

# **ARCHLine.XP® 2019**

BIM tools for architecture and interior design

**Manual**

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# 1. Introduction

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## 1.1. What's New?

The following features are new or enhanced for ARCHLine.XP.  
For additional detail of new features for ARCHLine.XP, go to the following:  
<https://www.archlinexp.com/new-in-archline-xp-2019>

### 1.1.1. User Interface Enhancements

Changes on user interface:

- **Renewed Navibar Tool.**
- **View Control Bar:** The View Control Bar provides quick access to rules to control the display of elements in different views.
- **Camera icon on Floor Plan view**  
Camera icon allows to view what we would actually see if we were standing at the given location in the floorplan.
- **Welcome Screen – Icon / List view:** You can swap the ICON / LIST view of projects.
- **Help Panel:** The Help palette shortly introduces how to use the currently selected tool.
- **Visual keyboard layout for keyboard shortcuts:** The new ARCHLine.XP 2019 keyboard shortcuts management can boost your productivity.
- **Ribbon bar menu access to most common door / window types:** The clicking on type icons you can place directly the most common door / window types.
- **Ribbon bar menu access to most common object types:** For elements such as objects, lamps, switches and sockets, cabinets clicking on icons the program displays in Design Centre the selected category
- **New Paneled Doors:** Paneled doors category is extended with 32 new typical paneled doors.
- **New grips:**
  - ❖ Parapet height /relative height modifier.
  - ❖ New grip points for ceiling, sweep 3D.
  - ❖ New rotation grip at 2D elements.
  - ❖ Text height is editable by temporary dimension.
- **Nudging Elements:** Nudging is a very simple way to move the selected elements.

### 1.1.2. Interoperability

- **Multiple instances of ARCHLine.XP:** It is possible to run multiple versions of ARCHLine.XP 2019 at the same time.
- **Renewed worksharing with Multi-user (team) mode:** Working on a team project is enabled for worksharing.
- **Design Phases:** You can separate the building construction into multi-phase design.
- **Layer variation groups:** Switching between variation groups you can hide or show the desired part of the project in one step.

### 1.1.3. Architectural Enhancements

Improvements for architectural features of the software:

- **Join two windows as corner window:** Any combination of standard windows can be joined with two methods to create the corner windows. Automatic or manual.
- **Renewed ramp tools:** 3 new tools are available: Straight sloped ramp, Arc ramp, Two ramp segments connected by a landing.
- **Brise Soleil:** Brise Soleils are ready to use as 3 separate tools: horizontal, vertical, custom defined.
- **Uniforming a staircase contour appearing in various Edit Layout commands:** The lower and upper contours of the stairs are also displayed in the editing commands. This way, you can decide whether the stair wall cut command is to hold the stairs above or below the stairs. Structurally, both situations may be justified.
- **Roof with custom shape - cross section profile editable:** When you create a roof with custom shape you sketch the profile first and then use that shape on the roof you create. This profile is available later to edit with Edit section profile command.
- **Wall Dimension to Core Layer axis:** You can dimension the axis of the core layer in the wall.

### 1.1.4. Interior Design Enhancements

Improvements for interior design features of the software

- **Tiling with predefined patterns:** Number of built-in patterns has increased. New patterns: Triangle, Benzene, 3 parts hexagon, various Chevron types, Fan, Alhambra.
- **Tiling list sorted by rooms:** The Tiling consignment is extended with a new Excel worksheet that lists the tiles sorted by rooms.

- **Picture in wall new feature: Managing transparent images:** The Picture on Wall command has been expanded to handle transparent PNG format images, so you can place any background and borderless shape on the wall.

### 1.1.5. Materials

- **Color Card** The Colour Card is for replacing a colour or texture with another colour or texture you choose - but this time, the change will take place on the entire 3D model. It replaces the used colour or texture with one of the predefined group of elements.

### 1.1.6. Visual Enhancements

- **Rendering Styles:** The Render quality and performance parameters are classified into specific groups such as metal, glass, brick, mirror, etc. The render styles can be assigned with drag and drop to any materials. The effects are visible in internal Rendering application.
- **Color coded visualization:** Color-coded view enables the classified visualization of render styles. Color codes are displayed in the upper right corner of the render style icons. Clicking on the Color coded command in the Design Center the ARCHLine.XP displays the model with the pure colors assigned to each render style. It makes easy to check render styles assignment through the related colors.

### 1.1.7. Documentation Enhancements

- **Schedules:** A schedule is a spreadsheet representation of extracted properties of the project elements. The schedule lists the selected properties of every instance of any type of element according to schedule's grouping criteria.
- **Section and Elevation** This command places two sections across the centre of the model perpendicular to each other (A-A, B-B) and creates the four main elevation views in one step.
- **Compare between 2 design phases:** The function compares two design phases of the same floor plan and displays the graphical changes visually.
- **Roof hatch on floorplan:** When you place a roof on floor plan you can assign a hatch style representing the roof tiles.

### 1.1.8. Tutorials and Courses

Check these resources that can help you learn how to use the software.

#### [Workshops](#)

The workshops are designed to give you the practical advice you need to be expert designer using ARCHLine.XP software.

#### [Courses:](#)

Online, or In-person educational courses can help you improve your knowledge using ARCHLine.XP.

#### [Additional Videos](#)

YouTube for ARCHLine.XP provides access to more videos created by CadLine for customers.



## 1.2. Introduction to ARCHLine.XP

### 1.2.1. BIM – Building Information Modeling

ARCHLine.XP is a **Building Information Modeling** (BIM) software.

The NIBS (National Institutes of Building Science) defines BIM as the digital representation of physical and functional characteristics of a facility.

*A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.*

[https://en.wikipedia.org/wiki/Building\\_information\\_modeling](https://en.wikipedia.org/wiki/Building_information_modeling)

A BIM model contains information about the building or its parts as the geographical location, geometry, material properties and the technical elements, the phases of construction, maintenance.

BIM is an intelligent design process. BIM is receiving and handling data for the efficient design and documentation of the project. The BIM-based design helps designers involved in the project, business co-operation.

The BIM standard IFC file format contains all of the building data in relation to information collected or added, and this format can be used during the entire life of the building.

The IFC format is a universal, neutral data format that is now considered as industry data exchange.

ARCHLine.XP supports the IFC 2x3 standard file format, that provides 3D and data exchange between different CAD / BIM design software.

The most valuable feature of the IFC format to preserve the architectural elements of the IFC file types and their properties. The wall, ceiling, etc. properties remain the same, although a few compromise may occur at the level of today's technology.

THE IFC-based data exchange capacity is significantly higher than the content of the currently dominant DXF and DWG-based data format information.

"BIM oriented" design offers unique competitive advantages: more efficiency and productivity, fewer errors, less downtime, lower costs, greater interoperability, maximum sharing of information, a more accurate and coherent project.

### 1.2.2. Introduction

This manual provides detailed information on ARCHLine.XP installation, basic principles and commands.

This documentation represents all the functionality of ARCHLine.XP. Functionality that is specific to Professional version is marked.

There are several tutorials that help you to increase your working knowledge. This video series helps to learn how to use the program from the beginning till the advanced functions [www.archlinexp.com](http://www.archlinexp.com).

### 1.2.3. Understanding ARCHLine.XP

ARCHLine.XP supports designing tools for the architect and interior designer that is efficient in executing even the most complicated drawing tasks. Many easy-to-use tools assist better productivity in design work from the early stages of a construction project to the construction documentation.

The program facilitates planning in a highly-standard, technically correct, exigent way, supports 3D modelling, photorealistic visualization and does all this focusing on the architects and interior designer approach.

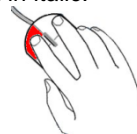
ARCHLine.XP stores all the building model information in one place, so floor-plans, phases, 3D views, sections and quantities are the presentation of the same database.

The Teamwork tools makes available to work on the same project with your colleagues together.

Every part of your project updates automatically, so that the plan and the documentation are one coherent unit through the lifecycle of it.

### 1.2.4. Manual conventions

- ❖ In the text, Menus, commands, keys, and controls will be highlighted in *italic*.



- ❖ "Click the mouse" always means **left-click** unless otherwise stated.
- ❖ "Double Click the mouse" always means press quickly twice the **left** button of the mouse.
- ❖ **SHIFT-click** means when you hold down the **Shift** key while you click with your mouse.
- ❖ **CTRL-click** means when you hold down the **Ctrl** key while you click with your mouse.
- ❖ "Drag the mouse" means **click** the mouse and move it while holding the button depressed. Release the mouse button when the desired effect has been achieved.

- ❖ When describing keyboard operations, **CTRL-key** always means hold down the **Ctrl** key while pressing the designated key.

## 1.3. Licensing

### 1.3.1. Overview

There are many options for licensing:

- ❖ **Standalone.** A standalone license is associated with one machine. In addition, you can transfer a license from one computer to another with a standalone license. For more information, see [Registration](#) and Activation.
- ❖ **Network (LAN).** A network license is not associated with one computer. It can be installed on a network server and multiple computers on that network to run Revit Architecture. In addition, you can borrow a license from the license server and use it outside the network environment for a specified time. For more information, see [Install LAN License](#).
- ❖ **Non-Profit (Standalone or Network).** ARCHLine.XP Non-Profit license is for non-commercial groups or individuals who would be eligible to use ARCHLine.XP free of charge for educational purposes. For more information, see [Non-Profit license](#)
- ❖ **Trial.** Trial version means you can use ARCHLine.XP in a limited mode for testing purpose. For more information, see [Registration](#) and Activation.

### 1.3.2. Installing the standalone license

Installing ARCHLine.XP is simple and straight forward. There is no need for any code during the installation of ARCHLine.XP. The software is installed as trial version automatically.

Since ARCHLine.XP is a 64-bit version application you can install on a computer running a 64-bit version of Windows operating system.

Go to the website <http://www.archline.com/downloads> and follow the instruction to download the installation set to your computer. Click the download link provided by email. When prompted, click "Open" or "Run" if you want to install the program. The installation wizard will launch. Follow the guided prompts on the installation wizard.

After having installed the software press the Finish button. The program can be launched from the Start menu.

### 1.3.3. Install the Network (LAN - local area network) license

Using this Network license the defined number of programs can be loaded through your local network according to the contract you signed.

Follow these steps:

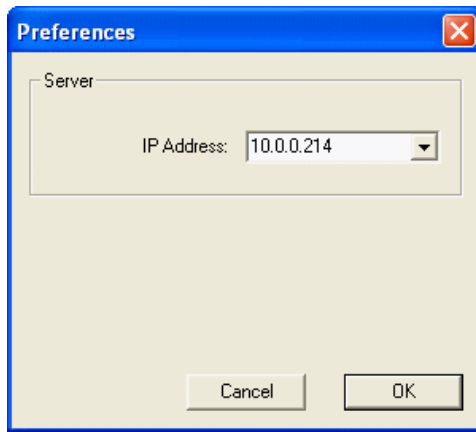
- ❖ Install the hard lock according to chapter *installing the hard lock* on the computer that is going to be the server of ARCHLine.XP program.
- ❖ Insert the hardlock into the USB port of this computer.
- ❖ Install the **ALServer** program on this computer.
- ❖ Install one by one the ARCHLine.XP program on the computers of your network.

#### **Install the AL-server**

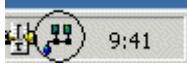


You need to log in as **Administrator!**

- Install the AL-server program.
- Choose the **Software** install option. If you want to install debug functions choose **Custom** option.
- If the installation was successful click on the **Start menu - Programs - Quick launch - ALserverXP** icon. This is necessary only for the first launch.
- Select the appropriate IP address from the appearing dialog. If there are more than one IP addresses in the table, contact the administrator.



After this the Alserver becomes activated, its icon appears on the Quick launch:



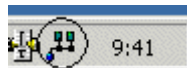
! If LAN hardlock is not inserted in the USB port, Alserver will not be running!

### Install ARCHLine.XP

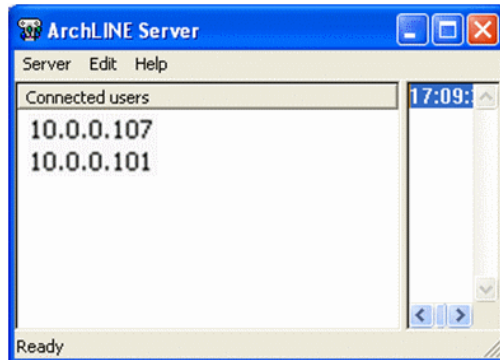
Follow the section 1.2.3.

If you have finished installation and launched ARCHLine.XP on the computers, return to the computer on which the Alserver program is running.

Double click on the icon of the Quick launch:



In the appearing dialog you can see how many ARCHLine.XP programs are running, and on which computers.



### 1.3.4. Non-Profit version

ARCHLine.XP Non-Profit license is for non-commercial groups or individuals who would be eligible to use ARCHLine.XP free of charge for educational purposes.

To use an ARCHLine.XP Non-Profit license, you will need to register an account and provide your name, contact and email address which will be used to generate and deliver your license key.

ARCHLine.XP Non-Profit licenses are issued for a period of 2 months by default and may be renewed for an additional period upon request.

Non-Profit licenses are ideal for: individuals to learn the CAD design, students and academic groups.

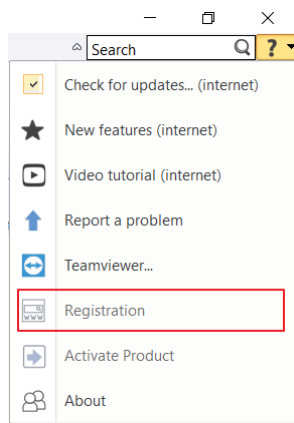
## 1.4. Registration

You can find your unique serial code in a confirmation e-mail when you purchased ARCHLine.XP.

You have 30 days after installing ARCHLine.XP to register your serial code. If this 30-day period expires before you complete registration, ARCHLine.XP goes into Demo mode and some ARCHLine.XP features will stop working until you enter your serial code.

To registrate the software, open the Help menu, and then click on Registration.

Type your ARCHLine.XP serial code. Click Ok, and then follow the instructions. ARCHLine.XP must be restarted in order to complete the process.



## 1.5. Activation

You have to activate ARCHLine.XP once or periodically according to your Perpetual or Subscription financial model. To activate the software, open the dialog by clicking the Help menu, and then clicking „Activate Product”. Activation requires an Internet connection to connect to the ARCHLine.XP web server on the Internet. If you have Internet connection you can select the **Activation via Internet** option and then follow the instructions.

**Attention!** The Serial code is NOT the same as Activation code!

If you have no Internet connection select the **Activation via e-mail** option, or call the phone number below the button. Type your ARCHLine.XP activation code obtained from your provider. Click Ok, and then follow the instructions.

If you have no connection then you can choose the option to activate by telephone.

### Frequently Asked Questions

#### Is product activation the same as registration?

No. They are different procedures, but linked to each other. Registration is a separate process where you register your unique serial code which prevents unauthorized use of your license by another person. The activation verifies that your serial code is valid and the software has been activated only on eligible computers.

#### I have entered my serial code but I cannot press the OK button to do registration. Why is the application not being registered?

Verify your serial code once again. The ARCHLine.XP cannot accept serial codes for 2012, 2011 or earlier releases. The OK button will be active only if you type the appropriate 16 digit serial code accurately.

#### How often will the software connect to the activation server via the Internet?

ARCHLine.XP connects to its activation server when it is first installed, when it is registered and activated. You can enable or disable Internet connection to activation server by clicking the Help menu and then clicking „Check for Updates”. If you have no Internet connection you have to register and activate manually by phone or by e-mail. However if you disable Internet connection you will not receive notification of important updates.

#### Does the internet connection speed affect activation? Will dial-up access work?

The amount of data transferred during activation is very small. Any stable internet connection will work. Slower connections such as dial-up access may take slightly longer to complete the activation steps.

#### During activation what information is passed to the server?

No personal information or information about your computer configuration is transferred. There is a one-way hash\* of some machine configuration data, your serial code, and the optional email address sent to the server. If you do not provide the optional information (email address and registration information) then no personal information will be transferred.

\*One-way Hash: Codes that identify parts of the computer are put through a special function that turns the codes into a code number that is unique to your computer but cannot be deciphered to determine what those components are. Only this hash value is sent to the activation server and not the details on the computer parts.

#### Can I move my license to another computer?

Yes, this can be done easily. ARCHLine.XP's license specifically authorizes you to use the software on more than one computer if you are using hard lock protection. For example, you can install ARCHLine.XP's on your office computer and your laptop. Simply install the software on the other machine and click on the "Buy now" and later the "Activate product"

button. You have to enter the same serial code and activation code. The software will run properly on that computer where you plug in the Hard lock protection

If you are using software protection without hard lock device you can use the software on one computer only. If you wish to move the software to another computer you should use the Activation via e-mail option to receive a new activation code valid for the computer where you move your license. Activating it on the second computer will automatically deactivate the license for the first computer.

#### **What is the serial code for?**

The serial code uniquely identifies your license. You will need the serial code if you ever need to reactivate your software (such as after a disk reformat and reinstall or moving the software to a new machine). The serial code will not change when you reactivate your software. We suggest that you write the serial code down in some permanent location.

#### **What is the email address for and is it mandatory?**

The email address on the activation dialog is mandatory if you choose the Activation via email button. You will be able to activate without email address if you choose activation via phone. Your email address will not be sold or provided to any third party.

#### **What if I have forgotten my serial code?**

During a registration the previously provided serial code is required. If the serial code has been lost and cannot be recovered (because an email address was not provided, or the email address is no longer valid) please contact us via our support form. We will be happy to reset your password.

#### **Will changes to my computer cause my application to stop working?**

There are no changes that will cause a permanent disabling of the software. Major changes (disk reformat being one such major change) will mean that you need to reactivate the software. If you have your serial code, this will be a fast and easy process.

#### **I wish to do an online activation but my firewall is set up to block such requests. What are the firewall settings?**

The following is the information that you need to setup your firewall:

Server IP address: archlinexp.com

Port: 80 (Standard HTTP)

Domain: archlinexp.com

#### **Why does ARCHLine.XP revert to demo mode?**

There might be several reasons:

You forgot to register your serial code.

You forgot to activate your license within the allowed time.

You forgot to plug in your hard lock.

## **1.6. System requirements**

To run ARCHLine.XP check the software and hardware conditions here:

<https://www.archlinexp.com/education/system-requirements>

## **1.7. DirectX support**

ARCHLine.XP requires DirectX support on version 9c or 11 level. DirectX 11 is recommended.

DirectX is included as part of the Windows operating system.

If for any reason your computer is not compatible with DirectX version 11 follow the guide below.

### **How to download and install DirectX?**

Visit the website <http://support.microsoft.com/kb/179113>

Before you can update the graphics driver, you need to know what kind of graphics card you have. For more information about how to find out what graphics card you have in your PC, do the following.

The easiest way is to run the DirectX Diagnostic Tool:

- Click "Start."
- On the "Start" menu, click "Run."
- In the "Open" box, type "dxdiag" (without the quotation marks), and then click "OK."
- The DirectX Diagnostic Tool opens. Click the "Display" tab.

- On the "Display" tab, information about your graphics card is shown in the "Device" section. You can see the name of your card, as well as how much video memory it has.

Once you know the kind of graphics card you have, visit the manufacturer's website to download the latest driver. Here are links for downloading drivers from the most common graphics card manufacturers:

NVIDIA: <http://www.nvidia.com/content/drivers/drivers.asp>

ATI from AMD: <http://ati.amd.com/support/driver.html>

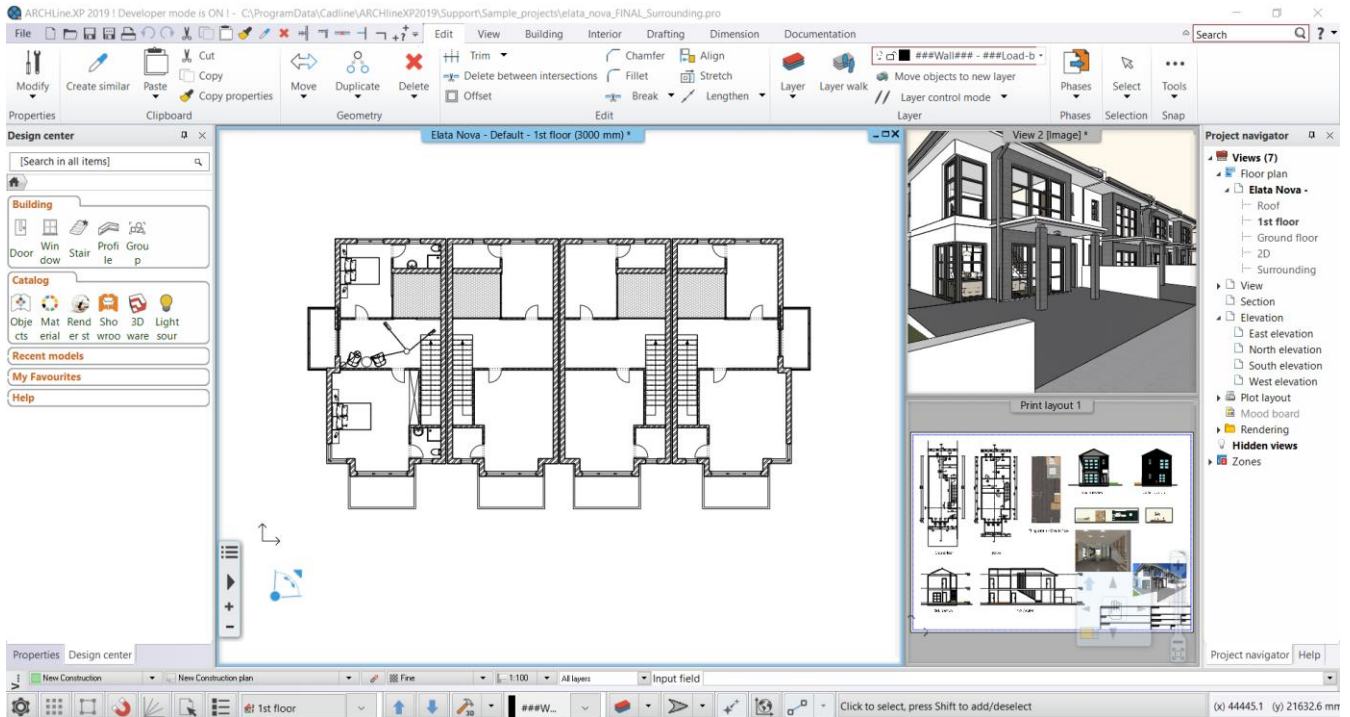
Intel: <http://support.intel.com/support/graphics/>

## 1.8. 64-bit support

Beginning with Version 2018, CadLine offers 64-bit versions of ARCHline.XP application only.

## 2. User Interface

Once the program is started, the ARCHLine.XP user interface appears on the screen. You can customize the interface to better support your design workflow.



### 2.1. User interface components:

1. **Drawing Area** The drawing area is the largest part of the ARCHLine.XP application window. All views that make up the project are displayed in the drawing area.
2. **Application Title** Displays the name of the current project.
3. **Application Menu** The application menu provides access to common file actions, such as New, Open, Save, Import, Export and Print.
4. **Ribbon bar** Ribbon bar provides access to ARCHLine.XP commands. Commands in the ribbon bar can be accessed through shortcuts.
5. **Quick access toolbars** The Quick Access Toolbar is a customizable toolbar that contains a set of commands.
6. **Tool Palettes left side** It contains the Design Centre and Properties Palette.
7. **Tool Palettes right side** It contains the Project navigator and Help Palette.
8. **View Control Bar** It provides quick access to rules to control the display of elements in different views. By default is located above the status bar.
9. **Drawing Pane** List of all drawings within the current project. Click one of the objects in the list to open a drawing.
10. **Navigation centre (Navibar)** Quick screen controls for zoom, pan, and rotation commands.
11. **Drawing Pane** It provides the lists the drawings belonging to the project.
12. **Status bar** Collection of the most frequently used commands and tips or hints related to the current command.

### 2.2. Drawing Area

The Drawing area is the largest part of the graphical screen. Graphical view windows appear here, that contain drawings for construction.

When you start a new project ARCHLine.XP loads the default settings and creates the primary floor plan view. Each time you open another view, by default the views divide the drawing area and you can see all of them in a tile arrangement.

#### Switch views

Using the Switch views command you can resize the active view. Clicking once again on Switch views command you can magnify the active view on top of other open views.

You find Switch views command:

- ❖ Click Ribbon menu View tab > Switch views.
- ❖ Click Navibar > Switch views.

### Drawing area background color

The default color of the drawing area background is white; later you can change it to any color.

#### To change the background color of the drawing area

- 1 Click Options > Graphics
- 2 Click on the suitable view type (2D, 3D, etc.) within Workspace panel
- 3 Select the new background color.

### Progress bar

The progress bar appears on the bottom of the drawing area when a large file is opening and visualizes the progress of the operation.

## 2.2.1. Activate view

Before starting work in a view it has to be activated:  
It can be done:

- ❖ By clicking on the window title or on the drawing area with the left mouse button or
- ❖ Hit ESC to close the current command and then press CTRL-TAB to activate the next view.
- ❖ In the Status bar > Current drawings button you see the list of open views. Click on the view name to be activated.

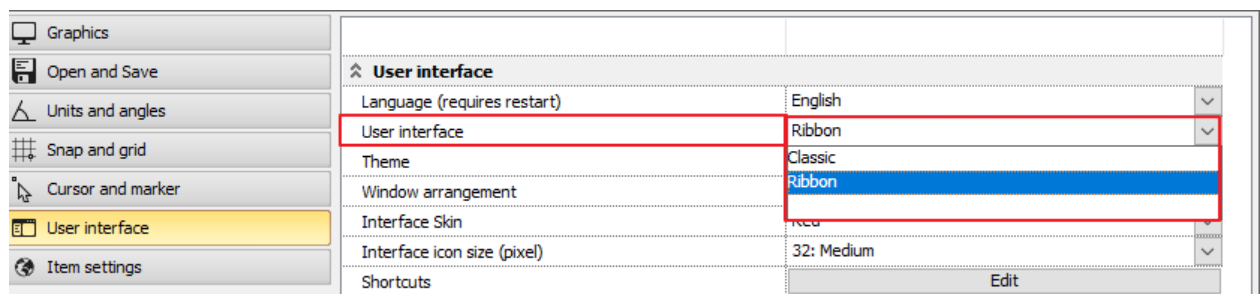
## 2.3. Ribbon

The ribbon provides the palette of the tools necessary to work with a project.

The ribbon organizes tools into logical groups. The ribbon is composed of a series of tabs, which are organized into panels.

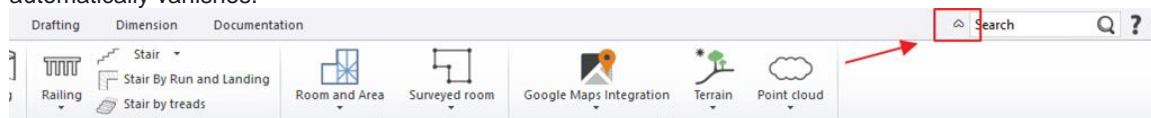
As a default the Ribbon bar is switched on.

If you are not familiar with the Ribbon you can switch to the 'Classic' Interface (ARCHLine.XP interface of earlier versions working with Toolbox and toolbars). The traditional 'classic' menu and toolbar can be accessed from the File – Options – User interface panel. Read more about Classic interface [here](#).

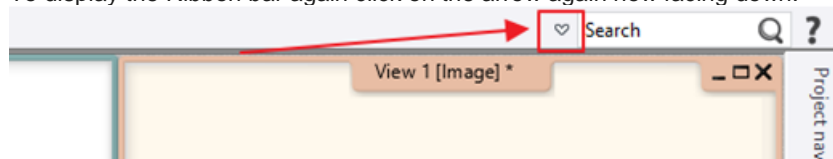


### Display or hide a Ribbon Bar

You can increase the drawing area by hiding the Ribbon. When you close the Ribbon bar, only the tabs on the Ribbon will remain visible. In the top right corner, click to the arrow icon to hide the Ribbon. When you click on the tabs, the Ribbon bar is temporarily displayed and you can choose from the available commands. After clicking on the command, the Ribbon automatically vanishes.



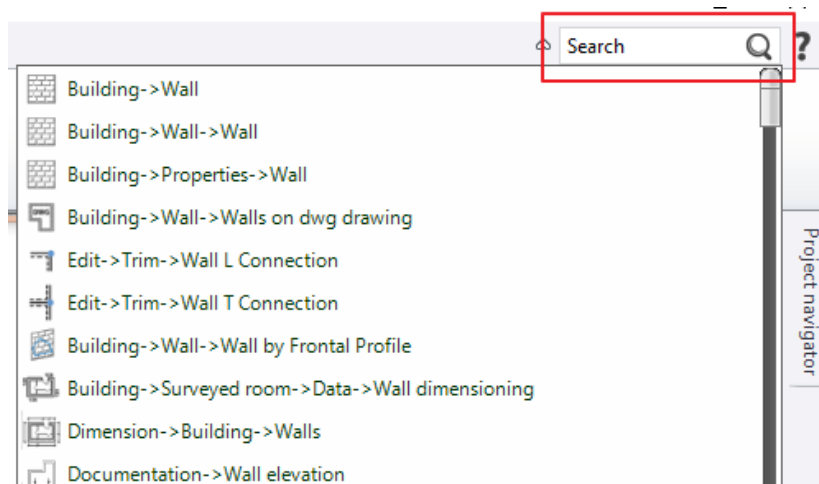
To display the Ribbon bar again click on the arrow again now facing down.



### Search between the commands of the Ribbon bar

According to the text written into the search box a list of commands appear which have the same words in them. Click on one element from the list and the chosen command starts. If you hover over one element of the list with your mouse its tooltip will appear. (Local help)



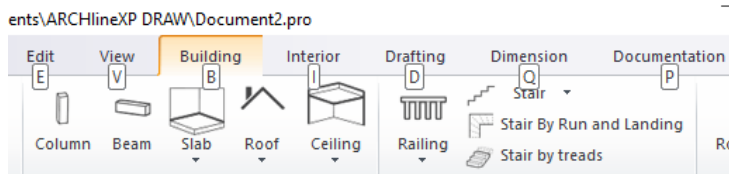


### Keytips

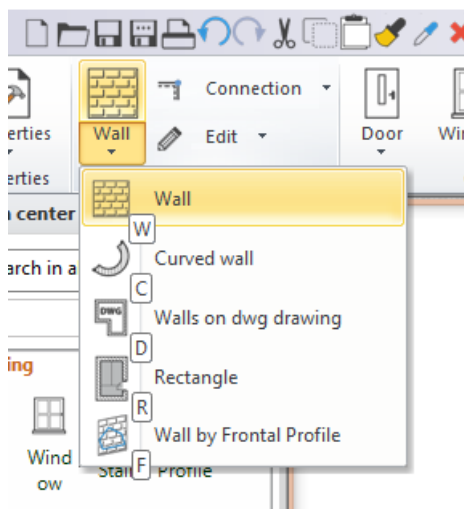
Keytips provide a way to access the application menu, the Quick Access toolbar, and the ribbon using the keyboard. To display keytips, press *Alt*.

Keytips appear beside the tabs and commands of the Ribbon bar.

You can use keytips to navigate through the ribbon. Type the keytip for a ribbon tab to bring that tab into focus and to display the keytips for its buttons and controls. If a ribbon tab has an expanded panel containing additional tools, type its keytip to display the panel and see keytips for those tools.



Using these letters after pressing the *Alt* button the commands of the Ribbon bar can be started. Example: by pressing the *Alt* and *B* buttons after each other the Building tab opens, then by pressing the *W* button you can access the Wall menu. Here if you press the *W* button again you can start the Wall command.



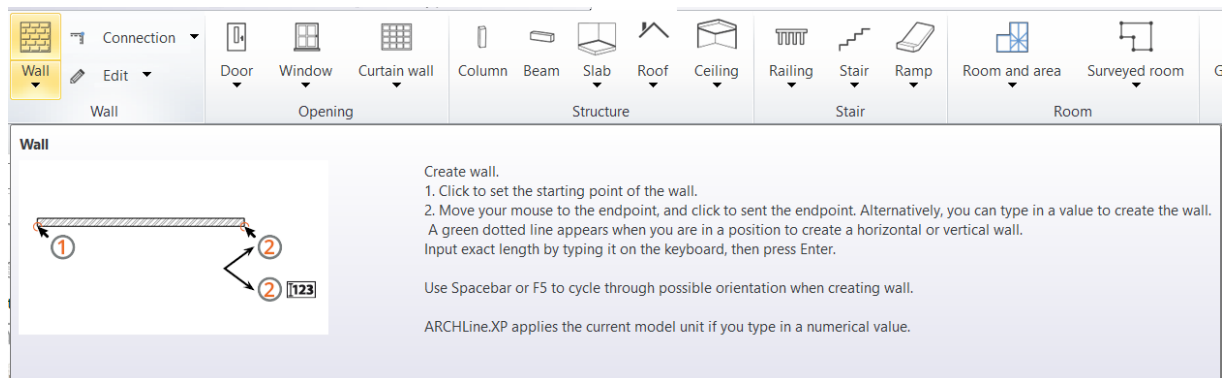
To close the Keytips press *Alt*.

### Subcommands

By clicking on the arrows facing down on the panels of the Ribbon bar the drop-down menus open and you can choose from the available commands.

### Tooltips (local help)

If you hover over a command for a few moments a tooltip appears which helps the understanding of the command with graphics and description.



## 2.4. Start Up dialog

The Start Up dialog appears at the start of the program and gives access to different initial operations, highlighted projects, recent projects in icon or list view.



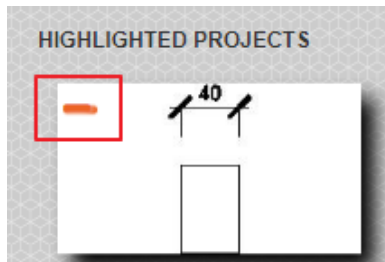
The upper part of the Start Up dialog contains:

- ❖ New project: Creates a new blank project.
- ❖ Open project: Opens the Open project file dialog.
- ❖ Exit: Closes the program.
  
- ❖ Search: Search projects
- ❖ First steps video: Online service to help learning the basics.

❖ Demo projects: Downloadable example projects. This feature cannot be used offline.

### Highlighted projects

In this section you can select from the pinned projects. A pinned project remains in the list until we remove it with the orange minus (-) found in the upper left corner. In this case it moves to the Recent projects section. The Highlighted projects list can only contain five projects at maximum. If your list is full you have to remove a project before adding another.



### Recent projects

The list of the recently used files. By clicking on the orange minus icon in the upper left corner the project is removed from the list. By clicking on the Star icon found in the upper right corner the project is moved to the Highlighted projects section. In the pop-up menu the path of the file, its last modifications and its size appears.



### List view

List view displays the projects with following details:

Project name | Path | Date and Size form.

List view allows you to display up to hundreds of projects at once sorted by name, date, etc.

You can swap the ICON / LIST view to the right side of the dialog.



NEW PROJECT  
OPEN PROJECT  
EXIT

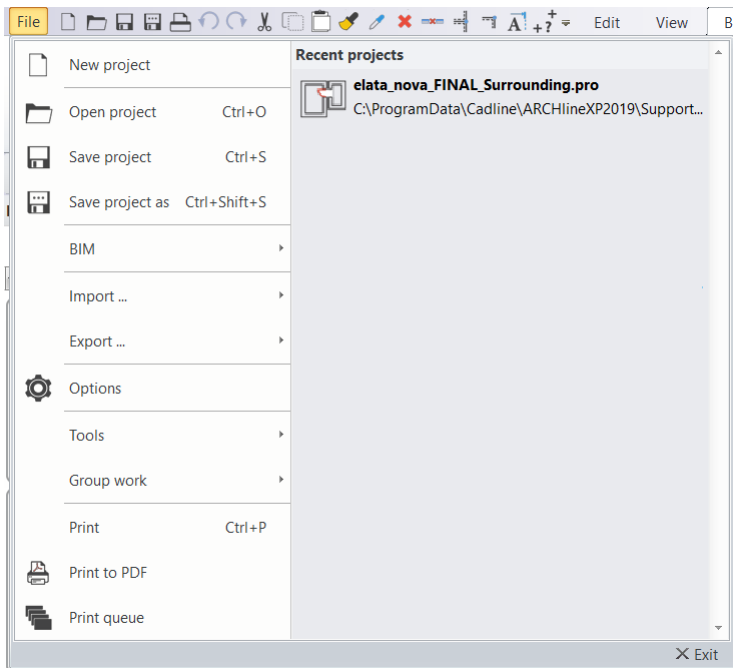
Search  
First steps video  
Demo projects

ICON / LIST				
Filtering <input type="text"/>				
Name	Path	Date	Size	
Transvaalstraatkontich45_Wannes_Malaise_Frank_Van_Asch.05.07.2018.pro	C:/Users/zoli/Documents/ARCHlineXP Draw/2018/	2018.07.09. 12:12	271 MB	
SAC_Prefab_home_07_donot_publish.pro	D:/Exhibition/	2018.08.17. 17:38	168 MB	
eDesign_Shop_2019.pro	C:/Users/zoli/Documents/ARCHlineXP Draw/	2018.08.08. 14:04	15 MB	
Scholtz_Gabor_E-Invest_Bp_2018.pro	/Support/Sample_projects/	2018.08.08. 09:39	10 MB	
Document25.pro	C:/Users/zoli/Documents/ARCHlineXP Draw/	2018.09.18. 17:26	2 MB	
2017_06 - AZZINI - PISCINA COMUNE dopo PAESAGGISTICA_19.pro	//cad-server/Design/Exhibition/01_Presentation_Project/05_Architecture/	0.00.00. 00:00	16 MB	
Chiswick_park_Final_all_purged.pro	//cad-server/Design/Exhibition/01_Presentation_Project/04_Apartment/Chiswick/	0.00.00. 00:00	15 MB	
eggendorfer_22012_wd.pro	//cad-server/Design/Exhibition/01_Presentation_Project/05_Architecture/	0.00.00. 00:00	68 MB	

Professional - 64 Bit Release 1 v180920 Build 32

## 2.5. Application menu

The application menu provides access to common file actions, such as New, Open, Save, Import, Export and Print. Application menu displays the list of recently opened projects.



### Recent Projects

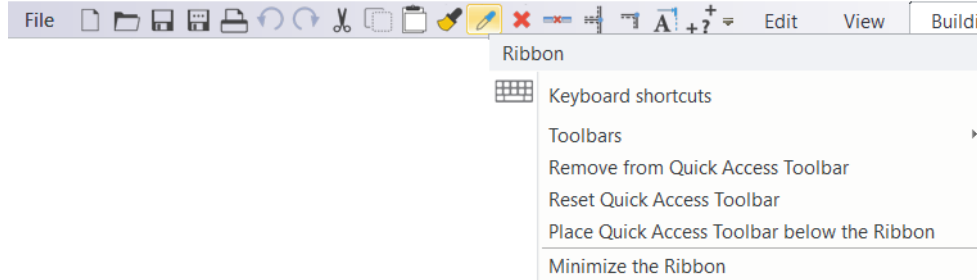
The application menu displays the list of projects that you opened most recently. Click a recent project to open it.

## 2.6. Quick Access Toolbar

The "Quick Access Toolbar" is a customizable toolbar that contains a set of commands that are independent of the tab on the ribbon that is currently displayed. You can move the Quick Access Toolbar above or below the ribbon, and you can add buttons that represent commands to the Quick Access Toolbar.



To move the Quick Access toolbar, right click on Quick Access Toolbar and click on Place Quick Access Toolbar below the Ribbon command.



### Add a command to the Quick Access Toolbar

On the ribbon, navigate to the appropriate command that you want to add to the Quick Access Toolbar. Right-click the command, and then click Add to Quick Access Toolbar on the shortcut menu.

### Remove a command from the Quick Access Toolbar

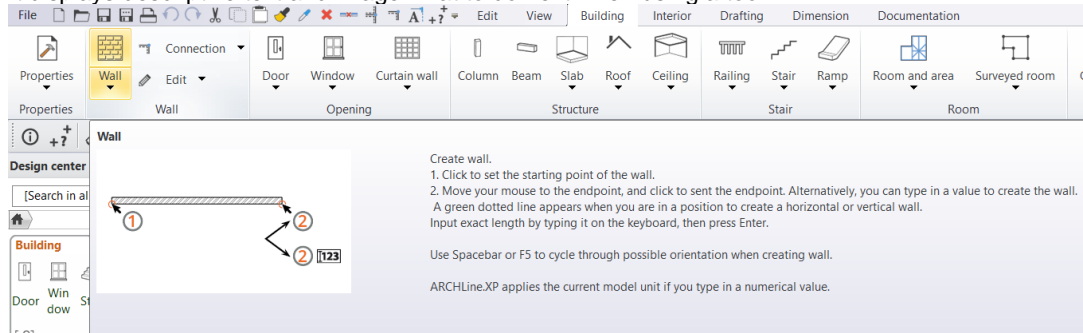
Right-click the command you want to remove from the Quick Access Toolbar, and then click Remove from Quick Access Toolbar on the shortcut menu.

### Reset the Quick Access Toolbar to the default settings

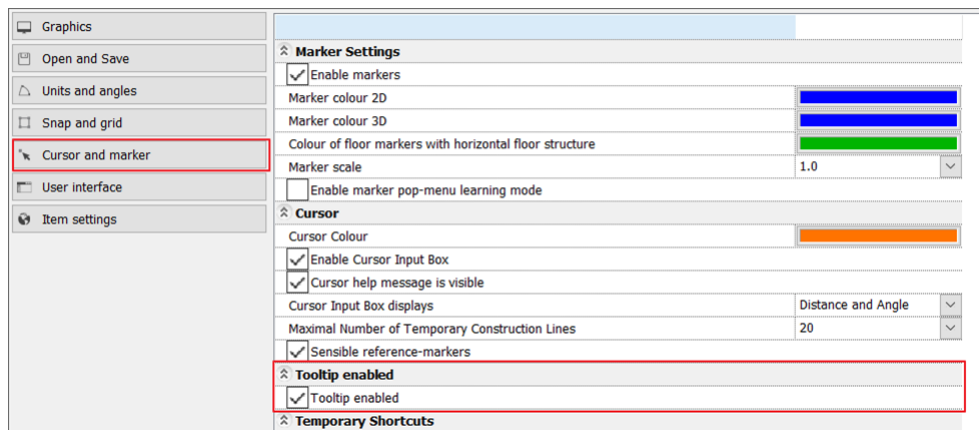
Right-click the Quick Access Toolbar, and then click Reset Quick Access Toolbar on the shortcut menu.

## 2.7. Tooltips

Tooltips provide information when you rest the pointer on a tool in the user interface. It displays descriptive text and image what to do next when using a tool.



Tooltips are useful when you are first learning how to use ARCHLine.XP. You can also turn off the tooltips when you no longer need them. Click on Options / Cursor and Marker / Tooltip Enabled



## 2.8. Project Navigator

Documents of each drawing that make up the projects are listed in the Project Navigator. It displays the hierarchy for all floor plans, 3D views, sections and elevations, plot layouts, mood boards and rendered images, linked ARCHLine.XP project. You can expand and collapse each branch, to see all items.

### Opening the Project Navigator

When you start ARCHLine.XP for the first time, the **Project** Navigator palette is open and docked on the right side of the application together with Help. If you close the **Project** Navigator palette with a click on the X icon on its top-right corner, you can open it again using any of the following methods:

- ❖ Click Ribbon menu View tab > User Interface > Project Navigator.
- ❖ Click Options > User Interface > Project Navigator.
- ❖ Right-click in the Ribbon empty area, > Toolbars > Project Navigator.

### Placing the Project Navigator

You can dock the Properties palette to either side of the ARCHLine.XP window and resize it horizontally. You can resize it both horizontally and vertically when it is undocked.

- To resize the Project Browser, drag one of its borders.
- To move the Project Browser, drag the browser's title bar within the ARCHLine.XP window. Release the mouse button to place the browser in the desired location.

Changes to the size and location of the Project Navigator are saved and restored when you restart ARCHLine.XP.

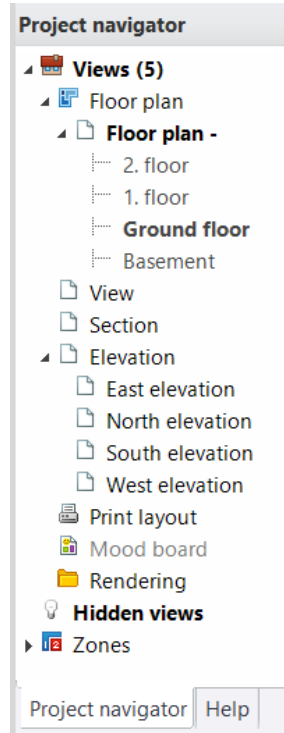
The 3D database is not saved in the project by default, only upon your request. When you save the project, each drawing goes into one file, with a .pro file extension.

### 2.8.1. Project Navigator in details

The drawings that make up a project are grouped as **Visible** and **Hidden** drawings. What is the difference? The hidden drawings have no assigned active window but remain part of the project when you save it. You can also move a drawing to the hidden drawings group if you click on the X icon on its window top-right corner. These visible and hidden folder contain the following sub groups:

- ❖ 2D drawings (floor plans)
- ❖ View (perspective and axonometric views, wall views)
- ❖ Sections
- ❖ Elevations
- ❖ Print layouts
- ❖ Mood board
- ❖ Rendering: rendered images

There is also a section named zones, detailed in 4.3.6.



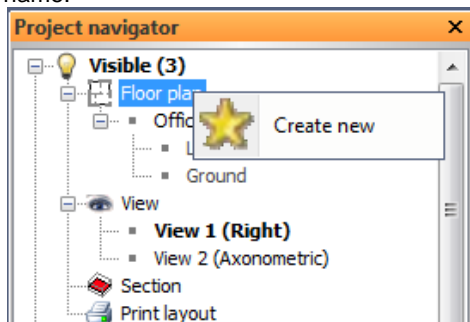
### 2.8.2. How to use the Project Navigator?

#### Active drawing

- The mouse left double click makes the selected drawing to active drawing. When the selected drawing is in the **Hidden** category it will be displayed on the screen and will be moved to the **Visible** category.

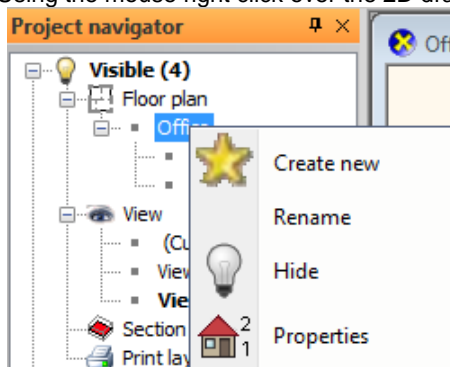
#### New drawing

The mouse right click makes over the folder name offers to create the appropriate new drawing according to the folder name.



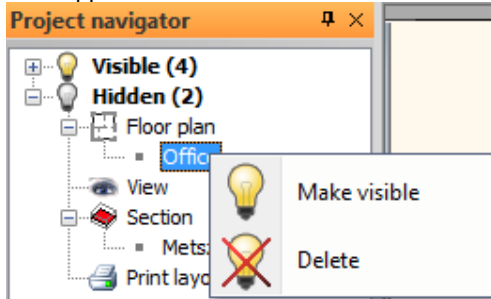
#### 2D drawing management

Using the mouse right click over the 2D drawing name the following menu appears:



- ❖ **Create new** enables to create a new 2D drawing.
- ❖ **Rename** command enables to change the pseudo name of the drawing. You can overwrite the pseudo name of the drawing but the real file name of the drawing will not change.
- ❖ **Hide**. The selected drawing will be temporarily invisible, i.e. it will not have a window but it *will remain part* of the project. The drawing moves to the Invisible group.
- ❖ **Properties** command opens the 2D drawing related floor management dialog where you can modify the current floor structure.

When you chose a 2D drawing in the **Hidden** folder with the mouse right click over the 2D drawing name the following menu appears:



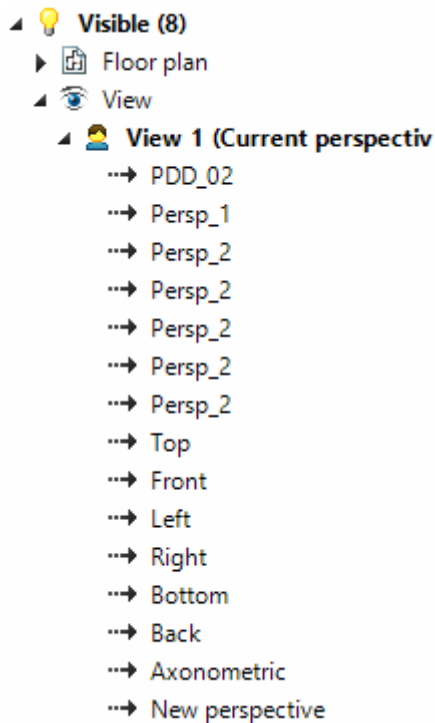
- ❖ Click on the Light bulb icon the **Make visible** command activates the hidden drawing and moves to the **Visible** folder.
- ❖ Click on the **Delete** command to delete the drawing from the project. This means that you delete the drawing from the hard disk and so it will not be accessible any more.



Remember not to delete the 2D drawing (floor plan) unless you do it for some specific reason.

### 3D view management

The mouse left double click activates the selected view.



Using the mouse right click over the view names the following menu appears:

## 2.9. Design Centre

The DC (Design Centre) contains content libraries provided with the ARCHLine.XP installation, corporate partners, individual contributors and you in a very compact manner.

Such content could include materials, 3D models, 2D drawings, light styles and other products or components.

DC helps finding the items quickly with search function even in a large database.

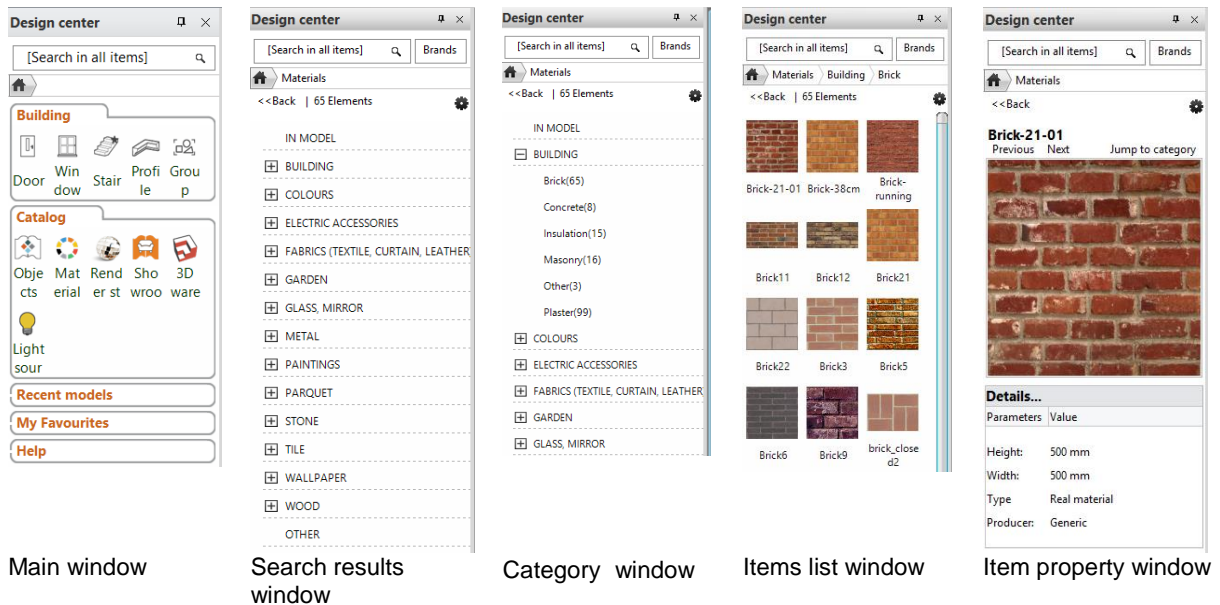
You can collect your most frequently used elements into My Favourites.

This chapter describes the interface elements you will encounter while you are using DC.



### 2.9.1. Design Centre Interface

The Design Centre (DC) graphical user interface consists of Main window, List view per Components (Building, Objects, Recent Models, My Favourites and Help).



#### Window

Main window  
Search results window  
Category window  
Items list window  
Item property window

#### Description

The Main window is where the DC components are displayed  
The Search results window displays the search results  
The Category window displays the appropriate categories and subcategories  
The Items list window displays the items within the selected subcategory.  
Displays the principal properties of the selected item..

### 2.9.2. Activating DC components

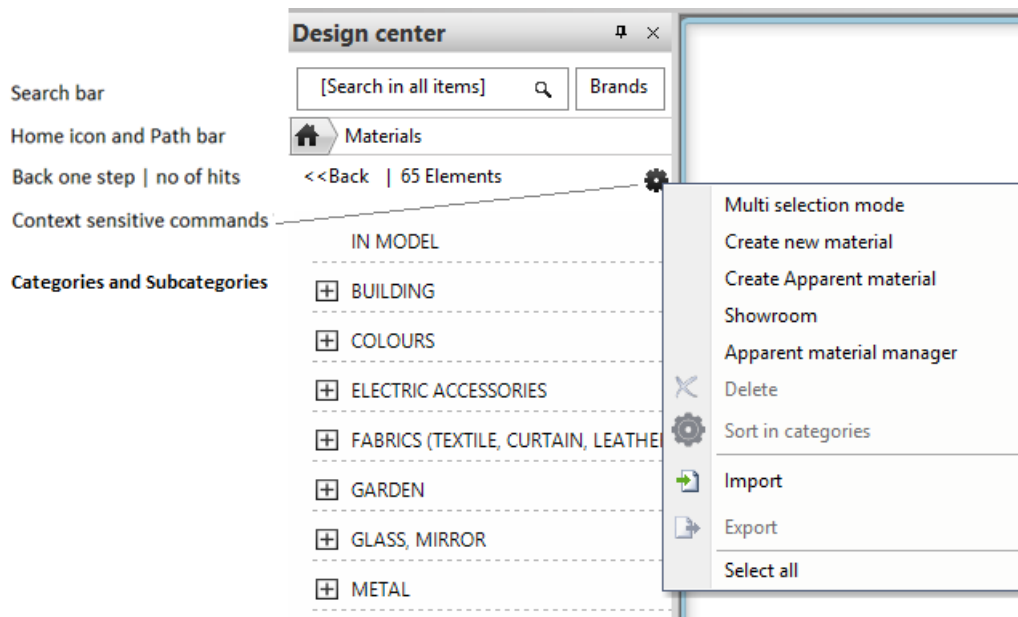
To open a DC component window, you can click the corresponding node in the Main window with mouse left button. When you activate one of these node in the Main window, the following action happens:

Building, Objects	The selected item's categories are displayed in the DC.
My Favourites or Recent Items	The relevant items are displayed in the DC. Your Favourites or Recent Items are stored in a file on your computer, so it keeps its content even if you restart ARCHLine.XP.
Brands	Brands filter to search items with the selected Brands only.

### 2.9.3. Design Centre structure

DC comes with the ability to sort your items into categories. The selected item's categories are displayed in the DC. The list displays the categories as a tree from root level to subcategories with folder icon or items with thumbnails as nodes.

The GUI consists of the following components:



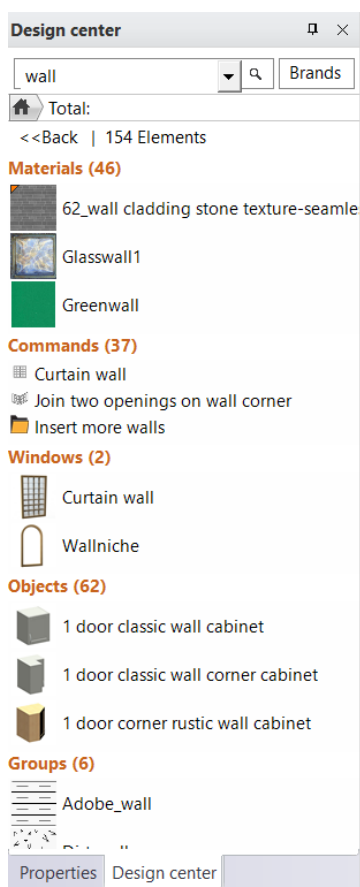
### 2.9.3.1. Search bar

The Search bar is on the top of the DC. This is the main search area, which lets you specify any specific terms you wish to search for.

It consist of two controls: Search input field and Brands button.

The Search Results window displays the search results after submitting a term.

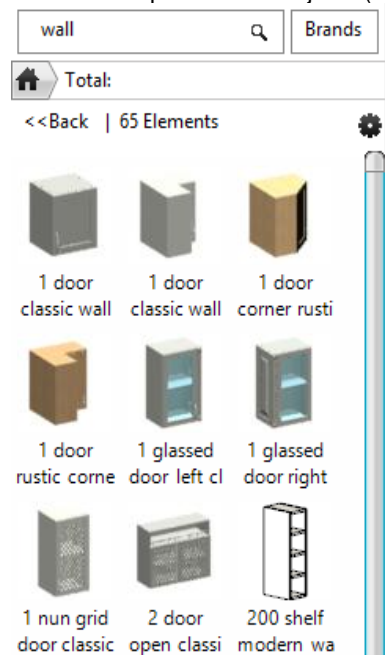
To search, just type a term in the Search input field, wait a second or click on the zoom icon on the right. ARCHLine.XP will take you to the search results page.



The search results are displayed in a list. You can click a header line to activate the corresponding list.

The header displays the number of hits in bracket (e.g. Materials (34)) in each category if the hits are greater than 3. To display all the hits in a category click on the header.

In this Example click on Objects (62) will display all the Wall hits.

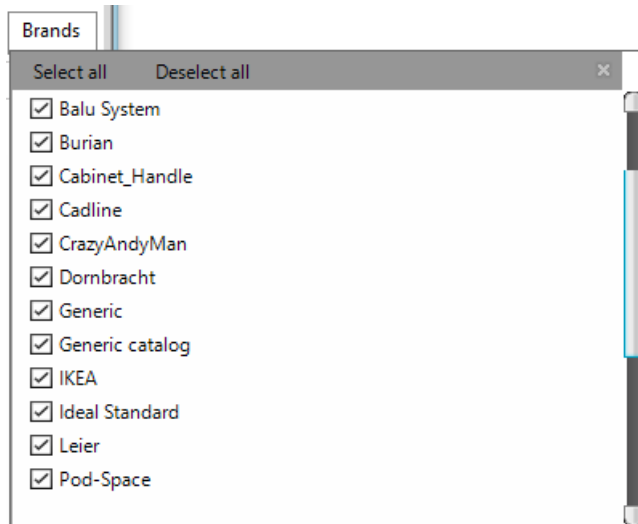


Wildcard \* allow you to match single or multiple characters within words. It displays all items in the DC database.

### Brands

The Brands button displays the number of Brands available in the database.


The filter by clicking on Brands allows you to narrow your search to only required Brands.



### 2.9.3.2. Path bar

The path bar appears beside the home button in every DC window and displays your current location as a series of links separated by arrows. You can click any of them in the bar to go back to that location.

#### Home button

Clicking on Home button brings you back to the DC Main window. 

#### Back

The back button appears below the home button in every list window and take you back to the previous window.

#### Number of hits

This number refers to the sum of all the items in the current window.

### 2.9.3.3. Categories

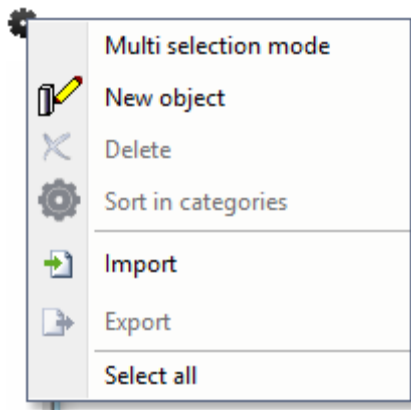
DC allows you to sort items into categories. The main Categories are predefined and you cannot modify it. You can choose among the Subcategories or you can create a new Subcategory. You can relocate the items into another Category and another Subcategories as well.

To sort in categories click on the black gear icon.

When you relocate an item you cannot change its name.

### 2.9.3.4. Context sensitive menu commands

Each window has its own specific menu commands. To display the commands click on the black gear icon. It includes the commands described in the table below.

**Command**

Multi Selection mode

New object

Sort in Categories

Import

Export

2D / 3D

Select All

Delete

**Description**

By default, a user can activate a single item with a click in a list window. You can set the Multi Selection Mode active to select multiple items simultaneously.

Define new object.

Relocate the object into another category.

Import a selection of DC items from an ARCHLine.XP .environment file.

Export a selection of DC items to an ARCHLine.XP .environment file.

You can change view mode displaying the window contents using 2D or 3D icons.

This button allows to select all items. You may need this when there are a lot of items to delete or export. Pressing Ctrl +A the program will select all the data in the window similar to how Select All works.

Delete the selected item. You can't delete the item if it is "in use".

**2.9.4. Placement mode and selection mode**

You select a control in the DC by clicking its name or icon.

While a single control is active, the DC is in placement mode, meaning that it is ready to place an instance of that control on the drawing. In this mode, clicking or dragging on the DC results an operation like placing an object or similar.

To operate on multiple items simultaneously, you must be in selection mode called Multi Selection Mode. To put the DC in selection mode, click on the black gear icon where you see the DC Edit menu (highlighted in the following illustration). In this mode, you can select one or more objects on the DC and export them, edit their properties or delete them.



You can activate the Multi Selection mode alternatively with pressing down CTRL and click on any item in the DC window. This action automatically activates the Multi Selection mode.

**Selection**

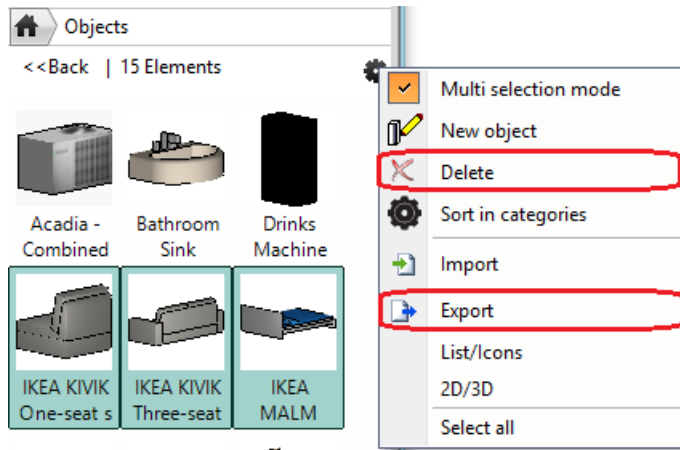
Multi Selection mode allows actions to be performed on one or more **items** or **Categories (Items)** displayed in the DC window.

For actions to be performed on multiple Items at once, those items must be first selected via one of these methods:

- ❖ **Select one or more Items at a time** - To select a Category, the Multi Selection mode checkbox must be checked (clicked). It is possible to keep selecting more Categories by clicking on their respective icon or label.
- ❖ **Select all Items in DC window** - All Items in a DC window can be selected by the Select All command or pressing the CTRL+A shortcut.
- ❖ **Reverse Selection** - A Reverse Selection means checked items become unchecked, and unchecked items become checked. A Reverse Selection is accomplished by holding the CTRL key on the keyboard and clicking the Item.

**Actions**

Actions describe the commands to be performed when Multi Selection mode is checked. The follow describes these actions:



- ❖ **Delete** - Deletes the currently selected DC items.
- ❖ **Export** - Export the selection of DC items to an ARCHLine.XP .environment file.

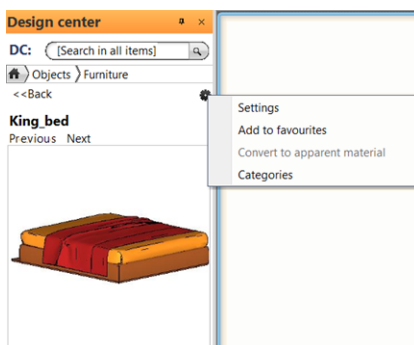
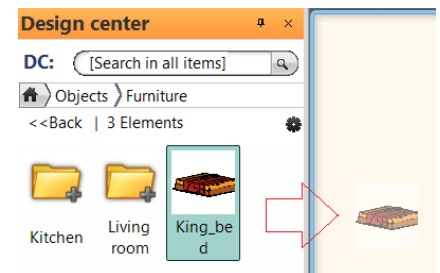
## 2.9.5. Using Placement mode

By default you are working on DC in Placement mode. In this mode you can activate commands with drag and drop technique or select one from the DC Edit menu with a click on the black gear icon.

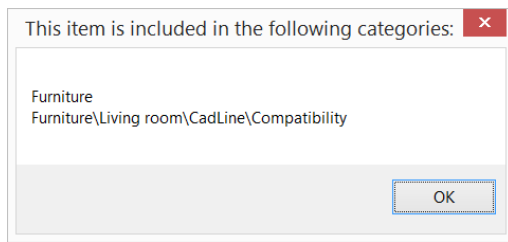
### Actions

Actions describe the commands to be performed when Single Selection mode is on. The follow describes these actions:

- **Place with Drag and drop** - Hover the mouse cursor over the item to be placed. Press down the mouse button then move the mouse with the left button down onto the drawing area and release the mouse button up. Follow ARCHLine.XP cursor during the placement.
- **Click on item** - Click on the selected item. The DC Property window open automatically.
- **Settings** - Open the DC Edit menu and click on Settings command. You can edit the item in its property dialog.



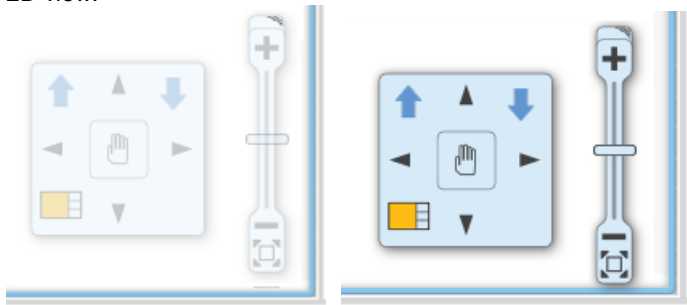
- **Add to favourites** - Open the DC Edit menu and click on Add to favourites command. The item will appear in your DC My Favourites list window.
- **Convert to apparent material** - This command is enabled when you are on a DC Texture window. You can convert the selected texture into apparent Material.
- **Categories** - Open the DC Edit menu and click on Categories command. The program display the associated categories in a dialog.



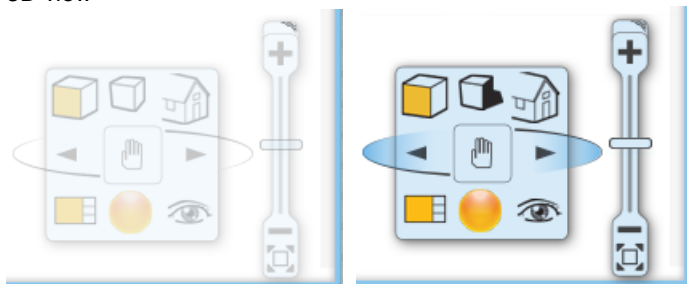
## 2.10. Navibar

The navigation controls are in the bottom right corner of the view and fade when you are not using them. To show the navigation controls, move the mouse over the navibar. The NaviBar's appearance in the 2D (2D floor plan, Printing Layout) and 3D (3D model, Section) is different.

2D view:



3D view



You find here the tools to navigate on the drawing area with the zoom and pan commands.

### **Zoom in/out and optimal view:**



Drag the zoom slider or click the + or – to zoom in or out

You can navigate with simple left mouse clicks or by dragging in some cases like zooming, panning or rotating. If you wish to zoom, pan or rotate continuously than you have to click on the appropriate command, hold down the mouse button and move the mouse.

### **3D Navibar**

When your active work space has 3D content (3D model, Section), the Navibar displays a second group of commands. This second group contains useful commands which facilitate setting up the view of the 3D model as 3D view, Walk, 3D visual styles, Shadow, Rendering and Perspective view.

### **Move the Navibar**

You can move the navibar on any other place on the workspace that is best for you. To move the navibar, move the mouse over the right top corner on the zoom slider and drag it to where you want to place it. Release the mouse button.

**Restore**

You can restore the navbar to its factory default state with a mouse right button click on the right top corner on the zoom slider.

**Show or Hide the Navibar**

Click Options > User Interface > Navibar is visible.

**2.10.1. Pan**

You can pan the drawing dynamically with these tools. The arrows show the pan direction.

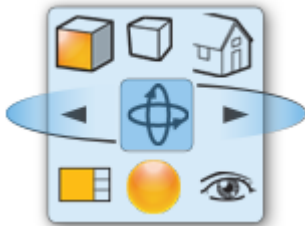
**Dynamic pan**

Hold down the Hand pan button and move your mouse to use dynamic pan.

**2.10.2. Orbiting the 3D model**

Click the centre icon, hold down the left mouse button and drag to orbit the model. Move in the direction you want to orbit the model.

The axis icon on the left side in the navbar helps to pick a new rotation centre point.

**Continuous Orbit.**

The command enables you to set the 3D view into continuous motion.

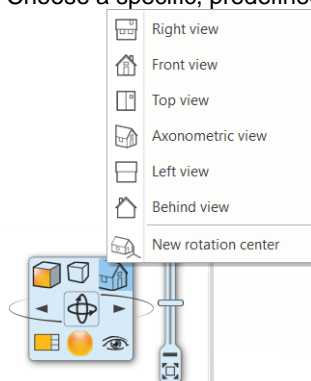
The Continuous Orbit tool that you find in Ribbon menu View > Animation > Walk and Fly > Look around

**2.10.3. View tools in 3D**

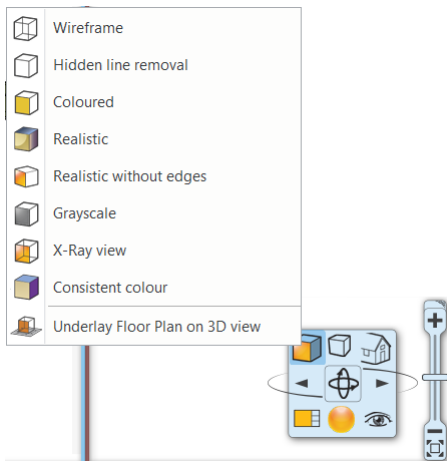
The NaviBar contains some useful commands which facilitate setting up the view of the model.

**Views**

Choose a specific, predefined view from the views list. You can also define a new rotation centre here.

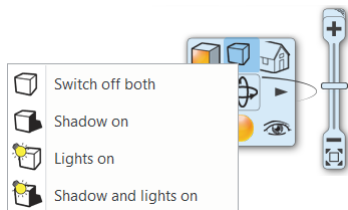
**3D visual style tools**

Choose a visual style from the list. This will change the appearance of the 3D model. You can select from Wireframe to Consistent Colour visual style.



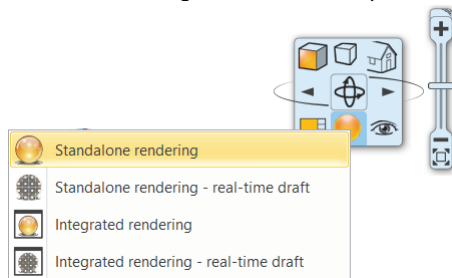
### Shadow and light switch

Click on Shadow icon to turn shadows on/off and lights on/off. The shadows will be visualized based on the Sun settings.



### Rendering

Click on rendering icon to start the photorealistic image preparation.



### Perspective view

Click on Perspective view to set the camera in the 3D model. You will see the model in perspective through the camera.

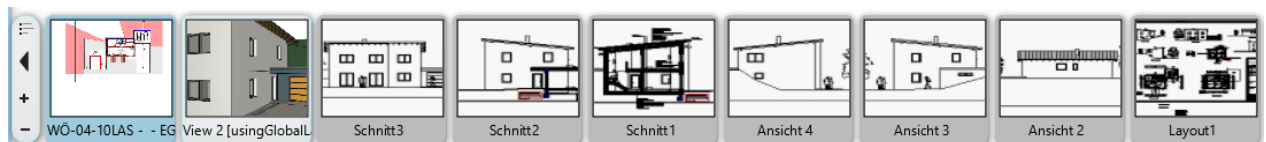
### Enlarge active window

Click on Enlarge active window to enlarge the already selected active view. With a second click you can magnify the active view. All inactive views will be organized automatically to the right side of the workspace.



## 2.11. Drawing Pane

A Drawing pane lists the drawings belonging to the project. The drawing pane contains three parts as Control bar, Drawing Selector and Pager.



To make a drawing current, click on the image in the list.

### Control bar

The left side control bar enables to display the workspace list, show and hide the drawing pane and resize it.



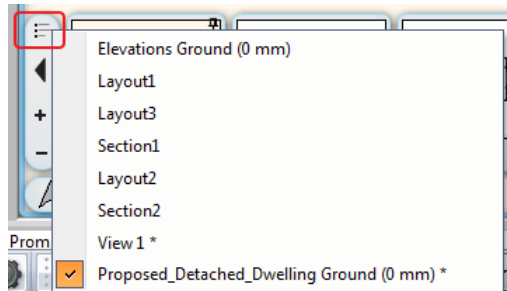


### Workspace list

You can use the workspace list icon to switch between the drawings of the project too.



It displays all workspace names in alphanumeric list.



### Activate view

Click the name of the view you want to activate and the appropriate view will be active.

### Show / Hide

You can show / hide the Drawing Selector and Pager.



### Size up / down

You can resize the Drawing Selector and Pager.



### Pager

The Pager becomes visible when the number of views exceeds 8. Clicking on the pager the Drawing Selector displays the next or the previous view in the list.

## 2.12. View Control Bar

The View Control Bar provides quick access to rules to control the display of elements in different views.

The View Control Bar by default is located above the status bar:



The View Control Bar provides quick access to the following tools:

- ❖ Phase status
- ❖ Phase filters
- ❖ Graphic overrides
- ❖ Wall state
- ❖ Opening Detail Level
- ❖ Layer variation groups
- ❖ Input field

### Input field

You can input commands, values, coordinates, texts or formulas by which you can use trigonometrically and arithmetical operators. You can activate the typed value with the Enter button:

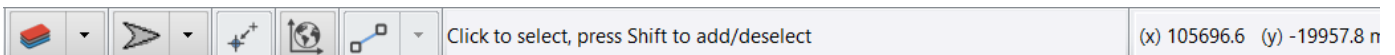
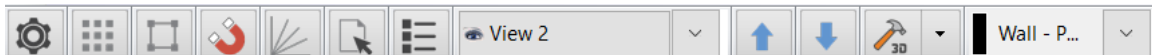


See description of input in the [Command line](#) chapter.

## 2.13. Status bar

The status bar is fixed to the bottom of the ARCHLine.XP application window. When you hover the mouse over a tool, the status bar provides tips or hints on what to do. The status bar displays the following information:

- ❖ Options,
- ❖ Grid, Snap, Osnap, Ortho,
- ❖ Selection control,
- ❖ Current drawing list
- ❖ Current Floor/Perspective Settings,
- ❖ Generate 3D model,
- ❖ Layer controls,
- ❖ North, sun and shadow controls
- ❖ Reference point bar,
- ❖ Move bar and
- ❖ Tips or hints on what to do.
- ❖ The current CAD coordinates of the mouse pointer.



### Options dialog

You can customize the program settings and appearance in the Options dialog. The Options dialog is located in the bottom left-hand corner of the ARCHLine.XP Status bar and has a unified interface outlook. Click on the first icon (gear like) to display the Options dialog.



You can also open the Options dialog in the File menu and click Options

### Grid, Snap, Osnap, Ortho,



The 2-5 icon group changes the settings of grid, snap, object snap and ortho commands.

<b>Grid</b>	Grid can be switched on/off.
<b>Snap</b>	Snap grid can be switched on/off.
<b>Object snap</b>	Objects snap on/off.
<b>Ortho</b>	You can switch between orthogonal and normal mode.

### Grid

A grid with arbitrary division can be visualized that helps orientation on the drawing. The grid is not part of the drawing. It is not printed with the drawing.

Switching on the snap, the grid becomes a snap grid. This means that points defined by graphical tools will be attracted to the nodes of the grid, or to the proportional part of it.

### Angle snap

In a graphical editing command the **Angle snap** defines the position of the second point in correlation to the first given point. The second point snaps to the nearest fix angle. The fixed default directions are:  $0^\circ$ ,  $45^\circ$ ,  $90^\circ$ ,  $135^\circ$ ,  $180^\circ$ ,  $225^\circ$ ,  $270^\circ$ , and  $315^\circ$ .

You can activate the angle snap and modify the default angles in the **File menu -Options - Snap and grid** dialog.

### Selection button

Activates the Selection pop menu.



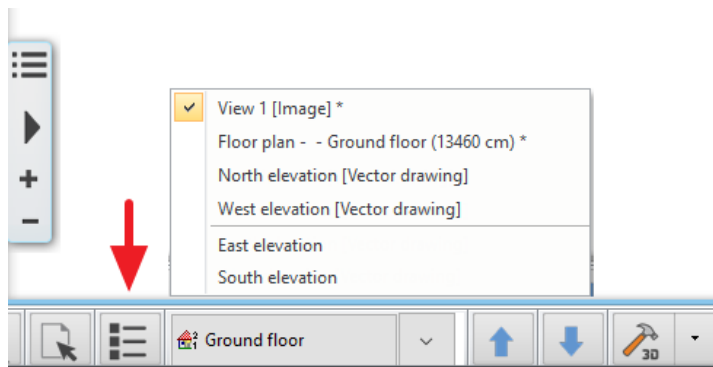
See description in 7. [Selection](#) chapter.

### Current drawing list

Displays the lists the drawings belonging to the project.

The documents below the horizontal line are the drawings that are currently hidden in the project.

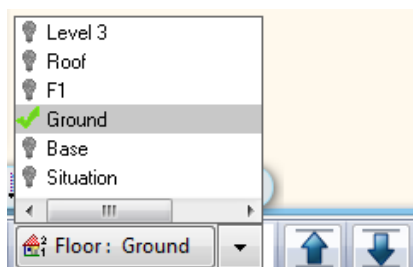
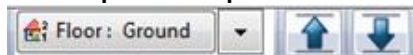
If you click on a drawing of the list, it becomes active and enlarged.



### **Current Floor / Perspective control buttons group**

The contents of this group represent the actual workspace nature.

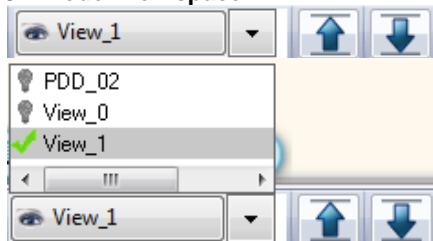
#### **2D floor plan workspace:**



The floor plan structure is listed on the button.

When you have more than one floor in your workspace, you can switch between them by clicking on the floor name in the list or go up, down one floor by clicking on the blue Up, Down icons on the bar.

#### **3D model workspace:**



The saved perspective views with a name are listed here.

When the perspective opens, the title bar of the button changes to display the name of the current perspective.


In addition, by clicking on the blue Up and Down icons, allows you to quickly switch between other saved perspective views.

To open a new perspective:

Click the Perspective button that displays the name of the current perspective. (This provides the same command as the View > Perspective view on the menu bar.)

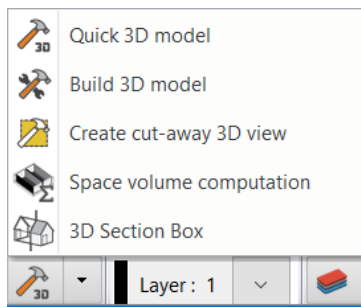
Define the perspective that you want to add and save it with a new name.

### **Generate 3D model**

Regenerates the 3D model with the current settings of Build 3D dialog.  See description in chapter 6.2 *Building 3D model*.

### **Build 3D model**

Activates the Build up 3D model dialog.  See description in chapter 6.2 *Building 3D model*.

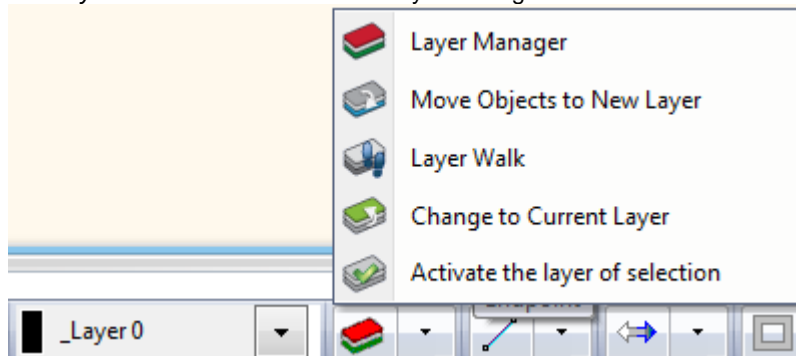


### Create cut-away 3D view

Build up 3D model by rectangle with clipping on all floors. See description in chapter 6.2.1.4. By rectangle - on all floors

### Layer toolbar

The *Layer toolbar* collects the main Layer management commands:



### Layer manager

This dialog manages layers and layer properties. You can change the current layer, create new ones, delete or turn on and off layers and lock/unlock them, change the printable status. In layer control mode you can assign properties such as colour and line type, line weight.

### Move Objects to New Layer

This tool will move objects from one layer to another, by selecting the destination layer from a dialog.

### Layer Walk

This tool displays objects on layers that you select in the Layer Walk dialog. This tool is very helpful to check which object lies on which layer.

### Change to Current Layer

This tool moves objects to the current layer.

### Make Object's Layer Current

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer. This command is accessible in layer control mode only.

### North

Displays and specifies the north direction. If you click on the North icon you can change the Geographic location, the date and the North direction.

### Reference point

The selected point becomes the reference point for next input. It replaces the last input point.

### Relative / absolute coordinate input

There are two modes to enter coordinates in ARCHLine.XP: Absolute or Relative coordinates. Absolute coordinates uses the Cartesian System to specify a position in the X, Y to locate a point from the 0, 0 origin. Relative coordinates are interpreted from the last input point. As relative coordinates much more frequently used than absolute, the default setting is relative.

You find the Relative Input icon to change between absolute / relative mode on the left side.

### Display information

When you are using a tool, the Information box on the right side of the status bar displays tips or hints on what to do.

### Display coordinate info

The coordinate bar displays the coordinate values of the cursor in absolute or relative coordinate's mode.

## 2.14. Properties palette

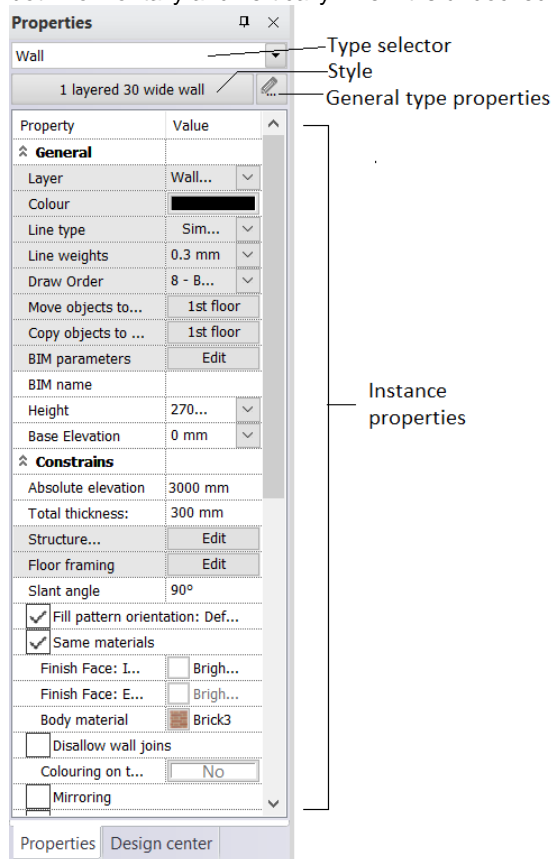
The Properties palette a user interface tool to visualize and modify the parameters of the selected objects or the active view.

### Opening the Properties Palette

When you start ARCHLine.XP for the first time, the Properties palette is open and docked on the left side of the application together with Design Center. If you close the Properties palette with a click on the X icon on its top-right corner, you can open it again using any of the following methods:

- ❖ Click Ribbon menu View tab > User Interface > Properties.
- ❖ Click Options > User Interface > Properties.
- ❖ Right-click in the Ribbon empty area, > Toolbars > Properties.

You can dock the Properties palette to either side of the ARCHLine.XP window and resize it horizontally. You can resize it both horizontally and vertically when it is undocked.



Typically you can view and modify the properties of the single selected or multiple selected elements in the drawing area. If no elements are selected, the Properties palette displays the properties for the active view. You can also access the active view properties in the Options panel.

### Single selection

You can change the editable property values of the selected object. The new value is executed when you click on another field in the in the grid that causes the object to update with the new value.

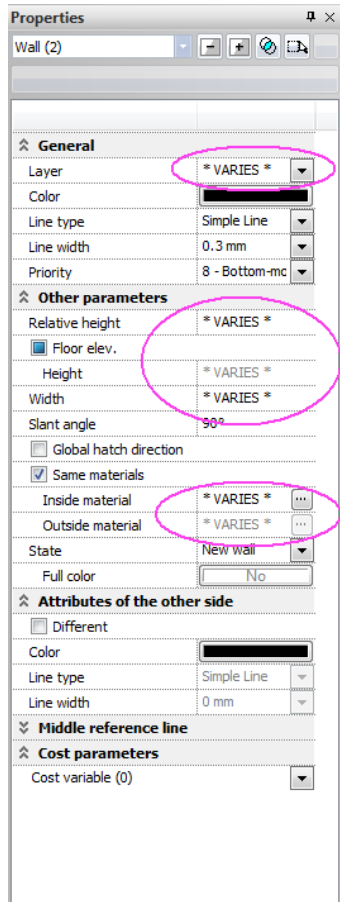
If you change a principal property it will cause the losing of the style name. For example, in case of wall the WIDTH is such a property.

Note: You can also access the properties for the currently selected object using any of the following methods:

- ❖ Click Ribbon menu Edit tab > Modify > Modify
- ❖ Right click on an object (e.g. Slab), then choose the Properties command.
- ❖ Markers appear when you select object. Clicking on black pencil icon executes the Modify command.

### Multiple selections

In case of multiple selections the Properties palette displays the common values of the selected objects. The not common property fields are filled with the **VARIABLES** indicator.

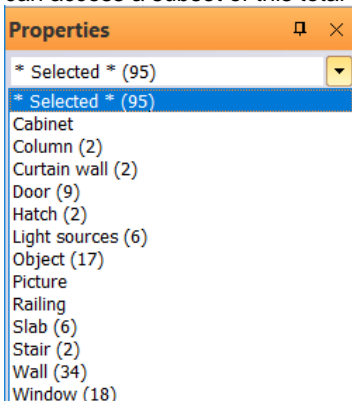


If different styles belong to the selected objects the VARIES indicator appears in place of the style name.

### Sub-Selection with Type Selector

Properties palette makes it possible to group the multiple selections according to the type.

When the selection is made up of different types, the selection dropdown will indicate the word "Selected (n)". This is an indicator that (n) objects are selected and your selected objects are not all the same type (for example: you may have a selection made up of lines, walls, slabs and columns). By clicking the down button at the right of the dropdown list, you can access a subset of this total selection.



This feature can be very useful for changing the value of a common parameter valid for all selected elements.

Example:

- Simply make a selection of the entire drawing.
- Drop down the list and choose Wall (n).  
Now you can change the properties common to selected walls.

### 2.14.1. Style Selector

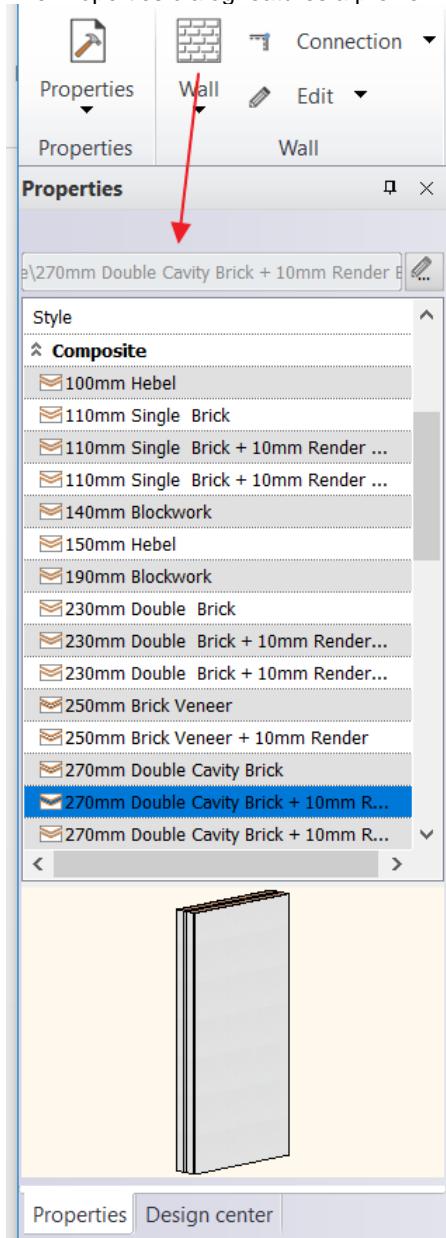
When a tool for placing elements is active, the Properties palette displays the list of available styles. The current style is highlighted. You can choose any other style to be the current style.

For example, if you begin to draw a wall the list of the current wall-styles appear. If you would like to change the style of active wall, click on name of the style.



The method is flexible, so you don't need to interrupt the command. Switch seamlessly between styles to be used while the command is running.

The Properties dialog features a preview window that shows an image of the current style.



## 2.15. Input commands

You can input commands, values, texts and formulas in two ways:

### **Command line Input field**

If you click on the View Control Bar - Command input field, then you can use this Input field to take in the values. You can activate the typed value with the Enter button.

Command line is present on the screen when you activate the Window menu – Toolbar – Command line option.

### Dynamic input field

Dynamic input provides an alternative way to enter input values. When you are in a command and the program is waiting for next input, pressing any key the input field appears on the drawing area near to the cursor actual location. For example, displaying the value of length:



You can activate the typed value with the Enter button.

### Input coordinates

If you click on the coordinate info field you can type the coordinates of the point you want, like: X space Y. The X-value and Y-value is interpreted in the current input mode as absolute or relative coordinates

#### Example:

You are in absolute coordinate's mode and in cm unit.

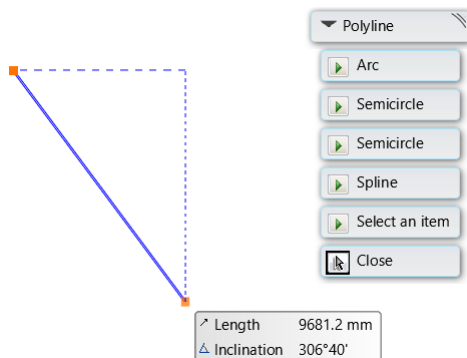
If you type 20 8 for a position, ARCHLine.XP will locate the next point on 20 cm along the X-axis and 8 cm along the Y-axis. Press ENTER to activate the input.

ARCHLine.XP draws the objects in their real size. ARCHLine.XP offers the following units to input a value: mm, cm, m (metric) and inch (imperial). If you have 1 m length wall and your current unit is cm, then draw it as 100 cm length. ARCHLine.XP uses scale for plotting only. ARCHLine.XP drawing sheet is a limitless area.

## 2.16. Floating Options Bar

The Floating Options Bar contains conditional options that relate to the current command. The Floating Options Bar is a floating bar and displays on the screen only when it is needed.

You can drag it anywhere on the screen with a click on the right side icon of the header. You can close the Options Bar list with a click on the little black triangle on the header left side.



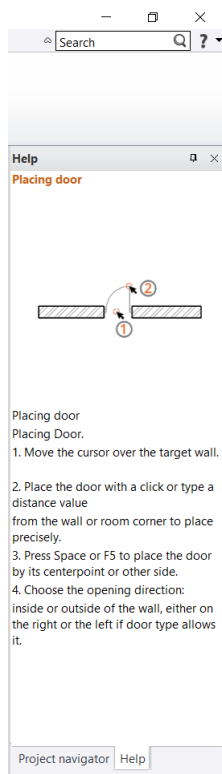
If you do not want to execute any of the options, you do not need to choose from Options Bar. These are only options that you can use when necessary.

## 2.17. Help palette

On the right side of the screen, the Help palette appear together with Project Navigator by default.

The Help palette shortly introduces how to use the currently selected tool. It may contains an image (optional) and the instructions what to do next when using a tool.





If you want to create more space in the drawing area, click the Auto Hide icon in the upper right corner and the Help palette disappears behind a tab. To see the Help palette again, hover over the tab, and you see the palettes in a slimmed-down format. To close the Help palette completely, click the X in the upper right corner. To see the Help palette again, select Options > User Interface - Help.


## 2.18. Mouse

ARCHLine.XP uses contemporary computer mouse, with the most common standard features: two buttons and a scroll wheel which can also act as a third button.

### 2.18.1. Single click with the left button

When clicking with the left button in ARCHLine.XP the program executes a command.

A command in general can be carried out with a simple click of the left mouse button in the Menu, Toolbox, and Toolbars. For example we can create a line with the following steps:

- ❖ Click on the  **Single line** tool.
- ❖ Click on the drawing to define the first point of the line.
- ❖ Move the cursor to the desired endpoint of the line, and click to define it.

**!** You can use the mouse with plain mouse clicks on the drawing area, not with the drag and drop method. This has many advantages, e.g.:

1. Faster work
2. The input of the angles and lengths are easier.
3. The forming of commands is easier during running because you need to keep pressing neither of the buttons of the mouse.

### 2.18.2. Double click with the left button



In ARCHLine.XP the double click with the mouse is used to modify the properties of the selected object. The properties dialog of the selected object appears.

The changes defined in this way have influence only on the properties of the selected object.

### 2.18.3. Single click with the right button

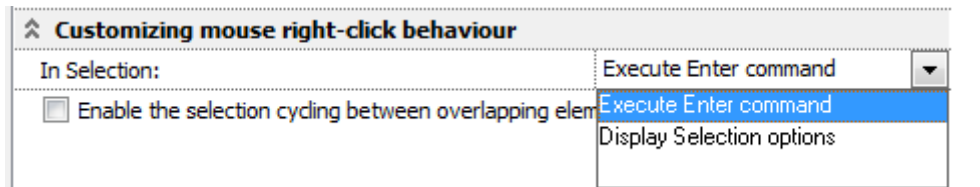


Clicking with the right button of the mouse in ARCHLine.XP-you can reach different functions, among which the most important are:

- ❖ Terminating the actual command
- ❖ Using context sensitive menus
- ❖ Opening the *Window handling* menu

#### 2.18.3.1. Using shortcut menus -Right click customization

If you select the **File menu -Options** command, and click on the **User Interface** button, you can select among the options regarding the right button action of the mouse.



#### **ENTER command**

Clicking with the right button of the mouse, the program executes the ENTER (terminating) command.

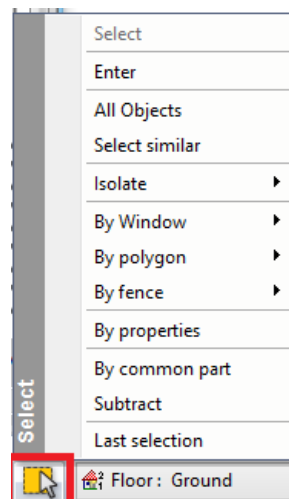
#### **Display Selection options**

When a command is waiting for selection press the right button of the mouse, the *Selection menu* appears with the following options:



These possibilities are available from the *Selection menu* of the status line as well. See there the description.

Select the Enter command to close the selection



#### 2.18.3.2. Setting the properties of the objects

If you right click on an icon of the drawing tools (e.g. Slab), then the properties dialog of the selected object appears. Having modified the properties the objects created later will have the set properties. At the same time the program opens the submenu of the drawing tool that makes planning quicker

### 2.18.4. How to use the mouse when selecting commands from the menu

The mouse is also used to select commands from the ARCHLine.XP menus. We are going to demonstrate the selection of the different menu objects (main menu - pop menu - shortcut menu, lists).

#### 2.18.4.1. Selecting an object of the menu

To select a command or option from the menu:

Click on the name of the adequate main menu (in case of pop menu or shortcut menu it appears automatically). Select the needed command from the list. If sub-command is belonging to it ( ▶ right arrow next to the option name), click on the needed command in the sub-list).

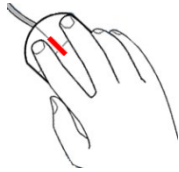
#### 2.18.4.2. Fields of scroll lists

In many dialogs there are so called 'list fields'. The objects of this list can be selected.

- Click with the left button of the mouse on the field, or on the arrow to the side. The whole list appears (or a part of it).
- Select an object of the list. Scroll down the list if there are more objects to be visualized than fits in the list field or
- Click on the field and

Type the value

## 2.18.5. Using the mouse wheel



If your mouse has a wheel, you can use the functions of the graphical handling. This makes the work very easy. The three frequented window handlings are:

**Zoom in – Zoom out:** Move the wheel forward means zoom in, move the wheel backward means zoom out.

**Moving the „Drawing sheet“:** Press and keep pressing the mouse wheel while moving the mouse.

**Rotate:** In a 3D View press and keep pressing the wheel and the Shift button, while moving the mouse.

### 2.18.5.1. Zoom in / out

The mouse wheel can be moved forward or backward. The operation uses the *zoom in - out* command pointing to the actual place of the cursor.

- Move the cursor to the point where you wish to activate the zoom. Move the wheel forward or backward. Moving forward the zoom in command will be activated; moving backwards you activate the zoom out. In case of zooming in the start point is moving towards the middle of the drawing area
- When you have reached the needed view, let the wheel free to close the zoom command. You can also activate this command, if you
  - ❖ Select the **Zoom +/-** icons from the *NaviBar*, or if you
  - ❖ Press the **Ctrl** key together with the **+/-** numeric keys on the floor plan or on a perspective view.

### 2.18.5.2. Moving the „Drawing sheet“

Pressing the mouse wheel and moving the cursor at the same time the „drawing sheet“ can be moved.

- Press and keep pressing the mouse wheel. This operation activates the Moving the „Drawing sheet“ command.
- Move the cursor to the needed position and let the wheel free.

You have now moved the whole drawing on the screen with a vector. The command also can be activated, if you

- ❖ Select the **Pan** icon from the *NaviBar*, or
- ❖ On the floor plan press the *Ctrl* key together with an *Arrow* key.




The operations **zoom** and **moving the „drawing sheet“** can be used together.


## 2.18.6. The shape of the cursor

The cursor is a graphical sign that shows the actual position of the mouse. The ARCHLine.XP automatically changes the shape of the cursor according to the type of active operation.

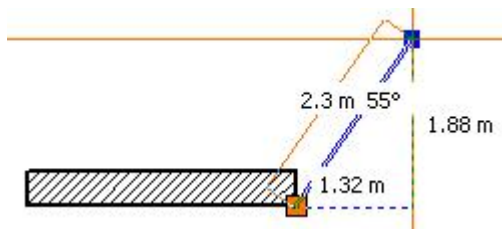
### 2.18.6.1. No operation - Arrow cursor

When ARCHLine.XP is waiting for a command ('Select a command' mode); the cursor is in arrow shape.  If you press **Esc** key the program closes all commands in progress and gets into 'Select a command' mode.


### 2.18.6.2. Editing - Cross cursor

If an editing command is active, so that ARCHLine.XP is waiting for the definition of a point or a coordinate, the cursor becomes cross-shaped. 

You can switch on the *Long cross cursor* shape as well in the **File menu -Options** dialog, in the **Other - Screen** part.

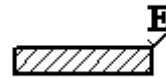


### 2.18.6.3. Selection - Selection cursor

When a selection command is active, so that the program is waiting for the selection of one or more objects, the cursor gets into the selection shape.  The size of the cursor signs the tolerance, so that the sensibility of the selection. The value of the tolerance can be set at the **File menu -Options - Cursor snap** dialog. Here you can define the radius of the tolerance circle in the percentage of the screen.

### 2.18.6.4. Snap to special points - Special shapes

If an editing command is activated, and pressing the **Ctrl key** the cursor changes its shape to the sign of the special point (found inside the tolerance circle). The clicking snaps the cursor to the special point.

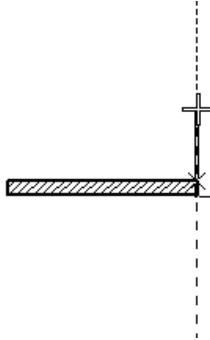


See description in 2.11.4 *CTRL* key chapter.

The same effect can be achieved if you check in the *Object Snap (OSNAP)*. This option is in the **File menu -Options - Object Snap Options** dialog.

### 2.18.6.5. HV cursor

The HV cursor appears if you move the cursor vertically or horizontally relative to the previously defined point. The cursor marks the vertical and horizontal directions



## 2.19. Keyboard

In ARCHLine.XP the keyboard is used not only to define values and type texts, but with the help of keyboard shortcuts commands becomes quicker and easier.

### **Special characters in the name of group, profile, object**

You can create your own 2D groups, profiles and objects. You can use in the name the following special characters:

**& ! @ \$ % + = ( ) [ ] { } ' ; , ~**

You can't use the following characters:

**? | > < : / \* "**

### 2.19.1. Enter key

In ARCHLine.XP with the key ENTER you can **close an active command or subcommand** during the operation.

You can substitute the key **ENTER** with pressing the right button of the mouse, except if you have defined other settings for the right click in the **File menu -Options - Right click customization** field.



In a dialog window the right click does not substitute the OK button.

## 2.19.2. Special keys

With the special keys in itself no character or number can be given, but a command can be activated. Many keys and key combinations are *predefined* in ARCHLine.XP, but there is possibility for the users to define freely shortcut keys. You can also change the predefined shortcut combinations.

In the following you can read the description of those operations that can be activated with a special key or with a key combination.

The important keys used in ARCHLine.XP:



**Alt key**  
Shift key  
Ctrl key

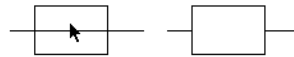
### 2.19.2.1. Delete with the CTRL key

Deleting a part of an object is among the most often used commands.

When the cursor is standing on an object, and **no command is active**, (cursor=**Arrow**), pressing the **Ctrl** key the part of an object will be deleted. In details:

Ctrl+Shift+ Click= 

If you keep pressing the **Ctrl** and the **Shift** keys and click on an object, the program deletes the part of object that is between intersection points



Delete (DEL) key

If you select on an object on the drawing, and press the **Del** key, the program deletes the **entire object**.

### 2.19.2.2. Ctrl+(+)/(-) key: Zoom

If the **2D window** is active, press the **Ctrl** and the **+/-** key to activate the Zoom in/out command.

**Ctrl + (+)**      **Zoom in**

**Ctrl + (-)**      **Zoom out**

When the 3D view displays a perspective view:

**Ctrl + (+)**      The observer approaches to the object (perspective magnification).

**Ctrl + (-)**      The position of the observer diverges from the object



See the 2.5.1 *Zoom in / out* chapter.

### 2.19.2.3. Selection by object type with Ctrl key

If an icon of the side menu was selected pressing the Ctrl key selects all the objects of the drawing area that is represented by the icon.

- Move the cursor to a main icon of the side menu: e.g. Wall.
- Press Ctrl key, and click on the icon. The program selects all the walls of the actual drawing.

## 2.19.3. SHIFT key

In ARCHLine.XP when Shift key is pressed it means:

If an editing command is active: **Angle snap, to set a vertical or horizontal constraint**

If a selection command is active: **Selection of more objects**

### 2.19.3.1. Angle snap

If **Angle snap** is not switched on you can still use it if you are pressing *Shift* key. Keeping **Shift** key pressed the cursor moves to the predefined angle direction. After having selected the needed direction go on with the command you wanted to execute.

**Shift** key the most often is used to find the vertical and horizontal directions.

### HV indicator cursor

The HV indicator appears if you move the cursor in vertical or horizontal directions in correlation with the previously given point

#### 2.19.3.2. Selecting more objects

With a single click the program selects only one object. Pressing the **Shift** key it is possible to select more objects together.

Having selected an object on the drawing area, press the **Shift** key, and while pressing it click on the other objects. It is possible to exclude objects from the selection by clicking again on the objects already selected and keeping the **Shift** key pressed.

#### 2.19.3.3. Combination of Shift and Ctrl keys

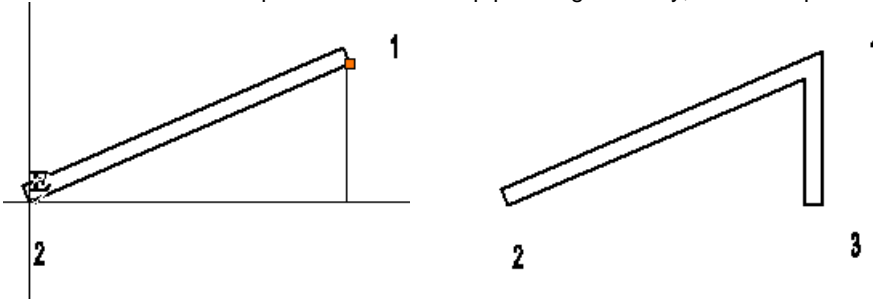
Pressing the Shift and the Ctrl keys together the direction of the line or wall to be drawn can be defined by a predefined direction (Shift key), and its endpoint can be selected as a special point (Ctrl key).

Using together the Shift and the Ctrl keys the handling of geometrical commands becomes easy:

#### Example:

Draw a wall from point 1 to point 3 in vertical direction. The point 3 is the horizontal projection of point 2.

- Give the start point of the wall: press **Ctrl** key, and select point 1.
- Move the cursor downwards, and press Shift key. The direction is snapped to the vertical.
- To define the endpoint of the wall keep pressing Shift key, and while pressing Ctrl key click close to point 2.



#### 2.19.4. ESC key

If you hit **Esc** key the program cancels the current ARCHLine.XP command and gets into 'Select a command' mode. Press **Esc** key if you cannot close a command with the **Enter** key or more Enters are needed to terminate the command.

Esc key can be also used to interrupt heavy calculation commands in progress (dense hatch patterns, regeneration of shaded model in 3D view, etc.).

#### 2.19.5. ARROW keys

The **Arrow** keys make possible the following operations:



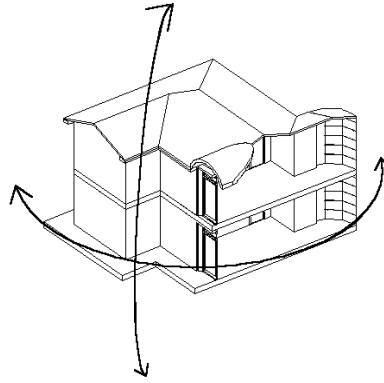
##### 2.19.5.1. Defining directions

With the **arrow** keys of the keyboard the direction of moving, copying and the direction of an object to be drawn can be given.

When a command of planning is active pressing an **arrow** key it automatically defines the direction of editing, and ARCHLine.XP is waiting for the definition of a distance or length value.

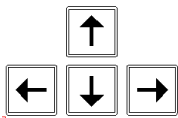
### 2.19.5.2. Rotating in the 3D View

If the 3D View is active and there is at least one 3D object pressing the **arrow** keys you can rotate the 3D view into the direction of the arrow.



#### Perspective view

If the active 3D view has perspective view pressing the appropriate arrow you can rotate model.



Rotates the position of the viewer into the direction of the arrow around the target point, while the position of the model is not changing. This is used when you want to walk around a building.

## 2.20. Data entry

You can define data (numeric and alphanumeric values, points and vectors) by using

- ❖ the keyboard,
- ❖ command icons, or
- ❖ pop-up menus.

This way you can specify values and use special points and vectors, which greatly simplifies the drawing process. In the following we will look at how to define *points* and *vectors*.

#### Defining points

You can define the value of a point the following ways:

- ❖ by typing X and Y global or local coordinates
- ❖ by moving the cursor in the preferred direction and typing the length
- ❖ by clicking on the drawing area
- ❖ with snap grid
- ❖ by using special points
- ❖ by fixing coordinates, distance or vector.

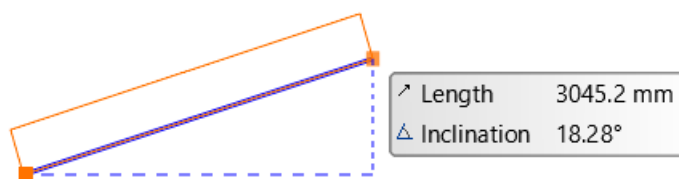
#### Defining vectors

The vector of the drawing can also be defined in various ways:

- ❖ with snap angle
- ❖ by pressing SHIFT
- ❖ HV indicator cursor
- ❖ with arrows
- ❖ with the Reference toolbar.

### 2.20.1. Cursor Input Box

Cursor Input Box provides a command interface near the cursor in the drawing area.

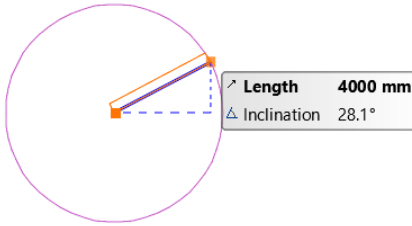


Distance

To enter distance press Tab. The software will let you edit the first value of the box. Enter a length value and press Enter.

↗ Length	3397.3 mm
△ Inclination	13.55°

The software displays the cursor similar to this figure and the cursor is constrained by the length value that you entered.

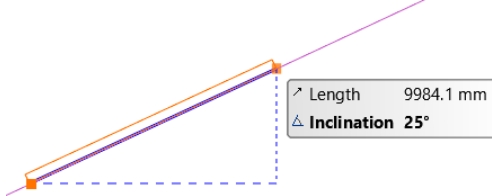


### Angle

To enter direction press Tab, and press TAB again and then enter an angle value and press Enter.

↗ Length	3645 mm
△ Inclination	14.54°

The software displays the cursor similar to this figure and the cursor is constrained by the angle value that you entered.

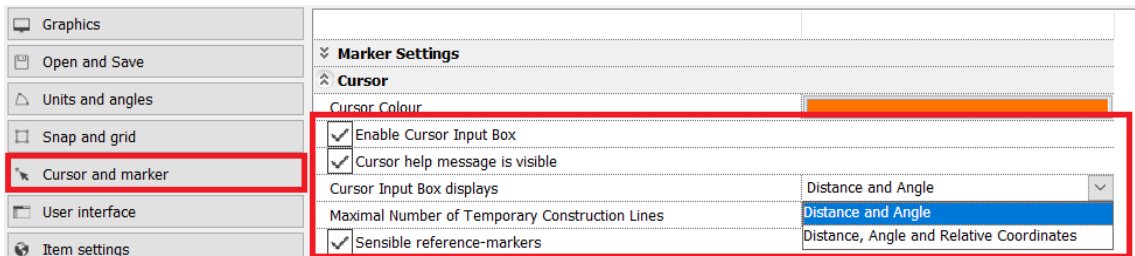


### Cursor Input Box settings

To change the Cursor Input Box settings click Options > Cursor and marker > Cursor

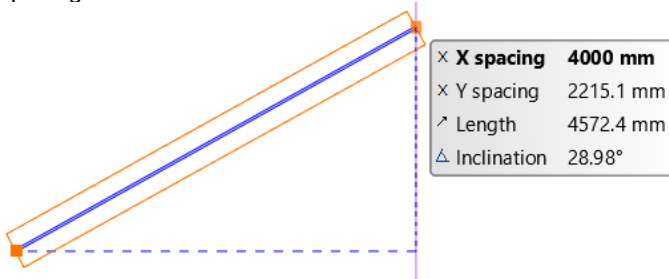
Enable Cursor Input Box: Visualize the Cursor Input Box.

Cursor Input Box displays. Choose the information you want to see: distance, inclination or additionally X and Y spacing of a linear object or definition.



### Relative coordinates - X spacing

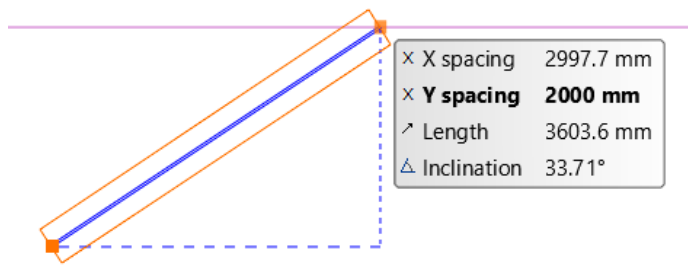
X spacing fixes the direction vertical.



### Relative coordinates - Y spacing

Y spacing fixes the direction horizontal.





## 2.20.2. Defining values

In ARCHLine.XP you can type numbers, texts, arithmetical expressions, coordinates.

When a command asks you an input value, you can enter a text, number, arithmetical expressions or coordinate value at the command line or in *Dynamic Input field*.

You can enter two-dimensional coordinates as either Cartesian (X, Y) or polar coordinates.



Polar coordinates can be used in AutoCAD® mode. Type the length and angle in the precise form, so that.

In absolute coordinate system: **1<45**

In relative coordinate system: **@1<45**



In arithmetic expressions, you can give values and operation sign which can be used between these values (addition, extraction, multiplication, division).

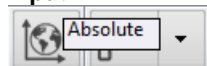
For example: to input 6.5, 3 as X, Y coordinate: **3+2\*2-1/2, 3**

## 2.20.3. Defining coordinates

In ARCHLine.XP, coordinates can be specified either globally, when the program calculates values in relation to the origin of the drawing, or relatively, when values are calculated in relation to the last point.

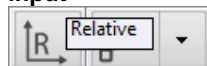
This can be set in the Status bar.

### Global coordinate input



Coordinates, values are calculated in relation to the origin of the drawing.

### Relative coordinate input



Coordinates, values are calculated in relation to the last point.

If you press any key, the dynamic input field on the drawing area comes up automatically according to the *Options > Cursor and Marker* tab.



See the chapter 2.11.1. *Defining values*.

- Enter the X and Y coordinate values, following each other, separated with a space:

Select start point  or

- Click Enter to close it.





Starting the project we suggest you to switch on the **Global coordinate input** and to place the first point of the drawing in the 0, 0. Later switch on the **Relative coordinate input**. In practice this simplifies notably to specify further points.

### Coordinate field

Coordinate values can be attained from the coordinate fields in the drawing status line.

x: 4.58 y: 5.9

In case of global input () , the field displays the absolute X and Y coordinates of the cursor.

In case of relative input () , the field displays the DX and DY values of the cursor in relation to the last point.

### 2.20.3.1. Defining points with snap grid

Snap grid locks the cursor into alignment with the grid points.

You can enable this option with the *Tools menu - Snap* command.

### 2.20.3.2. Defining points by using Reference points

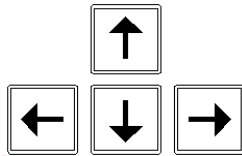
You can use the Reference toolbar icons if you have to specify a special point or angle, or lock a direction.



See details in chapter [Reference toolbar](#).

### 2.20.3.3. Direction with arrow keys

You can define in which direction to specify the distance with the keyboard **arrow** keys. In this case the **arrow** keys substitute the direction definition of the polar coordinate.



- Press any arrow button to define drawing **direction**.
- Specify the **length** of the object to be created.

The program creates the object of the specified length in the direction defined by the arrow.

## 2.20.4. Defining angle

### 2.20.4.1. Quick relative polar input

Quick relative polar input is a handy way to draw walls, lines and other linear objects by defining their length and angle. This feature is turned on by default and works automatically if you use the following expression when drawing:

length>angle

#### How to use?

- ❖ Start a tool to draw a linear object (e.g.: line) and set the first point.
- ❖ Type the desired length, a ">" mark without quotation marks and the desired angle.
- ❖ Finally press Enter.

It is essential to not to use spaces in the expression as it will lead to a different result.

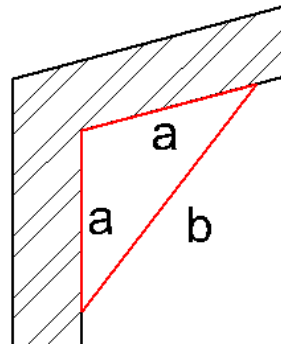
### 2.20.4.2. Direction by triangle

#### Simple survey

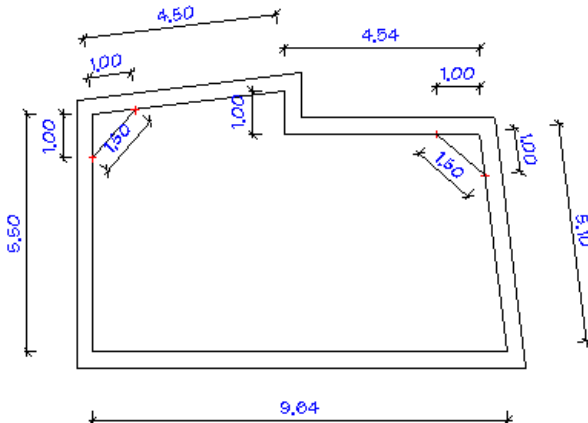
In the example below we demonstrate a very simple method for surveying. This method is not so complex like the survey module of ARCHLine.XP but you can quickly define irregular rooms with a help of it. (As it is known, in the survey module the program uses a room-based surveying method, by which the walls with uneven thickness are come into existence.)

**The method is the following:**

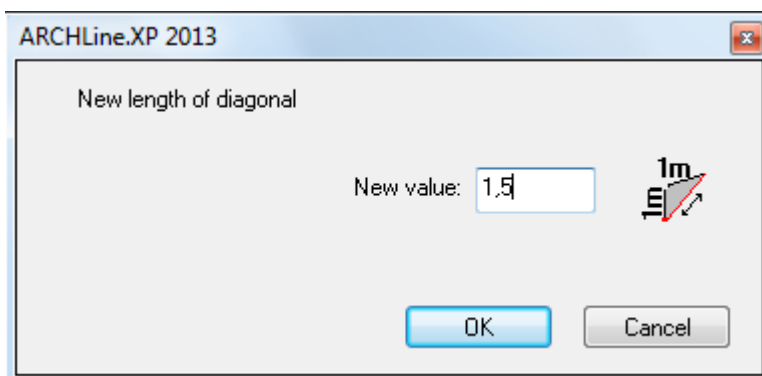
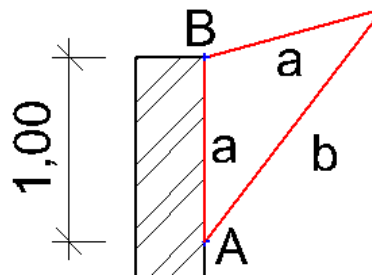
Starting from the corner point, measure 1 meter distance on the two adjacent walls. Using the constructed triangle gained from the measured data, the direction of the second wall relative to the first can be defined by the program. With this you can avoid the measuring of angles. On the figure the value of **a** is **1 m**, **b** is the measured hypotenuse.



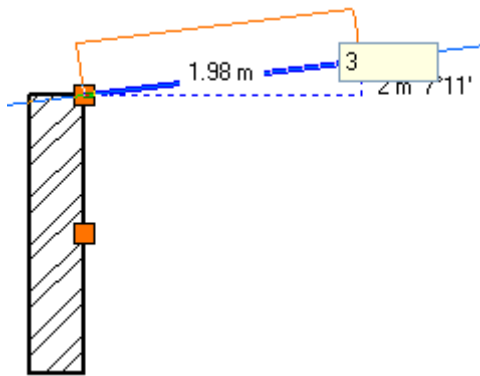
Following this method it is easy to create the floor plan below:



- Draw the first wall.
- When you get to point B, choose *Direction by triangle* command on the reference toolbar
- The program asks for point A, which is located on the wall 1 m far from point B. Move the cursor downside along the wall and type 1 m. At this point you have got the point A.
- In the appearing dialog enter the length of hypotenuse b.



- The direction of the second wall becomes fixed because of the triangle. Enter the length of the second wall.



### Defining direction with Angle snap



See the detailed description in 2.20.1. Defining direction with Angle snap.

### Angle snap

Select this option to enable or disable angle snap.

If you enable angle snap, the cursor can only move towards the defined directions. This is a very strong control and can be used only in special cases. We recommend that you disable this option.

When you define *Length* or press the *Shift* button, the program finds the default angles even if the Angle snap option is disabled.

### Ortho snap

Using the *Tools menu - Ortho* command you can switch on the ortho snap. In this case you can move the cursor into horizontal and vertical direction.

If the Angle snap and the ortho snap are switched on the program prefers the ortho snap.

### Using angle snap with disabled snap option

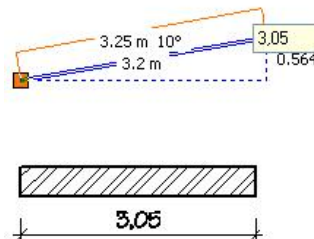
When you have specified the first point of an object:

- Move the cursor to the desired direction.
- The program is waiting for you to specify length or distance.  
Enter the appropriate values.
- The second point snaps to the nearest special angle.

#### Example:

To draw a 3,05 m long horizontal line:




- Specify the starting point.
- Move the cursor near the horizontal direction.
- Enter the value: 3.05.



### Direction control by using the Shift button

You can also enable **Angle snap** by pressing the *Shift* button. If you press the *Shift* button continuously, the cursor moves towards the nearest predefined direction. After defining a direction, you can carry on with the command you want to apply. The *Shift* button is most frequently used to reinforce vertical or horizontal directions.

You can combine *Shift* with cursor snap. With the help of the last three icons of the *Reference toolbar*, you can define which reference direction of the selected reference point to intersect the locked direction to specify a new point.

- ❖  Reference direction perpendicular
- ❖  Reference direction horizontal
- ❖  Reference direction vertical



If you do not use the icons, the reference direction will be defined by the actual status of the icon last used.

Perpendicular is the default direction.

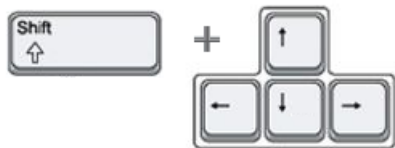
These icons can also be used when the direction is not controlled by *Shift*, but specifying direction is contained in the command e.g. modifying the length of a simple wall.

## 2.20.5. Nudging Elements

Nudging is a very simple way to move the selected elements.

Press the keyboard arrow keys to move the elements horizontally or vertically in specific distance.

Each press of a keyboard arrow key moves the selected elements with the normal or fine increments.



Nudge settings:

Set your setting in Option dialog > Snap and Grid panel.

Default increments:

Normal - 100 mm.

Increment to move the selected elements (Pressing the arrow keys on keyboard)

Fine - 10mm.

Fine increment to move the selected elements (holding down the SHIFT key then selecting the arrow keys on keyboard)

## 2.20.6. AutoCAD® compatible coordinate input

### The comma as separator

You can use the comma as separator for coordinate inputs. For this you have to switch off the *Comma (,) in Decimal point allowed* option in the *File menu -Options - Units and angles*

Accept comma (,) as decimal separator during input

For example if you want to draw a line from point X=0; Y=0 to point X=3; Y=4, it is enough to do the followings:

- Start the line drawing command.
- Type 0,0 and press Enter to specify the coordinates of the start point of the line.
- Type 3,4 and press Enter to specify the coordinates of the end point of the line.



By switching off the option the comma (,) is interpreted as a separator instead of a decimal point. Use the dot (.) character for decimal point.

You can specify relative or global coordinates.

Set the **Global / Relative coordinate** icon in the status bar to  global.

With this setting the coordinate input works as follow:

### Absolute coordinate input

In case of absolute coordinate input the syntax is the following:

**X,Y ENTER**

In that case the global origin is taken into consideration and the coordinate input is relative to this point.

The symbol of the global origin on the floor plan is represented as follows:



### Relative coordinate input

In case of relative coordinate input the syntax is the following:

**@X,Y ENTER**

In that case the last specified point is taken into consideration and the coordinate input is relative to this point.

Use this possibility if it is easier to specify a point relative to previous point than specifying the global coordinates.



If the **Global / Relative coordinate** icon is set to relative, it is enough to use the **X, Y ENTER** syntax for the coordinate input.

### Polar coordinate input

Often you know only the angle and length values. In that case use the polar coordinate input. It can be very helpful if you wish to draw a line with a length of 2.53 m and an angle of 32°. You can specify absolute or relative polar coordinates as well.

### Absolute polar coordinate input

In case of absolute polar coordinate input the syntax is the following:

$numR < numFi$ , where

$numR$  is the distance from the global origin,

$numFi$  is the angle.



Use this input method when you know the distance and angle relative to the global origin.

### Relative polar coordinate input

In case of relative polar coordinate input the syntax is the following:  $@ numDir < numFi$ , where

$numDr$  is the distance from the previously specified point,

$numFi$  is the angle.

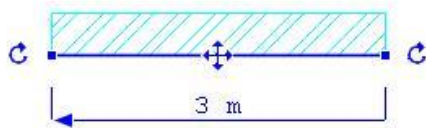
## 2.21. Markers

ARCHLine.XP markers are such interactive interface tools that help with modifying objects after their selection without using menus.

### Introduction

The main point of using ARCHLine.XP markers is that it is very easy to handle them.

Appearance of markers can be various depending on their aim. After indicating every drawing object special markers belonging to that object appear and with help of special markers frequent modifications can be completed quickly. Using markers, reduces time, increases design speed and can be learned.



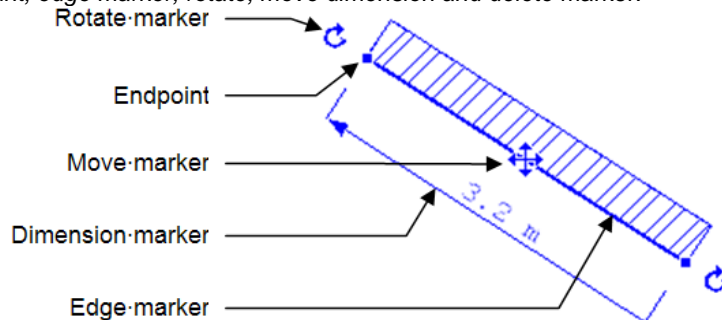
### 2.21.1. Markers' operation

Markers appear when you select one or more objects.

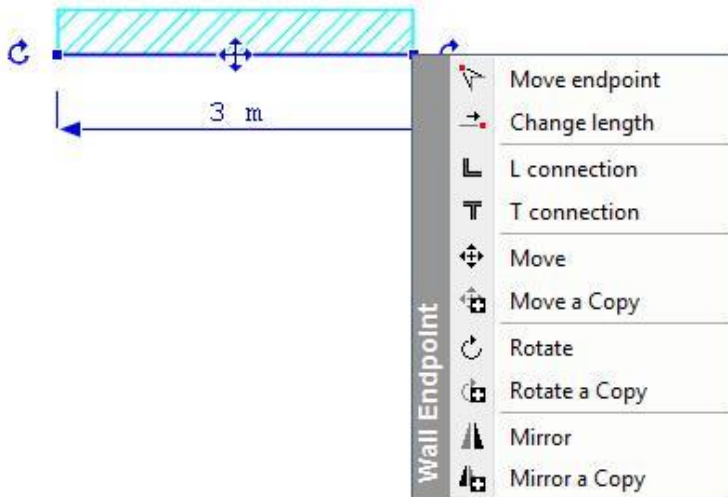
Markers can be used by left mouse button.

There are different types of markers:

*Endpoint, edge marker, rotate, move dimension and delete marker.*



Clicking on a marker with left mouse button a menu appears where you can choose from possible commands:

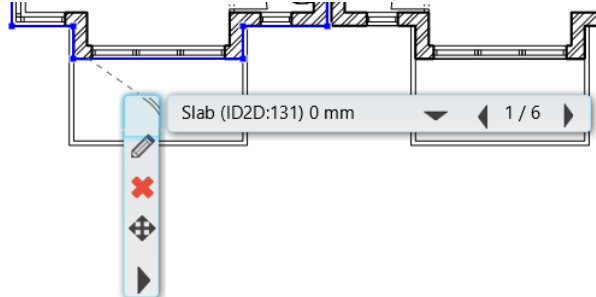
**Example for endpoint:****Example for edge marker:**

It appears with clicking on the edge of the object:

**Local menu marker**

ARCHLine.XP has many context sensitive tools. Most of these tools you can find in the local menu, which can be accessed by a right click, and also by left clicking on the object and selecting the Local menu marker.

Click on this marker to see the menu, and access the commands in it.

**How to use?**

- ❖ Click on an object on the drawing.
- ❖ The Local menu marker automatically appears right next to the click point.
- ❖ Press the arrow icons to cycle through all the selected elements available for the object you are going to edit.

**Delete marker**

When you select one or more objects, the Delete marker will appear together with other markers. Click with the left button on the red X marker and the selected objects will be deleted.

**2.21.2. Markers' behaviours in different views****Floor plan**

After selecting an object endpoints and edge markers always appear in Floor plan view. If the selected object is seen on the screen in too small size, move, rotate and dimension markers don't appear. In this case if you want to use these markers, enlarge the object with help of mouse runner until the markers appear.

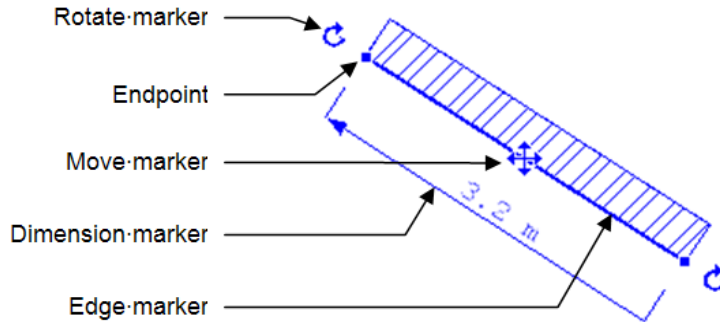
### 3D view

Move, rotate and dimension markers appear in 3D view if the selected object is seen on the screen in quite a big size similarly to floor plan view. Rotate and dimension markers are not seen in certain views, in this case if you want to use these markers rotate the model with help of arrow keys until the markers appear.

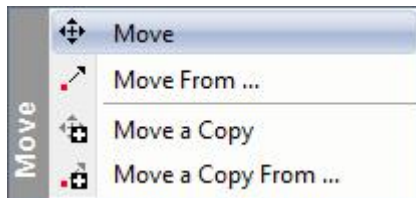
### Section view

In Section views and in 3D views representing profile a limited set of markers can be accessed. The commands here work on the level parallel to view level and not to model XY level.

### 2.21.3. Marker types and accessible commands



#### Move markers



**Move markers** take place in the centre of objects and they make their moving and lifting possible. In 3D view objects can be moved in parallel with floor plan's level and they can be lifted at right angles to floor plan's level. However in case of objects fitted to vertical or inclined level there is a possibility of moving them on fitting level as well. Menu belonging to move markers generally contain the following commands:

- Move or Move a Copy From* (starting point of moving is the centre of object)
- Move From or Move a Copy From* (starting point of moving has to be given as well)

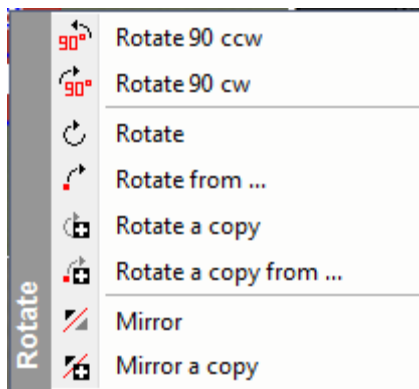
In 3D view there are further commands:

- Elevate or Elevate a Copy* (starting point of lifting is the centre of object)
- Elevate From or Elevate a Copy From* (starting point of lifting has to be given)

If you put an object into 3D view and during this process a certain level –which is different from horizontal – was given, in the 3D view instead of Lifting command the following commands can be found:



- Move on its own level or Move a Copy on its own level* (moving starting point is the centre of object)
- Move From on its own level or Move a Copy From on its own level* (moving starting point is has to be given)




#### Rotate markers





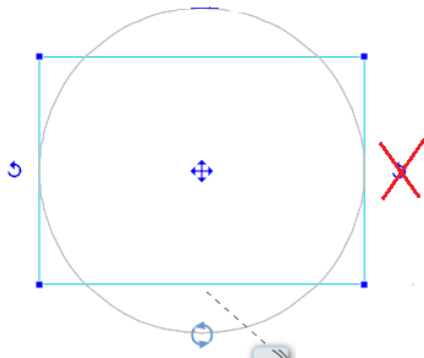
Rotate markers allow rotating and mirroring selected elements. In 3D view elements can be rotate around an axis perpendicular to floor plan and they can be mirror to the plane perpendicular to floor plan. Menu generally contain the following commands:

  *Rotate 90 ccw or Rotate 90 cw Copy*. The direction indicated by the icon and the centre of rotating is the move marker point.

-  *Rotate or Rotate a Copy* (the centre of rotating is the move marker and only the endpoint of rotating angle has to be given)
-  *Rotate From or Rotate a Copy From* (the centre of rotating and the starting- and endpoint of rotating angle have to be given)
-  *Mirror or Mirror a Copy*




### Rotation grip at 2D elements

Rotation grip can rotate in any direction the selected elements.






### Endpoint markers

**Endpoints** indicate significant points of elements. A part of commands connected to them alter (change) the shapes of objects. For example an endpoint menu belonging to Hatch contour contains the following commands:

-  Move node
-  Delete node
-  Fillet

In menus belonging to Endpoints generally commands for moving the whole object can be found as well:







-  *Move or Move a Copy* (moving starting point is the given endpoint)
-  *Rotate or Rotate a Copy* (rotating centre is the given endpoint)
-  *Mirror or Mirror a Copy* (first point of mirror axis is the given endpoint)

In 3D View further commands can be found:

-  *Elevate or Elevate a Copy* (lifting starting point here is the given endpoint)

### Edge markers

**Edge markers** allow modifying the edges of objects. For example the menu of an edge marker belonging to Hatch contour contains the following commands:

-  *Offset*
-  *Offset all*
-  *Insert Node*
-  *Insert Smooth Node*
-  *Turn to Curved Edge*
-  *Turn into Spline*

### Dimension markers

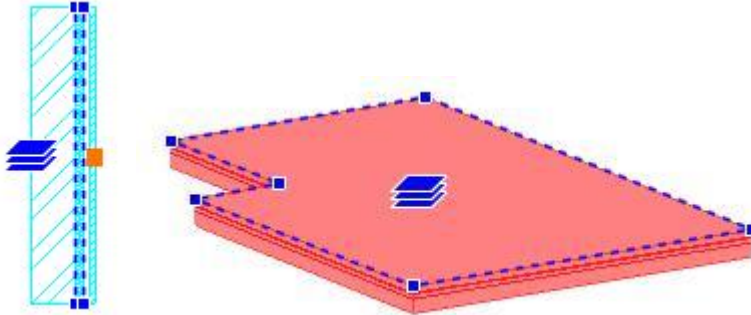
**Dimension** makers indicate the dimension of walls, openings and lines. A certain dimension can be changed with a click on the dimension value. In case of modifying the length an arrow can be found at the end of dimension line and it shows that end of object which moves in modifying. Clicking on this arrow its direction can be reversed.

### Mirror marker

In case of openings another **mirror marker** helps with transforming doors' and windows' position.

### 2.21.4. Edit multilayer walls, slabs and roofs

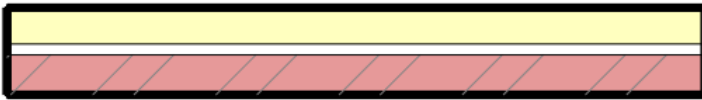
Each layer of layered walls, slabs and roofs are editable. For editing a layer you have to select an object with clicking left mouse button and at the same time you keep **ALT** key pressed down. Then edge markers appear on the object with dotted line, indicating that the given layer is editable.



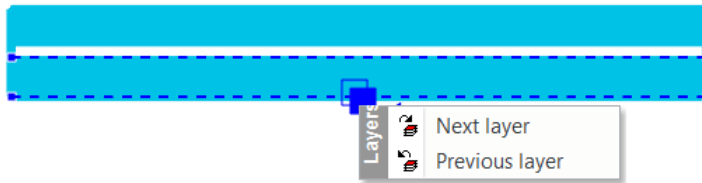
If you select the object as written above, endpoints and edge markers contain commands that help to edit the selected layer.

### Layer editing markers

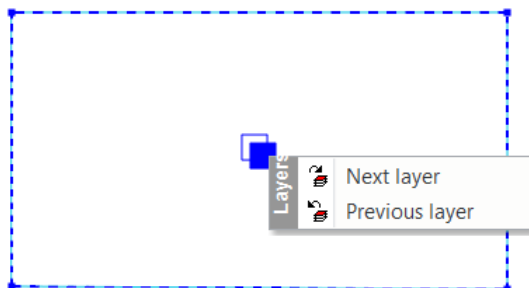
**Layer markers** help to change layers of layered walls, slabs and roofs. You can edit one layer at a time. Click on the blue dot in the middle of the element to swap between the layers.



ALT + left click:

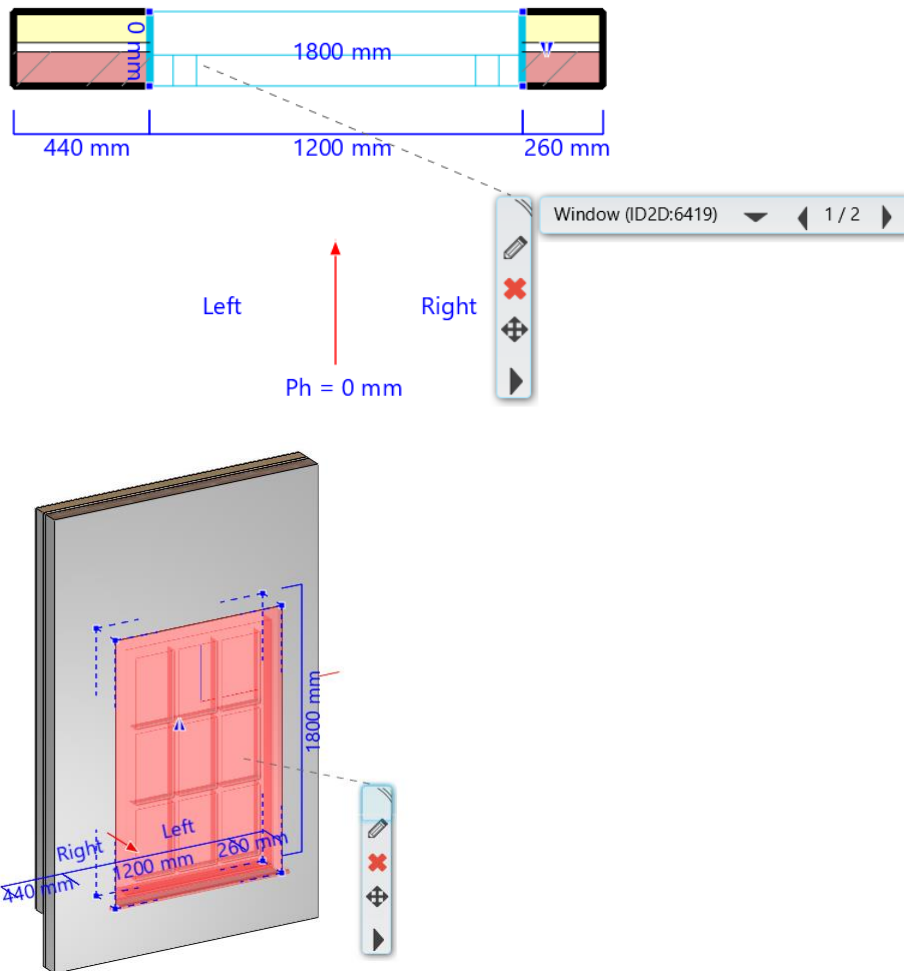


Slab:



### 2.21.5. Door, window 'virtual' dimensions

The selected door, window displays "virtual" dimensions (width, height, parapet height, distances relative to wall), providing the possibility to change the dimensions of an opening through the virtual dimension.



### 2.21.6. Smart Distance marker

*Smart Distance* is a fast tool to measure and change the distance between the first selected object and the later selected ones.

ARCHLine.XP displays the first object with a different colour. The other selected object(s) will be easy to recognize as it will have another selection colour.

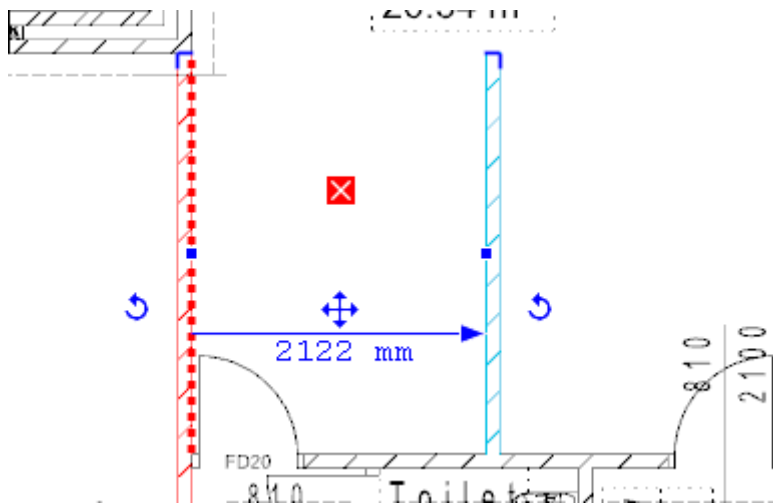
#### **How to use?**

- ❖ Click on the first object.
- ❖ Press and hold the CTRL key on your keyboard and click on the second and more objects.
- ❖ Click on the arrowhead if you wish to change direction of the movement.
- ❖ Click into the distance value, type a new distance and press the ENTER key on your keyboard.

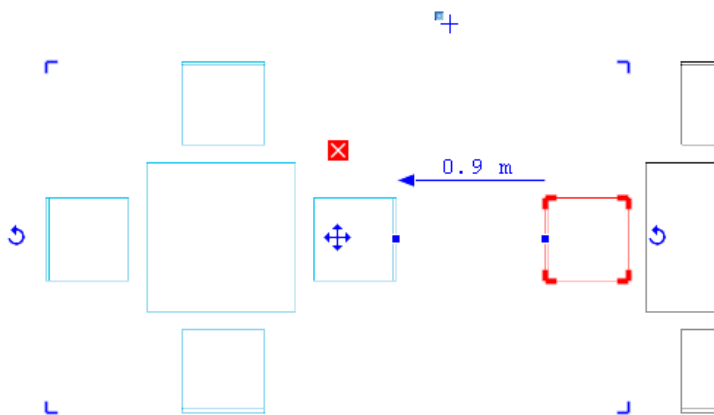
Note: This feature doesn't work when you select multiple objects by using the selection rectangle. In that case there is no object that can be distinguished as the first selected one.

#### **Practical examples:**

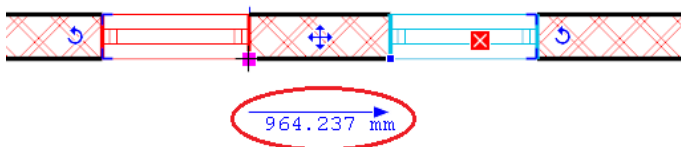
Example 1: Change the distance between two objects



Example 2: Change the distance between more than two objects:



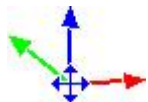
Example 3: The smart distance tool extended to measure distance between openings. It makes possible to shift a door/window relative to the other door/window.



The colour of the first selected object can be changed. Click on Options > Graphics and choose the Colour of reference element in multi-selection option and set the colour by using the colour selection button.

### 2.21.7. Main axis markers for 3D move

ARCHLine.XP makes the operations in the model space easy by interactive 3D cursors.



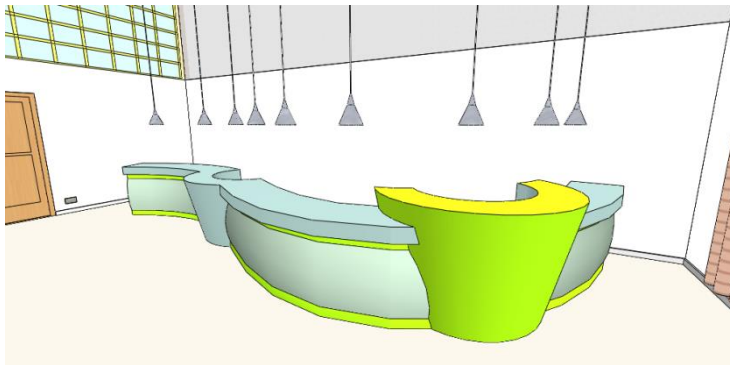
When selecting a 3D object, the program shows the main axis for moving operations. With the help of these markers you can move the selected object in the space along the main axes. Each axis has different colour representation. The horizontal X axis is represented by green, the horizontal Y axis is represented by red, and the vertical Z axis is represented by blue colour.

#### How to use

Clicking one of the main axes starts the movement along the axis. You can set the new position by moving the mouse cursor to the desired point and then clicking again.

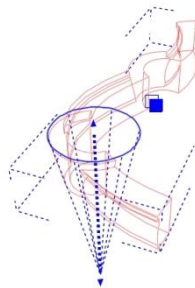
## 2.21.8. Editing 3D solids

ARCHLine.XP facilitates moving, copying, editing and deleting components of complex 3D solids created by means of Boolean operations like union or subtraction.

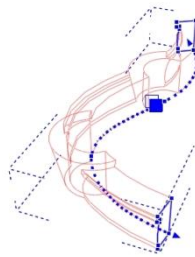


### 2.21.8.1. Selecting components

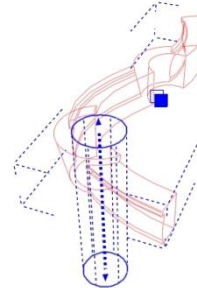
The components of the 3D solids can be selected like wall or slab layers: by selecting the **Edit Components** command in the menu of the Move marker or by clicking the appropriate component while pressing and holding down the **ALT** key.



A cone is the selected component



An extruded solid is the selected component



A cylinder-shaped hole is the selected component

You can navigate between components by using the **Previous component** or **Next component** commands of the marker. The marker appears automatically if a solid component is selected and the 3D solid consists of at least two components.



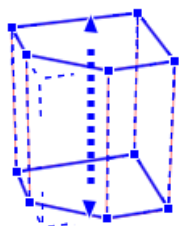
You can modify the shape of the solid which consists of only one component by selecting the single component.



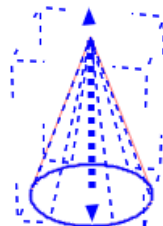
You can select the holes in complex solids as components if they are created by subtracting one component from another, by clicking the inner surface of the hole while pressing and holding down the **ALT** key.

### 2.21.8.2. Editing an Extruded Profile

The shapes of some components are based on one or more 2D profile. The cylinder is generated by extruding a circle along a straight path. By selecting the given component you can edit these profiles.



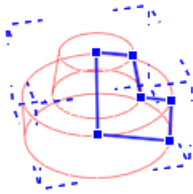
Basic extruded solid



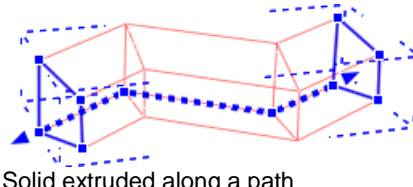
Cone



Solid based on two profiles



Rotational solid



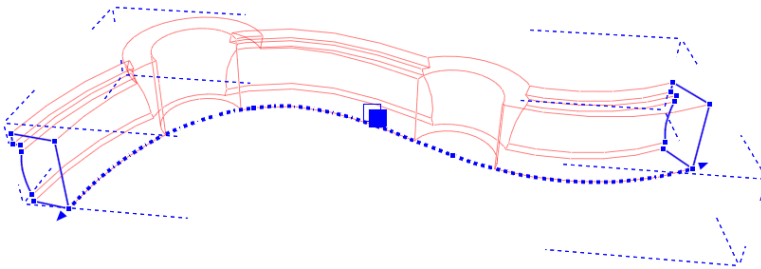
Solid extruded along a path

After selecting the desired component just click on an edge or node of the profile and select the appropriate command from the Marker menu. These menus contain the following common Profile editing commands:

- ❖ Move Node
- ❖ Delete Node
- ❖ Insert Node
- ❖ Fillet
- ❖ Offset
- ❖ Offset All
- ❖ Turn Into Curved Edge
- ❖ Turn Into Straight Edge
- ❖ Change Arc
- ❖ Change Radius

### 2.21.8.3. Editing the Path of Extrusion

Some components are created by extruding a profile along a given path. After selecting these components it is possible to modify the path of extrusion.



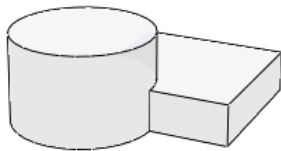
Solid extruded along a spline

After selecting the desired component just click on an edge or node of the path and select the appropriate command from the Marker menu. (You can access the first and last point of the path by clicking on one of the arrows.) These menus contain the following commands:

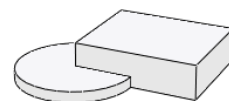
- ❖ Move Node
- ❖ Delete Node
- ❖ Insert Node

### 2.21.8.4. Changing height and slanting

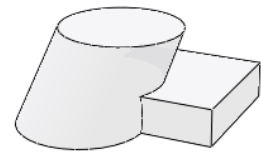
Some components are created by extruding a profile along a given path. After selecting these components it is possible to modify their height or to slant them.



Selecting the cylinder component



Result of decreasing height



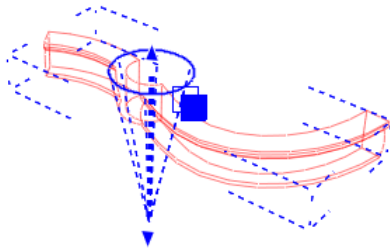
Result of slanting

After selecting the desired component just click on one of the arrows and select the appropriate command from the Marker menu. These menus contain the following commands:

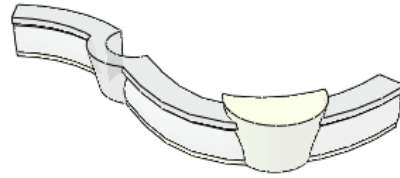
- ❖ Change Height
- ❖ Slant

### 2.21.8.5. Moving, copying and deleting components

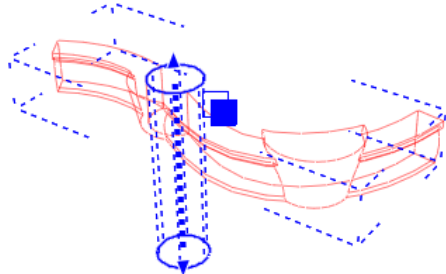
ARCHLine.XP facilitates moving, copying and deleting components of complex 3D solids created by means of Boolean operations like union or subtraction. If a component is copied, the copy inherits the original one's relations to the other components. For example, if the original component is a hole added by a „Subtract“ Boolean operation, the copied component will be a hole, too; it will be subtracted from the same components as the original one.



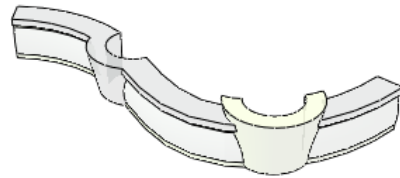
Copying the selected cone



The copy inherits the original component's relations to the other components.



Copying the cylinder shaped hole



The copy will be a hole, too.

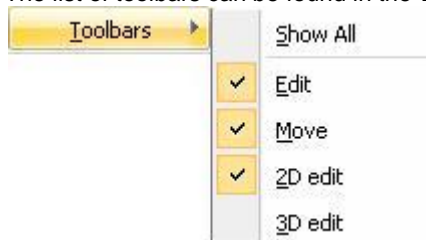
After selecting the desired component just click on one of the arrows or node markers and select the appropriate command from the Marker menu. These menus contain the following commands:

- ❖ Move
- ❖ Copy
- ❖ Delete

## 2.22. Toolbars

A toolbar is a graphical presentation of commands optimized for efficient work because always displayed instead of being displayed on mouse click like menu bar commands. Toolbars provide direct access to the same commands like menu bar.

The list of toolbars can be found in the **Window** menu:



### Visualizing Toolbars:

You can choose which toolbars of the program you need to visualize on your screen. If you check in the **Show all** command, all the toolbars appear on the screen.

### Moving the toolbars - Floating toolbars

The toolbars are default on the side of the main window. From there you can replace them if you drag the toolbar from the dot line marking its side and move the cursor to the new place.

If you place the toolbar in the middle of the drawing area, a floating toolbar appears with a heading. The floating toolbars can be resized moving their sides (if the cursor becomes a double arrow), dragging the header you can replace them and clicking on the **X** icon on the top right corner you can close them.

### Default position of toolbars

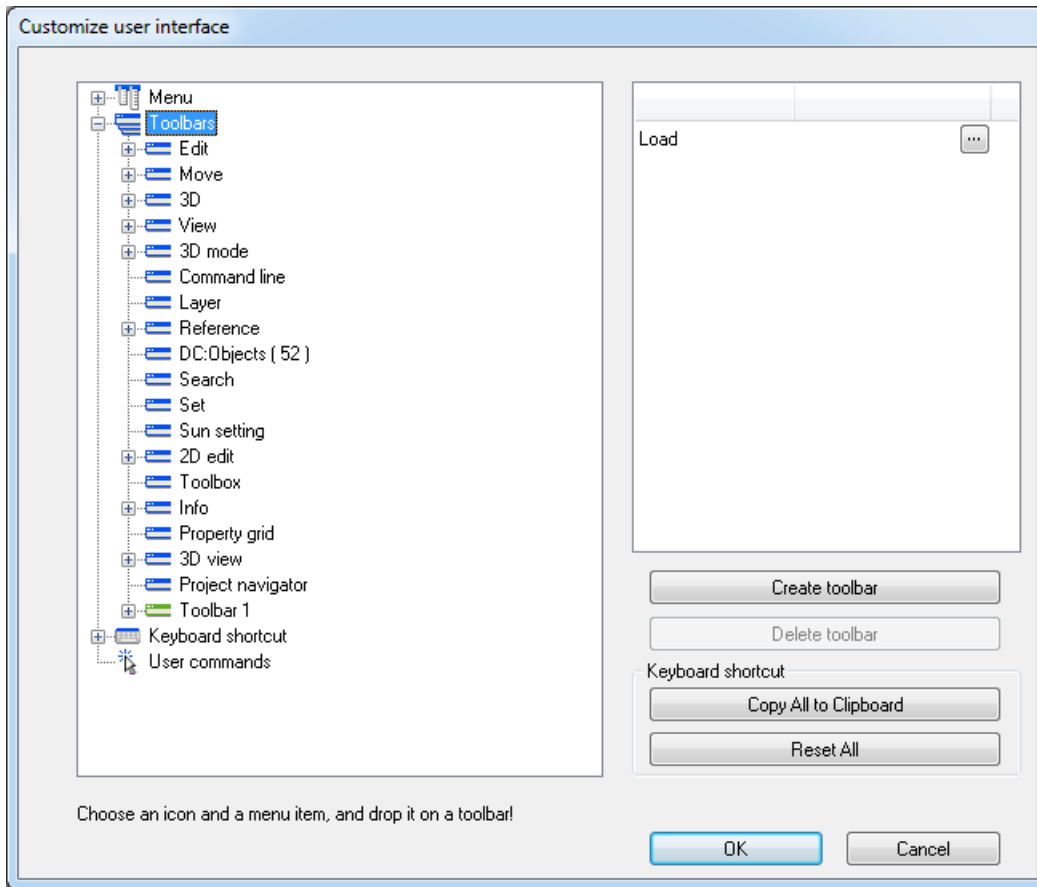
If you have changed the position of toolbars or created new ones with the **Window menu - Default position of Toolbars** command you can restore the original arrangements.

### Big toolbar buttons

The program by default has small icons, but selecting this command it is possible to visualize big icons on the screen. The **Window menu - Big toolbar buttons** command is a switch, and if it is active there is a tick in front of the option. If you check off the option the icons appear in the small, original size.

## Setting toolbars

Selecting the **Tools menu - Customize - Toolbars** command a dialog appears, where just as in the Window menu toolbars can be activated. Here you can create and delete new toolbars.



### Create new toolbar

- Click on the Create toolbar button to create new toolbar. The list of existing toolbars appears in the dialog.
- Rename the new toolbar in the Name field: The new toolbar appears on the screen.

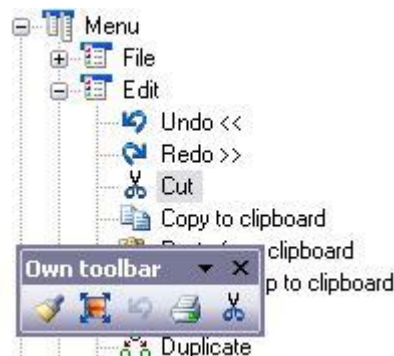
- Move the icons of existing toolbars into your new toolbar by keeping the left mouse button pressed. If you have selected an icon from the original system toolbar the program makes a copy of the icon. If an icon is not needed in the new toolbar simply pull it out of it with the mouse.

Name	Toolbar 1
Visible	<input checked="" type="checkbox"/>
Info	Custom
Put	

- OK to close the dialog

The method is the following to drag a **command** into a new toolbar:

- Select from the icons on the left side of the dialog and choose a command among the objects of the menu or toolbars.
- Drag the icon onto the needed toolbar.





**Delete toolbar**

Only toolbars created by the user can be deleted. Default toolbars cannot be deleted.

- Select the toolbar to be deleted in the dialog.
- Press the **Delete** button. **OK**.

### 2.22.1. Edit toolbar (Available in Classic mode)

The *Edit toolbar* includes the often-used general commands (Open file, Save, Print, etc.) and the often-used editing commands.



	<b>New window</b>	Opens a new window that becomes the part of the project.
	<b>Open file</b>	Opens the selected drawing file. This function equals the <b>File menu - Import</b> command.
	<b>Save project</b>	Saves the project. This function equals the <b>File menu - Save project (Ctrl+S)</b> command. If we work with drawings instead of projects, the current drawing is saved.
	<b>Print</b>	Opens the <b>Print dialog. (Ctrl+P)</b>
	<b>Cut</b>	Cuts the selected part of the drawing and puts it onto the clipboard.
	<b>Copy</b>	Copies the selected part of the drawing to the clipboard.
	<b>Paste</b>	Pastes the selected part of the drawing from the clipboard.
	<b>Undo</b>	Revokes the last command. It is possible to revoke maximum 20 steps. <b>(Ctrl+Z)</b>
	<b>Redo</b>	If the Undo command was used to restore the previous situation, the Redo steps forward in the 2D commands queue. <b>(Ctrl+Y)</b>
	<b>Copy properties</b>	Copies the properties of the selected object to another object. <b>(Alt+A)</b>
	<b>Create Similar</b>	The Create Similar command allows you to create a new object that is similar to a selected object..
	<b>Delete</b>	Deletes immediately the objects you click on.
	<b>Delete between intersections</b>	Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point.
	<b>Trim first object</b>	This command deletes (or adjusts) the unnecessary (or missing) part of the first selected objects to connect it to the second selected object.
	<b>Trim both objects</b>	Adjusts two selected objects to each other.
	<b>Define section</b>	You can define the section line. The program is going to use this line when creating the section.

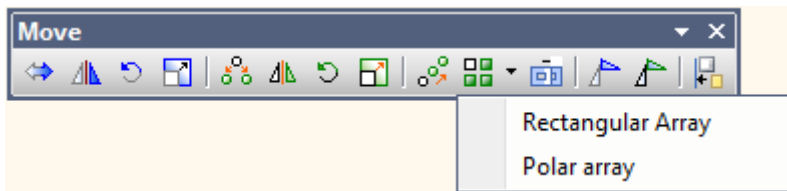


See description of these commands in the *7. Bases of editing*, *8. Bases of modifying* and in *6.5 Section* chapters.









### 2.22.2. Move toolbar

Using the *Move toolbar* you can define different geometrical transformation on the objects.

This is also available from the Status line in a more compressed form as a list. It saves space on your screen and you may enlarge the drawing area.



	<b>Moving</b>	Move the selected objects with the defined vector.
	<b>Mirroring</b>	Mirrors the selected object through a given axis.
	<b>Rotation</b>	Rotates the selected objects.
	<b>Scale</b>	Magnifies the selected objects.
	<b>Duplication</b>	Copies the selected objects with a given vector.
	<b>Duplicate and mirror</b>	Mirrors and copies the selected objects.
	<b>Duplicate and rotate</b>	Duplicates and copies the selected objects.

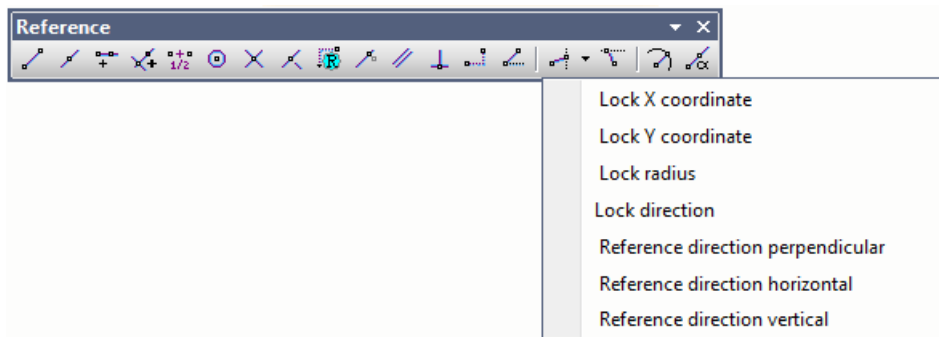
	<b>Duplicate and scale</b>	Scales and copies the selected objects.
	<b>Multiply</b>	Makes given copies of the selected object along the defined distance. Divides the given distance into defined equal parts.
	<b>Rectangular array</b>	Copies a given object according to the given matrix
	<b>Polar array</b>	Copies a given object according to the given polar matrix
	<b>Stretch</b>	Stretches the selected objects by a vector
	<b>Shift and Rotate</b>	Move the selected objects with the defined vector and rotate.
	<b>Duplicate and Rotate</b>	Copies the selected objects with the defined vector and rotate.
	<b>Align</b>	Aligns and/or distributes the selected objects on floor plan.



See description of the commands in the 8. *Editing commands* chapter.

### 2.22.3. Reference toolbar

The commands of the *Reference toolbar* are used when the program is waiting for a coordinate input.



With some of the icons you can define the special points that the cursor has to find. With others you can lock coordinates, distances, directions, projections.

This toolbar helps you to define precisely the input data.











The commands can be combined with each other.





This is also available from the Status line in a more compressed form as a list. It saves space on your screen and you may enlarge the drawing area.








See 2.16.1. Status bar

#### ***Snap to special points, defining direction and distance:***




	<b>Endpoint</b>	Defines the endpoint of the selected object.
	<b>Midpoint</b>	Defines the middle point of the selected object.
	<b>Distance from endpoint</b>	Defines a new point as a point on the selected object at a specified distance from the endpoint nearest to the selected point.
	<b>Distance from intersection</b>	Defines a new point as a point on the selected object at a specified distance from the nearest intersection point.
	<b>Half division point</b>	Divides the distance between two points into half.
	<b>Centre point</b>	Defines the centre of an object.
	<b>Intersection point</b>	Defines the nearest intersection point on the selected object.
	<b>Apparent intersection point</b>	This command is able to find the intersection point of two selected objects.
	<b>Reference point</b>	The selected point becomes the reference point.
	<b>Nearest point</b>	Defines the nearest point of the selected object.

	<b>Parallel direction</b>	The next input coordinate is in direction of the selected object or in the direction of the tangent of the selected object.
	<b>Perpendicular direction</b>	The direction of the next input coordinate is perpendicular to the selected object or to the tangent drawn in the selected point.
	<b>Relative distance</b>	The next point will be defined in X, Y distance.
	<b>Relative polar distance</b>	Defines the new point at a given angle with a given radius from the last point.

### Coordinate-, distance, locking direction:

	<b>Lock X coordinate</b>	Locks the absolute / relative X coordinate of the new point. A line appears and the program recognizes only the points of this line.
	<b>Lock Y coordinate</b>	Locks the absolute / relative Y coordinate of the new point. A line appears and the program recognizes only the points of this line.
	<b>Lock radius</b>	Having locked the radius a circle appears, after this the cursor finds only the points of this circle.
	<b>Lock direction</b>	If you lock the value of the angle a line appears in the given direction. After this the cursor finds only the points of this line.
	<b>Lock angle</b>	Locks the actual editing direction graphically. After this the cursor finds only the points of this line.

### Projections:

	<b>Reference direction perpendicular</b>	The new point will be in the intersection of the locked direction and the perpendicular projection of the selected reference point.
	<b>Reference direction horizontal</b>	The new point will be in the intersection of the locked direction and the horizontal projection of the selected reference point.
	<b>Reference direction vertical</b>	The new point will be in the intersection of the locked direction and the vertical projection of the selected reference point.



See description in 5.2. *Defining angle*.

## 2.22.4. View toolbar (Available in Classic mode)

The commands of *View toolbar* can be used in any views.



<b>Zoom all</b>	Displays all visible elements.
<b>Zoom in</b>	Enlarges the selected rectangle of the actual drawing to the whole active view.
<b>Zoom out</b>	Reduces the view by a scale factor of 0.5.
<b>Redraw</b>	Redraws all views containing the actual drawing.
<b>Pan</b>	Shifts the active 2D view on the actual drawing.
<b>Local Origin</b>	You can redefine the local coordinate system by giving the origin and the direction of the X axis.
<b>Previous view</b>	Restores the last defined view into the active view.
<b>Next view</b>	Reloads the next stored view in the active view.
<b>Enlarge active view</b>	The active view appears on the left side of the screen. Other views get to the right above each other.



See detailed description of the commands in chapter 6.1. *Setting view*.

### 2.22.5. 3D View toolbar (Available in Classic mode)

The icons of *3D View Toolbar* provide different ways to visualize the 3D model.



<b>Perspective settings</b>	Defines the perspective transformation by viewpoints on the 2D drawing. You can save the actual perspective view with a name in the Perspective dialog.
<b>Define right view</b>	Visualizes the right side view of the model in the 3D view.
<b>Define frontal view</b>	Visualizes the frontal view of the model in the 3D view.
<b>Define top view</b>	Visualizes the top view of the model in the 3D view.
<b>Define axonometric view</b>	Visualizes the axonometric view of the model in the 3D view.
<b>Define back view</b>	Visualizes the back view of the model in the 3D view.
<b>Define left view</b>	Visualizes the left side view of the model in the 3D view.



See description of these commands in chapter 6.1. *Setting view*.

### 2.22.6. 2D edit toolbar

This toolbar collects the frequently used 2D edit commands.



The edit commands are as follows in order:

<b>Offset</b>	Defines a line that is parallel to the selected object, has the same length as the selected object.
<b>Trim both</b>	Adjust two selected objects to each other.
<b>Trim first</b>	Deletes (or adjust) the unnecessary (or missing) part of the first selected object to connect it to the second selected object.
<b>Trim multiple</b>	Deletes (or adjust) the unnecessary part of a group of objects to connect it to the first selected object.
<b>Delete area</b>	Deletes the section of the object within the selected area.
<b>Delete between intersections</b>	Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point.
<b>Break</b>	Breaks an object into two objects at the point where the object intersects with another object.
<b>Lengthen by number</b>	Changes the length of the selected line with a specified value. The length specification can be absolute or relative.
<b>Chamfer</b>	Connects two objects with an angled line.
<b>Fillet</b>	Connects two objects with an arc.

## 2.23. Toolbox (visible in 'Classic' interface only)

Toolbox is a comprehensive catalog of commands using to create objects. They are arranged in groups. The content is corresponding with the groups in the Application Menu bar significantly.

You can:

- Drag the Toolbox.
- Dock the Toolbox at the edge of a parent frame.
- Pin a docked Toolbox open, or set it to hide itself.

Main features:


- ❖ The submenu displays within the main menu and remains open after the command selection. It requires less click to start the next command.
- ❖ The order of command groups are changeable.
- ❖ Search field to browse commands by name.
- ❖ Favourites menu.
- ❖ Optional menu for user defined command groups.
- ❖ Mouse right click menu.
- ❖ List or icons style.
- ❖ Info tooltip: Kind of on-the-spot "mini online help". It makes easier to understand the command.


### Using the Toolbox

Toolbox is present on the screen when you activate the Window menu – Toolbar – Toolbox option.

By default, the Toolbox is docked to the left edge of the ARCHLine.XP frame. If you wish, you can change the docking position. Toolbox displays a list of items with icons.

### Hiding the Toolbox

By default, the Toolbox is always visible when docked. If you prefer to hide it when it is not needed, click the push pin  in the top right corner. The Toolbox will then slide out of sight when it is not in use.

- To make the Toolbox remain open  
To display the Toolbox when it is hidden, just move the cursor over the Toolbox label in the border. The Toolbox slides back out and remains visible as long as the cursor is over it. The push pin  now appears in horizontal position. To keep the Toolbox expanded click the push pin icon in the top-right corner of the Toolbox.


### Moving the Toolbox to a different location

Click on the Toolbox title and drag the Toolbox to the desired location.

### Docking the Toolbox

Click on the Toolbox title and select the arrow that points toward the edge of the parent frame where you want to attach the Toolbox.

### To restore all default groups to the Toolbox, with their default position

Click on the black gear  icon on the toolbox right corner and choose Default command

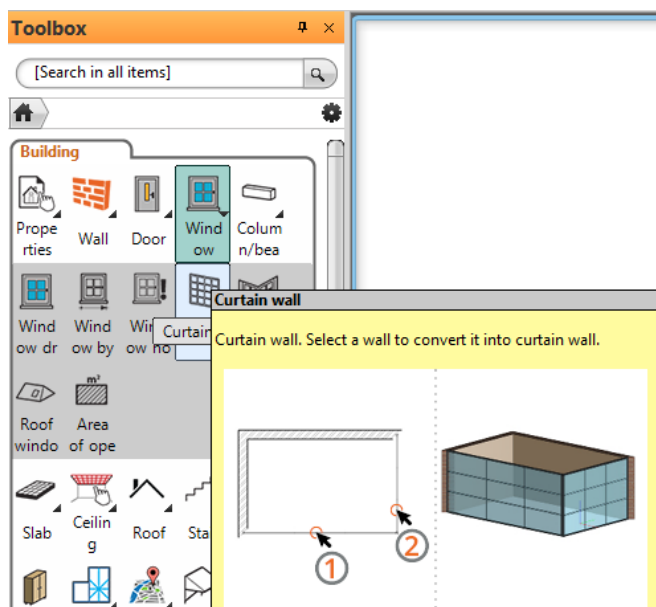
### Multiple expanded groups

Multiple groups of the Toolbox can be expanded simultaneously, and the entire content is scrollable.

To expand any group of the Toolbox, click to its name. To collapse an expanded group, click to its name again.

### Info Tooltip

Info Tooltips, are those little balloons that can pop-up when you hover your mouse over a command. It provides a fast and easy method to display additional explanation. They're a kind of on-the-spot "mini online help". The Info Tooltip can be switch on and off in the Options menu.

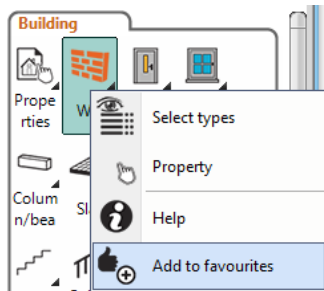


## Favourites

The Favorites list offers quick way to access frequently used commands. You can build more favourite lists for the most frequently used commands.

Use the right click on any Toolbox Items and select the Add to favourites command from its pop-up menu. Item is automatically added to the appropriate Favorites group on the Toolbox.

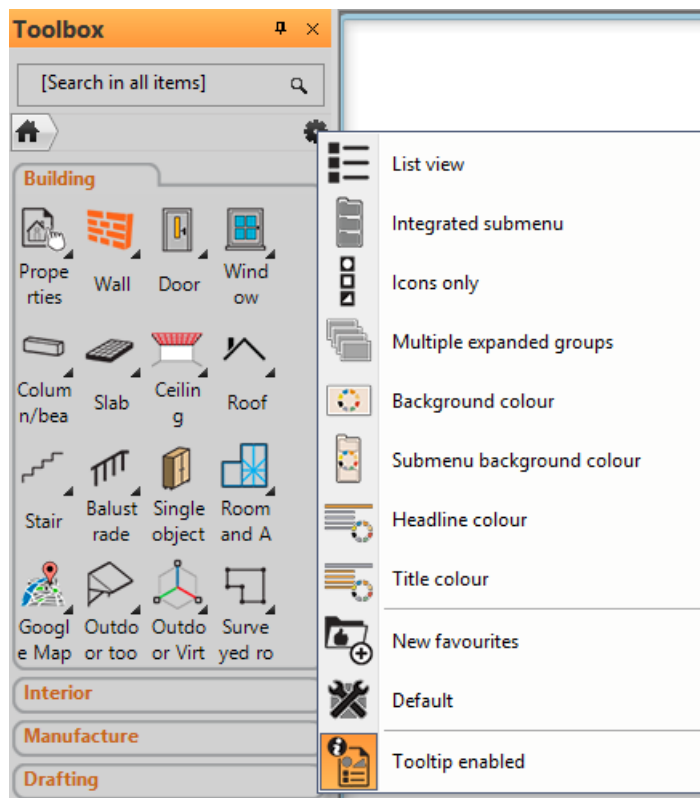
You can add more Favourites group with different names.



You can remove the items from Favourites groups but you cannot change the factory groups because they are part of the software installation.

### 2.23.1. Toolbox settings

Various methods are available to customize the appearance of Toolbox groups. To display the Toolbox context sensitive menu commands click on the black gear icon on the toolbox right corner.



It includes the commands described in the table below.

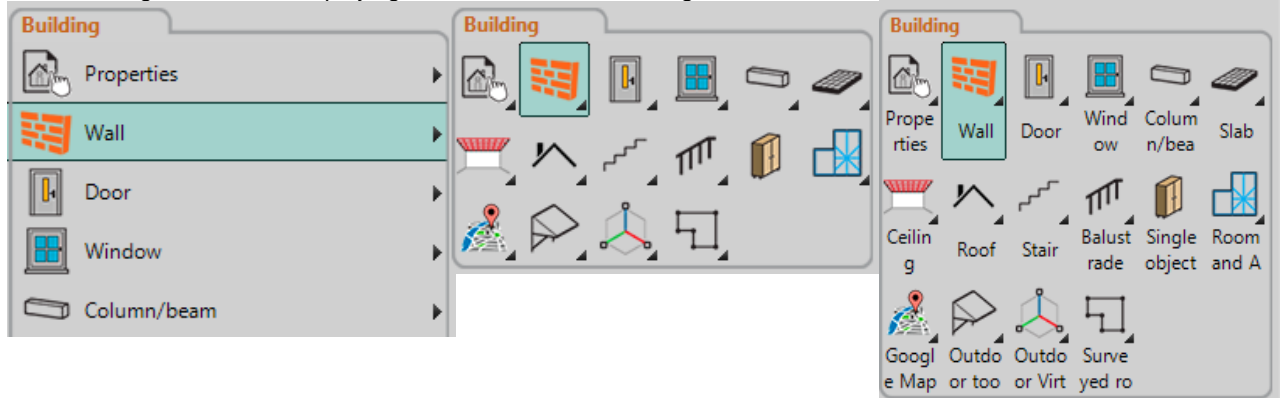
Command	Description
List view	You can change view mode displaying the Toolbox contents using icons or label
Integrated submenu	Specifies that Toolbox submenu expands the group to display the submenu commands.
Icons only	Specifies that Toolbox displays commands with icons only.
Multiple expanded groups	Multiple groups can be expanded simultaneously.
Background colour	Specifies the Toolbox groups background colour
Submenu background colour	Specifies the Toolbox submenu background colour
Headline colour	Specifies the Toolbox groups headline colour
Title colour	Specifies the Toolbox groups title colour
New favourites	Creates new favourites group

Default  
Tooltip enabled

Restore all default groups to the Toolbox  
Info tooltip switch on/off

### List view modes

You can change view mode displaying the Toolbox contents using list or icons. The control has three view modes:



List

Icons only

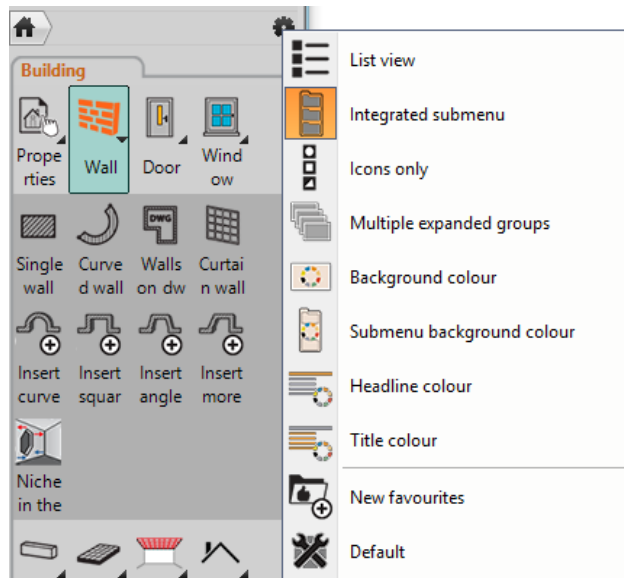
Icons with text

The List mode displays icons with text but is always in a single column. The Icon only and Icon with text mode displays items in multiple columns.

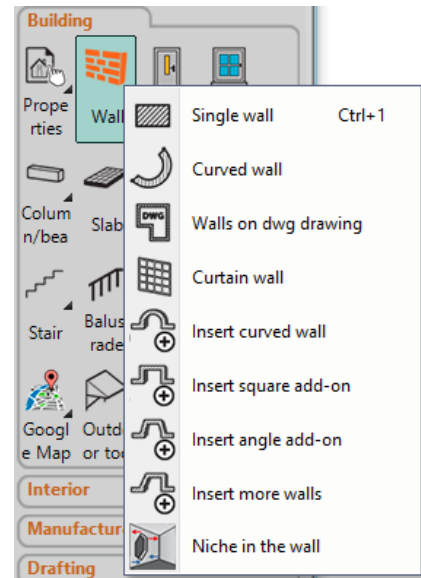
### Integrated submenu

There are two modes to manage sub menus.

- ❖ The submenus may be integrated in the group.
- ❖ The submenus will be displayed in a pop menu style.



Integrated submenu is enabled



Multiple Expanded Group is disabled

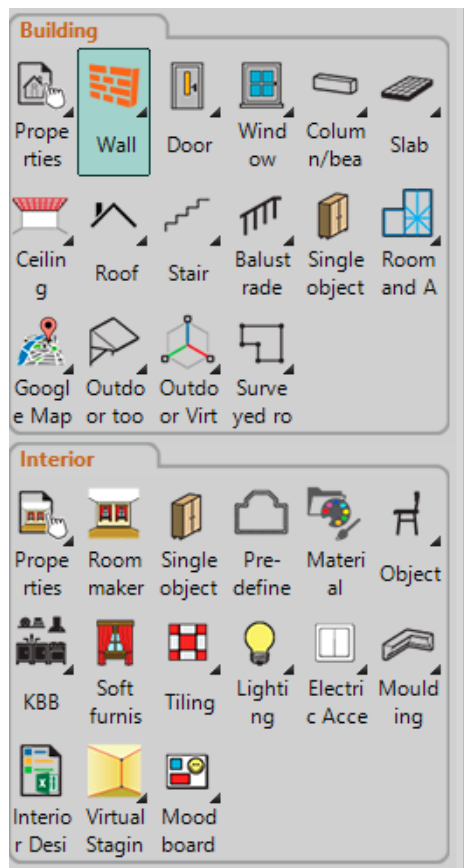
### Multiple expanded group

Toolbox menu will automatically open the command groups when you click on it. You can choose to enable or disable multiple groups to be open at the same time.

When Multiple Expanded Group is enabled it makes easier to find other items in the different groups, but if you see too many icons at the same time you may find it difficult to navigate in the groups.

When Multiple Expanded Group is disabled only one group is allowed to be open at a given time.





Multiple Expanded Group is enabled



Multiple Expanded Group is disabled

### 3. Customize ARCHLine.XP

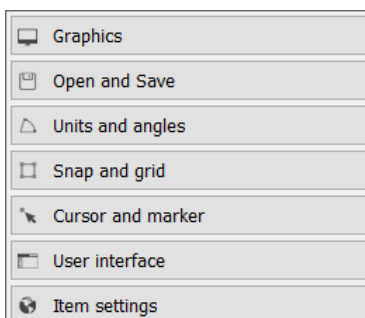
You can configure the global settings of your ARCHLine.XP installation and project dependent settings. Global settings are always valid when ARCHLine.XP is open. Project dependent settings may change after opening a project.

Parameters marked with an asterisk character (\*) are saved into the project. Other options are saved into the registry - global settings valid for all projects.

#### 3.1. Options

You can configure ARCHLine.XP global settings and its user interface in Option dialogs.

The Options dialog box includes the following tabs:



##### Graphics

Controls options that relate to presentation and drawing settings, colours and other visual options.

## Open and Save

Define paths for files and directories and set options to import/export and autorecovery settings.

## Units and angles

Project unit and angle settings control how ARCHLine.XP interprets the length, coordinate and angle entries and how it displays lengths, coordinates and angles in the drawing and in dialog boxes.

## Snap and grid

ARCHLine.XP provides drawing aids as snap and grid to provide alignment with existing geometry. Snap helps you to draw quickly and accurately.

## Cursor and marker

Cursor and marker settings can be found here.

## User Interface

Define options to change the behavior of the user interface.

## Item Settings

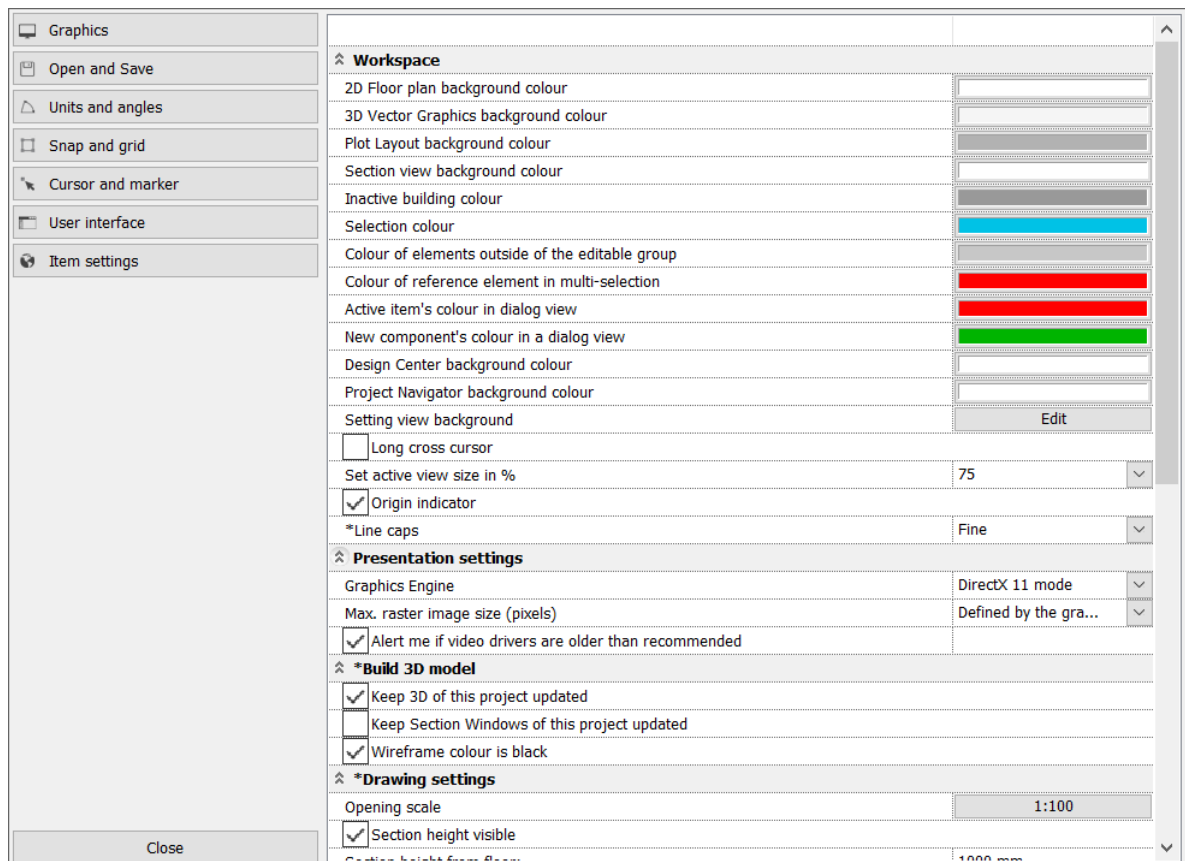
Specify global parameters here that are not related to the given objects Properties Palette.

### \* Star Icon

Star icon before the option name signifies that an option is saved with the project. An option saved with the project affects only the current project. If you transfer the project to another computer the option will be valid on that computer as well.

## 3.1.1. Graphics Tab

User can change the display of graphics.



## Colour

Changes the colour of the background in the view. Click the colour value to specify a new background colour. Black background colour will cause black colour objects to display as white.

Select that part of the user interface from the list whose colour will be changed.

### Inactive building colour:

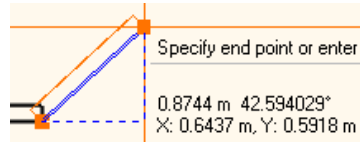
Inactive building colour is used for

- ❖ Representing the inactive buildings when there are more buildings created
- ❖ Inactive drawing objects in group work (multi-user) mode
- ❖ For not active but visible floors.

### Cursor shapes

#### Long cross cursor

Check in the option. The cursor intersects the entire window. When an editing command is active, ARCHLine.XP is waiting for definition of a point the cursor represents this form.



#### Origin indicator

The marker that represents the coordinate system origin appears or remains in hidden.



#### Line caps

Set endings of lines:

- ❖ Fine
- ❖ Normal



Line weight settings for printing can be specified in the *Print* dialog.

### Graphic Engines

Two types of graphic engine views are available:

- ❖ **DirectX mode** (DirectX Graphics Library).
- ❖ **OpenGL mode** (OpenGL).

**DirectX** and **OpenGL** are competing application programming interfaces (APIs) which can be used in applications to render 2D and 3D computer graphics, taking advantage of hardware acceleration when available.

Availability:

Direct3D application development generally targets the Microsoft Windows platform. The OpenGL is an open standard, and implementations exist for a wide variety of platforms.

See more: [http://en.wikipedia.org/wiki/Comparison\\_of\\_OpenGL\\_and\\_Direct3D](http://en.wikipedia.org/wiki/Comparison_of_OpenGL_and_Direct3D)



#### 3.1.1.1. View properties

The following properties are common to floor plan views. You can specify them in the *File menu - Options – Display* dialog.

Drawing properties	Description
Opening scale	The opening scale is the architectural detail level used to represent doors and windows in the floor plan. By changing the opening scale factor, you can affect the display of the same door/window geometry at different view scales.
Section height visible	Switch to apply Section height from floor
Section height from floor	Floor plan is understood to be drawn at a particular vertical position. Objects below this level are seen, objects at this level are shown 'cut' in plan-section, and objects above this vertical elevation are omitted or shown dashed. (Default elevation at 1000 mm above the floor)

Wall display	You can modify how the vertically layered walls are represented on the floor plan.
Line weights scale	When line weight is off it is displayed as one pixel wide. Otherwise line weights are displayed as a pixel width proportional to the real-unit value. This option has no effect on printing.
Display proportional line weights	Switch off on views the real line width with 1:10, 1:100 etc. scales. This option has no effect on printing. By default, line weights are plotted with the exact width of the assigned line weight value.
Line width is displayed as one pixel.	Turn on means to optimize performance on screen.
Side marker to display wall reference line on screen"	Switch on/off the visible marker what identifies the wall reference line
Maximum number of visible periods of the line-type pattern	When the number of line type pattern exceeds this value on the screen only the line is represented as continuous line.


### 3.1.1.2. Displaying the range of parameter values

With the *Show min-max values* option it is possible to display the range of parameter values in the objects, doors and windows properties dialogs.

This helps by specifying parameter values.

**Range of parameter values**

Show min-max values



Name	Value
Frame width around [ 0.01 - 0.5 ...	0.075
Threshold thickness [ 0 - 0.3 m ]	0
Leaf thickness [ 0.01 - 100 m ]	0.05
Opening angle [ 0 - 90 ]	0

Width:

Height:

Thickness:

Show other parameters

### 3.1.2. Open and Save options

You can specify the following files and folders in the *Options – Open and Save tab*.

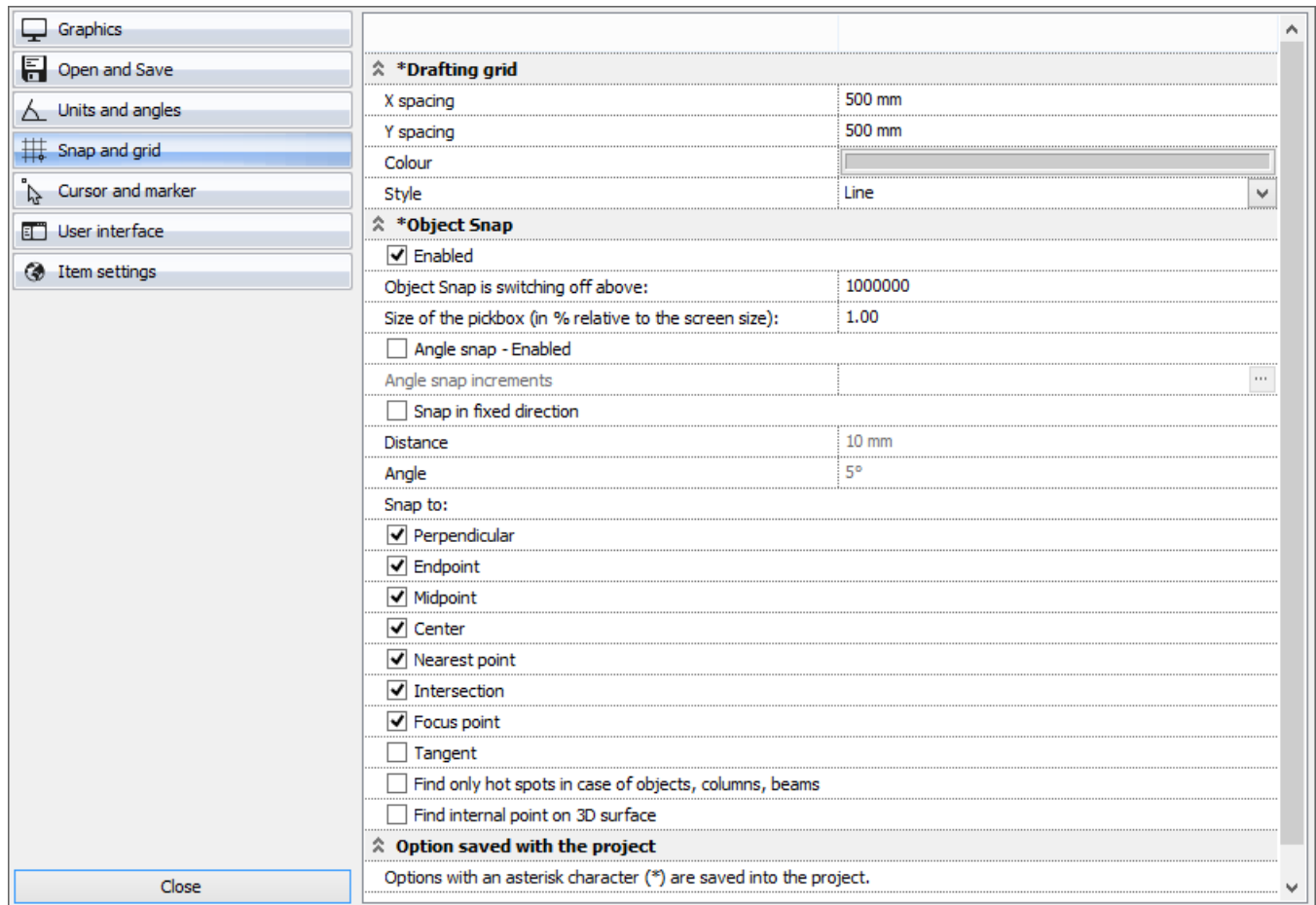
Properties	Description
Project Default Path	You can modify your project default path. The program offers the project default path when opening a new project.
Archive display	You can switch the Archive option on/off.
Archive path	Specify the directory where the archived files should be saved into. By default it points to the ...Draw\Archive subfolder according to the installation.  Under the Project default path the program creates a folders with the current date. Partial backups of projects are created here in subfolders named according to the project names. During the archiving procedure the .asc floor plans and plot layouts of project will be archived here. This archiving option provides automatic backups on each day, enables to return for a given state of the working procedure by date. Folders created this way are not deleted automatically. After finishing the work the users should ensure the deleting of unnecessary files themselves.
Image Default Path	Sets the initial directory displayed by the open image file dialog box.
Save 3D database	You can specify the saving option for 3D model in the project. It is switched off by default therefore the 3D model database is not saved in the project. The 3D model can be created from the floor plan any time. In a case when the program recognizes that the 3D view contains orphan 3D solids without reference to floor plan the program offers to switch on this flag to save the 3D solids as well. When it is on on the whole 3D database is saved. In this case the project size may considerably increase.
Save hatch components	When you load a project the program displays big drawing quicker. It may increase the project size.
Template Import Wizard	Import templates from the previous versions See more in 4.6.11.
Project Parameters	Yo can specify a group of project information such as building site, address, status and more.
DXF/DWG	Sets the initial directory displayed by the open DXF/DWG file dialog box.
Autorecovery	With Autorecovery you can avoid data losses due to black-outs or any other unexpected events.
Save Autorecover information	You can activate Autorecovery with the Save Autorecovery information checkbox.
Save frequency	After a definite number of drawing commands (Save frequency), the program saves the current project. When you restart the program after the unexpected events, the last used project will be loaded automatically from that folder.



This temporary folder for Autorecovery will be deleted when you exit the program, so Autorecovery **does not substitute** the saving of the project. If you fail to save your drawing, and then exit the program, your entire work will be lost.

### 3.1.3. Snap and Grid Tab

Specify snap and grid settings.



### 3.1.3.1. Grid

Define horizontal and vertical distance between nodes of the grid.

X Spacing: Specifies the grid spacing in the X direction.

Y Spacing: Specifies the grid spacing in the Y direction.

Colour: Specifies the grid colour

Style of grid: point or line.

The program limits the density of the grid when zoomed out.

The grid is not displayed if its density is too high compared to the size of the drawing. In that case you must zoom in to make the grid visible.

#### Activate grid

Clicking on the **status line – GRID** or **Tool menu - Grid** command activates and deactivates grid.

### 3.1.3.2. Object snap

Object snap enables to define precise locations on objects. You can specify an object snap whenever you are prompted for a point.





In ARCHLine.XP the special points are the following:

Perpendicular point, Endpoint, Center, Midpoint, Nearest point, Intersection, Focus point and Tangent point.

When OSNAP is on, the program finds the special points within the cursor tolerance circle and changes its shape, marking in this way the special points of the objects. When clicking the program snaps the cursor to the nearest special point if it is inside the tolerance radius.

ARCHLine.XP identifies the following special points and displays a marker when you move the cursor over an object snap location on an object.

	Perpendicular point		Nearest point
	Extreme point		Intersection

	Midpoint		Focus (ellipse)
	Centre		Tangential

### Objects snap (OSNAP)

The gravity to the points is automatic if the *OSNAP* option is activated. In this case it is enough to move the cursor towards the object, and the program automatically snaps the cursor to the nearest special point.

The *OSNAP* function helps your work remarkably.



The *OSNAP* can also be switched on with the *Tools menu - Object snap* option.

### Limit of Object snap

Default value of *OSNAP* is 1.000 000. This means that if the number of objects of a drawing is above 1.000 000, the *OSNAP* switches off, so searching in a large database will not engage the computer and will not slows down the work. This value can be changed according to the capacity of the computer.

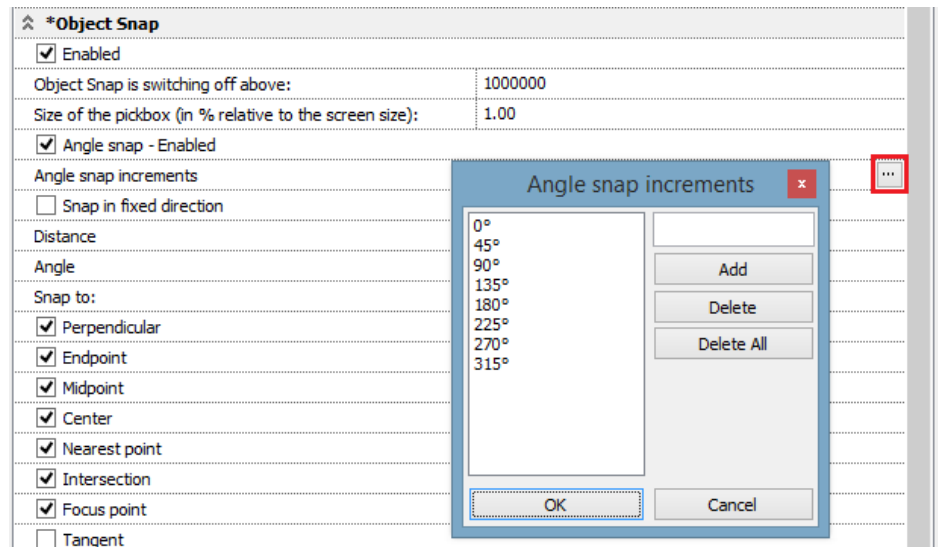
If the *OSNAP* is switched off the special point recognition can also be activated by pressing the **Ctrl** key. When the program is waiting for the definition of a coordinate, pressing the **Ctrl** key the *OSNAP* becomes activated temporarily.

### Object Snap Tolerance

You can also modify the radius of the searching circle (Size of the pickbox (in % relative to the screen size)). This must be defined in percentage of the screen size. Default value is 1 %.

### 3.1.3.3. Angle snap

Angle snap controls where to locate the second point in relation to the first point. The second point snaps to the nearest fixed angle. Default directions are the following: 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315°.



### Angle snap

Select this option to enable or disable angle snap.

If you enable angle snap, the cursor can only move towards the defined directions. This is a very strong control and can be used only in special cases. We recommend that you disable this option.

When you define *Length* or press the *Shift* button, the program finds the default angles even if the Angle snap option is disabled.

### Angle snap increments

Select this option to change angle snap values with dialog.

#### Add

You can modify a default value or specify a new one.

- Select the value you want to modify, or enter the new value in the *Input* field.
- Click on the **Add** button.

#### Delete

Delete the selected value.

- Select the value you want to delete.

- Click on the **Delete** button.  
**Delete all**  
Delete all values from the list.



If angle snap is active, grid snap is automatically disabled.

### Ortho snap

Using the **Tools menu - Ortho** command you can switch on the ortho snap. In this case you can move the cursor into horizontal and vertical direction.

If the Angle snap and the ortho snap are switched on the program prefers the ortho snap.

### Using angle snap with disabled snap option

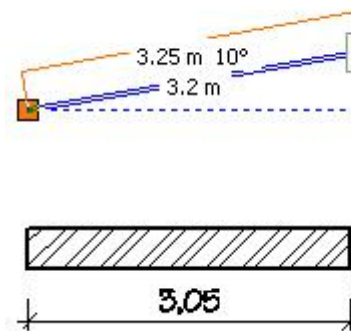
When you have specified the first point of an object:

- Move the cursor to the desired direction.
- The program is waiting for you to specify length or distance.  
Enter the appropriate values.
- The second point snaps to the nearest special angle.

#### Example:

To draw a 3,05 m long horizontal line:

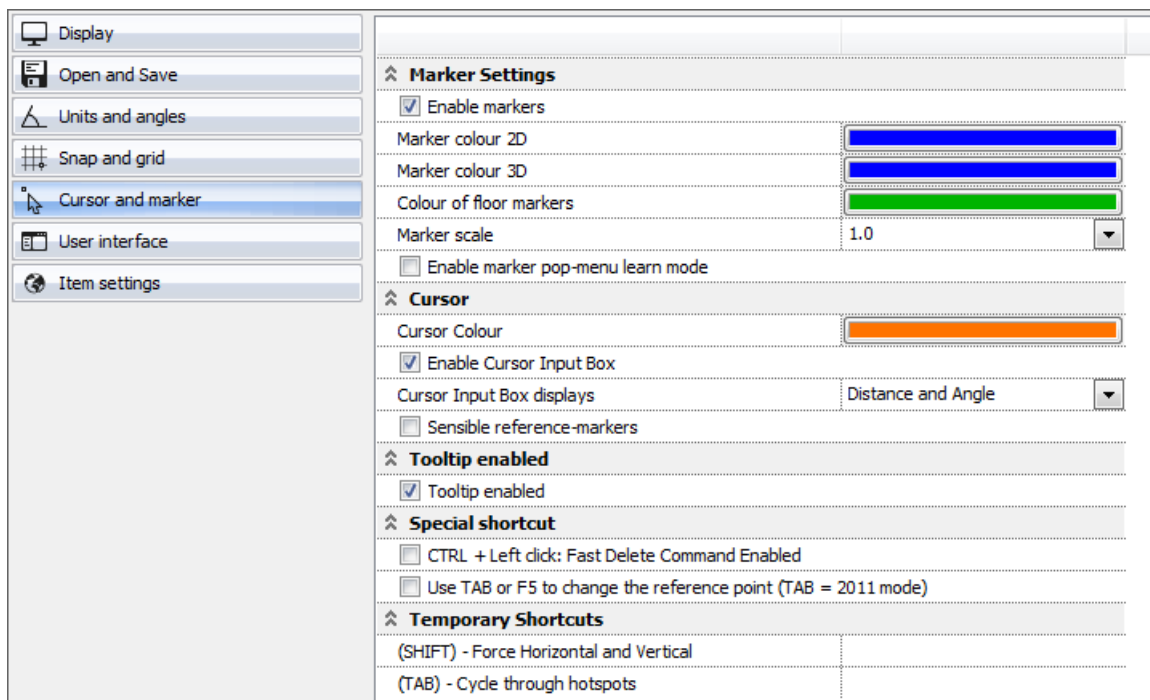
- Specify the starting point.
- Move the cursor near the horizontal direction.
- Enter the value: 3.05.



## 3.1.4. Cursor and Marker

Marker settings can be found in menu point File menu – Options – Cursor and Marker.

### 3.1.4.1. Marker Settings



#### Enable markers

Markers can be switched on and off in the program with this switch. After installing the program the option is in switched on mode.



### Marker colour 2D

You can set in the colours of markers that appear in the floor plan's views of the program. Click on the colour area on the right to modify (change) value then choose a colour from the colour charts and press down the key OK at last.

### Marker colour 3D

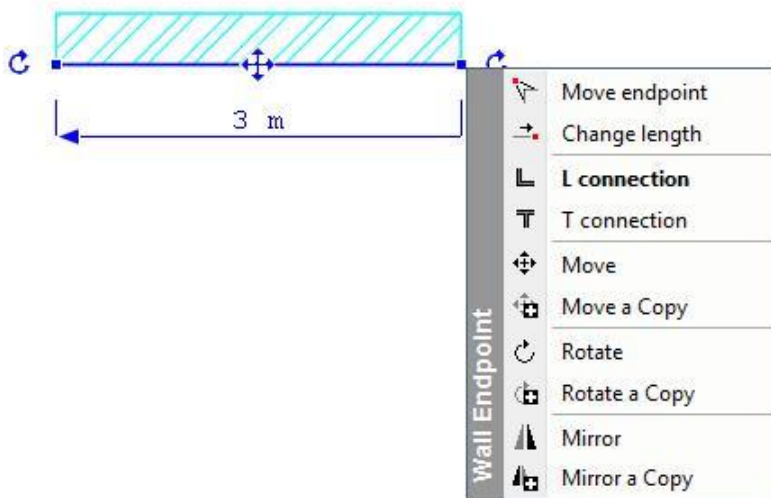
You can set in the colours of markers that appear in 3D views. To change value click on the colour are on the right then choose a colour from the colour charts and press down the key OK at last.

### Marker scale

You can increase dimension of markers because of screen resolution or other facts. Choose one from the rolling list on the right to change the value.

### Learning mode

In this mode you can set in that shortcut menu of markers can remember or not the last commands. If you switch on the option, it allows remembering the last used operations for the program. Then the program indicates the actual default command in shortcut menu in bold type.



### Special Shortcut

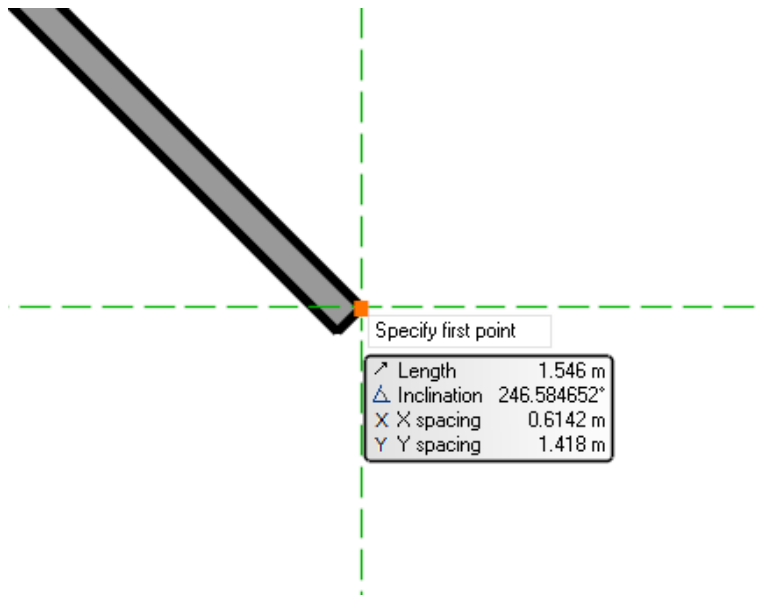
The CTRL + Left mouse click executes fast delete command. This shortcut can be switched on and off in the program with this switch. After installing the program the option is in switched off mode.

#### 3.1.4.2. Sensible reference-markers

Sensible reference-markers are appearing when you move your mouse cursor over a reference point and you keep it there for a short time. A green coloured vertical and horizontal line will appear. This is a reference marker.

When you marked a reference point you can move your mouse over another reference point and keep it there for a short time. Another reference-marker will appear.

You can repeat the previous steps to mark multiple reference points at a time.



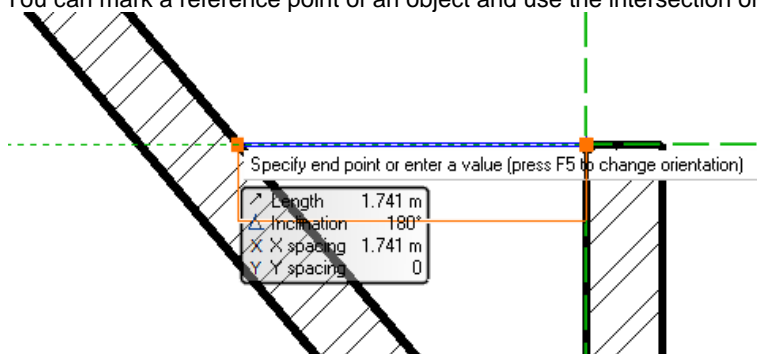
### Practical examples:

#### Horizontal / Vertical snap

You can draw horizontally or vertically aligned objects as the mouse cursor will snap to existing reference-markers.

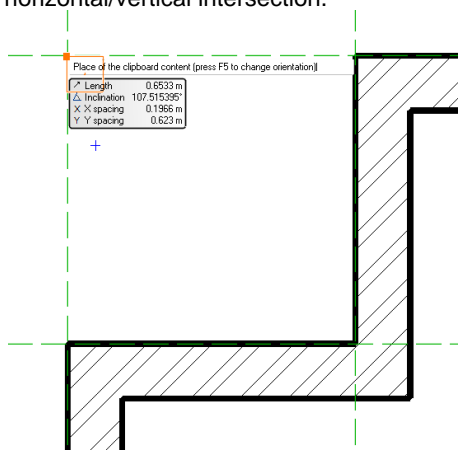
#### Intersection with a line

You can mark a reference point of an object and use the intersection of the reference marker with another object.



#### Apparent horizontal/vertical intersection

Mark the endpoints of two objects and you can use the intersection of two reference markers to draft the apparent horizontal/vertical intersection.



### 3.1.5. Units and Angles Tab

You can set the units and angle options necessary for design.

#### 3.1.5.1. Units of measurement

Every object you construct in ARCHLine.XP is measured in units. You have to set up the system of units within the software before creating the first elements.

Graphics	
Open and Save	
Units and angles	
Snap and grid	
Cursor and marker	
User interface	
Item settings	

<b>*Units</b>	
Primary unit of measurement	mm
Rounding Off Decimals	0.1
Drawing specific length unit	mm
Drawing and printing specific measurement unit (Lineweight, Font size, Hatch, Dimension marker size, etc...)	
Rounding Off Decimals	0.1
Area unit of measurement (and volume)	[m <sup>2</sup> ]
Rounding Off Decimals	0.12
<input type="checkbox"/> Accept comma (,) as decimal separator during input	
Display decimal separators on drawings as	System default
<b>*Angle</b>	
Angle Measure	Decimal Degrees
Rounding Off Decimals	0.12
Angle Direction	Counter Clockwise
<input type="checkbox"/> Positive axis to left direction	
<b>Option saved with the project</b>	
Options with an asterisk character (*) are saved into the project.	
Other options are saved into the registry - affecting all projects	

#### Primary unit of measurement

Specifies the measurement unit and the precision of drawing. The program offers the following units: mm, cm, m and inch.

#### Rounding Off Decimals

To specify precision click the pull-down list and choose the appropriate item:  
E.g.: choosing 0.12 means two decimal points of precision.

0.1
0.12
0.123
0.1234
0.12345
0.123456
0.1234567
0.12345678
0.123456789

#### Drawing-specific length unit

It defines the drawing-specific measurement unit and its precision. It includes marker properties, text properties, dimension properties and hatch dimension.

#### Accept comma (,) as decimal separator during input length unit

You can use comma as decimal separator parallel to a period/dot.



Precision does not refer to the dimensional precision required (that can be set in Dimension general properties); it refers to the precision of the query. This is shown by the **Cursor position tooltip** and by the **Cursor info tooltip**. For further references, see Chapter 2.19.3. –*Screen Properties* and Chapter 10.1.3. *Dimensioning - Format parameters*.

#### 3.1.5.2. Angle

You can set what angle measure to use and the direction of angles.

The program offers the following angle measures:

<b>Decimal Degrees</b>	Displays angles in decimal units (e.g.: 30,5°)
------------------------	--

Deg/Min/Sec	Degrees, minutes and seconds (e.g.: 30°30'00")
Grads	An engineering unit with 400 grads

To choose the unit of angle click on the corresponding option.



The result of angle definition is not displayed when setting the dimensions of the object (that can be set in Dimension general properties), only when querying. This is shown for example by the **Cursor position tooltip** and by the **Cursor info tooltip**. For further references, see Chapter 2.10.7 – *Cursor Input Box* and Chapter 10.1.3. *Dimensioning - Format parameters*.

### Angle Direction

You can measure angles clockwise and counter clockwise or topographically. Clockwise and counter clockwise directions are defined from the compass direction East, while topographical directions are defined counter clockwise from the compass direction North.

To specify a direction, click on Direction options or the icon on the right.

### Positive axis to left direction

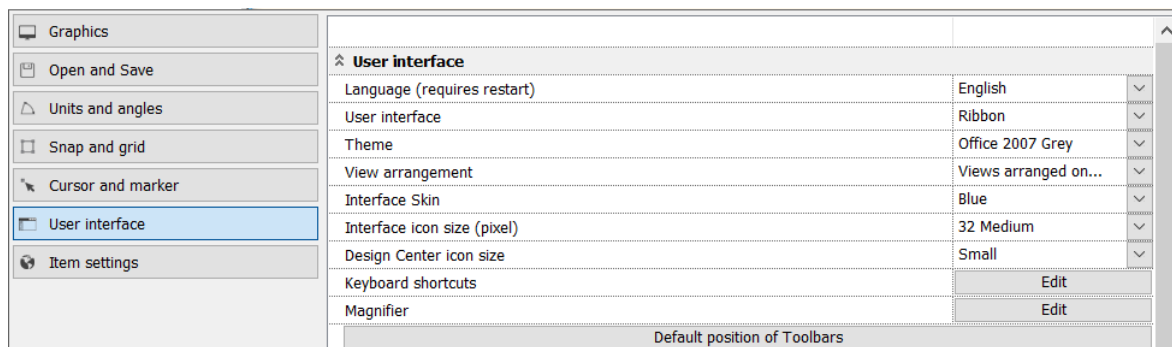
You can specify the direction of the X axis. By default, the X axis points to the right, so the program measures positive values on the right. Enable this option to measure positive values on the left.

## 3.1.6. User Interface Tab

Define options to change the behavior of the user interface.

### 3.1.6.1. User Interface

The Drawing area in ARCHLine.XP is the area where you draw. It is divided into work spaces known as 2D Floor plan, 3D model, Section, Animation and Printing Layout. You work always in the active one and you can switch between them.

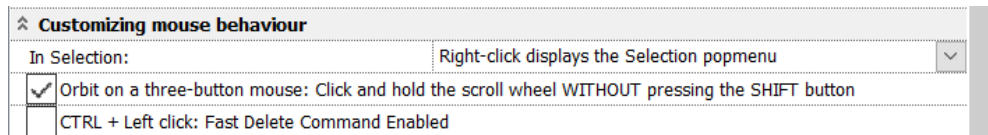


Properties	Description
Language	ARCHLine.XP user interface is available in eleven languages: English; Italian; German; Spanish; Chinese; Korean; Czech, Polish, Hungarian, Greek, and Croatian. Change requires restart.
User interface	Ribbon or Classic.
Theme	Specifies the visual theme to use for the ARCHLine.XP application.
View arrangement	You can choose among three drawing view arrangement styles or switch the active work spaces into full size view.
Interface skin	You can specify the graphical appearance of ARCHLine.XP view choosing among different colour models. Blue, Lime, Orange, etc
Interface icon size	You can specify the icon size for different screen resolution: small, medium, large, and extra large for 4k monitors.
Design Center icon size	You can specify the icon size for Design Center: small, large.
Keyboard shortcuts	Displays a dialog to manage keyboard shortcuts.
Alternate keyboard shortcuts	You can use different keyboard shortcuts table to navigate through ARCHLine.XP. The program displays the list of other available shortcut tables here
Magnifier	You can magnify any portion of the screen by up to 5 times. Panning around, zooming in or out.
Default position of toolbars	This option returns the ARCHLine.XP user interface default position:.
User interface components on/off	You can switch on / off the user interface components:

	<input checked="" type="checkbox"/> Design center <input checked="" type="checkbox"/> Project navigator <input checked="" type="checkbox"/> Properties <input type="checkbox"/> Info <input type="checkbox"/> Reference <input type="checkbox"/> Move <input type="checkbox"/> Properties <input type="checkbox"/> View Control Bar <input checked="" type="checkbox"/> Help <input type="checkbox"/> 2D edit <input type="checkbox"/> Move <input checked="" type="checkbox"/> Drawing Pane visible <input checked="" type="checkbox"/> Information bar visible <input type="checkbox"/> Enter / Escape bar visible
Display persp. view with camera icon on floor plan	Camera icon allows to view what we would actually see if we were standing at the given location in the floorplan.
Navibar	You can switch on / off the navibar.
Activate again dialogs with 'Don't show this message again' checkbox	Some command displays a popup message with a check box for you to tick [Do not show this message again]. If you think you do not need it again tick the check box and the popup message will not display anymore. Here you change your preference and bring back all the popup messages again.
Profiles	Switch between user profiles to customize the tools on the ribbon, the application menu, user defined toolbars, keyboard shortcuts.
Check database	Tool to repair possible database corruption. The tool informs you if any error exists and if it can be resolved.

### Customize Mouse Behavior

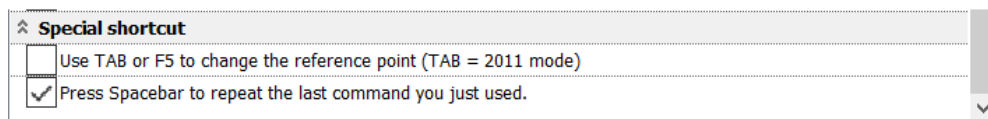
You can customize the behavior of the mouse:



Customizing Right-click Behaviour in selection	Choose to set whether a Right-click displays the Selection popmenu or is the same as pressing Enter.
Orbit on a three-button mouse	Click and hold the scroll wheel WITH or WITHOUT pressing the SHIFT button
Customizing Ctrl + Left Click	You can enable or disable the behaviour of the Ctrl + mouse Left Click shortcut to execute the specific immediate delete command of the selected element.

### Special shortcut

You can manage special keyboard shortcuts here:



TAB or F5	You can choose to press Tab or F5 to cycle through all the reference points available for the object in placement or editing commands.
Spacebar	Press Spacebar to repeat the last command you just used.

### 3.1.7. Item Settings Tab

You can configure ARCHLine.XP global settings for various object types.

Global Settings	Description
Select Raster images by their frames only. (Press Shift+Left Click to select with a click over the image)	For raster images you can choose between two selection modes. By default the raster image is selectable if you click over an image or on the frame either. You can configure the selection mode in the Option dialog > Item settings tab > Raster Image General Properties.

	<p>If you wish to switch off the selection by a left click over the image activate the Select Raster images by their frames only mode.</p> <p>Applying this mode you have to press Shift+Left Click to select with a click over the image.</p> <p>This mode is useful when you trace over an imported raster image and you do not want to click on the raster image.</p>
Automatic space recalculation	Data of room books that have been created by walls follow the modifications on the plan automatically.
Embedded wainscotings (ON: inside wall, OFF: inside the room)	<p>In different countries there are different requirements of modeling the wainscotings of rooms.</p> <p>In some countries the wainscotings are added to the walls. In other countries wainscotings are included in the definition of walls. In that case wainscotings start from the inner side of the wall and goes toward outside of the wall. As a consequence, the thickness of wainscotings do not increase the wall thickness in the 3D model. The same applies to other room border elements like slab, roof etc.</p>
Minimal height belonging to the net area (Norm I)	For Norm I net area calculations this height parameter is taken.
Minimal height belonging to the net area (DIN 277)	For DIN 277 net area calculations this height parameter is taken.
Use Superscript2	Use superscript characters for the representation of area and volume units: m <sup>2</sup> , m <sup>3</sup> .
Use Superscript3	
Side marker to display wall reference line on screen	Switch on/off the visible marker what identifies the wall reference line.
Door Lining and Mounting gap visibility	The dimension of wall openings is increased by lining, mounting gap, and shutter space and lintel dimensions.
Maximum number of tiles per area	Placing tiles on a surface is limited. The maximum number of tiles represents this limit.
Placement of slab tiling layout on the floor plan at any place	You can edit a slab tiling layout on floor plan in two ways. 1. Edit it its original position. 2. Place the layout for editing on an empty area on the drawing. It might be easier on a very dense drawing.
Representing the tiling layout with colors	Placing tiling layout with tile frames or coloured tiles.
Parapet title and value are placed equally on left and right side	Window dimensions style: title and parapet value are symmetrically placed left and right side of dimension axis line..
Parapet dimension line overlapping	Distance between dimension axis endpoint and Parapet title. 0 means text and line are on same coordinates.
Stair Standards	Building regulations are required for stairs used where the difference of level is greater than 600 mm. See <a href="#">more</a>
Plot layout - Place drawing names automatically on plot layout	Place the view name automatically on plot layout sheet below the view box at middle.
Room Maker - Minimum wall length	Walls of negligible length in calculation
Room Maker - Minimum wall height	Walls of negligible height in calculation
Objects - Enable 3D cache for generating KBB elements in 3D	The 3D data stored in cache means future requests for that data can be served significantly faster.
Clear 3D acceleration cache	Cache is a temporary storage to save on loading time. Clearing cache may resolve problems that may arise because of corrupted cache data.
Skp import (3D Warehouse) maximum texture count reached warning message	This is the limit of the number of textures that can be bound to one SKP object when imported. The number of textures over the limit will be ignored.
Warning message when number of mesh face exceeds the limit during object import	ARCHLine.XP displays a warning message when the imported SKP or other object is too complex and the number of mesh faces exceeds the specified limit. Then you can decide weather you can to continue the import process.
Use proxy setver for internet access	It allows your computer to make indirect network connections to other network services. If use proxy server, your computer

	will first connect to the proxy server, requesting some resources which are available from various servers over Internet.
Proxy server IP-address	By connecting to the internet through proxies, the home IP address of your computer will not be shown but rather the IP of the proxy server will be shown.
Proxy server port	A proxy's "port" is a number that refers to a specific virtual location on a computer. Computers have many ports that perform different tasks. When information arrives at a specific port, such as 80, the computer knows how to process that information. Network administrators who set up proxy servers define port numbers and make those numbers available to people who wish to use their servers.

### 3.1.7.1. 3D work plane

Use of 3D work plane is a great help in 3D design. It is easy to define points with it in 3D. After definition of the work plane the position of 3D and geometrical objects can be defined on it. Geometrical objects placed in this way in 3D keep their view when rotating the model; they rotate together with the work plane. A mesh marks Work plane; its properties can be set separately.

Opening a 3D view in the program the work plane by default appears. In the **3D work plane** dialog set the representation properties of work plane.

#### Delta X, Y:

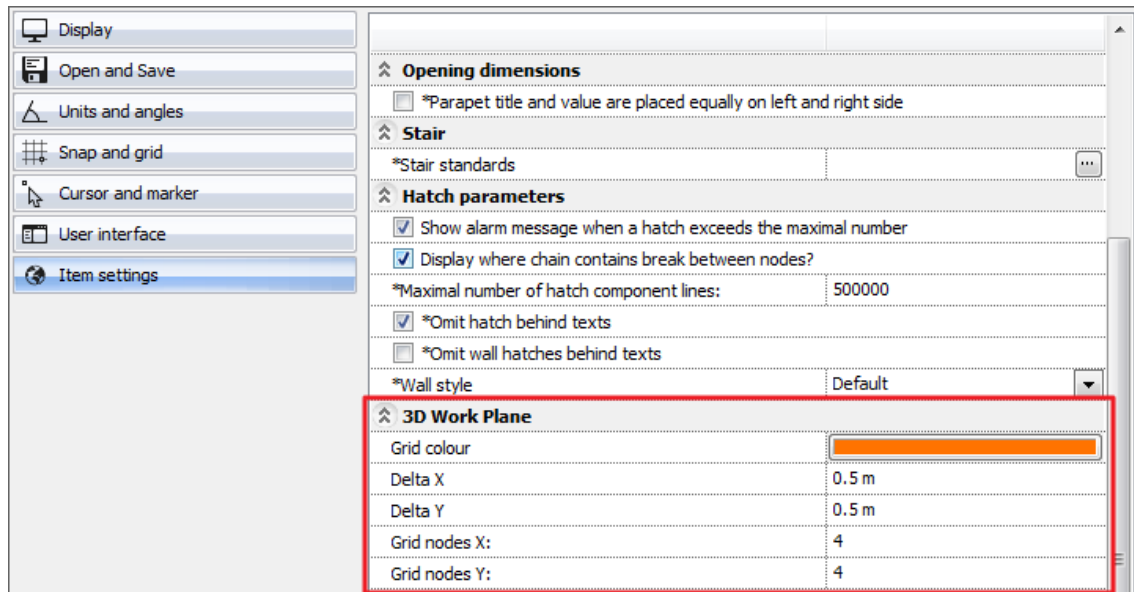
Set the work plane grid in X-Y distance.

#### Colour:

Colour of your work plane.

#### Grid nodes X, Y:

Define the number of rectangles of work plane in X-Y directions.



You can switch on and off work plane with the **3D menu - Activate global work plane** command.

### Work plane on surface

You can define the view with a plane surface of a selected object. It means that the view is the plane surface defined by the object's surface area.

The normal vector of the object surface aims at the viewer.

In this case the origin of the local 3D coordinate system is the perpendicular projection of the global origin on the work plane.

Location of the command: Ribbon > Drafting > 3D > Workplane

- Select the desired surface, or if it is not clear which surface to select, first click on the **Select Solid** and click a certain surface of the desired solid.

**ENTER** Accepts the selected surface, or  
**NO** Select another one.

### Work plane by 3 points

You can define a view by three points of a work plane.

The first point defines the origin of the local coordinate system. The second and the third points define a vector, which determines the direction of the local x axis (its projected image is horizontal). The normal vector of the view is a vector perpendicular to the coordinate system that was defined by the three points.

Location of the command: Ribbon > Drafting > 3D > Workplane

- Specify the origin of the view.
- Specify a point on the positive x axis of the local coordinate system.
- Specify another point of the view.



The work plane does not appear on the printing layout.

### 3.1.7.2. Stair standards

If you monitor continuously the ergonomic requirements defined by standards in case of stairs selected from the stair sets, it can help you in the drawing of stairs. You can find it in the *File menu - Options - Stair standard* dialog box.

During the planning the program monitors continuously that part of the values, which represented according to the standard, the other part you can select optional. The program signs the exceeded limits in red colour, but it doesn't forbid the creating of the stair, if it doesn't come up to ergonomics requirements.

You can pick your **Stair categories** and **Rise and going** from a pull-down menu. Their combination defines the limits that must be met according to the relevant standard.

The image shows three sequential screenshots of the 'Stair standard' dialog box. Each screenshot displays a 'Stair categories' dropdown menu and a 'Rise and going' dropdown menu. The first screenshot shows 'Private' selected for categories and 'Practical limits (rise: 155-220mm, going: 245-260mm)' selected for rise and going. The second screenshot shows 'Institutional or assembly' selected for categories and '(rise: 135-180mm, going: 280-340mm)' selected for rise and going. The third screenshot shows 'Other' selected for categories and '(rise: 150-190mm, going: 250-320mm)' selected for rise and going.

These are the following: **2R +G** (two times riser plus going), **stair width**, **Rise** and **Going**. When drawing the stairs from the stair library, the program monitors the compliance with these limits; if you exceed them, it is indicated by red colour.



Stair standards

Stair categories  
Private

Rise and going  
Practical limits (rise: 155-220mm, going: 245-260mm)

	min	max
2(Rise) + Tread	550 mm	700 mm
Stair width	1000 mm	
Rise	155 mm	220 mm
Tread	245 mm	260 mm

Headroom 2100 mm

Set walking line between 1/2 and 2/3 of the width

The stair dialog uses the unit of measurement

OK Cancel

You can enable the monitoring of the following parameters:

- ❖ Headroom height above stair: it is relevant when allowing stairs through the ceiling slab.
- ❖ set the walking line between 1/2 and 2/3 of the width of the stairs
- ❖ Use the measurement set in the dialog window. If you switch off the option, the values of stair parameters will appear in **cm** in the proper dialog windows.

### 3.1.7.3. Text

#### Text displayed with boundary rectangle

This command replaces text by its text box. (Redraw is quicker in this mode.)

Text

Text displayed with boundary rectangle

Texts are delineated in contours without shading

Keep readability when rotated in:

120° 300°

ArchLINE.XP



#### Texts are delineated in contours without shading

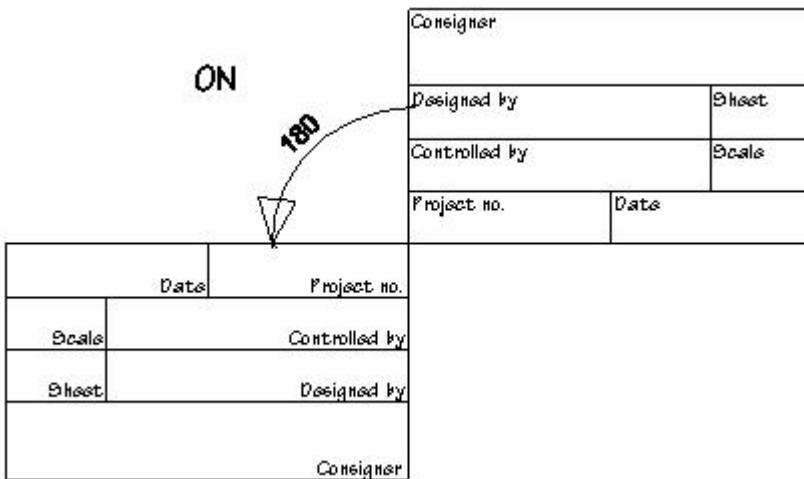
If this option is checked in only the outlines of characters appear.

ArchLINE.XP

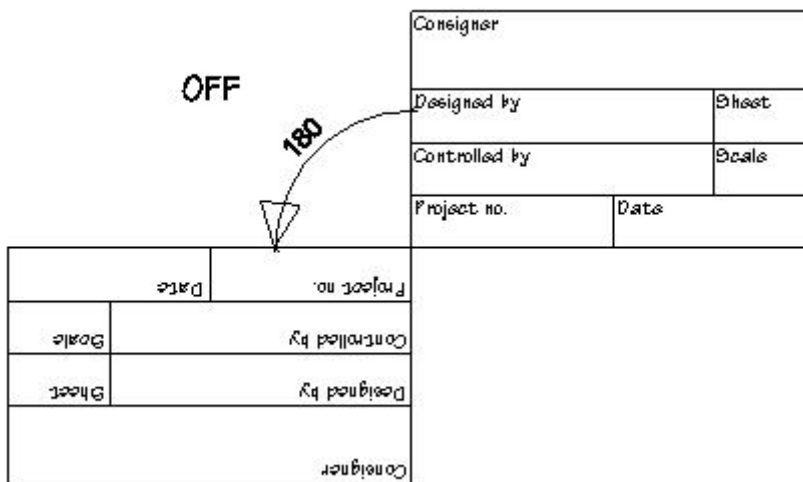
#### Keep readability when rotated in:

You can direct the readability of rotated text with this option.

If the *option is in switch on* status, the readability rule is valid for the text in the defined angle area after the rotation too.



If the *option is in switch out* status, then the program ignore the readability rule, so it applies the rotation transformation to the text too.



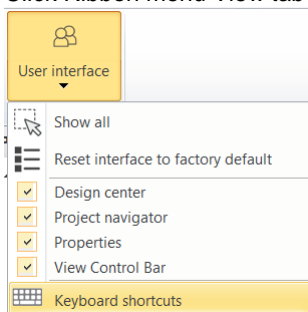
## 3.2. Keyboard shortcuts

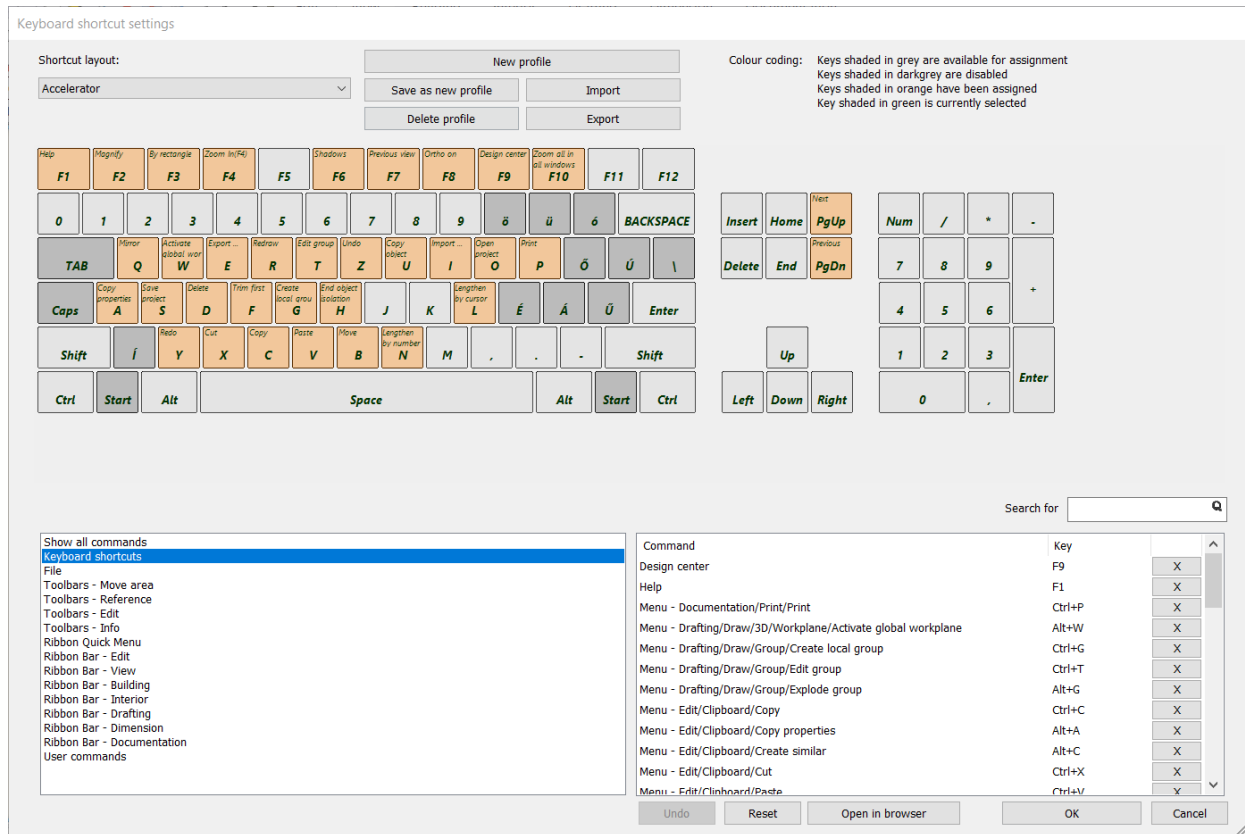
Keyboard shortcuts provide an alternative way to execute commands. Using keyboard shortcuts you can boost your productivity.

ARCHLine.XP provides a set of predefined keyboard shortcuts. You add your own key shortcuts or change most of the predefined keyboard shortcuts. Some shortcuts are reserved and cannot be modified.

### To edit shortcuts

- ❖ Click Ribbon menu View tab > User Interface > Keyboard shortcuts,





Each of the keyboard shortcuts assigned to that key is displayed by the visual keyboard when holding the mouse over a button for a short time.

Pressing the Ctrl, Shift, Alt buttons rearranges the visual keyboard and displays the keyboard shortcuts available with the key pressed.

### Search for

In the search field, start to type the name of the command. As you type, the Assignments list displays the commands that match any part of a word.

### Adding Keyboard Shortcuts

You can specify a keyboard shortcut that uses Ctrl, Ctrl + Shift, Ctrl + Alt + Shift, Shift and Alt with a single alphanumeric key.

You can specify a keyboard shortcut that consist of up to 2 alphanumeric keys as F A.

The new sequence displays in the Key field.

For example, if you press Control and Shift and F, it displays as Ctrl+Shift+F.

You cannot assign reserved keys.

Steps to add a keyboard shortcut to a command:

- Select the desired command from the Assignments list. The cursor moves to the Press new keys field
- Press the new key sequence. As you press keys, the sequence displays in the field

Command	Key	
Ribbon Bar - Edit - Edit		X
Ribbon Bar - Edit - Edit/Modify	Ctrl	X
Ribbon Bar - Edit - Edit/Modify/Modify	Ctrl+Alt	X
Ribbon Bar - Edit - Edit/Modify/Select all	Shift+	X
Ribbon Bar - Edit - Edit/Modify/Attach photo	Ctrl+Shift+A	X

### Open in Browser

You can export keyboard shortcuts into HTML document and display it in any browser. Then you can print it out and use it as an aid to your work.

### Export/import

You can export the current keyboard shortcuts into an ARCHLine.XP Accelerator.acprofile file.

### **Resetting Keyboard Shortcuts**

If you want to restore the factory default keyboard shortcuts, click on Reset button. It discards any changes you have made to keyboard shortcuts.

### **Reserved Keys**

The following table lists factory default keyboard shortcuts that cannot be modified. The reserved keyboard shortcuts display in gray and in angle brackets.

<b>Shortcut key</b>	<b>Command</b>
Alt+A	Menu - Modify/Copy properties
PAGE UP	Menu - View/Floors and building/Floor up
PAGE DOWN	Menu - View/Floors and building/Floor down
F1	Online Help
F2	View/Magnify
F3	View/2D -> 3D/By selection
F4	View/Zoom In
F7	View/Zoom/Previous
F8	Menu - Tools/Ortho on
F9	Design center On
F10	Menu - View/Zoom all in all views
Alt+T	Menu - View/2D -> 3D/By rectangle on all floors

### **Map of default shortcuts**

The following lists default keyboard shortcuts available in ARCHLine.XP.

Design center	F9
Help	F1
Menu - Documentation/Print/Print	Ctrl+P
Menu - Drafting/Draw/3D/Workplane/Activate global workplane	Alt+W
Menu - Drafting/Draw/Group/Create local group	Ctrl+G
Menu - Drafting/Draw/Group/Edit group	Ctrl+T
Menu - Drafting/Draw/Group/Explode group	Alt+G
Menu - Edit/Clipboard/Copy	Ctrl+C
Menu - Edit/Clipboard/Copy properties	Alt+A
Menu - Edit/Clipboard/Create similar	Alt+C
Menu - Edit/Clipboard/Cut	Ctrl+X
Menu - Edit/Clipboard/Paste	Ctrl+V
Menu - Edit/Edit/Lengthen/Lengthen by cursor	Ctrl+L
Menu - Edit/Edit/Lengthen/Lengthen by number	Ctrl+N
Menu - Edit/Edit/Trim/First object	Ctrl+F
Menu - Edit/Geometry/Delete	Ctrl+D
Menu - Edit/Geometry/Duplicate	Ctrl+U
Menu - Edit/Geometry/Duplicate/Mirror	Ctrl+W
Menu - Edit/Geometry/Move	Ctrl+B
Menu - Edit/Geometry/Move/Mirror	Ctrl+Q
Menu - Edit/Snap/Tools/Ortho	F8
Menu - Export .../Export ...	Ctrl+E
Menu - Import .../Import ...	Ctrl+I
Menu - Open project	Ctrl+O
Menu - Redo	Ctrl+Y
Menu - Save project	Ctrl+S
Menu - Save project as	Ctrl+Shift+S
Menu - Undo	Ctrl+Z
Menu - View/Navigate/Isolate/End object isolation	Alt+H
Menu - View/Navigate/Isolate/Isolate object	Ctrl+H
Menu - View/Navigate/Zoom Window/Magnify	F2
Menu - View/Navigate/Zoom Window/Previous view	F7
Menu - View/Navigate/Zoom Window/Redraw	Ctrl+R
Menu - View/Navigate/Zoom Window/Zoom all	Ctrl+A
Menu - View/Rebuild 3D/Quick 3D model/Create cut-away 3D view/By rectangle	Alt+F3
Menu - View/Rebuild 3D/Quick 3D model/Create cut-away 3D view/By rectangle on all floors	Alt+T
Menu - View/Storeys/Perspective views/Navigate/Next	PAGE UP
Menu - View/Storeys/Perspective views/Navigate/Previous	PAGE DOWN
New reference point	Alt+R
Reference direction horizontal	Alt+X
Reference direction perpendicular	Alt+P
Reference direction vertical	Alt+Y
Shadows	F6
Zoom In(F4)	F4
Zoom all in all windows	F10
Menu - Edit/Properties/Modify	Alt+Shift+
Menu - Edit/Properties/Modify/Select all	Shift+
Menu - Edit/Properties/Modify/Attach photo	Ctrl+Shift+A

### Page up - Page Down keys

On the floor plan the *Page up - Page Down* keys are used to move between floors of the building. In the 3D view they are used to change between the perspective views.

### Resave profile

When you change a shortcut, you can choose Resave profile to save the customized shortcut set again.

### New profile

When you need an Alternate keyboard shortcut, choose New profile to create a new alternate keyboard shortcut table.

## 3.2.1. Alternate keyboard shortcuts

You can use different keyboard shortcuts table to navigate through ARCHLine.XP. The program displays the list of other available shortcut tables here: Options > User Interface > Alternate keyboard shortcuts

## 3.3. Customize Toolbars, Toolbox and Design Center

The ARCHLine.XP interface is highly configurable, enabling you to adjust and arrange Toolbars, Toolbox, Design Center and keyboard shortcuts elements to meet your working preferences. All layout changes are saved as a Profile and you can switch among profiles.

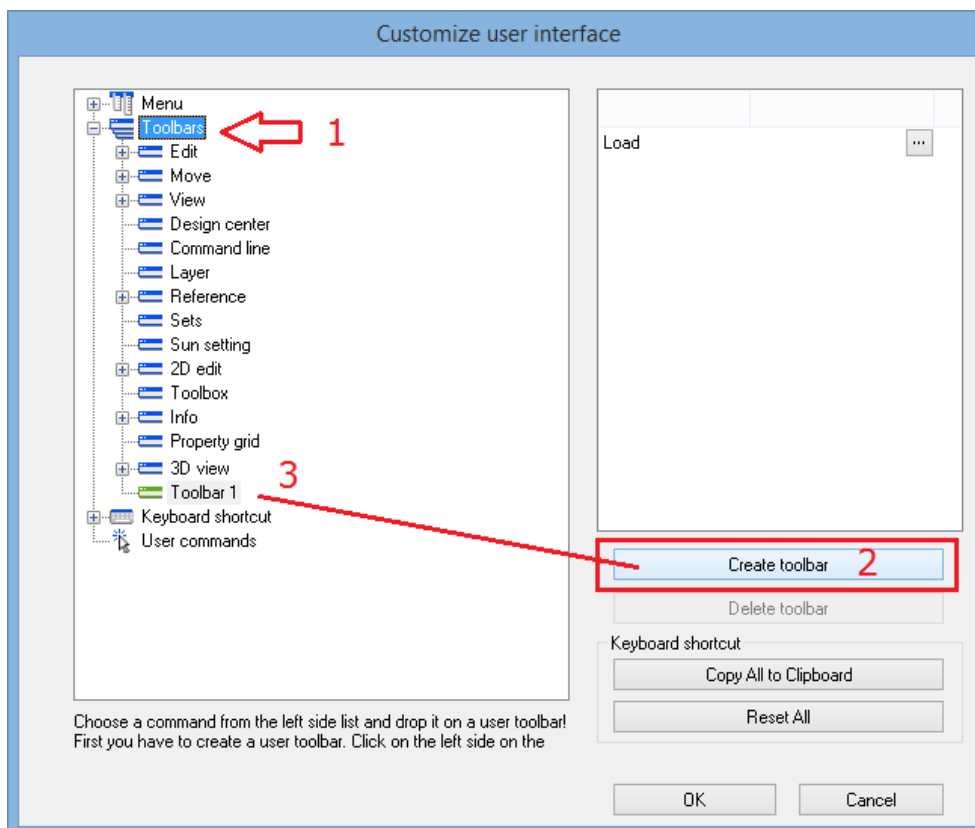
### 3.3.1. Handling Interface Elements

You can add, hide or show various interface elements with toolbar buttons, menu items, or keyboard shortcuts. All layout changes are saved automatically.

### 3.3.2. Creating a new Toolbar

To create a new toolbar do the following:

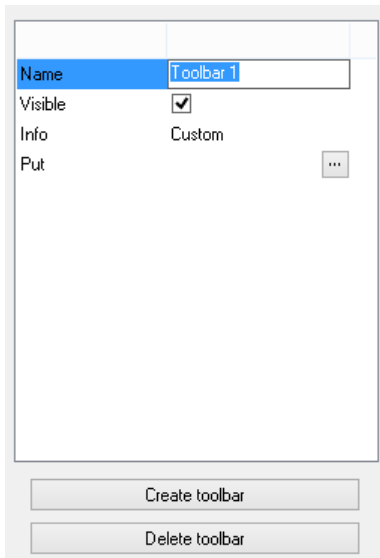
1. Choose Options > User Interface > Customize user interface. The Customize user interface dialog box appears.



The Menu and Toolbars panel contains a list of toolbar and Menu command categories as well as all commands in each category.

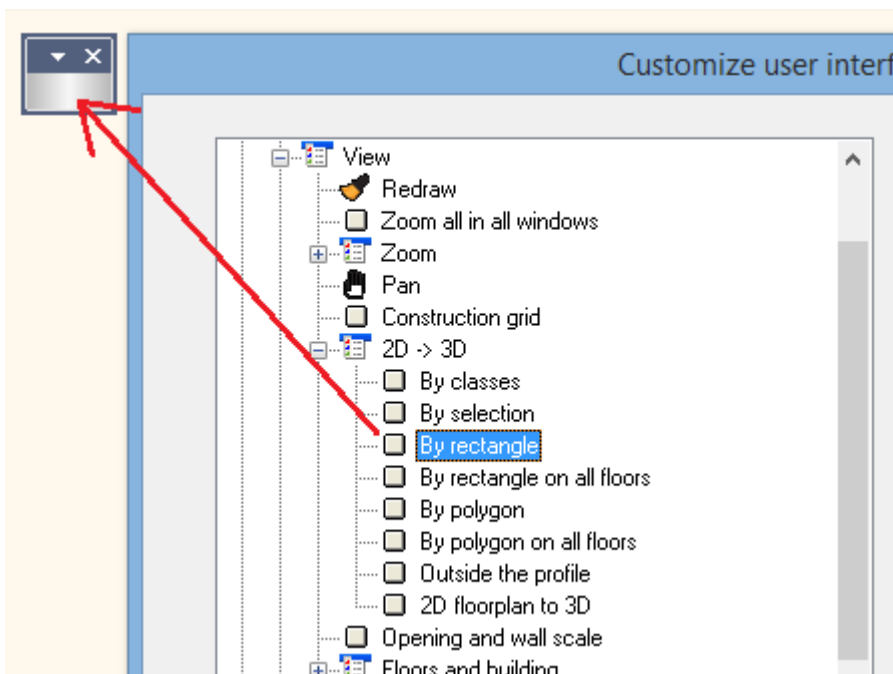
2. Click on the **Create Toolbar** button. An empty toolbar will appear at the top-left corner of the application with a name 'Toolbar 1' or 2, 3, 4, etc.

Click on the Toolbar 1 on the list. You can rename the toolbar with a click in the 'Toolbar 1' field on the right side editable field.



3. Click and hold on a Toolbar or Menu command name in the list of toolbars and Menu commands.

4. Drag the toolbar or Menu command name to the desired position on the new toolbar. An insertion cursor should appear.



5. Release the mouse button to place the toolbar or Menu command on the toolbar.

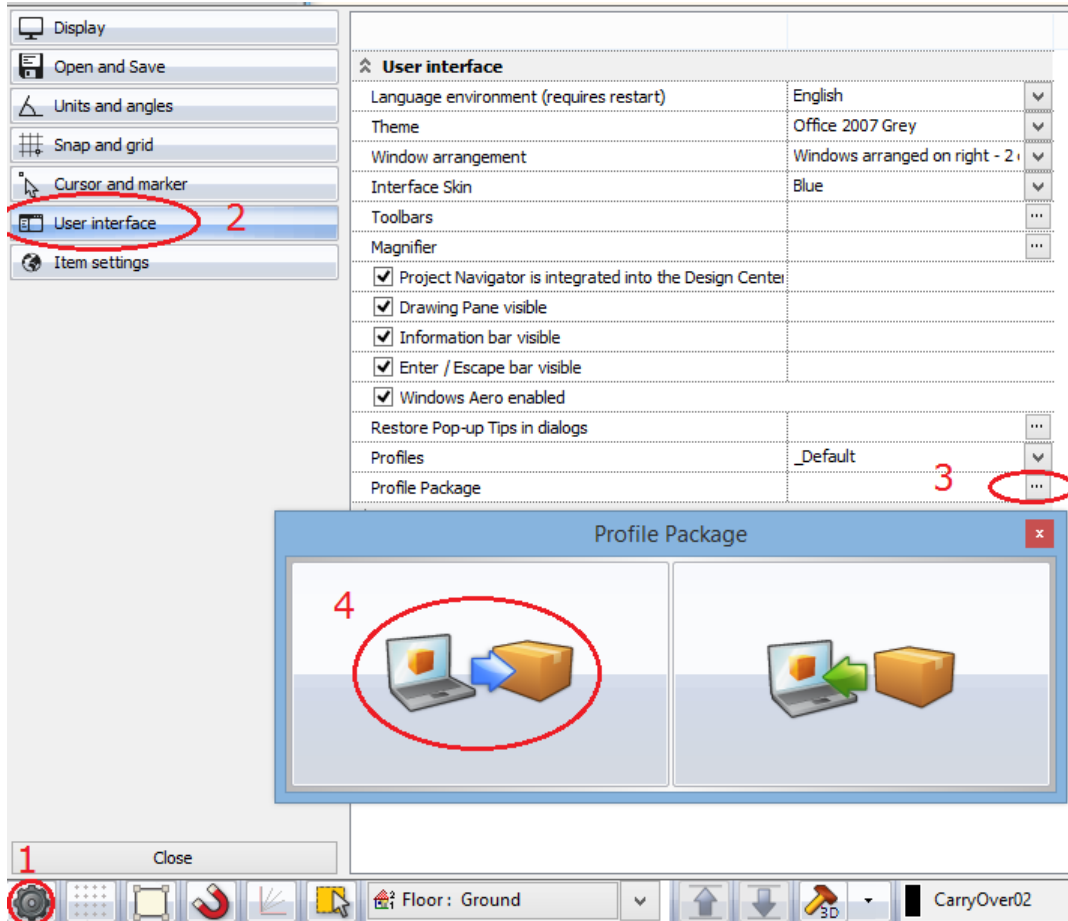
*Note:* You can remove a button from the user toolbar in a similar way. Click on a button then hold on and drag out from the toolbar. Release the mouse button outside of the toolbar.

### 3.3.3. How to create a new Profile

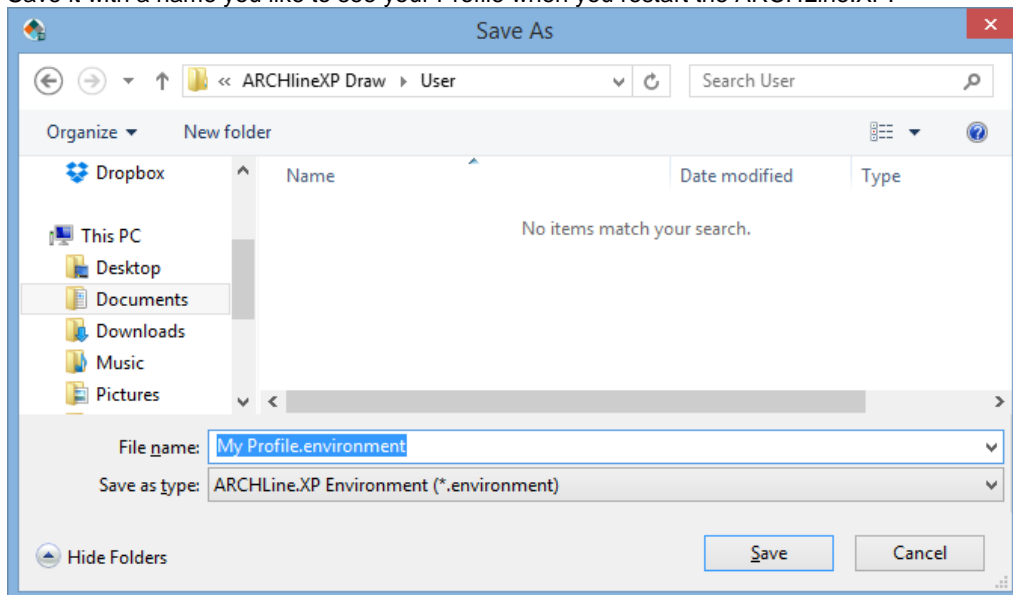
You can customize the program settings and appearance in the Options dialog.

The Options dialog is located in the bottom left-hand corner of the ARCHLine.XP Status bar.

1. Click on the first icon (gear like) to display the Options dialog.
2. Choose the User Interface button
3. Click on the Profile Package button. The Profile Package dialog box appears.
4. Choose the left side button to save the current profile.



Save it with a name you like to see your Profile when you restart the ARCHLine.XP.



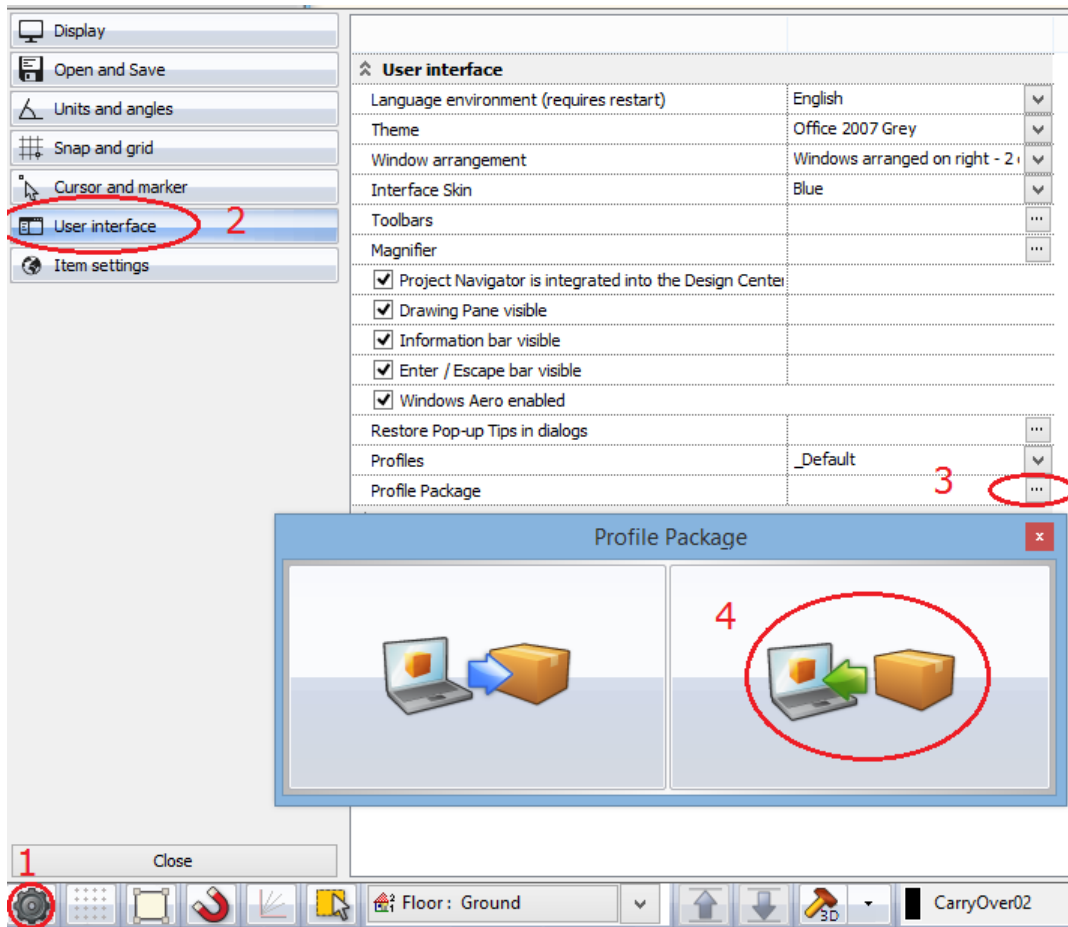
### 3.3.4. How to activate a new Profile

You can customize the program settings and appearance in the Options dialog.

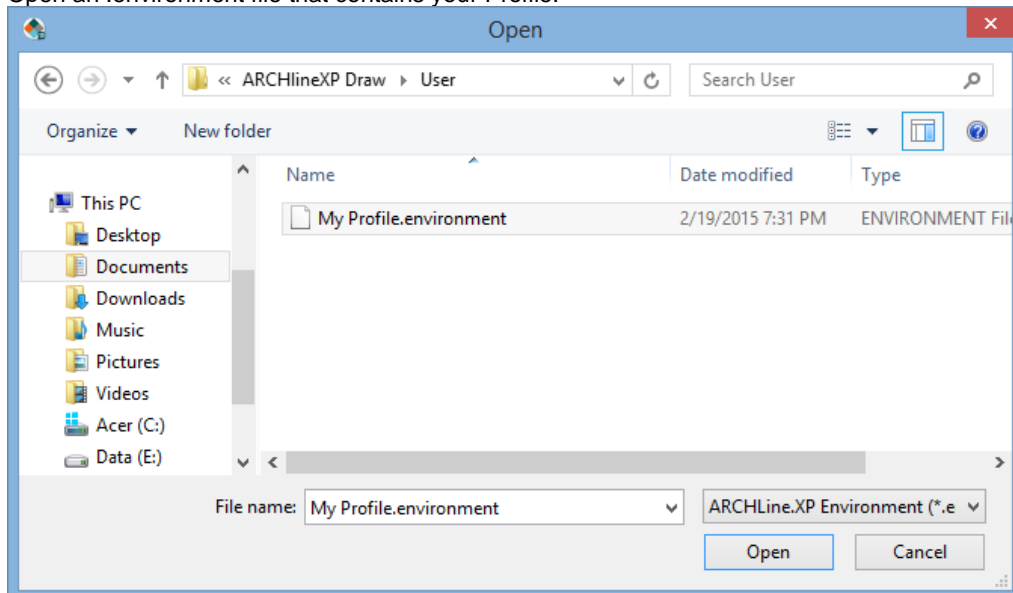
The Options dialog is located in the bottom left-hand corner of the ARCHLine.XP Status bar.



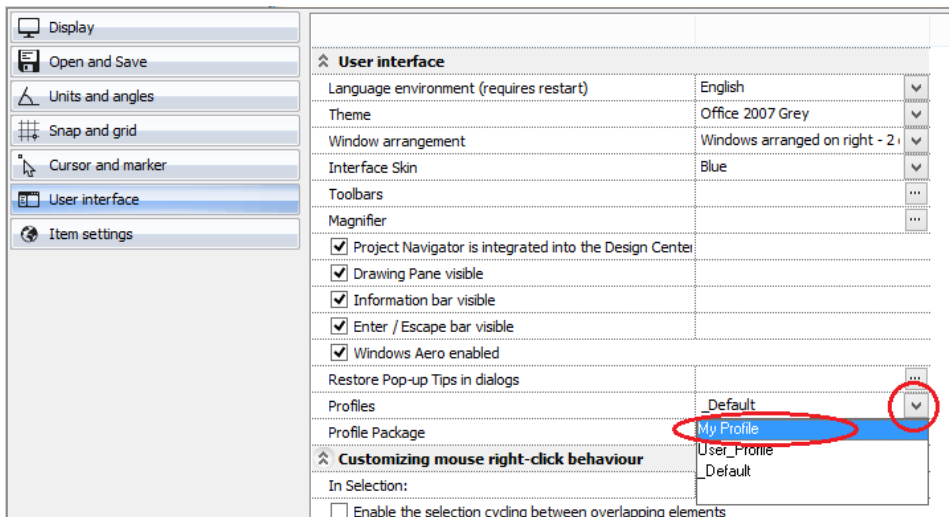
1. Click on the first icon (gear like) to display the Options dialog.
2. Choose the User Interface button
3. Click on the Profile Package button. The Profile Package dialog box appears.
4. Choose the right side button to import a new profile.



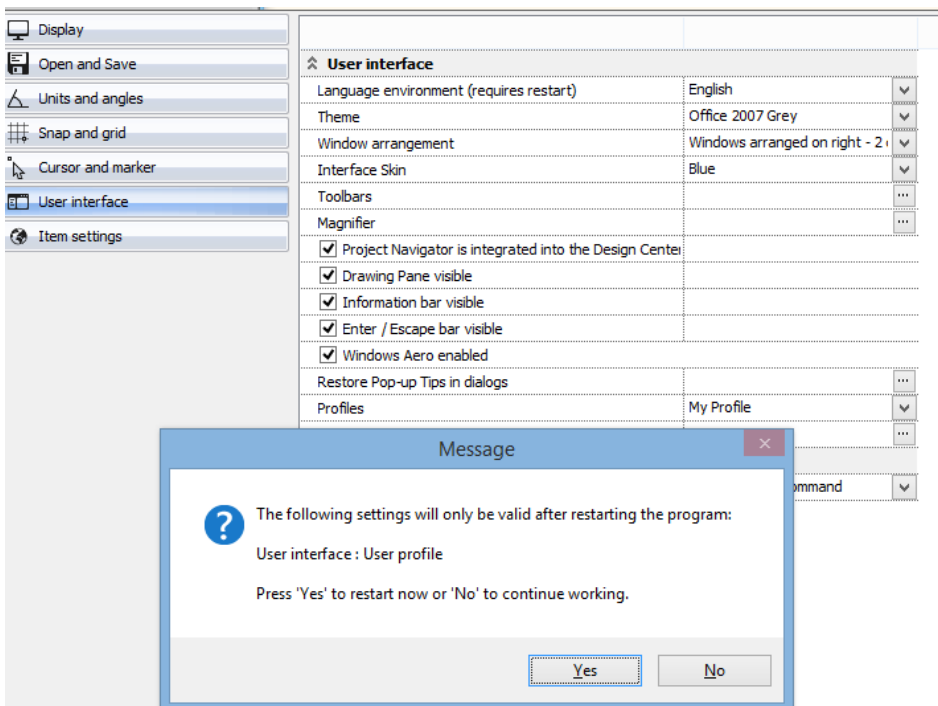
Open an .environment file that contains your Profile.



When the import is ready, select the new Profile from the Profiles List.



The new Profile will be active when you restart the ARCHLine.XP.



### 3.4. Parameters

Before you use any architectural object or the geometric drawing tool of the program, specify the properties of objects first. Use the commands in the Building menu, Drafting menu and Dimension menu - **Properties** command to set the properties. You can also access these properties by right-clicking the icons in the **Toolbox**.

#### Introduction

Properties are the graphical and structural features of objects and objects.

All object types have:

- ❖ *general properties*, such as colour, line width, line type, layer; and
- ❖ *special properties* (e.g. in the case of walls height, thickness, hatching, layer properties, etc.).



For a detailed description of the special properties of object types see the Chapter on the Detailed description of the special properties of object types.

You can save the edited set of properties of each object type in **Sets** and store the sets in the template assigned to the project.



For detailed information on the use of the template see Chapter 4.6 on *Managing templates*.

### 3.4.1. General properties

In the **Properties** dialog box you can first set the general properties of each object, such as colour, line width, layer, line type, and priority.

You can set the colour, line type, and line width:

- ❖ **Directly**, by specifying the property explicitly (e.g. the colour is red).
- ❖ **Indirectly**, so that the object acquires its general properties from the layer assigned to the object.
- ❖ 1. If the *Layer control mode* in the *Modify menu* is **turned off**, to specify the colour, line type, and line width you must turn on each *Layer* property separately. E.g. for colour activate the Layer option.
- 2. If the *Layer control mode* in the *Modify menu* is **turned on**, among the fields of general properties colour, line type, and line width are greyed out and are non-editable. In this case the program acquires these properties from the layer assigned to the object.



See Chapters 3.4. on *Managing layers and using properties*

#### Colour

- Choose a colour from the colour palette by clicking the box of the desired colour. You can choose from the 256 colours of the colour palette, or any other colour from additional colour palettes.
- If you do not want to change the colour, click *Cancel*.
- If you want to use the colour of the layer assigned to the object, activate the Layer option.



This specifies the current layer. By using this mode, you can assign different layers to each object type. You can turn layers of a drawing on and off when drawing. (For the sake of an unobstructed view, it is recommended that you store dimensions on a separate layer as it is not necessary to display it as you work.)

- Choose the layer to be assigned to the object from the pull-down menu. You can select the layers in the *Properties* dialog box only if you have already created them in the **Layer** dialog box.

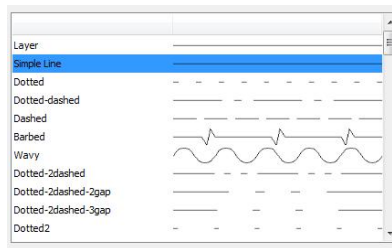


See Chapter 3.4. *Managing layers* for a detailed description on layer handling.

#### Line type

ARCHLine.XP allows you to choose from predefined line types, or you can create your own custom line type.

- Choose a line type from the list.



- If you want to use the line type of the layer assigned to the object, select 'Layer' in the pull-down menu.



It is not possible to set the line type in the *Text general properties* dialog box. To set a custom line type, use the **Tools menu - 2D group - Create new line type** command.

#### Line width

This specifies the current line width.

The line width can be set even at a minimum of **0.01 mm**, there is no upper limit.

A line width of 0 defines the thinnest line of the output device (plotter, printer, monitor, etc.).

- Enter the line width or select one of the predefined values.
- If you want to use the line width of the layer assigned to the object, choose 'Layer' in the pull-down menu.

#### Priority / Draw order

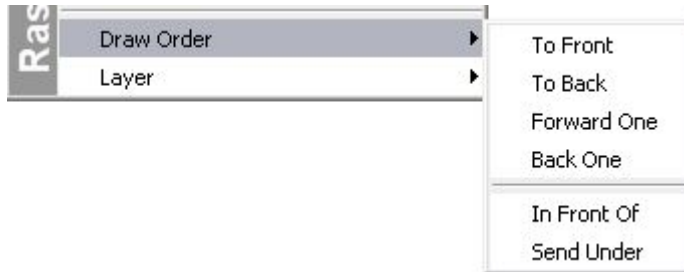
You can set numerically the priority of elements: 1 – top-most, 8 – bottom-most.

Element with a low priority number will be placed over elements with high priority number.

This way you can define which element should cover other elements in case of overlaying elements. This is very important when printing.

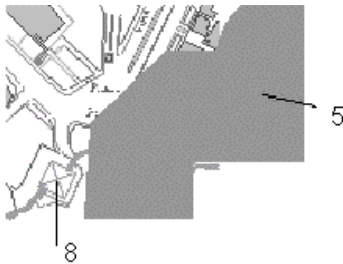
Using the **Draw Order** commands in the shortcut menu of an element you can set graphically the priority numbers. You have the possibility to put to front or back, to forward one or back one. You have also possibility set the priority relative to other one.

The graphically set priority value will appear in the Properties dialog – Priority field.

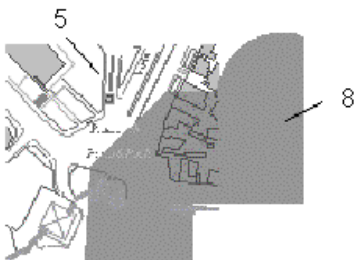


<b>To Front</b>	The priority number of the element will be 1 – top most.
<b>To back</b>	The priority number of the element will be 8 – bottom most.
<b>Forward one</b>	The priority number of the element will be decreased.
<b>Back one</b>	The priority number of the element will be increased.
<b>In front of</b>	The priority number of the element will be decreased relative to the priority number of the selected element.
<b>Send Under</b>	The priority number of the element will be increased relative to the priority number of the selected element.

- Select a priority number (1-8) from the list.



The hatched area has a level 5 priority, while the polygons representing houses have a level 8 priority, so the hatched area overlays the polygons.



The hatched area has a level 8 priority; the polygons' priority is higher (5), so the polygons are visible in the hatched area.

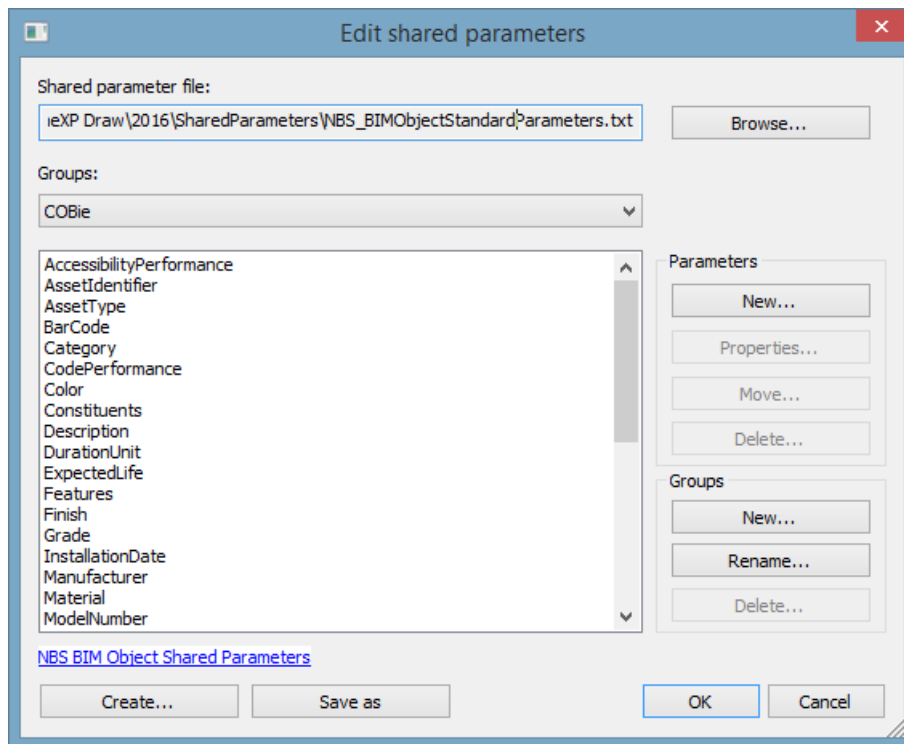
### 3.5. Shared Parameters

Shared Parameters have been developed in line with the BIM Object Standard. Shared Parameters allow the designer to create BIM objects. By using the BIM Object Shared Parameters the designer will gain consistency when scheduling and co-ordinating information.

Shared parameters are definitions of parameters that you can assign to styles or the project itself. Shared parameter definitions are stored in a common text file, allowing to access this file from different projects equally.

Note:

You can download a widely used standard NBS BIM Object Shared Parameters file from <http://www.nationalbimlibrary.com/nbs-shared-parameters>.

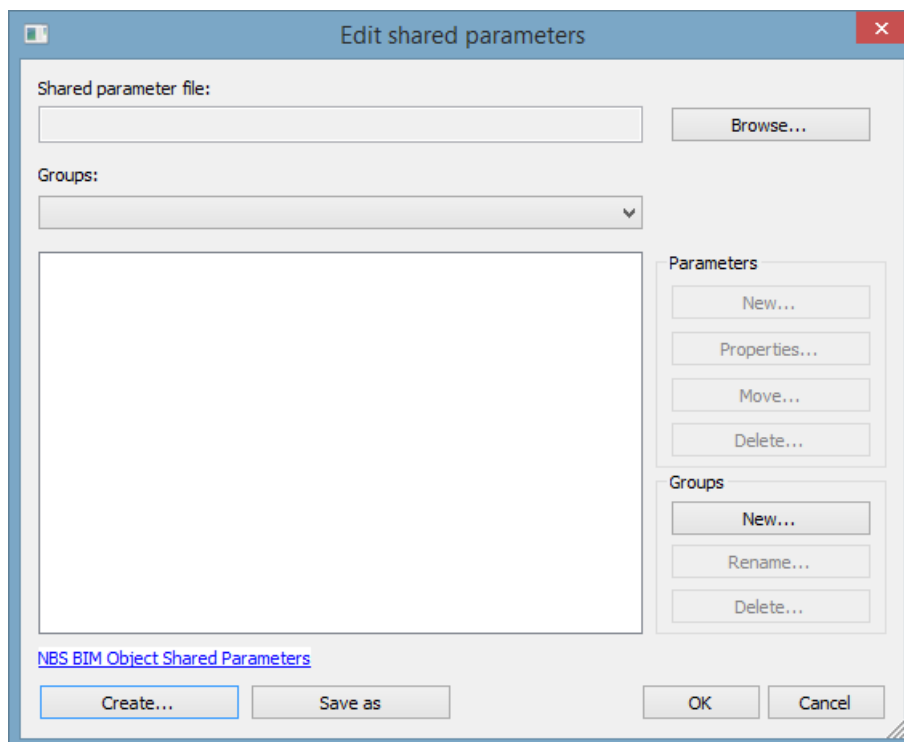


### 3.5.1. Create Shared Parameter Files, Groups, Parameters

The shared parameter file contains the shared parameters definition.

The Shared Parameter dialog is available from: File > BIM > Shared Parameters

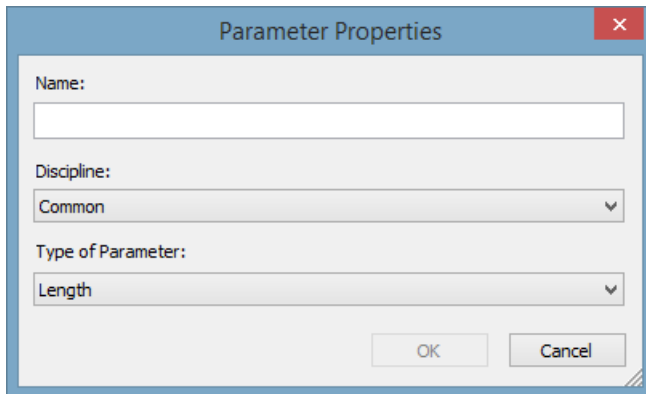
The Shared Parameters dialog opens. You can import an existing shared parameters file or you can create a new one where you can add groups, and parameters within the groups.



Adding a new group:

- ❖ In the Groups box, click on New.
  - ❖ Enter a name for the parameter group, and click OK.
- Adding parameters:
- ❖ From the Groups drop-down menu, select a group.

- ❖ In the Parameters group box, click on New.
- ❖ In the Parameter Properties dialog, enter the parameter name, discipline, and type of parameter. Type specifies the format of the information you can enter for the parameter value.



You can save the shared parameters in a file with a click on the Save as button. Enter the file name, and navigate to the desired location.

### **Rename Parameter Groups**

- ❖ Select the group from the Groups menu.
- ❖ Click Rename.
- ❖ Enter the new name, and click OK

### **Delete Parameter Groups**

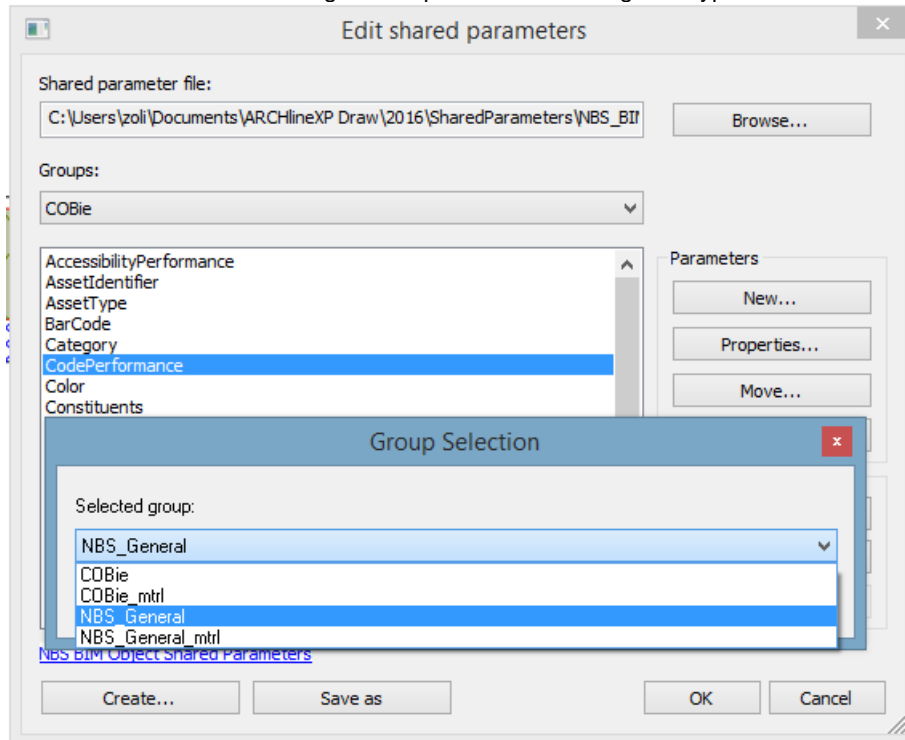
- ❖ Select the group from the Groups menu.
- ❖ Click Delete.

### **Move Shared Parameter**

You can move an existing shared parameter to a different group.

- ❖ Select the parameter from the Groups menu.
- ❖ Click Move.
- ❖ Select the new group from the Selected Group list, and click OK

You cannot rename an existing shared parameter or change the type.



### **Delete a parameter**

- ❖ Select the parameter from the Groups menu.
- ❖ Click Delete.

### 3.6. ARCHLine.XP Common Parameters

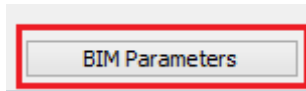
In ARCHLine.XP you can manage custom parameters. You can assign your individual custom parameters to any styles and any instances. The parameters assigned to styles are copied to the created objects. Using this method you can create your own 'database':

You have two options to start assigning custom parameters:

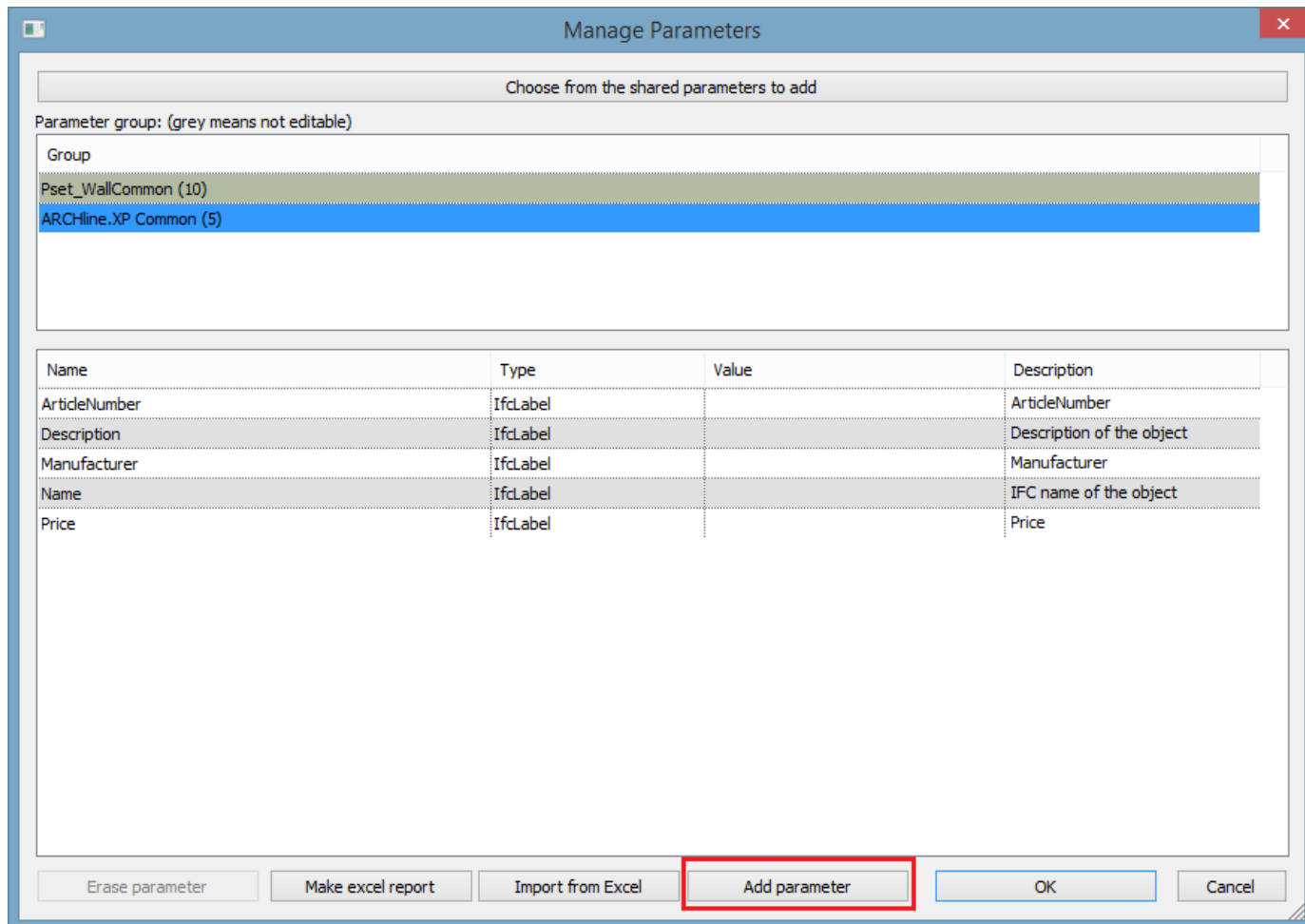
- ❖ You can add new parameters in the **Properties dialog**, or
- ❖ You can import parameters from **Excel spread sheet by dragging**

#### I. Add new parameters in Properties dialog

Double click the selected object (e.g. wall) on the floor plan. The **Properties** dialog box then appears.



- Click on the **BIM Parameters** button. The Manage Parameters dialog pops up.
- Click on the Add parameter button
- Define the parameter name and type of parameter. The available type of parameter depends on the object type. (It means the wall has different type of parameters like wall length, surface in, out, etc., and e.g. the roof comes with roof specific parameters as edge length, etc.)
- Close the dialog with ENTER.
- You will see the new parameter in the Manage Parameters dialog where you can complete the definition adding Value and Description. See the figures below.



**Add parameter** [X]

Name:

Discipline:

Type of Parameter:

- ecoline
- gear
- ww
- Note
- Thickness
- Layers
- Original height
- Average height
- Volume
- Length 1
- Length 2
- NetSideArea 1
- NetSideArea 2
- Average laminate width
- Average length
- Average area
- GrossFootprintArea
- GrossSideArea 1
- GrossSideArea 2
- Date

**Manage Parameters** [X]

Choose from the shared parameters to add

Parameter group: (grey means not editable)

Group

Pset\_WallCommon (10)

ARCHline.XP Common (5)

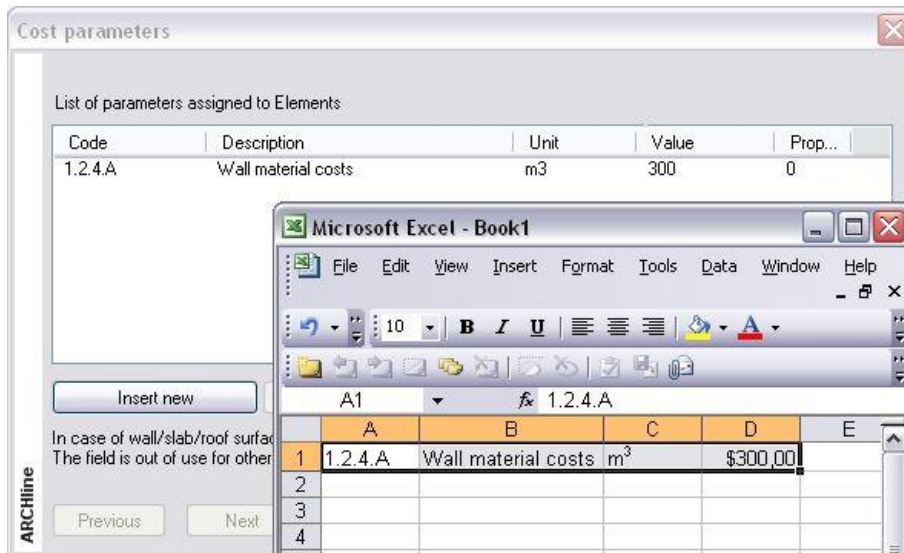
Name	Type	Value	Description
ArticleNumber	IfcLabel		ArticleNumber
Description	IfcLabel		Description of the object
Ext surface	GrossSideArea 2	12.50	Cost of painting
Manufacturer	IfcLabel		Manufacturer
Name	IfcLabel		IFC name of the object
Price	IfcLabel		Price

Erase parameter    Make excel report    Import from Excel    Add parameter    OK    Cancel

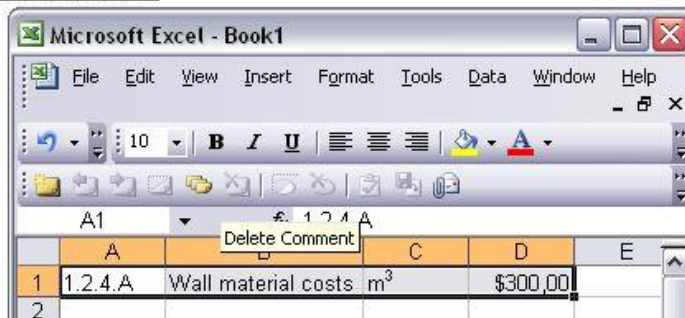
### I. Import parameters from Excel

- Open the Excel spread sheet.
- Select the desired line.
- By clicking the lower edge of the line, move the cells to the dialog box with the drag and drop method. Now the values are entered in the cells.

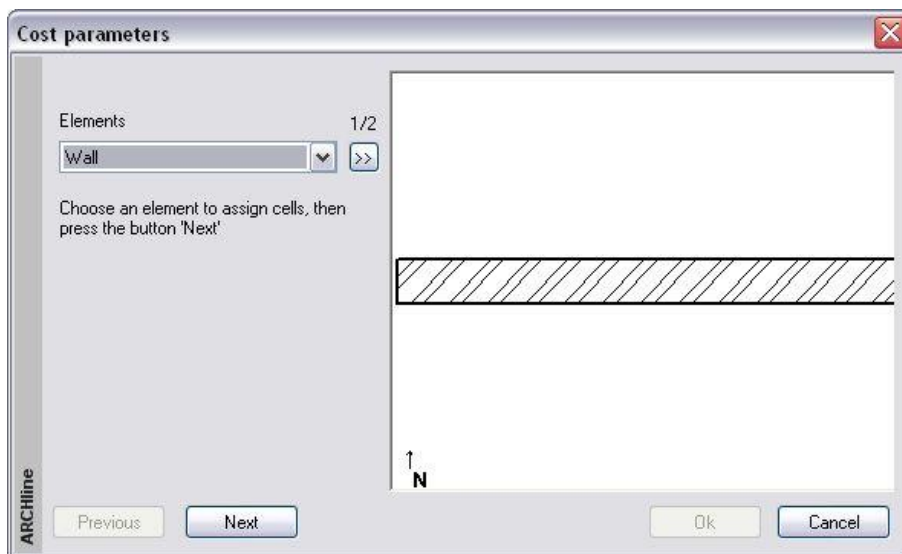




## II. From the Excel spread sheet by dragging



- Select the desired line in the Excel spreadsheet.
- Having selected the line click the lower edge of the line and move it to the wall in the drawing with the drag and drop method. Now the *Import cell* dialog box appears and the values are entered in the cells.
- When two or more objects overlap and therefore selection by dragging is ambiguous, select the object to which you actually wish to assign the imported data in the dialog box displayed. Click *Next*.



From this point on the two methods are similar:

Here you have to assign the cell values to the variables. At first variables might not be assigned to the cells you want them to be associated with, as in the line of the Excel spread sheet the order of variables may be different.

In this case, with the **Field associations** button you can specify for each variable from which cell the program should load its value. In our example the program obtained the code from the first cell, description from the second cell, and value from the fourth cell.

The fields are editable after loading, so for example for unit you can specify the *volume*:

#### Unit

You can specify any text for the unit, e.g. m3, or you can choose a code from the list. The Excel list will use this code for calculating the budget.

Note
Width
Laminates
Original height
Average height
Volume
Side length 1
Side length 2
Net side area 1
Net side area 2
Average laminate width
Average side length
Average side area
Area of 2D contour
Gross side area 1
Gross side area 2
Date


#### Factor

It only makes sense to set factors in the case of walls, slabs, roof surfaces and roof edge where the factor specifies the layer. Factors should be round numbers.

If you do not wish to assign the value of variables from the Excel spread sheet, you can enter them by inserting a new line



You can also indicate several variables (line) to an object.

You can delete unnecessary lines with the  button.

As from now on the wall has these attributes:



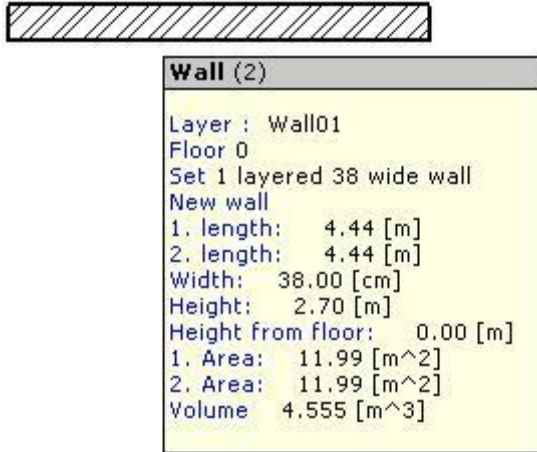
Wall (2)			
Layer :	Wall01		
Floor :	0		
Set :	1 layered 38 wide wall		
New wall			
1. length:	4.44 [m]		
2. length:	4.44 [m]		
Width:	38.00 [cm]		
Height:	2.70 [m]		
Height from floor:	0.00 [m]		
1. Area:	11.99 [m^2]		
2. Area:	11.99 [m^2]		
Volume	4.555 [m^3]		
<b>Assigned parameters (1):</b>			
<i>Code</i>	<i>Description</i>	<i>Unit</i>	<i>Value Property</i>
1.2.4.A	Wall material costs	Volume	300

Similarly to the above, you can assign variables to other floor plan objects. By copying properties you also have the option to transfer only those variables of an object to another that have been assigned.

### Budget calculation using the Excel spread sheet

This function provides support for the calculation of the budget of certain building projects or other calculations. Essentially, in the case of floor plan objects you can assign the cost, unit, and factor to parameters such as area or volume, whereby you can obtain a combined costing spread sheet in Excel format.

Suppose you want to calculate the material cost of wall building and you know the volume. In this simplified example a wall section has the following parameters:



In an Excel spread sheet where you have an objectized list of all costs, it is easy to assign these data to ARCHLine.XP objects. In the present example one line of the spread sheet indicates the material cost of the wall:

	A	B	C	D	E
1	1.2.4.A	Wall material costs	m <sup>3</sup>	\$300,00	
2					

#### Listing

When you finish a plan, you can export the consignment in an Excel spread sheet. You can access this list with the **Documentation > Quantity Take-Off > Excel list** command.

## 3.7. Create Annotation Labels

Annotation is a powerful option for storing text (labels) to place on your drawing. An annotation label is a text table placeholder where you place substitution text for the labels.

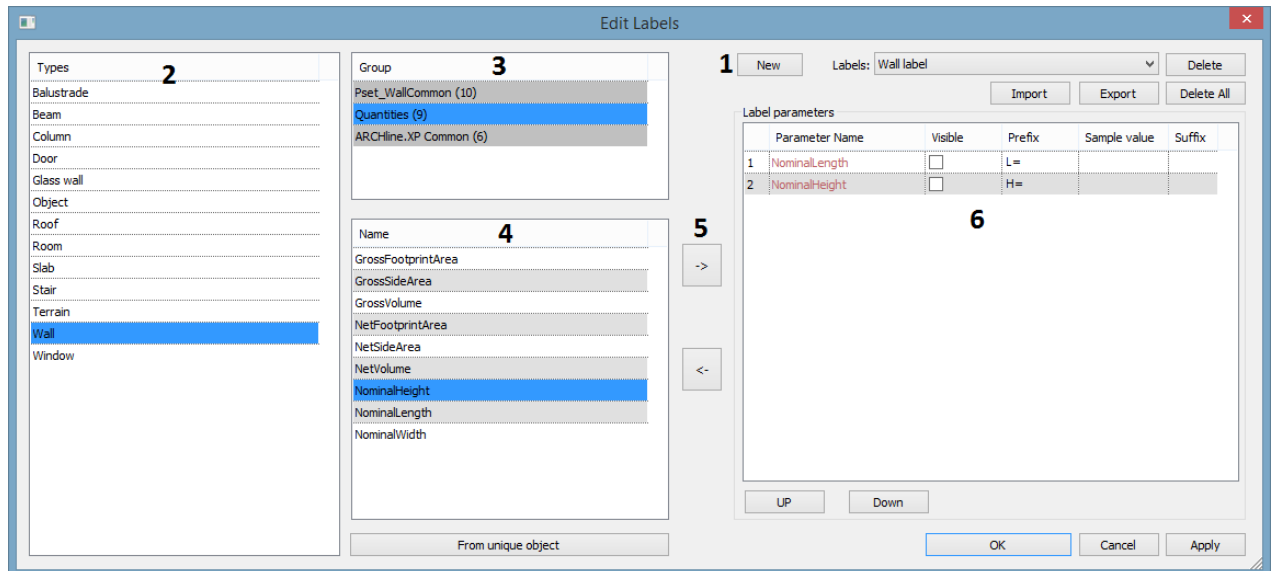
The Define Label dialog is available from: File > BIM > Define Label

You add label parameters by moving them from the left side Types, Group and Name listboxes. The annotation label uses the text properties.

### 3.7.1. Edit Label Dialog

When the dialog box opens, it will look similar like below. You can assign parameters to labels within the Edit Label dialog.

1. Create a New Label. (1)
2. Enter a name for the Label, and click OK
3. Select the type from Types list (2)
4. Select the Parameter Group from Group list
5. Select the Parameter from the Name list
6. Click on the -> button to move it into the Label Parameters window.



When you place it, Label displays the parameters from the first to the last as listed in the Label Parameters window.

You can reorganize the label. Click on a parameter and shift its position using Up and Down button.

### 3.7.2. Label Parameters Options

You can edit the cells in the Label Parameters window. The parameter names are listed in the first column.

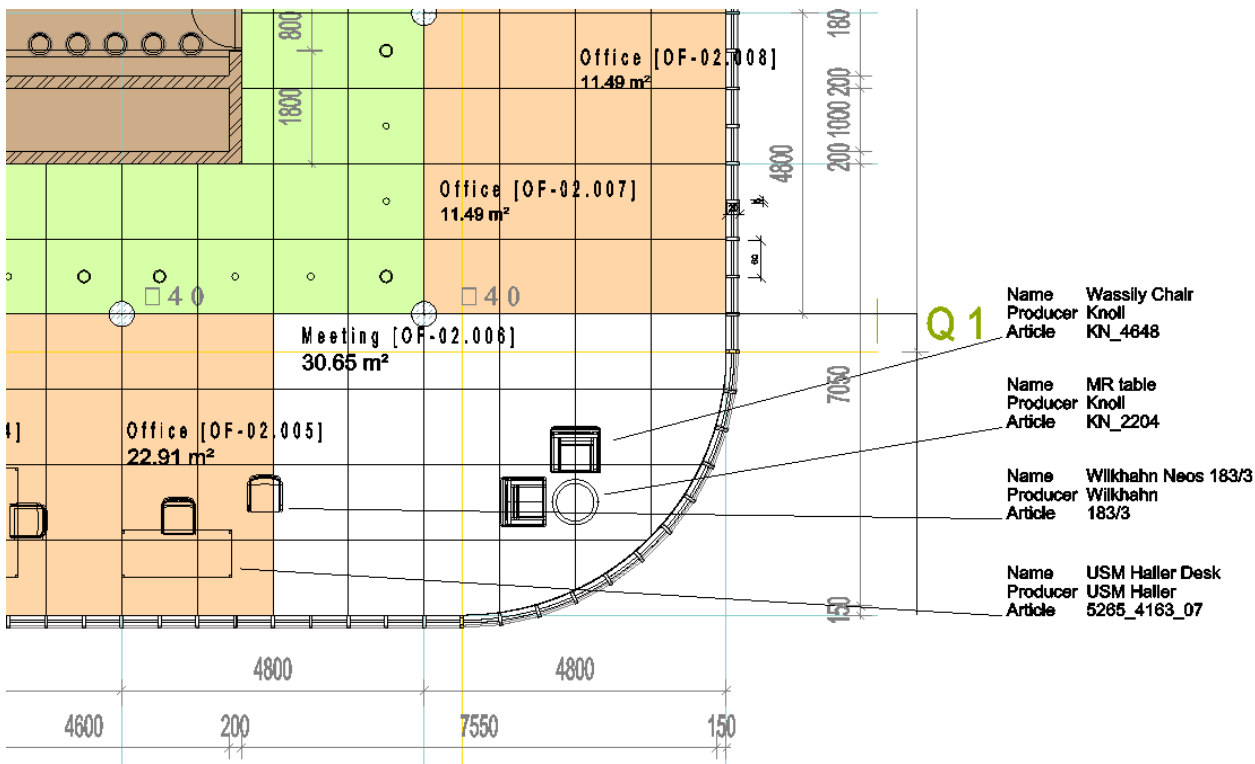
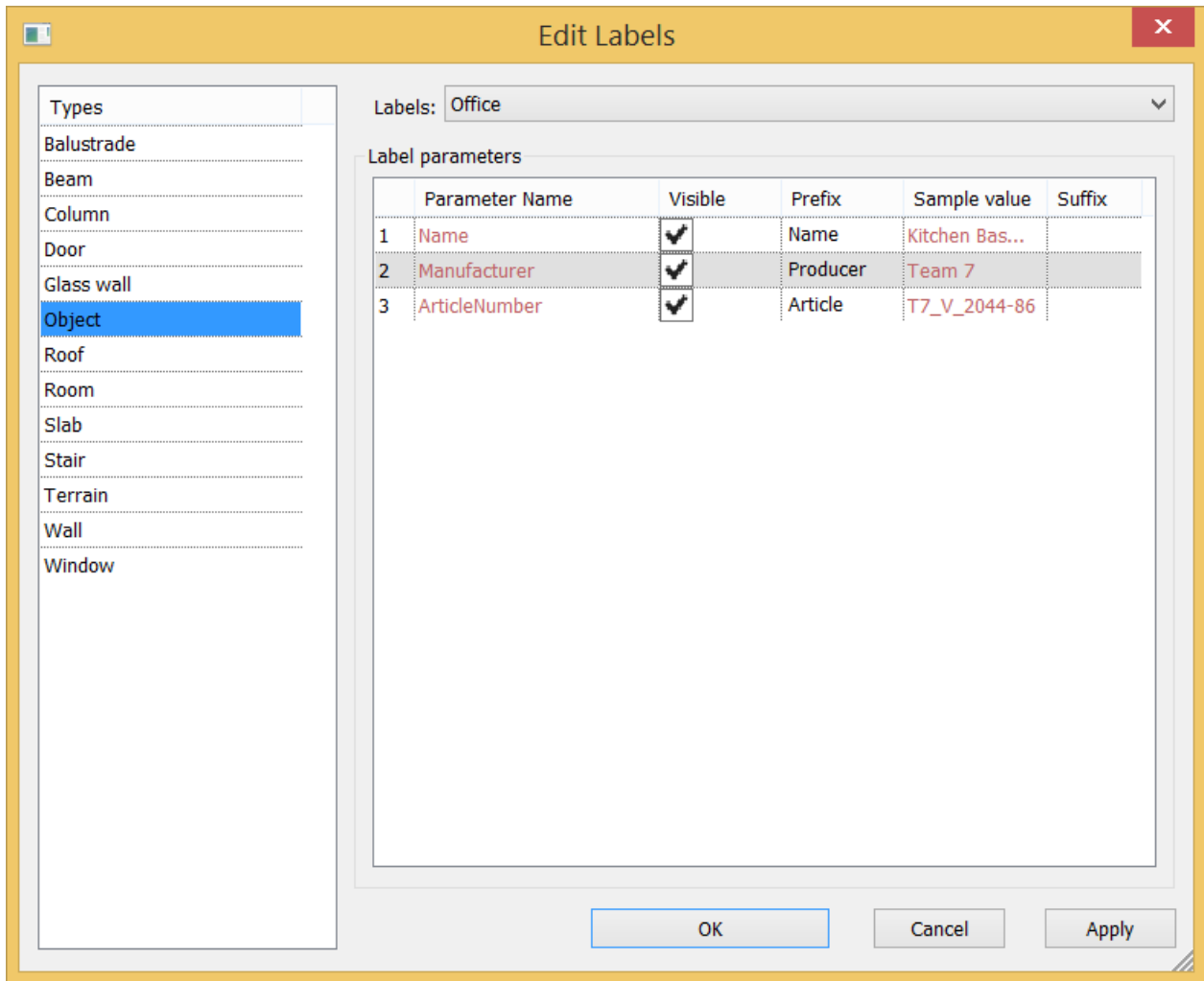
- ❖ Visible. You can make this parameter visible or off.
- ❖ Prefix. You can add a prefix to the parameter value by adding a text string in this option.
- ❖ Sample Value. You can change how the place-holding text appears in the parameter. Empty cell means to display the value measured from the drawing.
- ❖ Suffix. You can add a suffix to the parameter value by adding a text string in this column.

### 3.7.3. Place Label

You can place the predefined labels on the drawing. Label first. The parameter names are listed in the first column.

The Place Label dialog is available from: File > BIM > Place Label

1. Select the appropriate type first
2. The labels are listed in Labels combo box
3. Select the label you are going to place on the drawing and click OK
4. Select an object and place the label on the drawing.
5. Select the next objects in a loop



### 3.7.4. Update Labels

Labels are associative so you can update the values displayed in the annotation labels on the drawing.

The Update Labels command is available from: File > BIM > Update Labels

The program scans the drawing database and updates all labels with the current values.

## 3.8. Materials

The Material properties manage render material settings for the selected objects. Rendering properties can be assigned objects that will be used with the integrated renderer.

You can access the Material properties dialog in several ways;

- you may select it from the *View* menu, or
- in the object properties dialogs, or
- in the Design Center:

### 3.8.1. Material properties

For the representation of architectural drawings and for a realistic display it is necessary to define materials. The program applies material properties to all architectural objects and 3D objects. You can specify material properties in the **Material properties** dialog box. To access these properties open the **Material** dialog box first where you can handle the materials.

### 3.8.2. Managing materials

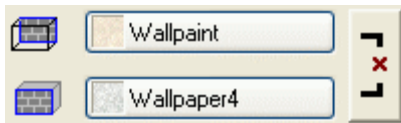
You can access the **Material** dialog box and the **Material properties** dialog box within in several ways; you may select it from the *Tools* menu, or in the architectural objects properties dialog, 3D objects, or the Design center:

- ❖ The **Category manager** dialog box appears instantly when you select *Accessories - Material manager* in the *Tools* menu. The **dialog** shows the previews and properties of the available *materials*.



See description of *Category manager* in chapter 3.3.

- ❖ For access via architectural objects, click the box of the material in the properties of the selected architectural object.



- ❖ For access via 3D objects, double click the material in the **Object properties** dialog box.



- ❖ For access via the Design center, first choose **Material** in the Design center and select one of the available material classes. Materials then appear in the content window of the Design center, where by clicking one of them the **Material properties** dialog box pops up.

### 3.8.3. Managing material classes

You find the material classes, subclasses, and categories in the left window of the **Material properties** dialog box arranged in a directory format. Materials are grouped into two classes:

- ❖ In Model
- ❖ Factory Materials

#### **In Model**

The **In Model** contains those materials that the user applies in a given project or places here. Therefore these materials vary every project. For example, if you render a material to an architectural object from the *Program* directory, the program automatically creates a copy of this material in the *In Model* directory and will subsequently use this copy. You cannot create any subclasses and categories in this directory. When saving the project, you also save the materials of the Project class.

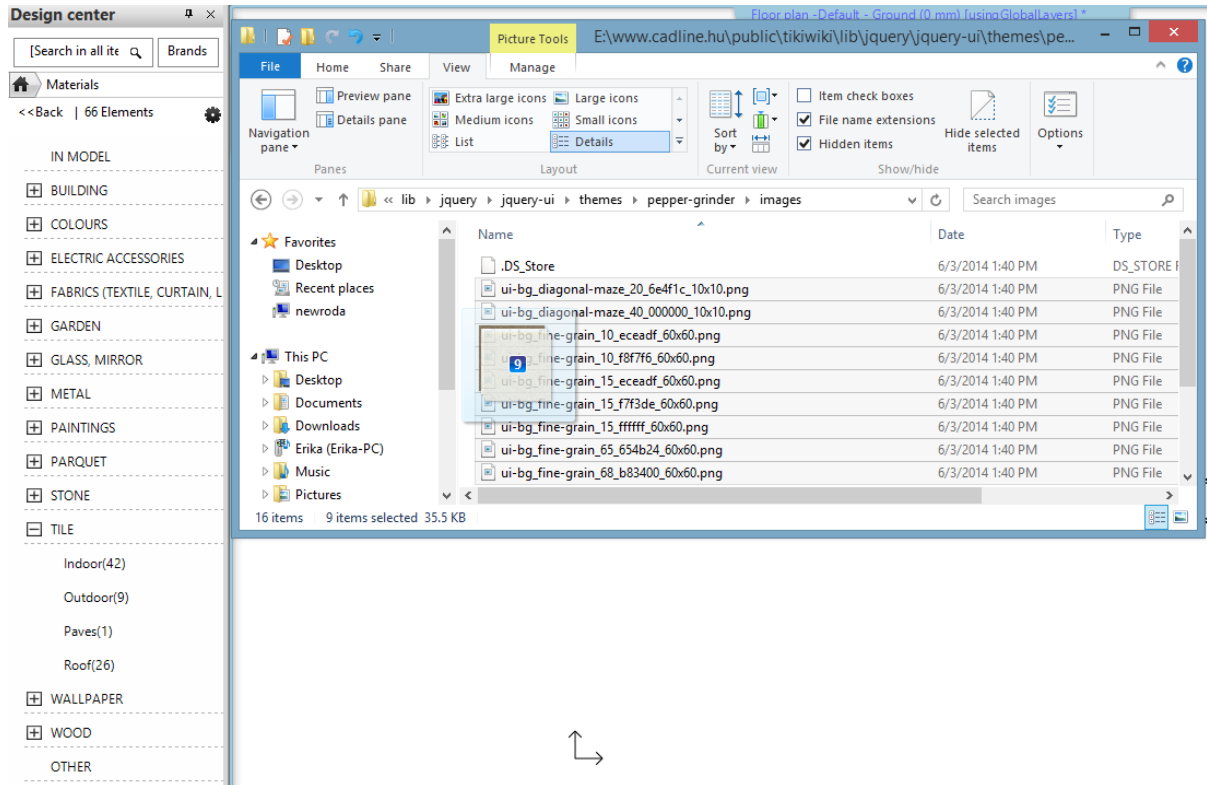
#### **Factory Materials**

By default tARCHLine.XP contains the factory materials sorted by categories. Once you start the program, these materials are always available. You can create new sub-categories. The factory materials are non-editable. Obviously the properties of user-created materials are editable.

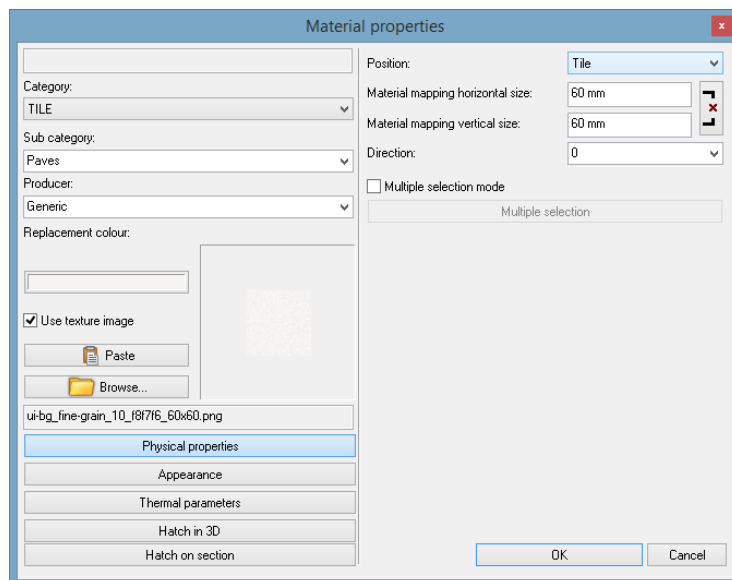
### 3.8.4. Creating materials in the Design center by dragging

Once you created a category in the **Material** container, you may 'drag' several texture images (.bmp or .jpg) in one step to the selected category with the drag and drop method. Do as follows:

- Set the window of the Design center in such a way that the category in which you wish to place the new textures can be seen. For example: *Tiles* -> *Paves*
- Select the textures in the window of *Windows explorer*.

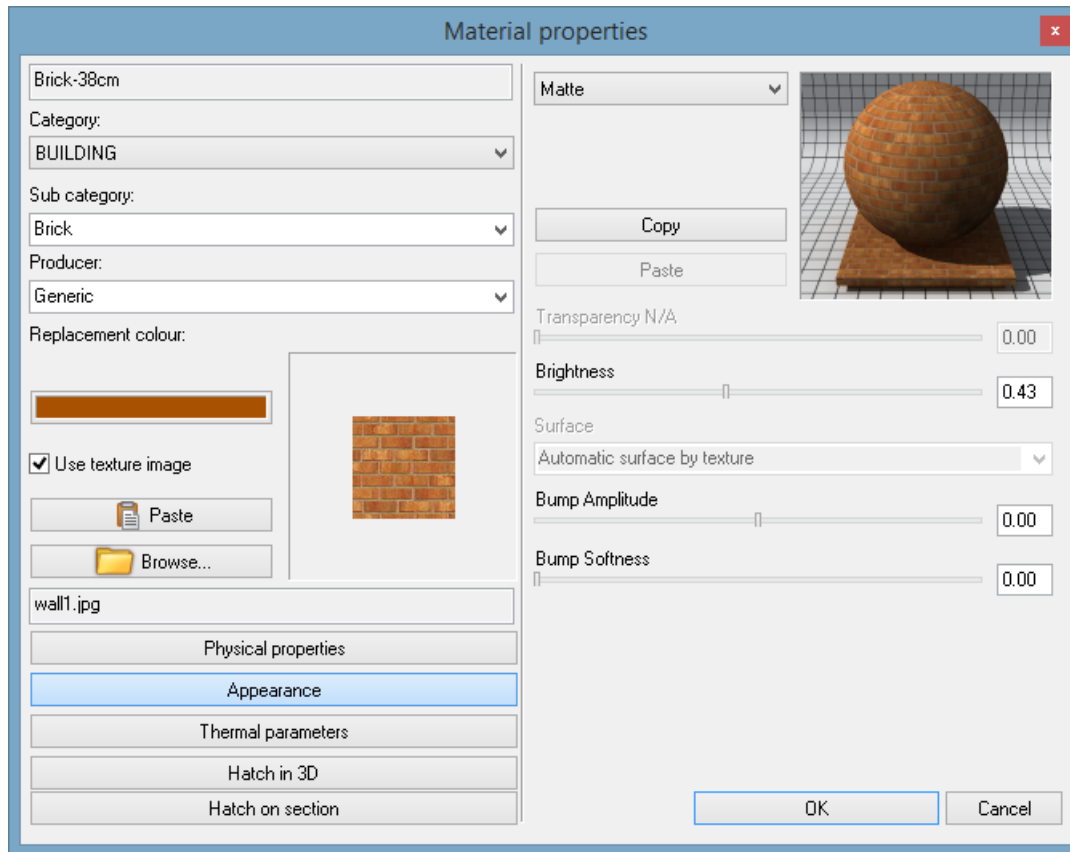


- *Drag and drop* the selected files to the category.
- After dragging the *Material properties* dialog box appears, where you may assign similar properties to the materials thus created. (It is advisable that you create materials that have the same properties at a time.) In the dialog box the name, the replacement color and texture image box is now disabled.



### 3.8.5. Material properties

Choose a material in the **Tools menu – Accessories – Category manager** dialog box, then click *Modify* or *Copy*. The **Material properties** dialog box then appears.



### Create new material

Select an image file to define the texture. Choose the Appearance tab to specify material settings for the selected texture. These settings will be used with the integrated renderer.

#### Replacement colour

You can see the current texture in the left box. If you do not want to assign a texture, click the **No texture** button. In the photorealistic view colour will be displayed instead of texture, which you may set by clicking the colour icon next to the texture image.

If you clicked the **No texture** button and lost the formerly assigned texture, you can recover it by clicking again.

#### Colour icon

This setting has two functions:

- ❖ As referred to above, this colour will be displayed in the photorealistic view when there is no texture.
- ❖ The *3D view toolbar - Shade with material colour* command uses this colour in the vector graphics drawing.



For a description of colour settings see Chapter 3.8.6.5. on RGB colour management.

#### Material texture

If you wish to assign a different texture, click the box displaying the texture and select the desired texture by opening the corresponding *.bmp* or *.jpg* file in the **Open picture** dialog box. The name of the material will automatically be that of the name of the open file without the file name extension.

### 3.8.5.1. Appearance

You can choose the rendering mode in a pull-down menu. Depending on the rendering mode you select, you can set different physical features that affect rendering. The physical features you can specify and their definitions are the following:



<b>Transparency</b>	Determines the extent of the transparency of the material.
<b>Bump altitude</b>	Bump Mapping simulates the impression of a detailed 3D surface with shading as if the surface had lots of small angles, rather than being completely flat. The height of the bumps can be adjusted using the <i>Amplitude</i> control.
<b>Bump softness</b>	This control is use to set the amount of blur that is applied to the 'bump map' image.
<b>Ambient factor</b>	Shows how the material reacts to ambient light.
<b>Diffuse factor</b>	Shows how the material reacts to diffuse light. Lights, Sun, camera light.
<b>Specular factor</b>	The <i>specular factor</i> controls the reflection of light from a "shiny" object
<b>Exponent Roughness</b>	Determines the sharpness of the distribution. Light is more radiant on a smooth surface. If roughness is set to a low level, radiance is concentrated on a small surface; if it is set high, radiance is distributed on the surface.
<b>Specular colour</b>	You can specify the specular colour in the colour palette.
<b>Transmission factor</b>	Has the same effect as transparency in the case of glass.
<b>Mirror factor</b>	Shows how the material reflects light from the surrounding objects.
<b>Refraction</b>	This setting concerns the physical characteristics of glass.

The rendering modes you can set are the following:

#### **Matte**

This reflection model ensures a dull and dim appearance. The extent of reflection from objects is determined by the *ambient factor* and the *diffuse factor* together. This model is suitable for displaying dull materials such as brick or textile.

#### **Metal**

This reflection model ensures a metallic appearance. The extent of reflection from objects is determined by the *ambient factor* and the *specular factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. This model is suitable for displaying most metallic materials such as steel or copper.

#### **Phong**

This reflection model corresponds to the well-known Phong model, where reflection is highest in the direction opposite to the viewpoint direction. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, and the *specular factor* together. The sharpness of the shiny surface is determined by the level of the specular factor. If this level is low, transition from the shiny surface is smoother, but radiance is concentrated in a smaller area. The colour of the shiny surface can be determined by setting the *specular colour*. This model is suitable for displaying glittering or delicately polished materials such as ceramic or glass.

#### **Plastic**

This reflection model has the same shiny effect as the Phong model. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, and the *specular factor* together. The sharpness of the shiny surface is determined by *roughness*. At a low level of roughness the reflection of shine is higher and affects a smaller area of the object. The colour of the shiny surface can be determined by setting the *specular colour*. This model is suitable for displaying glittering or delicately polished materials such as plastic or varnished surface.

#### **Glass**

This reflection model is suitable for displaying glass-like materials that are characterized by both reflectivity and transparency. Secondary reflection and light transmission is displayed by ray tracing. The extent of reflection is determined by the *specular factor*, the *transmission factor*, and additional lights defined by the *mirror factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. The program applies the same *refraction* factor to lights of all wavelengths. The default value equals the value in the case of glass. This model best imitates glass surface.

#### **Mirror**

This reflection model realizes secondary reflection by means of ray tracing. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, the *specular factor*, and additional lights defined by the *mirror factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. This model best imitates glass surface.

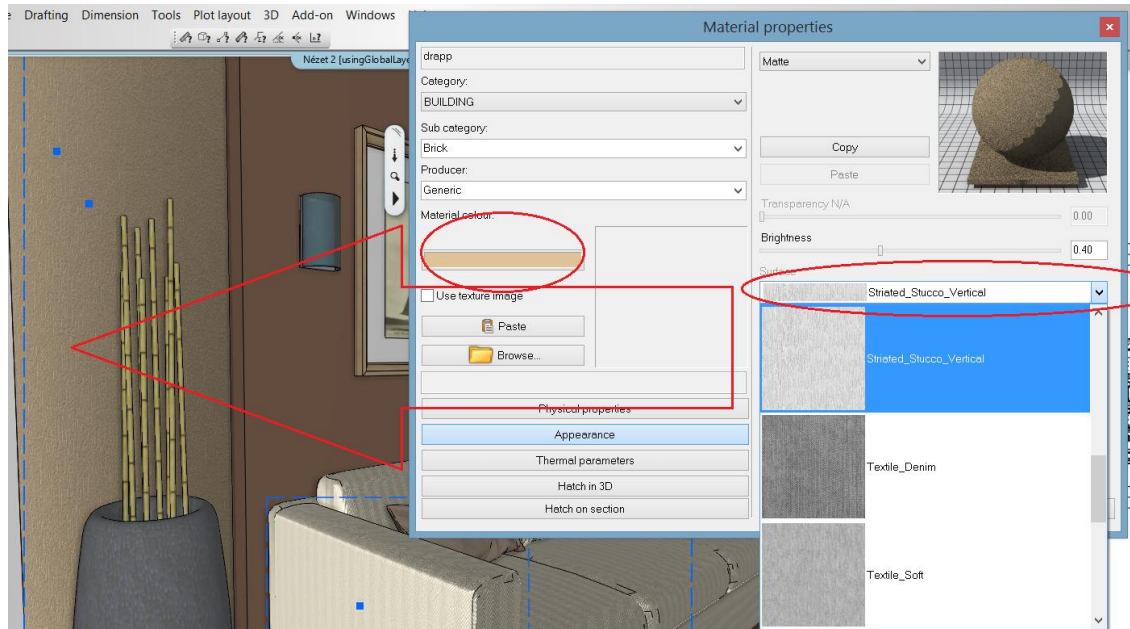
#### **Tips:**

- ❖ If you want to use specular tile lining, use the *Mirror* mode.
- ❖ Use the *Glass* mode in the case of lamp globes: here you have to set transparency to a low level whereas the transmission factor should be high.

If the transparency level is not zero, the object in question will cast no shadow. If you want a glass surface to cast shadow, e.g. a lamp globe, you have to set transparency to zero (that is you must bring the slide to the left).

- ❖ Bump Mapping applied on Color material:  
You can add a predefined pattern to pure color material and it appears to be surface roughness. If you look closely, you see lots of detail on it. You can choose among wood, stone, plaster, leather, etc. effects.

**!** Bump mapping is only a effect to make a rendered surface look more realistic, but it does not modify the shape of the underlying object.



### 3.8.5.2. Physical Properties

It is possible to assign the horizontal and vertical sizes to a texture or let it undefined. In that case the texture is stretched to fill the destination area.

Physical Properties	
Position	Position has two modes : When you stretch a texture on a face, the position is set on Stretch. The mapping size fields change to disabled. When you repeat a texture on a face, the position is set on Tile.
Material mapping horizontal size	Type a value in the input field to change the horizontal size of the texture.
Material mapping vertical size	Type a value in the input field to change the vertical size of the texture.
Direction	You can rotate the texture with a degree. i

#### Keep aspect ratio

When the Keep aspect ratio button is ON that means the changes either on the width or the height will reflect on the other value as the software will recalculate the other keeping the aspect ratio between the two.

If the Keep aspect ratio button is OFF the two values can be changed individually and it will have no effect on each other.



This state of the button indicates that horizontal and vertical sizes can be specified separately.

This state of the button indicates to keep relative horizontal and vertical sizes. Most of cases it is important to maintain the aspect ratio to avoid stretching the graphic out of proportion.



### 3.8.5.3. Thermal Parameters

Thermal parameters are input values to define U-value, or thermal transmittance.

Thermal transmittance, also known as U-value, is the rate of transfer of heat through a structure (which can be a single material or a composite), divided by the difference in temperature across that structure. The units of measurement are  $W/m^2K$ .

**Material properties**

Brick3

Category: BUILDING

Sub category: Brick

Producer: Generic

Replacement colour:

Use texture image

Paste

Browse...

brick3.jpg

Physical properties

Appearance

Thermal parameters

Hatch in 3D

Hatch on section

Specific properties of thermal management materials

Select from the list!

Parameters	Value
Conductivity(W/m²K)	0.520000
Density(Kg/m3)	1320.000000
Specific heat(J/Kg*K)	0.880000
Permeability( ng/(Pa*s*m2) )	0.600000
Porosity	0.000000

OK Cancel

#### Thermal Parameters

Conductivity

Thermal conductivity is a material property describing the ability to conduct heat. Thermal conductivity units is  $W/(m K)$  in the SI system.

Density

Mass density is a measure of the mass of a substance per unit volume. The SI unit of kilogram per cubic metre ( $kg/m^3$ )

Specific heat	The specific heat is the amount of heat per unit mass required to raise the temperature by one degree Celsius. The units are usually Joules per kilogram-degree Kelvin (J/ kg-K ).
Permeability	Permeability is a measure of the ability of a porous material (often, a rock or an unconsolidated material) to allow fluids to pass through i
Porosity	Porosity is a measure of the void (i.e. "empty") spaces in a material, and is a fraction of the volume of voids over the total volume between 0 and 1

### Copy and Paste:

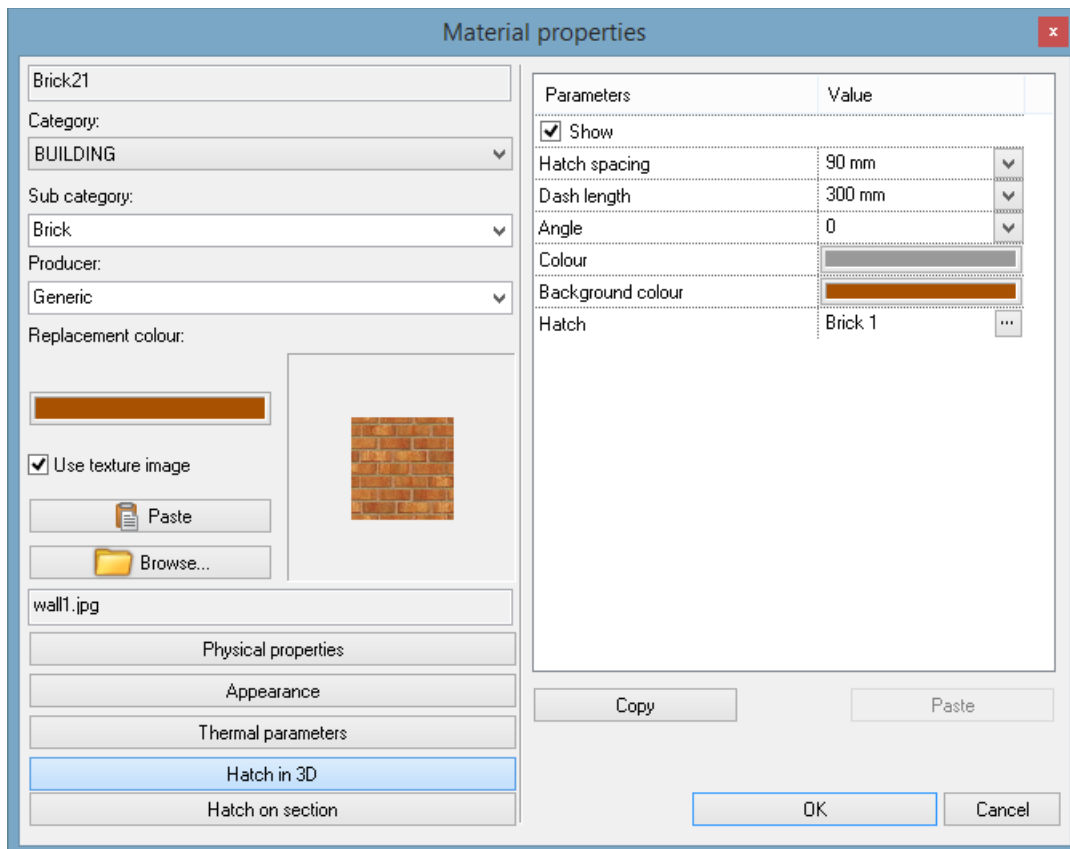
Copies the material to a new material.

### Hatches

A material has 2 different hatches, depending how the material is displayed.

*For example in the case of a brick material:*

- ❖ You have to specify the hatch on section. In the case of a brick wall we use 45-degree lines on the section.
- ❖ If this brick can be used for outer walls, hatching is also important in the 3D view. To have the hatches in the 3D view you need to use the View menu – View properties – Image < - > Vector graphics command. In the case of a brick wall, we use the standard hatch on the floor plan that is 45-degree lines. This hatch is not the property of the material, but that of the wall; therefore you have to specify it in the Wall properties dialog.



### Hatch in 3D

When setting material properties you must also specify 3D hatching, which enables you to display textures in the 3D model. For this option you must activate the *Display* button.

The hatch you specify here appears in the 3D model when you activate the Textured preview mode in the Navibar command.

If the *Display* option is deactivated, the material appears with the assigned colour.

### Hatch on section

Here you can specify what hatch you would like to represent the material on the vectorial section. To use this option, you must activate the *Display* button.

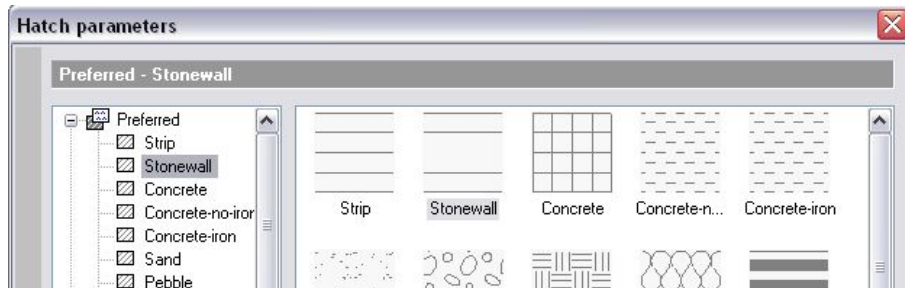
This hatch appears only on the architectural section and on the condition that the **File menu -Options - 3D Preferences - 3D Objects- Section plane created with hatch** is activated. You can switch on the option in the Section properties dialog window too.

To activate hatch on section, use the hidden line mode.

You can specify texture pattern colour and the texture background colour at the bottom of layer settings.

When the *Display* is on, you can select the hatch pattern of the object and set its properties: horizontal and vertical density of the pattern and line direction defined in degree.

- Click the pattern icon if you want to display and select hatch pattern types.



You can choose from various pattern types in the dialog box by clicking either the pattern name or the pattern image. You can move hatch patterns to new categories; this way you can arrange patterns in a structure that best suits you.

### Copying hatch settings



When clicking this button you have the option to copy hatch settings. You can copy the settings of *Hatch on section* to *Hatch in 3D*, and conversely.

## 3.8.6. RGB colour management

Colour is among the properties of each ARCHLine.XP object. Objects are represented with their colours on the screen or on the printed documents. Besides the colour properties of objects, colours have important role at materials when you represent materials with colours. In both cases the program uses *RGB* colours.

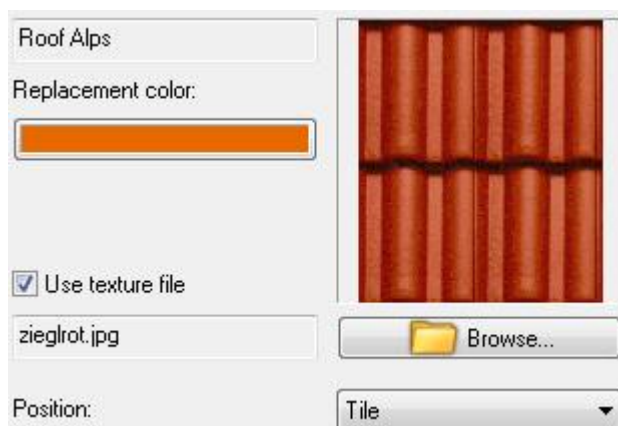
Displaying various colours is not only important in presenting a photorealistic image of wall paints and facades, but also in the case of a coloured 3D view. The option of RGB colour use therefore is significant as it enables you to illustrate or print vector graphics drawings of various facades in true colours that are in realistic Ral, Sikkens or Pantone colours.

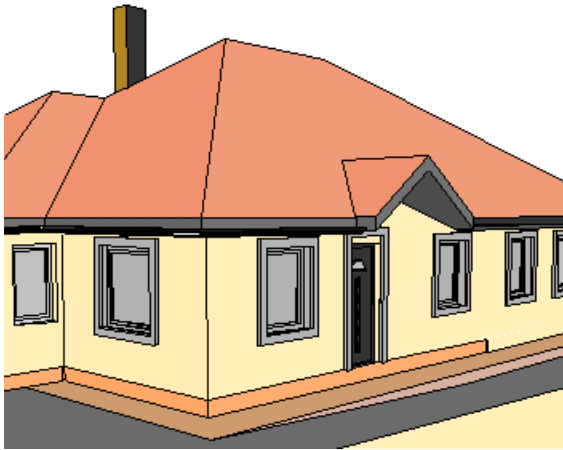
Colour settings thus have two functions:

- ❖ Click **No texture** in the *Material properties* dialog box to define the colour for the material. Now instead of the texture the colour appears in the photorealistic view, which you can set by clicking the colour icon next to the texture image.
- ❖ The Navibar – 3D preview modes - Coloured command uses this colour on the vector graphics drawing regardless of whether you defined the colour or texture for the material.

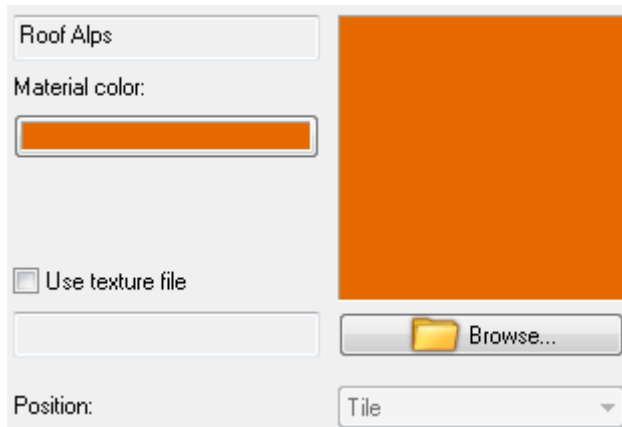


In the following example we use wall paint texture in the photorealistic view and yellow on the vector graphics drawing.





As we mentioned before, by clicking off the *Use texture file* button the given object will be displayed in the selected colour both in the coloured 3D view and on the photorealistic picture:

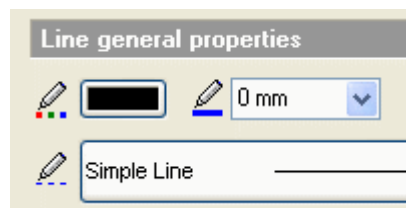


### Standard handling of colour tables

Colours can be chosen from different colour tables. The handling of these colours became standard in ARCHLine.XP.

Click on the colour icon in the properties dialog of any object (e.g. line) to access the *Colour tables*:

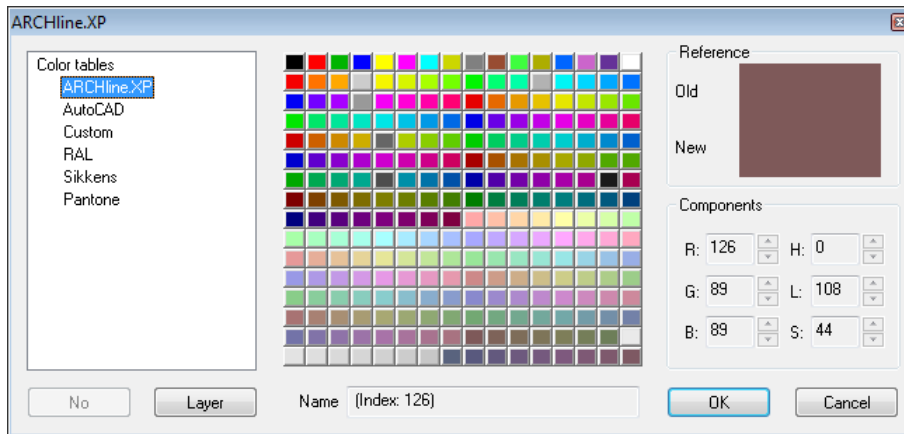
The browser of the appearing *Colour table* dialog shows the name of the selected colour table.



- Select the appropriate colour table.

ARCHLine.XP colour table

The ARCHLine.XP colour table appears with 256 primary colours, from which you can choose a colour. In the name field only names of the first 16 colours appear. You cannot specify names for other colours.

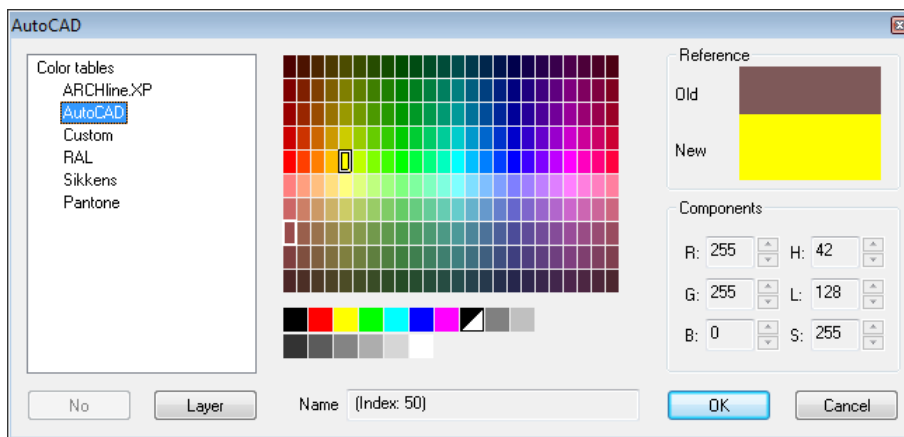


### AutoCAD® Colour table

The AutoCAD® colour table appears with 256 primary colours, from which you can choose a colour. You cannot specify names here.

If you import a drawing created in AutoCAD, the drawing objects will keep their AutoCAD colour table settings. Here you can modify the colour of an object.

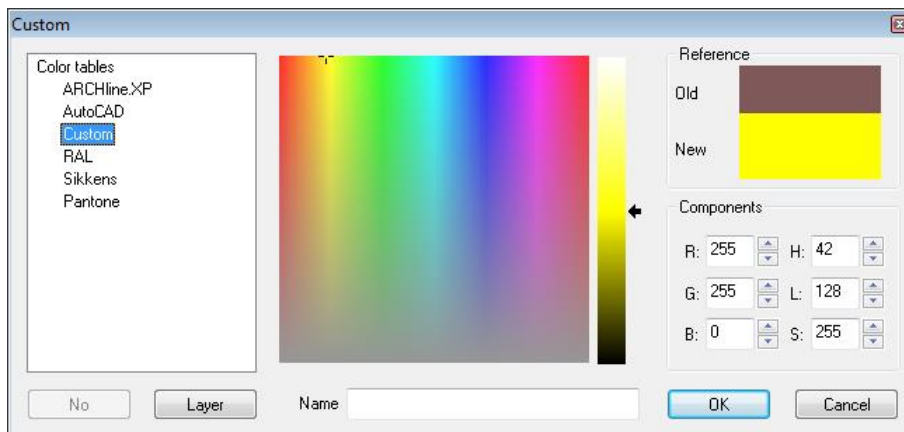
If all the drawing objects have colours from AutoCAD® colour table, you don't need to convert colours at file export. The exported drawing will appear with the same colours in AutoCAD®.



### Custom colour table

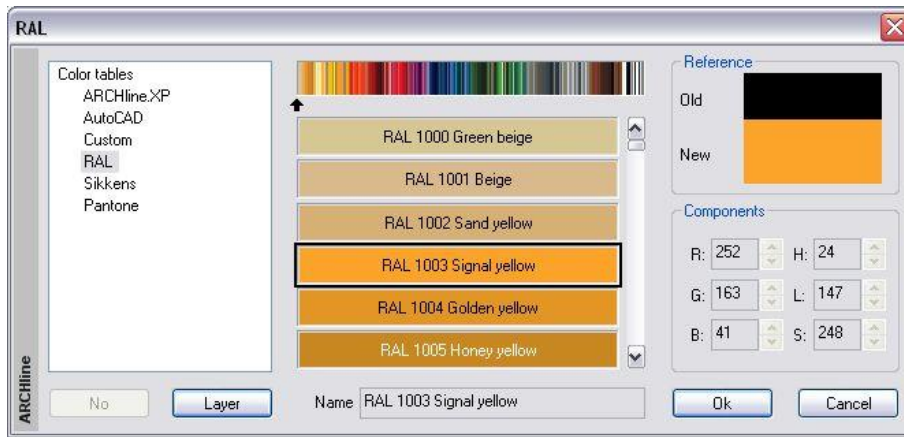
The standard Windows colour spectrum appears here. After selecting a colour you can specify its shading with a sliding arrow.

In the name field you can specify a colour name.



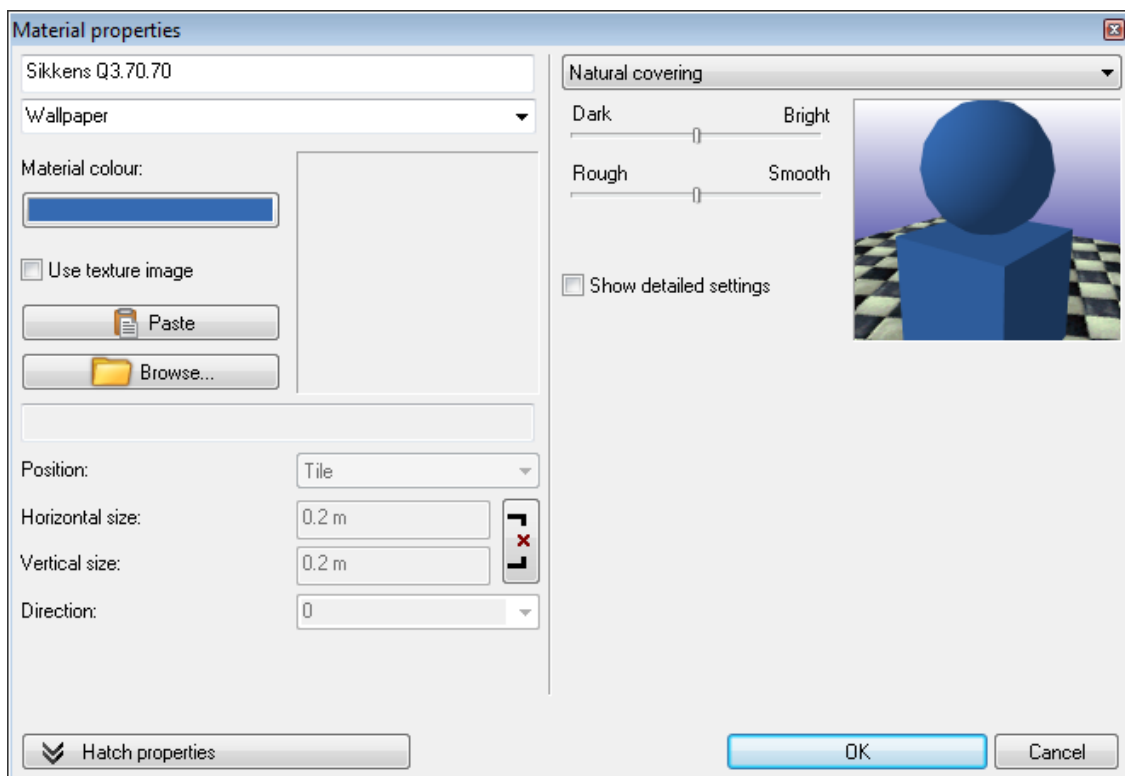
### Ral, Sikkens, Pantone colour tables

Use the horizontal sliding arrow or the vertical sliding bar to browse for the appropriate colour group. Select the desired colour by clicking on it. The name of the colour appears in the *Name* field.



### ***New material with colour***

If you create a new material by a Ral, Sikkens or Pantone colour, the name of the colour will automatically specify the name of the material, too. You can modify this material name as well.



### ***Reference***

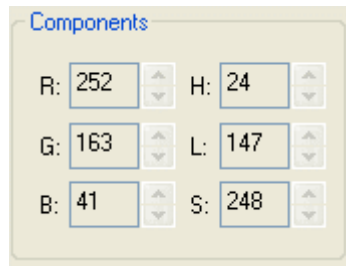
After selecting a new colour from a colour table, the selected new colour is displayed below the old colour.





### Components

The RGB code and the *Hue*, *Luminosity*, and *Saturation* values appear here.



### Layer

Click the *Layer* button if you want to specify the colour of an object by a colour of a layer. The object picks up the colour property of the layer where the object belongs to. The colour property of the object follows the changes made later on the colour of its layer.

### No

The *No colour* button becomes active only in the case when you wish to specify the background colour of a hatch. Clicking this button the hatch can be specified without background colour.

### New colour tables

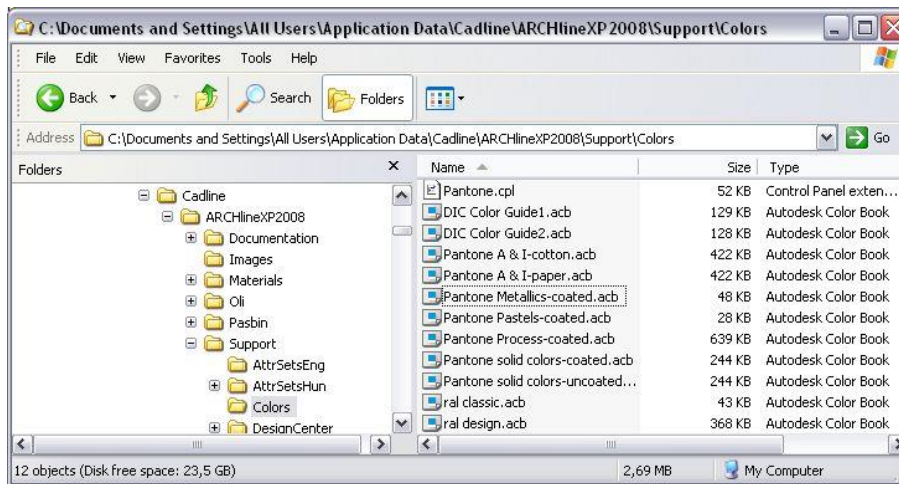
Different CAD applications can use numerous colour tables. Some of these colour tables are downloadable from the web.

In ARCHLine.XP it is possible to load colour tables that follow the format of Adobe or AutoCAD® ColourBook. These files can have .acb extension in binary (Adobe) or XML (AutoCAD) file format.

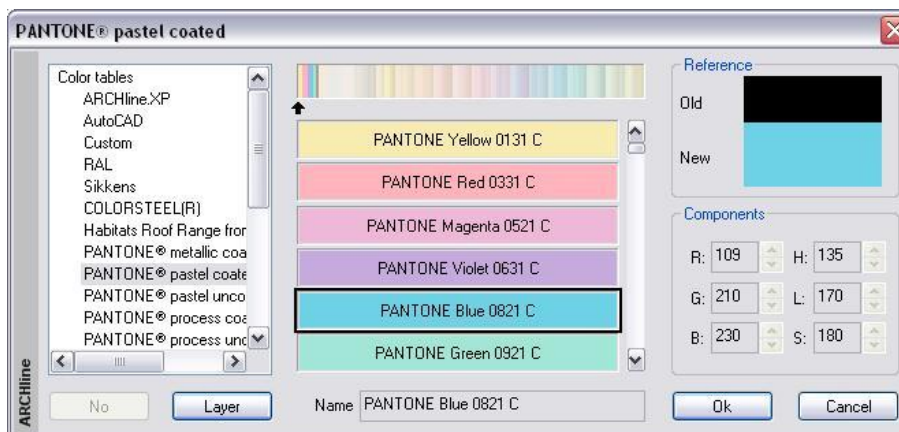


It is not possible to load protected colour tables!

- Copy or move the downloaded colour table in the ...\\Support\\Colours subdirectory inside your program installation directory:



- Restart ARCHLine.XP.
- Open the *Colour tables* dialog. The program automatically loads the inserted colour tables.



### Query the colour of an object

Any colour you have specified can be queried later on.

After you have specified a colour to an object, open the properties dialog of the object and click the colour button. The *Colour table* dialog appears with the appropriate colour table, showing the previously specified colour selected in that colour table.

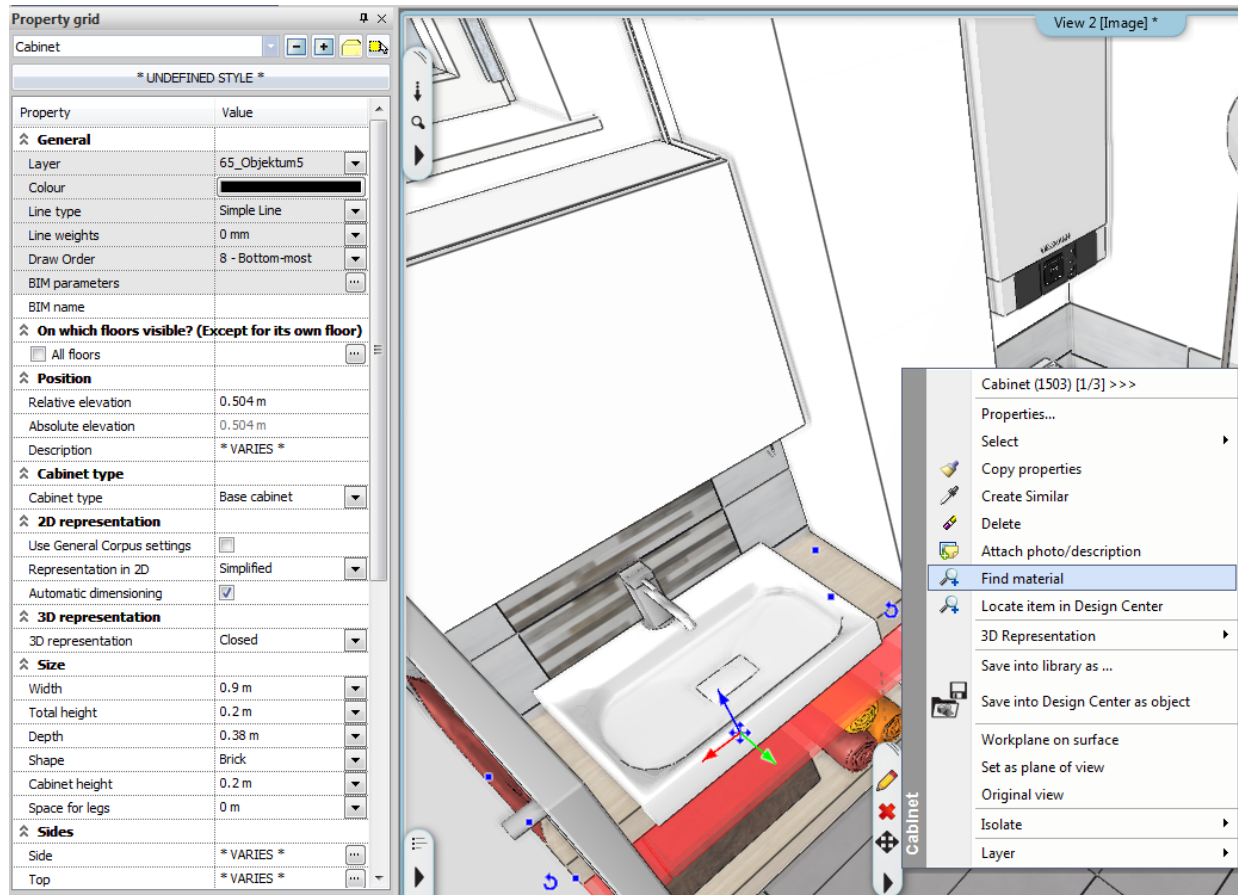
Under *Components* you can read the *RGB* codes and the *Hue*, *Luminosity*, and *Saturation* values.

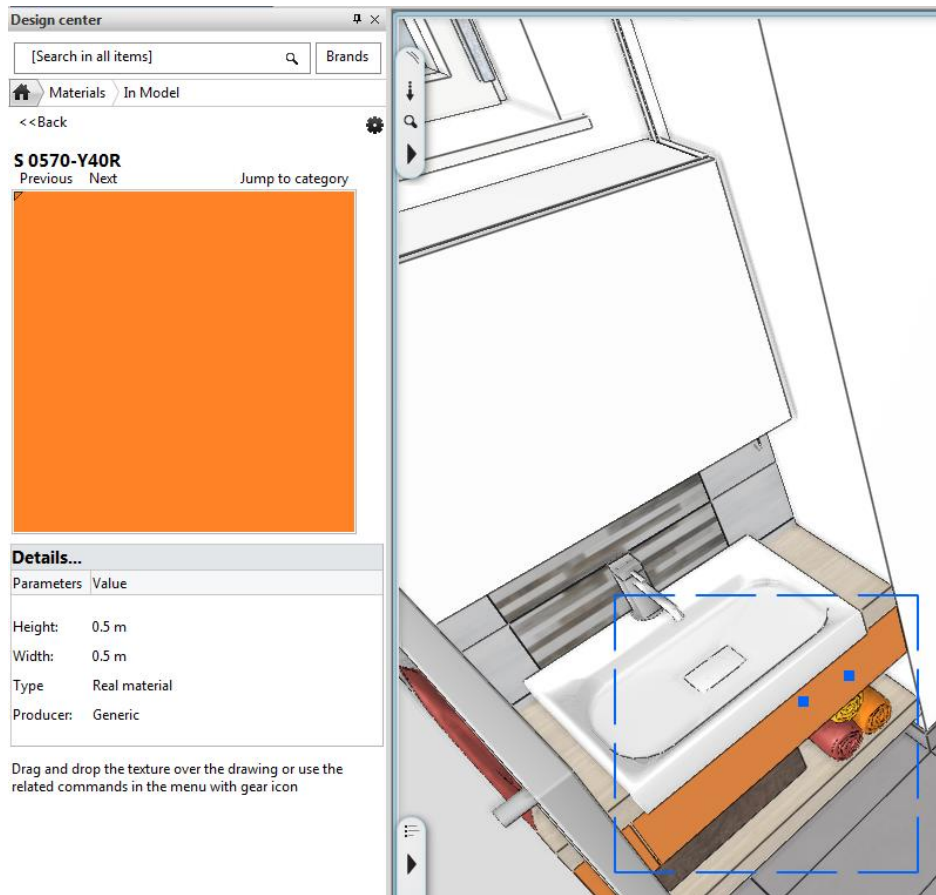
Here you can modify the colour, of course.

### 3.8.7. Find material

Find material command shows the material of the selected surface in the Design Center.

Click the surface and then select Find material command. The Design Center appears and navigates automatically to the selected material. In this example, material S 0570-Y40R is selected. The command is very useful when you would like to apply the material of a 3D surface on another element but you don't know the name or category of the material.





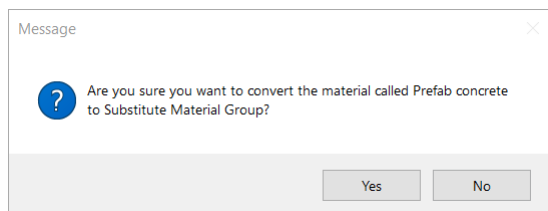
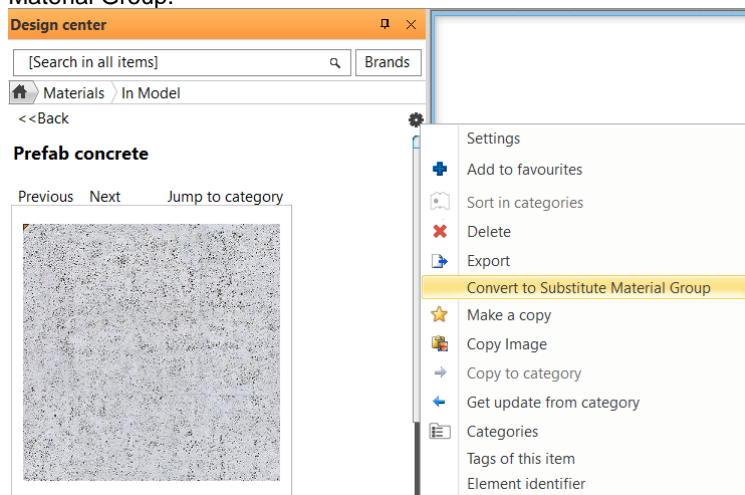
### 3.8.8. Material Replacement Tool

The Material Replacement Tool is for replacing a color or texture with another color or texture you choose on the entire 3D model.

It replaces the used color or texture with one of the predefined group of colors or textures.

In the Design Center, select the Material panel and In Model category

Click on a material you are going to convert. Click on Options button and select the command: Convert to Substitute Material Group.



Substitute Material Group manager

Name of the new material:

Category:

Sub category:

Producer:

( Use \ to organize into tree-structure eg: Myroom\Furniture )

Current:  
 Prefab concrete

Name  
 Prefab concrete

The Substitute Material Group is a collector of real material and displays the currently selected material. You can list any number of materials in the list. It has the advantage that different versions of the same 3D model can be presented by selecting another element in the list without changing the project. If materials are directly linked to walls, windows, furniture, etc., then their modifications will not affect the 3D model in general. YOU CAN APPLY MATERIALS IN THE PROJECT CATEGORY ONLY.

In the dialog you can add new materials, delete from the group and you can select a new current one. When you close the dialog with Ok, the program replaces the given material with the current one. Attention the material name remains the same!

Substitute Material Group manager

Name of the new material:

Category:

Sub category:

Producer:

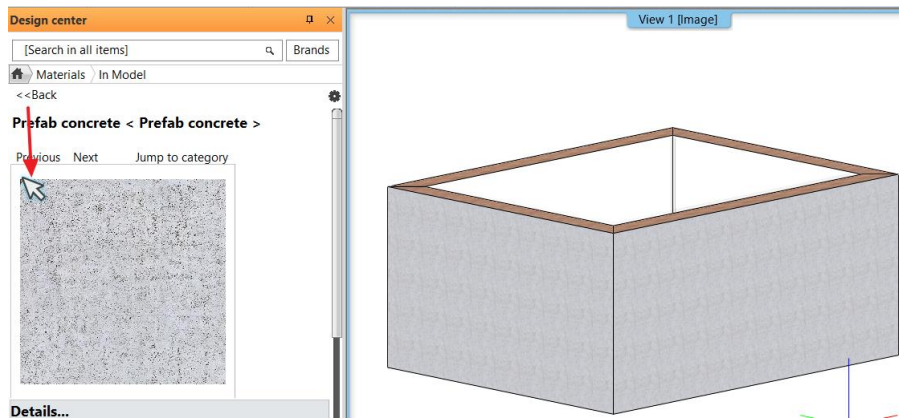
( Use \ to organize into tree-structure eg: Myroom\Furniture )

Current:  
 Prefab concrete

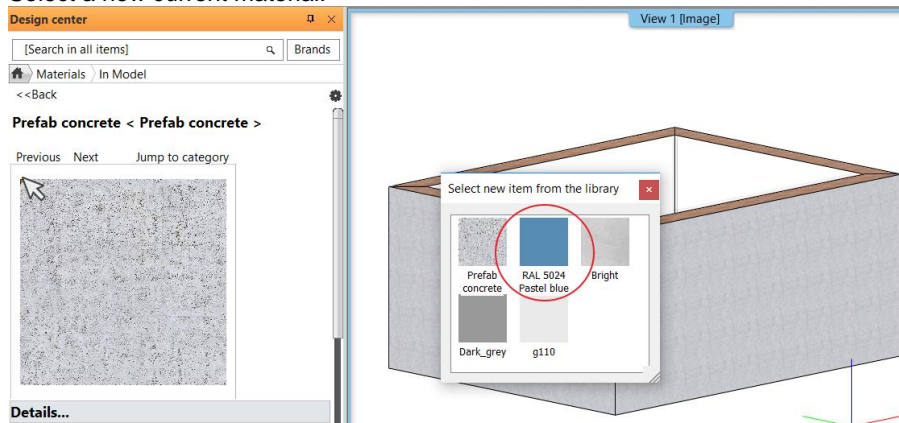
Name  
 Prefab concrete  
 Bright  
 Dark\_grey  
 g110  
 RAL 5024 Pastel blue

The Substitute Material Group is a collector of real material and displays the currently selected material. You can list any number of materials in the list. It has the advantage that different versions of the same 3D model can be presented by selecting another element in the list without changing the project. If materials are directly linked to walls, windows, furniture, etc., then their modifications will not affect the 3D model in general. YOU CAN APPLY MATERIALS IN THE PROJECT CATEGORY ONLY.

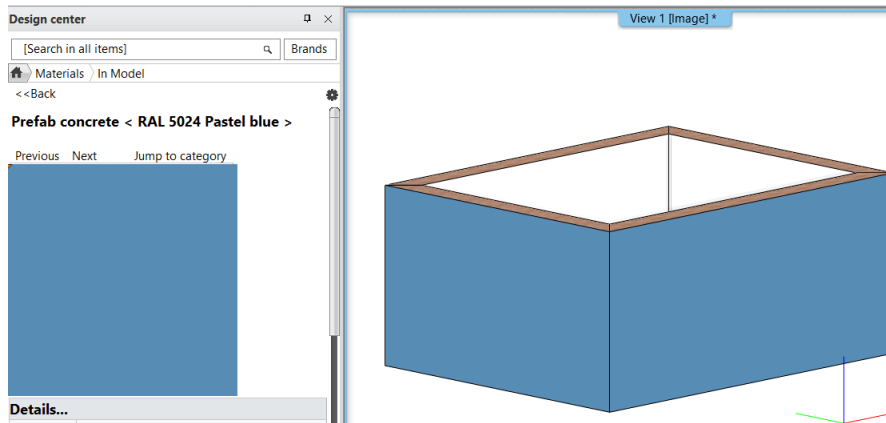
You can change the current material from the Substitute Material Group anytime. Click on the arrow icon in the left top corner of the image or click on Options button and Settings command. Example:



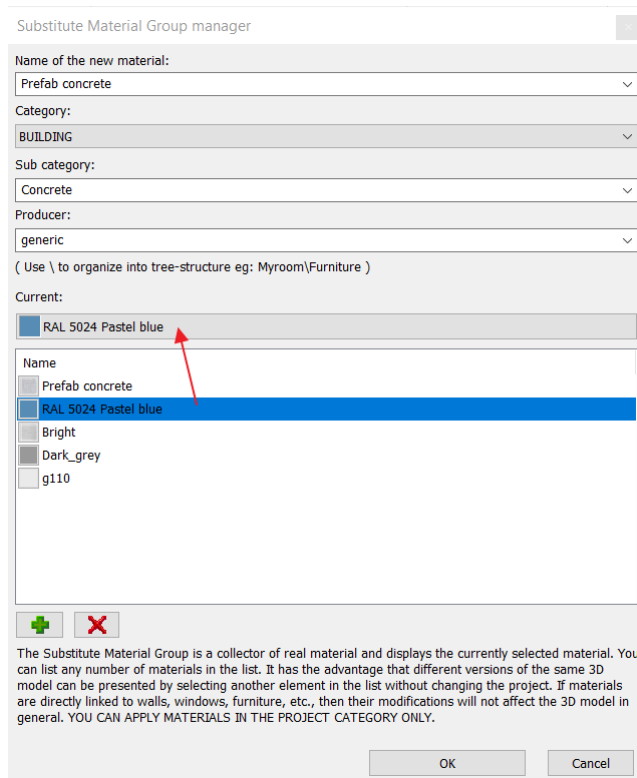
Select a new current material.



**Output:**



You can choose a new current material with Settings command too:

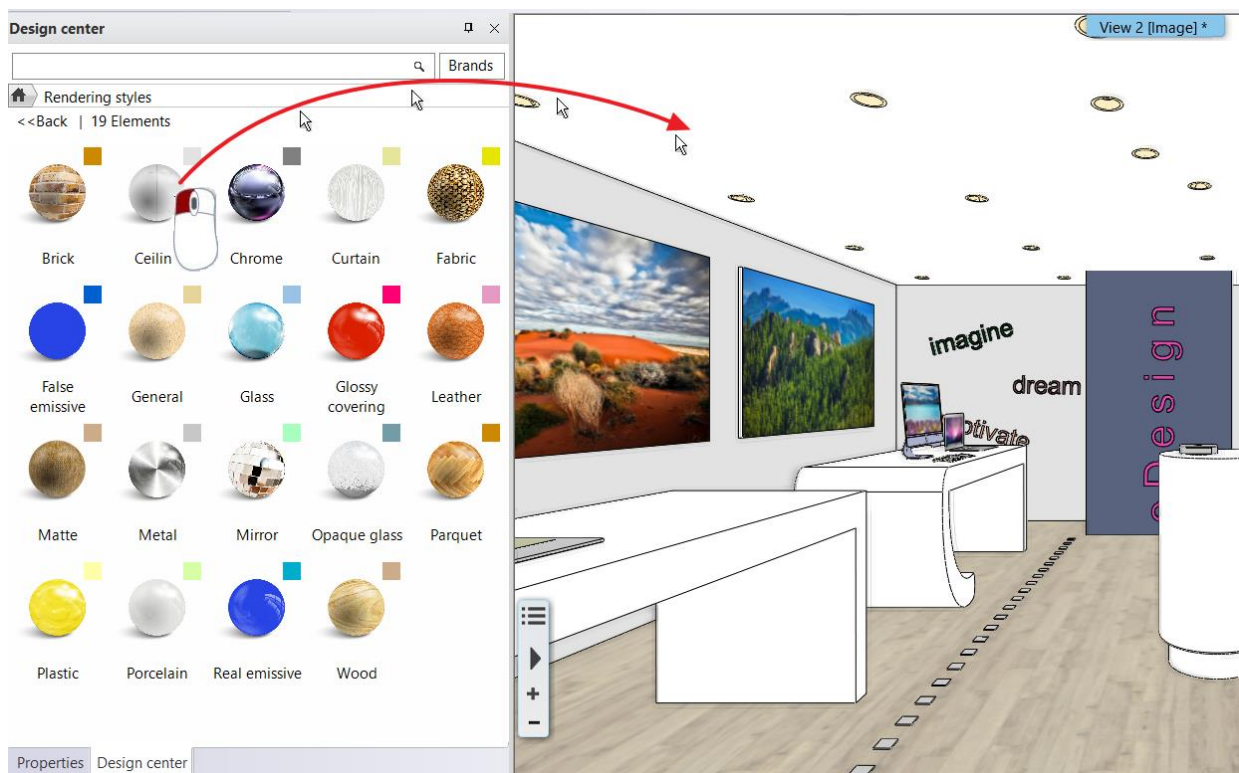


### 3.8.9. Rendering Styles

The Render quality and performance parameters are classified into specific groups such as metal, glass, brick, mirror, etc. The render styles are optimized groups to visualize the associated quality and performance parameters.

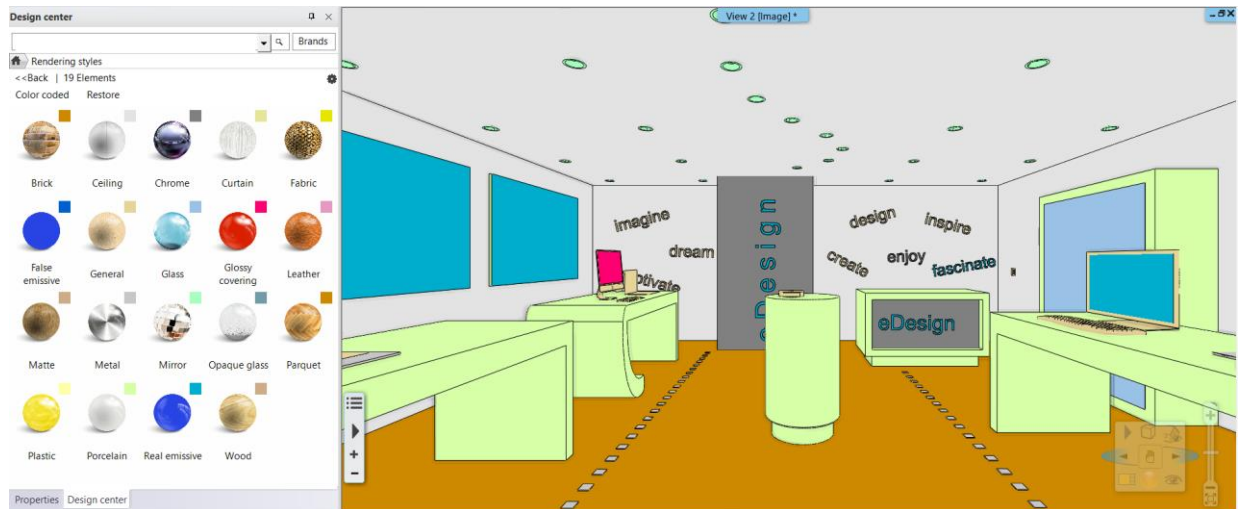
The render styles can be assigned with drag and drop to any materials. The effects are visible in internal Rendering application.

The command does NOT change the size and texture of the materials, it replaces the material quality parameters only. In addition to the sets, custom settings can be made, but the use of custom properties is primarily recommended for users with rendering experience.

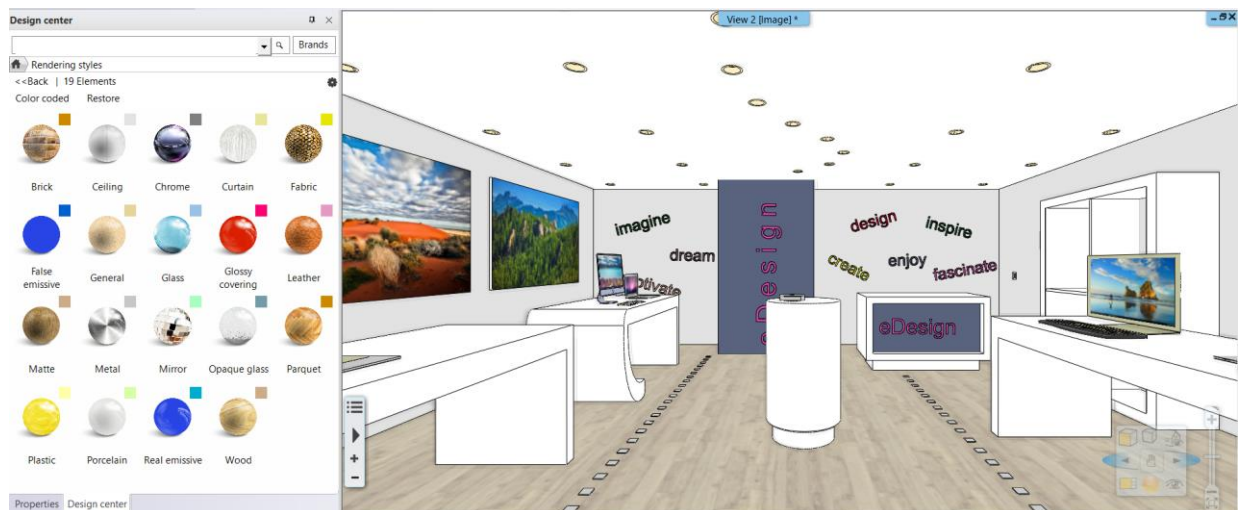


### Color coded visualization

Color-coded view enables the classified visualization of render styles. Color codes are displayed in the upper right corner of the render style icons. Clicking on the Color coded command in the Design Center the ARCHLine.XP displays the model with the pure colors assigned to each render style. It makes easy to check render styles assignment through the related colors.



Restore view:



#### 3.8.9.1. Use Rendering styles - example

Features of Rendering Styles:

- ❖ Can be assigned to any material.
- ❖ Available from the Design Center. From here, you can drag "Drag and Drop" to the selected surface in the 3D view. The effect is shown in the internal Rendering application.
- ❖ Do not change the size and texture of the materials, only change the material properties
- ❖ Custom style settings can be made after using the style.

With this in mind, we recommend the following method for optimal setting of materials..

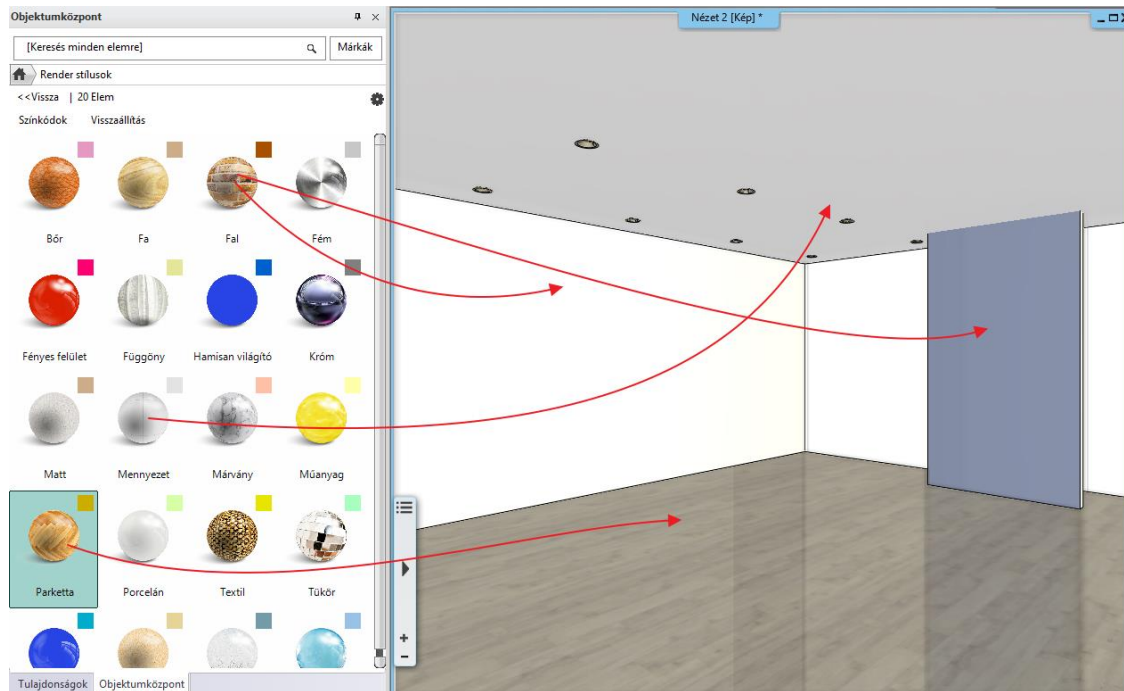
1. Assign the appropriate Render style to the different types of materials in the project.
2. Create a test render.
3. Refine the material settings depending on the result.

A példa projektünkben a jobb érthetőség kedvéért az anyagokat *Mat*t tulajdonsággal ruháztuk fel. Az előbb készített render képen csak matt tulajdonságú anyagok jelennek meg a padlón, falakon és a mennyezeten

Ezután a padló, falak és a mennyet beállításával foglalkozunk:

## 1. lépés

Az első lépésben ezekre a felületekre az Objektumközpontból ráhúzzuk a megfelelő Render stílusokat: A padlóra a „Parketta”, a falra a „Fal”, a mennyezetre a „Mennyezet” render stílust.



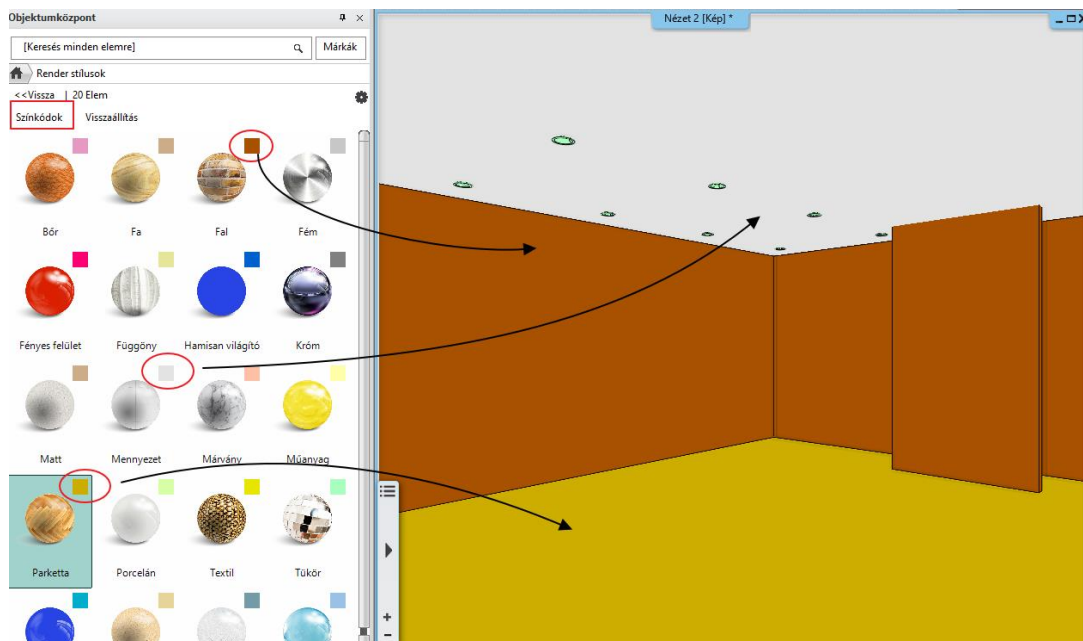
A 3D modellben, a színekódolt nézetben gyorsan ellenőrizhetjük, hogy nem hagytuk-e ki valamelyik felületet:

### Színekódolt megjelenítés

A színekódolt nézet lehetővé teszi a render stílusok osztályozott megjelenítését. A hozzárendelt színekódok a render stílus ikonok jobb felső sarkában láthatók.

Az Objektumközpontban a **Színekódok** szóra kattintva megjelenik a modell a render stílusokhoz rendelt tiszta színekkel. Így könnyen ellenőrizhetjük a render stílusok aktuális hozzárendelését a színeken keresztül.

- Kattintson a **Színekódok** szóra. A 3D nézetben a felületek a render stílusokhoz rendelt tiszta színekkel jelennek meg.



- Kattintson a **Visszaállítás** szóra, hogy az eredeti megjelenítési módot lássa.

## 2. lépés: Teszt Render

Az interaktív vázlat renderben láthatjuk a 2.render eredményt. Hasonlítsuk össze az 1. renderrel:



A mennyezet „kifehéredett”, a fal kivilágosodott, a padló enyhén tükröződik.



1.Render



2.Render

### 3. lépés: Anyag beállítások finomítása

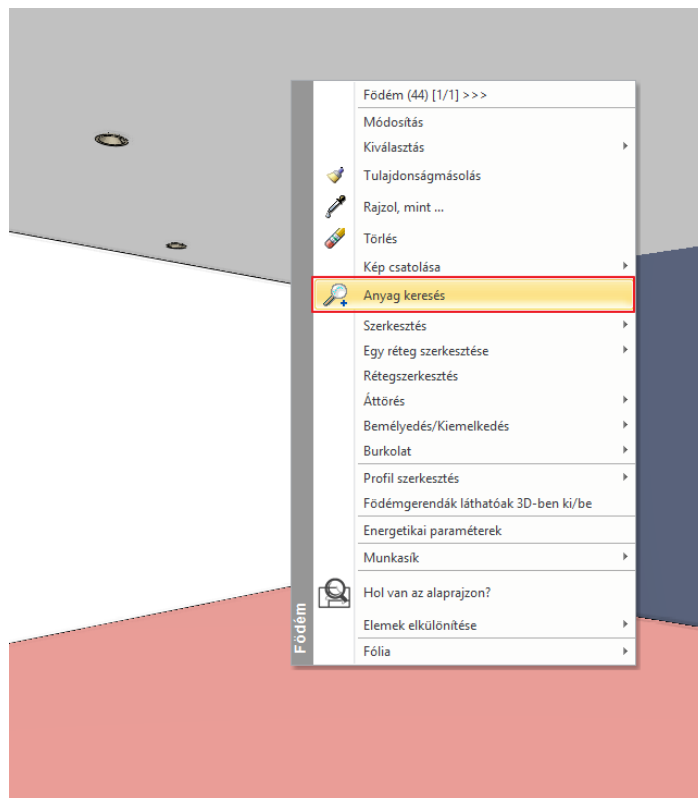
Nézzük át az anyagok beállítását, először a padlón.

Ahogy láttuk, a padló valamelyest megváltozott, a kék fal tükröződik benne.

A példában az általunk használt padló a valóságban fényesebb, jobban tükröződik. Tehát módosítanunk kell a padló beállítását. Tegye a következőket:

- Aktiválja a 3D ablakot.
- Kattintson az egér jobb gombjával a padlóra.
- Válassza a Helyi menüből az **Anyag keresés** opciót.





Bal oldalon megjelenik az Egger padló a tulajdonságaival, ezeken módosítani lehet.

- Görgessen le a listában és emelje meg a **Tükröződést** 25%-ról 70% körüli értékre, és nézze meg a render ablakban a változásokat.
- Következő lépésben vegye le szinte teljesen a **Tükröződés elmosását** 5%-ról 0%-ra. Ekkor élesebbé válik a padló tükröződése.

Ez lesz a 3. render képünk. Hasonlítsuk össze a 2. renderrel:

Részletek	
Paraméterek	Érték
Textúra	▼ Egger_Chalky_Oak_J.jpg ...
Pozíció:	Mozaik ▼
<input type="checkbox"/> Arány megtartása	
Magasság:	1.35 m
Szélesség:	1.35 m
Írány:	0°
Anyagjellemzők	Parketta ▼
Világosság	60%
<input type="checkbox"/> Tükröződés 25%	
<input type="checkbox"/> Tükröződés elmosás 5%	
Fénytörés (Nincs fénytörés = 1)	2
<input checked="" type="checkbox"/> Fresnel	
Felület	Automatikus a textúra ala ...
Felületi egyenetlenség	3
Egyenetlenség simítása	25



2.Render



3.Render

- Befejező megoldásként próbálja ki a Tükröződés = 70%; Tükröződés elmosás=20% kombinációt. Tartsa meg ezt a beállítást.

Az anyagok típusuktól, render stílustól függően további tulajdonságokkal rendelkeznek. A későbbiekben, amikor már nagyobb gyakorlata van a render képek készítésében, érdemes megismerni, kikapasztalni a működésüket, egymásra való hatásukat. Addig inkább csak a render stílusok által adott beállításokat használja.

### További anyag tulajdonságok - Opcionális

Itt összegyűjtöttünk a legfontosabb tudnivalókat az anyag tulajdonságokról:

#### Átlátszóság

Az **Átlátszóság** csúszka bal oldalán található az az állapot, amikor az anyag egyáltalán nem átlátszó, a jobb oldalon pedig szinte láthatatlanná válik az anyag.

#### Világosság

50%-nál van az az érték, ami az úgynevezett kiindulási állapotnak tekinthető. 50% alá húzva a csúszkát sötétebbé teheti az anyagot, 50% fölé húzva pedig világosítani lehet a felületet.

#### Fénytörés

A fénytörés mindig annak megfelelően áll, hogy milyen anyagtypust választottunk.

#### Felületi egyenetlenség

Különbé anyagokhoz be lehet állítani egyfajta felületi egyenetlenséget is, ami a textúra jellegétől függ. Ezt érdemes utána mindig elsimítani kicsit: **Egyenetlenség simítása**.

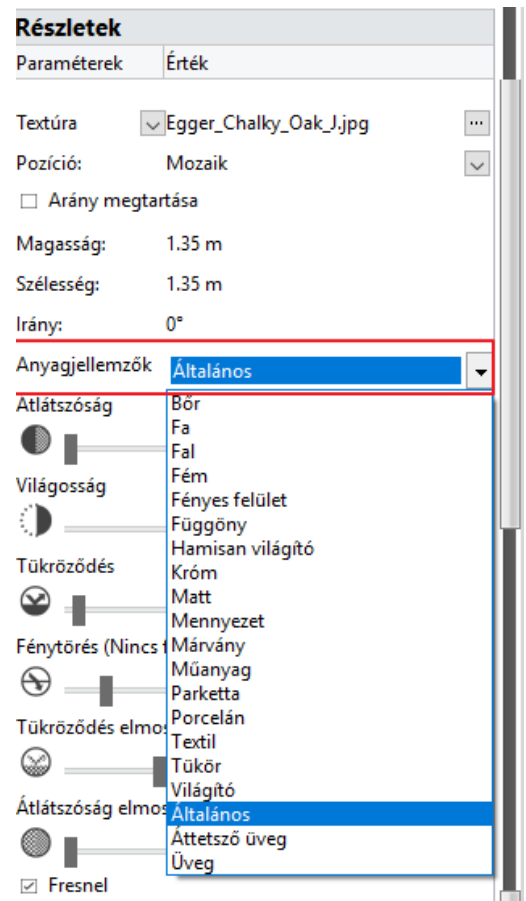
#### Általános render stílus

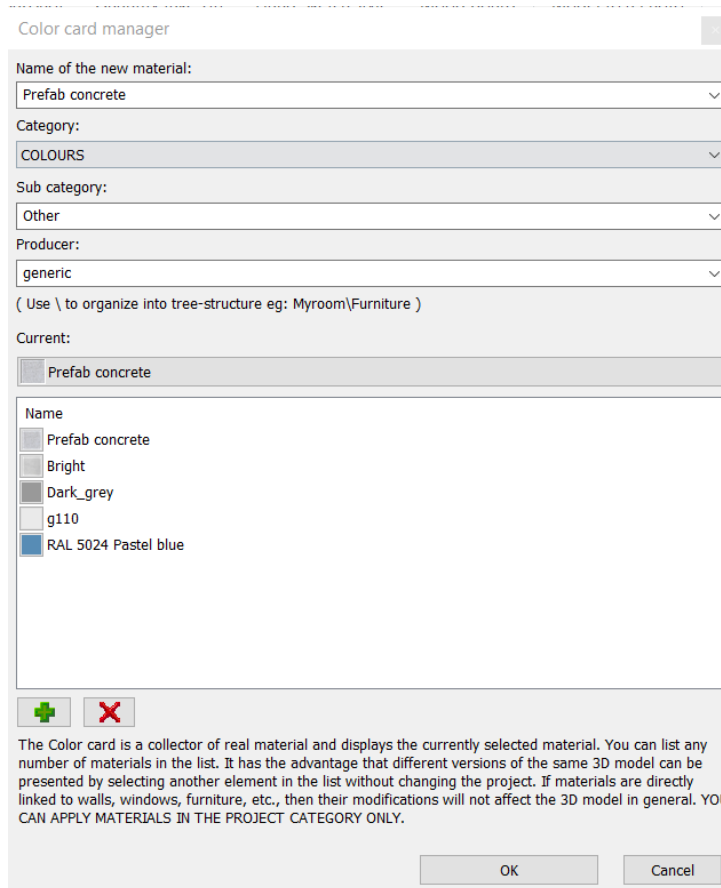
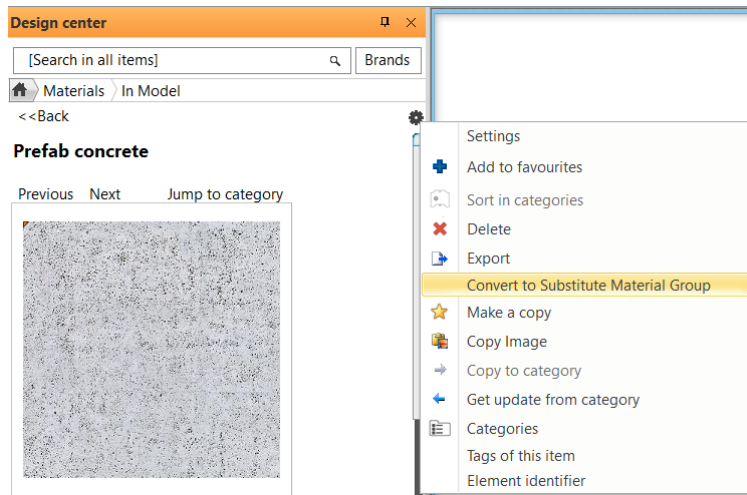
Abban az esetben, amikor olyan anyagbeállításra lenne szükség, ami nem jelenik meg az egyes render stílus tulajdonságai között, akkor használja az **Általános render stílust**. Ekkor az összes anyagmódosításhoz szükséges beállítás megjelenik. Ez az univerzális stílus, amelyből minden más stílus előállítható. A Render stílusok az anyag beállítás panelon is elérhetők:

### 3.8.10. Color Card

The Colour Card is for replacing a colour or texture with another colour or texture you choose - but this time, the change will take place on the entire 3D model. It replaces the used colour or texture with one of the predefined group of elements.

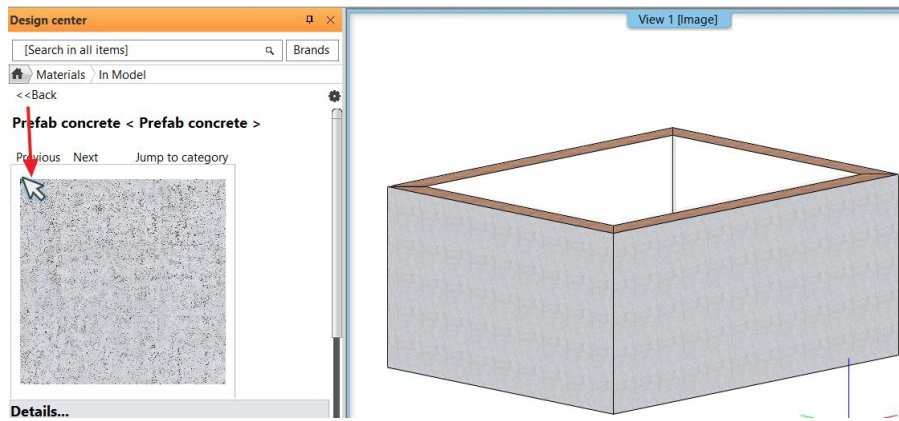
With only one click, you can visualize how the building would look like in an entirely different colour scheme. You can either create a new Colour Card, or turn an existing material into a new Card. In the Design Center, select the Material panel and In Model category. Click on a material you are going to convert. Click on Options button and select the command: Convert to Colour Card Group.



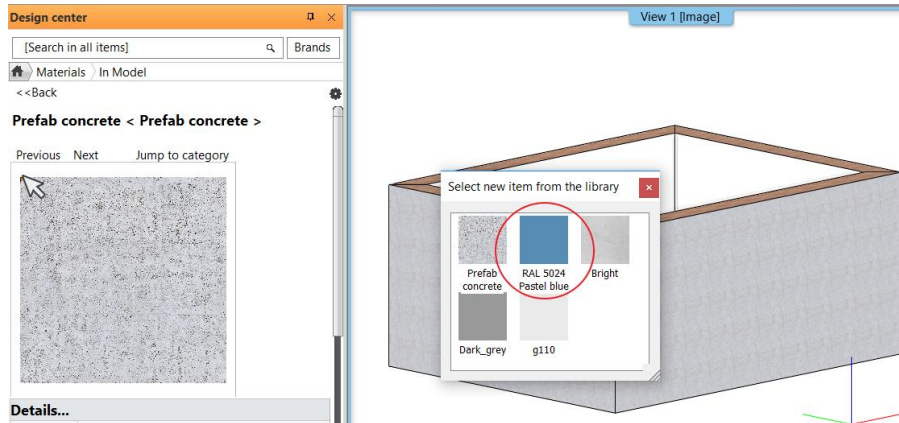


In the dialog you can add new materials, delete from the group and you can select a new current one. When you close the dialog with Ok, the program replaces the given material with the current one. Attention the material name remains the same!

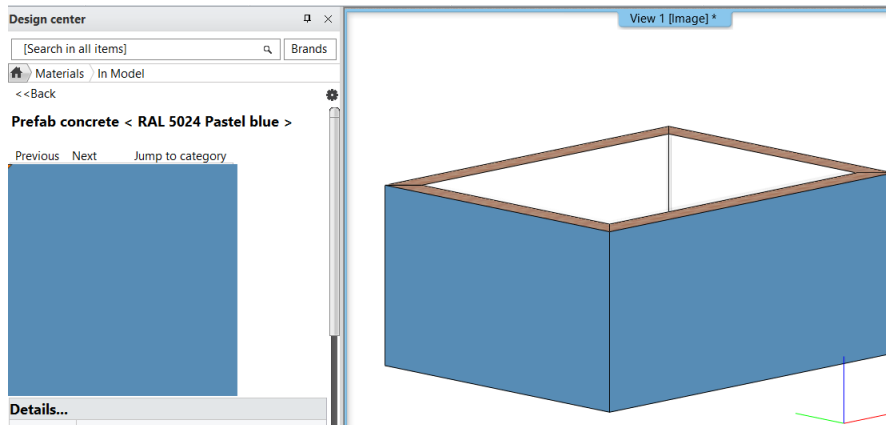
You can change the current material from the Color CardArd anytime. Click on the arrow icon in the left top corner of the image or click on Options button and Settings command.  
Example:



Select a new current material.



**Output:**



You can choose a new current material with Settings command too:

Substitute Material Group manager

Name of the new material:  
Prefab concrete

Category:  
BUILDING

Sub category:  
Concrete



Producer:  
generic

( Use \ to organize into tree-structure eg: Myroom\Furniture )

Current:  
RAL 5024 Pastel blue

Name

- Prefab concrete
- RAL 5024 Pastel blue**
- Bright
- Dark\_grey
- g110

The Substitute Material Group is a collector of real material and displays the currently selected material. You can list any number of materials in the list. It has the advantage that different versions of the same 3D model can be presented by selecting another element in the list without changing the project. If materials are directly linked to walls, windows, furniture, etc., then their modifications will not affect the 3D model in general. YOU CAN APPLY MATERIALS IN THE PROJECT CATEGORY ONLY.

OK Cancel

## 3.9. Layers

### Getting started

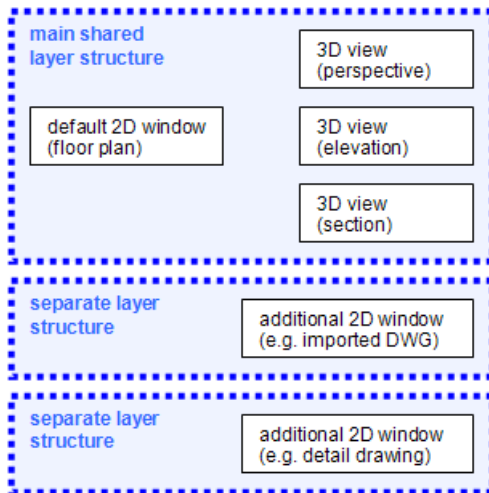
Layers are a method of managing the visual layout of a drawing. The program makes it possible to apply several layers at a time. With the use of layers you can group or separate the objects of the current project according to various aspects. The program sets the *Layer 0* layer as default, but you have the possibility to create additional layers. On the whole the program is able to manage 32 768 layers.

In ARCHLine.XP layers *have the following properties*:

- ❖ **Visibility:** on and off status
- ❖ **Background:** unlock and lock
- ❖ **Colour :** This feature is active in **Layer control mode**
- ❖ **Line type:** This feature is active in **Layer control mode**
- ❖ **Line width:** This feature is active in **Layer control mode**
- ❖ **Printable:** Set the layer to either printable (on) or not printable (off)
- ❖ **Description:** You can assign a description to layers – special information that is related to the given layer

Layers can be turned on and off, and can be unlocked and locked. With the help of these commands you can group the objects of the different layers.

3D views and the floor plan share a single layer structure:

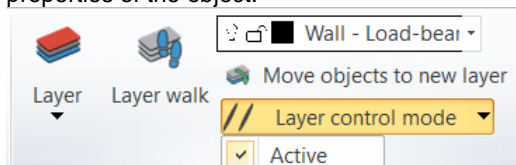


If you create, rename or delete a layer in the default 2D window, you can view the changes in the 3D View, and vice versa.


When specifying the general properties of object types, you can define on which layer you wish to place the objects of an object type.

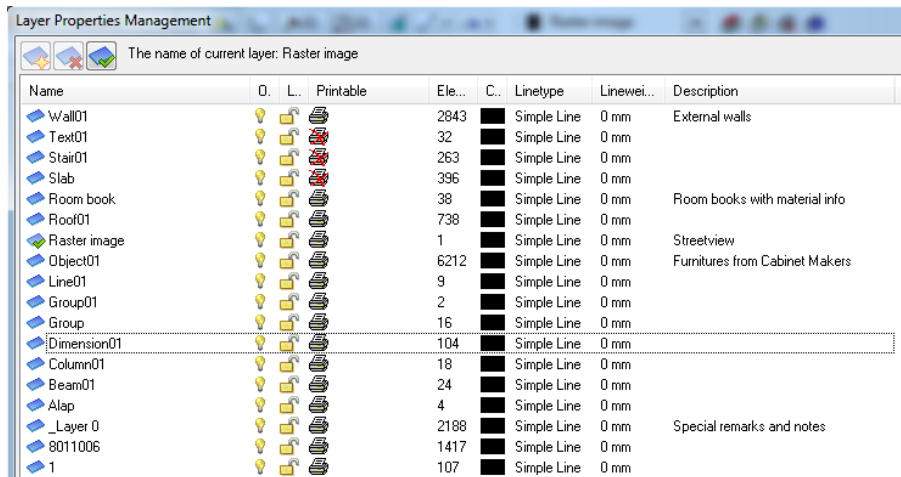
You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.

If you **activate** the **Layer control mode** in the Ribbon > Edit > Layer, when creating new objects the program can automatically assign the colour, line type, and line width of the layer on which you place the object to the general properties of the object.



### 3.9.1. Working with layers in Layer dialog


Select the Layer Manager command in the Modify menu, or Click the  Layer button in the Layer bar. The command displays the list of the layers in the drawing and you can specify their properties here.



! We suggest that you use a layer distribution and assign the elements to different layers. In this case you can group your project on the basis of layers. You can switch certain layers off, or use them as background.

In the following we describe the use of the *Layer* dialog box in details:


### Add layers

- To add new layer , click the  button.

Name	On	Lock	Elements	Color	Linetype	Lineweight
Dimension			0		Simple Line	0 mm
✓ Layer 0			0		Simple Line	0 mm
Layer : 1			0		Simple Line	0 mm

You can modify the properties of the new layer subsequently.

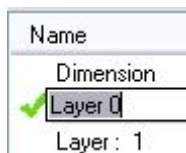


The pipe in front of the name of layer signs the active layer:  Layer 0  
See: 3.4.3. *Activate layers* chapter.

### Name layers

The program automatically names layers you create *Layer1*, *Layer2*, etc.

- Double click *Name*, and enter the desired name of the layer.
- Repeat the command in the case of other layers.



When clicking *Name* you can arrange the names in ascending or descending order.



The program maintains layer names even when you use the copy/paste command between different drawings. The name of the layer can contain maximum 48 characters; in case of longer name the program cuts the remaining characters.

### Delete layers

To delete a layer:

- Select the layer you wish to delete.
- Click the  button.



You can delete only empty, unreferenced layers. You cannot delete the active layer!

## 3.9.2. Layer variation groups

Layer variation groups is a new feature in the organization of project data.



When the project has entailed so much information that becomes confusing to understand it you can control the project visibility by Layer variation groups.

Switching between variation groups you can hide or show the desired part of the project in one step.

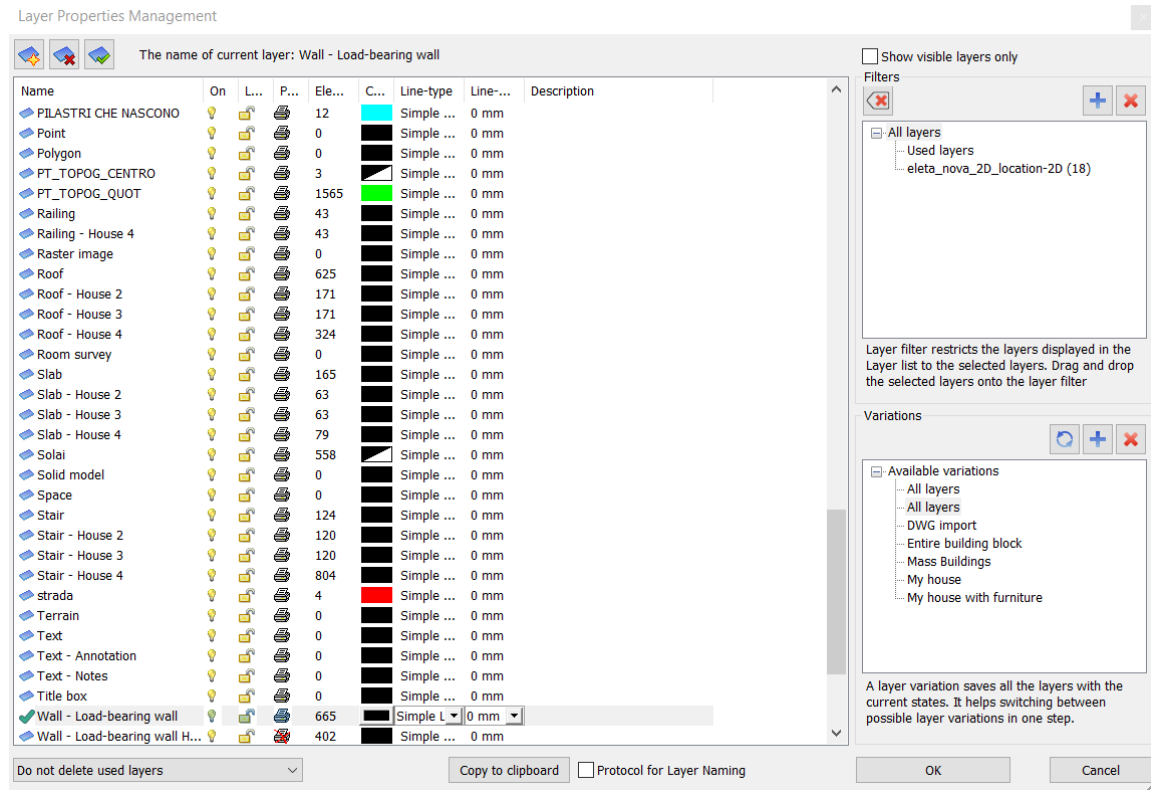
### Layer variation Group tree

Layer Combinations are listed on the right panel of the Layer Properties Dialog.


If a layer variation group is selected in the tree, the left side of the dialog displays the layers with the properties stored in the variation group.

The top node called *All layers*, displays all layers as visible and unlocked.


Click on the *Show used layers* checkbox if you want to filter layers that contain elements.




### Create layer variation group

Click on the *Create new group* button . Then a new group is listed with a name New Group. If you click with right mouse button on the name and select the *Rename* menu, you can give another name to the group.

### Update layer settings to a group

1. Select a variation group
2. Select one or more layers, change their settings and then press Update variation group button. 

### Display Layer variation groups


Select a layer group from the list and then press Delete variation group button .

### Example:

In the following example it is a really great help using the layer variation groups:

- Start a new project.
- Import a DWG file, which contains many layers.
- Switch ON all layers imported from DWG drawing and switch OFF all the others.
- Create a new layer variation group: *DWG layers*.
- Now Switch OFF all layers imported from DWG drawing and switch ON all the others.
- Create a new layer variation group: *My Building*.
- If the imported elements from DWG drawing are not needed, you can switch off them in one step.

### 3.9.3. Activate layers

Always has to be an activate layer on the plan. The active layer is always turned on and unlocked, with the pipe displayed in front of its name:  Layer 0

You can activate the layers:

- ❖ automatically
- ❖ in the Layer Properties Management
- ❖ in the Layer list box

The program always places the objects on the current layer.

The method is different according to the *Modify menu- Layer control mode* turn on/off status:


#### Layer control mode turned off:

The program activates *automatically* the layer assigned to the object in the object properties window. It places the new object on this layer. Except if you activate a layer during the command, for example: creating line, from the *Layer list box*. Then the program set the objects on this layer till you close the command.

#### Layer control mode turned on:

The program set the objects, that layer, which is activated in the Layer Properties Management dialog window or in Layer list box. In this case the program disregards the layer assigned to the object type.

#### Activate in the Layer Properties Management:

- To activate the layer click on the selected layer and then click on the  button.

#### Activate in Layer list box:


In the *Status* next to the *Layer settings* button you can find a list box, in which there are the layers with them actual status. The selected layer become active, this appears on the main line of the list box.



The automatic activate, the Layer Properties Management and the Layer list box are synchronized to each other.

### 3.9.4. Layer properties

#### Layers on and off (Visibility)

By turning layers on and off you can select the layers the objects of which you display in the drawing windows. The objects of turned-on layers  are visible and you can make reference to them.

Any time you can turn the layers on which have been turned off, then they become visible again.

- To turn layers on and off click the desired layer in the list, then
- Click the icon indicating the status of the layer next to Name field.



You can turn off layers by using the *Layer off command* in the shortcut menu of the drawing objects. Only the inactive layers can be turned off.

#### Locking and unlocking layers (Background)

By locking and unlocking layers you can define which layers shall be editable and selectable. You can lock layers containing objects that are not to be edited in a given planning process, these layers become background layers. The objects of locked layers are visible, you can make reference to them, but you cannot select or edit them.

- To unlock or lock a layer click the desired layer in the list, then
- Click the icon indicating the status of the layer next to Name field.

You can change the status of several layers at a time:

- With the Ctrl or Shift buttons select the desired layers from the list.

- Click the appropriate button in the list.

Name	On	Lock	Elements	Color	Linetype	Lineweight
Beam05			0		Simple Line	0 mm
Beam06			0		Simple Line	0 mm
Beam07			0		Simple Line	0 mm
Beam08			0		Simple Line	0 mm
Beam09			0		Simple Line	0 mm
Beam10			0		Simple Line	0 mm
CarryOver			0		Simple Line	0 mm
CarryOver01			0		Simple Line	0 mm
CarryOver02			0		Simple Line	0 mm
CarryOver03			0		Simple Line	0 mm
CarryOver04			0		Simple Line	0 mm



The active layer is always turned on and unlocked.



When the layer is turned on and unlocked:

- ❖ its objects are **visible**
- ❖ you can make **reference** to its objects
- ❖ its objects are **editable and selectable**



When the layer is turned on and locked:

- ❖ its objects are **visible**
- ❖ you can make **reference** to its objects, but
- ❖ its objects are **not editable or selectable**



When the layer is turned off:

- ❖ its objects are **not visible**, therefore
- ❖ consequently you **cannot make reference** to its objects, and
- ❖ its objects are **not editable or selectable**

### Colour

Color

- Click the button next to the layer you wish to modify, and then select the colour of the objects on the layer from the colour palette.

### Line type

Linetype  
Simple Line

- Click the command next to the layer you wish to modify, then
- Click the arrow next to the line type.
- Select the line type of the objects on the layer in the pull-down menu.

### Line width

Lineweight  
0 mm

- Click the command next to the layer you wish to modify, then
- Type in the desired line width, or
- Click the arrow next to the line width and
- Select the line width of the objects on the layer in the pull-down menu.

### Printable:

- By turning layers on or off you can select the layers to plot. If you turn off the printable property for a layer, the objects on that layer are still displayed.

### Description:

You can assign a description to layers – special information that is related to the given layer.

## 3.9.5. Layer control mode

The **Modify menu - Layer control mode option is turned off** by default.

When setting the general properties of object types you must specify to which layer you want to assign the objects of the object type in question.

You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.

For example:

When you select Layer1 in the *Wall properties* dialog box, it means that the program will place all walls created after setting with the given properties on Layer1. By turning a layer on or off or locking it, you can display, turn off, or use as background these walls together, where in the latter case you can only make reference to them but they are non-editable.

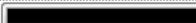
Let's see detailed, what's the different between the **turned on/off** option of the **Layer control mode**:

### Layer control mode - turned off

Let's have the *Layer control mode* in the *Modify menu* turned off:

In case of *Layer control mode* is off:

- ❖ The program set the objects to the object type assigned layer in the Layer Properties dialog. Except if during the creating command activate another layer from the State - Layer list box.
- ❖ When setting the general properties of the object you can specify the colour, line type, and line width directly by defining the property (e.g. the colour is red).

General	
Layer	12_Linie
Colour	
Line type	Simple Line
Line width	0 mm
Draw Order	8 - Bottom-most

#### Modify object properties:

















You can modify the properties of objects already existing on a layer similarly to the method described above. In the Modify object properties dialog box you can assign colour, line type, and line width separately to the layer or if these are already assigned, you can change them by directly specifying the properties.

### Layer control mode - turned on

When the *Layer control mode* is on, open the Layer Properties dialog and assign the appropriate *colour*, *line type*, and *line width* properties to the layers.

In case of *Layer control mode* is on:

- ❖ the program set the new objects to the active layer and not to the object type assigned layer
- ❖ The objects to be placed on the layer automatically acquire the layer properties. It means the colour, line type, and line width of the object comes from layer properties.

Name	On	Lock	Elements	Color	Linetype	Lineweight
Dimension			0		Simple Line	0 mm
Layer 0			0		Simple Line	0 mm
Layer : 1			0		Dotted	0 mm
 Layer : 2			0		Simple Line	0 mm
Layer : 4			1		Wavy	0 mm

#### Modify properties

When modifying the properties assigned to the layer, the objects in the drawing which belong to the given layer and whose properties are layer associated, will automatically be updated.

You can also modify layer associated properties subsequently:

If, for example, the program constructs each object of Layer1 with green lines, but you subsequently change the line colour of one object to blue, the object in question, although it is placed on a green-line layer, will be blue in accordance with the modification.



The difference between the on and off status of the layer control mode is that if turned on, the program set the new objects to the active layer and not to the object type assigned layer and the objects to be placed on the layer automatically acquire the layer properties (colour, line type, line width) at once. At the same time you can assign layer properties even if the layer control mode is off, but only one at a time. There is no difference between the on and off status when modifying object properties.

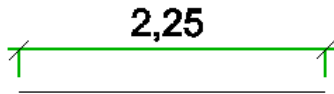
### Example 1:

- Make the Layer control mode turned on.

- In the Layer management dialog box assign to the *Dimension* layer the colour green and a line width of 0.15. Make the layer active.



- Draw a line and specify its size.



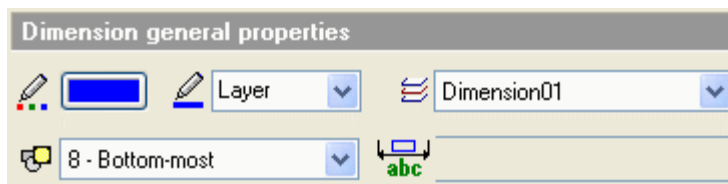
You see that the dimension has acquired the properties assigned to the layer. Let's see it in the *Dimension general properties* dialog box:

- Double click dimension.



The word *Layer* appears in the colour box in the general properties.

- Click colour. Next to the colour palette then displayed, the  option is activated indicating that the dimension has acquired the colour assigned to the layer. Next to the colour you see that line width is also assigned to the layer.
- By clicking and modifying the colour box, the colour properties of the object are not layer associated anymore.



### 3.9.6. Move Objects to New Layer

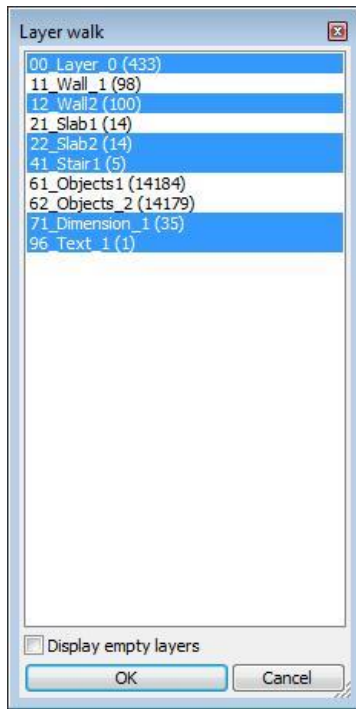
This tool will move objects from one layer to another, by selecting the destination layer from a dialog. You can move certain objects from one layer to another with the **Modify menu - Modify layer** command.

- In the dialog box displayed, choose the number of the new layer to which you want to assign the objects, and then click **OK**.
- Select those objects you wish to move to the new layer (you may also use the commands in the **Selection menu**).
- Enter** Finish selection and close the command.

**!** As soon as the selected object is moved to a given layer, the Visibility and Background properties of the layer also apply to the object. Additional layer properties, such as colour, line type, and line width modify only those properties of the moved object that are layer-associated.

### 3.9.7. Layer Walk tool

Layer walk tool helps you navigating through your existing layers of one drawing. The key point of using Layer walk is that it makes easy to switch on and off visibility of layers and visualize the effect at the same time on the drawing itself. The layer walk list shows the names of layers and the numbers of objects of one layer between bracelets "()".



Layer Walk tool can be found on Layer toolbar and also in the main menu in Modify / Layer walk.

### ***Display empty layers***

This option enables the visibility of empty layers in the layer walk list. By default all empty layers are invisible.

### ***Using layer walk***

#### **Select a layer**

When the layer walk list is open you can select a layer, by clicking on its name. The selected layer will be highlighted and its content will be automatically visible in the active window.

```
00_Layer_0 (433)
11_Wall_1 (98)
12_Wall2 (100)
21_Slab1 (14)
22_Slab2 (14)
41_Stair1 (5)
61_Objects1 (14184)
62_Objects_2 (14179)
71_Dimension_1 (35)
96_Text_1 (1)
```

#### **Select multiple layers**

To add a layer to your selection please hold down Ctrl button and click on the layer name. The selected layers will be highlighted and their content will be visible in the active window.

```
00_Layer_0 (433)
11_Wall_1 (98)
12_Wall2 (100)
21_Slab1 (14)
22_Slab2 (14)
41_Stair1 (5)
61_Objects1 (14184)
62_Objects_2 (14179)
71_Dimension_1 (35)
96_Text_1 (1)
```

#### **Select layers between first and last selection**

You can select every layer in the layer walk list between two selected list objects. Click on the first one, hold down the SHIFT button on your keyboard and click on the last object. Every layer between the selected ones will be selected, including the first and last.

```
00_Layer_0 (433)
11_Wall_1 (98)
12_Wall2 (100)
21_Slab1 (14)
22_Slab2 (14)
41_Stair1 (5)
61_Objects1 (14184)
62_Objects_2 (14179)
71_Dimension_1 (35)
96_Text_1 (1)
```

The same selection is also available by mouse only. Move over the first object, and hold down the left mouse button. While holding the left button move the mouse towards the end of the list and when you are satisfied with the selection release the mouse button. All objects will be selected between the first selections until the list object where the left mouse button was released.

### Change to Current Layer

This command moves objects to the current layer.

### Make Object's Layer Current

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer. This command is accessible in layer control mode only.

## 4. Project structure

### 4.1. Introduction

In ARCHLine.XP you can manage projects.

#### 4.1.1. Projects

The project contains all information needed to represent your design in floor plan, 3D views, sections, and printing layouts. The project is the single database of information and saved into one file with .pro extension.

ARCHLine.XP saves all your settings together with the project and allows you to customize them at any phase in the design process.

Moving project to another computer means to copy the one file with .PRO extension.

As you work on your design in any view, ARCHLine.XP follows the changes throughout the project. It means the 3D model, any views of the model, sections, the floor plan, and the printing layouts automatically update to reflect the changes.

***We recommend to work with project.***



If you double click on .pro and .asc files in the **Explorer**, ARCHLine.XP starts automatically, and the selected file is loaded.

If ARCHLine.XP is running, you can load any .pro and .asc or image file from the **Explorer** by drag and drop.

#### 4.1.2. Manage Project parameters

ARCHLine.XP provides option for project customization, including standard and user defined Project parameters. The standard parameters are the following:

Project properties

Parameters	Value
<b>Building information</b>	
Building type	Office
Project name	
Project number	
Building site name	
Project phase	Existing
Begin date	
Completion date	
Type Of Construction	
Current Floor	
Status	
Office area	
Building volume	
Area available for Building	0 m <sup>2</sup>
Maximum height of the Building:	0 mm
Building site total area [m2]	0 m <sup>2</sup>
Building elevation above sea level in m	
<b>Location information</b>	
Project location	47°30'0",19°04'59.88"
Project address	
Postal code	
Region	
Town	
Country	
<b>Client information</b>	
Organization name	
Client name	
<b>Architect information</b>	
Architect Name	
Architect Company Name	
Architect Address	
<b>Other</b>	
Creation date	2018.09.21. 09:47:39
<b>User parameters</b>	
Add	
<input type="checkbox"/> Do not show this dialog again	
OK	
Cancel	

**User parameters:**

Beside the standard parameters you can add any number of new project related information parameters.

Project information parameters are linked to Project Layout Stamp and fills the appropriate fields automatically.

**4.1.3. Building**

In ARCHLine.XP, the building is the highest logical unit.

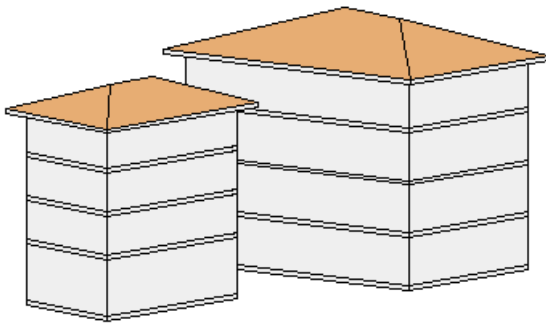
The building is made up of multiple floors, the architectural objects on the floors, and the layers that help the visualization and grouping of the objects.

Architects can design several buildings within one ARCHLine.XP project.

The buildings can be drawn separately in different projects or they can be handled in the same project.

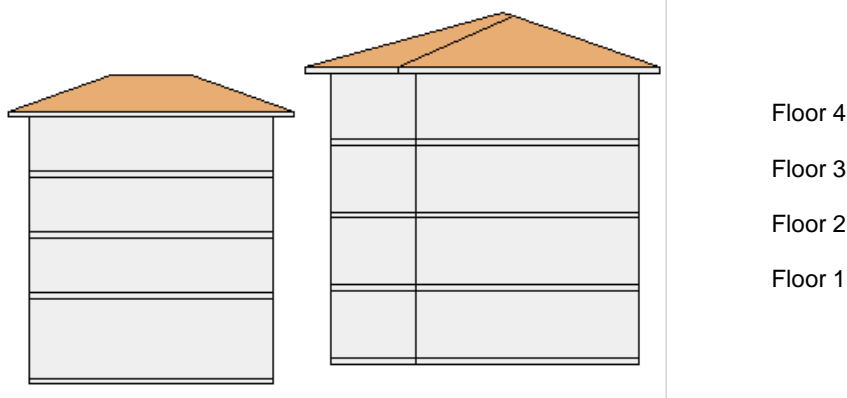
One building is active at a time while the others are visualized with a lighter tone. Different altitudes can be assigned to the buildings.





#### 4.1.4. Floor

In ARCHLine.XP the building levels are defined as floors. *Structural objects* and *Component objects* are associated to these floors, so that changes to a floor's height automatically generate changes to the linked objects elevation and height. The floor corresponds to the architectural meaning of floor. Just as in reality a building is built up from floors, the plan is also realized floor by floor, level by level. Opening a new project Floor 0 is automatically created. Any other floors are to be created by the architect according to the needs of the design.

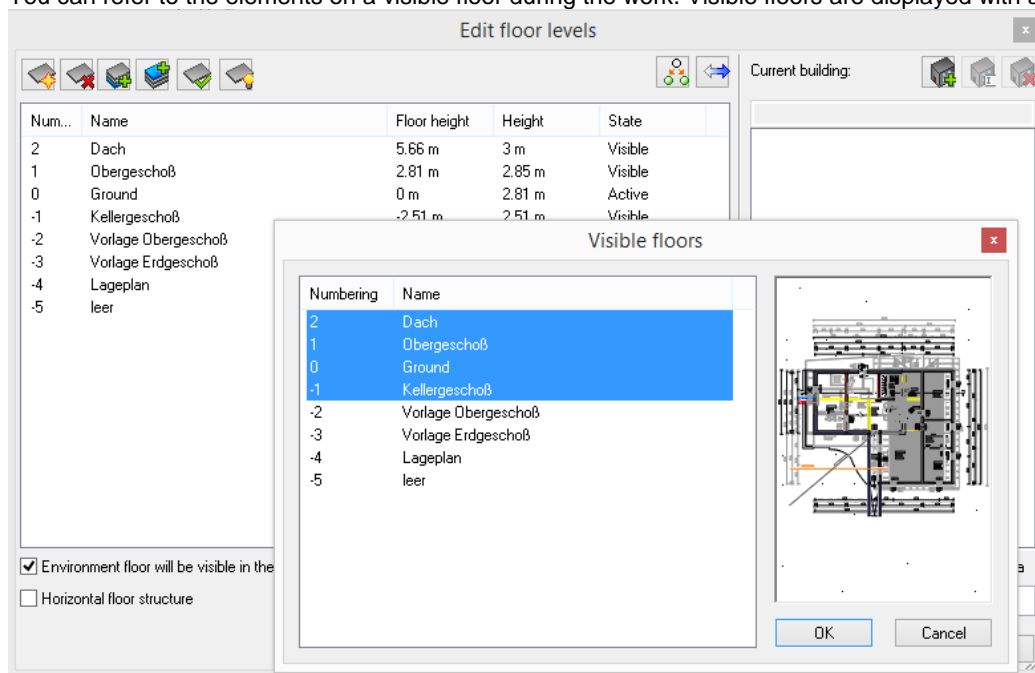


##### 4.1.4.1. Multiple visible floor plan structure

The multiple visible floor plan structure control visibility and display on the floor plan.

The visible range may contain more than one visible horizontal planes of a multi-story building.

You can refer to the elements on a visible floor during the work. Visible floors are displayed with a common grey colour.

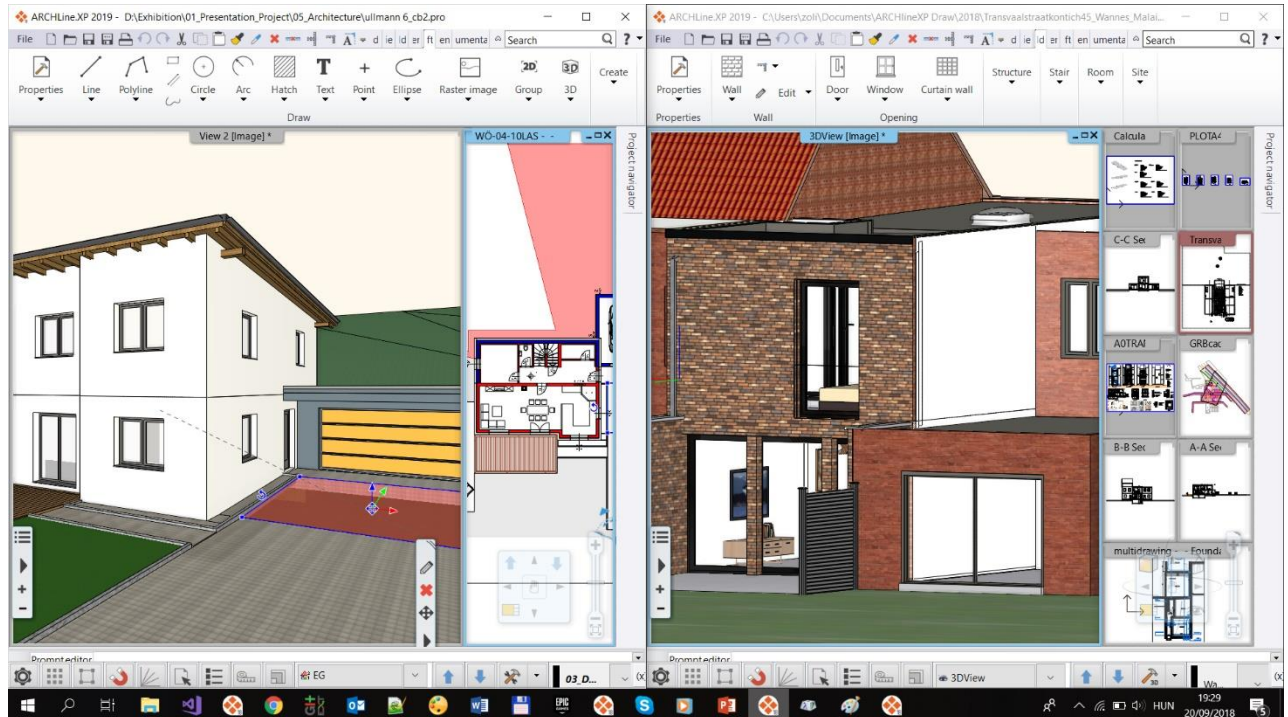


### 4.1.5. Multiple instances of ARCHLine.XP

It is possible to run multiple versions of ARCHLine.XP at the same time (available in Professional version).

Using multiple instances of ARCHLine.XP you can copy data from one project to another.

To copy a part of your floor plan from one project to another, using multiple instances of ARCHLine.XP, simply use the copy and paste clipboard commands in Edit menu.



## 4.2. Working with ARCHLine.XP project

The Welcome dialog automatically opens when you are starting ARCHLine.XP or you are about to close an existing project and create a new one.

In this dialog you can:

- ❖ start a new project,
- ❖ open any of the last projects used,
- ❖ open a project browsing by name,
- ❖ search a project by name and folders.

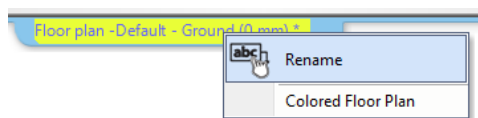
### 4.2.1. New project

With *File menu - New project* command you can start a new project.

When you start a new project, the new project uses default settings, which are defined in the default template.

The default template comes from Factory, Local and My template in this order. You custom template saved in My template has the highest priority.

If you click on 'New project' ARCHLine.XP loads the default settings and creates the primary floor plan view. This view is the default view in any project. The default name displays in the title bar of the view. To assign a different name, click into the title bar and type the new name. It is not allowed to delete the primary floor plan view from the project.



Take care! When a new project or drawing is created it is not automatically saved. You need to save it later.

### 4.2.2. Opening a project

In the Open dialog, navigate to the folder where the project file resides. Select the project file and click Open.

When you start the *Open project* command, the program offers you the folder of the last project you worked on.

**Preview**

Enable the *Preview* option to display the name of the drawings related to the selected project in the right hand side of the dialog box.

This helps you to clearly identify the project.

The program displays images only if you click on the name of the drawing. This way you can scroll the names of the drawings within each project.

Here you can select any of the last projects. The program loads the selected project.

**Importing floor plan from another project**

If you enable this option, the program will load the selected drawing **only**.

The drawing is separated from its original project and created in a separate view as part of the current project.



Use this option if you want to place a finished drawing saved as a project onto the terrain. If you manage multiple buildings, you should load the buildings with this option. To do so, select the floor plan from project drawings.

**Drag and drop files in ARCHLine.XP**

To open a project, there are other options than using a dialog box.

You can open files by drag and drop that is by dragging and dropping files from Windows Explorer to ARCHLine.XP, as it is used in Windows. You can use the following files:

Projects, ASC drawings, DXF, DWG, DWF drawings, image files (e.g. BMP and JPG files), SKP, 3D Studio objects (3DS).

**Opening ARCHLine.XP projects from Windows Explorer**

Double click the project file name (.pro) in Windows Explorer to start the program; the project will be loaded.

**Recent projects**

The last used projects appear at the right side of the *File menu*. You can load any of those by clicking on its name.

**File name rules**

Inside a project the renaming of files is not allowed, thus you can avoid creating name conflicts in a project. Only the changing of the pseudo name is possible in the Project properties dialog box. This new rule makes easier the handling and identifying of drawings on plot layouts, too.

- ❖ The name of the first floor plan window is derived from the name of the project.
- ❖ At the opening of other floor plan windows you have to define the new window name (e.g. 2D sections, 2D facades etc.).
- ❖ At the opening of a 3D view window the new window name is generated automatically (View 1, View 2, etc.).
- ❖ At the creation of a 3D section window the window name is generated automatically (Section1, Section2 etc.).

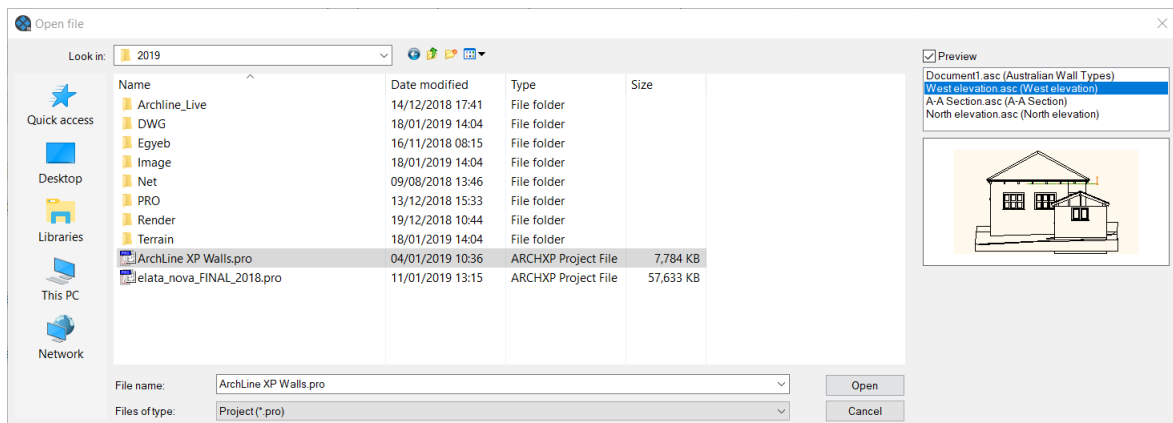
**4.2.3. Importing a drawing from another project**

If the drawing to be loaded is part of another project, the *Import* command can't be used. In this case, use the *File > Tools > Import from Project* command.

You can select in the Open Project dialog the project and click on the drawing name to import. Press the Open button.

**Preview**

Enable this option to display the selected drawing in the dialog box in an optimized size.



The program will merge the imported drawing file into the current project.

#### 4.2.4. Save project

When you save the project, each view goes into one file, with a **.pro** file extension.

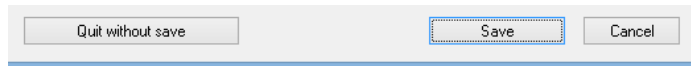
This project file contains all the information including materials, objects existing only in this project, architectural settings, display settings, hatch patterns and line types.

Only those styles are saved in the projects that are used within it.

The 3D database is not saved in the project by default, only upon your request.

#### Exit the program

When you exit the program, start a new project or load another project, the program displays the *Project properties* dialog box showing the states of the drawings, and asks for confirmation.



You can select the *Quit without save* option. In this case you are to lose all changes made since the latest save.

If you click *Quit without save*, the message appears: "Are you sure to close the project without save?" Choose YES to exit from the project without saving. Choose NO to return to Project properties dialog.

#### Save the current project

Click on Save button if you want to resave the current project.

#### 4.2.5. Save project as

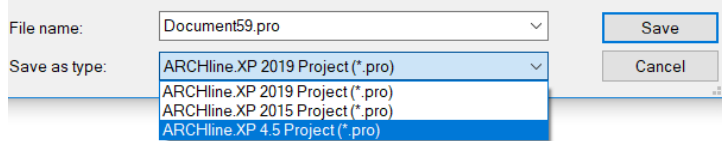
If you want to save the current project to a different file name or folder choose the Save Project as command.

In the Save As dialog, navigate to the desired folder and change the file name if needed.

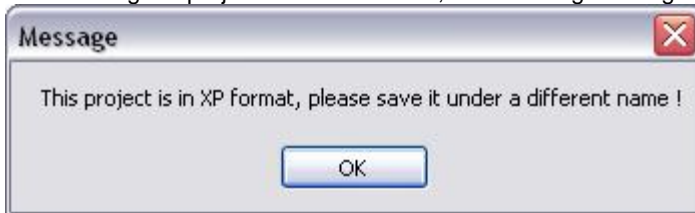
- ❖ If you want to export the project to earlier versions of ARCHLine.XP:

In the dialog click on Save as Fype field and select XP 4.5, 2015 or 2019 project format.

You can open the project saved this way with the previous program versions.



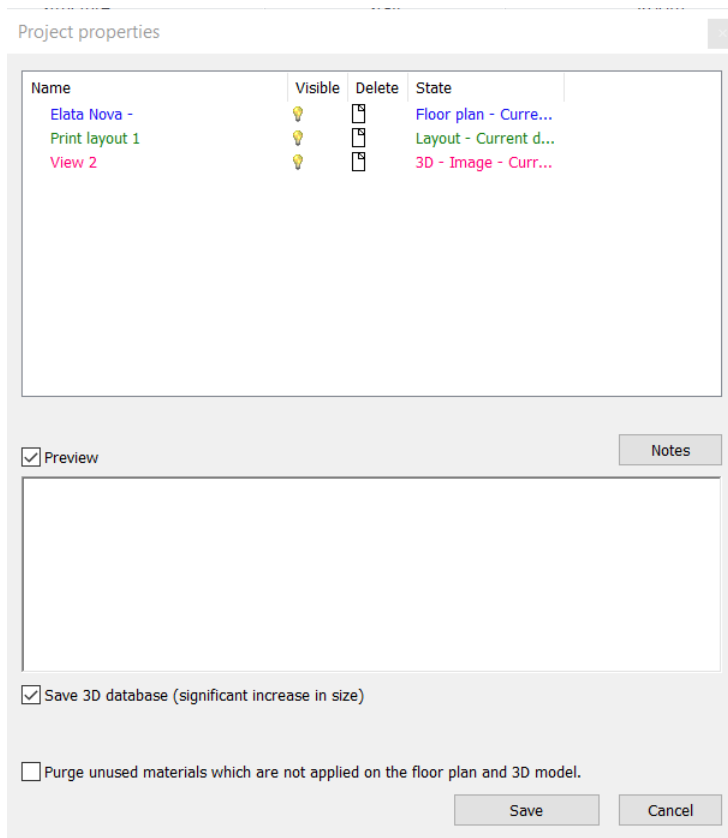
- ❖ You can load any project created with the previous versions. When saving the project in XP 4.5 format, the following message pops up:



This means that the program will not overwrite the previous file version, and you can save the project with a new name in ARCHLine.XP 4.5 format.

Drawings that make up the projects are also listed in the dialog box.

Floor plans are marked with blue, 3D drawings are marked with black, and plot layouts are marked with green.



### Rename

Double click on the selected File name. You can overwrite the drawing name here.

### State

You can change the state of any drawing.

You can delete any selected drawing in a project or you can turn them off temporarily. Drawing files can have three states: active or not visible and drawings to be deleted from the project.

Name	Visible	Delete	State
view			3D - Image - Current drawing
2d section			Floor plan - Current drawing
2d view			2D - Not visible drawing
office_building			Floor plan - Current drawing

### Active drawing:

An active drawing is displayed on the screen and is part of the project.

### Not visible drawing:

If you turn off the Light bulb icon, the selected drawing will be temporarily invisible, i.e. it will not have a window but it *will remain part* of the project. If you reload the project later on, the last saved state will be displayed, i.e. only the active drawings will appear. Click on the Light bulb icon in the **Save project** or **Project properties** dialog to activate the invisible drawing.

You can also make the drawing invisible if you disable the window of the drawing.

### Drawing to be deleted:

Click on the *Sheet* icon of any drawing to delete the drawing from the project; this also means that you delete the drawing from the hard disk and so it will not be accessible any more.

### Checkboxes:

#### -Purge unused materials:

The materials which are not applied on the floor plan and 3D model will automatically deleted from the project, if this function is switched on. As a consequence your project size may decrease significantly.



Remember not to delete the floor plan unless you do it for some specific reason.

### **-Save 3D database**

#### ❖ *Off:*

It is switched off by default therefore the 3D database is not saved in the project. The 3D model can be created from the floor plan any time.

If we use the 3D solid modeller and we do not save the object in the object library, we need to save the 3D model.

In a case like this the program recognizes that the plan contains 3D objects which have not connection to the plan and when the project is saved the program offers the possibility of saving the 3D model as well.

#### ❖ *On:*

If it is switched on the whole 3D database is saved. In this case the project size considerably increases.

## **4.2.6. Search projects**

### ***Introduction***

ARCHLine.XP gives an efficient helping hand to search former projects and drawings on the hard disks of the computer. You can use it simply, just determine the search position and conditions then you just have to select the proper one from the found projects or drawings.

This function can be used excellently for searching former used works or their backup copies.

Use search function

You can start the command from the File > Tools > Drawing Recovery Manager.

In the dialog determine, in which folder you want to search and give the name you are looking for, and the type of the file:

Project / Drawing

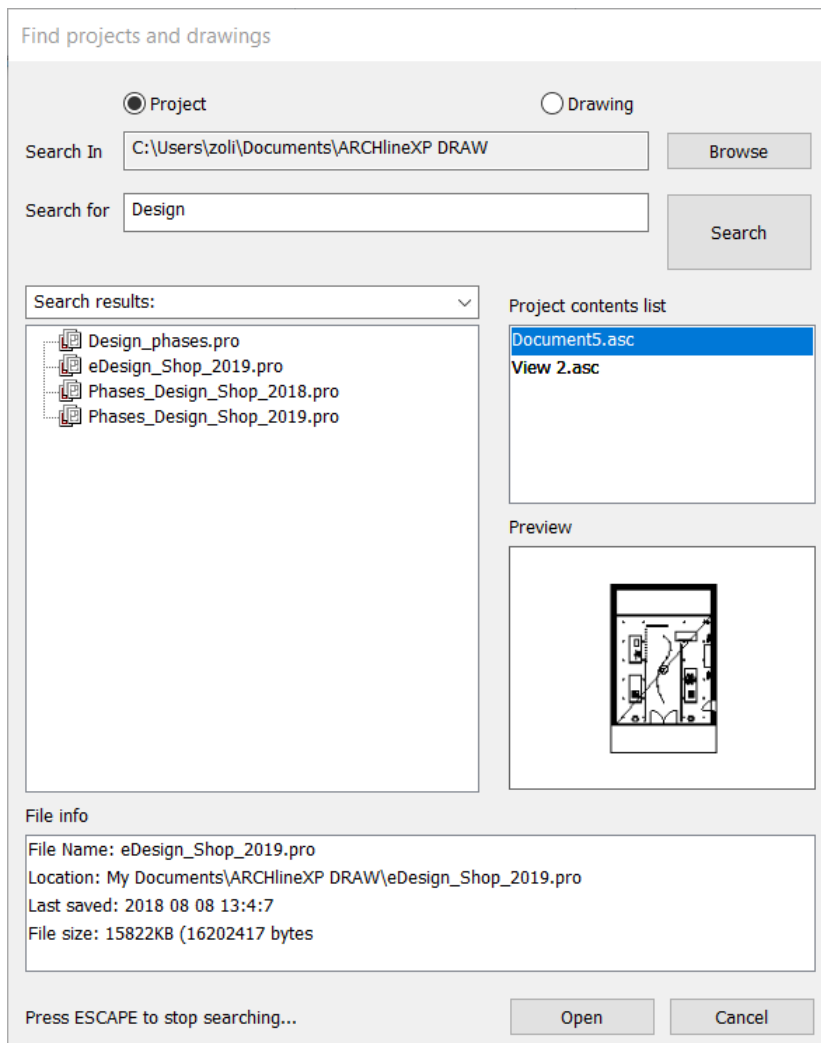
You can set what and where you are looking for. Select the proper option.

Folder

Here can be seen that access path, where the program is searching. Click on the Browse button, you can select another folder or driver. The searching happens in all subfolder too.

Search for

Here you can determine the name of the file or the part of it, which you want to search for. For example, if you look for the original „klimahaus.pro“ file, it is enough to write in the „klima“ search condition. After clicking on the Search button the program is searching files in the given path that contain the „klima“ detail.



The search results appear similarly as above.

### Search results

You can fine the search results. In course of searching the ARCHLine.XP search not only among the saved projects according to the given conditions, but among the backup copies (PR\$ extend files) and the automatically exist archives (Archive folder) as well.

Select the proper option from the drop down list, if it is necessary.

### Project contents

In this field you can select one design, which is in the selected project.

### Preview

It shows the preview of the selected drawing from project contents list in miniature form.

### File info

The program represents essential information from the selected file.

### Open

You can open the selected project or drawing, if you click on the Open button.



You can interrupt searching with pressing down the ESC button.

## 4.2.7. Backup Archives

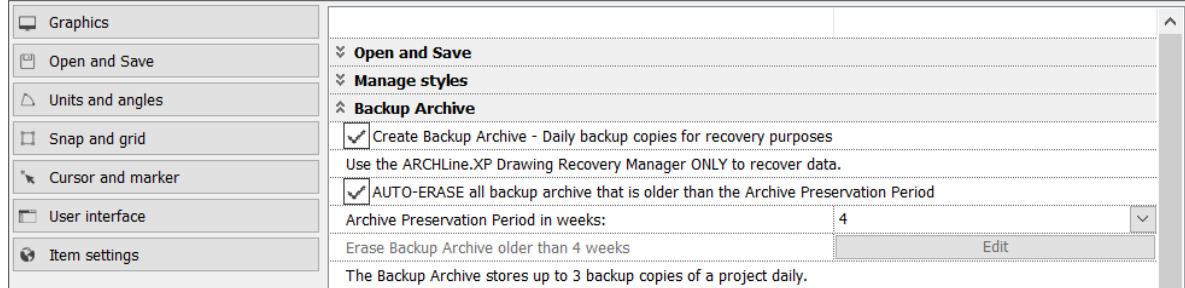
### Backup Archive

Backup Archive in ARCHLine.XP can be used to restore previous savings. However, it is important to know that this does not replace the normal project savings, it is only for backup purpose, and its content is not intended for permanent storage.

The archiving process creates a copy of the project under the ARCHLine.XP Draw/Archive folder into a hidden folder with the current date, right after resaving it first time.

During the daily work, two more savings are being stored by the program in this folder, a total of three project files. The first saving will not be overwritten and the other two backups will be overwritten only if one hour has passed between the two states. Until that the file stored in the Archive will not change. The program replaces the older file in the Archive when overwriting one of the two replaceable files.

Projects stored in the Archive will be deleted automatically so that they do not load the storage space slowly. This can be adjusted in Options > Open and Save > Archive Preservation Period in weeks. The shortest time is 2 weeks, the longest is 52 weeks. If you want to permanently save archive backups, automatic deletion can be disabled, but this means that your storage space will soon be full.



### Backup Archive restoration

You can find the archive files that are available using the Drawing Recovery Manager. Data stored in the Backup Archive can be easily restored by using the Drawing Recovery Manager from the File menu.

In the appearing dialog, you can set the folder where you are looking for files, this is by default the ARCHLineXP Draw folder.

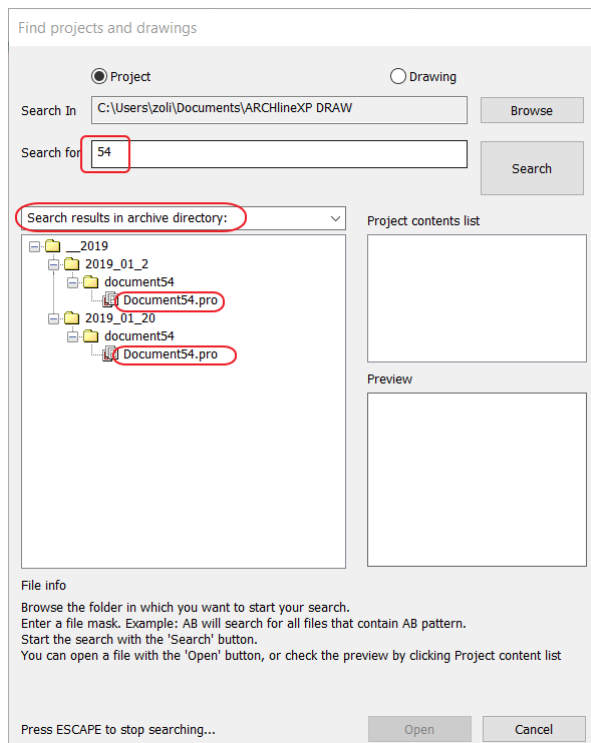
Then you need to enter a pattern that is included in the project name that will help you find it.

Finally, select from the list to search in the Archive folder.

Here you will find the results the daily backups. Choose the project name and click Open to load it.

Modifying the Archive files manually is not recommended.

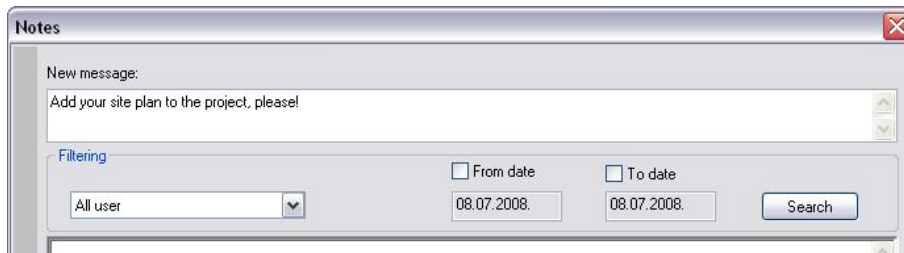
Example: Search for a project with a name pattern „54”.



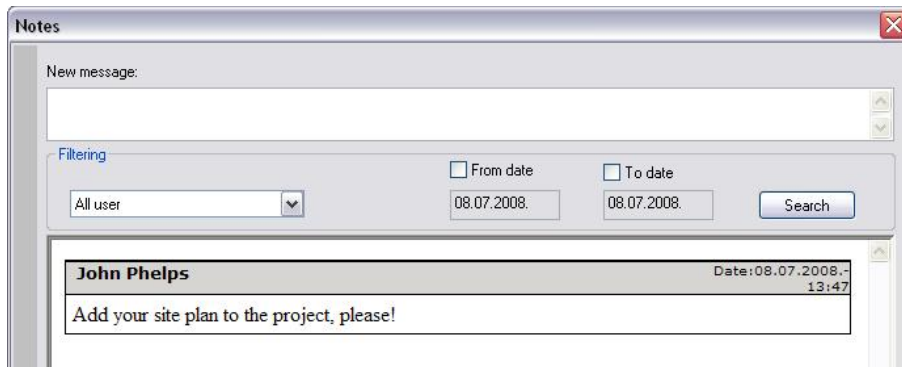
### 4.2.8. Notes

You can add notes to the project.





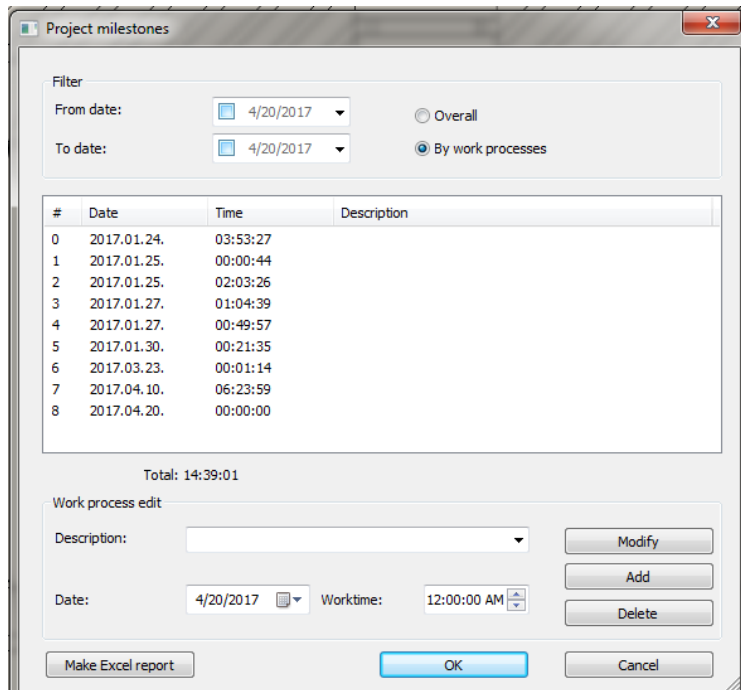
You can submit a note with the *Enter* key. For the case you exit from the dialog by clicking the *Ok* button, the new message will be saved, too. The messages appear in the message list. Click *Cancel* if you want to quit without saving the message.



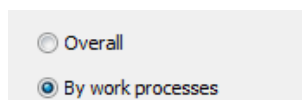
#### 4.2.9. Project milestones

ARCHLine.XP automatically follows and records the time was spent on the project. It takes as basis the time passed between project opening and its manual saving. These recorded data are editable and can be extended with further milestones.

Location of the command: Ribbon > File > BIM > Project milestones".



#### Views



There are two approaches in work process documentation which can be selected in “Project milestones” dialog window by selecting “Overall or By work processes”.

### Recording the time is spent on working on a project

A new work session starts when you open a project. If you save a project manually, then the linked working hour counter automatically refreshes. In case you work on more projects on the same day and you return to them from time to time then these are defined as new working sessions which are recorded as well.

The software helps to facilitate to record time with the above mentioned simple but hands-on approach, which later can be further specified or completed with data as per requests.

### Automatic recording

The fundamental starting point of “Project milestones” is the date and time of opening a project. If we open a project and manually save it, then the time spent working on this project automatically will be increased and saved with the project. Time elapsed between subsequent savings will increase total working time. The programme automatically records the work process without any detailed description, which later can be added.

### Manual recording

“Work process edit” enables to add new work process. The manual recording is useful to register such events which are carried out during the project. But due to the nature of these events, the time spent on cannot be directly counted and added to the project file (e.g. building survey)

- ❖ Choose “By work process” option.
- ❖ Select or type the details of the work process such as description, date and worktime in the “Work process edit” section.
- ❖ Press “Add” to record the previously uploaded work process.



Important note: The software allows overlaps between working hours. Therefore these sessions will appear in the work time summary (e.g. one colleague consulted on site while the other colleague edited certain parts of the project). If you want to avoid unwanted overlaps, always check the recorded data before using them.

### How to view the Project milestones?

The recorded data of the currently opened project can be viewed by clicking on the “Project milestones” command in the main menu “File-BIM”. By choosing “Overall” filter then you can check the details of the daily breakdown. If you choose the “By work process” filter then the details of work session will appear.

#	Date	Time	Description
0	2017.01.24.	03:53:27	Site planning
1	2017.01.25.	02:04:10	Floor plan design
2	2017.01.27.	01:54:36	Suspended ceiling plan design
3	2017.01.30.	00:21:35	Tiling and other surface decoration
4	2017.03.23.	00:01:14	3D modeling
5	2017.04.10.	06:23:59	Documentation

Overall view

#	Date	Time	Description
0	2017.01.24.	03:53:27	Site planning
1	2017.01.25.	00:00:44	Floor plan design
2	2017.01.25.	02:03:26	Floor plan design
3	2017.01.27.	01:04:39	Suspended ceiling plan design
4	2017.01.27.	00:49:57	Suspended ceiling plan design
5	2017.01.30.	00:21:35	Tiling and other surface decoration
6	2017.03.23.	00:01:14	3D modeling
7	2017.04.10.	06:23:59	Documentation
8	2017.04.20.	00:00:00	

By work process view

### Editing work process

There is always a possibility to modify the description, worktime, date of a work process which was automatically generated or previously created/added - in overall view only the description is editable. The latter will be the most useful, when you like to add description to the automatically generated notes with no description.



It is good to know that in the “Description” field you can choose not just from the given list but also you can create new ones. (e.g. consultation via Skype) These individually typed descriptions will be noted in the project by the software. Next time if you like to use these new descriptions you just simple choose these items from the upper part of the extended list.

### **Modifying work process**

To modify already existing work process please do the followings:

- ❖ Select the work process on the list
- ❖ Modify the "Description", "Date" and "Worktime"
- ❖ Press "Modify" button to save changes

### **Modifying notes**

To modify in group the description of overall work process please do the followings:

- ❖ Select the work process you want to change from the list
- ❖ Modify the description
- ❖ Press "Modify" button to save changes
- ❖ A "Message" will appear to confirm the changes. If you choose "Yes" every independent notes linked to the overall work process will get the new description.

### **Deleting work process**

To delete an existing work process please do the followings:

- ❖ Select the work process you want to delete
- ❖ Press "Delete" button in the dialog window

### **Make Excel Report**

The collected work time data in a project can be further processed by exporting them into an Excel file.

To aim this please do the followings:

- ❖ Press "Make Excel report" button at the bottom of the dialog window.
- ❖ Give the location and the name of the file and press "Save".

If you have a program which is able to handle/edit Excel files, after finishing to save the file, then the saved Excel file will open automatically and be ready for editing.

### **Project locking**

File locking is a mechanism that restricts access to an open project, allowing only one user to work on it and meanwhile the other users can open it only in read only mode. ARCHLine.XP locking system prevents the interceding update, so the project is editable only for the user who accessed the project first.

Other users can open the same project on the network but only in locked mode that disables to save any modifications

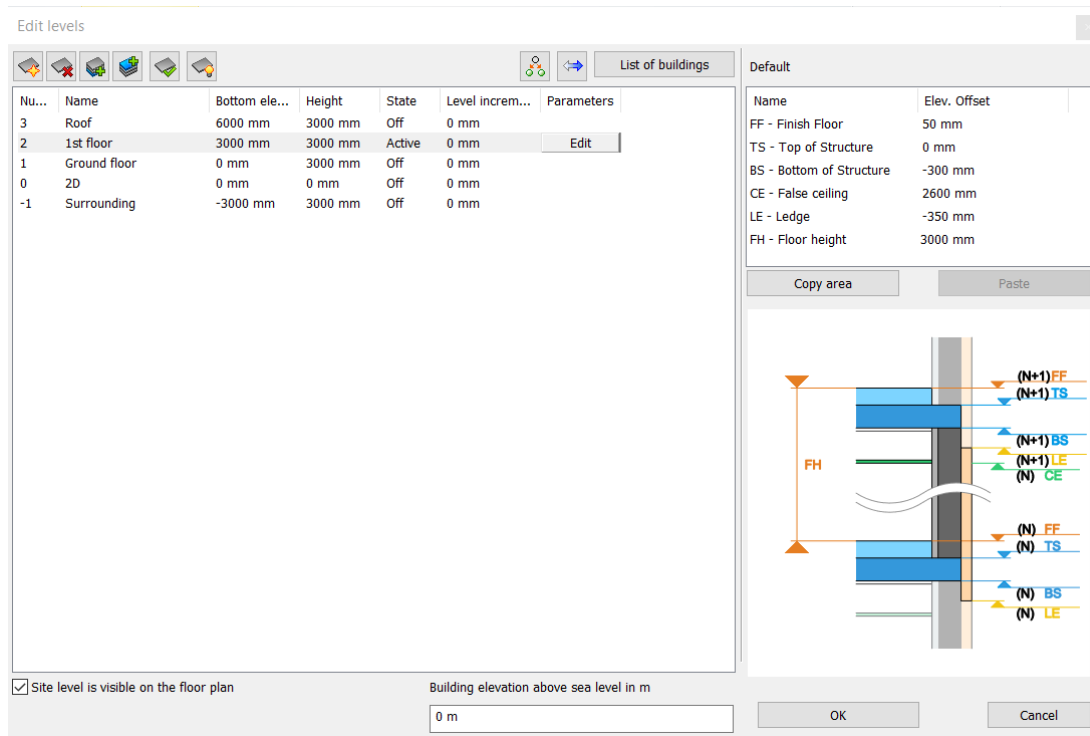
## **4.3. Views**

The drawing area is the largest part of the ARCHLine.XP application window. All views that make up the project are displayed in the drawing area. Title bar of each view displays the name of drawing file. Views can be moved by the title bar, and can be resized by their side.

### **4.3.1. 2D floor plan**

The 2D floor plan view is the default view in a new project. Every project must include at least one floor plan.

Floor plan contains buildings and levels (storeys) within the buildings.



### 4.3.2. 3D view

An arbitrary number of 3D views can be created. The names are generated automatically.

There can be two types of 3D views:

- ❖ 3D image mode,
- ❖ 3D vector graphics mode

An image view can be converted to vector graphics view and vice versa. For this you have to click with your right mouse button on the title bar of the view and select the command: **Image <-> Vectorial**

What are the differences among these two view types?

#### 3D image view

We recommend the use of Image view by default because it moves quickly the 3D model (rotation, zooming) regardless if the model is represented with hidden line, material colour or material pattern. In this case the 3D hidden line representation is much faster because the application can use the capabilities of graphics hardware acceleration.



Please be aware: if the content of a view is IMAGE then it is not suitable for drawing representation or copying its content to a 2D view. It is printable as a raster image.

#### 3D vector graphics mode view:

Because of the drawing (vector graphics) content, the representation with hidden line, material colour or material pattern is slow because the generation of the model is based on software. We recommend to use for Sections.

#### 4.3.2.1. Specifying the background for 3D image mode view

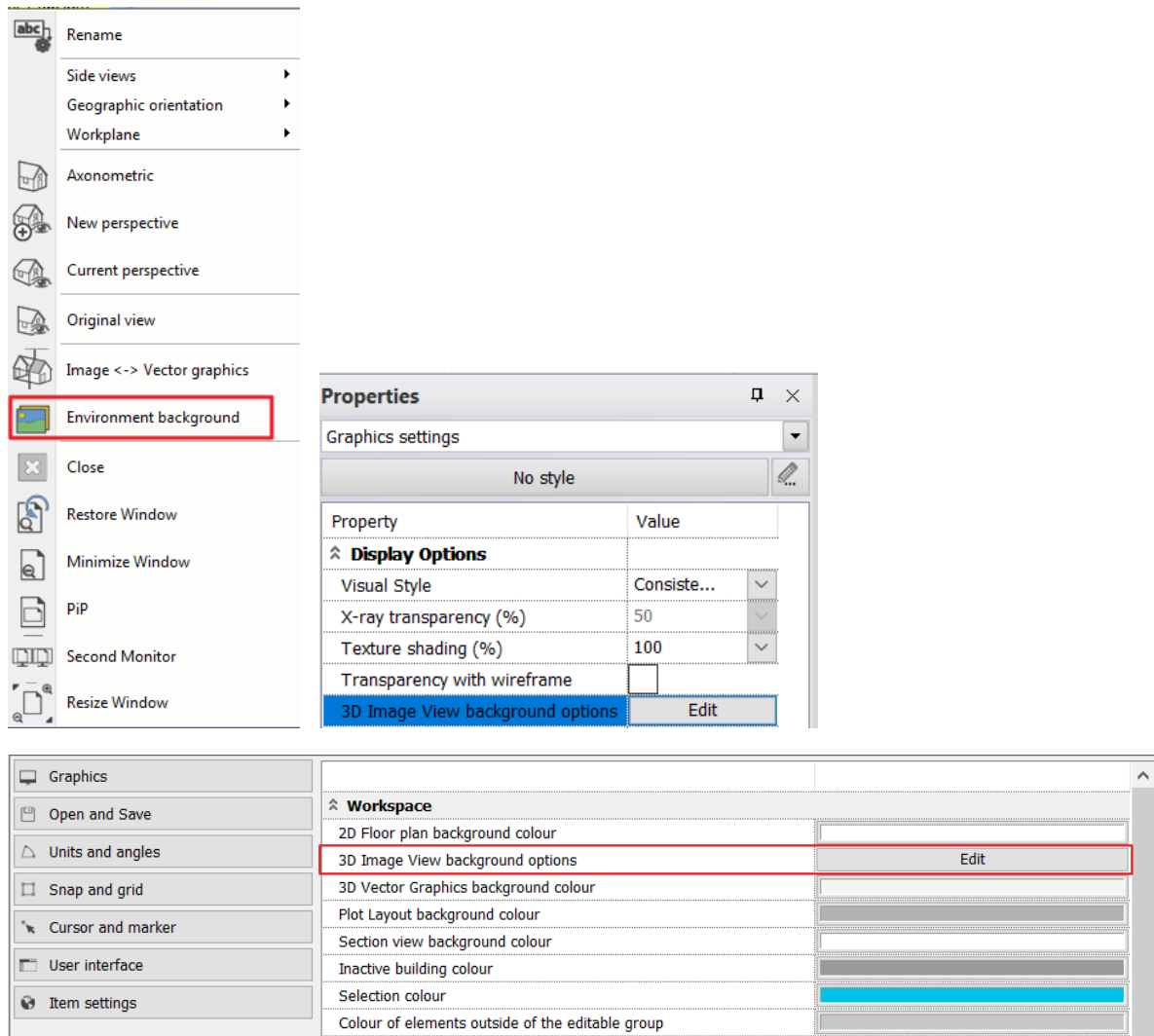
You can specify various background as uniform color, gradient color, image and panorama. You can apply gradient background for representing the sky, horizon, and ground with different colors. In an orthographic view, the gradient mode is automatically changes to uniform color.

HDRi images provide realistic backgrounds to 3D perspective views even in the design phase in ARCHLine.XP. HDRi images are special 360 degree images of background imagery such as skies, landscapes and buildings. If you want to use the HDRi as background, all you have to do is to activate Environment Background and load it in the Environment Options dialog.

#### How to specify the background for a 3D view

- Activate the 3D image view

- Set a perspective view
- Click the header of the 3D image view and select Environmental background or
- Go to the Option > Graphics > Workspace > 3D Image View background options, or
- In the Property Grid – Graphics settings panel, click the button for 3D Image View background options.



The Environment Background options dialog appears.

- Select the desired Background option from the drop-down list. You can select from Uniform, Gradient, Image and Panorama options. The preview of the selected background appears on the bottom-left space of the dialogue.

### **Uniform**

In case of Uniform background selection, you can select one colour for background. The selected colour is represented on the colour button.

- To change the selected colour, click the Colour button and select a colour from the available colour schemes.

### **Gradient**

In case of Gradient background selection, you can define different colours for sky top, sky bottom, ground top and ground bottom. The selected colours are represented on the colour buttons.

- To change a colour, click the colour button and select a colour from the available colour schemes.

### **Image**

In case of Image background selection, you can select an image for the background. Five built-in images are available in the Printer Raster drop-down list:

- ❖ City sky- Cloudy
- ❖ City sky at night
- ❖ City sky at sunset

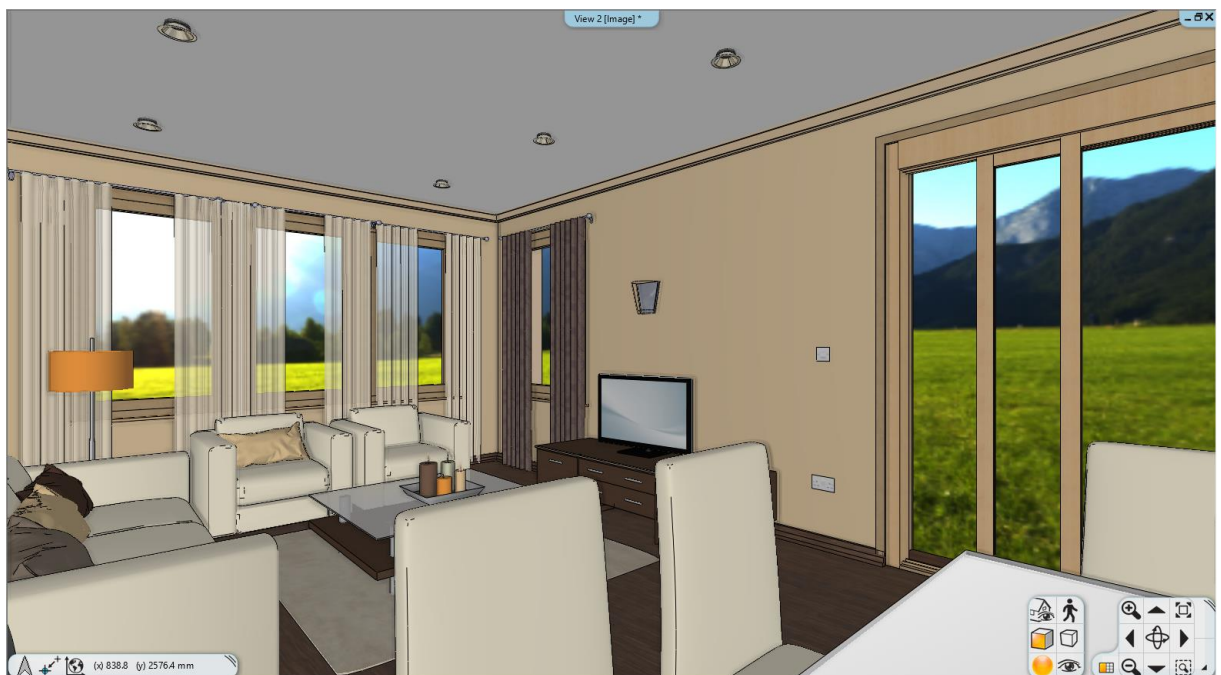
- ❖ Cloudy blue sky
- ❖ Starry night
- Select Custom Background Image from the drop-down list if you want to specify your own image.
- Click the *Filename with path* ellipsis button and browse for the desired image file.

### Panorama

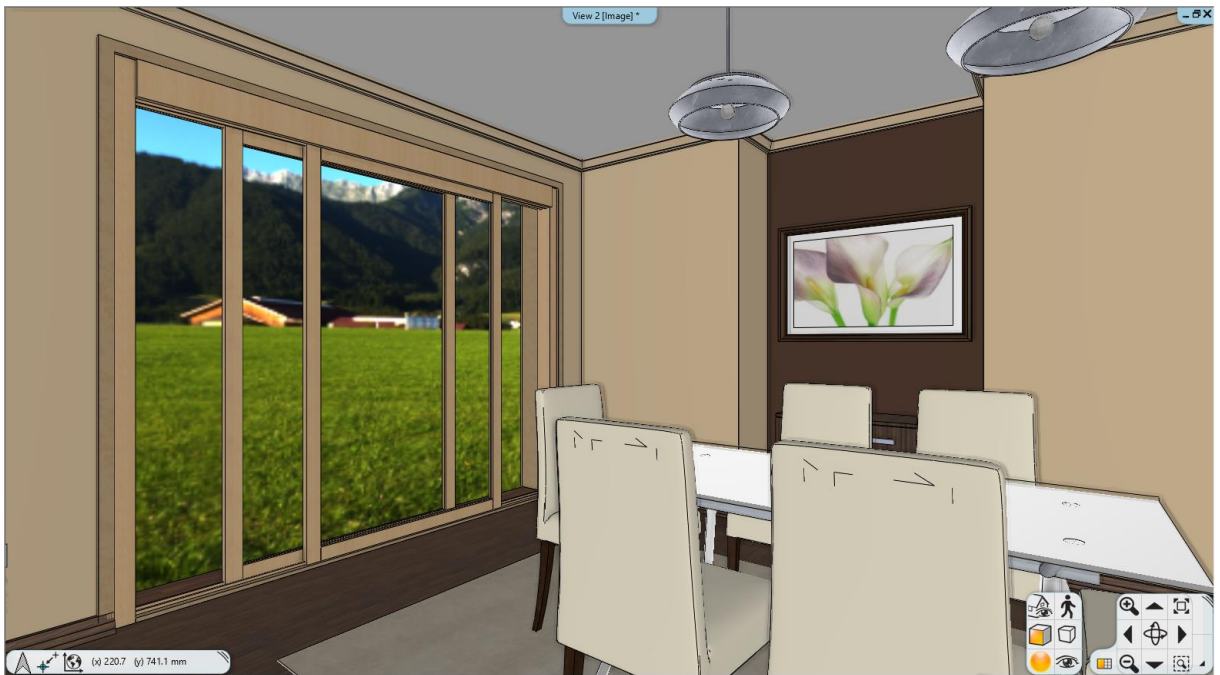
In case of Panorama background selection, you can select a Panorama image for the background. Three built-in images are available in the Panorama drop-down list:

- ❖ Hills in the distance
- ❖ Just outside the town
- ❖ Sunny plain
- Select *Custom panorama* from the drop-down list if you want to specify your own Panorama file.
- Click the *Filename with path* ellipsis button and browse for the desired HDRI image file.
- Specify the Panorama direction from the drop-down list. This value turns around the panorama so you can see the desired part of the background in the actual perspective.

The view should come out looking like this example below.



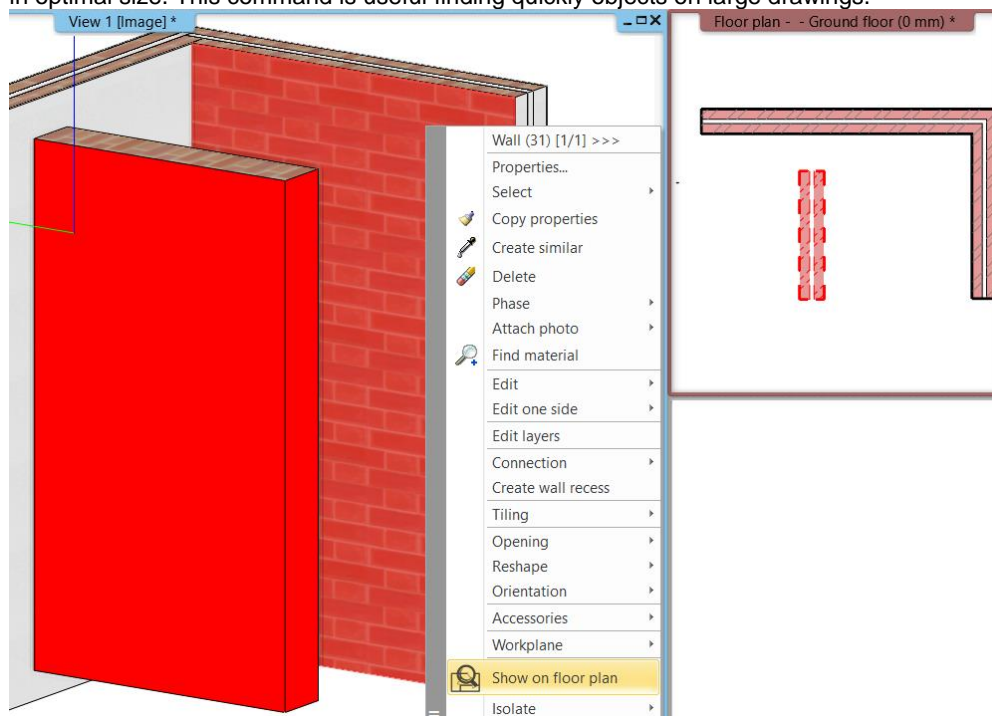
Walking in the scene the environmental background changes according to the movement.

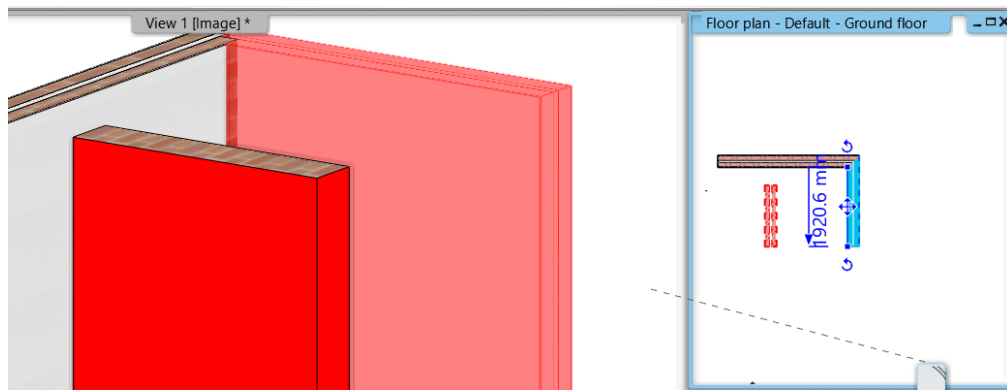


**Note** To refresh the background image according to the settings you made in the Environment Background options dialogue, click into the 3D view or change the perspective.

### 4.3.3. Show on floor plan

Right-click on an architectural object in the 3D view, and in the shortcut menu choose the *Show on floor plan* command. The appropriate floor becomes active; in the centre of the view the program displays the selected object on the floor plan in optimal size. This command is useful finding quickly objects on large drawings.





#### 4.3.4. Close view

If You click to the X sign in the right upper corner of the activate view, the program close it. It reminds us to save the content of the view. There must be at least one view open on the screen

Working with projects the closed view will not be seen, but it will not be deleted from the project. A drawing can be deleted from the project in the *File menu - Project properties* dialog.



#### 4.3.5. Modify views

Size and position of a view can be changed according to Windows standard.

#### 4.3.6. Open new view

Because the views containing the drawings can be of two types: *2D views*, *3D views*. Type must be defined when a new view is created. The maximal number of visible views is 16.

##### 4.3.6.1. New 2D floor plan view


Choosing this command the program opens a new 2D view.

Location of the command: Ribbon bar > View > Add 2D Drawing

- Define the name of the new view.

New floor plan view will be created.



The command can also be activated with the *Edit toolbar*-  *New* icon.

##### 4.3.6.2. New 3D view

Choosing this command the program opens a new 3D view. The new 3D view visualizes the axonometric view of the actual 3D model.

Location of the command: Ribbon bar > View > Add 3D View

- ❖ The view can be changed by right clicking on the heading of the 3D view and selecting the adequate view command from the **3D view menu**.
- ❖ The same can be done with **View menu - Show 3D - View** option.

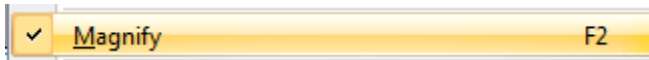


### 4.3.7. Arrange views

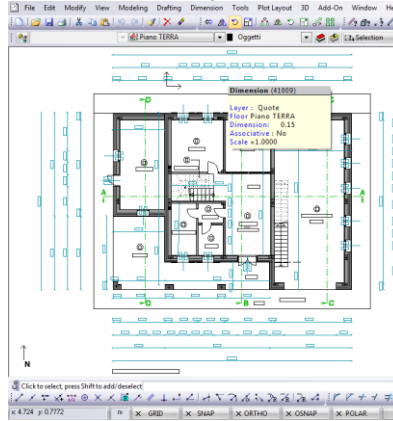
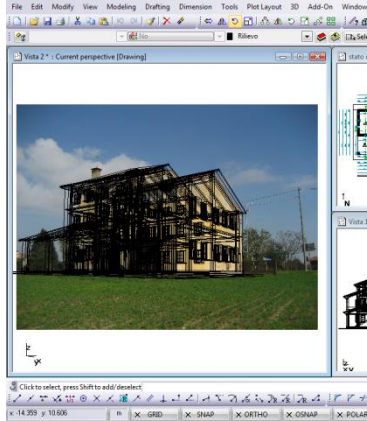
The following commands help you to arrange views on your computer screen in the most optimal way.

#### 4.3.7.1. Magnify - F2

Presents the active view enlarged to the entire screen. A tick in front of the command in the menu shows that the command is active.



Click on the command again it will be switched off, and the original multi-view arrangement appears again.



**Enlarge** command can also be activated by the  button in the right top corner of the active view.

#### 4.3.7.2. Zoom in active view

The program divides the screen: the active drawing gets into the main view; the others will be presented under each other in the right side of the screen.

Ratio between the main and lateral views can be given by the following *Zoom in active view with value...* command.

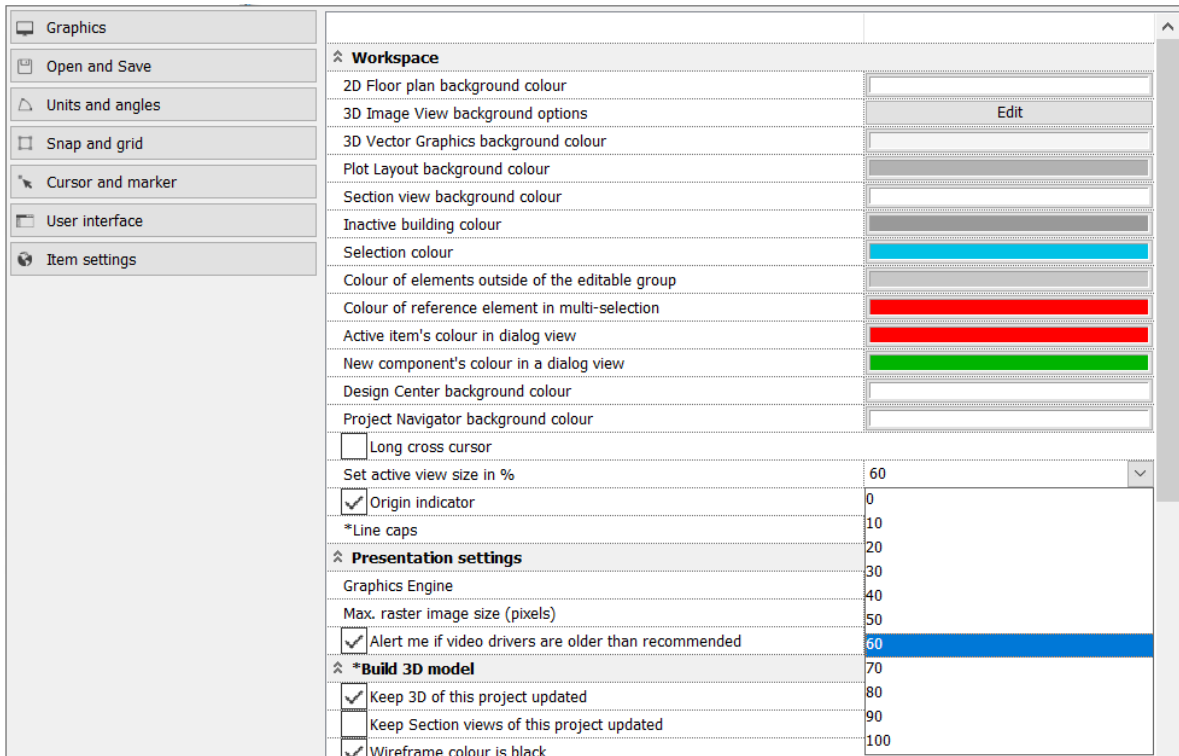


Command is also available in **View toolbar** -  **Enlarge active view** icon.

#### 4.3.7.3. Zoom in active view with value

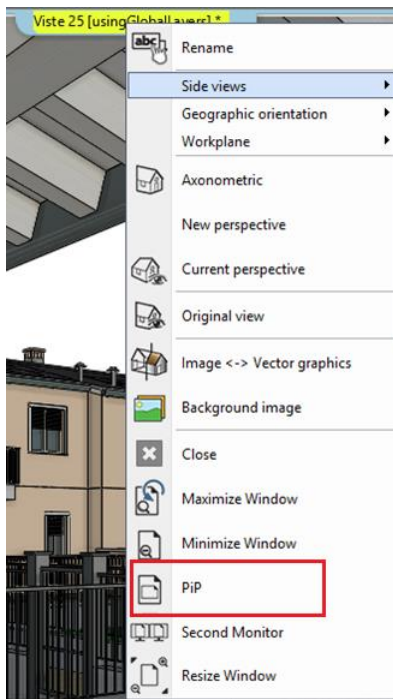
In the **File -Options - Graphics** you can manage the active view proportional size on the screen.

You can set here the active view's width in %. The value can be between 15 and 85 %.



#### 4.3.8. PiP (Picture in Picture)

When you click on the view header the *View menu* appears. It contains the Picture in picture command:



#### **Pip (Picture in picture) - Always on Top**

PiP (Always on Top) forces the view to stay on top relative to other views.

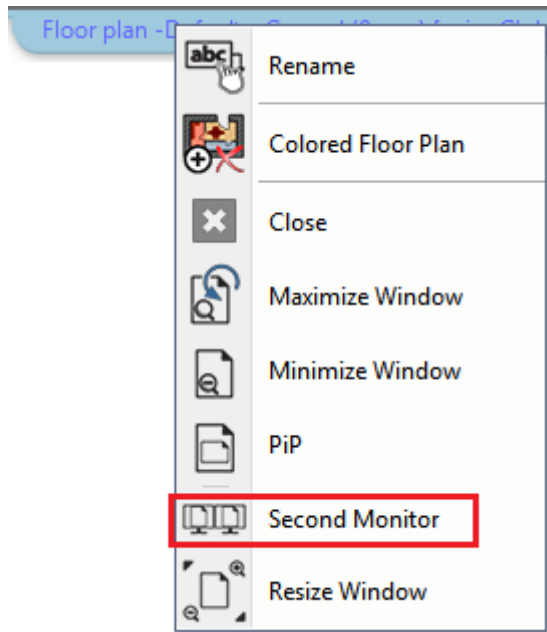
Always On Top allows controlling the view 'behaviour' by means of extra button placed near the standard Minimize/Restore/Close group that results in greater workspace e.g. for your floor plan and its accuracy.

#### 4.3.9. Second Monitor

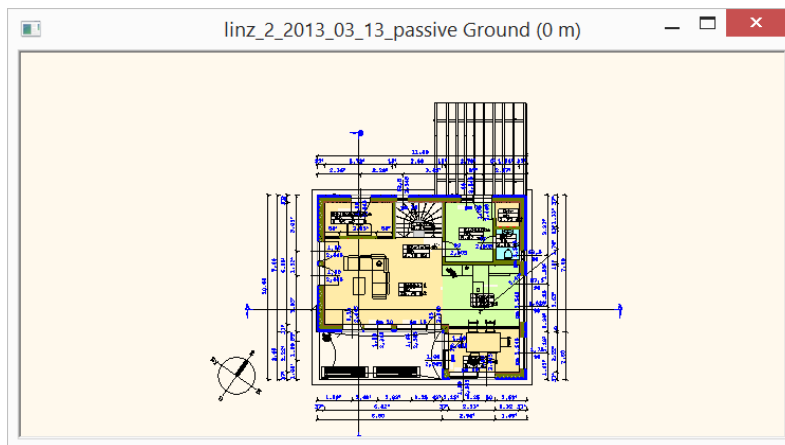
In the ARCHLine.XP it is easy to configure the display layout using the second monitor placing there one or more 2D or 3D views.

To adjust the display layout, you need to click on the active view header.

Here you find the **Second Monitor** command. Click on it to prepare the view movable to your second monitor.



Click on it to make the view movable to your second monitor. The view layout will change and displays a wide header.



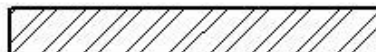
Click on the header and you should be able to drag the view from one screen to the other without changing any settings.

### Object info

Information window that appears when the cursor is moved above an object, and waits a little. Geometrical information is listed here. Tool tip with these data can be placed on the drawing by the last icon of Text menu

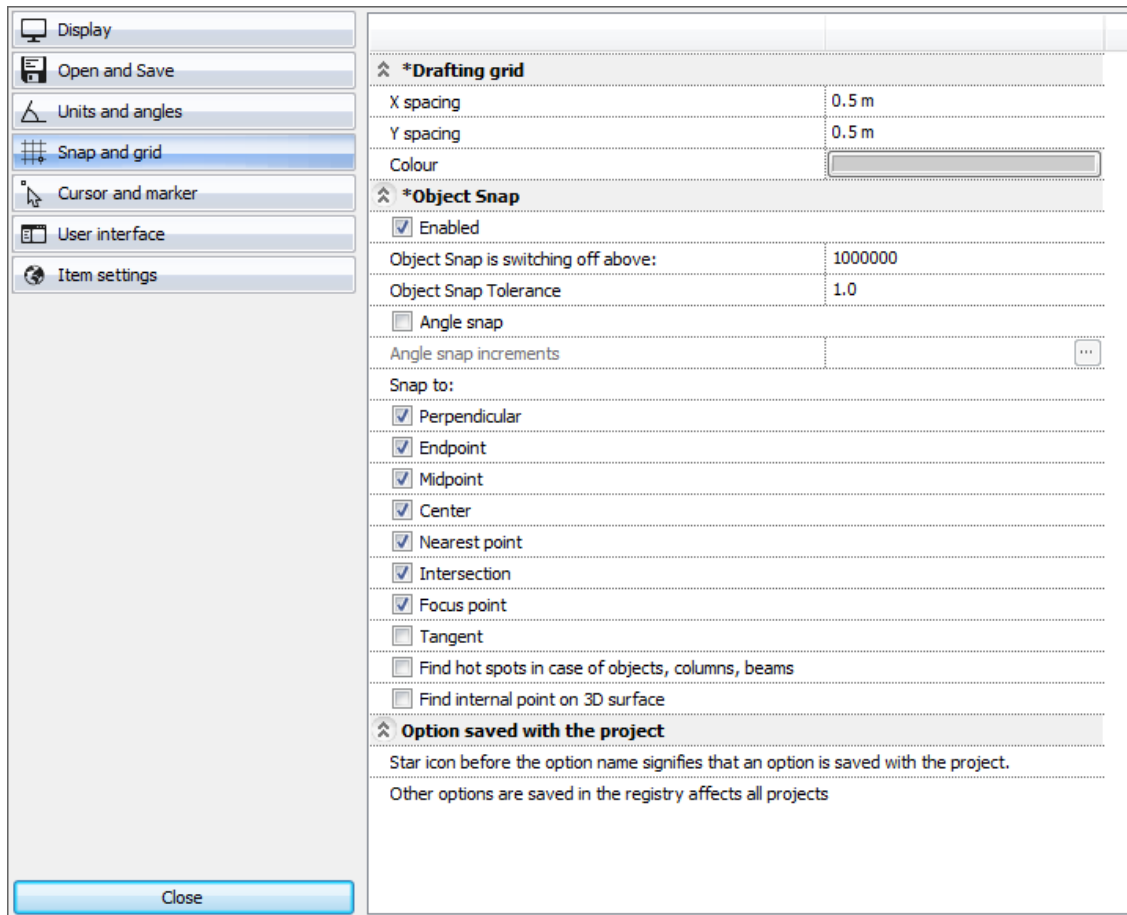


This option can be switched on/off in File menu / Preferences / General /



Wall (2)	
Layer :	Wall01
Floor :	0
Set :	1 layered 38 wide wall
New wall	
1. length:	3.00 [m]
2. length:	3.00 [m]
Width:	38.00 [cm]
Height:	2.70 [m]
Height from floor:	0.00 [m]
1. Area:	8.10 [m <sup>2</sup> ]
2. Area:	8.10 [m <sup>2</sup> ]
Volume	3.078 [m <sup>3</sup> ]

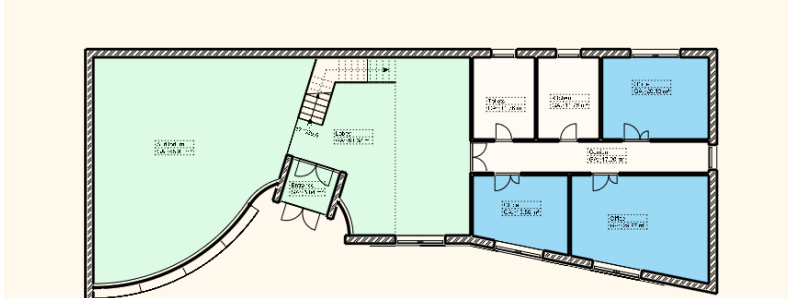
This option can be switched on/off in File menu / Preferences / General / Object snap option:



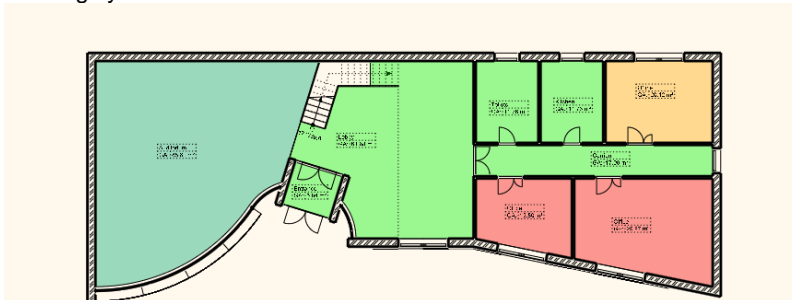
## 4.4. Zones

### Concept

Zones can be defined in a building. They are groups of several rooms. You can use zones to represent ownership, to design heating or air conditioning systems, to visualise areas with different acoustic requirements, etc.



Air conditioning systems

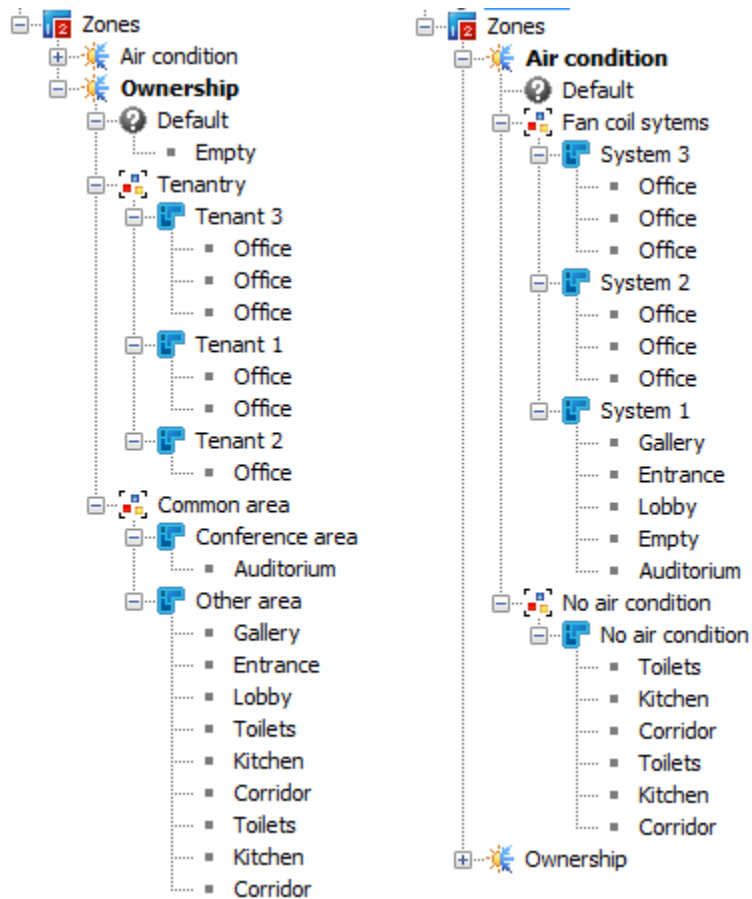


Ownership

### Categories

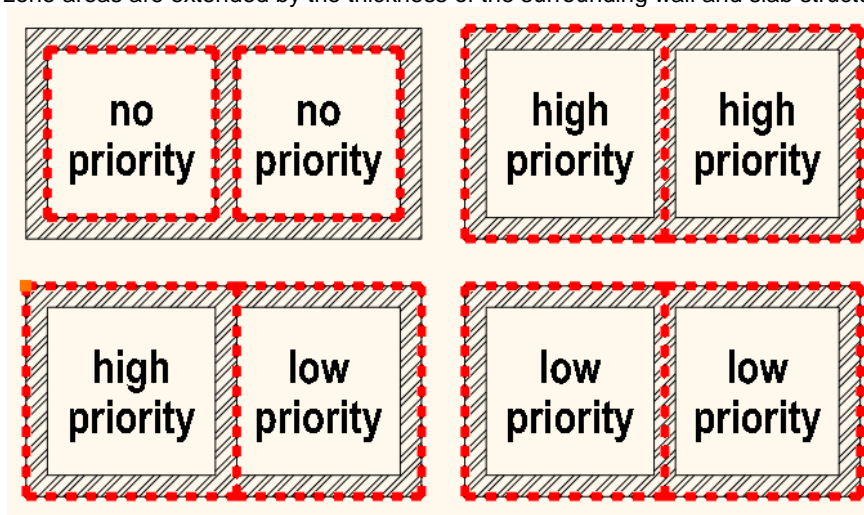
You classify rooms on a building in many ways. As for the ownership you can differentiate between tenants, if you would like to deal with air condition it is possible to define zones based on the required cooling and heating systems.

### Manual



### Groups and priorities

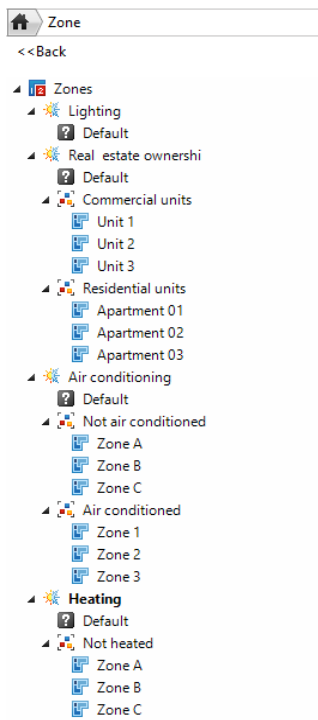
You can sort zones into several groups, if necessary. For zone groups you can define high or low priorities. Priorities are taken into consideration while calculating zone areas and volumes. If you use zone group priorities in a zone category, zone areas are extended by the thickness of the surrounding wall and slab structures according to the following figure:



### Colours

Finally you can define zones and add rooms to them. In a zone category every room can be added to one zone. Zones can be visualised by a unique zone colour.

## Managing zones



Zones is a tree structure in Design Center. You can expand or collapse branches by clicking the +/- signs in front of the tree objects. By clicking on an object you can rename it.

**By clicking on an object with the right mouse button** a Local pop menu appears and you can select a command in it. Below you can learn about local pop menus of different tree objects.

### Zones (main tree object)

#### Create new category

A new zone category is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

#### Show zones with colours

Rooms will appear with zone colours of the active zone category.

#### Hide colours

Rooms will appear as empty polygons.

### Zone category

#### Activate

It activates the current zone category. Area calculation and zone colouring is based always on the active category.

#### Create new zone group

A new zone group is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

#### Rename

It renames the current zone category.

#### Priorities and colours

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

#### Delete

Deletes the current zone category.

### Uncategorized rooms

#### Add rooms to this zone

Select rooms on the floor plan and then press ENTER. The rooms are moved to the uncategorized zone.

**Zone group***Create new zone*

A new zone is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

*Rename*

Renames the current zone group.

*Priorities and colours*

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

*Delete*

Deletes the current zone group.

**Zone***Add rooms to this zone*

Select rooms on the floor plan and then press ENTER. The rooms are moved to the current zone.

*Rename*

Renames the current zone.

*Priorities and colours*

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

*Delete*

Deletes the current zone.

**Room***Show on floor plan*

Selects the room on the floor plan.

*Rename*

Renames the current room.

*Room properties*

Opens the Properties dialog of the current room.

*Remove from zone*

The room is moved to the uncategorized zone.

**4.5. Import/Export**

ARCHLine.XP is compatible with many different design and display software.

**Import**

The drawings to be loaded can be the next files:

<b>.asc</b>	drawings created with ARCHLine.XP and a previous version
<b>.dxf</b>	AutoCAD® DXF format
<b>.dwg</b>	AutoCAD® DWG binary format
<b>.dwf</b>	AutoDesk Design Web format
<b>.skp</b>	SketchUp file format
<b>.kmz</b>	File extension for a placemark file used by Google Earth.
<b>.3ds</b>	3D Studio format
<b>.obj</b>	Wavefront format
<b>.hou</b>	drawings created with ARCHLine® 4.x versions
<b>.drw</b>	drawings created with ARCHLine® 4.x versions
<b>.ifc</b>	IFC 2x3

## Export

In case of export, the ARCHLine.XP supports the following file formats:

Format	Description
AutoCAD DWG (*.dwg)	Drawing file
Autodesk DWF (*.dwf)	Autodesk Design Web Format
AutoCAD DXF (*.dxf)	Drawing file
SketchUp (*.skp)	Sketchup 3D model
KMZ (*.kmz)	File extension for a placemark file used by Google Earth.
3D Studio (*.3ds)	3D Studio 3D model
Wavefront (*.obj)	Wavefront 3D model
Autocad 3D DXF (*.dxf)	3D model
Autocad 3D DWG (*.dwg)	3D model
ARCHLine.XP Render Studio (*.tgr)	3D model
ARCHLine.XP ASCII (*.asc)	Drawing file
ARCHLine.XP ASCII 2004 format (*.asc)	Drawing file
ARCHLine.XP 3D (*.3as)	3D model
Metafile (*.wmf)	Microsoft Windows® Metafile
Cinema 4D (*.c4d)	3D model
Atlantis Render (*.atl)	3D model
Indigo Render (*.igs)	3D model
Autodesk FBX (*.fbx)	3D model
Portable Document (*.pdf)	Drawing file or 3D model
JPEG (*.jpg)	Device-independent bitmap file
Thea Render (*.igs)	3D model
Autodesk Maya (*.ma)	3D model
Luxology Modo (*.lxo)	3D model
IFC 2.x3 (*.ifc)	3D model
Green Building XML (*.xml)	3D model

### 4.5.1. ASC Import / Export

Besides allowing file transfer from other applications, the *Import* command is very useful when you want to merge a drawing saved as ASC into an existing drawing. This happens very often when you place a building on a terrain. To do so, enable *Merge to current drawing* option.

If the drawing to be merged is the part of a project, you cannot use *Import*. In this case, you have to use *Open project*, and choose *Import file* and *Merge to current drawing* options.

Importing of files can be done in three ways:

- ❖ with the drag & drop method: for example dragging from the Windows Explorer.
- ❖ with the *File menu – Import* command,
- ❖ with the *File menu – Open project - Import file* command

#### Importing of ASC file into a project –using drag & drop method

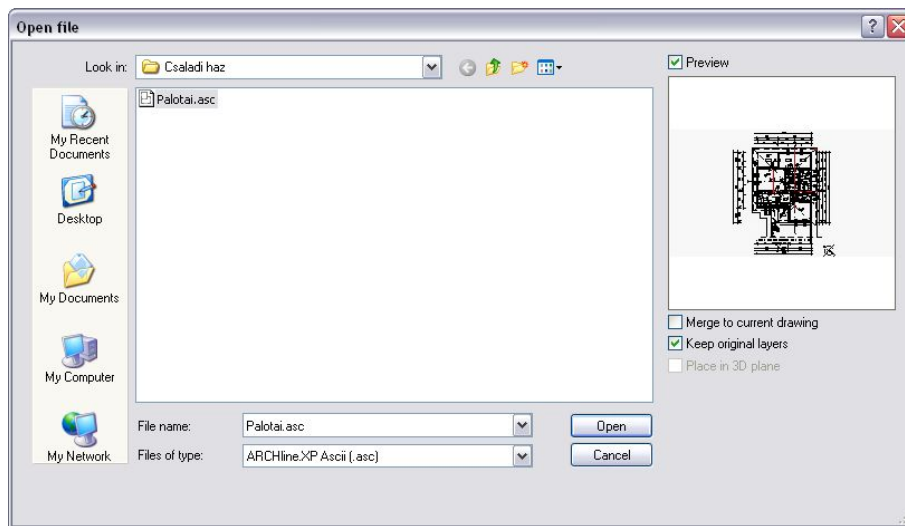
If we import into an active a 2D floor plan using the *drag & drop* method the drawing will be imported into a given drawing. If we import into an active 3D View with the *drag & drop* method, a new window will be created and the drawing will be loaded there.

#### Importing of ASC file into a project – using File menu –Import command

*Import* allows you to merge the imported drawing to the current drawing or place that into a new window.

If we import into an active a 2D floor plan/3D View with the *File menu - Import* command, the *Merge to current drawing* option is switched off by default, therefore a new window will be created. In case of *drag & drop* method the drawing will be imported into a given drawing.





- Select drawing file format: .asc
- Select the drawing you want to open.

### Preview

Enable this option to display the selected drawing in the dialog box in an optimized size.

### Merging to current drawing

Enable the option to merge the imported drawing file to the current drawing; the imported file will be part of the current drawing.

Disable the option to display the drawing in a separate window.

### Keeping original layers

If you enable *Keep original layers*, the program loads the drawing while keeping the layers of the drawing. Disable the option to place each object on the current layer.

### ASC file import from project into project

If the drawing to be loaded is part of project, the *Import* command can't be used. In this case, use the *Open Project* command, and select the *Import file* and *Merge to current drawing* option.



See the Chapter 4.2.3. *Opening project – Import file option*.

### Compatibility with the previous version

You can save the drawing in ARCHLine.XP ASC format which is readable with earlier versions of ARCHLine.XP. You can also save the content of the 3D View as .3as format of the ARCHLine.XP version.

## 4.5.2. DXF/DWG import/export

DXF/DWG file format allows you to exchange your drawings with other CAD users. You can export or import even DWF (Design Web Format) files as well. You can quickly select the file format you wish to save your work in.

### 4.5.2.1. DXF/DWG import

Importing of files can be done in two ways:

- ❖ with the drag & drop method: for example dragging from the Windows Explorer.
- ❖ with the *File menu – Import* command,

#### Importing using drag & drop method

If we import into an active a *2D floor plan* with the *drag & drop* method, the drawing will be imported to a given drawing. This way the unnecessary increasing of the number of 2D floor plan windows can be avoided.

If we import into an active *3D View*, the drawing will be loaded into a newly created window.

#### Importing using File menu – Import command

If we import into an active a *2D floor plan* / *3D View* with the *File menu – Import* command, the *Merge to current drawing* option is the default setting. This way the unnecessary increasing of the number of 2D floor plan windows can be avoided.

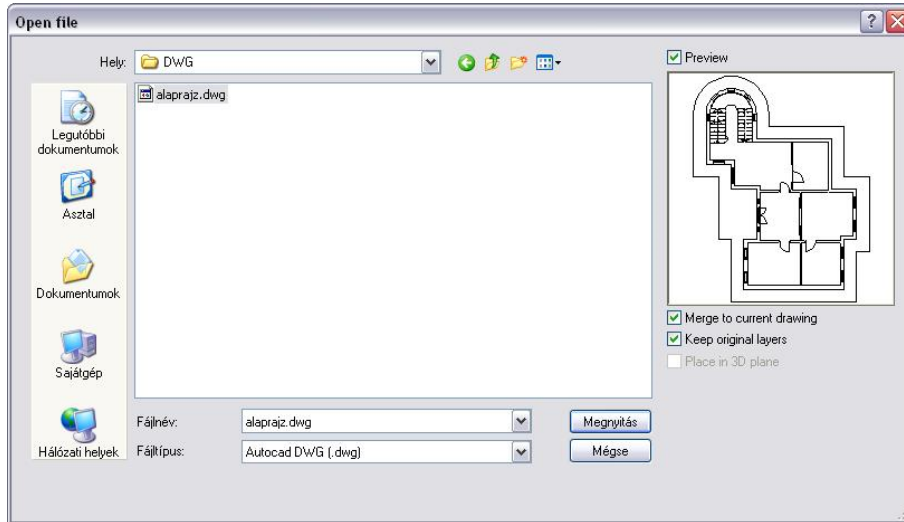
The program is capable to process the latest DXF, DWG and DWF file formats and to load these files into your own project either as part of your project or as external references.



See chapter 11.11. *External References*.

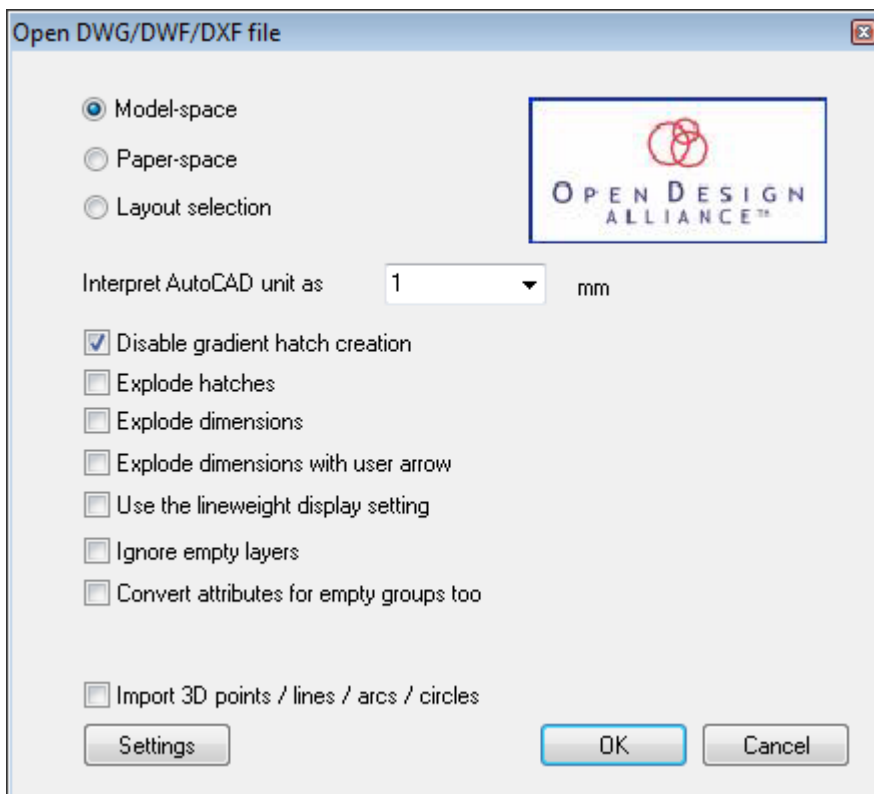
If a DXF/DWG file is imported and the file is placed in a new window, the floors are not available in this window. This way the number of real floor plan windows is not increased when a DXF/DWG file is imported. Architectural objects cannot be placed in this window, of course.

If the goal is to place the DXF/DWG drawing as a base and build the model on it, when the file is imported, switch on the *Merge to current drawing* option. The drawing will be placed in the real floor plan window, the design can be continued.



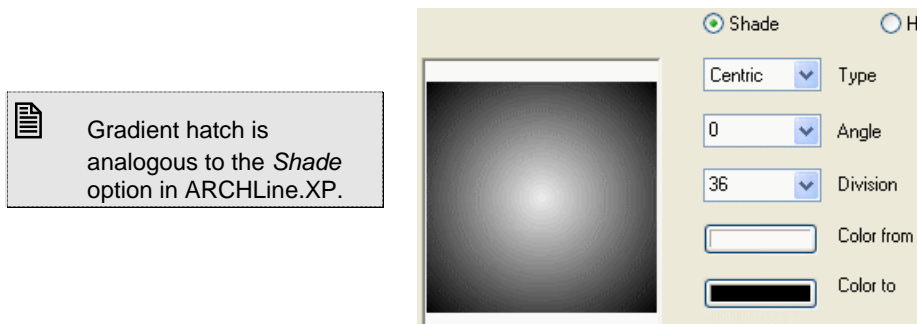
See the Chapter 4.5.1. *ASC Import* command.

At DXF/DWG drawing import you can choose the following settings in the dialog. With these settings you can make the display of the imported drawing correct and fast.



### Disable gradient hatch creation

Importing of gradient hatches can slow down the displaying of the imported drawings in ARCHLine.XP . To avoid this problem, it is possible to have all gradient hatches displayed as solid hatches.



### Explode dimensions

With this option you can load the dimensioning exploded, so these will be handled as general drawing objects instead of real dimensions. The advantage is that the look will be identical with the AutoCAD® display. The drawback is that you lose the dimensioning properties.

### Explode dimensions with user arrow

The look of dimensioning with user-defined arrows in ARCHLine.XP is not the same as in the original AutoCAD® drawing. That's why you have the possibility to explode these dimensioning. The advantages and drawbacks are the same as it was described above.

### Use line weight display setting

In the *File menu - Options - Other* dialog there is a *Line width ON* switch. By selecting this option, lines will be displayed with their own thickness, otherwise all lines will be displayed with zero (the thinnest) thickness.

In AutoCAD® drawings you can also apply the line weight settings.

At file import it is possible to take over this setting. With this setting you will overwrite the *Line width ON* option found in the *File menu - Options - Other* dialog, and this option will be applied to the whole project. For this you have to select the *Use line weight display setting* option, so the program will use the AutoCAD® setting.

If we have imported several of drawings into the project, the settings applied in the last drawing will be in force in the whole project, of course.

### Colour table handling

A higher level of colour table handling is available in the imported drawings, too.

The program is able to recognize the original AutoCAD® colours of the objects in the imported drawings, which can be modified later in the specific colour table. When you export a drawing like this, there is no need to convert the colours because the drawing uses the same AutoCAD® colour table.

### Import 3D points / lines / arcs / circles

By selecting this option, the points / lines / circles / arcs are created in the 3D. In this way the visualization measure up to the AutoCAD®

### Extension of DWG import

The AutoCAD® DWG files can contain 3D surfaces, which are created by drawing out lines, arches, and polygons in 3D, by determining the so-called Thickness of the objects.

You can also create such surfaces in the ARCHLine.XP (see in *3D extension of line nature objects* chapter), and the program can import the AutoCAD® DWG files containing these objects.

The AutoCAD® creates a surface from the straight lines that it draws out the line into the space perpendicularly to that plane, on which it was designed.

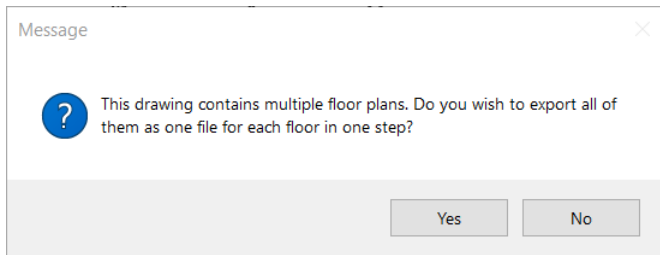
## 4.5.2.2. Export

The Export command is used to save 2D or 3D contents to various file formats.

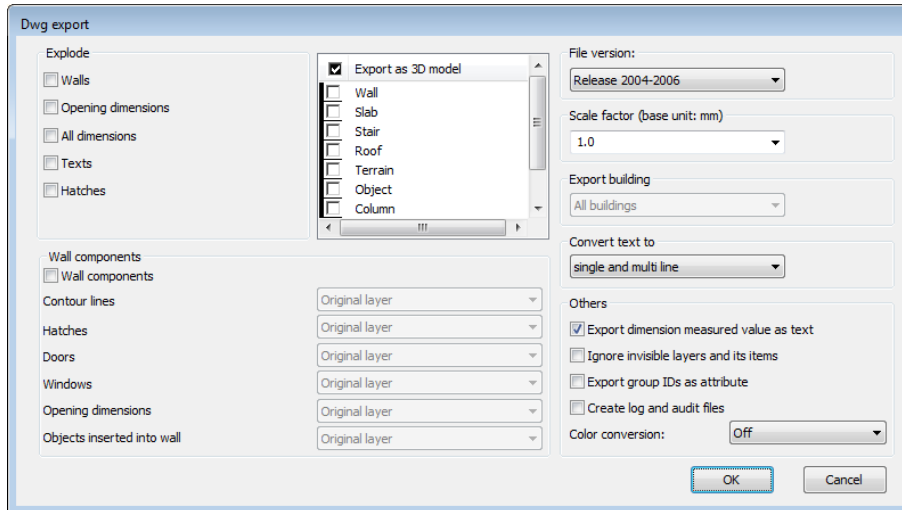
In *File menu - Export* specify the file name and file type.

### DWG export – multiply floors together

In case of floor plan export the program offers you to export multiple floor plans into a series of DWG files as one file for each floor in one step.



If you select any of the dwg or dxf file formats, you can customize the export settings in the appearing dialog.



The following options are available:

### Explode

You can export objects to other CAD programs in an exploded format (with lines). Select the objects you want to explode: walls, opening dimensions, all dimensions, texts and hatches.

*The aim of this function is the following:*

To offer the option to print drawings in AutoCAD® where the printed drawing will correspond 100% to that printed from ARCHLine.XP. In this case, for example, it will not be a problem if certain fonts are missing from the other computer.

### Wall components

You can explode walls in such a way that their main constituents (contour lines, hatches, doors, windows and opening dimensions) are placed on separate layers.

*The aim of this function:*

You can continue drawings in AutoCAD® using the groupings applied on the layers.

Example: create a Wall contour line layer and use this layer for wall contours.

### File version

You can choose from the released AutoCAD® versions. The exported file will be compatible with the selected AutoCAD® version. This way the exported file can be used by users with previous AutoCAD® versions.

### Scale

You can rescale your drawing by setting a scale.

*The aim of this function:*

You can export your units of measurement to AutoCAD®.

AutoCAD® will use mm in the exported drawing, so dimensioning will also use mm. You can define your units of measurement in ARCHLine.XP, e.g. if you set m, dimensions defined so far will be displayed in meters. This way dimensions in AutoCAD® will be given in m and mm (the program will display the values set in ARCHLine.XP multiplied by 1000). To solve this problem, make sure to type 0.001 in the Scale factor field.

### Convert multiline texts

AutoCAD® can use one-line and multiple-line texts. When exporting, you can define whether you want to export ARCHLine.XP's multiple-line text as multiple one-line texts or as a single multiple-line text.

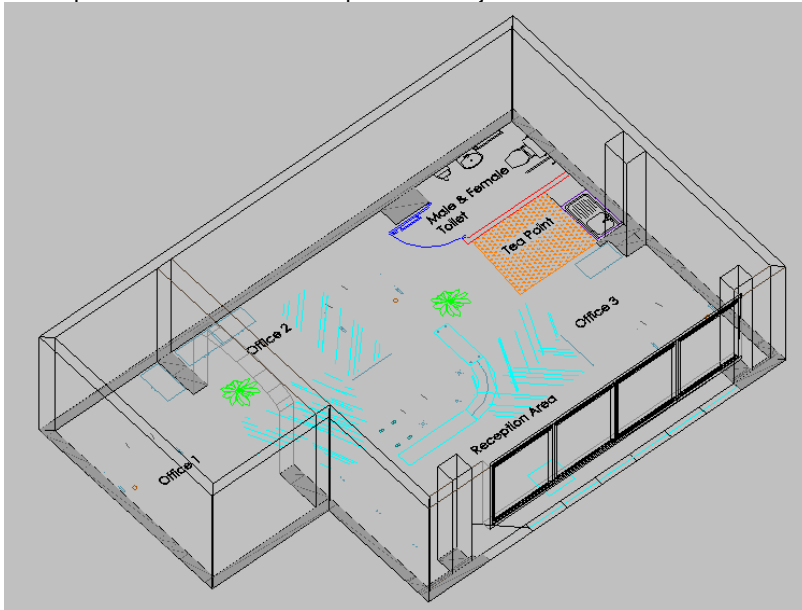
Experience shows that it is advisable to use multiple one-line texts.

### Exporting buildings

In the case of multiple buildings, you can define which building to export. With the building to be exported, you can also export the terrain of the plan. If you select the All building option, the terrain will also be exported to the AutoCAD® file.

### Export as 3D model

You can specify whether you would like to export the plan view or the 3D model of the selected object. This way you can create plan view what contains special 3D objects

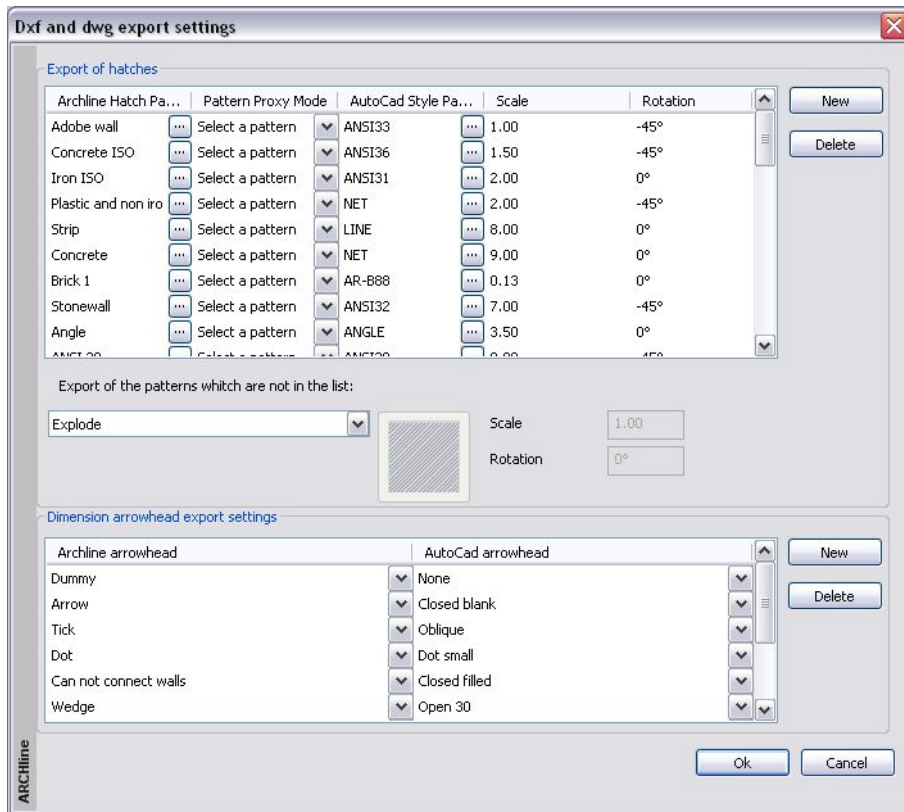


### Others

Using these options you can enhance the appearance of your drawing objects in other CAD applications.

- ❖ **Export dimension measured value as text:** the measured values of a dimension will be exported as fix values. This means that the dimension value of an object in AutoCAD® will not change automatically if you modify its size, for example.
- ❖ **Ignore invisible layers and its objects:** invisible layers and the objects belonging to these layers will be ignored during the export.
- ❖ **Export group IDs as attribute:** the ID numbers of groups will be exported as block attributes (you can see them among the block attributes).
- ❖ **Create log and audit files:** during the export of a drawing two additional files can be created; a log file with the <filename>.log file name format and an audit file with the <filename>.aud file name format. The both files may include useful information for ARCHLine.XP developers. Send these files along with the original end exported drawings to your local distributor if you find some errors in the exported file.



Other export settings are available in the *File menu - Options - Dxf and dwg export settings* dialog.



The following options are available:

#### Export of hatches

You can define hatch conversion rules between ARCHLine.XP and AutoCAD® hatches. You can

- ❖ add new rule by clicking the *New* button,
- ❖ delete a selected rule by clicking the *Delete* button,
- ❖ modify a hatch pattern in the by clicking the  button,
- ❖ modify a pattern proxy mode by clicking the  button. You can select either the *Export as solid* or the *Explode* options. Both selections will ignore the hatch conversion and only the ARCHLine hatch patterns will be exported in exploded or solid state. If you export exploded ARCHLine hatch patterns, the size of your exported file may increase substantially.

#### Export of the patterns which are not in the list


Because of the differences between CAD applications you may not find the proper rule for a hatch conversion or you simply do not want to create rules one by one.

In that case you can export ARCHLine style hatches.

- ❖ as exploded objects (*Explode*)
- ❖ as solids (*Export as solid*)
- ❖ as a hatch with the selected hatch pattern (*Select a pattern*). With this selection you can also specify the scale and rotation of the selected pattern.



#### Dimension arrowhead export settings:

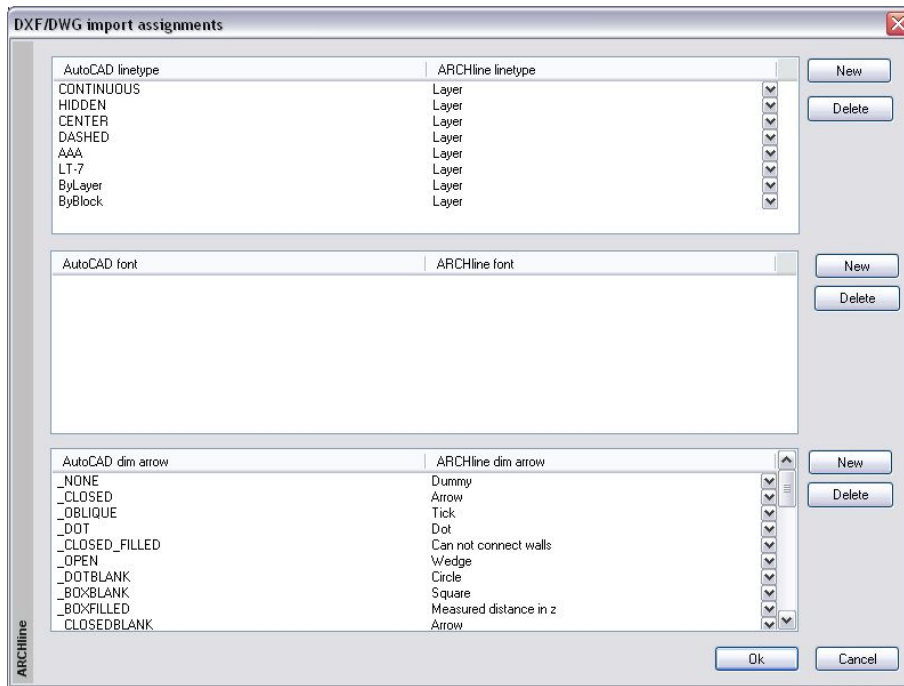
Similar to the hatch conversion rules you can define conversion rules between ARCHLine and AutoCAD® arrowheads. You can add new rule to the list by the *New* button, delete a selected rule by the *Delete* button, or change an existing conversion rule by the  buttons.

#### 4.5.2.3. Settings: line type, font and dimensioning arrow assignments

- By clicking on the Settings button you can make assignments between AutoCAD® and ARCHLine.XP for special AutoCAD® line types, fonts (true type fonts not found in Windows by default) and dimensioning arrows. The assignments are saved and you can use them afterwards.



You can reach these settings through the *File menu - Options - DXF and DWG import settings* command.



The user's assignments are stored in the `_dxfass.xml` file in the *Support* subdirectory of the installation folder.

In all the three cases you can find the list of AutoCAD® objects in the column on the left, while the columns on the right side include the assigned ARCHLine.XP objects.

### Modify

- Click the arrow beside the ARCHLine object.
- Select the appropriate object from the list.

### New

- Click the *New* button. The program adds a new ARCHLine object to the end of the list. You can modify this object.
- Specify the AutoCAD® object that belongs to the new assignment.

### Delete

- Select the row you want to delete, and then click on the *Delete* button.

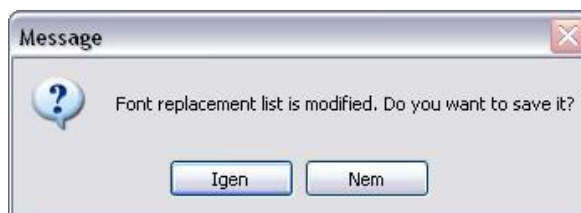
In the imported file there can be line types, fonts or dimensioning arrows which are not listed in the table. After the file import:

- ❖ These line types will appear as user-defined line types in ARCHLine.

- ❖ The program tries to use the same font type as the original. If it is not found, the program asks for a substitution.



- ❖ After specifying the font substitutions in this dialog you can save it into the font assignment list.



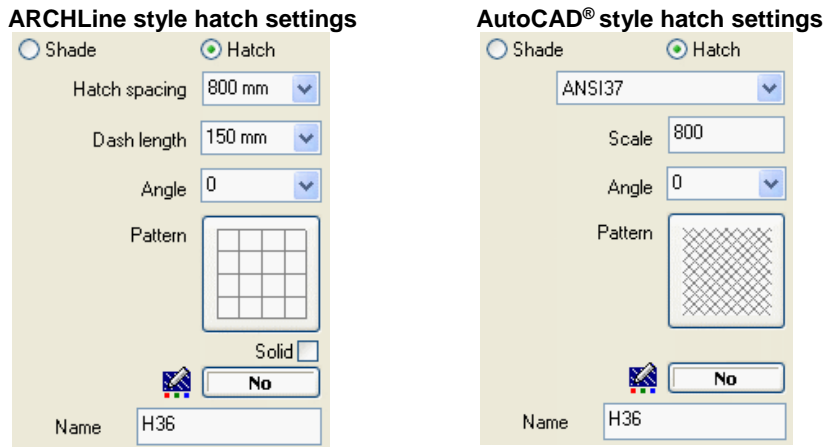
- ❖ To the arrows not listed in the assignments, the program assigns the default dimensioning arrow.



The *Explode dimensions* and the *Explode dimensions with user arrow* settings will override the arrow assignments, of course.

#### 4.5.2.4. AutoCAD® style hatches

In case of importing AutoCAD® drawings, default AutoCAD® style hatches are recognized automatically and handled differently from ARCHLine style hatches. This means that scaling and rotating are the only possibilities for AutoCAD® style hatches, similarly as users can do it in AutoCAD®.

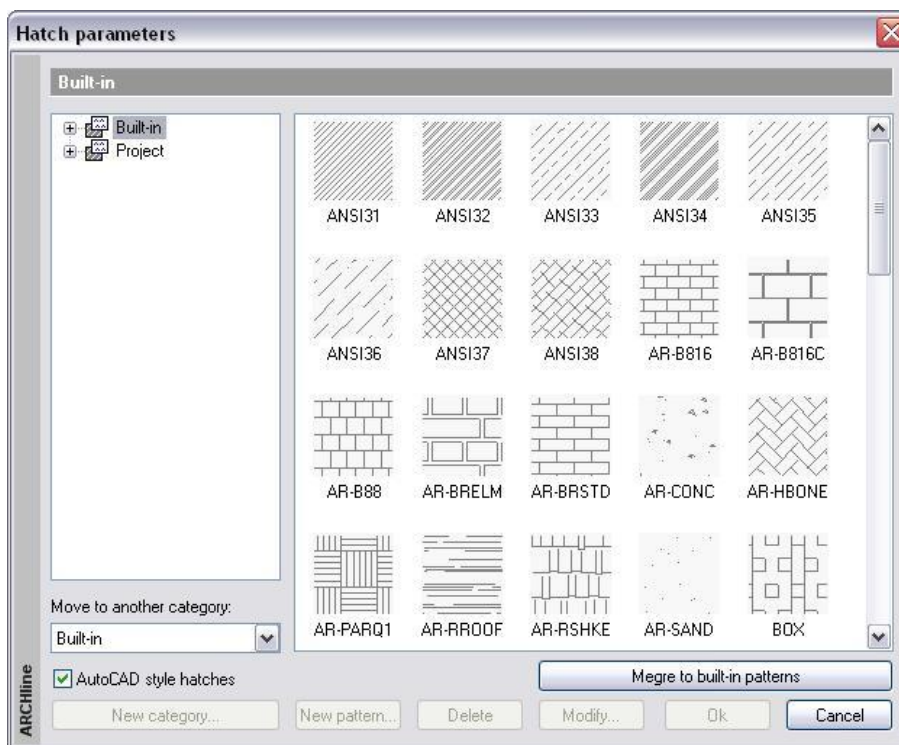


AutoCAD® style patterns data are stored in the `acpatterns.xml` file. This file can be found in the *Support* subdirectory of the program installation.

#### 4.5.2.5. AutoCAD® style hatch selection

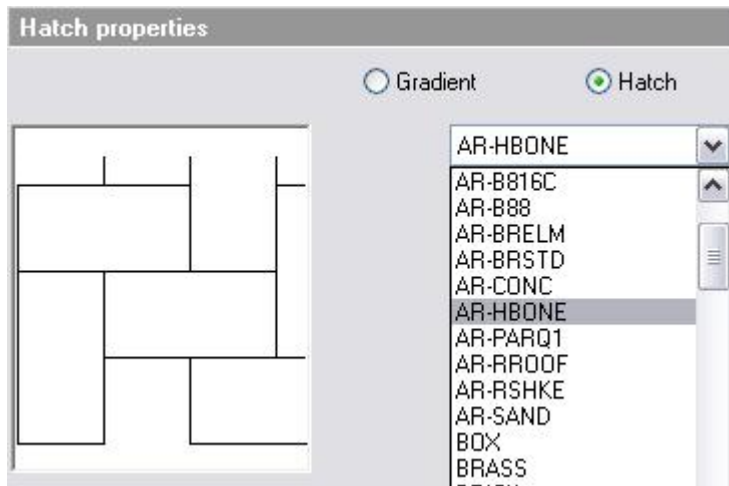
For the selection of an AutoCAD® style hatch:

- Click the **Pattern** icon in the *Hatch properties* dialog.
- In the appearing window select the AutoCAD® style hatches option.
- Double click on the required hatch.



- After that it is enough to select from the list in the *Hatch properties* dialog:





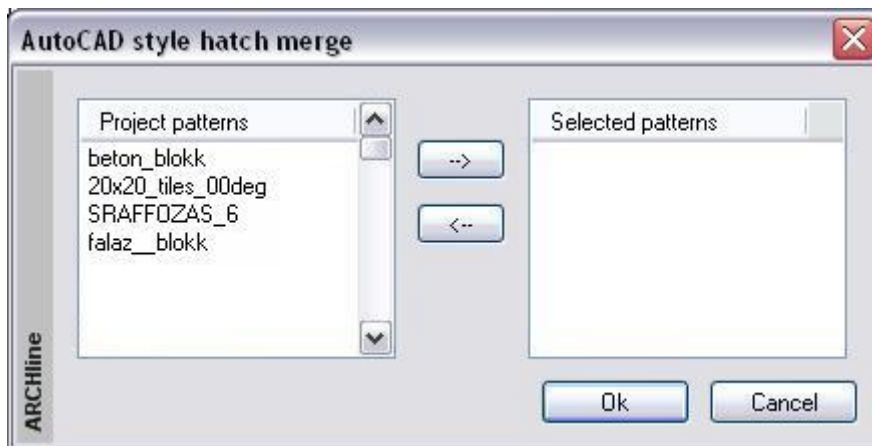
#### 4.5.2.6. Merge to built-in patterns

There are two categories of AutoCAD® style hatches.

- ❖ AutoCAD® style hatches coming from the default program installation files are handled as *Built-in* category.
- ❖ The user-defined AutoCAD® style hatches coming from the DXF/DWG import are put automatically into the *Project* category. In the *Hatch parameters* dialog these hatches are displayed with the same pattern and different names.



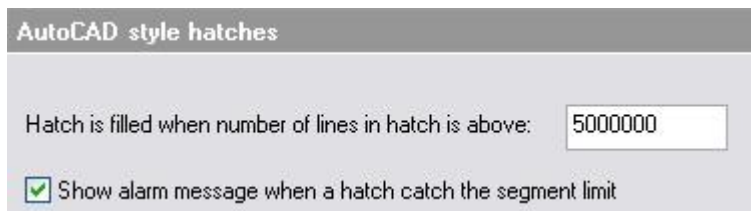
Hatches in the *Project* category can be used only in the actual project (similarly to the new project materials). In a new project those will not appear automatically, therefore you have the possibility to move hatches from the *Project* category to the *Built-in* category by clicking the **Merge to built-in patterns** button.



- Select pattern names from the *Project* category and click the right arrow button.
- Click *Ok* to move the selected *Project* patterns to *Built-in* patterns. Later you can use these hatch patterns in any other project.

#### 4.5.2.7. Limitation – maximum number of lines

In the *File menu - Options - AutoCAD® style hatches* dialog you can set a limit for the maximum number of segment in a hatch. If any hatch on the drawing requires more segments than this limit, the drawing of hatches will stop when the limit is reached. By this the memory usage can be limited. This is handled analogous to AutoCAD®.



#### 4.5.2.8. Extension of DWG import

The AutoCAD® DWG files can contain 3D surfaces, which are created by drawing out lines, arches, and polygons in 3D, by determining the so-called Thickness of the objects.

You can also create such surfaces in the ARCHLine.XP (see in *3D extension of line nature objects* chapter), and the program can import the AutoCAD® DWG files containing these objects.



The AutoCAD® creates a surface from the straight lines that it draws out the line into the space perpendicularly to that plane, on which it was designed.

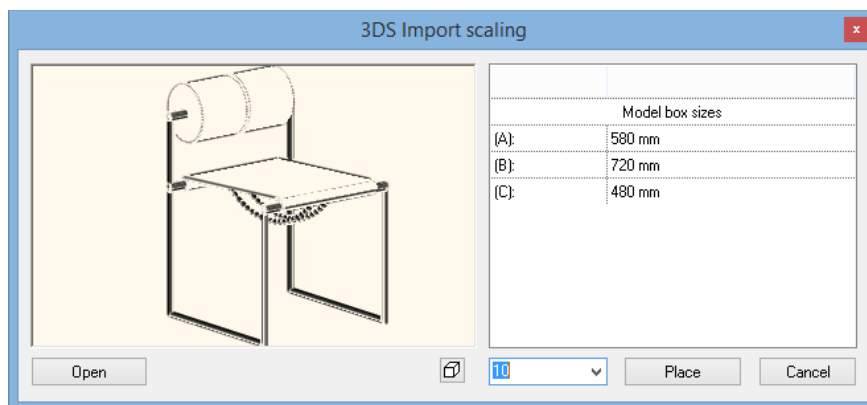
#### 4.5.3. 3DS Import

ARCHLine.XP allows you to import 3D Studio (3DS) files. You can import in three different ways:

- ❖ Import a file using the *File menu – Import* command. In the Open dialog box, select the supported file type.
- ❖ Dragging onto the drawing area by drag and drop
- ❖ Dragging into the Design Center by drag and drop

##### File menu - Import

- Select the file to import. After clicking the *Open* button, the following dialog pops up:



##### Specify import setting

Before the placement you can scale precisely the dimensions of the incoming file. Choose a scale value from Units drop-down list to import geometry at the correct scale.

Click on Place. The model is converted into an object and saved into the object library. Then it appears in the drawing area and you can locate it either on the floor plan or 3D view.



A 3DS file has a field which indicates its unit. However sometimes it is missing and set to a generic value (such as millimeters).

##### Open

If the object is not appropriate, you can import another 3ds file.

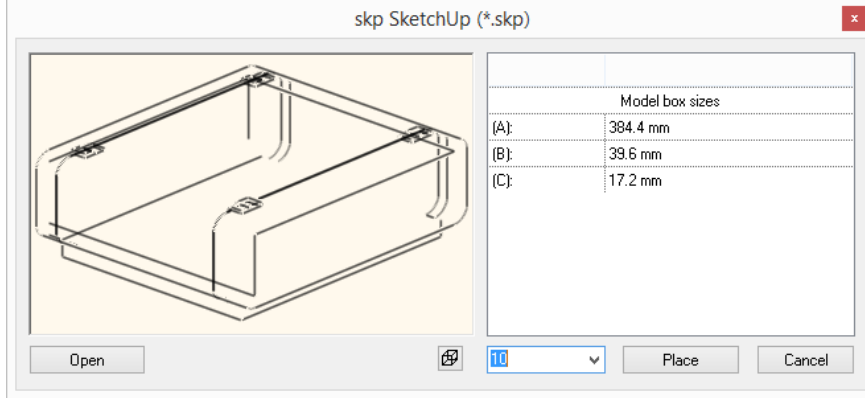
#### 4.5.4. SketchUp Import/export

ARCHLine.XP allows you to import SketchUp (.skp) files. You can import in four different ways:

- ❖ Import a file using the *File menu – Import* command. In the Open dialog box, select the supported file type.
- ❖ Dragging onto the drawing area by drag and drop
- ❖ Dragging into the Design Center by drag and drop
- ❖ Import a model from 3D Warehouse

### File menu - Import

Select the file to import. After clicking the *Open* button, the following dialog pops up:



### Specify import setting

Before the placement you can scale precisely the dimensions of the incoming file. Choose a scale value from Units drop-down list to import geometry at the correct scale.

Click on Place. The model is converted into an object and saved into the object library. Then it appears in the drawing area and you can locate it either on the floor plan or 3D view.



An SKP file has a field which indicates its unit. However sometimes it is missing and set to a generic value (such as millimeters).

### Open

If the object is not appropriate, you can import another file.

### Import from 3D Warehouse

Models made available through 3D Warehouse may be downloaded as a "SketchUp [x] Model" (\*.skp - where [x] equals a version number) file depending on the application used to upload the model originally.



To download a model navigate to the item page and click the "Download" button then choose a " SketchUp [x] Model" option as presented.

### 4.5.5. OBJ Import/export

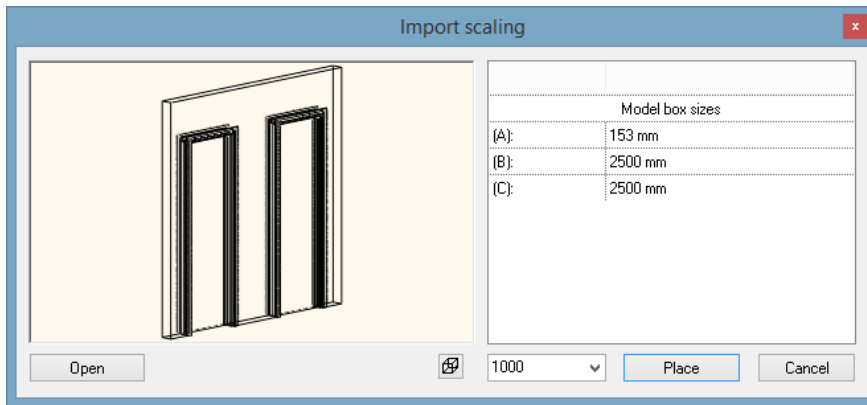
The OBJ file format is a simple data-format that represents 3-D geometry alone include only the position of each vertex, the UV position of each texture coordinate vertex, normals, and the faces that make each polygon defined as a list of vertices, and texture vertices.

You can import Wavefront (.obj) files in three different ways:

- ❖ Import a file using the *File menu – Import* command. In the Open dialog box, select the supported file type.
- ❖ Dragging onto the drawing area by drag and drop
- ❖ Dragging into the Design Center by drag and drop

### File menu - Import

Select the file to import. After clicking the *Open* button, the following dialog pops up:



### Specify import setting

Before the placement you can scale precisely the dimensions of the incoming file. Choose a scale value from Units drop-down list to import geometry at the correct scale.

Click on Place. The model is converted into an object and saved into the object library. Then it appears in the drawing area and you can locate it either on the floor plan or 3D view.



An SKP file has a field which indicates its unit. However sometimes it is missing and set to a generic value (such as millimeters).

### Open

If the object is not appropriate, you can import another file.

## 4.5.6. KMZ Import/Export

### What is a KMZ File?

A KMZ file consists of a main KML file and zero or more supporting files that are packaged using a Zip utility into one unit, called an archive.

The KMZ file can then be stored and emailed as a single entity. When the KMZ file is unzipped, the main .kml file and its supporting files are separated into their original formats and directory structure, with their original filenames and extensions.

Google Earth and Google Maps can read KMZ files directly, and they can save files as KMZ files.

See more here: <https://developers.google.com/kml/documentation/kmzarchives>

You can import KMZ file in two different ways:

- ❖ Import a file using the *File menu – Import* command
- ❖ Models made available through 3D Warehouse may be downloaded as a "Google Earth KMZ" (\*.kmz) or "SketchUp [x] Model" (\*.skp - where [x] equals a version number) file depending on the application used to upload the model originally.

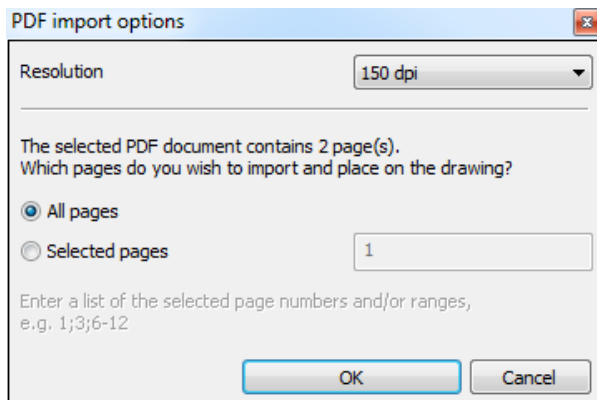


To download a model navigate to the item page and click the "Download" button then choose a "KMZ" option as presented.

## 4.5.7. PDF import

The PDF Import allows you to import a PDF documents in ARCHLine.XP as a raster image.

Menu: File > Import > PDF as Image



### **Resolution**

The PDF importer converts PDF files to image format. The resolution option enables to customize the resolution quality in DPI.

You can choose among standard resolution values as:

- ❖ 72 DPI
- ❖ 96 DPI
- ❖ 150 DPI
- ❖ 300 DPI
- ❖ 600 DPI

### **All pages**

The converter supports single and multiple-page PDF file import as well. When the option All pages is enabled, every pages is imported as a new image.

### **Selected pages**

If you import a multiple-page PDF file you can specify a selection to import. Type the page numbers or page ranges separated by semicolon for example: 1; 3; 6-12

## **4.5.8. Import PDF geometry**

ARCHLine.XP importes the geometry, and TrueType text from the given pages of PDF files. Fast, accurate way to reduce to minimal the time is spent on processing architectural file in PDF.

- ❖ You can import the content of PDF file not only as a picture but as a scalable and modifiable line.
- ❖ Geometry import visualizes lines and polygons with a given colour and line weight.
- ❖ The imported floorplan can be re-scaled to 1:1 (if the scale factor is 1:100, we need 100 times bigger enlargement).
- Start File menu - Import – PDF Geometry command, and choose a PDF file.
- Place the imported drawing with the appropriate location by moving with mouse cursor.

The geometry import mean lines and polygons with the given colour and line tickhness. The colour of the items are coming up in different layers.

## **4.5.9. Showroom**

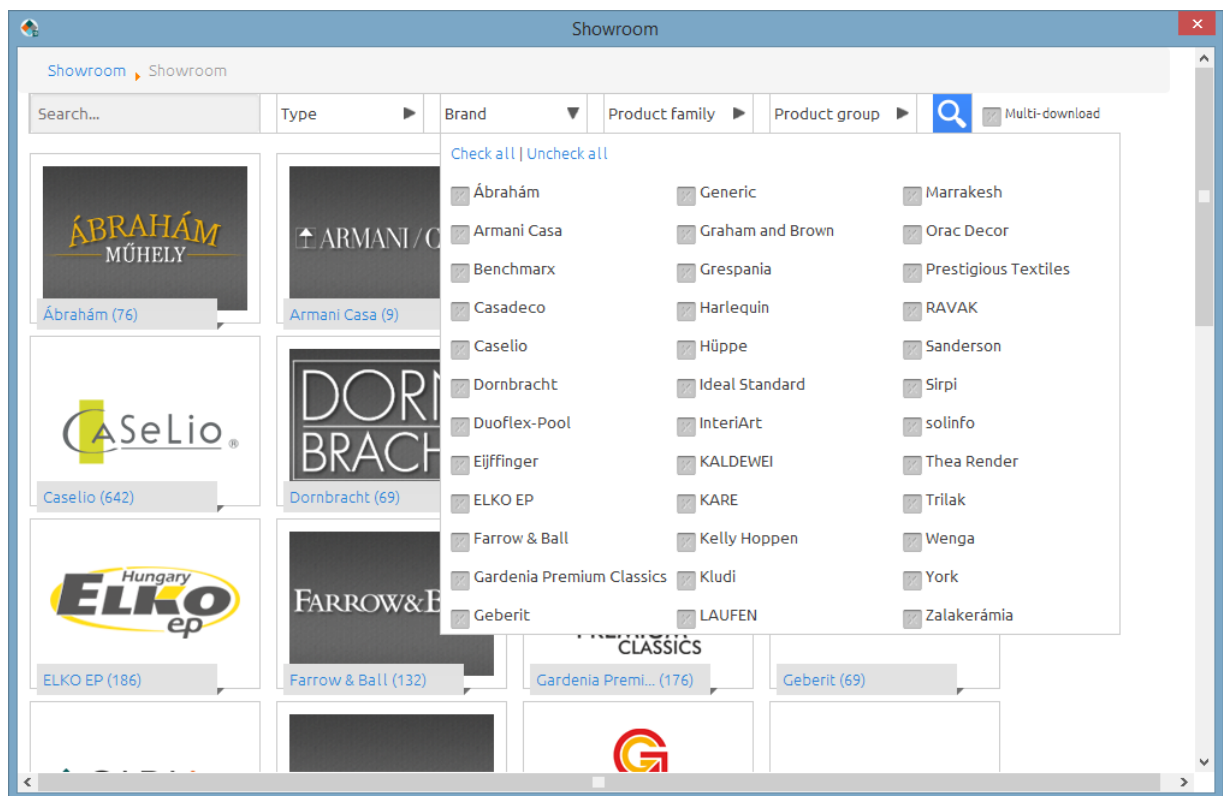
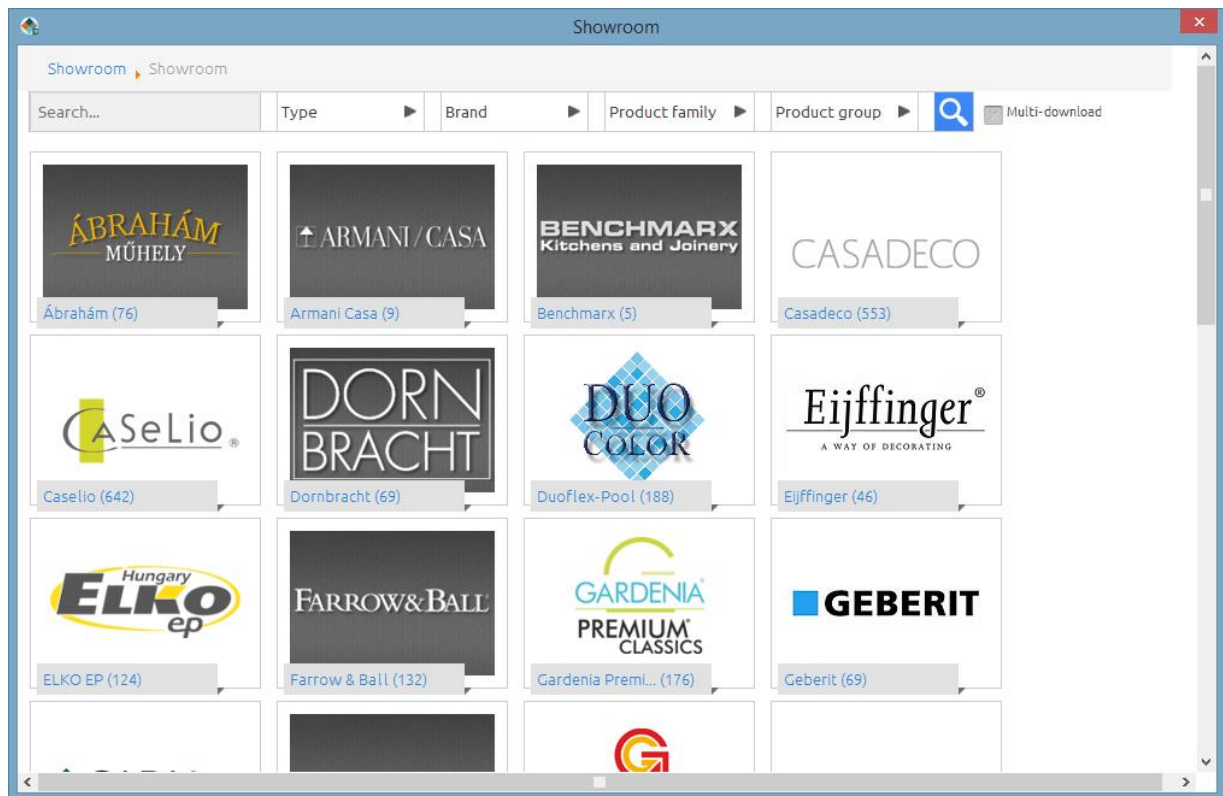
Virtual Showroom is a web application accompanying ARCHLine.XP. It contains high-quality fabric and wallpaper collections, colors, profiles, furniture, lamps and other 3D models from leading online suppliers.

It displays and enables to select on one webpage the whole collection of Product types, Manufacturers and Product families

Virtual Showroom helps to our interior designers' community discovering your company products, downloading and using them directly into their projects.

Showroom is the optimal tool to visualize realistic high-quality online products instead of generic ones.

Using your products during the design phase, clients will more likely to purchase your products.



### Downloading an element from Showroom

- Please be sure that you have a live internet connection.
- Click Showroom in File menu – Export ...
- In the appearing categories/brands browse to the element you would like to download.
- To start downloading, click **Download**. Wait until the downloading process is finished.
- In case of successful downloading, a confirmation dialog appears with the appropriate information about the downloaded element.
- Click **Ok** to accept the element. The element will be stored in the appropriate library for instant placement and/or further usage.

### Uploading elements to Showroom

If you wish to add your products to Showroom, please follow the steps as follows:

- Please be sure that you have a live internet connection.
- Click Showroom in File menu – Export ...
- Click **Add Your Brand** and follow the instructions in the pop-up window.

### 4.5.10. Indigo render export

ARCHLine.XP supports the Indigo native render file format. Indigo Renderer is an unbiased, physically based and photorealistic renderer.

See more: <http://www.indigorenderer.com/>

- From the File menu, choose Export.
- In the dialog box, the Files of type list displays the currently supported file types for export.
- In the Files of type box, select the supported file type.
- In the File name box, select or type a file name and click Save

ARCHLine.XP creates the file with „.igs” extension and a folder with the same name and „.tex” extension that contains all the textures referenced in their 3D model.

**Note:** In order to import properly the file with „.igs” extension with other applications on another computer remembers to copy the „.tex” extension folder together!

### 4.5.11. Autodesk FBX export

ARCHLine.XP supports the Autodesk® FBX® file format. Autodesk® FBX® provides higher-fidelity data export to several Autodesk packages as Autodesk® 3ds Max® and Autodesk® Maya® software.

See more: <http://en.wikipedia.org/wiki/FBX>

- From the File menu, choose Export.
- In the dialog box, the Files of type list displays the currently supported file types for export.
- In the Files of type box, select the supported file type.
- In the File name box, select or type a file name and click Save

ARCHLine.XP creates the file with „.fbx” extension and a folder with the same name and „.tex” extension that contains all the textures referenced in their 3D model.

**Note:** In order to import properly the file with „.fbx” extension with other applications on another computer remember to copy the „.tex” extension folder together!

### 4.5.12. IFC Export / Import

The standard BIM file format is the IFC, which contains all building information data gathered from or added to the project and this same format can be used during the whole life-span of the building.

The Industry Foundation Classes (IFC) file format is developed and published by buildingSMART®. IFC is a universal and manufacturer-independent industry standard file format for data exchange between CAD/BIM applications.

The IFC-based data exchange exceeds the nowadays widely used DXF or DWG based data exchange and this means you can export and import a lot more information using IFC than using the regular drawing file formats.

One of the highest value of the IFC format is the architectural elements keep their types and properties in it. The walls, slabs, and other architectural elements remain walls, slabs, etc. with the same properties when you open them in another BIM software - there might be little differences because of technological reasons.

#### 4.5.12.1. Export a Project to IFC

ARCHLine.XP provides fully certified export based on buildingSMART® IFC data exchange standards.

ARCHLine.XP supports the IFC 2x3 standard file format, which guarantees an efficient and good quality data and model exchange between CAD/BIM applications.

1. Select *File / Export / IFC* command.

In the Export IFC dialog, navigate to the target folder for saving the IFC file. Enter a name for the IFC file in the File name box and click Save

2. Select export options:

Export base quantities includes base quantities for model elements in the export data. Base quantities are generated from model geometry to reflect actual physical quantity values.

3. Supported IFC Classes

Before exporting a project to IFC, you can assign to each object the appropriate IFC classes from the list below.

Beam / IfcBeam  
 BuildingElementProxy / IfcBuildingElementProxy  
 Column / IfcColumn  
 Covering / IfcCovering  
 Curtain wall / IfcCurtainWall  
 Door / IfcDoor  
 Flow Terminal / IfcFlowTerminal  
 Footing / IfcFooting"  
 Furnishing Element / IfcFurnishingElement  
 Grid / IfcGrid  
 Lamp / IfcLightFixture  
 Member / IfcMember"  
 Pile / IfcPile  
 Railing / IfcRailing  
 Ramp / IfcRamp  
 Roof / IfcRoof  
 Sanitary Terminal / IfcSanitaryTerminalType  
 Site / IfcSite  
 Slab / IfcSlab  
 Space / IfcSpace  
 Space Heater / IfcSpaceHeaterType  
 Stair / IfcStair  
 Wall / IfcWall  
 Window / IfcWindow



4. Click on Ok and the resulting IFC file is placed in the target folder.




### 4.5.12.2. Import IFC

ARCHLine.XP allows you to import IFC files.

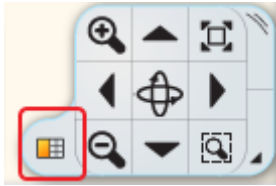
1. Select *File / Import / IFC* command.

In the Import IFC dialog, navigate to the IFC file to import, and select it. Click on Open.

ARCHLine.XP creates a new floor plan with the building and floor plan structure imported from the IFC file.

2. Click on **Status bar** -  **Build 3D model** icon to regenerate the 3D model.
3. Click on Enlarge active window to enlarge the selected active window.

All inactive windows will be organized automatically by the software to the right side of the workspace.



### 4.5.13. Revit RFA, RVT import

ARCHLine.XP allows you to import RVT and RFA files types.

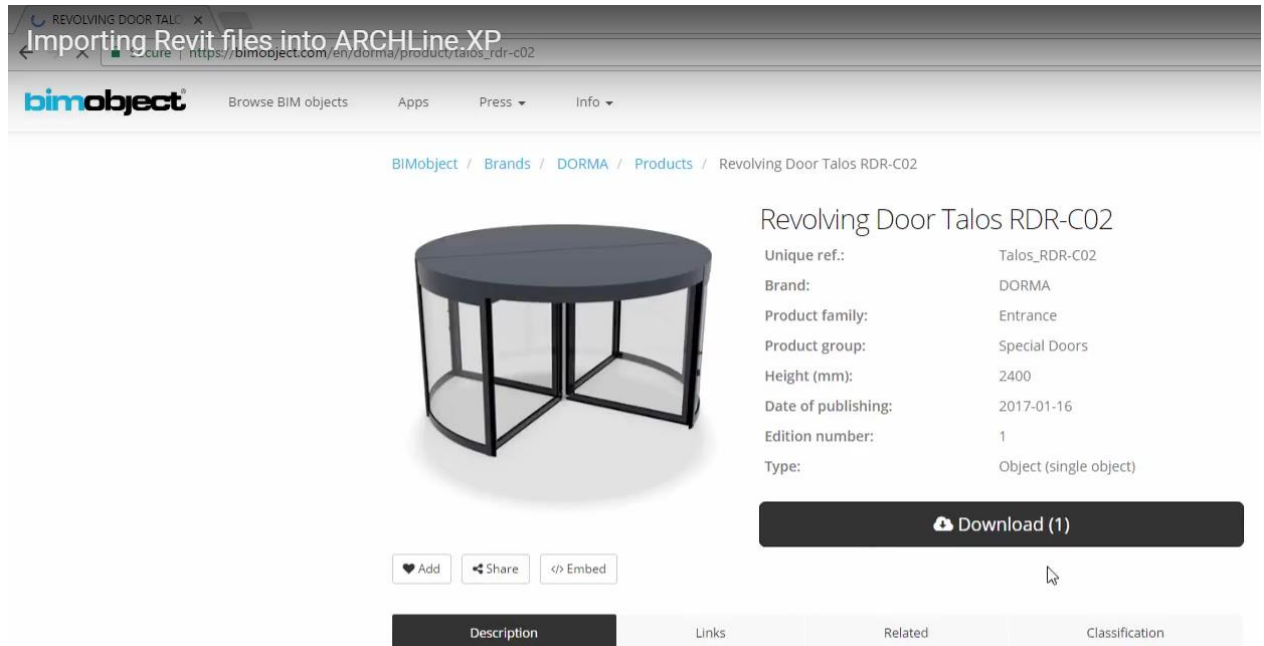
RFA (Revit Family) is the format of families of the BIM application Autodesk Revit. RFA objects carry BIM parameters about the object.

There are plenty of objects downloadable from manufacturers in Revit format. One of the most comprehensive BIM library is the [Bimobjects.com](https://bimobjects.com).

After downloading and extracting from .ZIP file you can open the RFA file in ARCHLine.XP (e.g. by simple drag-n-drop) using the menu *File > Import > RFA, RVT* command.

You can convert then the imported items into ARCHLine objects, doors, windows together with the original Revit family BIM parameters.

Use the command *Manufacture > New object > New object* for ARCHLine object conversion and *Manufacture > New door > Convert object to door* for ARCHLine door conversion.



Importing Revit files into ARCHLine.XP

**bimobject** Browse BIM objects Apps Press Info

BIMobject / Brands / DORMA / Products / Revolving Door Talos RDR-C02

### Revolving Door Talos RDR-C02

Unique ref.:	Talos_RDR-C02
Brand:	DORMA
Product family:	Entrance
Product group:	Special Doors
Height (mm):	2400
Date of publishing:	2017-01-16
Edition number:	1
Type:	Object (single object)

[Download \(1\)](#)

[Add](#) [Share](#) [Embed](#)

Description Links Related Classification

## 4.6. Styles

When you create an element in a project with a specific geometry and parameters, you create an *instance* of the element. Each element has a set of properties. You can change the properties freely. These changes apply only to the single element in the project.

Styles provide a level of control over elements that are similar in use. Using styles optimize the design process and enable to create the documents more efficiently.

When you work with often-used object settings (such as wall or slab height, structure, 2D representation, cover materials etc.) styles can be a very useful way to store the settings and recall them later at any time.

Styles can be applied later to existing elements as well.  
Styles can be shared as office standard using the loadable package of styles.

### 4.6.1. Working with Styles

When you select a **style**, all of the properties in that **style** are copied to the *instances* of element created with that style. When you start the program the element types are displayed with their default properties as saved in the default style.

Styles are saved in three level. The three levels are **Project**, **My** and **Factory**. Optionally you can work with another level called **Loadable package of styles**.

#### Styles in Project

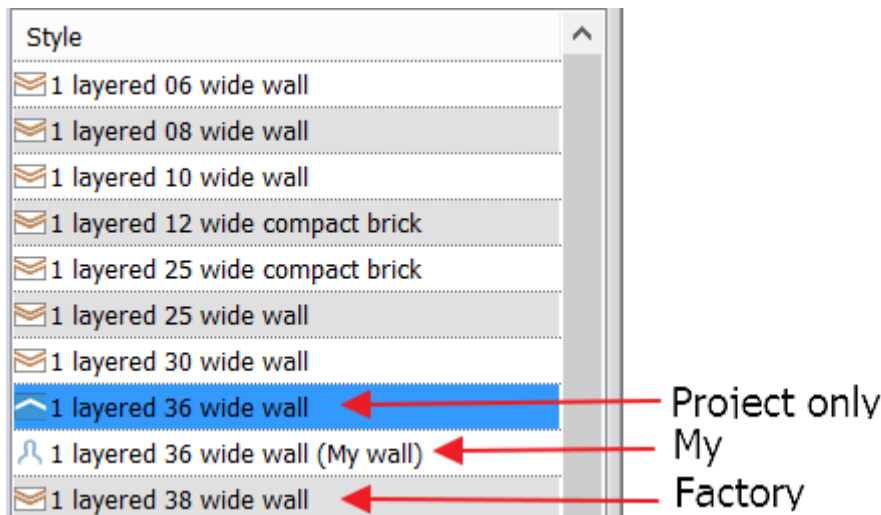
Styles created and saved in a project are included in this category. Please be aware that these styles are not available in other projects. These styles are denoted by blue upside down envelope icon.

#### My styles

Your favourite styles are stored here in order to make those available in every project. My styles are distinguished from other categories by a human shape icon.

#### Factory (built-in) styles

Factory (built-in) styles come with the installation of the software. These styles have read only property you cannot change them. These built-in styles are represented by orange envelope icon.



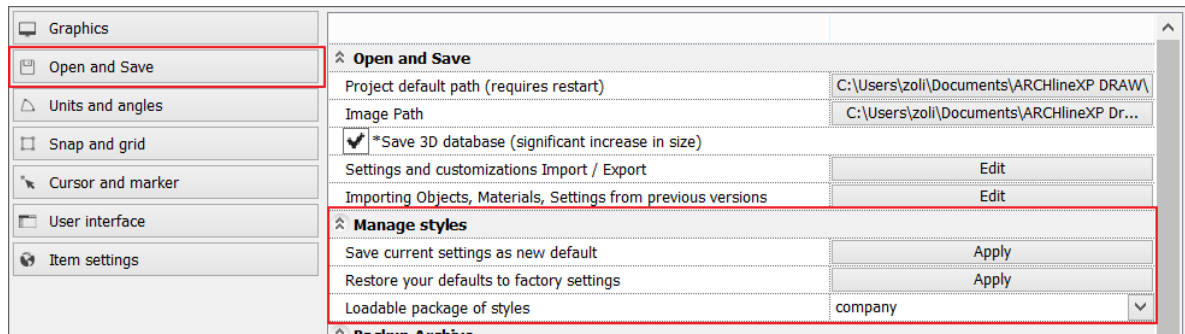
#### Preferences

Project styles has the highest preference, followed by My and Factory.

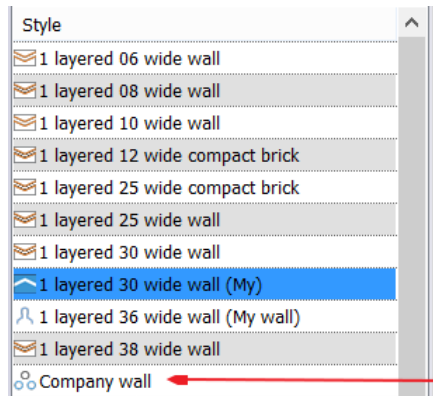
If you have two conflicting styles that come from different level, there is a weighting system that determines the priorities in order to maintain consistency. Styles in project wins over My styles, and My styles wins over Factory (built-in) styles.

#### Loadable Package of Styles

Typically, the loadable package of styles represents standards that are used within a company or installed as ARCHLine.XP extension by third parties.



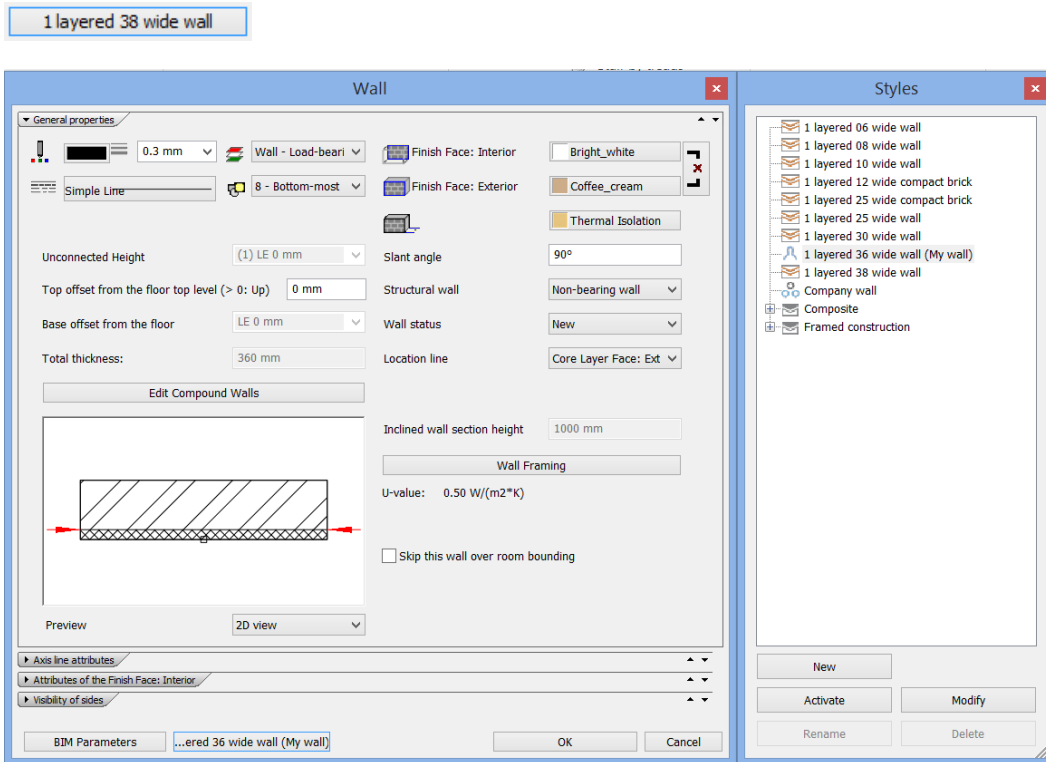
These styles may be represented by their own icon or the default 3 circles icon.



**Loadable package  
of styles**

### 4.6.2. Using styles in the property dialog

Click on the style button displaying the current style name on one of the properties dialog box (e.g. wall):



When no style is loaded, the word **No style** is displayed.

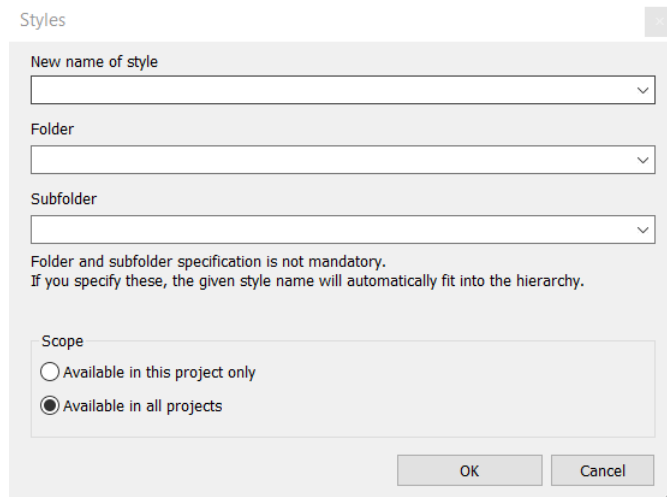
Style dialog box appears on the right where the program lists predefined styles. You can do the following operations with styles:

- Create new style
- Activate style
- Modify, delete, rename style

### 4.6.3. Create new style

Once you have specified all properties of a given object in the **Properties** dialog box:

- Click the Style button.
- Click **New**, and
- Enter the name of the new style, and organize in folder and sub folder (optional).
- Scope: new style is available in the project only, or available in all projects.



**!** If the new style is saved in the project only and you would like to make this style available in every project you have to relocate it into My styles.

#### 4.6.3.1. Activate style

By activating a style you can recall all the settings stored in it. This makes the workflow smoother and quicker when you need to use an object with different settings. You can activate a style when you define the settings of an object. You can activate a style in the **Properties** dialog box

##### **Properties dialog box**

- Click the Style button to display the list of styles, then
- Select the desired style from the list and click Activate or
- Double click the style name
- **OK** Close the dialog box

 You may use this method in setting properties or modifying objects as you work.

#### 4.6.3.2. Modify, rename, delete style

You can modify the properties of the current style, and rename or delete the style.

##### **Modify properties**

- Activate the style you wish to modify.
- Change the properties you want to modify, then
- Click Modify.
- In the message box displayed, click Yes to overwrite the selected set.

##### **Rename style**

- Choose the desired style from the list.
- Click Rename.
- Enter the new name of the style.  
**OK** Close the dialog box.

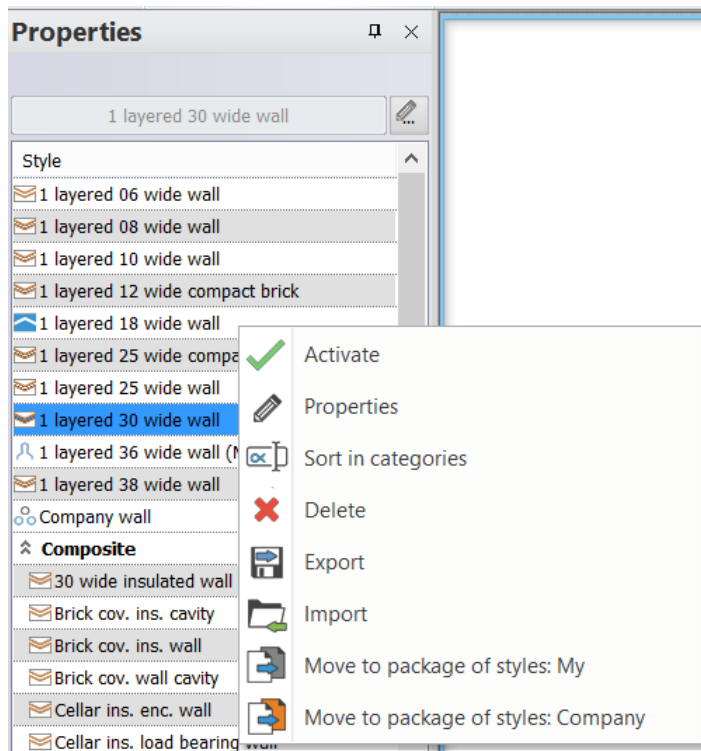
##### **Delete style**

- Open the **Properties** dialog box and click the Style button.
- Choose the desired style from the list.
- Click Delete.
- Click Yes to reconfirm and delete the selected style.

**!** You can rename or delete styles in this dialog that are located on Project level only.

#### 4.6.4. Managing styles in the Properties toolbar

By clicking with right mouse button on a style, the following commands are available:



### **Activate**

With this command you can activate a style. Then you create the next element in a project with the properties stored in that style.

### **Sort in categories**

With this command you can rename a style. The name of Factory styles cannot be modified.

### **Delete**

With this command you can delete styles. Styles in Factory level cannot be deleted.

### **Move to package of styles**

With this command styles can be copied from one level to another. Styles cannot be moved to the Factory level. See the next chapter for details.

### **Export**

You can export this single style in a file with .set extension.

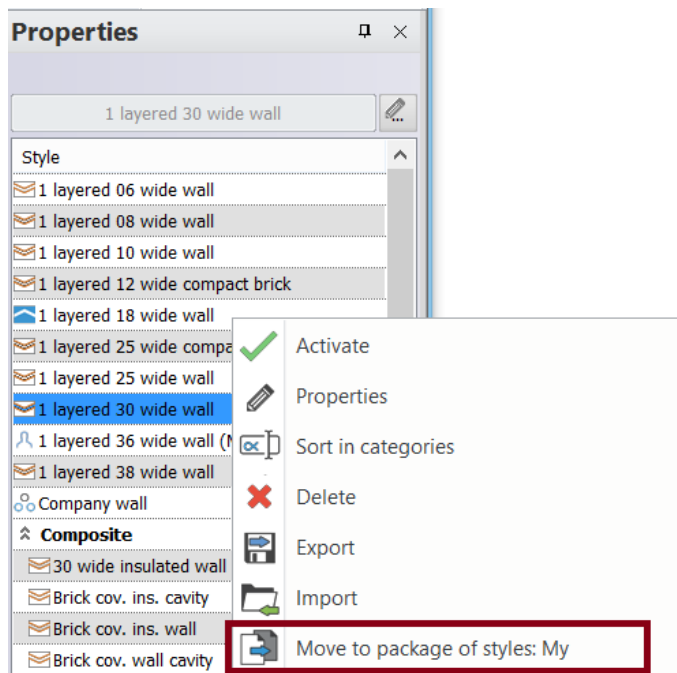
### **Import**

You can import a single style from a file with .set extension.

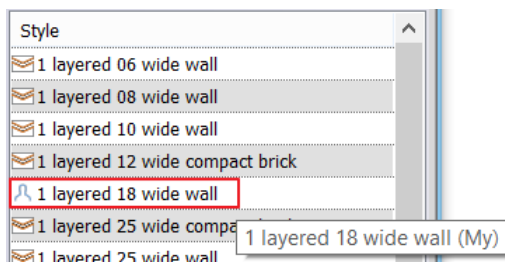
## **4.6.5. How to relocate styles from Project to My level**

You can relocate the styles from Project to My level in Properties toolbar.

- In **Properties** select the style you are going to relocate, then right-click to display the pop-up menu.
- Select **Move to package of styles: My** command in the menu. The style will be moved then.



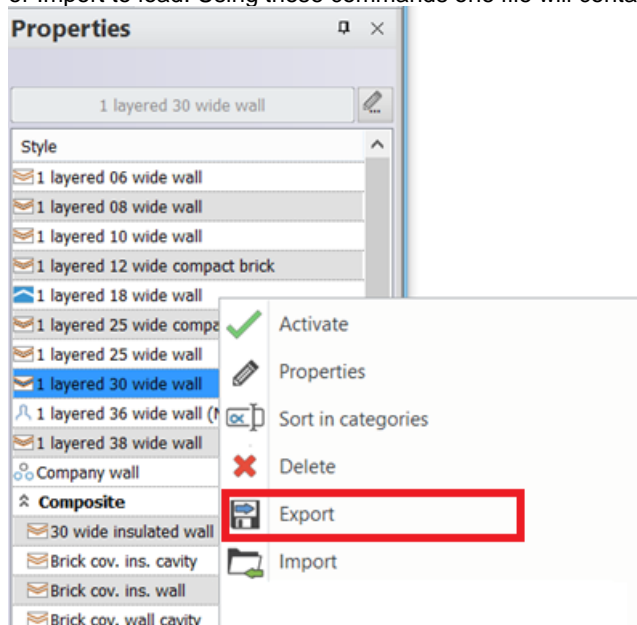
- The command changes the style's icon from the envelope to human shape icon. **The style is available** in every project from now on.



**!** Styles cannot be moved to the Factory level.

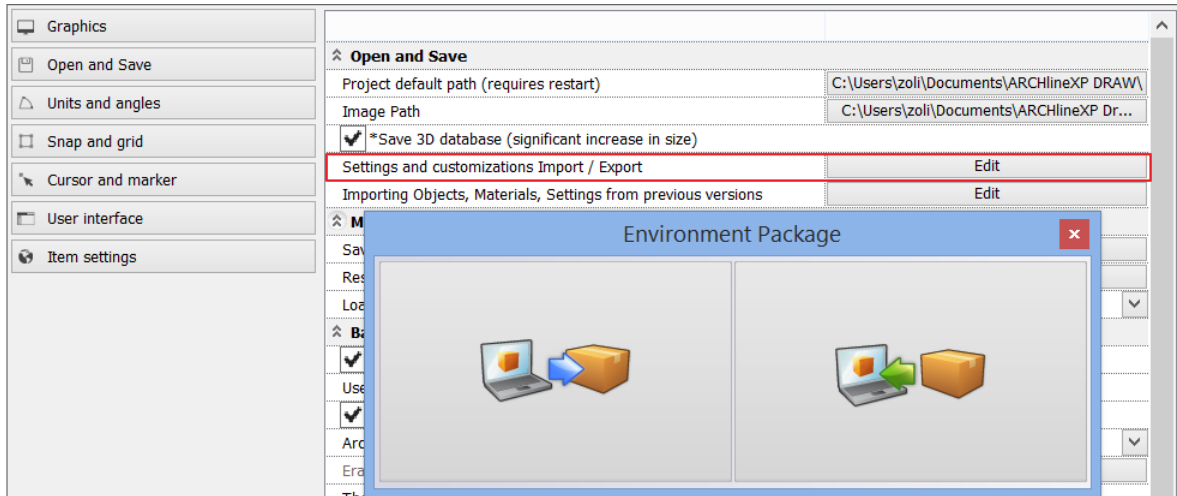
#### 4.6.6. How to exchange Styles one by one to another computer?

You can exchange your favourite styles (My) one by one to another computer. On the popup menu, select Export to save or Import to load. Using these commands one file will contain one Style with .set extension.

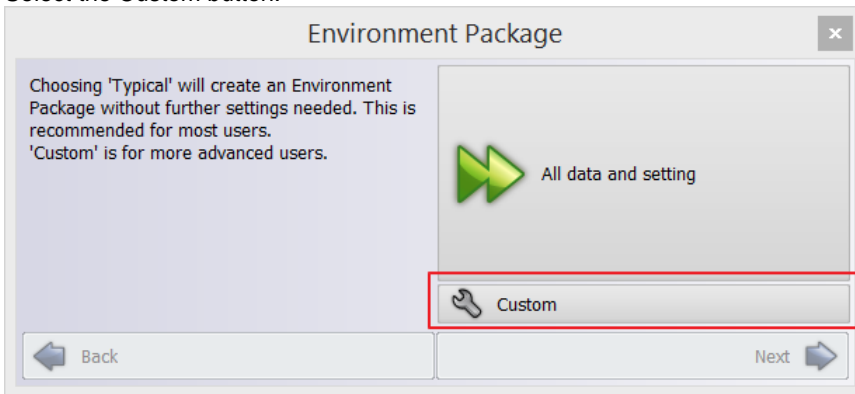


#### 4.6.7. How to export all the styles stored in the My

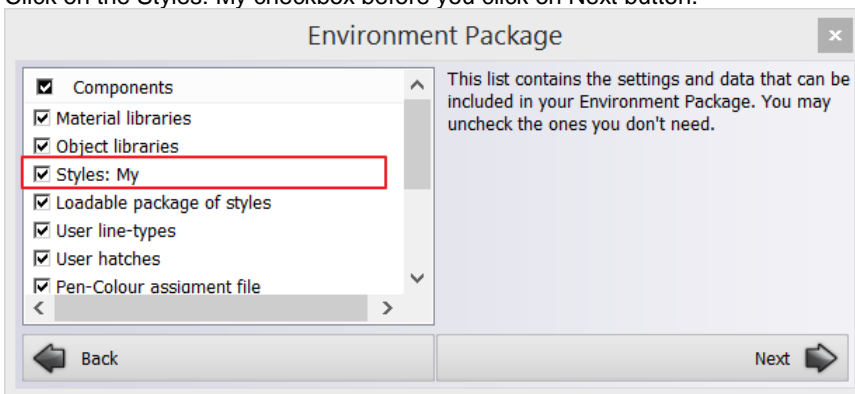
You can share all the styles stored in the My category with the following command: Options dialog - Open and Save – Settings and customizations Import / Export. Click on Edit button.



- Select the left button to export My styles.
- Select the Custom button.

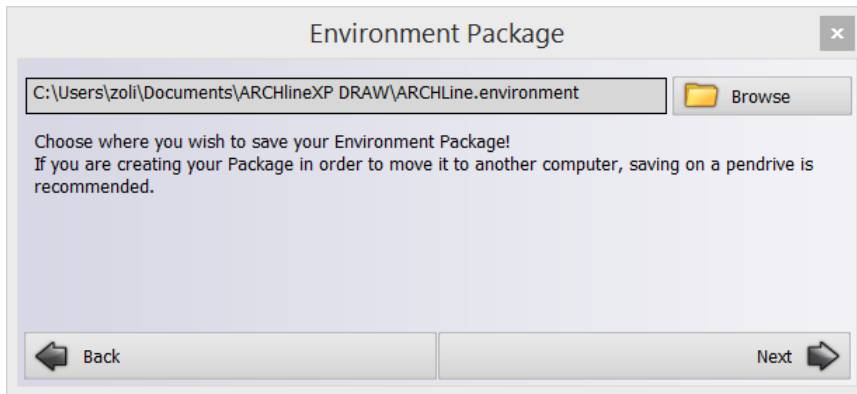


- Click on the Styles: My checkbox before you click on Next button.

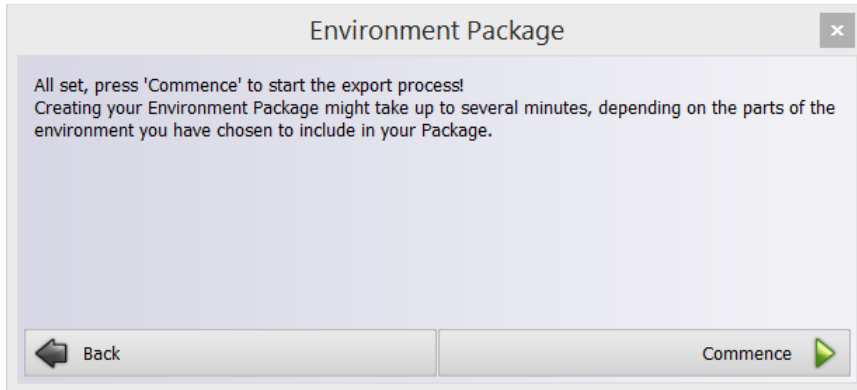


- Select a file name with .environment extension clicking on the Browser button. Then click on Next button.





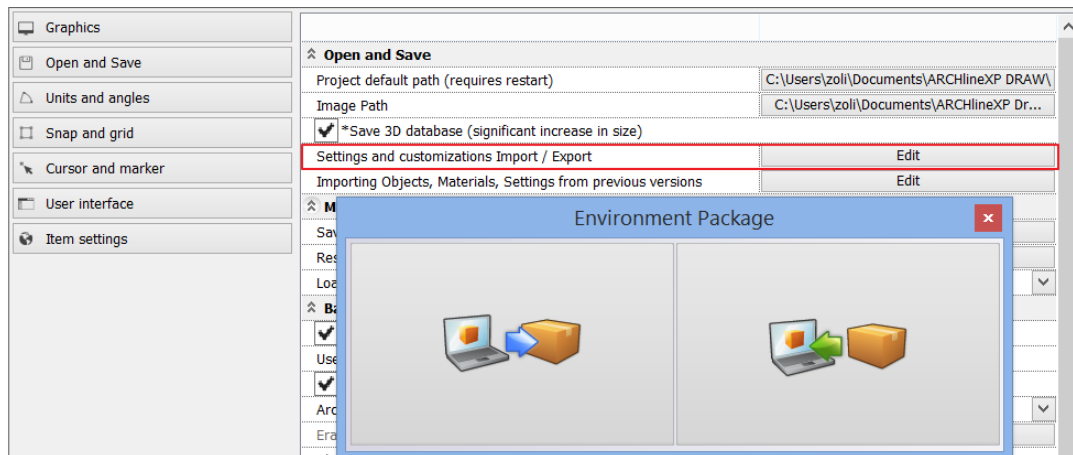
- Press on Commence button to save the file.



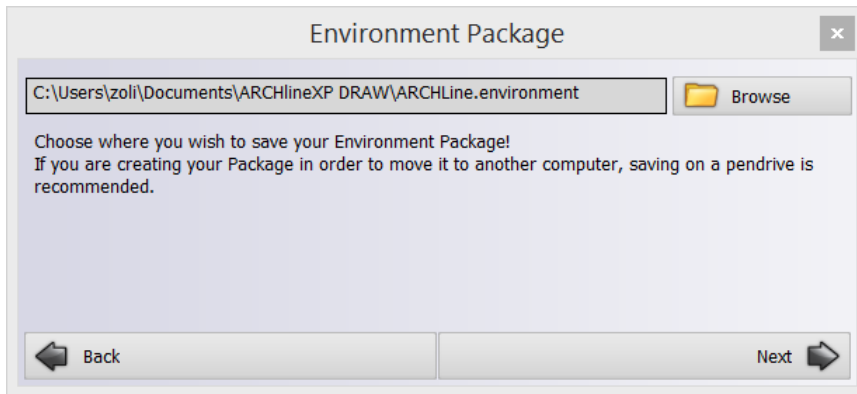
**!** The method is the same if you are going to export the Loadable package of styles.

#### 4.6.8. How to import My styles

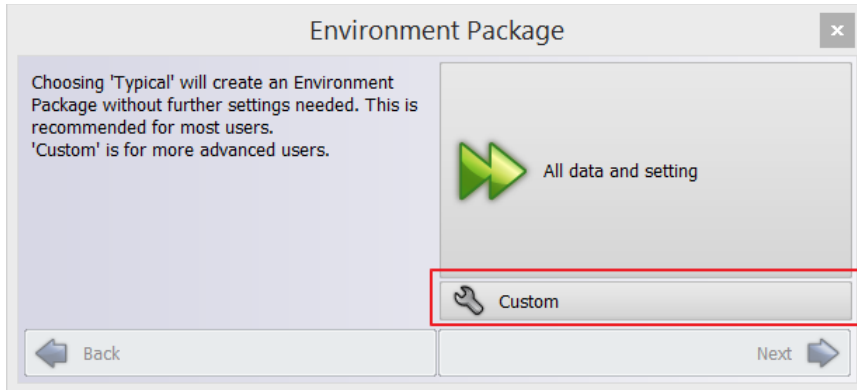
You can import all the styles stored in the My category with the following command: Options dialog - Open and Save – Settings and customizations Import / Export. Click on Edit button.



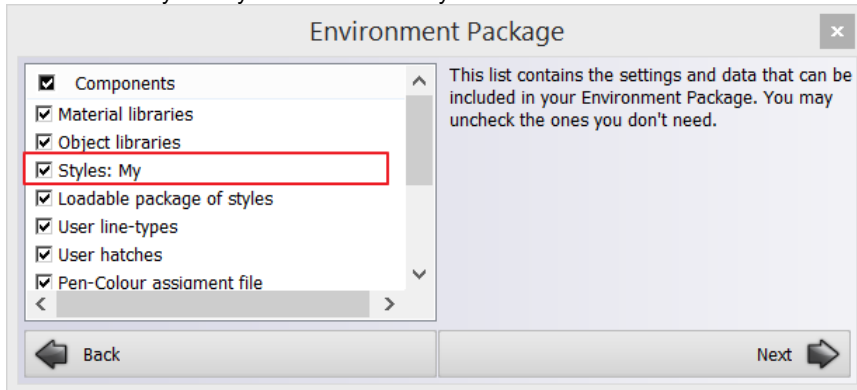
- Select the right button to import My styles.
- Select a file name with .environment extension clicking on the Browser button. Then click on Next button.



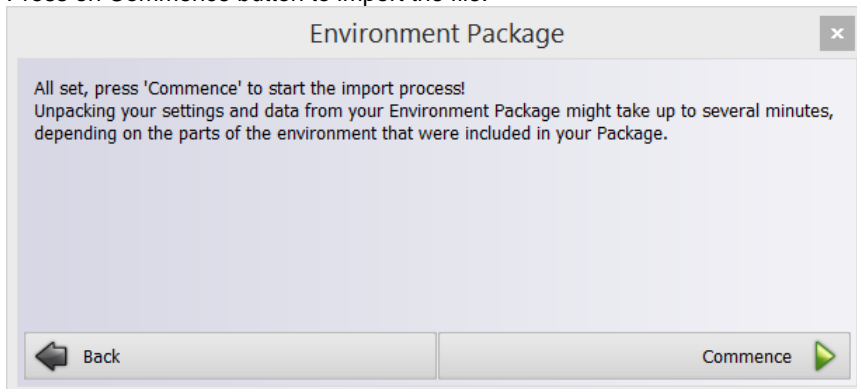
- Select the Custom button.



- Click on the Styles: My checkbox before you click on Next button.



- Press on Commence button to import the file.



Remember to restart ARCHLine.XP to validate the new styles.



The method is the same if you are going to import the Loadable package of styles.

### 4.6.9. Operations with loadable package of styles

Typically, the loadable package of styles represents standards that are used within a company or installed as ARCHLine.XP extension by third parties.

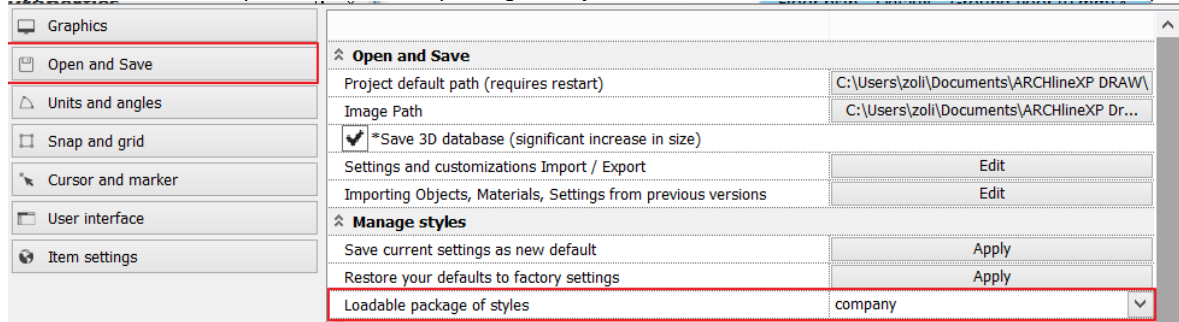
Styles can be shared as office standard using the loadable package of styles.

#### Specify

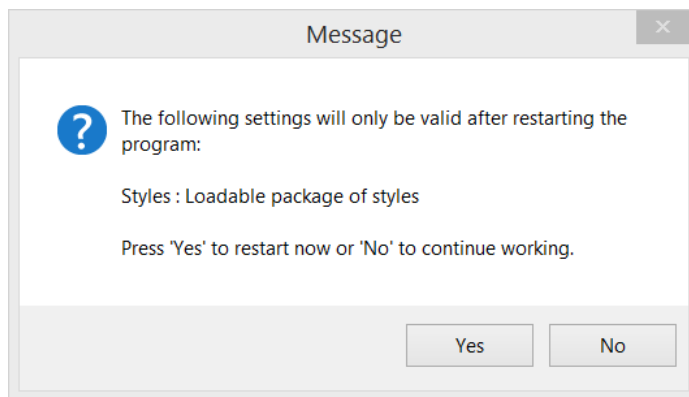
At first you have to specify the name that represents the loadable package of styles.

Specify it with the following command: Options dialog - Open and Save – Loadable package of styles.

Type the name that represents loadable package of styles. In this manual we use the neutral name as “company”.



Remember to restart ARCHLine.XP to validate the new styles.



#### Unload

You can switch off the loadable package of styles by deleting the name and let it empty.



Remember to restart ARCHLine.XP to validate the new setting.

### 4.6.10. Importing Objects, Materials, Settings from previous versions

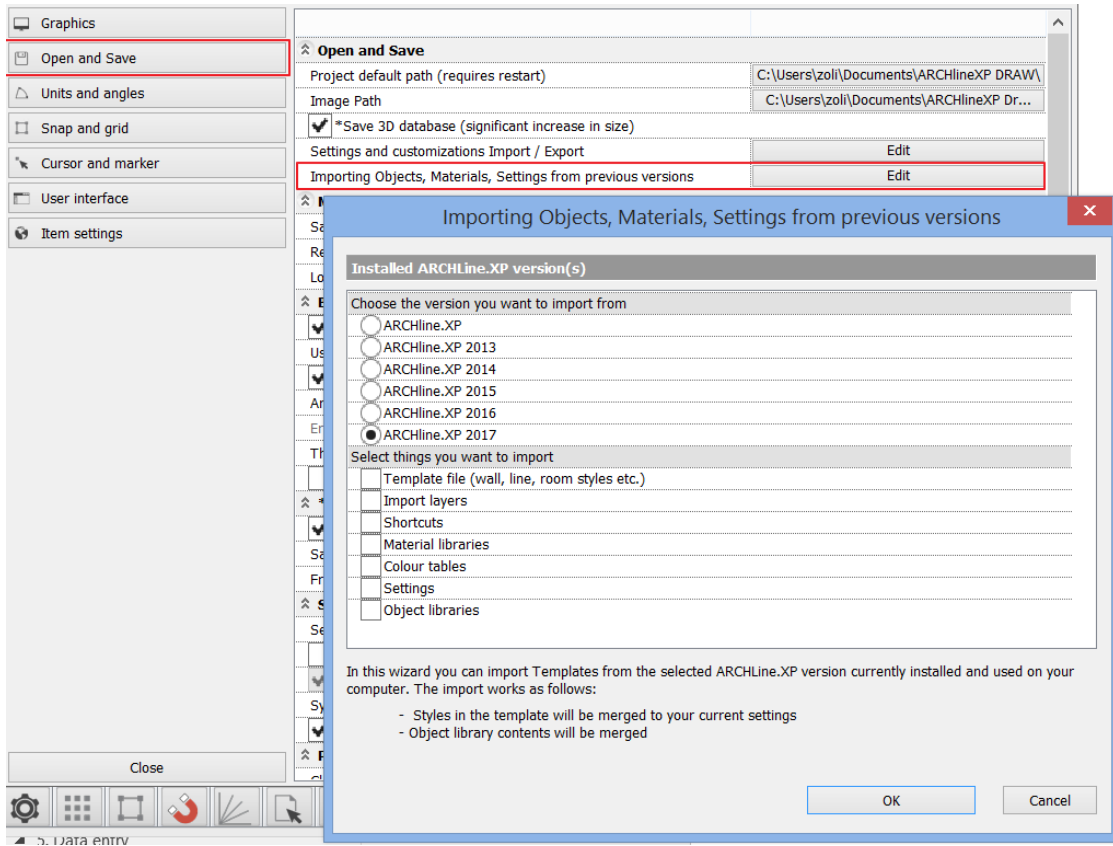
#### Import from the previous versions

The Import Wizard allows you to select the previously used (in the previous version of ARCHLine.XP) styles, objects, materials, settings and import them into the actual version.

**!** The Import Wizard will only display the first time after you install the software. Once you have completed it, you cannot run it again when you restart the software.

However Import Wizard can be activated any time if you choose the *File menu – Options – Open and Save - Importing Objects, Materials, Settings from previous versions* command if you skipped the default method at the first run.

- Choose the previous program version (You can choose from the installed program versions on your computer.)
- Select what you want to import.
- Styles, Object library contents, materials, etc. will be transferred.



### 4.6.11. Save current settings

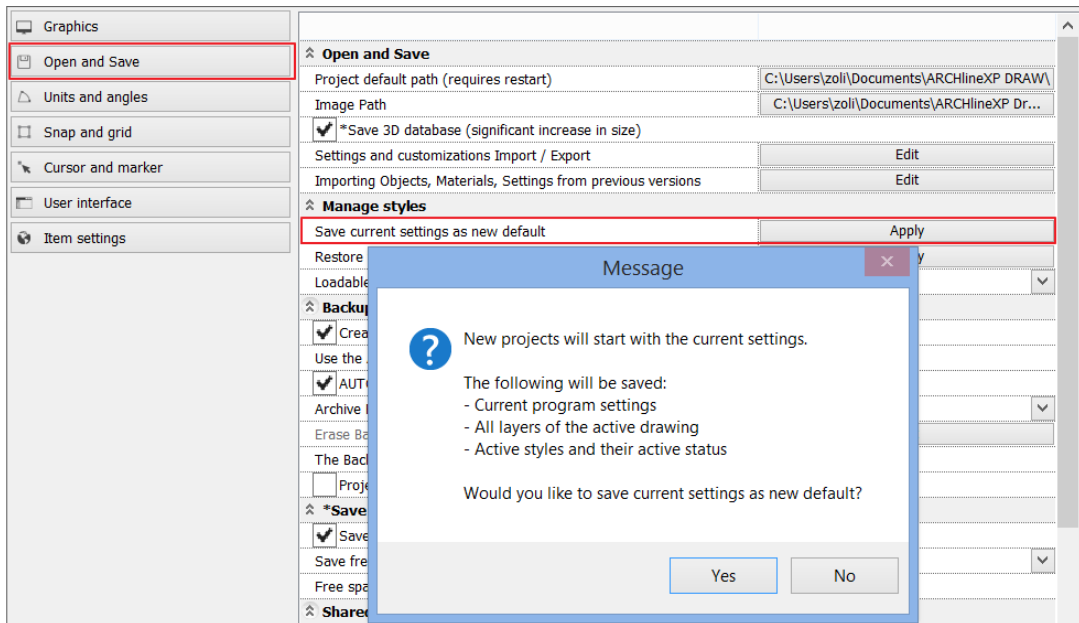
After downloading and installing ARCHLine.XP starts with the initial factory settings.

The following settings belong here:

- Layers,
- Units,
- Angle measure
- Rounding off decimals
- Auto save settings
- Snap, grid, object snap, cursor, marker settings
- general text settings as display boundary
- Printing defaults

You can override the default settings with your current settings if you choose the *File menu – Options – Open and Save – Save current settings as new default* command.

Your new settings are stored as new default settings and after restart it will be available in every new project.



### 4.6.12. Restore factory default settings

You can restore ARCHLine.XP factory default settings by resetting your current settings.

Choose the *File menu – Options – Open and Save – Restore your default to factory settings* command.

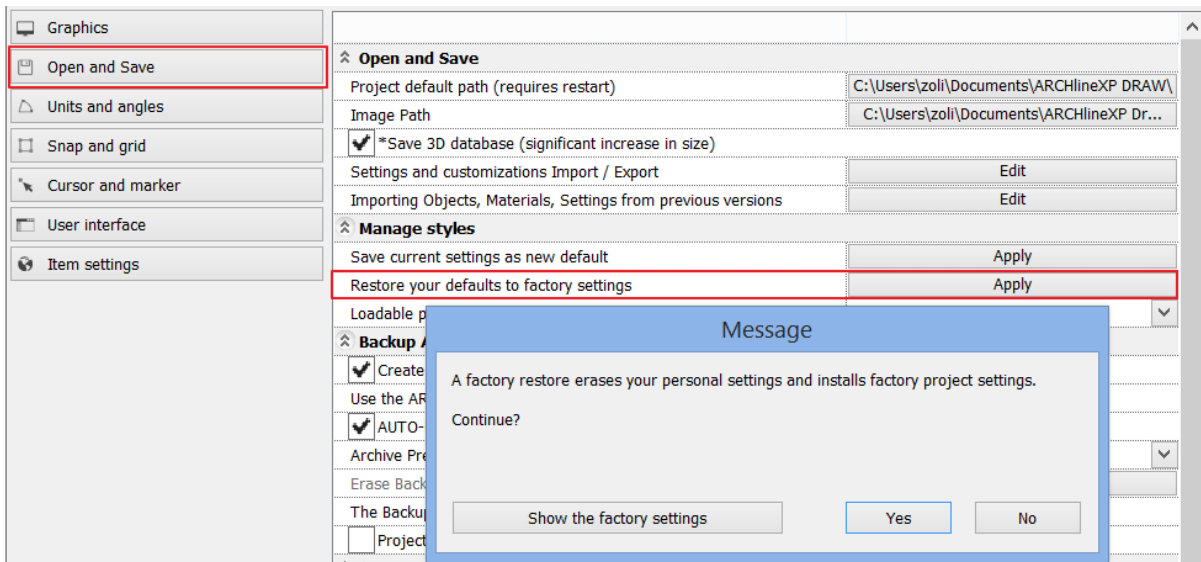
The following settings belong here:

- Layers,
- Units,
- Angle measure
- Rounding off decimals
- Auto save settings
- Snap, grid, object snap, cursor, marker settings



Please note: all data listed above will be deleted and the factory default settings are restored.

Your new factory settings are stored as new default settings and after restart it will be available in every new project.



### 4.6.13. Template Import Wizard

#### *Import from the previous versions*

After downloading and installing ARCHLine.XP at the time of first run of the program the *Template Import Wizard* appears. You can select the previously used (in the previous version of ARCHLine.XP) templates, user objects and load them into the actual version.

Please use the *File menu – Import – Template* command if you missed this method at the first run.

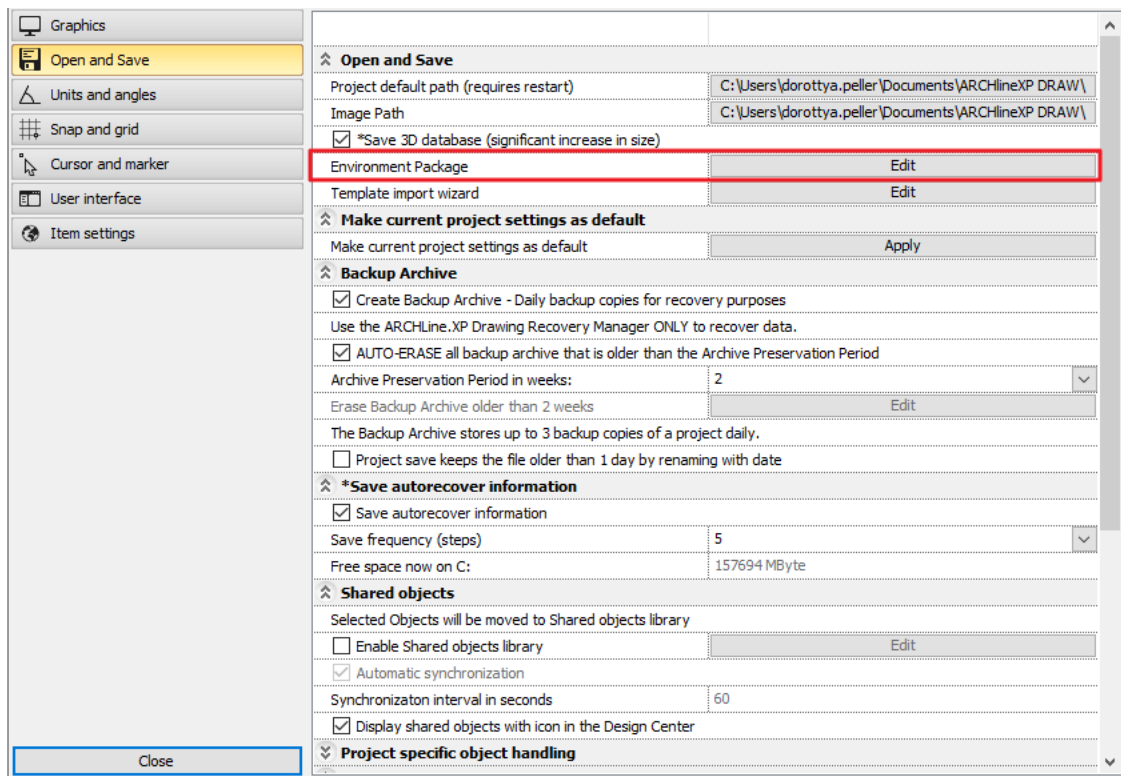
- Choose the previous program version (You can choose from the installed program versions on your computer.)
- Select things you want to import (Template file, Shortcuts, Material libraries, etc.).

The program is going to search the previous version and:

- ❖ styles in the template will be merged to your current settings,
- ❖ Object library contents will be merged.

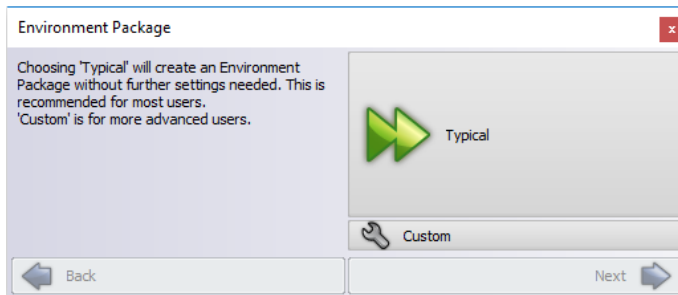
### 4.7. Relocating the whole work environment

The environment relocation has new features in ARCHLine.XP 2018. We can save and scan any user data that is supported by the program in a single file. Supported data includes the user-generated material library, style library, objects created by the user or downloaded from the internet, and all user settings (linetypes, sun settings, views). The command is available in the Settings / Open and Save tab under the "Environment Package" button.



#### 4.7.1. Creating an environment package

- Start the command.
- In the Popup window, when you select the "Typical" option, the program collects all the user data into a single file. If you want to filter more precisely, you have to select the "Custom" option.
- By clicking on one object or on a category, you can save all the objects and materials in it to one environment package. In this case, you need to look up the Object or Texture you want to export from the Design Center, and click on the Cogwheel icon in the top right corner. Then in the drop-down menu select "Export". The selected elements will be exported to the folder we have selected on the computer. The extension of all such files is .environment.



#### 4.7.2. Importing an environment package

- With the "drag and drop" method, we can easily import the environment files into the program. We just have to drag the desired file to the program window from the computer's folder. A system message will appear informing us about the successful import.
- The Import command can also be accessed from the Settings / Open and Save tab after selecting "Environment Package" command.

Of course, the environment package file that was saved in 2017 can also be imported into the 2018 version. If there are elements in this package that have the same name as an existing one, the program requests confirmation for overwriting. If this package contains styles, the program does not overwrite styles with the same name, but copies the non-conflicting files to the User category. After importing, the program must be restarted.

## 5. Team work

ARCHLine.XP supports teamwork. Teamwork allows simultaneous access to a shared model through use of a central model.

All users work locally on different working areas of the central model at the same time. For example, a team may have different members assigned to work on specific functional areas, such as the building structure, interior details e.g. lighting, tiling, furniture layout.



Most important rules:

- Teamwork allows simultaneous access to a shared model through use of a central model.
- The central model has to be saved on a network drive to which all team members have access.
- Master working area is privileged to define team project fundamentals (Storey structure, layers, geo-location and initial state of the project)
- All users work locally on different working areas. Every user can manage one working area in active state to which new elements are added.
- Graphic Override enabled to provide different output of the view (color, line types, line weight, half-tone, and hatch pattern).
- Save command means synchronizing local working areas with central model so that other users can see the updated work.

### 5.1.1. Terminology

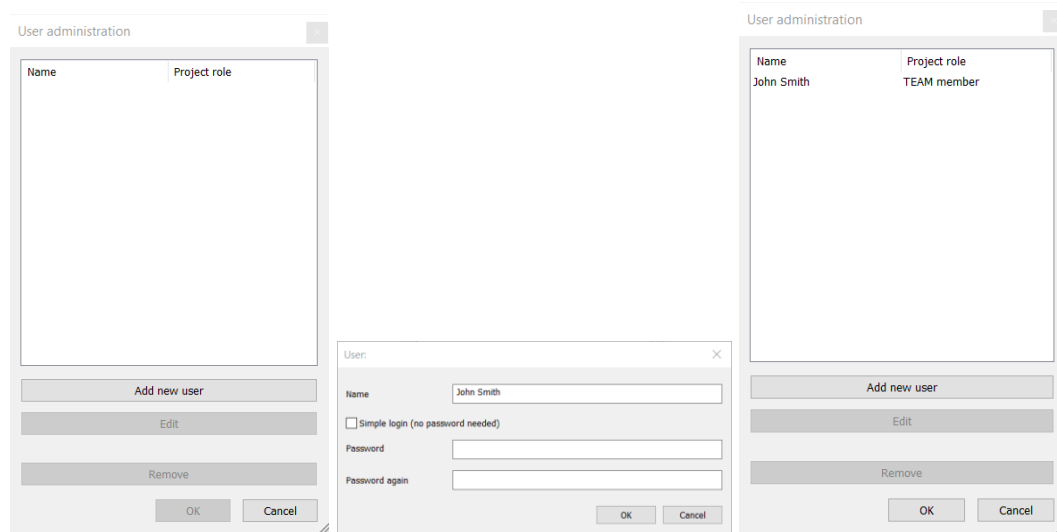
Central model	The central model stores all information for the separate parts (working area) and current ownership information (users) of the project. The central model has to be saved on a network drive to which all team members have access.
Administrator	User who creates the team project and saves first time the central model. The administrator has the right to add or remove team members.
Team Member (User)	Users are invited by the Administrator to work on the same project at the same time.
Master working area	Master working area is a privileged working area which contains fundamentals of the team project that can be later modified only with administrator rights (Buildings, storey structure, layers, geo-location and initial state of the project).
Working area	Collection of elements, accessible by users.
Active working area	The working area to which new elements are added. Only one working area can be in active state.
Graphic Override	Graphic Override provides different output of the view. You can specify graphic override of color, line types, line weight, half-tone display, and hatch pattern.
Save	Save command means synchronizing local working areas with central model so that other users can see the updated work.

### 5.1.2. Flow diagram for setting up Team project

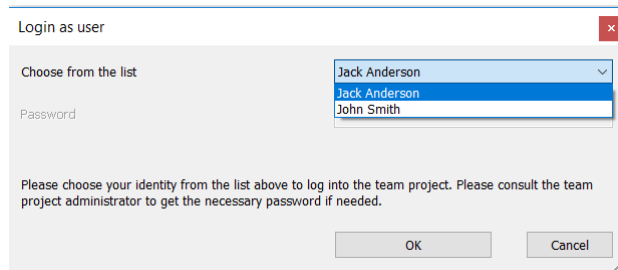
1. Administrator creates a new Team project by choosing New project when ARCHLine.XP starts.  
Location of the command: File > Teamwork > New project  
In the Save dialog, Administrator specifies a file name and directory location for the central model on a network drive to which all team members (users) have access.



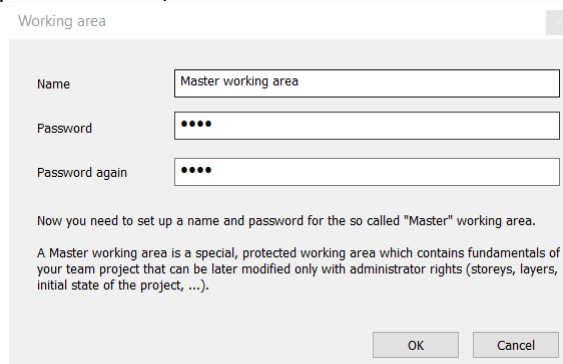
2. Administrator adds new users by defining the name that will be used to login. Password is optional. The following image shows the User administration dialog, adding users.



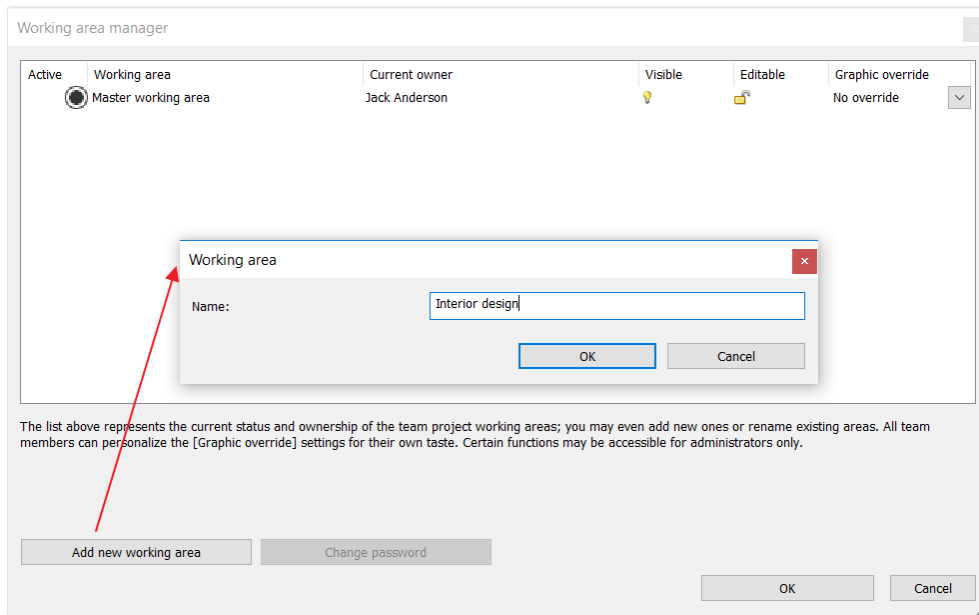
3. Administrator will login choosing one of the identity already defined.



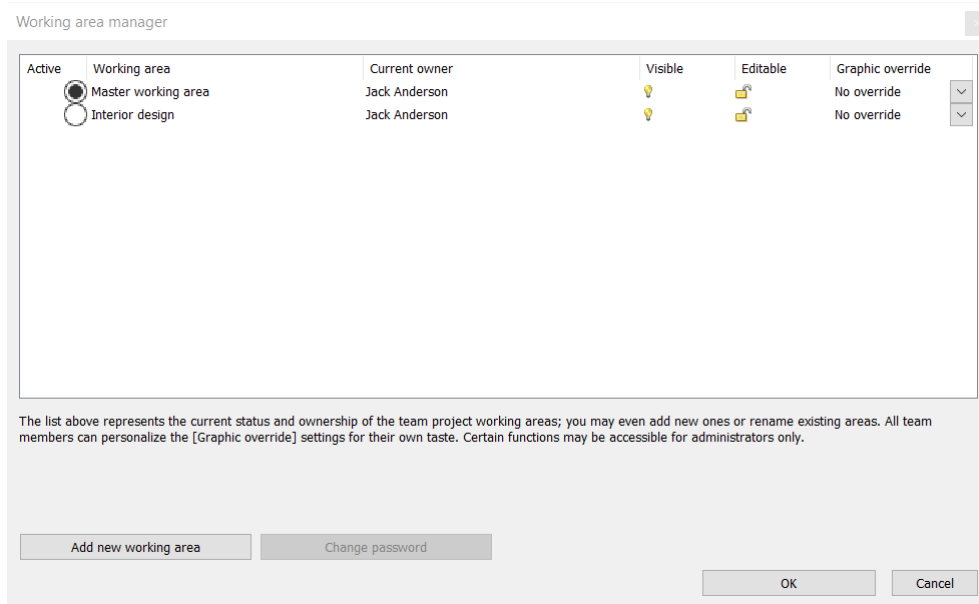
4. The next step is to create the Master working area. Master working area is the only working area where password is required to enter.



5. Additional working areas can be created to provide simultaneous access to a shared model for the other users.



The following image shows the Working area manager dialog, with two working areas.



6. Administrator resaves the project.
7. Users can login choosing one of the identity already defined and begin to work on Team projects.

### 5.1.3. Setting up working areas

The workspace is a collection of elements handled by a team member, eg. walls, windows, doors, stairs, etc. Only one user can edit each working area at a given time. All users can view the working areas owned by other users, but they cannot make changes on it.

The Working area manager dialog provides the following information:

Active	Designates the working area to which new elements are added.
Working Area	Indicates the name of the working area. Click inside the name field to rename it
Current owner	Indicates the current owner of the working area.

Visible	Allows to show or hide the working area.
Editable	By default all working area are locked for editing. Choose one or more working areas you want to edit. When you take over more than one working area you can activate one working area to which new elements are added. Working areas currently owned by other team members cannot be taken over for editing but they are still visible as reference drawings by default. Should all the working areas be occupied by other team members already you can still login as a passive visitor in READ-ONLY mode.
Graphic Override	Use the Graphic override option when you would like to colour-code representation of different working areas for better understanding.

Working area manager

Active	Working area	Current owner	Visible	Editable	Graphic override
<input checked="" type="radio"/>	Interior design	Jack Anderson			No override
<input type="radio"/>	Master working area	None			No override

Please set one or more working areas to Editable to be able to work on them. When you take over more than one working area you can activate one to start working with.

Working areas currently owned by other team members cannot be taken over for editing but they are still visible as reference drawings by default. Visibility of working areas can be turned on or off. Use the [Graphic override] option when you would like to colour-code certain working areas for better understanding.

Should all the working areas be occupied by other team members already you can still login as a passive visitor in READ-ONLY mode.

OK Cancel

### Choose the active working area

User can only create elements in the Active Working Area only. Click on the circle icon in the first column to select your active working area.

### Visible

Choose the working area you want to make visible. You can improve performance if you hide working areas that are not required for your current work.

### Editable

Choose one or more working areas you want to edit. Working areas currently owned by other team members cannot be taken over for editing.

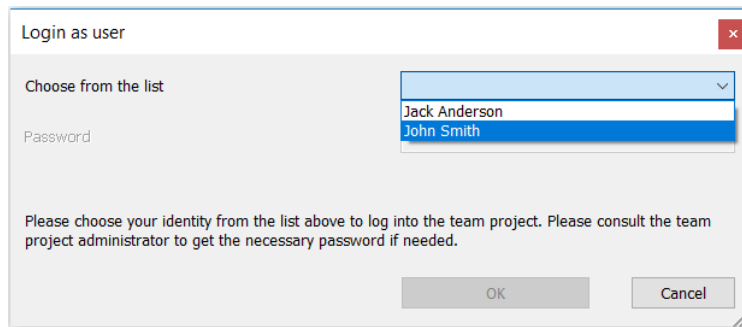
### Graphic Override

You can specify graphic override of color, line types, line weight, half-tone display, and hatch pattern. When the Halftone option is enabled the halftone of the element colour will be used for representation. Hatch pattern can be also overridden in case the element has hatch pattern representation.

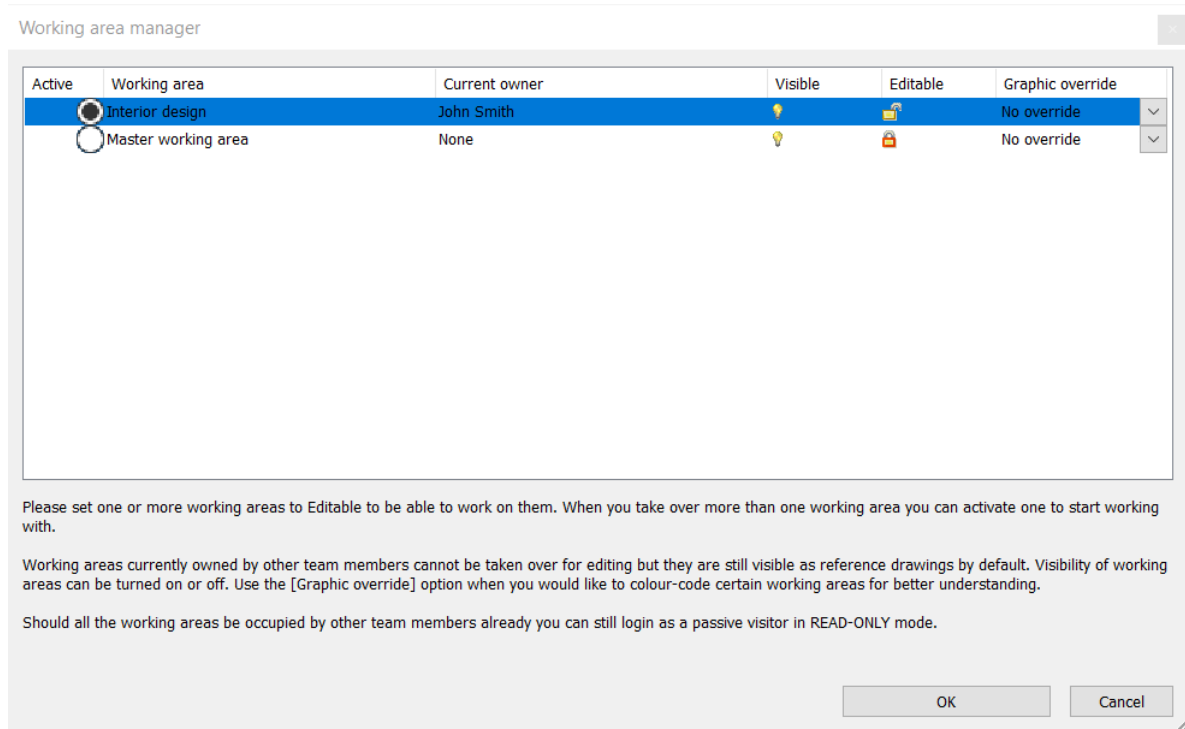
## 5.1.4. Changing the Editable Status of working areas

If you want to create new elements on a different working area you have to close the Team project and open it again.

Login as an user and choose another working area



You can only set the active state of a working area that is not owned by another user.



### 5.1.5. Work offsite or offline

Change to Offline mode is useful when you are not connected to the network to save your changes.

Working in OFFLINE mode you can work on the project and make changes on your editable working areas far from the team, with no network connection.

Project changes are saved on your hard drive each time you modify and resave the project.

To share changes with the team members switch back to ONLINE mode when you can do that and save the project file.

Location of the command: File > Teamwork > Administrative Tools > Creating a Local Copy for Offline mode

Note: all changes made on this project are not available for other team members until you switch back to ONLINE mode and save the project again.

### 5.1.6. Update Local Copy to the central model

Using this command you join again to the Team and synchronize your changes with central model.

You can update your local changes to the central model and you will see the latest changes from other team members

### 5.1.7. Reassign elements to a different working area

In the drawing area, select elements you wish to reassign.

Select the target working area.

### 5.1.8. Convert Team project to single-user project

The command converts Team project to single-user project.

Location of the command: File > Teamwork > Administrative tools > Convert Team project to single-user project

- Save the project.
- Exit from the project.
- Open the project again. From now on you can work in single user mode.

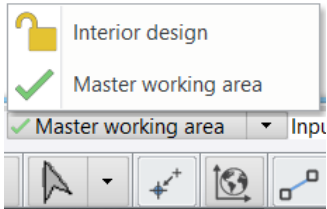
### 5.1.9. Change active working area on the View Control Bar

The View Control Bar always displays the active working area.

To change the active working area, click on the Drop-down list and select another one.

You can choose from editable working areas only.

The active working area drop-down provides the same function as the corresponding dialog clicking on the File > Teamwork > Working Area Administration command.



## 6. Views

### 6.1. Setting view

You can create different views of the building model, such as floorplan, sections, elevations, print layouts, moodboards and 3D views.

In the 3D views you can set the view of the model; you can set named views, axonometric or perspective. You can also set how to display objects in 3D.

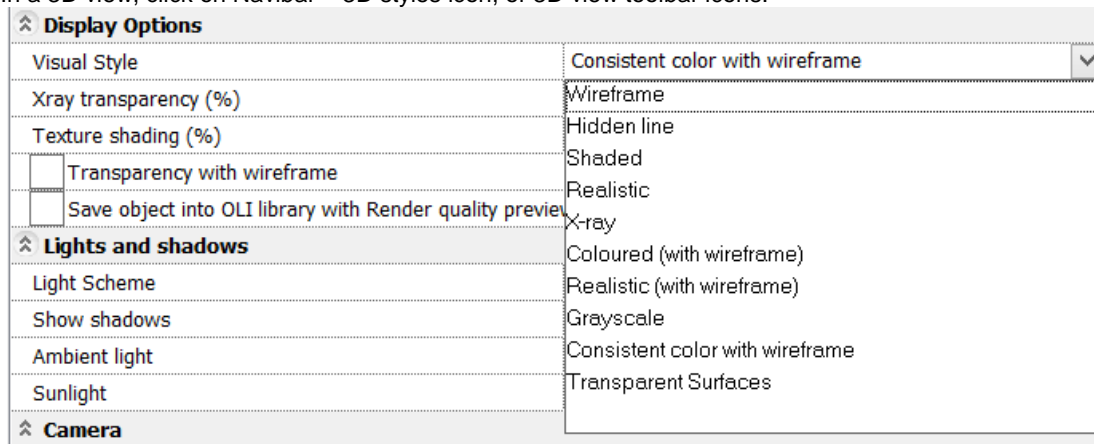
#### 6.1.1. 3D view graphics settings

In the **File - Options - Display** dialog box or in the Property grid you can manage the 3D view graphics settings.

##### Display options

You can control the display of the 3D model in several visual styles.

In a 3D view, click on Navibar – 3D styles icon, or 3D view toolbar icons.



##### Wireframe

In wireframe representation each edge of the model is visible.

##### Hidden line

In hidden line representation the program displays only the edges of the model that can be seen from the current view. The program doesn't display the hidden lines in the background.

##### Shaded

Shaded means that the surfaces of the model are represented with the colour properties specified for the used materials. Only the surfaces that can be seen from the specific view are displayed.

Material colour (With wireframe)

This representation is the combination of Shaded and Hidden line rendering types.

##### Realistic

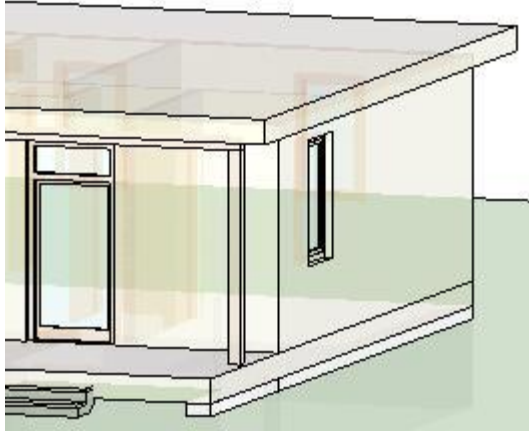
Realistic representation means that the surfaces of the model are displayed with the texture properties specified for the used materials (if the texture property is not specified for a material then the material colour is used instead). Only the surfaces that can be seen from the specific view are displayed.

##### Realistic (With wireframe)

This representation is the combination of Textured and Hidden lines rendering types.

##### X-ray

The X-ray rendering type is similar to the Textured (with wireframe). The difference is that non-transparent surfaces become transparent and therefore the structure of the model can be overviewed in unique and spectacularly way, similarly to an X-ray photo.



### X-ray transparency (%)

When X-ray is selected from the Render type options, you can specify the amount of transparency. You can specify a value between 0% and 100%.

### Consistent colour

Consistent colour mode indicates how natural the colours of objects appear regardless of illuminated by a light source. Consistent colour display mode is essential for producing documents like wall elevation view, where it's important that tiles, paintings, etc. display the accurate colour and appear as it looks on a normal noon day.

Consistent colour rendition



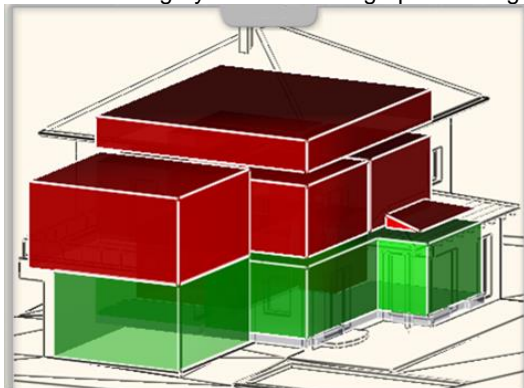
Textured Phong Shading



### Transparent surfaces

The Transparency is very useful when you want to display internal volumes together with the entire model. Available in Hidden Line visual mode, you can display what is behind the external surfaces of the building. When you work in a room you can visualize what is behind the furniture, such as electrical accessories or pipes. The transparent surface effect can be set on a category or element.

To apply the transparent surfaces on a 3D view, click on transparent surface button in the 3D Model Display dialog and select the category to override its graphic setting.

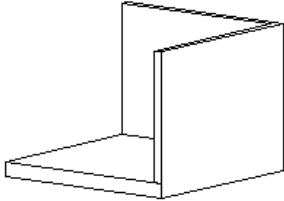


### Join surfaces

*Join surfaces* shows or hides the common edges of different surfaces.

This option enables the quality of display of solids with same material to be controlled. When two surfaces have edge that match up entirely or partly, you can force to join them with the 'Join surfaces'. checkbox.

If you activate the **Join surfaces** option, the common edges between **wall and wall**, **wall and slab** are displayed in hidden-line mode, provided that the material of the joining surfaces is the same.



These views are captured as 'Join surfaces' off and on.

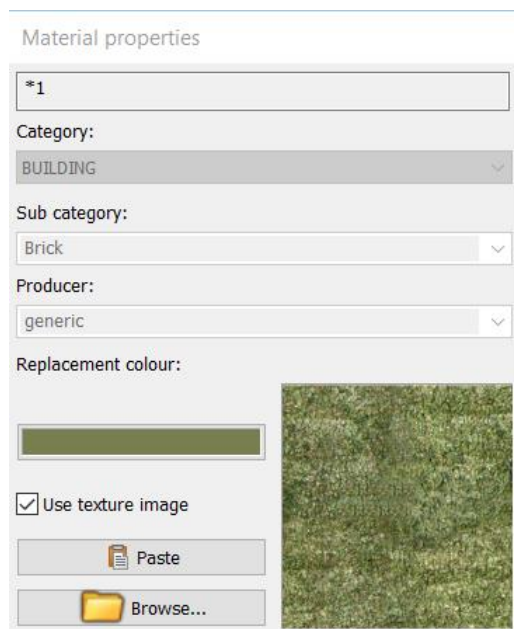


### Approximation lines

For the representation of arc surfaces you can switch on the displaying of approximation lines.

### Texture mixed with material colour

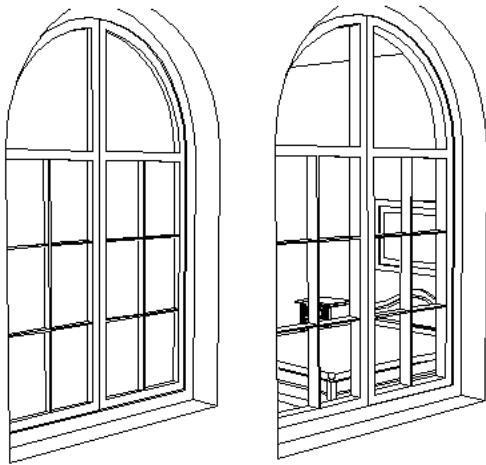
This option displays the texture and its replacement colour together in texture view mode.



### Transparency

Using this option you can make the edges behind surfaces with transparent materials visible. By default, only doors and windows have transparent surfaces.





### 6.1.2. 3D View Graphic Display Options

The visual impact of the 3D view depends on the following graphic settings:

#### Graphic Display Options Model Display

Visual Style  
X-ray transparency (%)  
Texture shading (%)

#### Description

Select from predefined visual settings to set the visual style of the view.  
Controls the opacity of the x-ray visual style.  
You can scale it between 0 and 100%.  
The strength of the texture shading effect.  
You can scale it between 0 and 100%.  
Available only in views that use the Realistic or X-Ray visual style.

#### Lighting and Shadow

Light scheme

Select from interior and exterior sun and artificial lighting combinations, such as *Exterior: Sun only*, or *Interior: Sun and Artificial lights*, or *Artificial lights' solid only*. Available only in views that use the Realistic or X-Ray visual style.

Ambient light

Sometimes it is quite difficult to place enough lights in your drawing to be fully realistic. Ambient light setting help with this, but it can produce a flat effect. By using ambient light you can add effective illumination and highlighting. You can scale it between 0 and 500.

Sunlight

Brightness of the direct light. You can scale it between 0 and 500.

Show shadows

This parameter controls the display of shadows in the view.

Shadow type

Soft or Hard shadow. Hard shadow means crisply defined, sharp edges. Soft shadow means less distinct view and fade off toward the edges. Soft shadow looks more realistic than hard shadows.

Bump Mapping

Bump Mapping is simulating **bumps** and wrinkles on the surface of an object.

Mirroring

This parameter controls the display of a blurred reflection effect in the view. Do not confused it with a high-resolution photo-realistic image calculated with real reflections.

Available only in views that use the Realistic visual style.

#### Camera

Walk speed

It is called walking when we move the camera in the Walk or Fly function with the mouse or the keyboard arrow keys. The speed of walking can be specified here. The measure of this is meter/second.

Run speed

It is running when we move the camera in the Walk or Fly function with the move keys, while the Shift key is pressed and hold. The speed of running can be specified here. The measure of this is meter/second.

#### Visual effects

Joining Surfaces

Join geometry removes the visible edges between two adjacent surfaces having the same material. It works only if adjacent surfaces are in the same plane and they meet at a clean edge.

Classes for Joining Surfaces

Select object types to apply Joining Surfaces

Joining Surfaces is disabled between roofs

Switch off Joining Surfaces between roofs

Display of Facet Edges

Display of Facet Edges (the edges between planar faces representing a surface).

3D section box transparency

You can change the transparency of the 3D section box plane in the 3D model window

Anti-aliasing

Anti-aliasing improves the quality of lines in the view, making edges display more smoothly.

Hardware vertex processing	The matter of how the calculations are made either by the CPU (software mode) or by the GPU (hardware mode). In software mode the CPU works more than if vertex are processed by the graphic card GPU.
Texture optimization	This parameter replaces the high-resolution textures with properly compressed and resized textures.
Texture quality	Depending on the selected option the program may override the original texture resolution and represents the materials on the surfaces with poorer quality than the original.
Instancing	Practice of rendering multiple copies of the same mesh in a scene at once. Frequently the 3D model contains numerous copies of the exact same geometry with just slight changes in position, scaling, colour, and so on. The one by one representation tends to be very inefficient and send a large amount of data to the graphics card. Instancing is a method of rendering in DirectX that eliminates this problem.

**Texture quality example:**

Some textures have 2048x2048 or higher resolution. Texture quality is reducing the texture size, and using proper compression on textures.



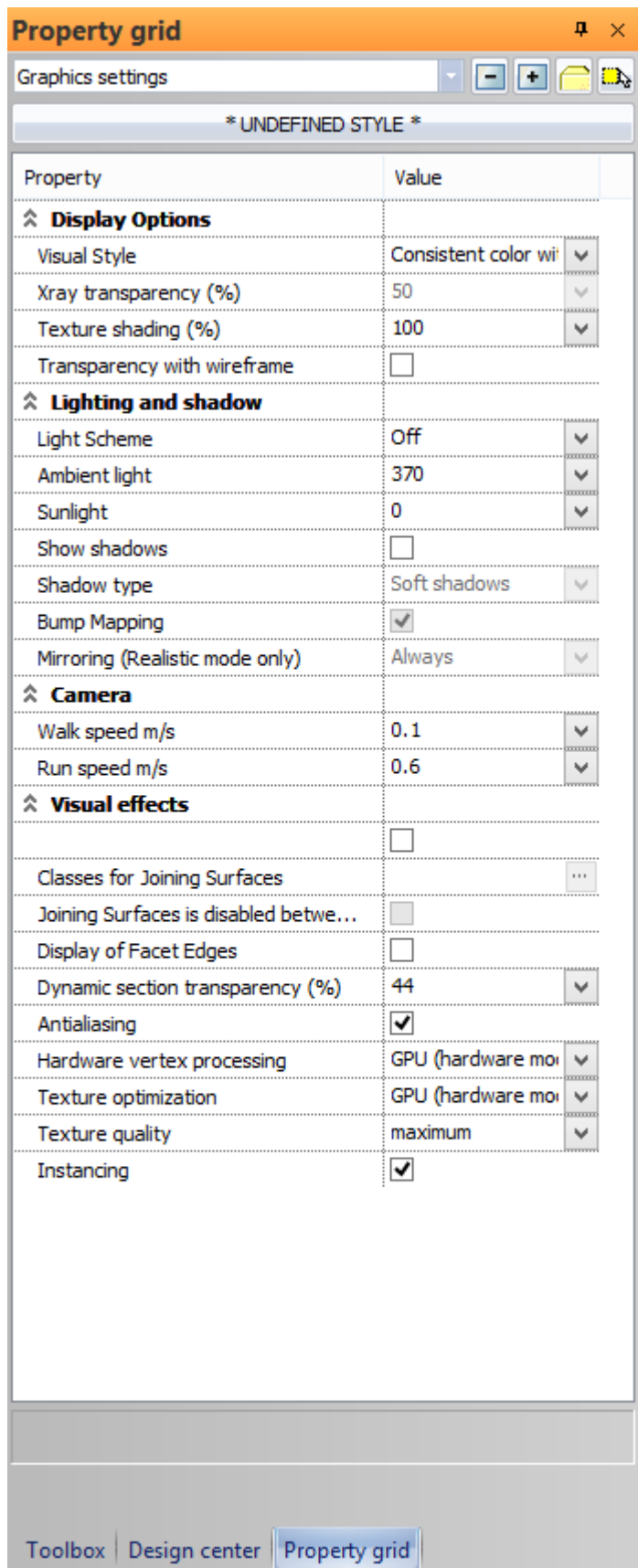
Low

Medium



High

Maximum



### 6.1.3. Zoom

You can change the content of a view by zooming in and out. ZOOM does not change the absolute size of the drawing. .

### 6.1.3.1. Zoom out

This command decreases the size of the drawing with the specified value. Proportions do not change in the window.

- Define the view box by its two opposite corners.

### 6.1.3.2. Zoom all in all windows (F10)

The command modifies the zoom scale so that the whole drawing (all visible objects) would be placed within the window. The same is done in each window.

## 6.2. Building 3D models

The program offers several possibilities to create a 3D model of the designed building. You can display all objects of the model on every floor, or just certain floors or selected objects or a selected part of the model.

The command can be activated from:

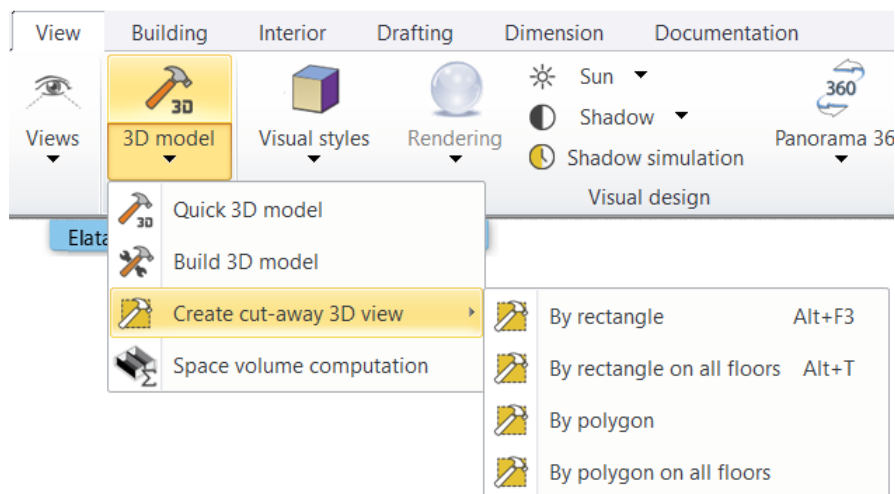
- ❖ **Ribbon > View > 3D model.**
- ❖ **Status bar** -  **Build 3D model** icon, and
- ❖ **F3, Alt +F3, and Alt + T** keyboard shortcuts.

When you create the 3D model, the program opens a 3D view to display the 3D model of the floor plan.

The model is shown in the *Show hidden object* display mode. This means that every object is displayed with hidden lines, but the objects do not hide the edges of other objects. You can change settings with the *3D toolbar* icons. The 3D view follows the changes made on the original drawing.

### 6.2.1. 2D -> 3D

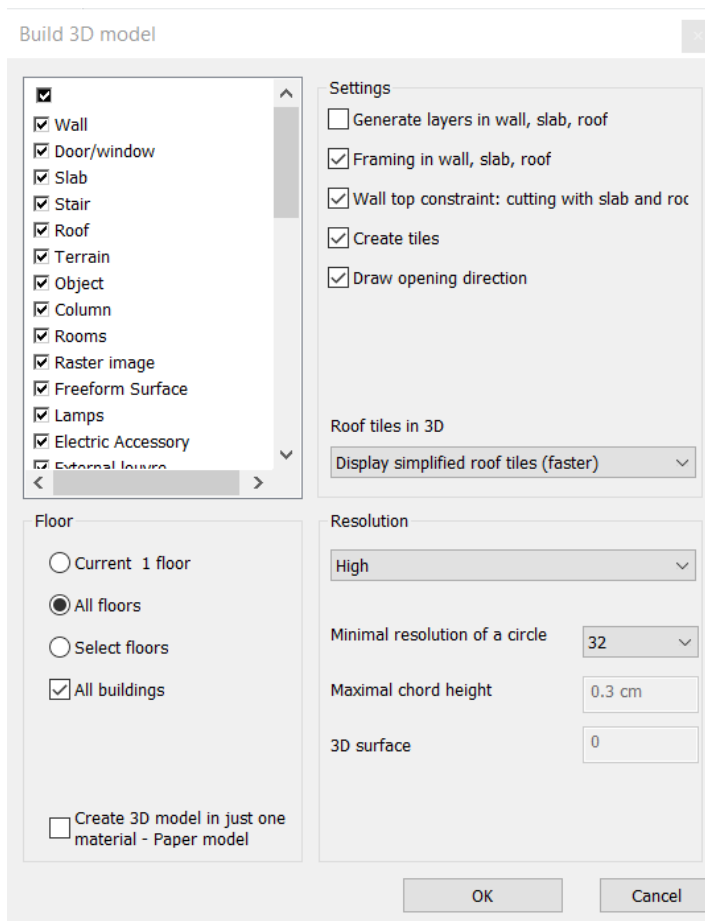
The menu contains the following commands to create and display a 3D model:



The commands don't modify the object itself, only the 3D appearance of it.

#### 6.2.1.1. Building 3D model

To display the **Build 3D model** dialog box, go to the **Ribbon > View > 3D model > Build 3D model** command, or click on the  **Build 3D model** icon in the **Status bar**.



### Classes

- Select the object classes to display in 3D or click the box on top to select all objects.

### Floor

- Select an option:

#### Active floor

The program only displays the active floors of the building.

#### All floors

All floors are displayed.

#### Select floor

For more complex buildings with a number of floors it is not enough to use the *Active floor* or *All floors* options to create the proper details of the 3D model. The *Select floor* option enables more varieties in the 3D model representation:

- The *Select floors* dialog appears.
- Select the floors from you wish to include in the 3D model generation. Use the SHIFT or CTRL keys for multiple selections.
- Click *Ok* to close the dialog.
- To change the floor selection, select either the *Active floor* or *All floors* option first, and then select the *Select floors* option again.

#### All buildings

Enable this option if you have more than one building in the drawing and you want to display all of them in 3D. If this option is disabled, the program only displays the active building.



Read about managing multiple buildings in Chapter 3.5. *Floor management*.

### Create 3D model in one material – Paper model

In architecture there is a need to create section **view, where is necessary to display the mass** volume. The building itself is composed of different materials, which have in section view different hatching.

Therefore, these materials must be replaced with one, to all materials combined in one and join surfaces in 3D.

The paper model method enables to **create the 3D model in just one material**.

This function **temporarily changes every material to one material**, but the project remembers the distributions of materials and next time switching off the paper model function the 3D model restores the assigned materials.

## Settings

### With laminate

- Enable this option if you want to display the layers of the walls.

### Slab beams

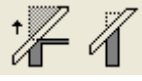
- Enable this option if you want to display the beams of slabs.



### Wall - slab - roof cutting

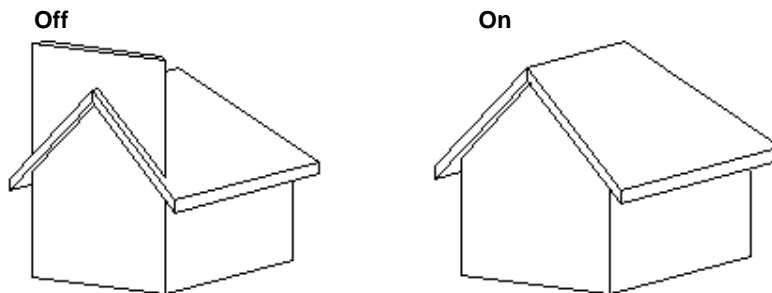
With this option you can fit:

- ❖ wall to slab,
- ❖ slab to roof,
- ❖ wall to roof.

If you enable this option, the program automatically cuts the walls higher than the roof where they intersect it. To do this,

you have to enable the cut option in roof properties. 

Similarly, slabs overhanging the roof,  and walls reaching beyond the slab  are cut. To do this, you have to enable the Slab cut option in the Slab general properties dialog box.



### Keep 3D of this project

If you enable this option, the program creates a new 3D model only for the selected object types, while keeping the contents of the previous 3D display.

### Delete entire 3D model

If you disable the *Keep 3D of this project* option, the **Delete entire 3D model** option comes up. If you enable this option, it deletes the entire 3D model and creates a new one.

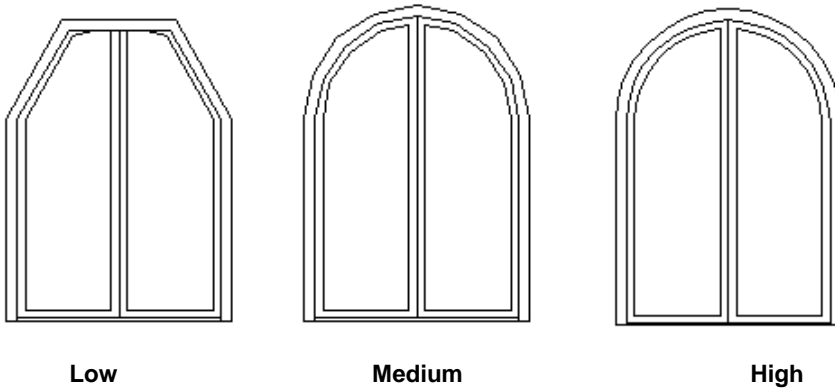
### Create tiles

Enable this option to display the tiles that belong to layers of the wall or the slab. After enabling this option you can create tiles with zero or real width. If you use zero width, it significantly speeds up the display.

### Resolution

With resolution you can set the smoothness of arched surfaces. The higher the resolution is, the smoother the arched surfaces are. However, high resolution can greatly slow down the speed of display.

If you select high resolution, you can set the precise resolution value.



Low

Medium

High

OK Closes the dialog box.

### Face limit

When you want to display a 3D model you can define the number of displayed surfaces. If there are too many surfaces, the number of the displayed surfaces can be decreased, so the display of the model can be optimized.

### Tiling surface number limit

The 3D model size can be limited if you define the maximal number of displayed tiles. If there are too many tiles, the 3D model size may result too many surfaces, so the display of the model can be optimized with this number.

#### 6.2.1.2. By selection (F3)

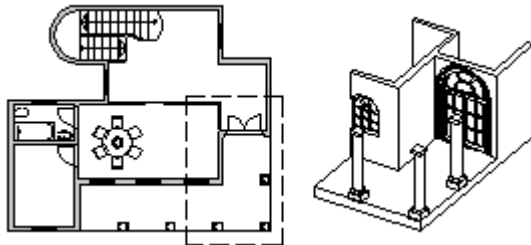
The command displays the selected objects in 3D.

- Select the objects you want to display in 3D:  
**Enter** Completes the selection.

#### 6.2.1.3. By rectangle (Alt + F3)

A rectangle-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the view box by its two opposite corners.



#### 6.2.1.4. By rectangle - on all floors (Alt + T)

A rectangle-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed.



- Define the view box by its two opposite corners.

#### 6.2.1.5. By polygon

A polygon-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the points of the polygon.



If you need help to draw a polygon, read the description of **Polylines**   in Chapter 11.2.2. *Creating lines*.

#### 6.2.1.6. By polygon - on all floors

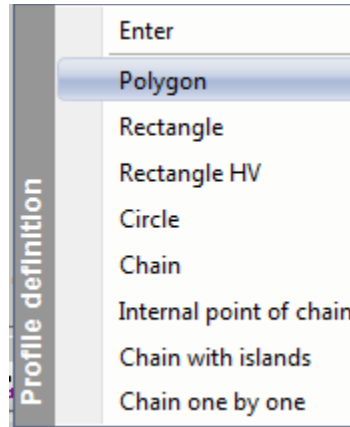
A polygon-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the points of the polygon.

### 6.2.1.7. Outside the profile

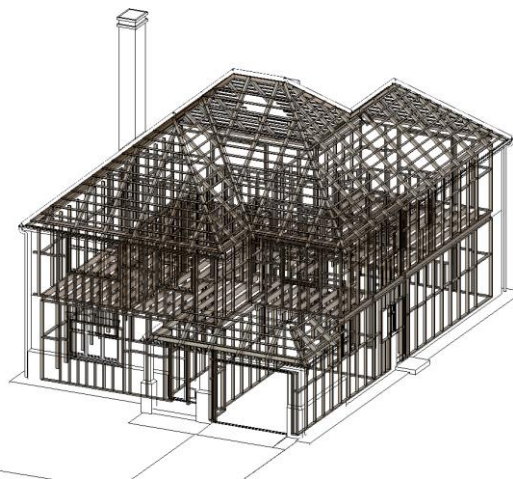
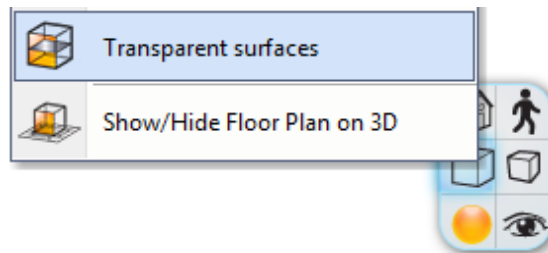
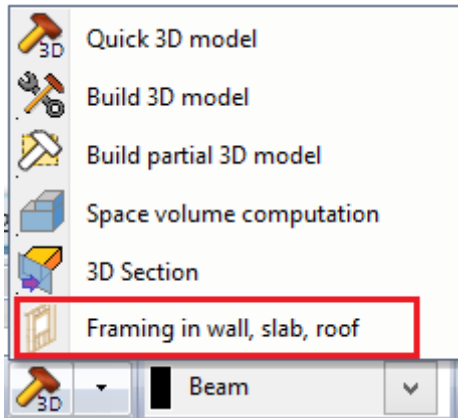
A profile-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Select the **POPMENU** keyword in the command line and define the type of profile in the *Profile definition* menu.



### 6.2.2. 3D visual mode: Framing in wall, slab, roof

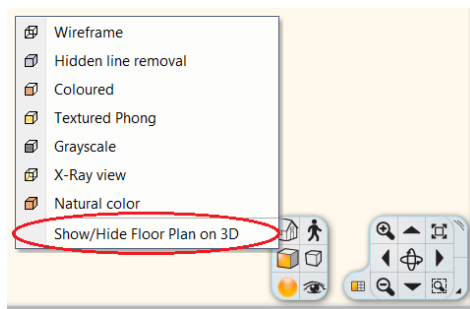
The Framing mode displays wall, slab and roof framing together with the entire building. When you work in this mode you can visualize the framing elements with colours and the building is behind them in wireframe. To visualize the Framing structure of the building in 3D view, click on Transparent surfaces command in the 3D Navibar.



### 6.2.3. Show/Hide Floor Plan on 3D

The floor plan consist of 2D items such as lines, dimensions and building components as walls, slabs, roof, etc. The Show/Hide Floor Plan on 3D command superimposes the 2D *Floor Plan* onto a *3D Model* displaying them together. This kind of presentation including annotation and dimensions makes easier to understand the 3D view. The combined 2D-3D offers a very informative layout to communicate your ideas.





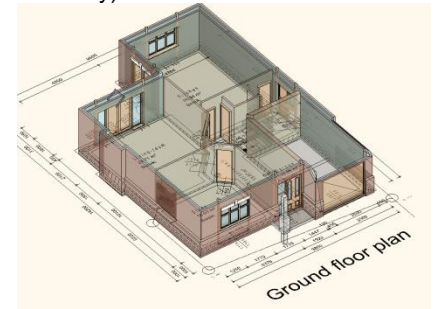
Textured 3D view



Floor Plan on 3D X-Ray view (Building)





Floor Plan on 3D X-Ray view (Current floor only)



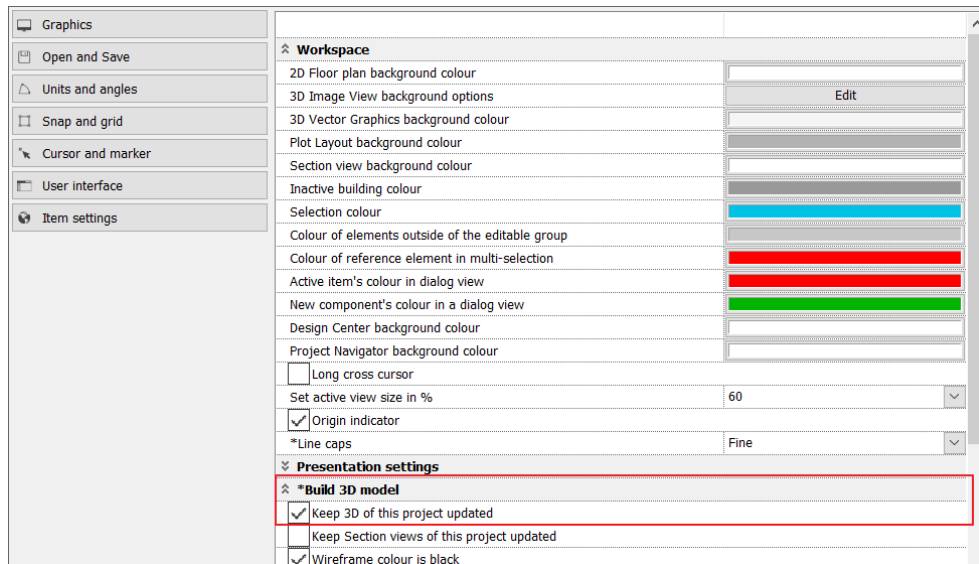
### 6.2.4. Creating 3D models with keyboard shortcuts

You can also create 3D models with keyboard shortcuts. These are summarized in the following table:

<b>Alt + T</b>	Creates a rectangle, which cuts the model. The part of the 3D model which is enclosed in the rectangle becomes visible in the 3D view. The program displays the objects of all floors.
<b>Alt + F3</b>	Creates a rectangle, which cuts the model. The part of the 3D model which is enclosed in the rectangle becomes visible in the 3D view. The program only displays the objects of the active floor.
<b>F3</b>	Select an object and press the F3 button. The 3D model of the selected object appears, or if nothing is selected, press the F3 button. Select the objects on the floor plan you want to display. The program only displays the objects of the active floor.
	If you select an object and click the  <b>Build 3D model</b> icon in the <b>Status</b> bar, the program only displays the selected objects in 3D. In this case the program does not activate the <b>Build 3D model</b> dialog box, but applies the previous settings.


### 6.2.5. File -> Option menu: Keep 3D model updated

This command enables to update the 3D model continuously. A tick marks if the command is enabled. If you set on, every modification of the floor plan becomes visible in the 3D view.



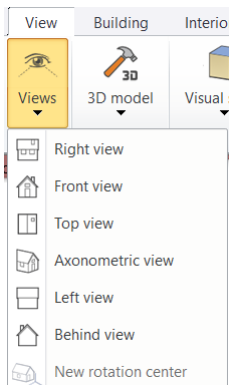
### 6.3. 3D views

After creating the model, you can display it in different views. When a 3D View is active, to set views you can use: the *View menu* – *View Properties* – *Define View* dialog box, or

- ❖ the last six icons of the **3D view toolbar**  for the main views: right side view, front view, top view, axonometric view, back view, left side view or
- ❖ the objects of the **3D view** shortcut menu, which comes up if you right-click the header of a 3D View. The commands of the shortcut menu are the same as the commands in the **View** dialog box.
- ❖ When you apply these views, the contents of the open window are not deleted; the selected view appears in the actual representation mode and with optimal zoom.
- ❖ While working you can use different views at the same time in different 3D Views.

#### 6.3.1. Define View

You can choose from the following views in the Ribbon:



#### ***Perpendicular projections***

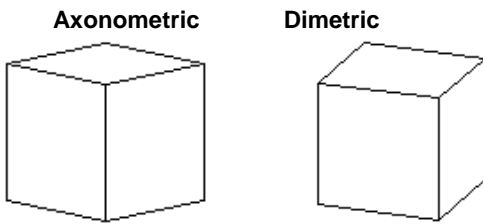
These are the following:

Top view, front view, left and right view, bottom and back view.

<b>Right view</b>	Displays the right view of the model.
<b>Front view</b>	Displays the front view of the model.
<b>Top view</b>	Displays the top view of the model.
<b>Axonometric</b>	Displays the axonometric view of the model.
<b>Back view</b>	Displays the back view of the model.
<b>Left view</b>	Displays the left view of the model.
<b>New rotation center</b>	Relocate the navigation rotation center.

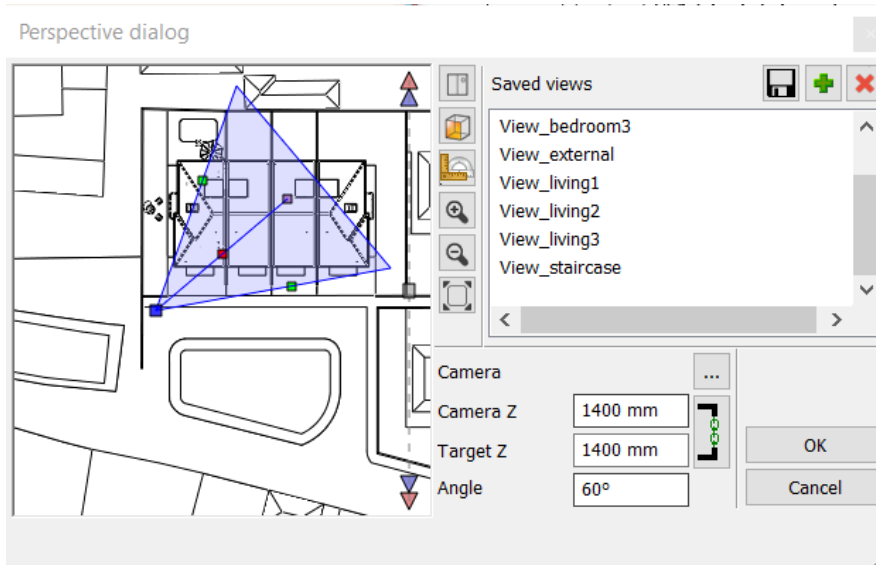
### Dimetric

Automatically creates a dimetric view.



### 6.3.2. Perspective view

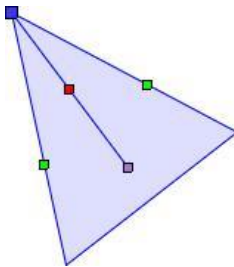
You can set the 3D perspective view in the main menu: Ribbon > View > *Perspective view* or press the perspective view icon on the Navigation Bar. The view is resizable, and on the left side you can see the top view of the model by default.



Note: When the project contains more than one floor plan, by clicking on the 2D view icon, a pop menu will appear letting you choose the one that contains the proper floor plan.

#### 6.3.2.1.

You can set the desired camera and target location.



#### Camera tool

The camera tool displays the camera location (blue point), the target location (grey point), the middle point between the camera and target location (red point) and the angle (green dots) with different colour of markers. You can move the markers with the "Drag and drop" method.

The following camera handlings can be implemented using the aforementioned markers:

#### Viewpoint setting

You can set your viewpoint by moving the camera's marker. The viewpoint always looks at the point of view or subject. The Viewpoint and the Point of view together set the view direction.

### Point of view setting

You can set the point of view or subject by moving the correct marker. The viewpoint always points to the subject. The Viewpoint and the Point of view together set the view direction.

### Angle setting

You can set the field of view of the camera by moving the corresponding markers.

### Camera handling (dolly)

You can move the camera by moving the camera-marker. In this case the viewpoint will move with same extent and direction as the camera. Therefore we call this style of camera handling as dolly, also used to call in the film production, where the camera is moved by a cart.

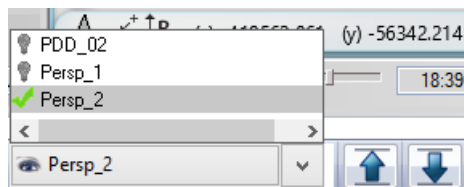
Thus the direction of the camera view is remain, only the spatial position changes.

## 6.3.2.2. Creating Scenes

With this feature you can save your favourite views and present these views to other people precisely at any time or you can improve your photorealistic images using the same view.

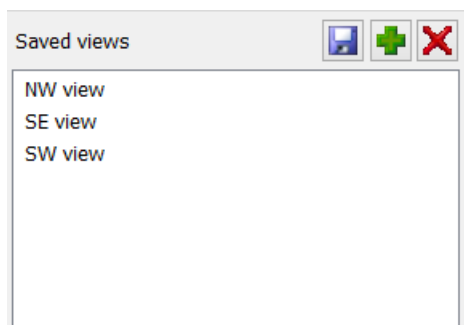
When you close the dialog and your active view is a 3D view, you can simply move form one view to another in many ways:

- ❖ Pressing the Page Up and Page down buttons
- ❖ Click on the Scene name in the Project Navigator
- ❖ Click on the blue UP and DOWN buttons in Status bar.
- ❖ In the *Status bar* with the **Perspective views** button. Click on the arrow on the right side of the button to open the views list and select the new perspective view.



### Saved views list

The **Saved views list** manages the named views list to resave, add and delete named views. You can check your custom viewpoints in the Saved views list.



### Resave view

Saves the current view as a named view.

### Add view

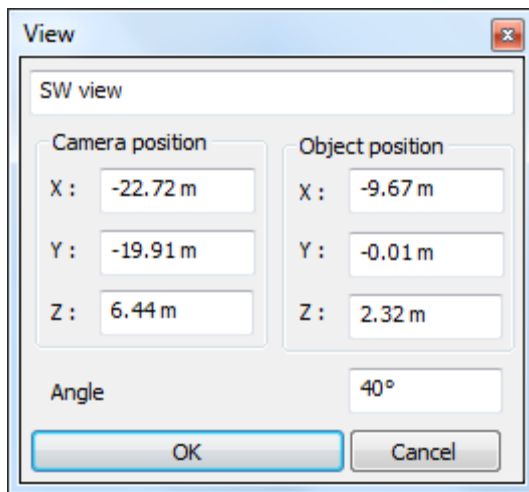
Adds a new named view. You can edit the view by clicking on it.

### Delete view

Deletes the selected named view.

### View properties

You can edit the settings of the currently selected view by using the View Properties button. You can change the name and angle and set the details of the Camera and Object Position, which is updated and saved into the selected view automatically by pressing the OK button.

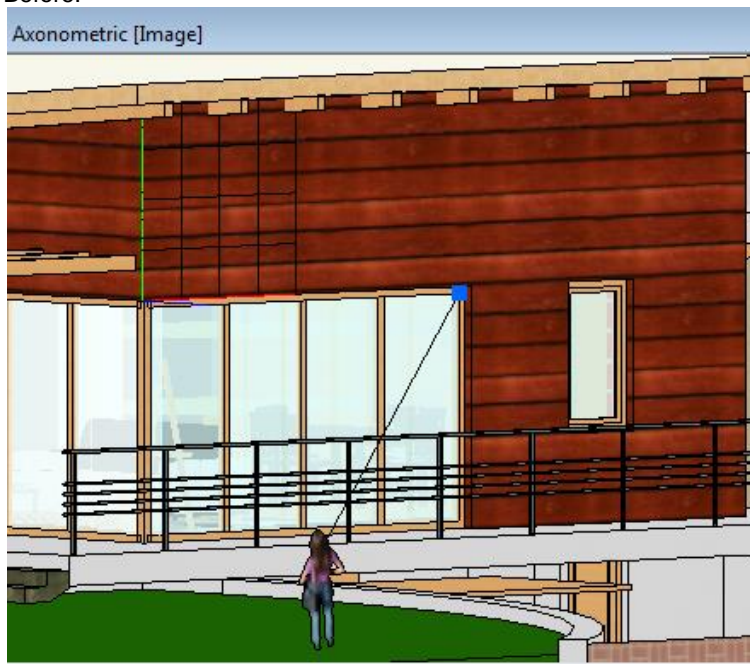


### 6.3.3. Define view by two points

Defines the perspective view by observer and observed points

Location of the command: Ribbon > View > Define view by two points

Before:



After:



### 6.3.4. Navigation in 3D

You can navigate in the model with the following tools.

- ❖ **Definition of the origin of rotation**
- ❖ Rotation
- ❖ Zooming
- ❖ Shifting

#### 6.3.4.1. Definition of the origin of rotation

The origin of rotation can be defined differently in axonometric and perspective views.

##### Axonometric

The origin of rotation is specified by the origin of a small co-ordinate system. The origin of rotation can be changed by the relocation of this co-ordinate system.

- Click the Navigation bar - New rotation centre icon.
- Specify the new origin of rotation.

##### Perspective

In perspective view the origin of rotation is the *observed point*. You can modify this many ways, for example in the *Perspective settings* dialog.

#### 6.3.4.2. Rotation

You can rotate the model around the origin of rotation with:

- ❖ Shift + mouse wheel button pressed
- ❖ Arrows on keyboard
- ❖ Navigation bar

#### 6.3.4.3. Zooming

You can zoom the model with:

- ❖ *Scrolling the mouse scroll*
- ❖ Shift + mouse right button pressed
- ❖ Double click with the scroll button will zoom all
- ❖ Navigation bar

In perspective view, zooming means the modification of the distance between view point and observed point.

#### 6.3.4.4. Shifting

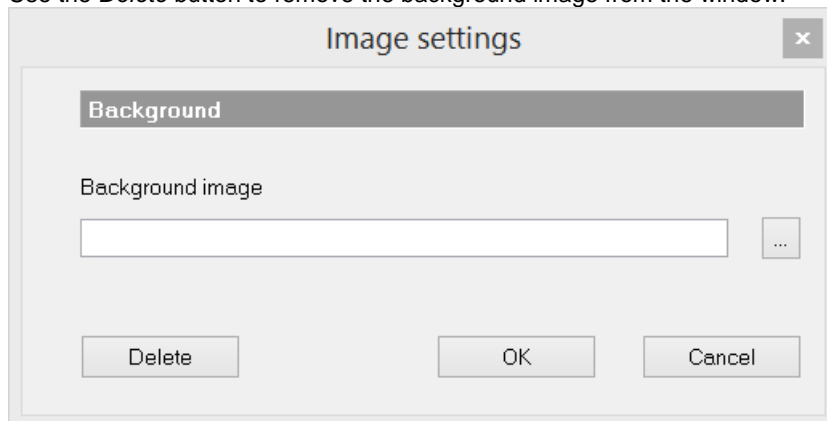
You can shift the model with:

- ❖ *Mouse middle button pressed*
- ❖ Navigation bar

#### 6.3.5. Add Background image

You can insert an Image onto a view, set it to fill the background. The background image is visible in the view only, there is no influence on the rendered image. Background image for rendering can be set in Render dialog.

- Click the File menu – Options – Graphics – 3D Image view Background options – Edit command.
- Select the background image option in the dialog. The image size information appears below the image file path information. The background image always fills the Image window, independently from its size.
- Use the *Delete* button to remove the background image from the window.



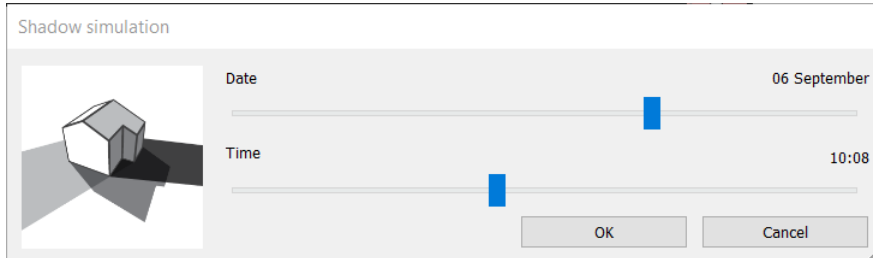
### 6.3.6. Shadow simulation

Changing the date and the time you can see how the sun casts shadows on your model.

Location of the command: Ribbon > View > Shadow Simulation

*Note: the shadow simulation feature can give you only a general idea of how the sun and shadows will look at a specific location. The time is not adjusted for daylight saving time.*

Moving the sliders, an interactive shadow animation can be made in the Image view.



### 6.3.7. Calculated Shadows

On a vectorial 3D view with hidden-line or coloured or textured mode, you can display vectorial calculated shadows.

Location of the command: Ribbon > View > Shadow > Solar access

#### Shadowing - Light direction

Two types of shadowing are distinguished in architectural design:

##### Sun shadow

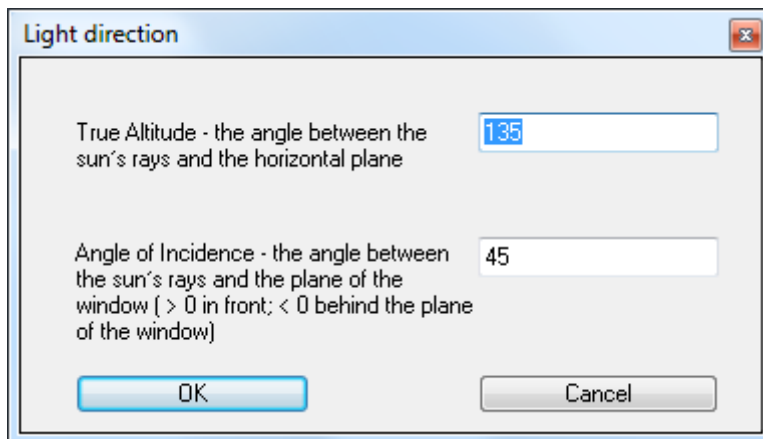
In this case the position of the sun is defined by azimuth and zenith values. The position of the sun is the same as the value set in the Sun settings dialog box.

Click on *Set* to specify values.

##### Elevation shadow

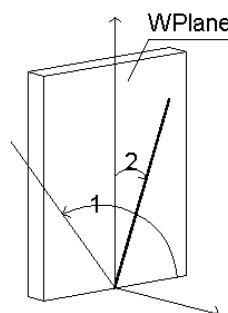
In the case of **elevation shadow**, the sunray comes from a very distant point and reaches the building in an angle that you define. Usually this angle is  $45^\circ$  or  $135^\circ$ , depending on whether the light comes from left or right.

Click on *OK* to specify values.

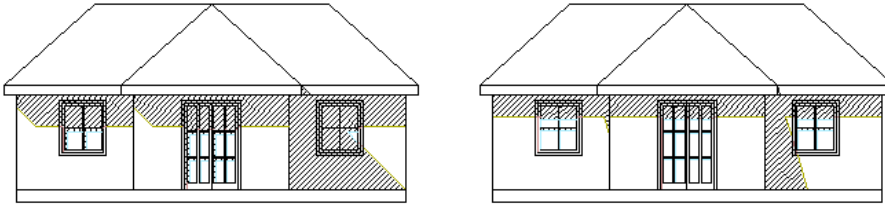


You can define the light source vector with its angle formed with the XY plane (1) and with the angle formed with the current work plane (2).

Technical shadow is mainly displayed in the main views.



In these two front views you can observe the difference between the technical shadow and the sun shadow:



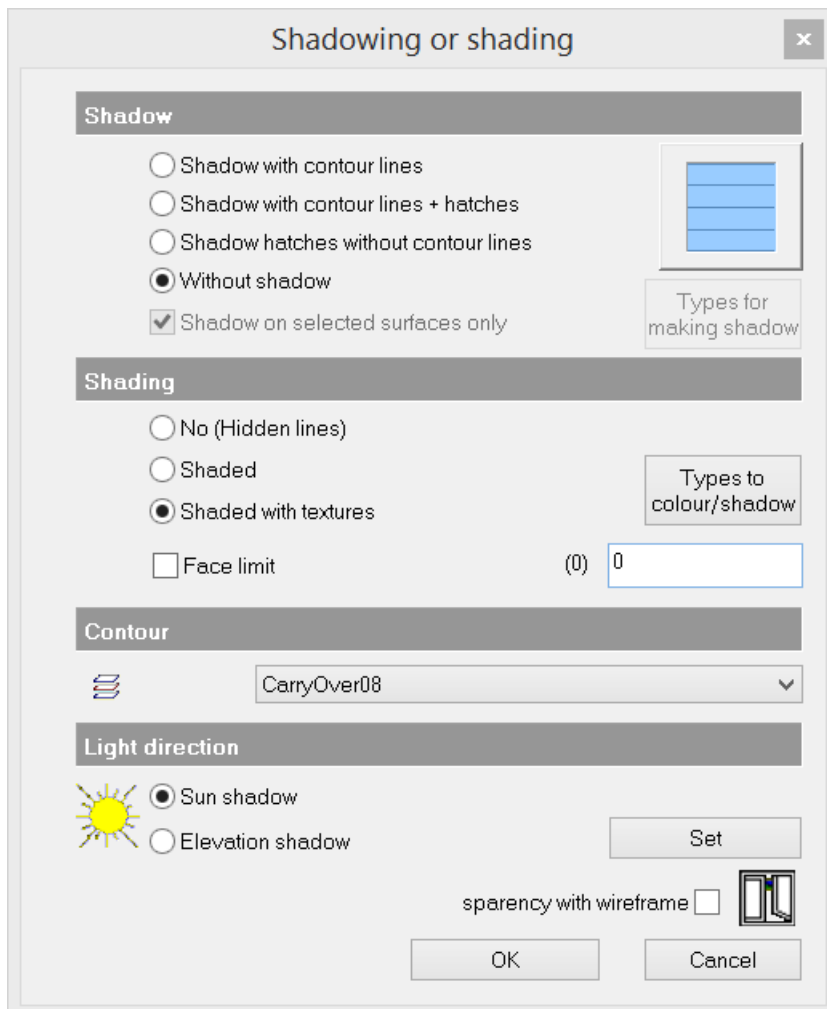
**Elevation shadow**

**Sun shadow**

The models are displayed in hidden-line mode. In both cases contour lines and hatches indicate the shadow, but shading is not added to the models.

### Shadow on vector graphics 3D view

Besides light direction, you can specify how to display the shadow:

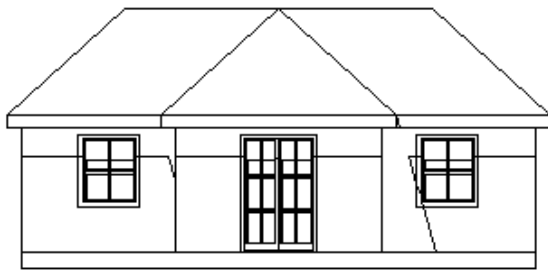


The shadow can be displayed *with contour lines* or *with contour lines and hatches*. Click on the icon to set hatch properties.

If you choose *without shadow*, no shadows appear on the model, so you can set a shaded image.

In the previous figure the shadow is made up of contour lines and hatches. Let's compare it with the next figure, where we only displayed the contour of the shadow.



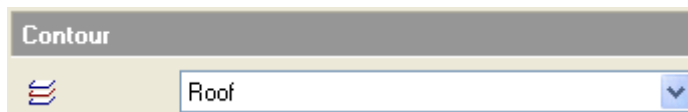


**Shadow without hatches**

### **Position of the contour line**

Once you decide whether you want the shadow with contour lines or with contour lines and hatching, you can define on which layer to apply the contour lines. This way you can separate the lines from the model. The contour line is always black.

In the hatch general properties dialog box you can specify on which layer to apply hatching.



### **Shading**

You can set the parameters for shading a model. The model can be displayed in hidden-line mode, with material colour or hatched with texture pattern.

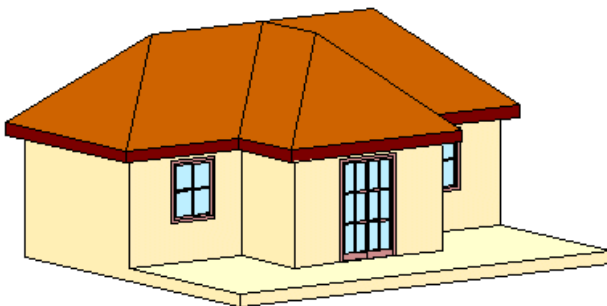


#### **No (Hidden lines)**

Displays the model in hidden-line mode.

#### **Material colour**

You can display the model with the colours assigned to the materials. If you turn off the shadow (Without shadow) option, you get a shaded image without shadow. The colour is the same as the one assigned to the texture in the Material properties dialog box.

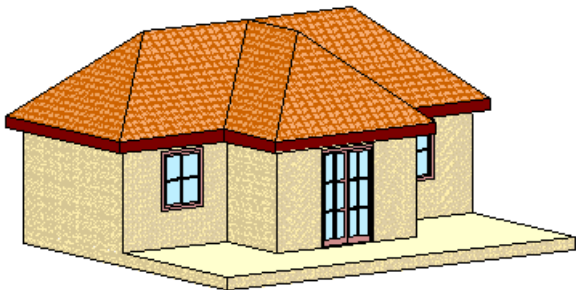
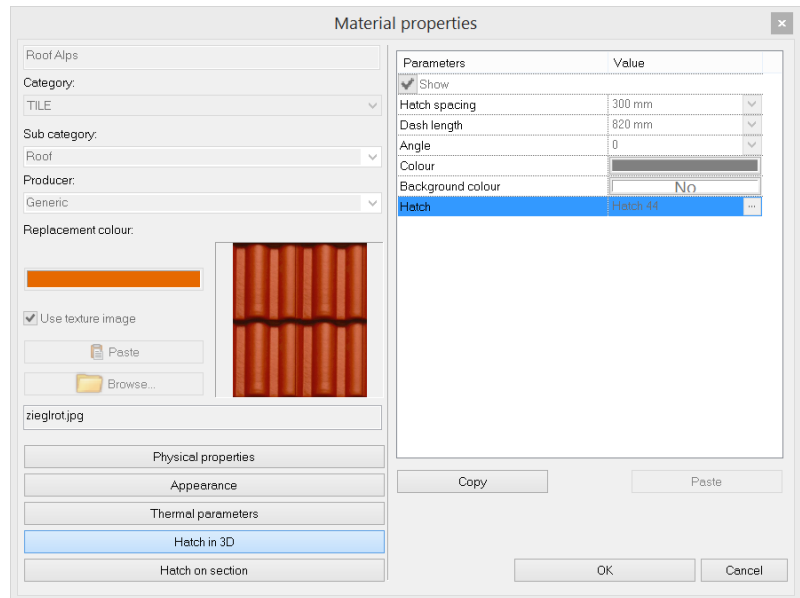


**With material colour, without shadow**

If you click on the **Types to colour** button, you can give, that on which objects apply the program the colouring. So for example, you can switch off the colouring of objects, which is very time-consuming in the vector graphics 3D View.


#### **With texture pattern and background colour**

You can display the model filled up with the hatch assigned to the materials and shaded with the background colour of the hatching. If you turn off the shadow, you get a hatched image without shadow. The colour is the same as the hatch background colour assigned to the texture in the Material properties dialog box.



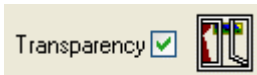
With texture pattern and background colour



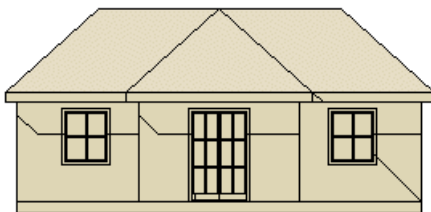
You can also display the shaded model with the **3D view toolbar**  **Hidden lines with hatch icon**, which creates the shaded model or the model hatched with texture pattern depending on the values set.

**Transparency**

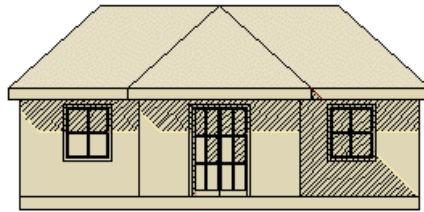
You can set whether the glass surfaces are transparent in the vector graphics image or not.



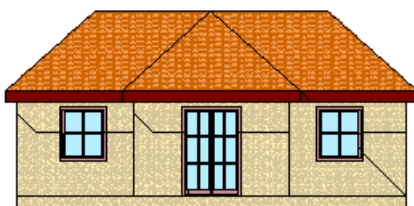
Let's see some examples for technical shadow with different settings:



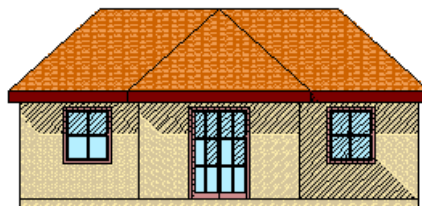
Shadow contour + Material colour



Shadow contour with hatches + Material colour




Shadow contour + Texture pattern



Shadow contour with hatching + Texture



To disable Hidden lines with the hatch command press the **3D view toolbar**  **Hidden lines** icon.

### Face limit

When you want to display a 3D model you can define the number of displayed surfaces. If there are too many surfaces, the number of the displayed surfaces can be decreased, so the display of the model can be optimized.

Face limit (131190)

In brackets you can see the number of the model's surfaces. We set the initial limit to 30000.

If the model has more surfaces, the difference is ignored.

The algorithm is the following:

in static cases (3D model, rendering), the program examines the size and the distance of the surfaces. It ignores certain surfaces on the basis of the result of this multiplication. This means that nearer, bigger surfaces remain, the smaller, further surfaces are ignored.

In dynamic cases (OpenGL, DirectX) the program only examines the size of the surface.



You can enable Face limit in the *File -Options - 3D preferences* dialog box.

## 6.3.8. Heliodon

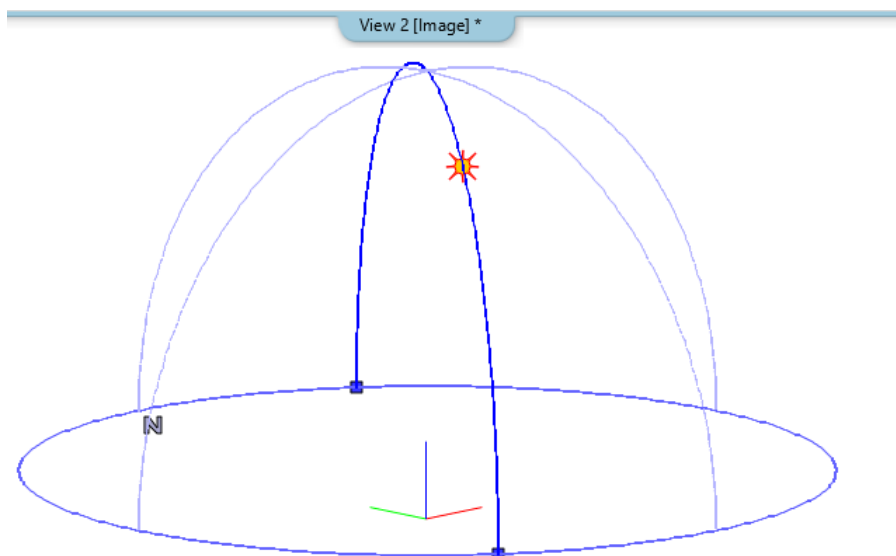
Heliodon is a tool that creates the appropriate geometrical relationship between an architectural scale model and a representation of the sun. By allowing adjustment for solar declination (season), the earth's rotation (time of day), and site location (latitude) a Heliodon can simulate sunlight penetration and shading for any combination of site location and time. The result is a useful representation of solar patterns for clear sky conditions.

Heliodon provides an effective tool for the visualization and calculation of solar effects at the window, building, or site scale.

### Heliodon tools

Location of the command: Ribbon > View > Sun > Heliodon

The program displays the Heliodon in the centre of the active 3D View. You can switch off the Heliodon with another click on the Sun setting toolbar or with a simple left click on any point of the 3D View except the Heliodon markers.



Heliodon tool

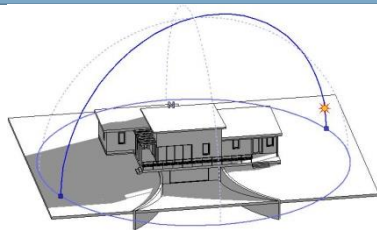
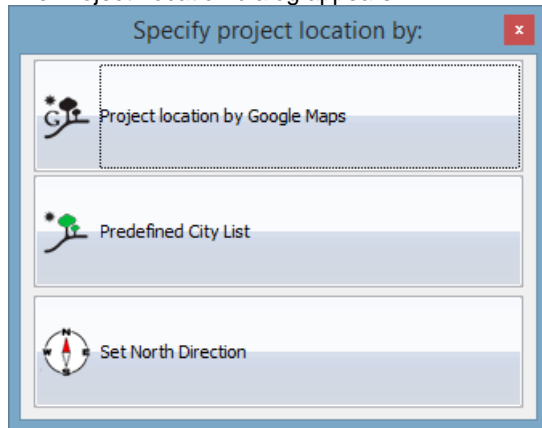
The Heliodon represents the sun position with its azimuth and zenith angle.

### Azimuth

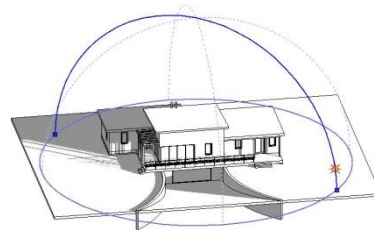
Azimuth is an angular measurement in a spherical coordinate system. The vector from an observer (origin) to a point of interest is projected perpendicularly onto a reference plane; the angle between the projected vector and the reference vector on the reference plane is called the azimuth.

See more in <http://en.wikipedia.org/wiki/Azimuth>

You can move the azimuth with the blue dot markers on the Heliodon's flat surface with mouse left click.  
The Project Location dialog appears:



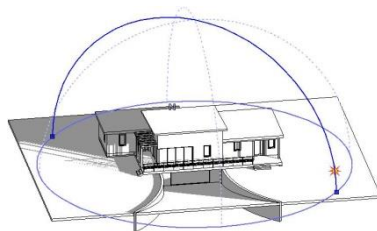
Azimuth movement



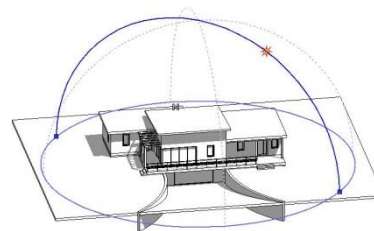
### Zenith

The zenith is the point in the sky that appears directly above the observer. It helps to describe the location of the Sun. See more in <http://en.wikipedia.org/wiki/Zenith>

You can move the zenith with the small sun marker above the Heliodon's vertical half-circle with mouse left click. The model illumination follows the changes and you can see how the building would look at various light conditions.



Zenith movement



### Concentric rings

Two rings represent the North and its perpendicular direction with dotted blue lines. When the designer sets up the right North direction the rings follow the changes. The N (North) sign displays the North direction. The other ring represents the East-West axis.

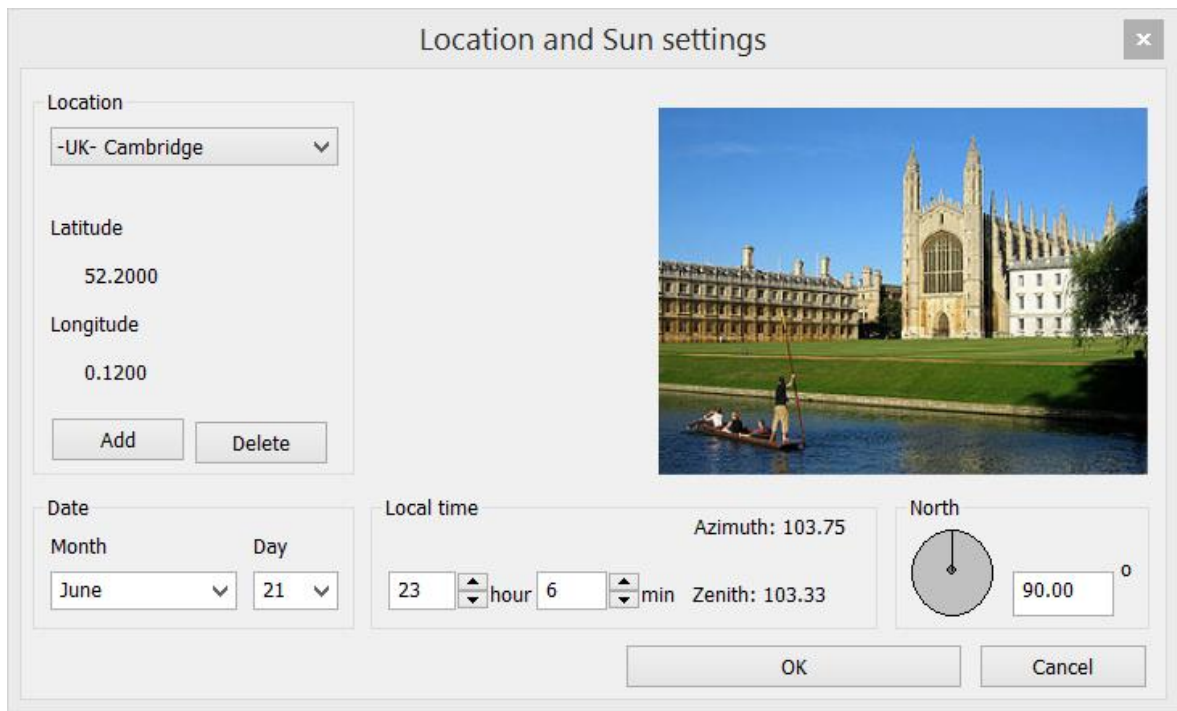
### 6.3.9. Location and Sun settings

Location of the command: Ribbon > View > Sun > Sun Position.

In the dialog box you can set the position of the sun, depending on the geographical position, the date and time.

ARCHLine.XP automatically displays the longitude and latitude of the selected geolocation and the zenith and azimuth values.

The dialog box displays illustration picture of the selected town.



### Location

If you select a town from the pull-down menu, the picture and the longitude and latitude values of the town appear. You can add new locations to the list with **Add** by entering the name, the longitude and latitude values of the town. You can also attach a picture. To delete a location from the list press **Delete**.

### Date

You can set the day and month of the desired sun position.

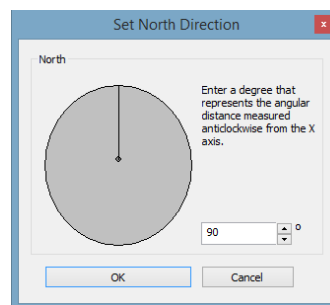
### Time


After setting the date, you can set the time of the Sun's position.

If the time you set is during the night, i.e. the sun is under the horizon, the model turns grey to indicate night. At sunrise the model regains full colour.



### North


You can define North direction in relation to the horizontal 0 degree. You can set North by entering a new value or by moving the arm. Make sure the North direction set here and the North direction on the floor plan are the same.



 If you want to define North direction graphically, apply the *North direction* command in the View menu / View Properties.

- OK accepts changes and closes the dialog box.

 You can start a photorealistic rendering with the  **Rendering** icon to see the changes on a rendered image also.

 You can also carry out a shadow analysis. The command can be activated from the *Add-On - Animation* submenu. You can read about Shadow analysis in chapter 13.

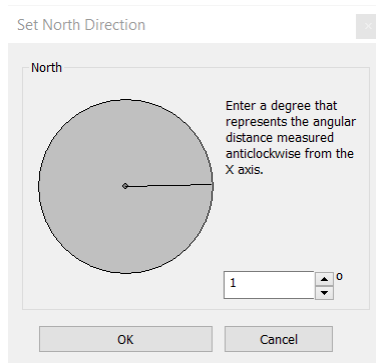
### 6.3.10. North direction

With this command you can define North direction graphically.

Location of the command: Ribbon > View > Sun > North direction

- The program displays a rubber-band line starting from the middle of the circle.
- Define the endpoint of the line.

The direction of this line indicates North.



### 6.3.11. Walk and Fly

You can represent the 3D content of your projects in higher quality with the help of the *View - Walk and Fly* commands. This function will help you, when you would like to show the different details of the model in real. You can do it in that way, as you walk in the building in the reality. You can apply the commands excellently in course of work, because the different settings of perspective views and design are become simple.

You can edit the different 3D objects, as if you stand in the model and work in the virtual space.

Location of the command: Ribbon > View > Animation > *Walk and Fly* > *Walk*  
or  
Ribbon > View > Animation > *Walk and Fly* > *Fly*

It works only in that case if you activate the 3D DirectX window.

#### 6.3.11.1. Terminology

The difference between the Walk and Fly is the moving method in the virtual model.

##### **Walk**

In course of walk – like in the reality – the viewpoint height of the spectator doesn't change. When you move in the model with the help of walk, then it moves the viewpoint (the camera) on a fixed horizontal plane.

##### **Fly**

In course of fly the viewpoint height of the spectator can change as if it flies the model. This function can be important, when you need higher freedom of movement from Walk. You can reach down and up different levels (for example movement on the step) owing to the freedom open space coordination independently from the size of the model.

Because of the things just mentioned we have to talk about the camera. The camera is that point in the open space from where we look at the part of the model.

The observed point and the camera determine together the direction in which the spectator looks.

The field of view is also important, because you might need wider visual angle in viewing narrow spaces to see the proper part of the model.

#### 6.3.11.2. Handling

You can start the *Walk and Fly* commands by clicking on the *View -*  *Walk* and  *Fly* icon.

When you use the Walk or Fly commands, the mouse cursor is disappeared and you can move in the space by the help of mouse and the keyboard. You can change the direction of view with the mouse, while you can move in the space with the proper button of keyboard. It is really similar to the movement in the reality, because you can move and look around at the same time. It is easier to understand if you imagine the mouse as the head of the spectator, and the keyboard as the body of the spectator.

You can interrupt the *Walk* or *Fly* command by:

- ❖ Pressing down **ESC**
- ❖ Left click
- ❖ Right click

#### **Using the mouse**

In course of using Walk and Fly functions the mouse determines the view and walk direction. You just have to move the mouse.

Moving the mouse	Walk	Fly
Forward	Move forward	Move up
Back	Move back	Move down
Left	Move left	Move left
Right	Move right	Move right

Start a command, move your mouse and study the effect.

### Using the keyboard

You can use two sorts of keyboard layout to the keyboard movement.

1. Layout	2. Layout	Effect
Cursor up	W	Move forward
Cursor down	S	Move backward
Cursor left	A	Move left
Cursor right	D	Move right
Space	Space	Elevate viewpoint
C	C	Lower viewpoint
Shift	Shift	Run
Page Up/Down	Page Up/Down	Jump to the next/previous saved perspective view



You can interrupt the *Walk* or *Fly* command by:

Pressing down **ESC**  
Left click  
Right click

### Move in open space

It is practical to learn the movement in open space to move efficiently in it. For this you need the mouse and the keyboard at the same time.

Put one of your hands on directions button of the keyboard, and the other one on the mouse.

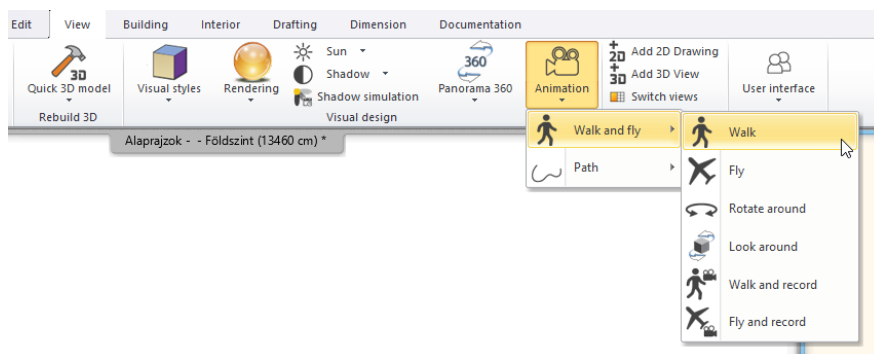
Start the  Walk and  Fly command.

After this, hold down the Move forward button, and release it when you would like to stop. Move the mouse to look around. Repeat this as many times as you wish.

You will notice that it will move to the direction you are looking at. You can combine the movement keys as you wish according to the simple example mentioned previously, so you have a possibility to complex movement in the open space.

### 6.3.11.3. Virtual tour animation by capturing the walkthrough

The animation can be made not only by defining points in the 2D window, but in the 3D View you can walk through the model and by clicking with the left mouse button you can define points through which the walkthrough will be completed. Using this option you do not need to define the points on which the camera focuses from that specific point, when clicking with the left mouse button the program will create the animation based on the view in the 3D View. After the last point has been placed, you can close the command with the right mouse button, after which the path of the animation becomes immediately visible on the floor plan. The command is available in the Ribbon Bar / View / Animation / Walk and Fly / Walk.



## 6.4. Animation

### Introduction

The Animation module of ARCHLine.XP makes a film in .avi format by sequencing rendered images.

#### 6.4.1. Creating animation by path

To create animation you need a path to be followed by the camera and you also have to define the target point in each point of the path.

The animation will be created with the following method:

- ❖ Definition of the animation path by spline.
- ❖ Setting the timeframe of animation and the number of frames.
- ❖ Graphical adjustment of the path: moving, inserting and deleting nodes.
- ❖ Setting viewpoints and target points on the basis of display when viewing the animation.  
Setting correct timeframes and refining animation.  
This is facilitated by the DirectX technology.
- ❖ Creating animation: making the AVI file.

For this method you can use the commands in the *Add-On menu – Animation* submenu or in the *Define path* submenu:

##### 6.4.1.1. Defining the path

You can specify a 3D animation by the definition of the following data:

- ❖ default height of camera path,
  - ❖ places of viewpoint/observer,
  - ❖ the target point/observed object in the individual viewpoints,
  - ❖ the height of the observer and the target points (e.g. always changing in the case of stairs).
- Specify the default height of the animation path; each point of the path will have the same height.
  - Give the observer's path by defining the points of the spline. The spline can be open or closed. In the case of closed path select the **CLOSED** option.
  - **Enter** Closes the path.
  - Define one by one the location of target points in the case of each viewpoint.

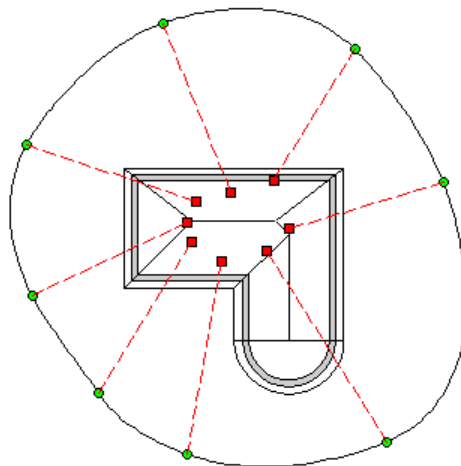


For details, see Chapter 11.2.9.  *Spline*.

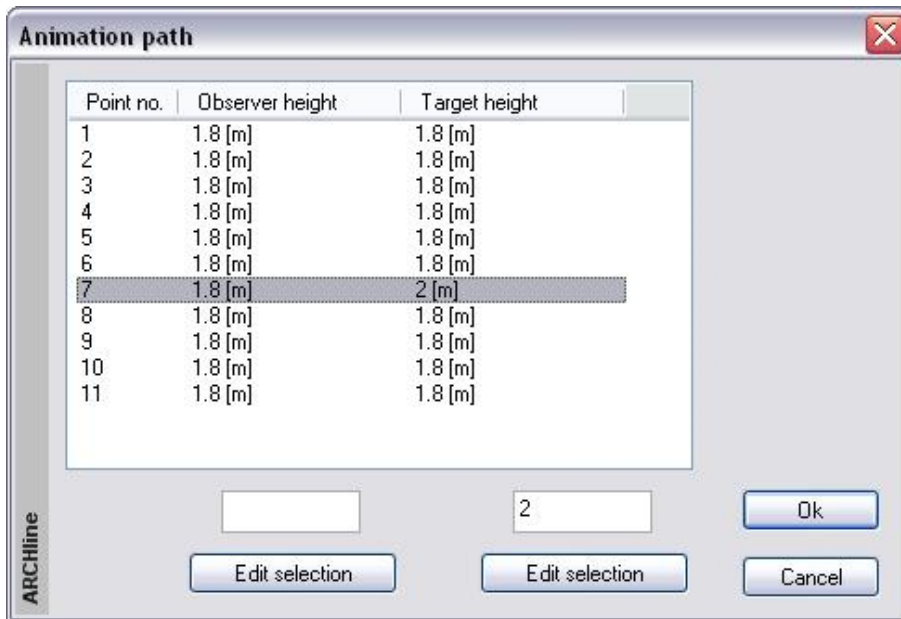
The program will show the current observer and target points of the path.

- Select a viewpoint with a target point to be modified and define the location of the new target point.
- Select the next viewpoint, or
- **Enter** completes individual modification.

The **Animation path** dialog box will appear, showing the height of the viewpoints and target points:







- Select the observer/target points with the heights to be modified.
- Type the new values in the appropriate fields.
- Click on the **Edit selection** button.  
If you select multiple observer/target points, the program will assign the value given to each selected point. If you want to adjust value only, you can type in that value directly in the *Observer height/Target height* field.
- **OK** Closes the dialog box and ends the command.

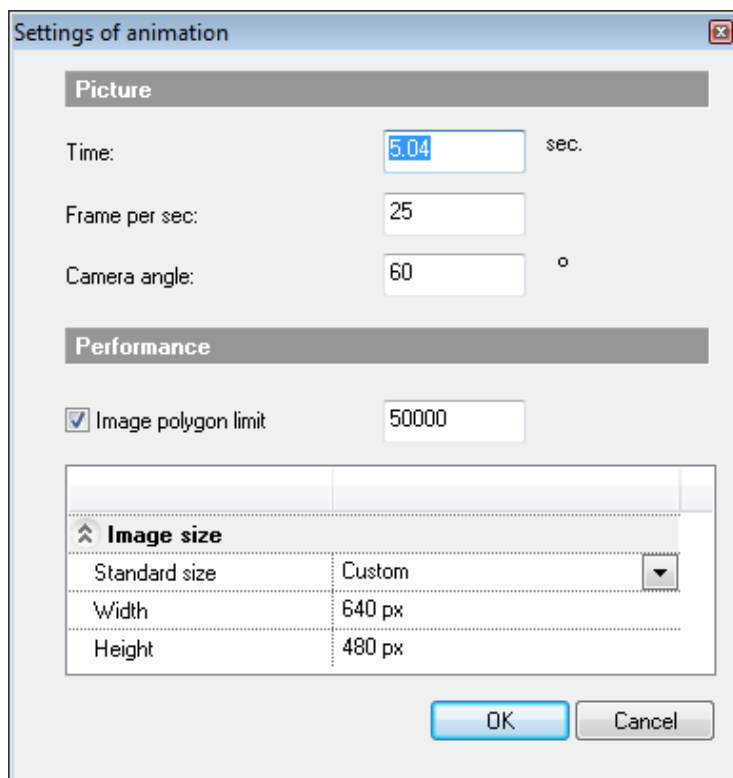
*The animation path has been completed and you can modify anytime afterwards:*

#### 6.4.1.2. Settings of animation

##### Picture

After creating the animation path you have to specify the length of time and the number of frames of animation per second.

- Choose the animation path.



- Type the length of animation in seconds.
- Type the number of frames of animation per second. For real film this value is between 25 and 30 images. With this number of images can perceive as a film. Under 25 frames per second the film is broken.
- Type the value of the Camera angle.

### Image polygon limit (Face limit)

You can watch the animation in 3D view window before finishing the creation, that is why the setting of Image polygon limit is very important. You can reach the image polygon limit (Face limit) through Build 3D model dialog box too.



For details see *Chapter 13.2.1. DirectX settings*.

### 6.4.1.3. Adjusting node height

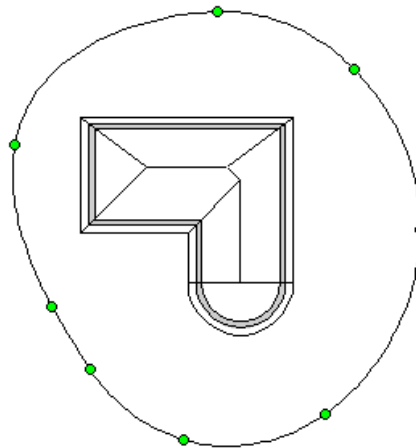
- Select the animation path.
- In the appearing dialog box, as in the case of definition, select the points with the height to be modified and set their new values.

### 6.4.1.4. Graphical adjustment of the path

To adjust the path graphically, use the commands

- ❖ *Move node*
- ❖ *Add node*
- ❖ *Delete node*
- ❖ *Move destination point.*

You can access these commands in the *Add-On menu – Animation* submenu or in the *Shortcut menu* of the path.

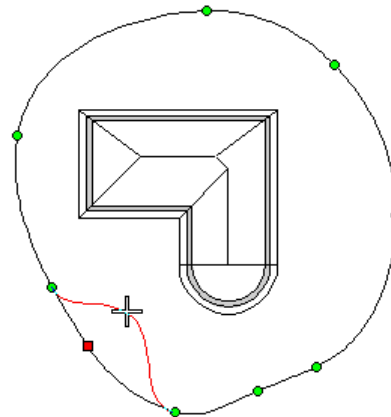


### 6.4.1.5. Move node

With this command you can modify the place and height of observer and target points.

#### Changing the place of observation points.

- Select the animation path.
- Select the node to be relocated.
- Define the place of the new node.
- **Enter** closes the modification of observation points.



In the figure you can see the observation and target points.

#### Modify target points + height.

- Select the observation point with the target point to be modified.
- Specify the new place of the target point.
- Specify the height of the selected observation and target point:
- Select a new point pair, or
- **Enter** completes modification.
- 



You can run the Move node command by first selecting the animation path, then clicking on a node, and selecting the node to be moved and defining the new place for the node.

### 6.4.1.6. Add node

With this command you can add a new observation point to the animation path. You can modify the place of the corresponding target and you can also define the height of the new pair.

- Select the animation path.
- Select the edge of the spline where you want to add a new observation point.
- Specify the place of the new observation point.

The observation and target points now appear.

#### Modify the place of target points + height.

- Select the observation point with the target point to be modified.
- Specify the new place of the target point.
- Specify the height of the selected observation and target point:
- Select a new point pair, or
- **Enter** completes modification.

### 6.4.1.7. Delete node

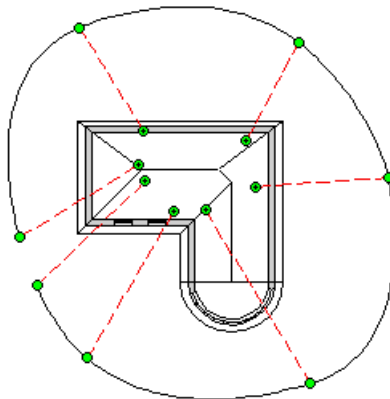
With this command you can delete an observation point from the animation path.

- Select the animation path.
- Click on the node to be deleted.
- Select another node to be deleted, or
- **Enter** Completes the command.

### 6.4.1.8. Move destination point

With this command you can modify the place of the target points.

- Select the animation path.
- In the figure you will see the observation and the target points.
- Select a target point and move it to its new place. You can move multiple target points if you want. Enter.
- The *Animation path* dialog box will pop up where you can modify observation and target point height.



### 6.4.1.9. Animation preview

After defining the animation path and making graphical modifications open the preview of the animation where you can:

- ❖ Play the animation promptly.
- ❖ Set animation time.
- ❖ With the perspective setting on key frames you can fine tune the spatial location of the observation point and the target point.
- ❖ You can record the animation.
- ❖ Select *Add-On menu – Animation – Preview* command and select the animation path. The *Animation editor* window will appear.



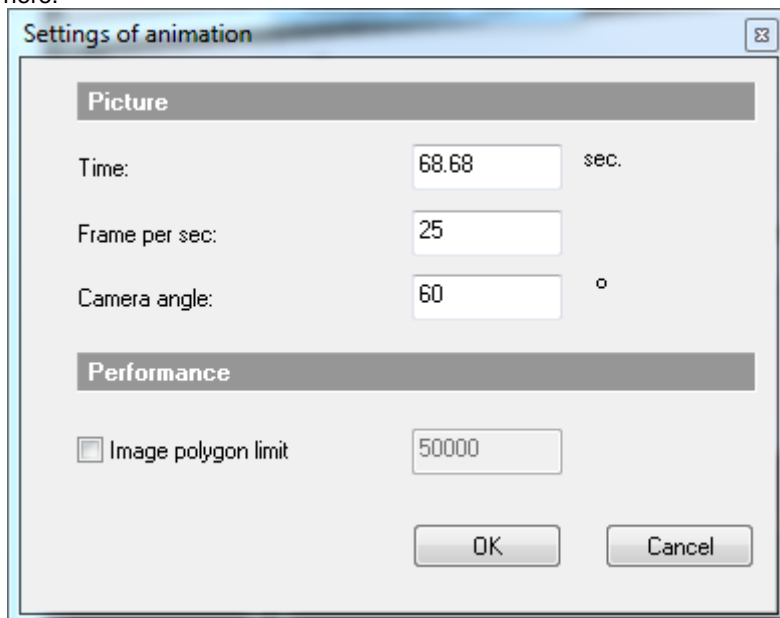
The Animation editor window is made up of different parts:

- ❖ **Animation settings**
- ❖ **Time line**  
The timeline toolbar belongs to the bottom of the animation window.
- ❖ **Player toolbar**

### **Animation settings**

Before playing the animation, you have to define the timeframe of the animation and the number of frames per seconds. If you click on the gear icon, the *Animation settings* dialog box will appear:

If you failed to set parameters with *Add-On menu – Animation – Animation settings* command, you can set these values here.



- Type in the length of the animation in seconds, then
- Type in the number of frames per second to be created. In the case of real films this number is between 25 and 30. The human eye would see it as a film. Under 25 frames per second the image will be jerky.
- Set the visual angle of the camera.
- Image polygon limit: The setting of *Image polygon limit* is necessary here, because you can see the animation in Image 3D View before creating.

Polygon limits set here will concern motion only. If you do not have a high performance graphic card, you should enable polygon limit to avoid the slowdown of the model.

### Playing the animation

After setting the animation path you can play the definition.

To do so, click on the **Player toolbar** –  **Play icon**.

The animation will be shown in the frame. You can check this with the blue indicator in the timeline.

### Timeline

The timeline expresses the total length of the animation in seconds. This corresponds to the timeframe you entered in the *Animation settings* dialog box.

If you have failed to set a timeframe, the program will assign to each path section (edge between the nodes of the spline) 1 second, and 25 frames to each second.



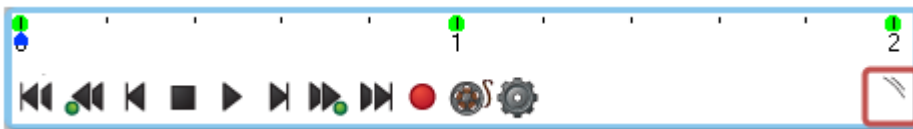
The green dots in the timeline are **key frames** corresponding to the nodes (spline nodes) of the path.

The image frame will always show the status corresponding to the position of the **blue slider**. You can move the blue slider in different ways:

Click on any point of the timeline and the blue slider will jump there and the model will take the corresponding status. Use the Arrow icons of the Player toolbar to step or to jump to the next frame in the timeline:

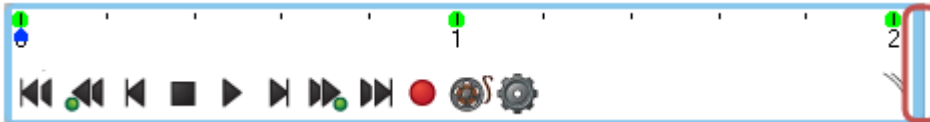
#### Move

You can move the timeline toolbar as a floating window anywhere on the workspace. To move the bar, move the mouse over the grip point on the right side and left click and drag it to where you want to place it and release the mouse button.



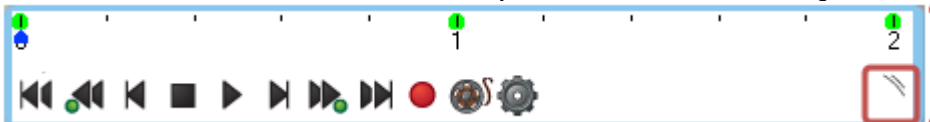
#### Resize

Move your cursor to the right size of the window. You will see the cursor change appearance. Hold down the left mouse button and drag the window to the size you want. then release it.



#### Restore

You can restore the timeline toolbar to its factory default state with a mouse right button click on the grip point.



### Player toolbar



Besides playing the animation, you can use the icons of the *Player toolbar* to step in the animation and to launch the creation of animation. The meaning of the icons is the following (from left to right):

- ❖ Jump to first frame
- ❖ Jump to previous key frame
- ❖ Jump to previous frame
- ❖ Stop animation
- ❖ Play animation
- ❖ Jump to next frame
- ❖ Jump to next key frame
- ❖ Jump to last frame
- ❖ Create animation with photorealistic rendering,
- ❖ Create animation with quick AVI rendering

### Setting animation time section by section in the path

You specify the total animation path time when setting the animation. The program distributes that total time evenly among the path sections.

You can modify the time intervals of the individual path sections. You can do this in two different ways:

- ❖ Redistribution of the total timeframe
- ❖ Time by path sections

#### Redistribution of the total timeframe – Sliding key frames

- Click on a key frame in the timeline. The green dot representing the key frame will turn into a double arrow.
- Hold the mouse button and
- Drag the key frame.

Now you have modified the time relating to the path section before and after the key frame. The total timeframe did not change, only the distribution of time related to the two path sections.

#### Time by path sections – Right-click on the key frame

- Click on a key frame in the timeline. The green dot representing the key frame will turn into a double arrow. Right-click the double arrow.



You can define the time of the path section before the key frame in the dialog box popping up. This will not influence the next interval, so the total timeframe of the animation may be affected.

#### Relocate the observation point and the target point

- ❖ On key frames the perspective setting icon appears and you can fine tune the spatial location of the observation point and the target point.



The changes will be applied on the animation path on the floor plan after closing the Perspective setting dialog.

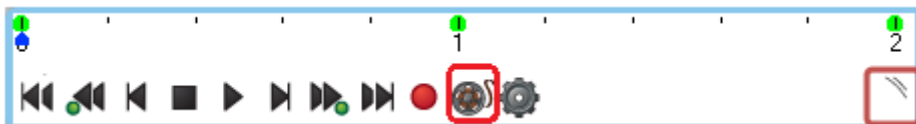
### 6.4.2. Create animation

After playing the animation several times and performing the necessary adjustments, the final step is to create the animation:


**!** Please note that the *Animation editor window* is not saved into the project.

#### 6.4.2.1. Quick AVI rendering

*Add – on menu – Animation – Preview animation* editor is extended with a quick AVI rendering command (camera icon). This command creates an animation video in AVI file format. The quality of the video corresponds to the 3D representation (wireframe, hidden lines, textured, x-ray view etc.).

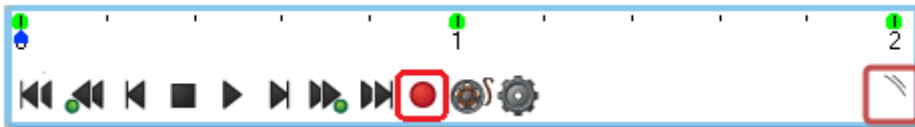


- Enter the name and path of the animation file. The file will be in .AVI format.

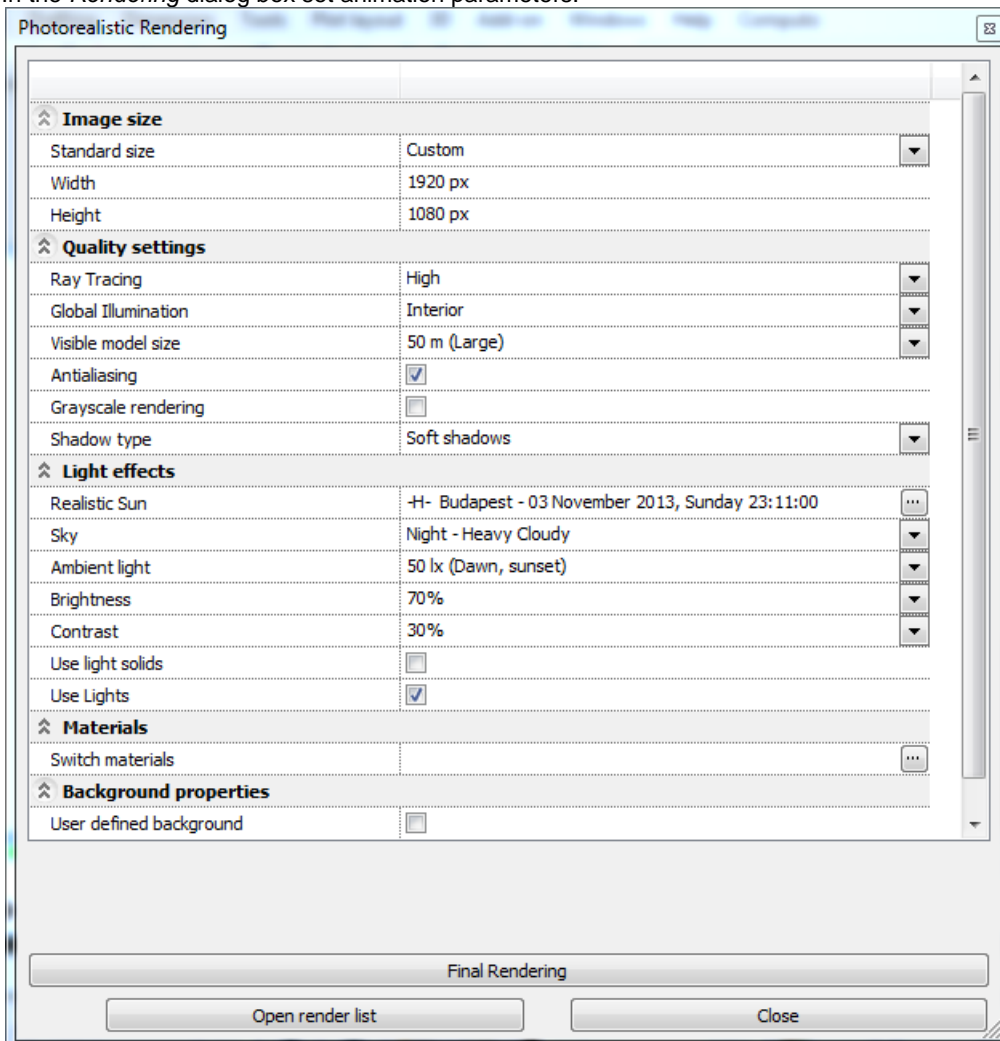
 There is no need for Rendering Module to use quick AVI rendering command. This tool is based on the settings of the active DirectX or OpenGL 3D View.

#### 6.4.2.2. Create animation by rendered images

Use this command to start creating animations.



In the *Rendering* dialog box set animation parameters:

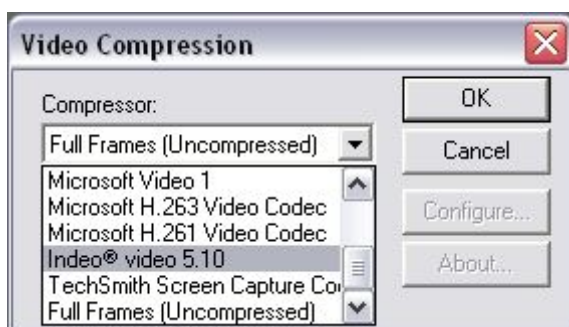


- Click on the *Final Rendering* button.
- Enter the name and path of the animation file. The file will be in .AVI format.



- Set further rendering parameters;  
See Chapter 13.1 *Rendering* for their detailed description.
- Click on the *Start* button.

After creating the first image the program will ask to select the video compression method you want to apply.



- ❖ You can select the uncompressed file format if you want. This will work with all computers; however, the size of the AVI file will be extremely large.
- ❖ You should select a compression method which is available in your operating system. For example, you may want to use *Indeo video codec*.

! You can download codec's from the Internet. Please note, that if you copy your films to other computers, they must have the codec's you used to be able to play the films!

The program will create your rendered images according to the values entered.  
When creation is finished, close the last window.  
Find the saved .avi file with Windows Explorer and double-click to play the film.

### 6.4.2.3. Create Partial animation

You can record a part of the animation from key frame to key frame. Press CTRL and mouse left click over the timeline and drag it to the required key frame and release the mouse button. The selected part will be highlighted.



This function is useful when you record relatively big video over 30 seconds or more.

### 6.4.3. Virtual reality

With the virtual reality tool of ARCHLine.XP the program creates a virtual reality out of the rendered image of the 3D model, having a \*.mov format.

Unlike the .avi format, this display tool creates an apparently still picture, where you can move with the mouse among the pre-set camera positions.

You can activate the completed virtual reality with **Quick Time Player**, and then you can move the camera, or take a look around in the virtual model.

To activate the command, select *Add-On menu – Animation – Virtual reality*.

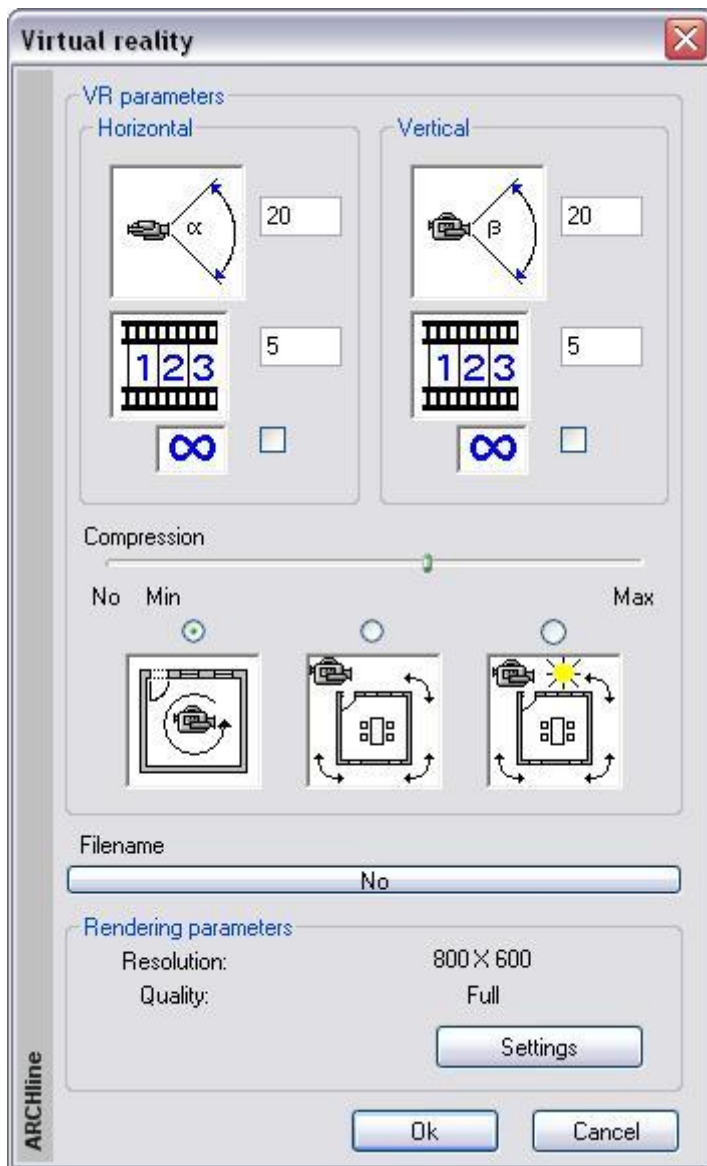
! Before starting to create the virtual reality, do not forget to set perspective. The virtual reality tool of ARCHLine.XP will consider the view set in the perspective.  
**Quick Time Player** is available on <http://www.apple.com/quicktime/download/>

You can run this command from the active 3D View; you can set the properties of the virtual reality in the **Virtual reality** dialog box appearing after the launching of the command.

#### **Defining the parameters of horizontal motion**

- ❖ **Horizontal camera angle:**  
This angle refers to the interval of horizontal camera movement; the viewpoint is always in the centre of the interval. For example: a 20° interval means that the visual angle is 10° on both sides, i.e. left and right.
- ❖ **Number of frames:** set the number of frames within the horizontal motion angle of the camera. If you increase the number of frames, camera movement slows down and the film quality will be better and smoother; however, this will increase the film making time.
- ❖ **Auto repeat:** if this option is disabled, object movement will be jerky. This means that the film ends at the end of the actual visual angle and you can move the model in the opposite direction with the mouse.





- ❖ If this option is enabled, the motion of the model will be continuous, so if you move the mouse at the end of the visual angle, the film jumps back to the starting angle and will repeat motion within the given angle. Auto repeat gains its significance if the angle of the motion is 360°. In this case motion will be uninterrupted, and if you move the mouse, you can go back from the last frame to the first frame automatically; you can walk around the model this way. Auto repeat is very useful for the rendering and visual inspection of indoor spaces.

### Defining the parameters of vertical movement

These values refer to the vertical movement of the model. They correspond to the horizontal parameters in respective of their adjustment and other properties. For a detailed description see Heading *Defining the parameters of horizontal motion*.

### Compression

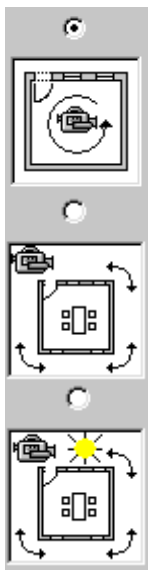
Define the size and the quality of the film. The higher the value of compression is, the smaller the size and the poorer the quality of the created film will be.

- ❖ **Max. Compression**  
The size of the film is small, but its quality is poor.
- ❖ **Min. compression**  
large size, but good quality.
- ❖ **No compression**  
this option allows for the best quality, but the size of the film is the largest in this case.



## Moving

The different figures of the dialog box indicate the movement of the camera and the object. By selecting from the three figures you can decide what to move in the picture: the camera, the object without the Sun, or the object with the Sun. Select one of the three options:



The camera position will remain the same the whole time but the camera will be rotated around its own axis. This option corresponds to the situation where you are standing in a room and look around.

The Sun does not move relative to the object therefore the shadow will not change.

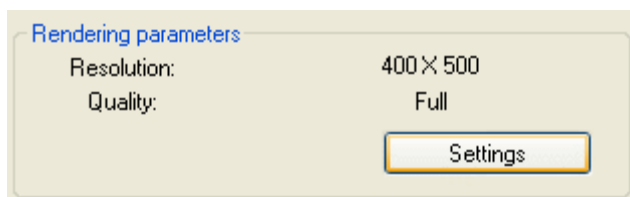
The camera moves around a static object. It resembles the way planets are orbiting the Sun.

Compared to the previous option, here the position of the Sun is changing relative to the object. The angle defined by the camera and the Sun will not change.

### File name

Specify the name and the path of the .mov file. You cannot continue your work without defining the name of the file.

### Rendering parameters



- Click on the **Settings** button, then
- Define the rendering parameters in the *Rendering* dialog box.



See the description of the *Rendering* dialog box in Chapter 13.1. *Rendering*.

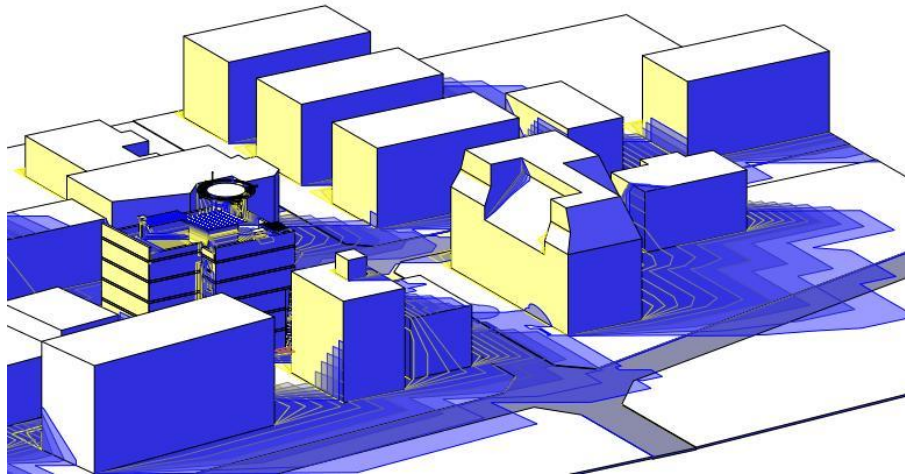
## 6.4.4. Solar access protection

### Introduction

The ARCHLine.XP provides a great opportunity to survey the solar access of the building or its rooms. The advantage of the function is that it is prepared in clear graphical form, which is easy to survey and with its help we can support the proper solar access of the designed building's room.

In case of not proper solar access (because of the parameters of the building or the place), you can make a decision about modifications according to the prepared model.

Further advantage is that you can use the *Solar access* in any phase of designing. So you can prepare the building with equal efficiency on the volume model, on the sketch plan or on the authorization plan and on the working draw.



### Information

Before using the solar access, shadow analysis functions, it's worth knowing certain rules and features.

### Calculation basis on 3D model

The shadow graphic is prepared according to the information of actual 3D model of the project. It's important now to mention, that the ARCHLine.XP can represent and hide certain parts of the model according to the user settings. Before using the solar access function it's worth making sure, that the 3D model has all the information or you have to refresh it with other settings.

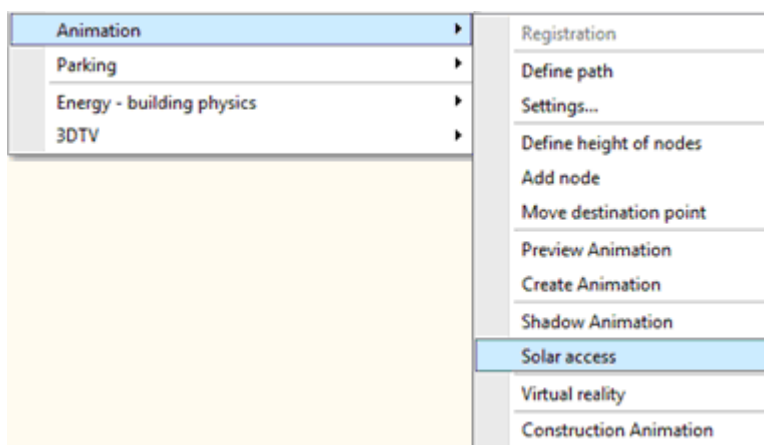
### Appearance

The appearing of the solar access depends on the set representation features. You can represent colour or black sketch depending on that you need spectacular or technical draw.

### How to use

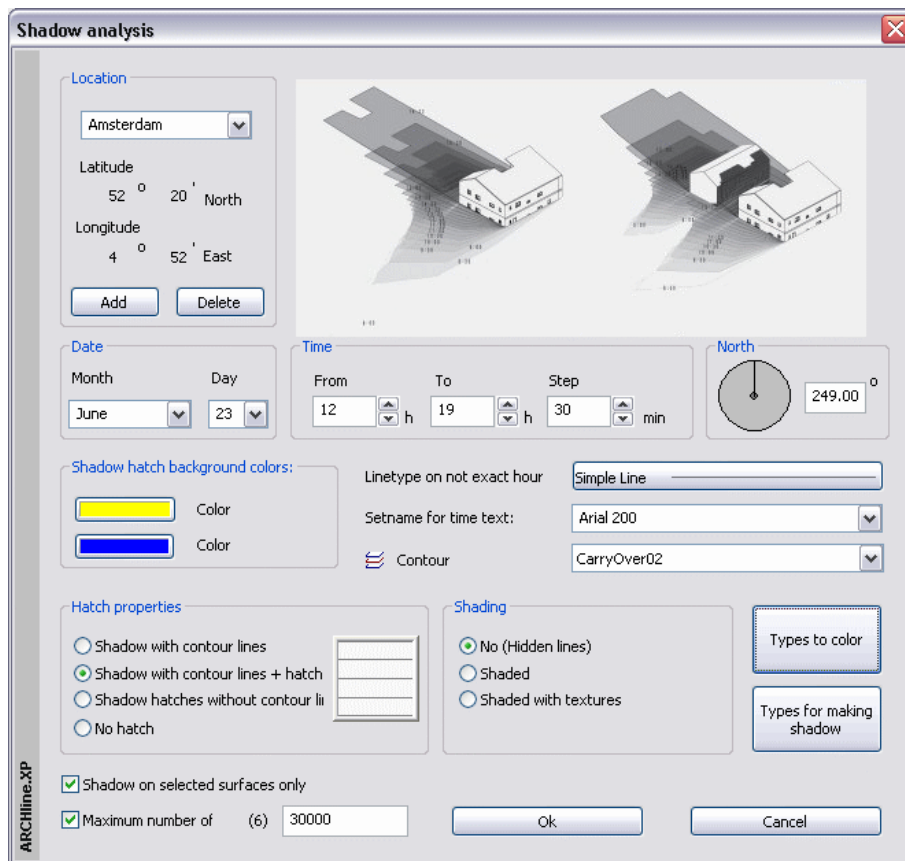
Before use you have to activate the 3D model window, in which you want to prepare the solar access analysis. It's important, that you can make the solar access analysis draw only in the 3D View. Because of the complexity of the calculation, the drawing doesn't follow the model changing, and the changing of the 3D model view. So it's worth setting in advance the 3D view, before the solar access analysis.

Start the shadow analysis with the *Add-On menu – Animation – Solar access* command.



Then the *Shadow analysis* window appears where you can determine the sun position, north direction and preferences of the created graphic, for example: *Shadow, Shade, and Contour*.

Follow these instructions step by step:



### Location, date, north

You can determine the location, date and north, which is important for the shadow analysis

### Time setting

The shadow analysis will be finished according to the here determined Start- and finish point and step.

### Line type on not exact hour

You can determine, that the shadow contours between whole hours (for example 08:00 and 09:00) which line type will draw, if it is needed according to the interval time.

### Set name for time text

When the shadow analysis is finished, on the shadow contours time points appear belonging to it for easier identification. You can select the set name for time text.

### Contour

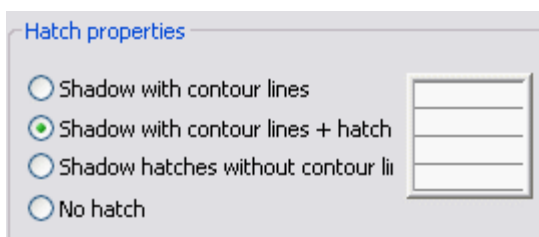
It determines the layer of the shadow's contour.

### Shadow hatch background colours

You can determine even two different hatch backgrounds. The first colour is the starting, while the second will be the finishing colour. If you determine two different colours the program makes transition between the first and last colour.

### Hatch properties

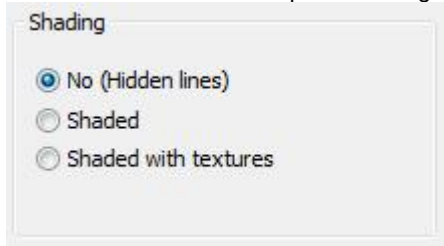
Set the shadow and the hatch properties.



On the example draw we used the *Shadow with contour lines + hatches* options, and in the Hatch properties window the *Solid* and *Transparency* option is switched on.

### Shading

Because of the complex counting method of the function it is offered to use the hidden lines.



### Types to colour

Select those types of objects (wall, roof...) where the shadow appears.

### Types for making shadow

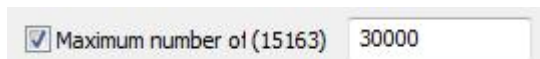
Select those types of object (wall, roof...) which throw a shadow.

Limiting the two groups you can reduce the time consuming process of shadow analysis in case of a mass model.

### Shadow receiving surfaces

In the Shading or shading dialog window you can select the *Shadow on selected surfaces only* option. If you switch it off, the program prepares the shadow analysis on all surfaces of the model, which can take long time in a case of a complex model. If you switch the option on, then the program considers only the surfaces selected by the user. Select this option, if the shadow receiving surfaces are determined and their number is low.

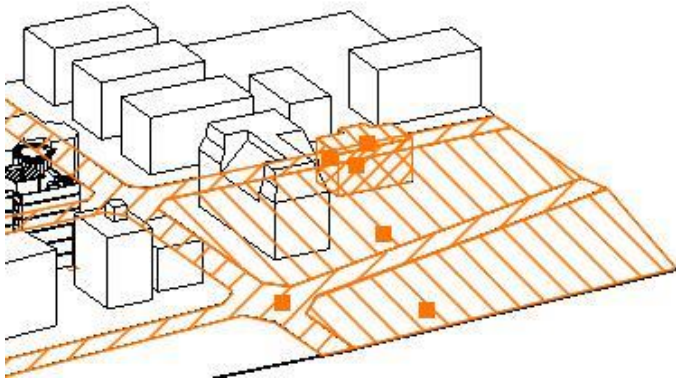
### Face limit

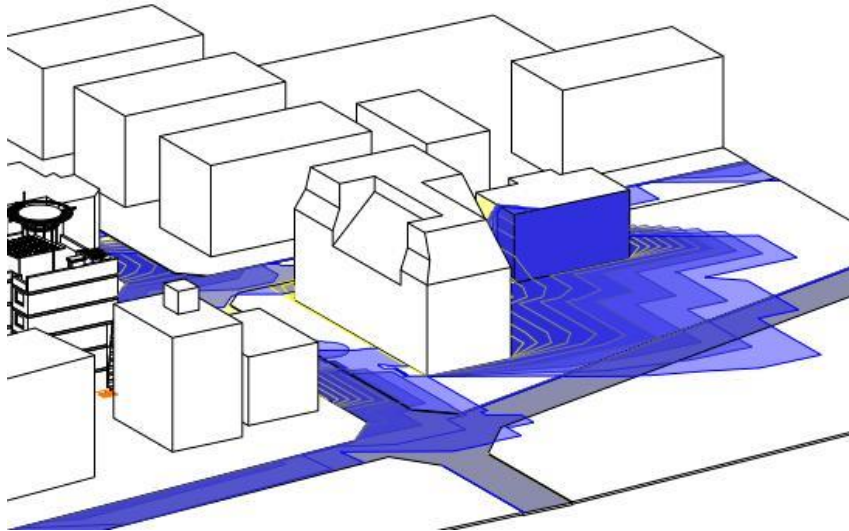


Switching on the option if the face number of the model is higher than the selected face number, the limitation is executed. It means that only the object with the selected face number is created.

### Creating shadow analysis

After clicking on OK in the *Shadow analysis* dialog window, and selecting the shadow receiving surfaces (if the option is switched on), begins the shadow analysis and the process mark of the program informs about its actual state. (You can interrupt the counting by pressing the ESC.)



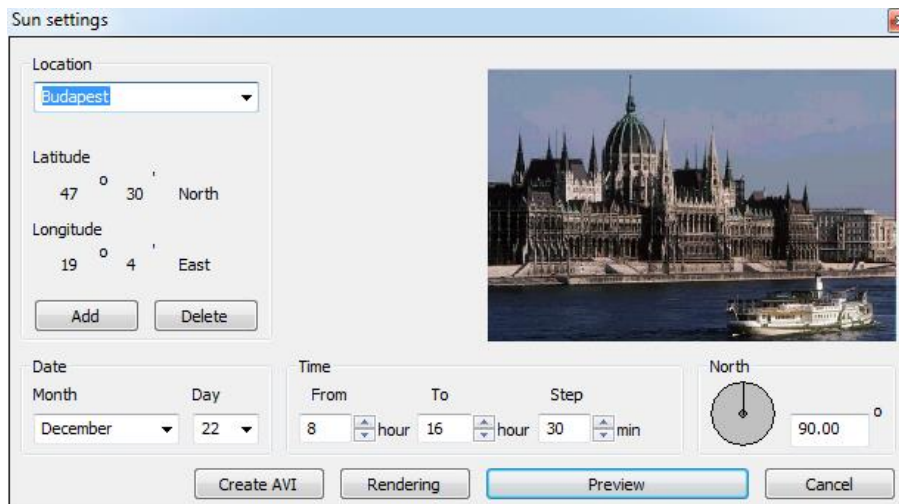


### 6.4.5. Shadow animation

With shadow animation you can create your films in accordance with the position of the Sun at a given geographical location. The viewpoint will be unaffected in the case of such animation, and the Sun will make its way according to the settings within the defined interval.

To activate the command, select *Add-On menu – Animation – Shadow animation*.

In the dialog box popping up you can set the properties concerning shadow animation:



#### Location

Select the city in the scroll down menu whose position you want to set. ARCHLine.XP will automatically display the image of the selected city with its longitude and latitude.

If you want to add a new location to the list, use the *Add* button.

#### Date

Set the date for shadow analysis (month, day).

#### Setting time intervals

After giving the date, you have to define a time interval. This will be an interval within which the shadow analysis is performed. Use the **Step** option to define periods within an interval for the creation of images. The more frames you set (i.e. the shorter interval you define) the more realistic shadow analysis you get and it takes a lot more time to make the film, too.

#### North

Set the northern direction. The northern direction will be defined relative to the horizontal zero degree. To set the direction, enter the values or use the indicator.

- use the OK button to close the dialog box,
- choose a 3D View for the selection of the desired 3D view,

- Define the properties of rendering in the **Rendering** dialog box popping up. The format of the film will be *.avi*.



For the description of the Rendering dialog box, see Chapter 13.1 *Rendering*.



In the Render dialog do not forget to select the *Shadow*, otherwise shadows will not be displayed in the film.

## 6.5. Panorama 360 virtual tour

Thanks to “Panorama 360” function you can take from different perspectives a fully surrounded rendering in schematic or photorealistic quality. Linking together more panorama views you can create a virtual tour, this can help your clients discovering the spatial relations, experiencing the size and layout of each room and feeling the cosiness.

### 6.5.1. Set Panorama Layer

Using this command you place the symbols of Panorama 360 (camera, hotspot, info points) on any panorama layer.

- ❖ Click on “Set panorama layer” command.
- ❖ Select a layer from the list and press “OK”.
- ❖

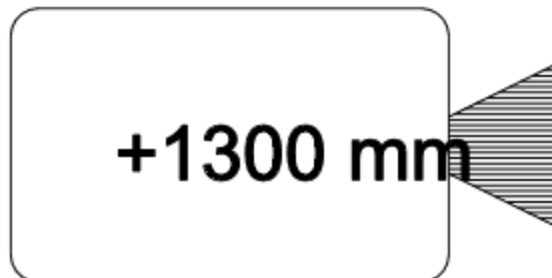
At the end of the process, every symbol previously placed by Panorama 360 function will appear on the selected layer.

### 6.5.2. Place Camera

For virtual tours this command helps to clarify the place of camera’s viewpoint and its direction in the plan. Here there is also an option to define a series of cameras.

- ❖ To place the camera select “Place Camera” command.
- ❖ Press “OK” in the appearing dialog box, to use the given camera symbol.
- ❖ Type the height of the camera, and press “OK”.
- ❖ Label the camera with a new name and press “OK”.

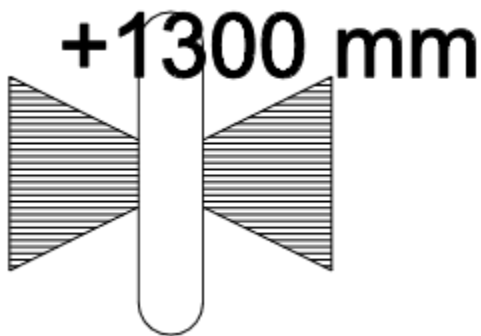
You can add more cameras by repeating previous steps giving them different heights and names; or you can finish placing cameras by pressing “ESC”.



The symbol of the camera

The camera can be moved, rotated into other direction or position afterwards. The viewing direction of the camera determines by default which spatial direction is shown by this given camera. As an example, a camera had already been placed at the end of a corridor. Rotate this camera symbol to the preferred direction so now it can show a more attractive view to our client.

### 6.5.3. Place link hotspot between cameras



The symbol of the hotspot



The symbol of the hotspot on the result

The command allows to place special hotspot on the plan. This point provides the access between certain cameras during the virtual tour. In the virtual tour the hotspot is represented by black arrow pointing upwards.

- ❖ Start the Place link hotspot between cameras command. In the appearing dialog box give the height of the hotspot.
- ❖ Select the first camera from which view point you want to make visible the hotspot.
- ❖ Click on the second camera from which view point you want to make visible the hotspot

### **Half finished hotspot**

While we are creating the virtual tour the software collects from the drawing the cameras, info points and hotspot and checks that the tour contains any half-finished hotspots.

This can happen when we delete deliberately or accidentally a camera therefore the linked hotspot becomes one-sided. When the software finds these half-finished hotspots sends an error message and interrupts the process of panorama view and marks these half-finished hotspots.

For the good visual result always amend the half-finished hotspot by modifying the linked camera.

### **Checking the accessibility**

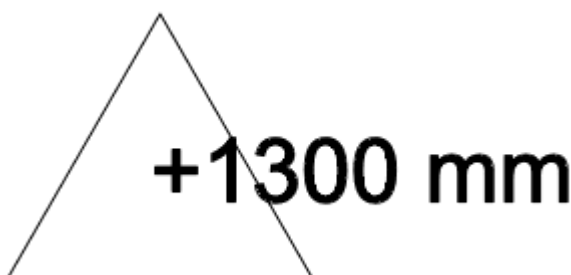
While creating the virtual tour the software automatically checks on the drawing that all cameras are accessible during the tour. In case this condition doesn't meet, the software sends an error message and might interrupt the whole process. The software selects all items which are not accessible from the starting point.

### **Modifying cameras linked to hotspot**

If it is necessary, it is possible to view and modify cameras which already had been set and linked to hotspot. Click on hotspot in the appearing local menu choose "Modify" command. In the dialog box you can see the linked cameras, here you can choose any cameras placed on the drawing.

### **6.5.4. Place info points**

This command helps to place info points with descriptions and on-line reference on the drawing on a specified area. You can define the height, select the camera which will show the info point. In Panorama 360 the info point is shown by a special symbol.





The symbol of the info point on floorplan

The symbol of the info point on the result

- ❖ To place the info point select "Place info point" command
- ❖ Press "OK" to use the recommended symbol
- ❖ Type the height of the info point and press "OK"
- ❖ Click on the camera had been placed before. This will be the camera from which point of view the info point will be seen.
- ❖ Give the description and URL, then close the dialog window by pressing "OK".

More info point can be placed by repeating the steps above described. (Giving, height, selection of camera, giving description/URL)

### 6.5.5. View Camera- Perspective view from camera viewpoint

Using this command you can see the default image from the viewpoint of the previously selected camera. This command can help finding the proper starting position by adjusting the rotation of each cameras.

- ❖ Start "View Camera" command
- ❖ Click on any of the previously placed camera icon on the drawing

### 6.5.6. Build virtual tour

Build virtual tour (draft mode) and Build virtual tour (render mode) these commands create virtual tours in the quality of 3D modelling and photorealistic rendering.



Draft mode



Render mode

#### 6.5.6.1. Build virtual tour (draft mode)

The draft mode is an excellent control tool before creating the virtual tour in the quality of photorealistic rendering. This can be also a unique and fast tool to depict the spatial environment, when there is no need for rendered images.

- ❖ Start "Build virtual tour (draft mode)"
- ❖ Finally save it on your computer

#### 6.5.6.2. Build virtual tour (render mode)

This tool helps creating the virtual tour in rendering quality. Cameras placed for the tour will display the rendered interior view with previously specified rendering properties.

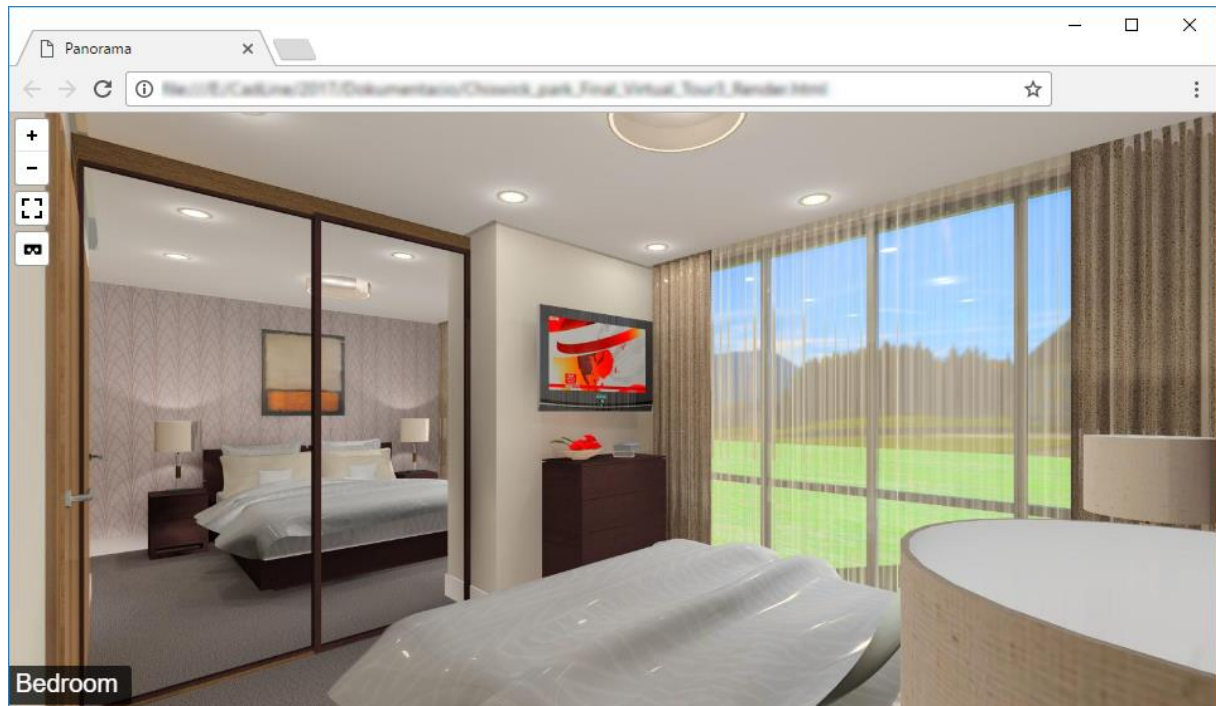
- ❖ Start Build virtual tour (render mode)
- ❖ Set the parameters for rendering
- ❖ The program start creating the rendered quality virtual tour. Six images will be taken by each camera.
- ❖ Finally save the file on your computer

#### 6.5.6.3. Share virtual tour

Files are created in Panorama 360 have an html extension. This format can be opened by any browsers on desktop or mobile.

### 6.5.7. View the Panorama 360

Files created in Panorama 360 can be viewed on desktop or mobile. To see them you only need a browser, which can open the file created.



You can alter the appearing content with icons in the left top corner. In the left bottom corner you can find the name of current camera.



Using some browsers might happen that the Panorma 360 will appear in black and white. At this time please update the page in order to reach the desired representation.

#### 6.5.7.1. Zoom in and out

Use the icons in the left top corner to zoom in or out the displayed panorama. On your desktop browser you can also do that with your mouse/scroll wheel.

#### 6.5.7.2. Manual virtual tour

On your desktop browser click and hold down the left mouse button on the area of panorama with no icons and move the mouse left and right, up and down to look around. On your mobile pin on the area of panorama with no icons and move your fingertip left and right, up and down to look around.

#### 6.5.7.3. View around with gyroscope

If your mobile device has a built-in gyroscope sensor, you can allow to look around with using gyroscope.



Enable gyroscope



Disable gyroscope

Enabling this function – either VR or normal mode- you can view around by moving your mobile device from the given point of view. You can terminate the VR with gyroscope by pressing a switch button or just to pin anywhere on the panorama screen.




#### 6.5.7.4. Moving between cameras

Hotspots linked to cameras are represented by black arrow pointing upwards in the panorama. When you look around manually simply click on the hotspot which leads you to the camera on the other side of the hotspot. If you look around on mobile just pin on the screen.

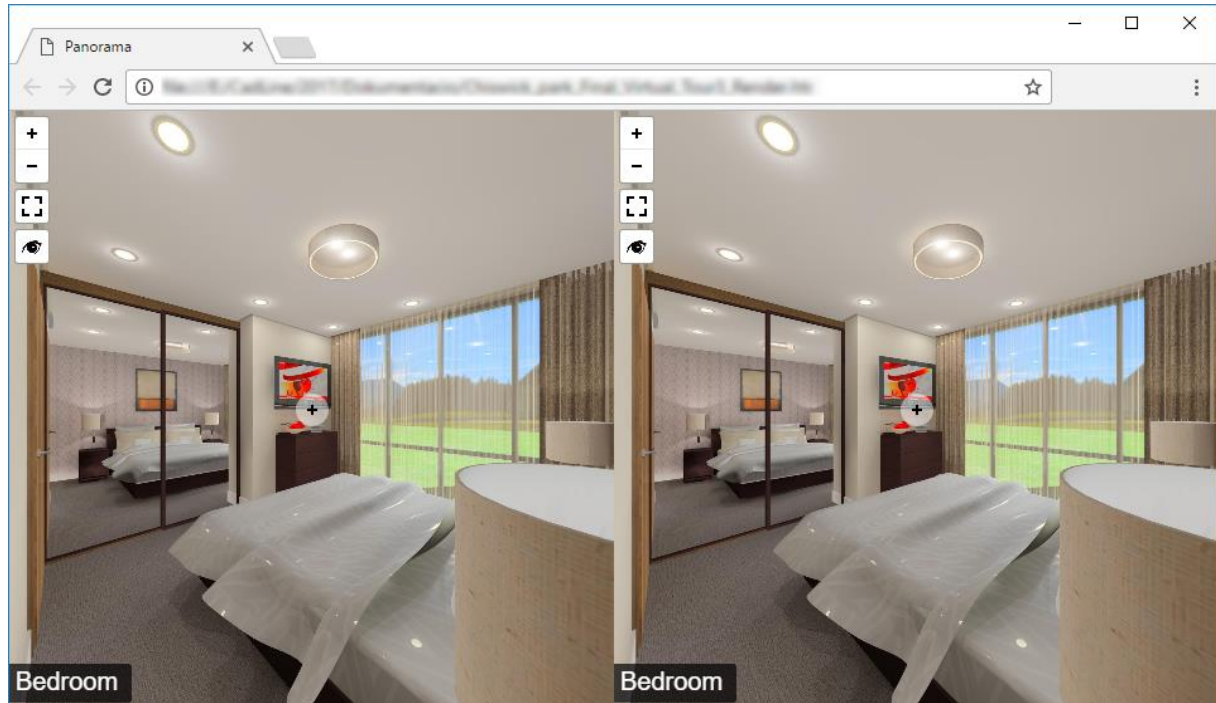
When the virtual tour is operated by a gyroscope you have to target the hotspot with a cursor appearing in the middle of the screen. Successfully targeted hotspot gradually turns into red then the switch happens between cameras. Until the hotspot turns completely red by looking any other part of the panorama you can abort moving to other place.

### 6.5.7.5. VR mode and Normal mode switch

This switch allow us to move freely between from one mode to the other depending on demand. In VR mode the represented content will appear in double, which is optimized for mobile VR goggles.

-  Switch VR mode
-  Switch Normal mode
- 



Using VR goggles set VR mode before you place the mobile device in a VR goggles.



Using VR goggles it is advised to enable gyroscope for the desired experience.

### 6.5.7.6. Full screen switch

There is an option to turn the default view to full screen view by using this button.

-  Full screen view
-  Default view

Full screen view the panorama fills the screen entirely, you can only see the essential tools, icons. Stepping out from the full screen view you can find again the browser's other functions (menu, heading, etc....).



## 6.6. Hide and Isolate Objects

ARCHLine.XP offers has group of commands that isolate the selected objects (hide everything except the selected ones) or hide the selected ones either in 2D or 3D workspace.

It is very practical tool when you have a large drawing and need to display only one object or a small number of objects.

Menu: View > Isolate

### **Isolate Object**

The Isolate Object command hides all objects except the one you select.

### **Isolate Selection**

The Isolate Selection command hides all objects except the selected ones.

### **End Object Isolation**

The End Object Isolation command displays all objects again.

### **Isolate with Wireframe**

The Isolate with Wireframe command sets the selected objects to be wireframe, enabling you to focus on the not selected ones.

The model can be very impressive in texture mode, if you display certain parts of the model with wireframe.

### **Hide Selection**

The Hide Selection command hides selected objects.

Objects hidden on the floor plan do not show in print.

### **Isolate classes**

The Isolate classes command displays the object classes marked with a tick only. Object classes without tick remain hidden. Click the box on top to select all classes.

### **Select Similar**

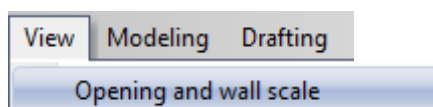
The Select Similar command allows you to select objects that are similar to a selected object.

The command will select all of the objects with the same type in the drawing regardless of their properties.

You can apply editing commands in the Property grid that will be valid for the whole selection. The objects remain selected so you can apply more commands to the selected objects.

## 6.7. Opening and wall scale factor

The View menu contains the following command to display the symbol of doors and windows on the floor plan with different scale factors:

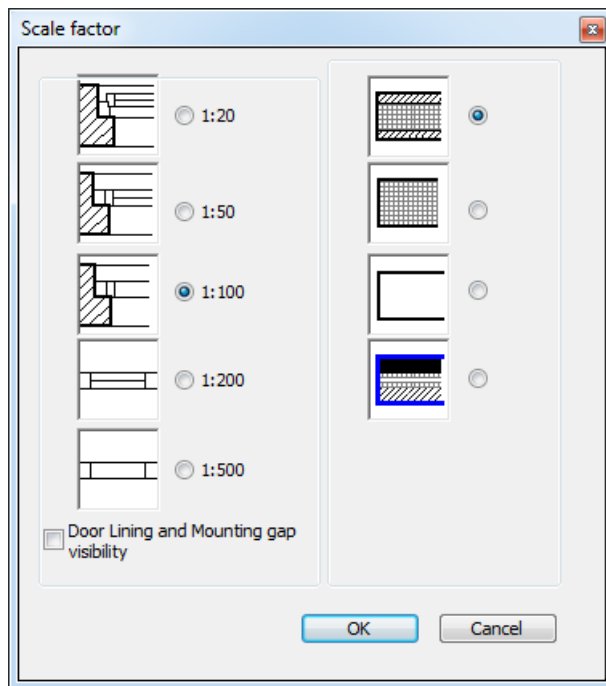


You can specify how walls are visualized independent from the scale factor of the whole drawing.

The abovementioned independence means that e.g. you print your drawing in 1:100 scale, while you set 1:50 for the scale of doors and windows, so these appear on the plan in more detail.

In the dialog box you can set:

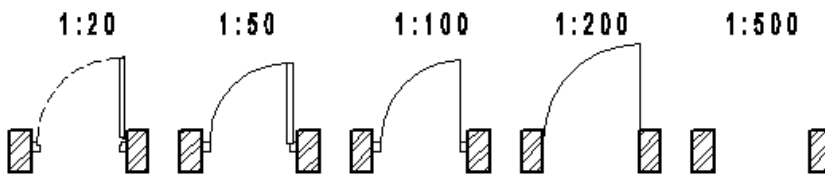
- the scale factor of doors and windows,
- How walls are hatched and visualized on the floor plan.
- Visibility of Door Lining and Mounting Gap parameters in 3D view.



**I) Scale factor of doors and windows:**

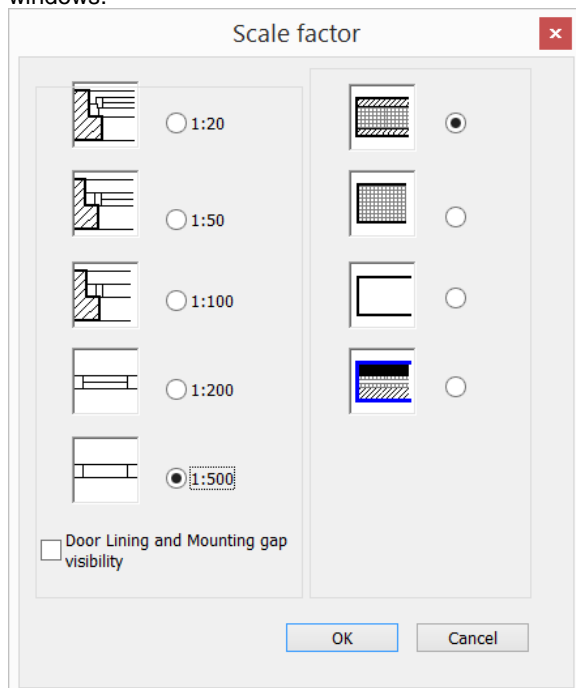
Doors and windows have a standard form of display in all scales. Whichever scale you apply to doors and windows, it does not affect their physical size, only the form of display.

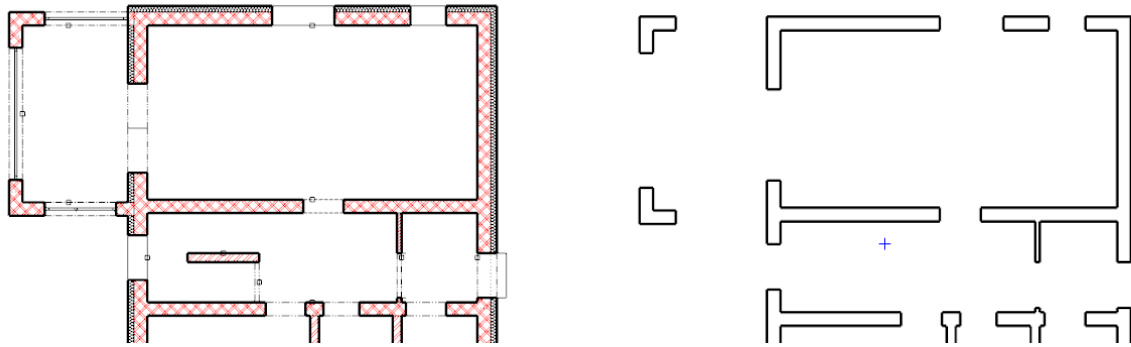
ARCHLine.XP® offers 5 scale factors to display doors and windows (1:20, 1:50, 1:100, 1:200, and 1:500).



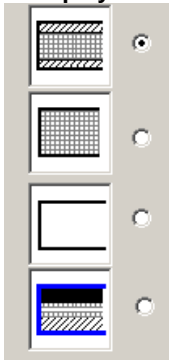
**Floor plan without opening external and internal ref. line in 1:500**

In 1:500 scale factor in 2D floor plan displays only the contours of the walls without any representation of doors / windows.





## II) Wall display

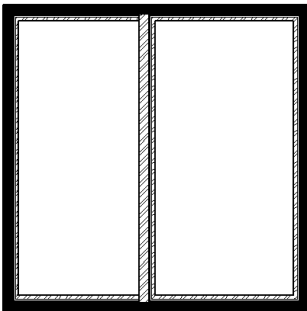


Walls are displayed with all their layers.

Walls are displayed with the hatch applied to the *displayed layer*.

Walls are displayed without layers and hatching.

Independent of the hatching applied to the wall, the outside layer of the building's outside walls are hatched black, as it is displayed in the figure.



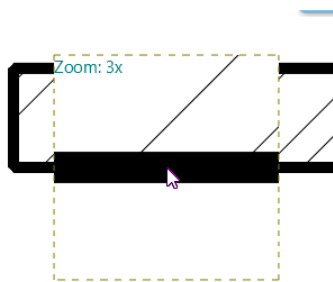
## 6.8. Magnifier tool

Magnifier tool can be used in any design situation, when a fine mouse movement is needed to define a specific point. Using the Magnifier, you don't have to change the actual view, because when you switch Magnifier on, you are able to zoom inside the magnifier borders.

During the use of Magnifier tool you can start and run any other design tool.

### Using the Magnifier

You can find the Magnifier command in the *View – Zoom Window* menu. Click on it to switch on/off. When you switch the Magnifier on, you can move your mouse over the active drawing. You can see the borders of Magnifier.

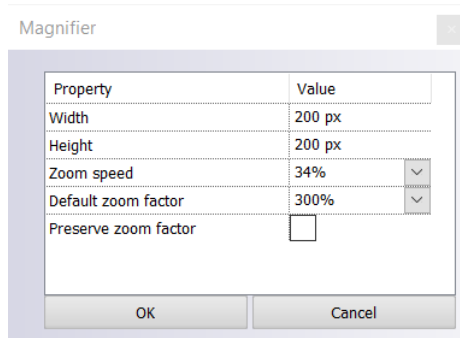


Use the wheel on your mouse to zoom in inside the borders of the Magnifier. This way you can enlarge the area inside the borders. You can see the actual Magnification value at the left top corner of the Magnifier's rectangle.

To exit Magnifier push the Magnifier icon again or push the ESC key on your keyboard.

### Magnifier settings

You can change the settings for the Magnifier tool in Options > User Interface > Magnifier.



#### Width

You can set the width of the border of the Magnifier rectangle in pixels.

#### Height

You can set the height of the border of the Magnifier rectangle in pixels.

#### Zoom speed

You can change the magnification step, which will be used when you scroll the mouse wheel.

#### Default zoom factor

By setting the Default zoom factor you can define the starting value of Magnifier, which you will see when you activate the Magnifier tool.

#### Preserve zoom factor

By setting the Preserve zoom factor, the software will remember the last used zoom factor, when you exit the Magnifier. Next time when you start Magnifier the software will start with the preserved value, instead of the default zoom factor.

## 7. Selection

### General

To apply most editing commands, it is necessary to select drawing objects. The set of the selected drawing objects can be expanded or restricted.

The selected objects appear in highlighted colour.

ARCHLine.XP offers two methods for most editing commands:

- ❖ According to the first method, you must select an object first and then specify the command to be executed on it.
- ❖ When using the other method, you must specify the command first and then select the object the command is executed on.

Choose the method that fits your needs the best.

You can also select an object in different ways:

- ❖ Clicking on the object with the mouse, or selecting by window (selection rectangle).
- ❖ By using the Selection menu.

### 7.1. Selection with the mouse

As described in Chapter on *ARCHLine.XP Interface - 2.10. Mouse*, objects can be selected by clicking with the left mouse button on an object, or a selection rectangle can be defined with the mouse.

In the previous chapter we also described that you can apply an editing command in two different ways. Let's see the first method:


#### I. First choose the object then an editing command.

When the mouse pointer is an arrow shape, the objects can be selected as follows.

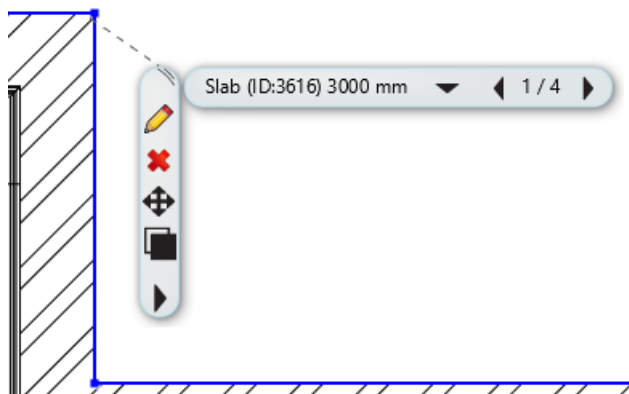
#### II. Activate an editing command then select the objects you want the command to be executed on.

With this method you can select objects in a similar way to the previous method, with the following difference: The selection must be completed with the Enter key.

#### 7.1.1. Selecting one object

When the cursor is in arrow shape  (press the ESC button to get it) you can select an object with the mouse click on it. The selected object is highlighted and changes the colour to the selection colour

Note: If there are multiple objects at a certain click point, the quick selection menu pops up helping to choose the proper object.




#### 7.1.2. Selecting more objects

While pressing the **SHIFT** button more objects can be added to the selection. Clicking on an object, it is added to the selection.



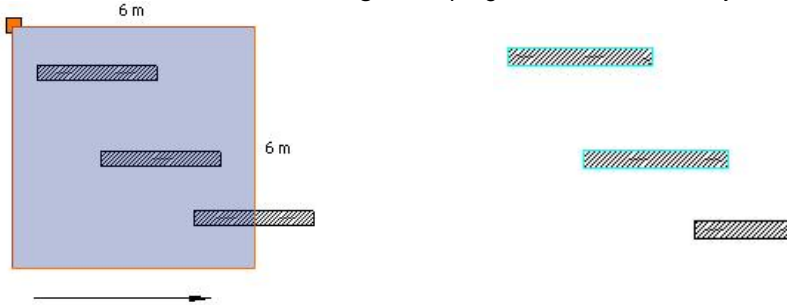
### 7.1.3. Rectangle selection

When the cursor is in **Arrow** shape , (that means the program is not in active command), there is the possibility to define a selection rectangle. If you click on an empty area of the drawing with the left button of the mouse, you can move the cursor and click again. The program selects the objects that are inside the rectangle. However it is not all the same which direction the cursor is moved.

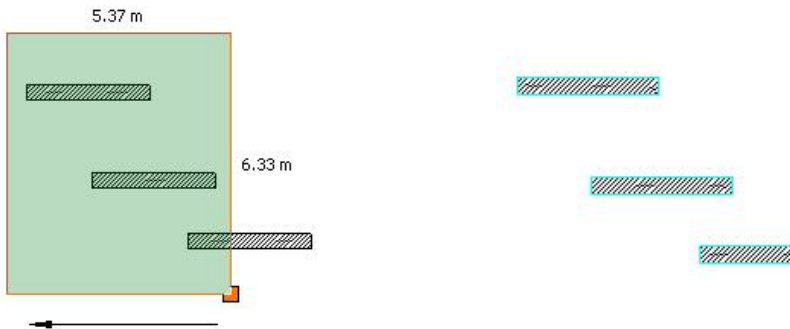
Define the selection rectangle with its two opposite corner points:

- Click with the left mouse button to define the first corner point of the selection window.
- Move the cursor and click to define the other corner point.
- 

If you move the cursor **from left to right**, the program selects all the objects that are inside the rectangle.



Moving **from right to left** the program selects all the objects that are inside the rectangle and those also that are cut by the rectangle.



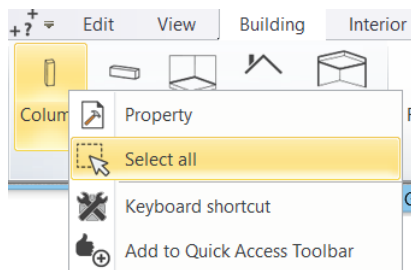
You can apply editing commands to the objects selected.



The *Selection window* highlights the selection area with transparent colour. The colour depends on that you select the area from right to left (green) or from left to right (blue).

### 7.1.4. Select All Instances in the current view

- Right click with the mouse on a Ribbon bar icon. The command selects all instances of the element type on the current view. Example: All columns that are selected can be modified together using the Property manager.



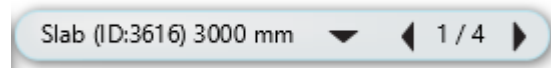
### 7.1.5. Quick selection dialog

Quick selection dialog can be helpful in case of complex drawings when more objects found by a left mouse click selection operation. It can happen that you have to select the desired object from a range of 5, 10 or even more objects.

Quick selection dialog makes the overview of more objects easy by creating a clear, user-friendly selection list.

**How to use**

When clicking a point with left mouse button on the drawing where more objects found, press TAB key repeatedly for switching between objects. At the same time the Quick selection dialog appears by which you can monitor the state of selection continuously.

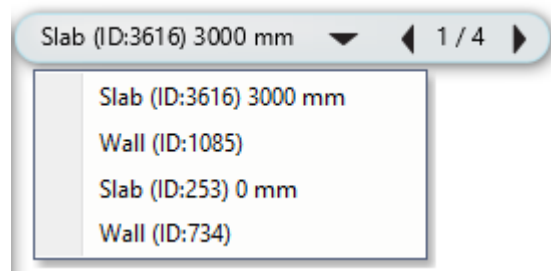


The Quick selection dialog doesn't appear when you can't switch to another object (for example there is no other object nearby).

Quick selection dialog shuts down by cancelling the selection.

**Quick selection list**

The list appearing in the Quick selection dialog helps to choose the desired object from the list of more objects. Click the arrow down button for this.



Click on the object in the list and then it will be highlighted on the drawing.

After that you can modify the properties of the selected object in the appearing Property manager on the left or different operations like rotation or move can be executed.

**Forward/ Backward buttons**

With the help of Forward/Backward buttons you can switch to the next object in the selection list. This click is the same as pressing the TAB key repeatedly.

**7.1.6. Multiple area and lasso selection**

- Area selection can be repeated
- Lasso selection: a newer, more comfortable way of selection which is useful in many cases
- Selection in multiple windows: in 2D and 3D as well

**7.1.7. Intersection of two-or more selections**

ARCHLine.XP enables of intersection of two or more selections. You can access common part of two selections with this command to limit the objects that you want to modify for example

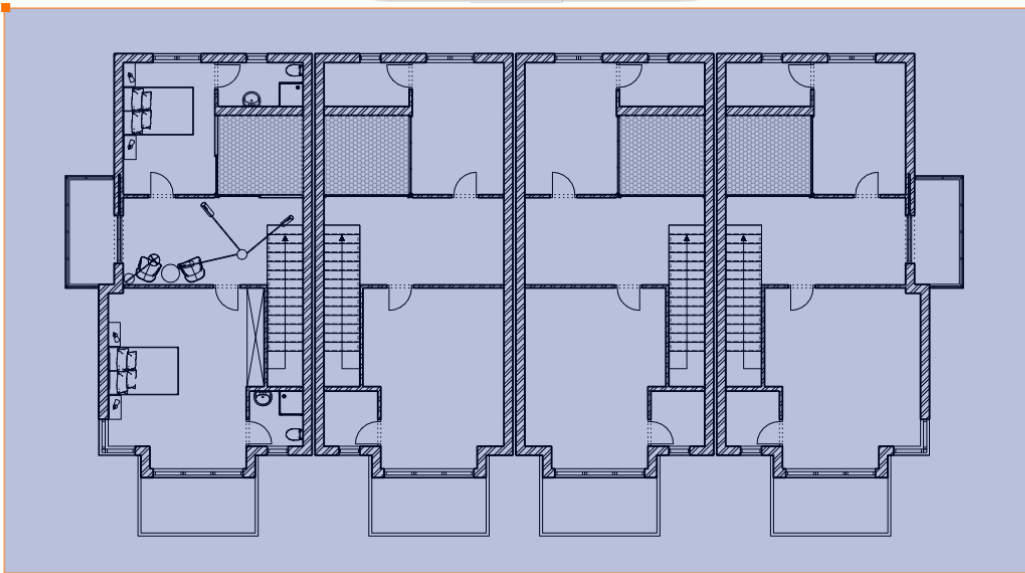
**Example:**

Selecting all walls with the same wall width.

*Supposing that we have a floor plan that contains walls and some of the walls have the property of wall width with the value of 100 mm.*

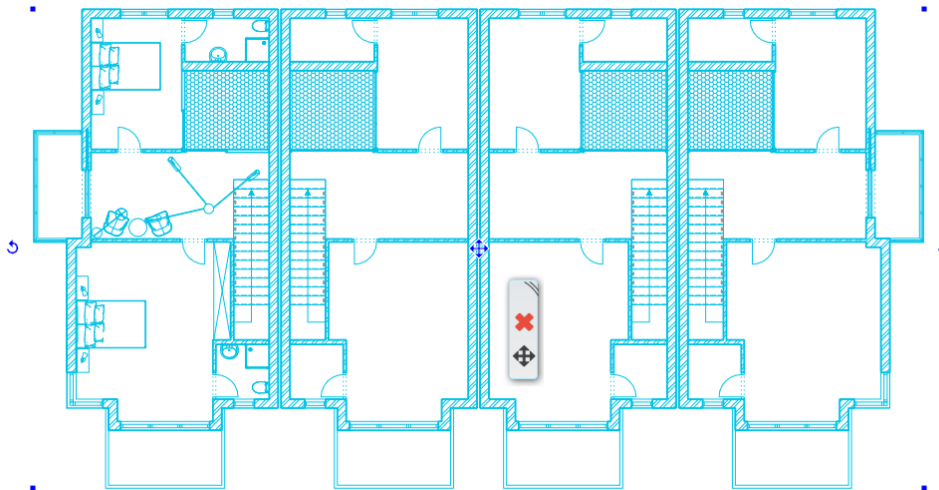
- Zoom all objects on the screen and click on the upper left corner on an empty area and next on the bottom right corner on an empty area. In This way you have selected all visible objects on the floor plan.
- Select Ribbon menu Edit > Select > By common part.
- Select Ribbon menu Edit > Select > By properties.  
Choose the Wall width criteria. Type a value as 100 mm in the current measurement unit and press Ok.

1



18925.3 mm

2



In Selection:

Criteria:

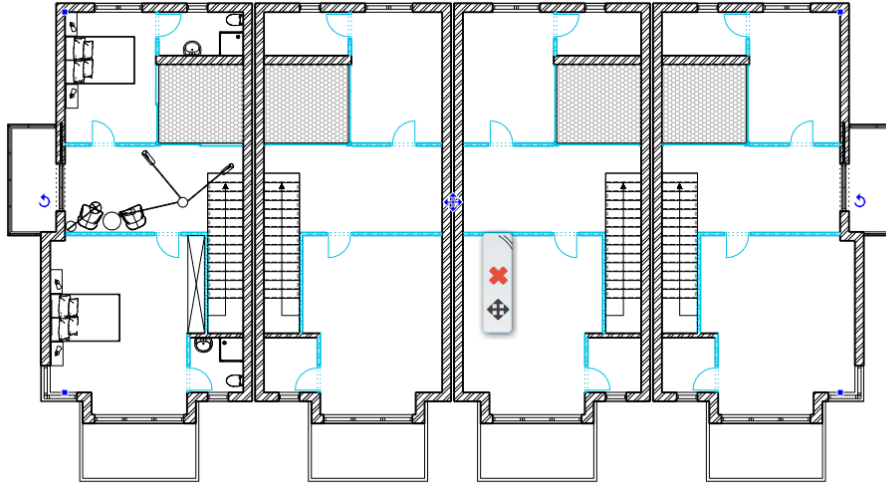
- GUID
- Group name
- Hatch Hatch spacing
- ID
- Intensity
- Layer
- Line weight
- Line-type
- Object
- Object type
- Parameter
- Room type
- Slab width
- Style name
- Wall width

Operators: Equal

Value: 100

OK Cancel

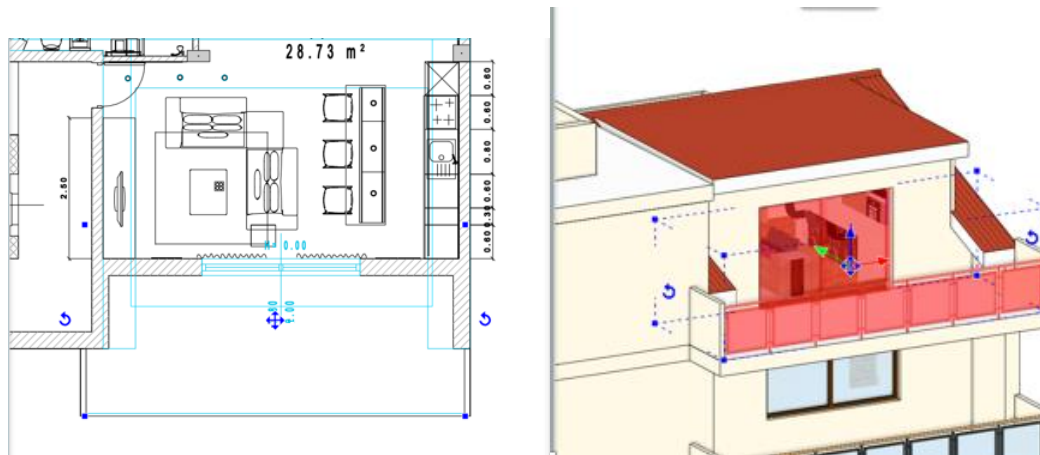
The common part of the two selections will be displayed highlighted in blue



Now you can modify all the walls that have the property of the same wall width.

### 7.1.8. Display selection on multiple views 2D / 3D

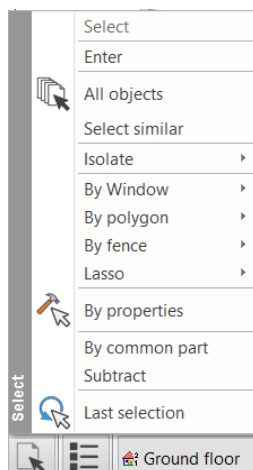
The currently selected element are displayed simultaneously on the 2D / 3D views.



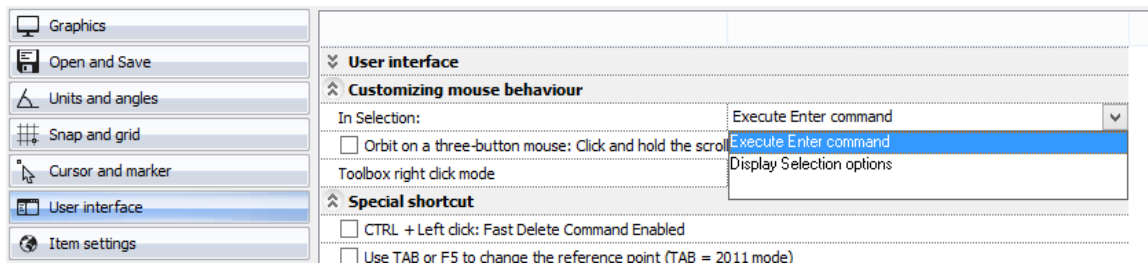
## 7.2. Selection menu

To select, you can use the Selection *button* in the *Status bar* that activates *the Selection menu*.

With the pop menu you can select objects in the drawing by using different options. The Selection menu can be used for pre-selection of objects and also for selection within an editing command. In the latter case selection must be completed with Enter.



The *Selection menu* may pop-up when the program is waiting for selection, and you press the right mouse button. Select the option Display Selection Options in *File - Options – User Interface Tab - Customizing Mouse Behaviour* instead of the Execute Enter command.



### 7.2.1. Enter

The selection is completed with the Enter key. Right-clicking is the same as pressing Enter.

### 7.2.2. All Objects

This command selects all elements on the view.

### 7.2.3. Select Similar

The Select Similar command lets you choose all instances on the current floor with the type of the selected object, e.g. all walls.

### 7.2.4. Isolate

A group of commands that isolate the selected objects (hide everything except the selected ones) or hide the selected ones either in 2D or 3D workspace.

### 7.2.5. Selection by window

Options of selection by window:

#### **One floor - in**

The program selects all the objects on the current floor that are entirely within the selection window.


#### **One floor - out**

The program selects all the objects on the current floor that are entirely outside the selection window.

#### **All floors - in**

The program selects all the objects on all floors that are entirely within the selection window.



With this instruction it is easy to select the entire building. It is useful if you want the building to be placed to a definite location on the key plan or the terrain, or to be rotated as moved. For this transformation you can use the *Move*  instruction and "Multitrans" option.

#### **All floors - out**

The program selects all the objects on all floors that are entirely outside the selection window.

- Specify a corner point of the window.
- Specify the opposite corner point.

### 7.2.6. Selection by polygon

Options of selection by polygon:

#### **One floor - in**

The program selects the objects on the current floor that the selection polygon entirely encloses.

#### **One floor - out**

The program selects the objects on the current floor that are entirely outside the selection polygon.

#### **All floors - in**

The program selects the objects on all floors that the selection polygon entirely encloses.

**All floors - out**

The program selects the objects on all floors that are entirely outside the selection polygon.

- Specify the first corner point of the polygon.
- Specify the next corner points of the polygon. The polygon may also contain arcs.
- **Enter** Ends the selection of the corner points.

**7.2.7. By fence**

Options of selection by fence:

**One floor**

The program selects all the objects on the current floor that intersect the specified fence.

**All floors**

The program selects all the objects on all floors that intersect the specified fence.

- Define the fence as a series of lines, arcs with which you select the objects.

**7.2.8. Selection by properties**

- Specify the criterion of selection.
- Specify the operator that depends on the defined criterion.
- Specify the value of the operator (if any).



In the case of a complex logical criterion, after *specifying all criteria* and selecting the appropriate logical operation, the dialog box must be closed with **OK**. You can continue specifying the criterion by recalling the *Selection by properties* dialog box.

- Specify the logical connection by selecting the appropriate option:

**Add / Or relation:**

Expands the previous selection with objects meeting the new criterion.

**7.2.8.1. Object type**

The program selects all objects that belong to a certain object type in the drawing.

Operators associated with object types.

- Select the desired object type.


With this option you can select e.g. all walls on a given floor.

**7.2.8.2. Colour**

You can carry out the selection with the defined colour.

Operators associated with colour:

- ❖ **Add**  
Selects the objects of a specified colour.
- ❖ **Except the following values**  
Selects the objects that have different colour than the defined one.
- Select the colours from the colour palette, or  
Enter the colour indexes in the *Value* field separating them by spaces. You can specify more colours at a time.

Value:  

### 7.2.8.3. Layer

You can carry out the selection with the defined layers.  
Operators associated with layers:

- ❖ **Select**  
Selects all objects placed on a specified layer.
- ❖ **Except the following values**  
Selects all objects that are not on the specified layer.
- Select the desired layer from the pull-down menu, or enter its number or name in the *Value* field.  
You can also define more layers at a time, separating them by spaces.


Operators:

Value:

### 7.2.8.4. Line type

You can carry out selection with the defined line type.

- ❖ **Select**  
Selects all objects of a defined line type.
- ❖ **Except the following values**  
Selects the objects that have a different line type than the defined one.
- Click the line type button. From the list displayed select the desired line type, or enter the index of the line type in the *Value* field. You can also define more line types at a time, separating them by spaces.

Operators:  

Value:

### 7.2.8.5. Line width

You can carry out selection with the defined line width.

- ❖ **Equal**  
Selects the objects of a specified line width.
- ❖ **Not equal**  
Selects the objects that have a different line width than the specified one.
- ❖ **Region**  
Selects all objects the line width of which is within the specified region.
- ❖ **Out of region**  
Selects all objects the line width of which is outside the specified region.

- When applying the *Equal* and *Not equal* commands, choose the appropriate line width from the pull-down list of the *Value* field, or enter its value.  
You may define only one value.

- When applying the *Region* and *Out of region* commands, enter the lower and upper limit of the region in the appearing fields.

#### 7.2.8.6. Wall width

Selects walls of a specified width according to different criteria.

- See the selection properties as 7.2.5.5. Selection by line width.

#### 7.2.8.7. Slab width

Selects slabs of a specified width:

- The selection unit is slab width. Otherwise see the selection properties as 7.2.5.5. Selection by line width.

#### 7.2.8.8. Selection by group name

As a result of the selection, you get all the groups that you defined by a given name.

- Define the desired name.

#### 7.2.8.9. Selection by style name

As a result of the selection, you get all the objects the selected set name is assigned to.

- Select the desired set name.

#### 7.2.8.10. Selection by parameter

As a result of the selection, you get all the groups that you defined by a given name.

- Define the desired name.

#### 7.2.8.11. Selection by object

As a result of the selection, you get all the objects, that you defined by a given name.

- Select the desired name.

#### 7.2.8.12. Selection by column

As a result of the selection, you get all the columns, that you defined by a given name.

- Select the desired name.

#### 7.2.8.13. Selection by beam

As a result of the selection, you get all the beams, that you defined by a given name.

- Select the desired name.

#### 7.2.8.14. Selection by ID

As a result of the selection, you get the object that you defined by a given unique ID.

- Define the desired ID.



### 7.2.8.15. Selection by Hatch Spacing

Selects hatches of a specified width:

- See the selection properties as 7.2.5.5. Selection by line width.

### 7.2.8.16. Selection by Intensity

Selects light sources of a specified Lumen value:

- The selection unit is Lumen (lm). Otherwise see the selection properties as 7.2.5.5. Selection by line width.

### 7.2.9. Common part of selections / And relation:

Selects only those objects that meet both the previous and the new criteria.

### 7.2.10. Subtract

Selects only those objects that meet the previous criteria but not the new ones.

- Specify a new criterion and an operator that will be the new condition for selection.
- **OK** Close the dialog box.
- **Enter** End the instruction.

Doing so, you can specify the selection even on the basis of a complex system of conditions in the same dialog box. You can also specify the system of conditions in different dialog boxes one after another.

Let's see the criteria and the associated operators.

### 7.2.11. Last selection

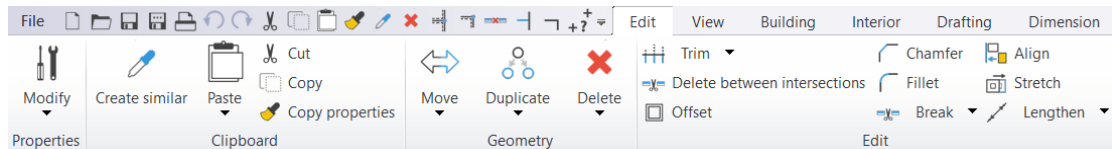
The program activates the last selection, thus the previously selected objects can be further edited.

## 8. Editing

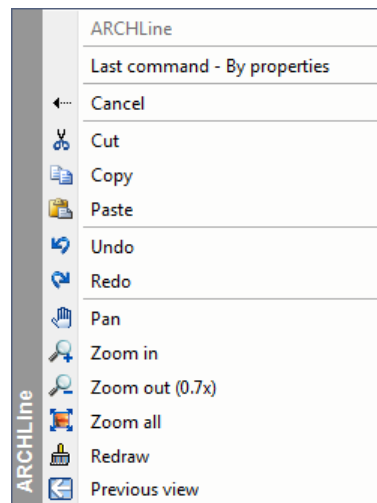
This chapter describes the editing commands, including: move, copy, rotate, mirror, scale, delete, stretch and offset. With the editing commands you can edit the selected objects. Except Undo and Redo, each command activates a geometrical transformation.

These commands can be accessed:

- ❖ From the Ribbon > Edit panel or the Move toolbar.



- ❖ You can also access some editing commands from the **General Shortcut menu**. The General Shortcut menu appears if you open the *General menu* option in the *File - Options - Right click customization* dialog box and then right-click on the empty drawing area.



### 8.1. General editing commands

#### 8.1.1. Undo an action - Ctrl Z

The program stores the last 16 steps, thus it is possible to cancel the most recent action. Each time you click "Undo", the command reverses the last action.

#### 8.1.2. Redo an action - Ctrl Y

To redo a command reversed by **Undo**, you can use the **Redo** command.

**!** Note: The following commands are not available from the undo/redo list: style settings, view commands, Options panels' commands.

#### 8.1.3. Repeat last command - SPACEBAR

You can repeat the command that was last used with the following commands:

- ❖ Press Spacebar to repeat the last command you just used.
- ❖ Right-click in the drawing, and choose Last Command from the appearing menu

#### 8.1.4. ARCHLine.XP clipboard

- ❖ The ARCHLine.XP clipboard is a temporary internal memory. Part or all of a drawing can be placed to and removed from the memory. When turning off the program, the clipboard content will be lost.
- ❖ The drawing placed to the clipboard overwrites the drawing previously placed there.
- ❖ This clipboard is used for inserting graphic information within ARCHLine.XP so after selecting the objects you always have to specify the reference point.



The clipboard provides an effective way to copy any 3D *view*, *section* to a floor plan window. The drawing thus copied has no connection with the 3D model in the floor plan window. Consequently, editing becomes optional, the view and the section can be edited as required. With this option the program provides freedom for the designer.



Note: **The ARCHLine.XP clipboard is not equivalent to the Windows clipboard.**

#### 8.1.4.1. Cut - Ctrl X

Move the selected objects to the clipboard. Erases the objects selected in the floor plan window. Retains the objects selected in the 3D View, so it has the same effect as the *Copy* command.

- Select the objects to be moved.  
**Enter** Ends the selection.
- Specify the reference point of the selected objects (Optional).

#### 8.1.4.2. Copy - Ctrl C

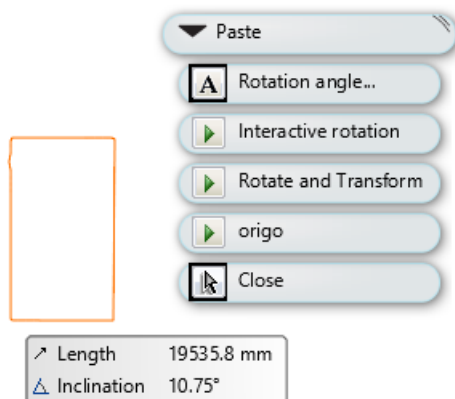
Copies the selected objects to the clipboard. The drawing copied to the program clipboard overwrites the drawing previously placed there.

- Select the object you want to copy.  
**Enter** Ends the selection.
- Specify the reference points of the selected objects (Optional).

#### 8.1.4.3. Paste – Ctrl V

Inserts the clipboard content by the reference point into the specified point. You can activate the command only if you have already placed objects on the clipboard.

The object or objects can also be rotated as placed. To do so, choose one of the options:



#### Options:

<b>Rotation angle...</b>	Specify the rotation angle in the form of a number
<b>Interactive rotation</b>	Specify the angle with its two sides
<b>Rotate and Transform</b>	Specify scaling and a rotation angle before placement
<b>Origo</b>	Place to the global 0 0 origin.

#### 8.1.5. Copy bitmap to clipboard

When activating this command the program copies the image of the active view to the Windows clipboard in a picture file format. This way it is easy to insert the drawing as a picture e.g. into a Word document.



In Windows use the *Edit - Paste (Ctrl + V)* command to paste.  
In ARCHLine.XP use the Edit menu **Paste bitmap from Clipboard** command to paste the content of the Windows clipboard to the active view.

#### 8.1.6. Paste bitmap from clipboard

**Paste bitmap from Clipboard** pastes the content of the Windows clipboard to the active view as a raster image.

### 8.1.6.1. Modify view parameter

Modify view parameter will open the Graphics settings dialog where you can set changes for the representation of the snapshot view (for example change visual style from Textured to Hidden lines representation).

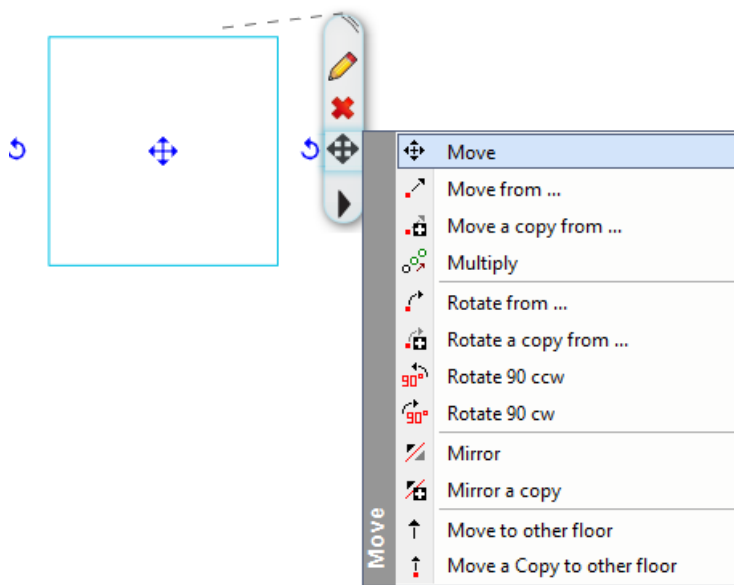
### 8.1.6.2. Modify resolution

Each snapshot has a resolution measured in pixels. As the snapshot is a raster image, larger resolution means a much detailed representation but also a larger size in the project. If you have a raster image which you feel is a little bit rough at the representation, you can change the resolution to a higher value, but please keep in mind that your project file will be larger also and a larger snapshot takes longer to refresh.

### 8.1.7. Move

Using the **Move** command you can move the selected objects.  
Several methods are available for moving one or more selected objects.

- Choose one of the following methods:
  - ❖ Use the shortcut CTRL + B to start the command
  - ❖ Select object(s) and click on the anchor marker on the view and choose **Move** or **Move from** command. (See the image below)
  - ❖ Select the object(s) and then click on *Edit menu - Move* command (using preselection)
  - ❖ Click on *Edit menu - Move* command, select the object(s) to move, and then press Enter.
  - ❖ Click on the Move icon on the Move toolbar to start the command.
  - ❖ Use the program clipboard to cut and paste object(s) with Ctrl+X and Ctrl+V.



- Specify the reference point for moving (first point).
- Move the cursor in the direction that you want the element to move. The preview cursor displays the objects new position.
- Specify the new place of the reference point to complete the move (second point), or you can type a value for the distance to move the objects, and press Enter (for more precision), or  
Select object(s) and move with Arrow Keys: Use arrow keys on the keyboard and type a value for the distance to move selected object(s) vertically or horizontally.



If you hold **Shift** while you specify the second point, the new position of the selected object(s) will be orthogonally vertical or horizontal.



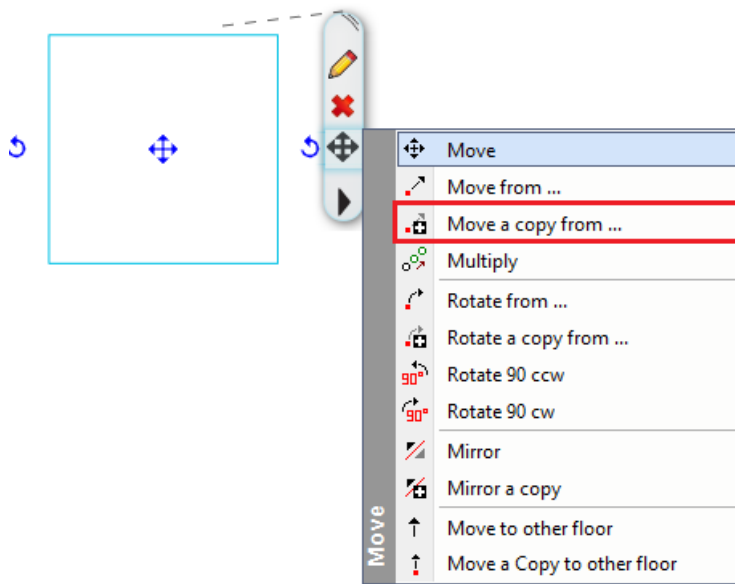
The Move command is different than the Cut to Clipboard and Paste.  
Use the Move command when you want to place a selected object and place it immediately in the same view.  
Use the Cut to Clipboard and Paste commands, when you need to change the view before placing the selected objects.  
On the Options Bar, you may select the following command:

**Origo** - Specify the new place of the reference point into the origin. Equal as typing 0 0 and **Enter**.

### 8.1.8. Duplicate

Using the Duplicate command you can copy the selected objects.  
Several methods are available for duplicating one or more selected objects.

- Choose one of the following methods:
  - ❖ Use the shortcut CTRL + U to start the command
  - ❖ Select object(s) and click on the anchor marker on the view and select Move a copy from command. (See the image below)
  - ❖ Select the object(s) to duplicate, and then click on *Edit menu - Duplicate* command (using preselection)
  - ❖ Click on *Edit menu - Duplicate* command, select the object(s) to duplicate, and then press Enter.
  - ❖ Click on the Duplicate icon on the Move toolbar to start the command.
  - ❖ Use the program clipboard to copy and paste object(s) with Ctrl+C and Ctrl+V.



#### Place multiple copies:

On the Options Bar, you may select the following command:

**Repeat:** to place multiple copies.

- Specify the reference point for copying (first point).
- Move the cursor in the direction that you want the element to duplicate. The preview cursor displays the objects new position.
- Specify the new place of the reference point to complete the copy (second point), or you can type a value for the distance to copy the objects, and press Enter (for more precision).



If you hold **Shift** while you specify the second point, the new position of the selected object(s) will be orthogonally vertical or horizontal.



The Duplicate command is different than the Copy to Clipboard and Paste.

Use the Duplicate command when you want to copy a selected object and place it immediately in the same view. Use the Copy to Clipboard and Paste commands, when you need to change the view before placing the selected objects.

On the Options Bar, you may select the following command:

**Origo** - Specify the new place of the reference point into the origin. Equal as typing 0 0 and **Enter**.

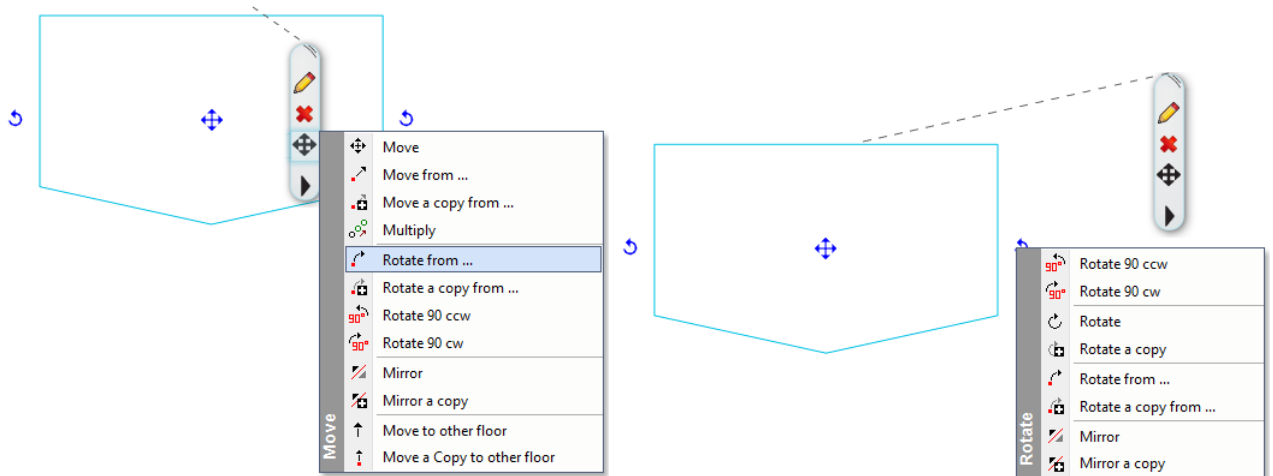
### 8.1.9. Rotate

Using the **Rotate** command you can rotate the selected objects.  
Several methods are available for rotating one or more selected objects.

Rotate is not a valid command for all types. For example, spaces do not rotate in any views. Windows and doors cannot rotate without their walls.

Select **Rotate a Copy** command to rotate a copy of the selection. The original remains in place.

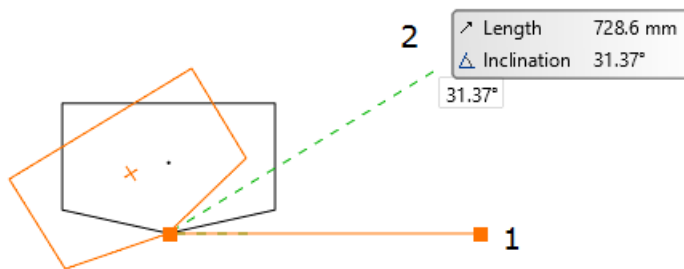
- Choose one of the following methods:
  - ❖ Select object(s) and click on the anchor marker on the view and select one of the rotation command. (See the left image below)
  - ❖ Select object(s) and click on the blue rotation icon on the view and select one of the rotation command. (See the right image below)
  - ❖ Select the object(s) to rotate, and then click on *Edit menu - Rotate* command (using preselection)
  - ❖ Click on *Edit menu - Rotate* command, select the object(s) to rotate, and then press Enter.
  - ❖ Click on the Rotate icon on the Move toolbar to start the command.
  - ❖ Use the program clipboard to copy and paste object(s) with Ctrl+C and Ctrl+V.



- Specify the rotation centre if requested (*Edit menu - Rotate*).
- Specify the rotation angle if requested (*Edit menu - Rotate*).
- On the Options Bar, select any of the following:
  - ❖ **Rotation angle...:** Type the angle of rotation and press Enter.
  - ❖ **Interactive rotation:** Specify the angle with with start ray and end ray of rotation

How to define the angle with start ray and end ray of rotation?

- Click to specify the start ray of rotation. The cursor line displays to indicate the start ray.
- Move the cursor to place the end ray of rotation, or type the angle of rotation, and press Enter.



#### Options:

<b>Rotate from</b>	Specify the rotation centre and then specify the angle with start ray and end ray of rotation.
<b>Rotate 90 ccw or Rotate 90 cw</b>	Rotate 90 degrees counterclockwise or 90 degrees clockwise. The rotation centre is the anchor marker position.



Use the Copy to Clipboard and Paste commands, when you need to change the view before placing the selected objects. On the Options Bar, select any of the following:


**Rotation angle... - Type the angle of rotation and press Enter.**

**Interactive rotation - Specify the angle with with start ray and end ray of rotation.**


## 8.1.10. Copy by matrix

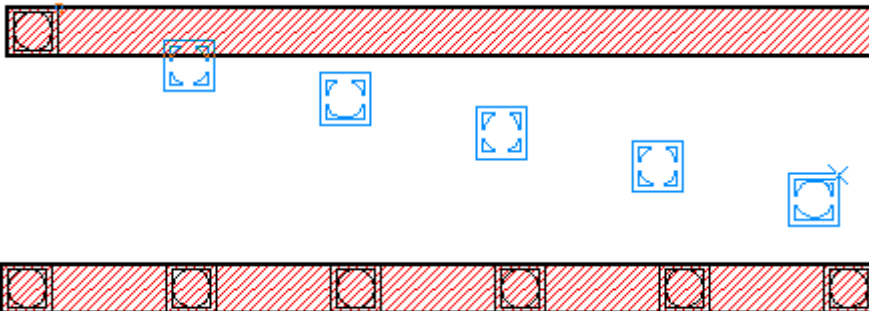
*Copy* (the centre of rotating is the move marker position)

### 8.1.10.1. Multiply

With the *Multiply* -  icon in the *Move toolbar menu* you can place elements of a certain number at an equal distance from each other along the specified line.

Suppose you want to place columns on a wall. You know the number of the columns and that there is an equal distance between them. However, you do not know exactly this distance.

- Draw the wall and place the first column on it.
- Choose the **Multiply** -  command.
- Select the element you want to multiply. Complete the selection with Enter.
- Specify the number of copies.
- Specify the base point of the distance you want to divide. (Specify the point of the first element that will touch - in the case of the last element - the endpoint of the distance you want to divide.)
- Specify the other endpoint of the distance you want to divide. Before specifying the endpoint you can choose **REPEAT** in the More options menu if you want to change the number of copies.

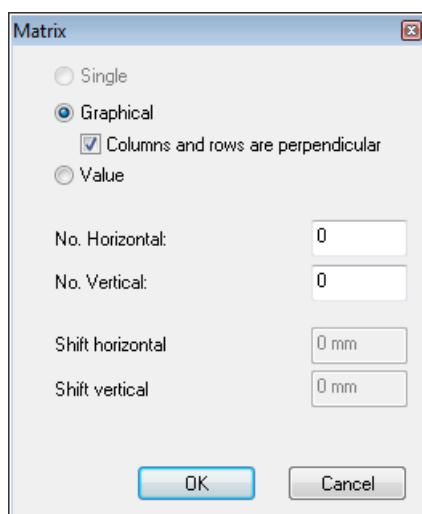


### 8.1.10.2. Array

It copies a given object according to the given number of row and column.



- Start the Array tool.
- Select the element, that you would like to multiply. Close the selection with Enter.
- Set the starting point of the move.
- Determine the array in the appearing dialog window. OK.



#### 1) **Graphical**

It places a specific number of elements equidistant from each other on the selected grid.

- Determine the place of the last element in the first row. So you can fix the divided distance, and also give the direction of the row.
- Determine the place of the last element in the last row. So you can fix the divided distance. If the *Column and row are perpendicular* option is switch off, the given point determines the direction of columns too.

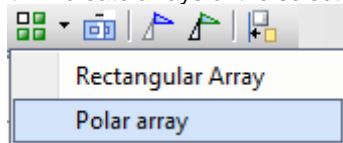
## II) Value

It places a specific number of elements in the given distance (Shift horizontal and vertical) from each other on the selected grid.

- Determine the direction of the matrix first row.  
It places specific number objects in the given distance from each other in this direction by the line. The columns of the matrix are perpendicular to the rows.

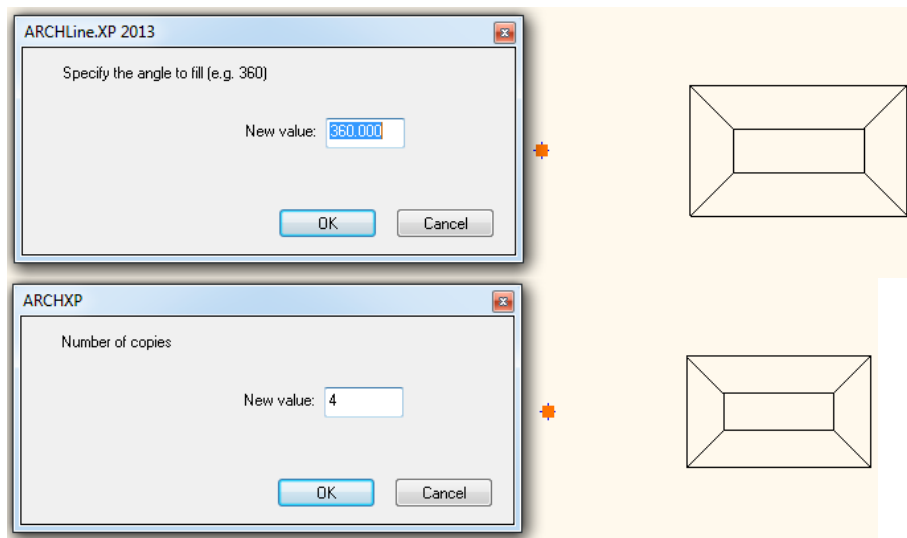
### 8.1.10.3. Polar array

It will create arrays of the selected objects by giving angle to fill and repeat factor.

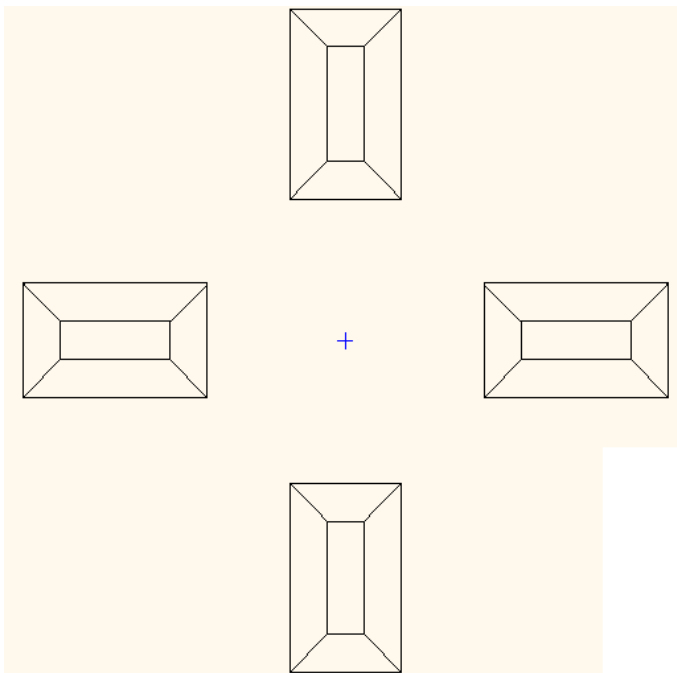


- Start the Polar Array tool.
- Select the objects that you would like to multiply. Close the selection with Enter.
- Specify the center point of the array.
- Enter the angle to fill with equally spaced objects.
- Enter the number of objects in array.

In this example the command places 4 objects equally spaced around 360 degrees.







### 8.1.11. Mirror

Reverses the position of a selected objects by applying the mirror transformation.

Two types of mirror transformation are available:

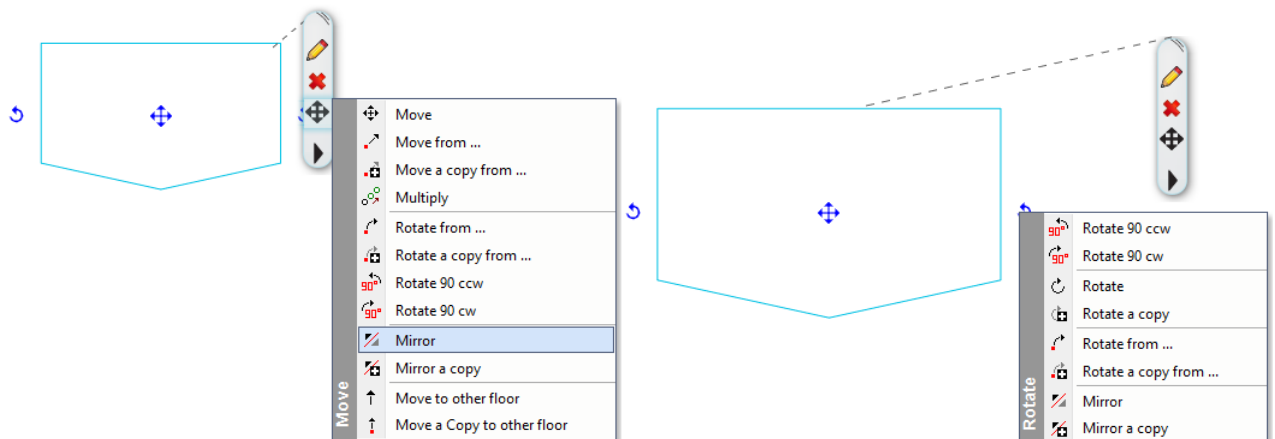
- ❖ *Mirror by axis*
- ❖ *Mirror by point reflection*

Several methods are available for mirroring one or more selected objects.

Mirroring is not a valid command for all types. For example, spaces do not mirror in any views. Windows and doors cannot mirror without their walls.

Select **Mirror a Copy** command to mirror a copy of the selection. The original remains in place.

- Choose one of the following methods:
  - ❖ Select object(s) and click on the anchor marker on the view and select one of the mirror command. (See the left image below)
  - ❖ Select object(s) and click on the blue rotation icon on the view and select one of the mirror command. (See the right image below)
  - ❖ Select the object(s) to mirror, and then click on *Edit menu - Mirror* command (using preselection)
  - ❖ Click on *Edit menu - Mirror* command, select the object(s) to mirror, and then press Enter.
  - ❖ Click on the Mirror icon on the Move toolbar to start the command.



- Specify the first point of the mirror axis.

- Specify the second point to draw a line and use it as a mirror axis. If you press Enter, the program reflects the selected object(s) around the first point.
- The program moves or copies the selected object(s) and reverses its position opposite the selected axis

On the Options Bar, you may select the following command:

**On selected object:** Select a line to use as a mirror axis, or select a line to use as a mirror centre.


### 8.1.12. Scale

Enlarges or multiplies the objects.

Commands that you can apply here:



#### Scale - Move


With the **Edit -  Scale - Move** command you can enlarge/reduce the selected objects.

- Select the objects you want to enlarge.
- **Enter** accepts the selected objects.
- Specify the scale centre.
- With the mouse specify a point that defines the scale factor. The distance between the specified point and the scale centre defines the scale factor. This factor is indicated by the mouse pointer info tooltip. Choose **Scaling** in the More options menu if you want to specify the scale factor. A scale factor less than 1 reduces the objects. A scale factor greater than 1 enlarges the objects.

#### Options:

<b>Scaling...</b>	Specify the scale factor
<b>X</b>	Scale only in x direction
<b>Y</b>	Scale only in y direction

#### Scale - Duplicate

With the **Edit -  Scale - Duplicate** command you can enlarge/reduce the selected objects. You can also multiply the copies.

#### Option:

<b>REPEAT</b>	When making multiple copies, specify the number of copies.
---------------	--



For a detailed description of the command see Chapter.8.1.12.1 on *Scale - Move*.

### 8.1.13. Align

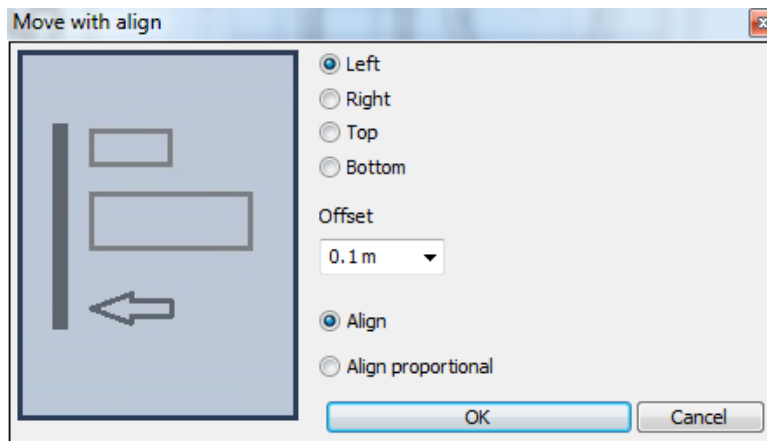
The Align command aligns and/or distributes the selected objects on floor plan. The alignment applied only along the horizontal and vertical axes.

Menu: Edit > Align

The Move with Align dialog box displays.

Select a line as horizontal and vertical axes.

Select the objects to be aligned or aligned proportional (distributed)

**Left**

Align to the horizontal axes by the left side of the selected objects with offset value.

**Right**

Align to the horizontal axes by the right side of the selected objects with offset value.

**Top**

Align to the vertical axes by the upper side of the selected objects with offset value.

**Bottom**

Align to the vertical axes by the lower side of the selected objects with offset value.

**Offset**

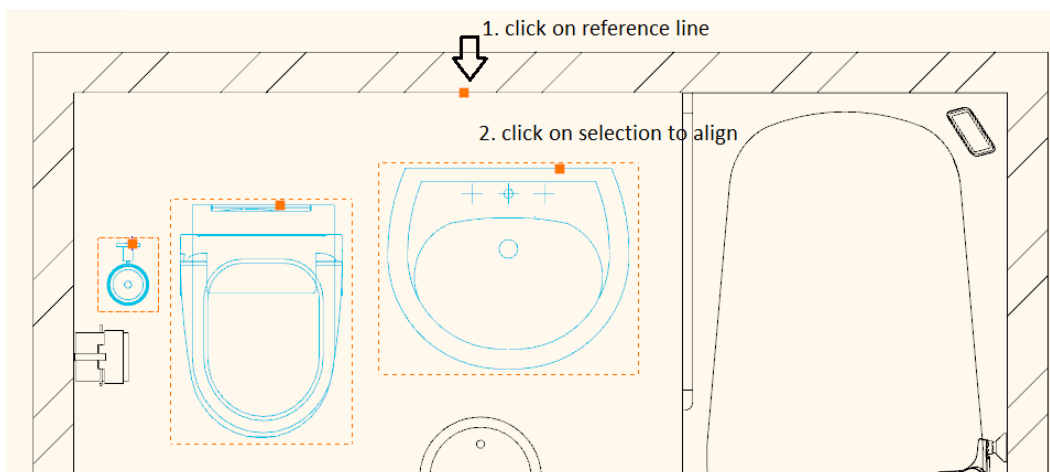
Distance between the horizontal or vertical axes and the selected objects.

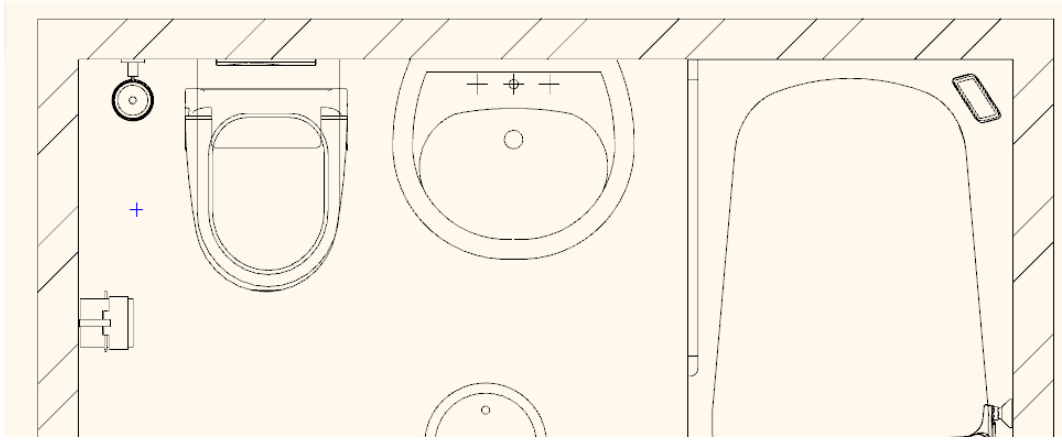
**Align proportional**

Aligns the selected objects keeping their location relative to each other.

**Align proportional**

Aligns proportionally the selected objects on the distance between the two far position objects.






### 8.1.14. Select all

We can select all items in the same time with this command.

### 8.1.15. Delete single (Ctrl + D)

Deletes the selected objects in the current drawing one by one.


-  Start the tool.
- Click the object you want to delete.
- Select further objects to be deleted, or  
**Enter** Ends the command.

**!** All objects associated with the selected object are also deleted. (For example, if you assigned dimension to an object, when deleting the object, the dimension lines are also deleted.)

If you delete an object in the 3D View, the **Select a surface** option appears in the More options menu. With this keyword you can delete the patterns placed on the surface of the solid (2D group)



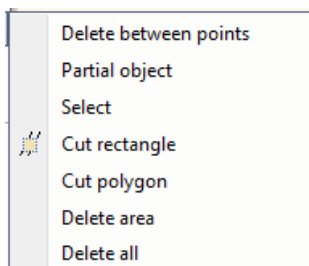
You can activate the command in the following ways:

- ❖ By clicking the *Delete* -  icon in the *Edit toolbar*, or
- ❖ In the *Shortcut menu* of each object as well. In this case right-click the object.
- ❖ If the mouse pointer is an arrow shape: hold the **Ctrl** key and click an object, then **the entire object is deleted (only with specific settings in File menu – Options – General / Marker settings – Special shortcut)**.
- ❖ If you click an object in the drawing and press the **Del** key, the program deletes the **entire object**.

### 8.1.16. Delete

With the commands in the **Edit - Delete** menu object you can delete the objects or the specified part of the objects in the current drawing.

The menu object contains the following commands:



The *Delete*, *Select*, *Delete area*, *Delete all* instructions can be applied to all object types. The other delete instructions can only be applied to geometric objects, but not to architectural ones. Thus, for example, with the *Delete between points* command it is not possible to delete the part between the two intersections of the wall.


### 8.1.16.1. Delete between points

The program enables you to delete the section of an object between the intersections (or endpoints) nearest to the selected point. If the object does not have or has only one intersection with other objects, this command corresponds to the delete operation.

- Select the object to be deleted between its nearest intersections. The program immediately deletes that part of the object.
- Repeat the previous step if you want to delete further parts of the object, or  
**Enter** Ends the command.



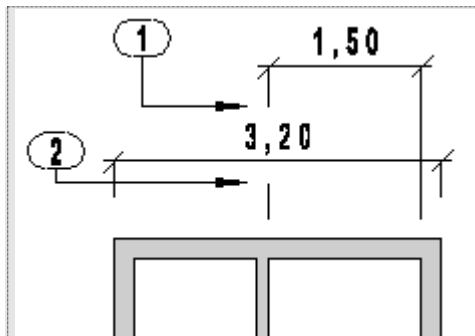
You can activate the command in the following ways:

- ❖ By clicking the **Delete between intersections** -  icon in the *Edit toolbar*.
- ❖ When the mouse pointer is an arrow shape: hold the **Ctrl** and **Shift** keys and click an object, and then the program deletes the section of the object that is between the intersections.

### 8.1.16.2. Partial delete

Deletes the section of the object between the selected points.

- Select the base point of the line you want to delete: *Point 1*
- Select the endpoint of the line you want to delete: *Point 2*
- Select further lines to be deleted, or  
**Enter** Ends the command.



The Partial *Delete* can be applied to dimension projection lines as well.

### 8.1.16.3. Delete selected

The command deletes the selected objects in the current drawing.

- Select the objects to be deleted.  
**Enter** Ends the selection and deletes the objects.
- Repeat the previous step if you want to delete further objects, or  
**Enter** Ends the command.



To select a group of objects you can apply the commands in the **Status bar - Selection** menu.



You can also activate the command with the **Delete selected** -  icon in the **Edit toolbar**.

### 8.1.16.4. Cut rectangle

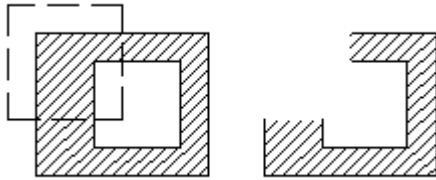
With this command you can delete objects in the following ways:

- ❖ You can delete the objects or their sections that are inside a specified rectangle or area.
- ❖ Before deleting you can pre-select the objects on which the deletion will be carried out.

If an object is not entirely enclosed by the rectangle or area, only its section inside the rectangle or area is deleted. The contour of the selection area is shown by broken line.

**Deletes all objects or all sections of an object inside a specified rectangle:**

- Specify the first point of the selection window.
- Specify the other point of the selection window.
- Repeat the command, or  
**Enter** Ends the command.



**Deletes all objects or all sections of an object inside a specified area:**

- Choose **POLYGON** in the More options menu.
- Define the polygon within which you delete all objects or all sections of an object.
- **Enter** Completes the definition of the polygon, and the program executes the deletion.

**Deletes all objects or object sections inside a specified area, but you can select the objects on which deletion will be carried out:**

- Choose **PRESELECT** in the More options menu.
- Select the objects the deletion will be applied to.
- Specify the polyline that is necessary for the deletion.
- **Enter** Completes the definition of the polyline, and the program executes the deletion.



If you specified an open polyline, the program automatically connects the first and the last point of the polyline to create a closed polyline (polygon).

### 8.1.16.5. Cut polygon

Deletes all objects or all sections of an object inside a specified area.

If an object is not entirely enclosed by the area, only its section inside the area is deleted. The contour of the selection area is shown by broken line.

- Define the polygon within which you delete all objects or all sections of an object.
- **Enter** Completes the definition of the polygon, and the program executes the deletion.

**Options:**

<b>Circle</b>	The selection area is a circle
<b>Parallel shifted...</b>	Before defining the polygon specify the offset value. It means that the area will be an area enclosed by the contour of the reference point enlarged or reduced by offsetting.
<b>Width...</b>	The selection area is a polyline with a specified width.
<b>Arc</b>	The next object of the polyline is an arc.
<b>Select an object</b>	The next object of the polyline is an existing object.
<b>Spline</b>	The next object of the polyline is a spline.

### 8.1.16.6. Area

The command deletes the objects that are entirely inside the selection area. The contour of the selection area is shown by broken line. After closing the selection area you can select the objects to be deleted one by one.

- Specify the polyline necessary for deletion.
- **Enter** Completes the definition of the polyline.
- Select the objects the deletion will be applied to.
- **Enter** Ends the selection,
- **Enter** The program executes the deletion.

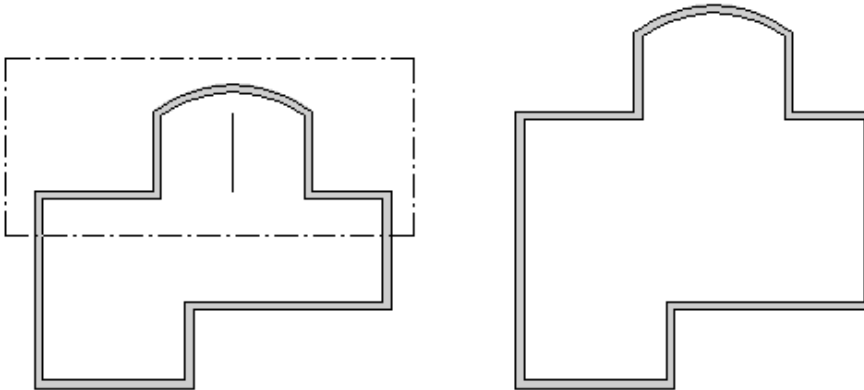
### 8.1.16.7. All

The command deletes all objects in the current drawing.

### 8.1.17. Stretch

The **Edit - Stretch** command stretches the sections of an object that are completely inside a selection area.

- ❖ If the object is a single line or a segment of a polyline, the program moves its endpoints only, and connects them again with a straight line.
- ❖ The 'curves' (circle, arc, ellipse, elliptic arc, splines) intersected by the area are cut at the intersection. The instruction connects the intersections with a straight line at the same time retaining the geometrical relations.
- ❖ All hatchings and dimensions assigned to the object follow the changes of the stretched object.
- ❖ In addition to the geometric objects the command is also valid for the wall and the slab. After stretching the wall connections are restored.



You can specify the area in the following ways:

- ❖ **By selection rectangle** or
- ❖ With the **Polygon** option.

#### Window

- Specify the corner point of the window.
- Specify the other corner point of the window.
- Specify the start point of the offset vector.
- Specify the endpoint of the offset vector.

#### Area

- Choose **Polygon** in the More options menu.
  - Specify a chain of lines and arcs. Enter.
  - Specify the start point of the offset vector.
  - Specify the endpoint of the offset vector.
- Enter** Ends the command.



For a detailed description of the options of **Polygon** see the instruction *8.1.12.5 Delete – Cut polygon*.

### 8.1.18. Offset

With the **Edit menu - Offset** command you can create a contour around the selected object at a specified distance. The contour of lines, polylines, arcs and splines retains its original type during the offset transformation, while circles are transformed into arcs, and the contour of ellipses and elliptic arcs into splines.

Select the object to offset or select an option:

<b>Select one by one</b>
<b>Select an open chain</b>

#### Select one by one

You must select the components of the closed chain one by one.

#### Select an open chain

You can specify the open chain by clicking near one of its endpoints.

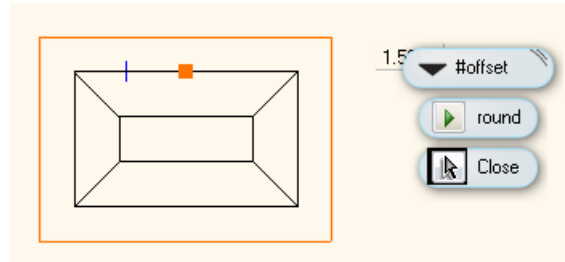
You can specify a segment of the chain by selecting any part of it (except its endpoint). Then you can choose the chain starting from the selected object to the endpoint that is farther from the centre of the selected object.

#### Offset type

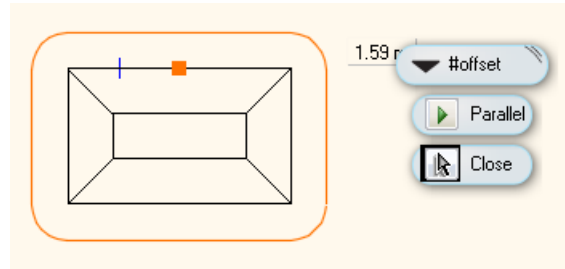
- Select the desired offset type by clicking the option:

**Parallel**

Offsets the chain of one or more objects at a specified distance from the selected objects.

**Rounded**

Offsets the chain of one or more objects at a specified distance from the selected objects. Should the new profile become geometrically distorted, the program rounds the corners off.

**Select mode**

- Specify the select mode:

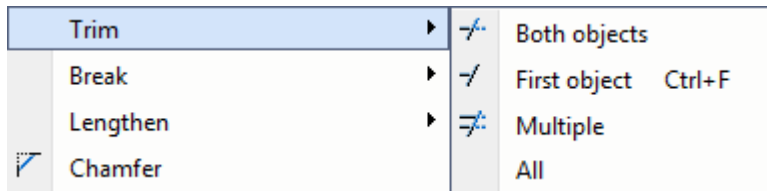
**Offset distance**

Offset distance: distance of the new contour from the selected objects.  
After the selection, the program asks you to specify the offset distance:

- Drag the mouse pointer to the direction where you want to create the offset. Enter the offset value.

**8.1.19. Trim**

With the options in the **Edit menu - Trim** command, you can trim objects by trimming or extending them, so that their endpoints closest to the selected points coincide.  
Select a subcommand:

**8.1.19.1. Both objects**

The command trims the two objects by trimming or extending them. Adjustment involves the intersection closest to your selection.

- Select the first object you wish to trim.
  - Select the second object you want to trim.
- Enter** Completes the command.



You may also activate the command with the **Edit toolbar - Trim both objects** icon. The command can be used for walls and corresponds to the L connection.

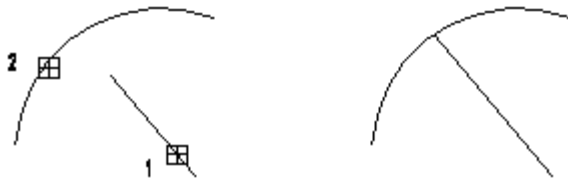
**8.1.19.2. First object - CTRL + F**

The command trims (or extends) the unnecessary section (missing section) of the first selected object compared with its intersection with the second object.  
Adjustment concerns the intersection nearest the selected section.



The second selected object only helps selection and is not modified with this command, just as the other endpoint of the first object is left intact.

- Select the object you want to trim.
  - Choose the object you want the first object to intersect with.
- Enter**      Completes the command.

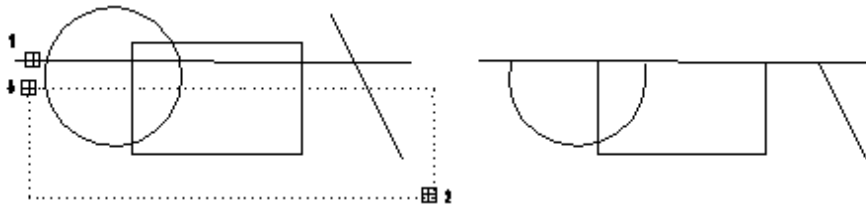


You may also activate the command with the **Edit toolbar** -  **Trim first object** icon. The command can be used for walls; it corresponds to the T connection.

### 8.1.19.3. Multiple

The command trims all subsequently selected objects to the first defined object. It trims or extends that section of the objects you define after the first selected object, which is closer to the intersection. The first selected object and the other endpoints of the specified objects are not modified with this command.

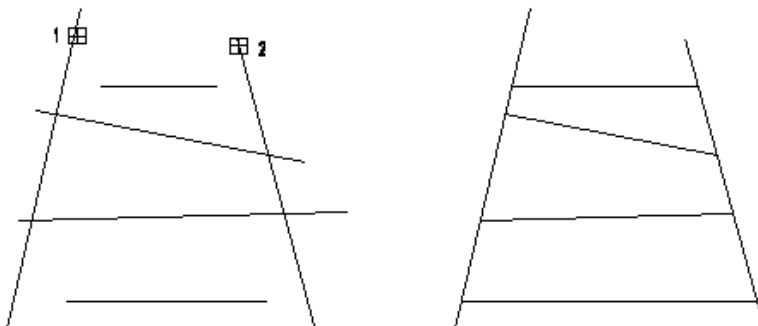
- Define the object to which you wish to adjust the objects selected subsequently.
- Specify the objects you want to adjust.
- Press **Enter** to complete the command.



### 8.1.19.4. All

The command trims to the segments all objects falling between the two given bordering segments. This means that the objects are trimmed or extended to their intersection with the adjacent segments.

- Select the first line to which you wish to adjust the objects.
  - Select the second reference line.
- Press **Enter** to complete the command.

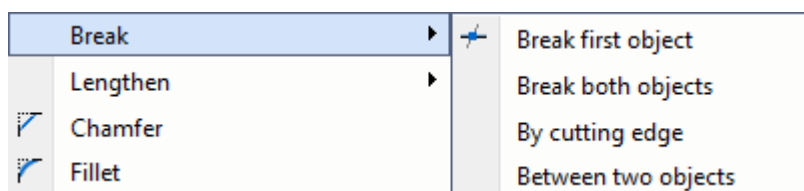


### 8.1.20. Break

Breaks the objects at a point defined with another object. Using this command, you can split an object in two separate parts.

The program transforms circles into arcs, and ellipses into elliptical arcs.

Choose a subcommand:



### 8.1.20.1. Break first object

Breaks the first selected object in two new objects at the point where it intersects the second (reference) object closest to selection. The command does not break the second object.

- Choose the object you want to break.
- Choose the object that intersects the first object.
- Press **Enter** to complete the command.

### 8.1.20.2. Break both objects

Breaks both selected objects in two new objects at their intersection closest to selection.

- Choose the object you want to break.
- Choose the second object you want to break.
- Press **Enter** to complete the command.

### 8.1.20.3. By cutting edge

You can break the selected objects with the help of an imaginary reference line. The cutting points will be at their intersections with the reference object.

- Define the start point of the cutting edge.
- Define the endpoint of the cutting edge.
- Select the object to be break at its nearest intersection.  
Press **Enter** to end selection.  
Press **Enter** to complete the command.

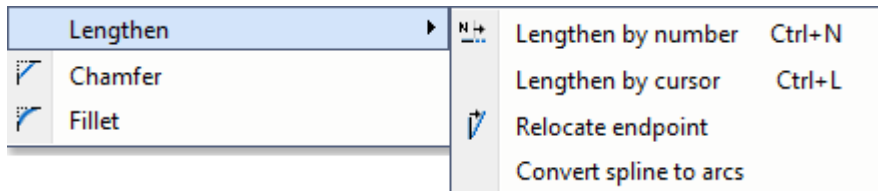
### 8.1.20.4. Between two objects

By using this command, you can break the object at its two intersections closest to a surrounding selection.

- Select the object you want to break between two intersections.  
Press **Enter** to complete the command.

## 8.1.21. Lengthen

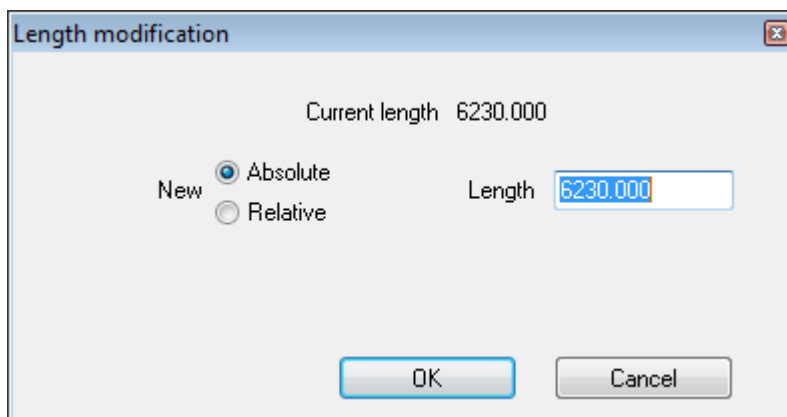
You can modify the length, radius, endpoint and resolution of the objects with this command. Select a subcommand:



### 8.1.21.1. Length by number - CTRL+N

With this command you can alter the length of a selected object (segment, arc, elliptical arc) by moving its endpoint closest to selection and specifying the new value in the form of a number.

- Select a line, arc or elliptical arc.  
The **Length modification** dialog box appears displaying the current value of length.



Choose an option and define the new value.

**Absolute** Specifies the length of the object.

**Relative** Specifies by what value the length of the object should be increased/decreased.

**OK** Completes the command.

### 8.1.21.2. Lengthen by cursor - CTRL+L

You can alter the length of the selected line, arc or elliptical arc by moving one of its endpoints to the desired place without changing its direction. With circles you can graphically modify the radius, whereas with ellipses the minor and the major axes.

- Select the endpoint of the line segment, arc or elliptical arc along which you move the object. (The endpoint closest to selection will be moved.)
- Define the new place of the endpoint graphically. Using the expand line departing from the endpoint, you can move the specified endpoint to its new place, or

**Option:**

<b>Beam</b>	Extends the selected beam.
-------------	----------------------------

Press **Enter** to complete the command.



Once you select the object, you may also modify its length or radius with the hotspots. See the *Tools -2.10.1 Clicking with the left mouse button* Chapter.

### 8.1.21.3. Relocate endpoint

You can modify the selected line segment, arc or elliptical arc by moving one of its endpoints to the desired place.

- Select a line segment, arc or elliptical arc.
  - Move the endpoint closest to selection. Specify its new position. Using the expand line departing from the other endpoint of the object; you can move the selected endpoint.
- Enter** Ends the command.

### 8.1.21.4. Convert spline to arcs

With this command you can alter the resolution of arched objects. The value defined for resolution specifies how many linear segments a polyline representing circles or ellipses should consist of.

- Specify the value of resolution.
  - Select the objects the resolution of which you want to modify.
- Enter** Ends the command.

## 8.1.22. Chamfer

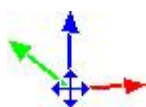
Connects two objects with an angled line.

## 8.1.23. Fillet

Connects two objects with an arc.

## 8.2. Main axis markers for 3D move

With the effective usage of 3D technology ARCHLine.XP makes the operations in the model space easy by interactive 3D cursors.



When selecting a 3D object, the program shows the main axis for moving operations. With the help of these markers you can move the selected object in the space along the main axes. Each axis has different colour representation. The horizontal X axis is represented by green, the horizontal Y axis is represented by red, and the vertical Z axis is represented by blue colour.

### How to use

Clicking one of the main axes starts the movement along the axis. You can set the new position by moving the mouse cursor to the desired point and then clicking again.  
You can see possible overlaps while moving the mouse.

## 8.3. Modification

You can modify both the properties and the geometry of the created objects.

### Modifying properties

Some opportunities to modify the properties are available from the Modify menu. But the modification of any object is available with the **Properties** command from the *Shortcut menu* or in the *Property manager*.

### Modifying geometry

The geometry modifying commands are available as follows:

- ❖ Click on the appropriate icon in the Toolbox or the Main menu , or
- ❖ Right click on the object from the Shortcut menu.

## 8.4. Specifying properties

Before you create any object, you can set the properties of the object in the **Properties** dialog box. You can activate the dialog box in several ways:

- ❖ With the **Building menu - Properties** commands, or
- ❖ With the **Drafting menu - Properties** commands, or
- ❖ With the **Dimension menu - Properties** commands, or
- ❖ Right-click on the icon of the object in the **Toolbox tool**.

Here you can specify the global properties that will be associated with all corresponding object types created subsequently.

## 8.5. Modifying properties

You can modify the properties of objects already created in the following ways:

- ❖ *One by one*, by selecting the desired property in the *Shortcut menu - Properties* dialog box.
- ❖ By copying the properties of a reference object with the *Modify menu - Copy properties* command.
- ❖ Using the **Property manager**, see the *Chapter 2.14*.
- ❖ With the *Modify menu – Create similar* command it is possible to create new objects, using the properties of an object already created.
- ❖ In the *Substitute material* dialog the he selected texture can be changed to the desired one in all the objects in the plan.
- ❖ You can modify the material of the objects using the Design center.

### 8.5.1. Modifying the object properties

You can modify the properties of objects:

- ❖ The Property Manager visualizes the properties of the selected objects and modify its values
- ❖ Right-click the object, then select *Shortcut menu - Properties*.
- ❖ Select the object and click on the Properties marker.

When the *Properties* dialog box displayed you can specify properties that will be assigned only to the selected object.




You can find the detailed the specification and modification of the properties of each object type in the corresponding chapters.

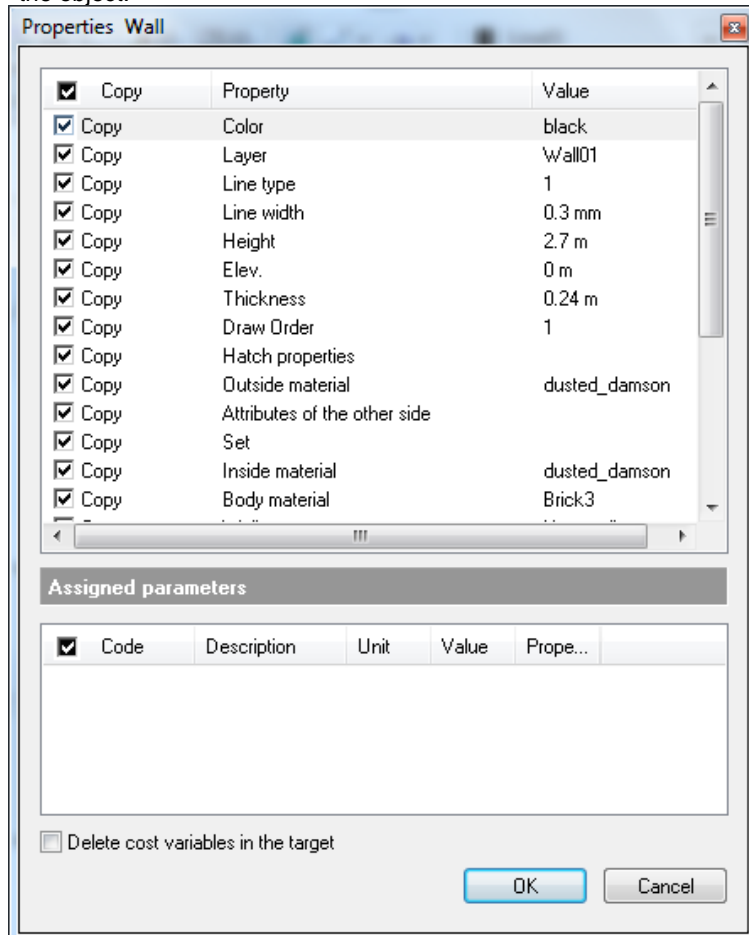
### 8.5.2. Copy properties

With the **Copy properties** command you may also modify the properties of an object group if you copy all or certain properties of a selected object to a group of objects.

You can activate the command:

- ❖ In the **Modify menu**,
- ❖ Right-click the object, then selecting the *Copy properties* option in the *Shortcut menu* displayed, or

- ❖ With the *Copy properties* icon -  in the *Edit toolbar*.
- Activate the command, and
- Choose an object the properties of which you wish to copy, or select the option corresponding to the desired object type in the command line if selection is ambiguous, that is when objects overlap.
- Select the desired properties in the **Properties** dialog box. E.g. in the case of wall the following dialog box appears:
- By clicking the checkbox in front of a property you can turn that property on and off. If you click the box in the heading you can turn all properties on and off.  
The program assigns only those properties to the selected objects that have been selected.
- You can decide whether you copy the parameters (which may contain important data for quantity calculation) assigned to the object.



- Select the objects you wish to modify.  
**Enter**            Completes the command.

In case of objects you can copy properties between floors as well.

For this please select the **Go to: Lower floor** or **Go to: Upper floor** keyword from the More options menu.

#### Options:

<b>Go to: Lower floor</b>	The software activates the following lower floor if there is any.
<b>Go to: Upper floor</b>	The software activates the following upper floor if there is any.



In case of object if the "Name" option is switched on, the objects to be modified will inherit the object type as well.

### 8.5.3. Layer control mode

In the ARCHLine.XP program the **Modify menu - Layer control mode option is turned off** as default.

When setting the general properties of object types you must specify to which layer you want to assign the objects of the object type in question.

You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.



For a detailed description of the options of **Layer control mode** see the instruction 3.4.5. *Layer control mode*.

### 8.5.4. Create similar

- ❖ You can create a new object with the properties of an existing object by using the **Modify menu - Create similar** command.

You can activate the command:

- ❖ In the **Modify menu** or,
  - ❖ By right-clicking the object and selecting the *Create Similar...* option in the *Shortcut menu* displayed.
- Activate the **Modify menu - Create similar** command.
  - Select an object to open its property list.

The program reads the properties of the selected object and enters the create object command. The object drawn subsequently will have the properties of the selected object.

If for example you select a wall to read its properties, the program offers the **Create wall** command.

### 8.5.5. Layer

With the use of layers you can group or separate the objects of the current project according to various aspects.



For a detailed description of the options of **Layer** see the instruction 3.4 *Managing layers*.

#### **Layer Manager**

This dialog manages layers and layer properties. You can change the current layer, create new ones, delete or turn on and off layers and lock/unlock them, change the printable status. In layer control mode you can assign properties such as colour and line type, line weight.



For a detailed description of the *Layer manager* command see Chapter 2.16.2. *Layer toolbar*.

#### **Move Objects to New Layer**

This tool will move objects from one layer to another, by selecting the destination layer from a dialog.



For a detailed description of the *Move Objects to New Layer* command see Chapter 3.4.6. *Move Objects to New Layer*.

#### **Layer walk**

This tool displays objects on layers that you select in the Layer Walk dialog. This tool is very helpful to check which object lies on which layer.



For a detailed description of the *Layerwalk* command see Chapter 3.4.7. *Layer walk tool*.

#### **Change to current Layer**

This command moves objects to the current layer.

#### **Activate the Layer of selection**

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer.

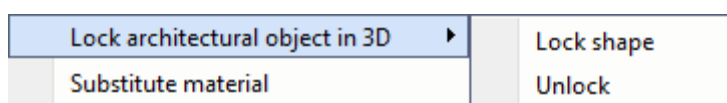
### 8.5.6. Lock architectural object in 3D

With this command you can lock 3D models to architectural objects (the architectural objects in the Building tool from wall to object) independent of their 2D symbol. This way you can create detailed drawings, such as decorated walls, without displaying their details on the 2D drawing. Once you lock an architectural object, you may make any modification in the 2D drawing; its 3D view will not be altered.



We suggest that you only decorate walls and use the **Lock in 3D** mode when you have completed the construction of the building structure. In this case you will not have to make frequent modifications.

The commands are the following:

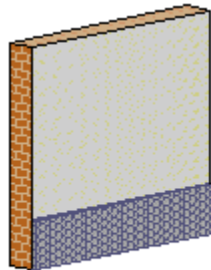


## Lock shape

Example:

You can create a wall with its foundation without displaying the foundation in the 2D view. You can see how this command works in the following example:

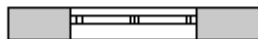
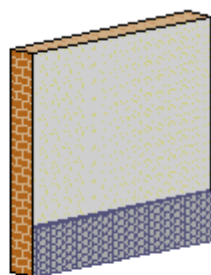
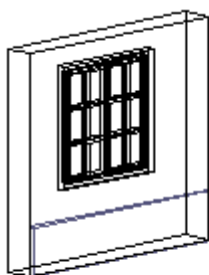
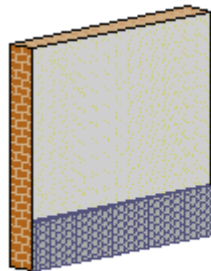
- Draw a wall with its foundation. To create a foundation draw a wall with the following parameters for example:  
*wall thickness: 0.05 m,*  
*height: 0.6 m,*  
*wall material: stone-2*
- Select the **Lock architectural object in 3D - Lock shape** command. Choose an architectural object (the wall in the model), to which you want to attach additional objects and whose 3D model you wish to lock.
- Select the additional objects for locking their 3D model.  
 (Select foundation.)  
**Enter** Completes selection.



Once you locked an architectural object's 3D model, the **3D fixed** option is activated in the properties dialog box of the object.

The 3D view of the wall with foundation is now locked. From this time on you can delete the 2D view of the wall, its 3D view will not change.

For example, if you place a window on the wall, the window will only be displayed on the 2D symbol of the wall. In the 3D view the window will only be indicated by the wireframe model, as the 3D model of the wall has been locked.



If you wish to display the new shape of the wall (with the window), you have to use the *Lock architectural object in 3D - Unlock* commands under *3D menu - Architectural object ->3D solid*.

## Unlock

With this command you can unlock the selected objects, and work with them as ordinary architectural objects.

- Select an architectural object the 3D view of which you want to unlock.



The **3D fixed** option is deactivated in the **Properties** dialog box.

In this case select the wall to unlock its solid 3D view. The program now displays the wall with the inserted window.



We suggest you that before unlocking use the *3D menu – Arch. object -> 3D solid* command, thus the 3D model of the foundation will be saved.

Repeat the *Lock shape* command for the wall and the foundation to save the new layout of the wall. (If you regenerate the wall without using this command, you will lose the foundation.)

### 8.5.7. Substitute material

With the *Modify - Substitute material* command you change the selected texture of each object of the drawing to the one you specify. This concerns all architectural objects of a drawing and involves all floors.

When you activate the command the **Material** dialog box appears.

- Select the material category you wish to replace. Click **Select**.
- In the dialog box then displayed select the new material. Click **Select**.

#### **Substitute materials using the Design center**

By using the Design center you can modify the material of selected objects in an instant without activating the *Properties* dialog box and browsing in the Select by object dialog box.

Using the Design center you can modify the material of objects on the floor plan and in the 3D view in different ways.

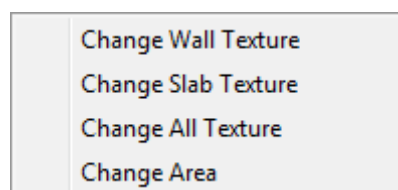
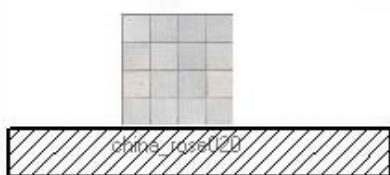
#### **Modifying materials on the floor plan**



You can use this command for all architectural objects except doors and windows.

You find the materials applied in the program arranged in classes and categories in the *Materials* directory of the Design center.

- Open the desired category, e.g. *Program Materials class - Colours*. The program displays all materials within that category.
- Click the name/picture of the texture with the left mouse button.
- While holding the mouse button, drag the texture on the object you wish to modify.
- Once the texture is on the object, release the mouse button.



- In the menu then displayed choose the option you wish.

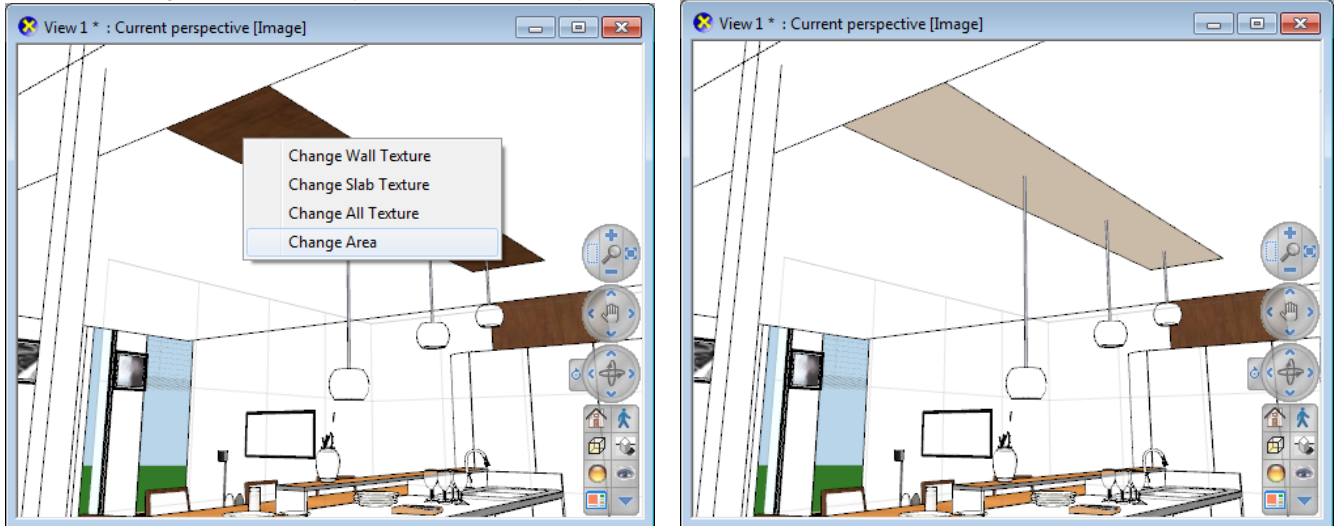


## Modifying materials in 3D

The command changes the texture selected with a plane of the model to the material you choose in the Design center.

- Select the desired material in the appropriate material category, and then click its name/picture with the left mouse button.
- While holding the mouse button grab the texture over the plane to which you assigned the texture you wish to modify.
- Click the requested plane. The program then selects the plane.

The program automatically opens a menu and you can choose an option.



### 8.5.8. Explode by selection

You can explode compound objects (such as text, dimension, hatch, groups and architectural objects) into their components.

#### Explode what object

Text  
Dimension  
Hatch  
Group  
Architectural objects

#### into what objects

Line, elliptical arc, spline, hatch  
Line, text  
Line  
Objects it contains  
Graphical components or subgroups

You can explode objects in the following way:

- 
- Select the compound objects you wish to explode.
- Choose the Modify menu - Explode by selection command.
- Select the next object, or
- **Enter**      Completes the command.

#### Option:

<b>Text</b>	Explodes the selected multiline texts into multiple single-line texts.
-------------	--

### 8.5.9. Explode

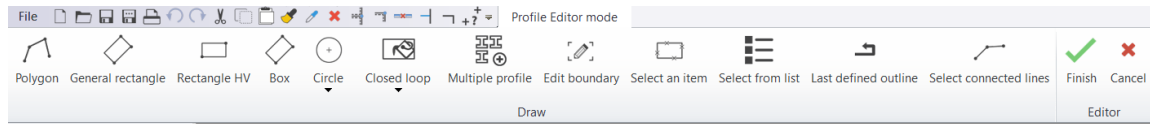
- In the displayed dialog box click on a class to explode all objects in the selected class.
  - Click **OK**.
  -
- The program explodes the selected objects.

## 8.6. Specifying profile

When applying more commands to create or modify objects it is necessary to edit profile.

For example, profiles are used when specifying the contour to be cut into the wall or slab, when defining the slab, roof with a contour or when creating a terrain

When a command is waiting for the specifying a profile, the **Profile Editor Mode** panel appears the commands of which can be used for specifying the profile. To close the *Profile definitions* tool, click on Enter or Cancel icon.



### 8.6.1. Polygon

Creates a polygon that can be used as a profile.

- Specify the polygon as a chain of lines and arcs.  
**Enter** Closes the polygon.

#### Options:

<b>Arc</b>	The next object of the polyline is an arc.
<b>Select an object</b>	The next object of the polyline is an existing object.
<b>Smooth</b>	The next object of the polyline is tangential to the previous object.

### 8.6.2. Rectangle HV

Creates a rectangle that can be used as a profile. The sides of the rectangle are horizontal and vertical.

- Specify the first corner of the rectangle.  
Specify the opposite corner of the rectangle.

### 8.6.3. Rectangle

Creates a rectangle that can be used as a profile.

- Specify the first corner of the rectangle.
- Specify another point of the rectangle's base line, or
- Specify the corner opposite to the first corner of the rectangle.

#### Options:

<b>Width...</b>	Creates the rectangle with a specified width.
<b>Define rectangle X/y size...</b>	Creates the rectangle with a specified width and height



See the description of the *Polyline drawing commands* -  *General rectangle* in Chapter 11.3.2.4.

### 8.6.4. Circle

Creates a circle that can be used as a profile.

- Specify the centre point of the circle, or use the **Devise 3 points**, **Axis** keywords.

### 8.6.5. Circle 3P

This command creates a circle from 3 points.

- Enter the first and second point of the circumference of the circle.
- These two points define the arc and can determine the third one.

### 8.6.6. Point of profile

This command makes a profile from the closed polyline created in the active window. Just click inside the polyline and the program will search for the closed chain.

- Specify an internal point of the profile.

### 8.6.7. Chain one by one

This command creates a profile from a closed polyline by selecting its segments one by one.

- Select the sides of the profile one by one.  
**Enter** Ends the selection.

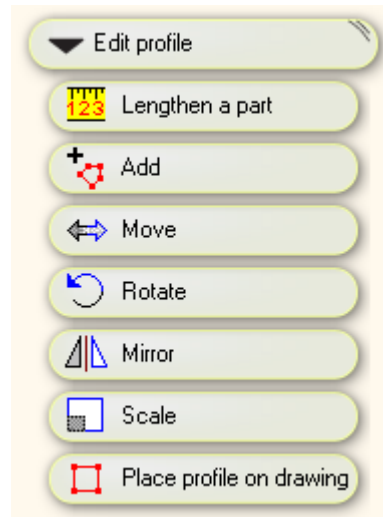
### 8.6.8. Select item

It applies the contour of the closed object or the hatching in the drawing

### 8.6.9. Editable profile

When modifying architectural objects, you may need to edit the geometry of a formerly created profile.

- ❖ When you use a profile editing command, in the Toolbar the *Edit profile* tool pops up whose commands can be applied for editing the profile. Use the first, Enter icon to close the *Edit profile* tool.



#### **Lengthen a part**

The program recognizes the direction of the selected section of the contour line. By entering the value of modification (relative length) you increase or decrease the length of the selected section by that value.

#### **Add**

Inserts a new node between the nodes closest to where you click in the contour.


- Select the section of the profile where you wish to insert the new node.
- Define the place of the new node in the drawing.
- You can repeat the command, or  
**Enter**            Completes the insert node command.

#### **Move**

Moves the selected profile.

- Select the profile you wish to move.
- Define the new place of the profile.
- You can repeat the command by selecting a new profile, or  
**Enter**            Completes the move command.

#### **Rotate**

With the  **Rotate** icon you can rotate the selected objects.



For a detailed description of the *Rotate* command see Chapter 8.1.9. *Rotate*.

#### **Mirror**

Places or copies objects by applying mirror transformation.



For a detailed description of the *Mirror* command see Chapter 8.1.11. *Mirror*.

#### **Scale**

Enlarges or multiplies the objects.



For a detailed description of the *Scale* command see Chapter 8.1.12. *Scale*.

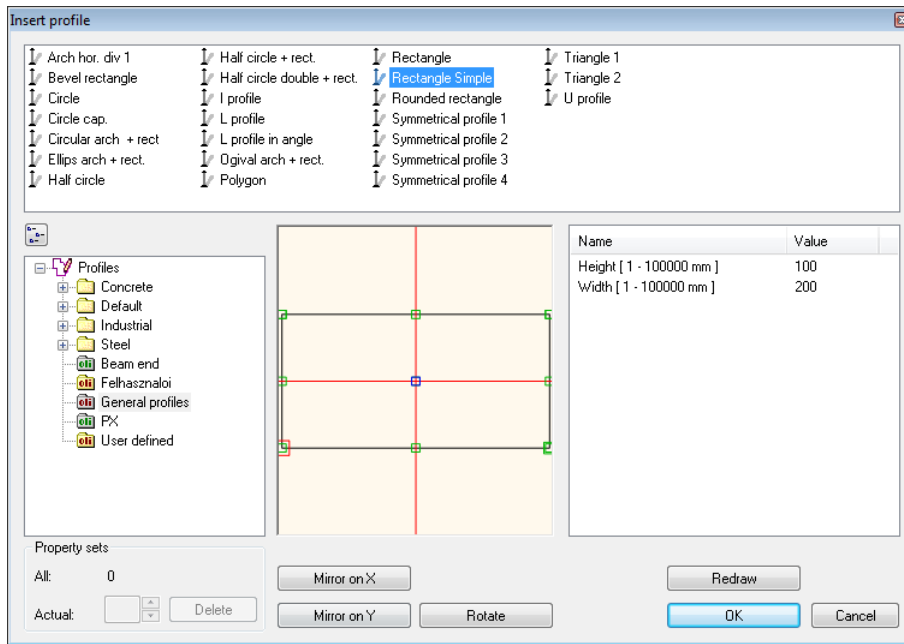
#### **Insert profile in drawing**

The requested or modified profile can be placed on the drawing with this command.

### 8.6.10. Select from list

Profiles are grouped into different categories of the profile directory.

With this command you can choose a predefined profile from the appropriate category of the profile directory.



- Choose the desired profile category and type from the list; the shape of the selected profile and the list of its geometrical characteristics appear. You can modify the values; after modification press **Redraw** to update the drawing area of the dialog box.
- To place, activate the desired reference point.  
The eligible reference points are shown by small squares in the drawing area that can be activated by clicking. The active reference point is red while the others are green.
- Use the **Mirror** and **Rotate** buttons for the optimal setting of the profile.  
**OK** Closes the dialog box.

The profile directory can be extended with closed and open profiles. To do so, use the *Building menu – Accessories – Define closed profile* or *Define open profile* instructions.



For the description see Chapter 9.11.5 on *Creating profiles*.

### 8.6.11. Last value

The selected profile is the last defined profile (if any).

## 8.7. Design Phases

Using design phases you can separate the building construction into multi-phase design. Building renovation projects, or the project complexity often requires to separate in multiple phases.

Location of the command: Ribbon > Edit > Phases

### About design phasing

The design phase can be Existing and New.  
When creating a new element, it will be associated to the current phase (Existing or New).  
Demolition is NOT a phase you cannot create an element with demolished phase.  
Any elements can be set for demolition with modification command.

The design phases can be tracked in full documentation, so 3D views, sections, elevations, and consignment lists follow the status of the current phase.

1. New Elements are created in the New Construction phase.
2. Existing elements are created in the Existing Phase
3. Demolished: The element created in the previous phase disappears in the given phase.

Any elements can be set for any other design phase with modification command. Select an element and set the

### 8.7.1. Phase filters

Phase filter means rules applying to display of elements based on their phase status: new, existing or demolished. ARCHLine.XP comes with 5 phase filters:

- a. All phases
- b. Existing plan
- c. Demolition plan
- d. Existing plan after demolition
- e. New construction plan

### **Existing plan**

Displays existing elements and demolished elements with graphic overrides.

If the element to be demolished is located in a host element the program creates the 3D view without difference on existing or demolished elements (e.g. wall - window, roof - window, slab - hole).

### **Demolition plan:**

Displays existing elements and demolished elements with graphic overrides.

If the element to be demolished is located in a host element in the 3D view, the program automatically places an infill element in the host element to patch the hole created by the demolished element (e.g. wall - window, roof - window, slab - hole).

Infill element cannot be edited.

### **Existing plan after demolition**

Displays existing elements, after demolition.

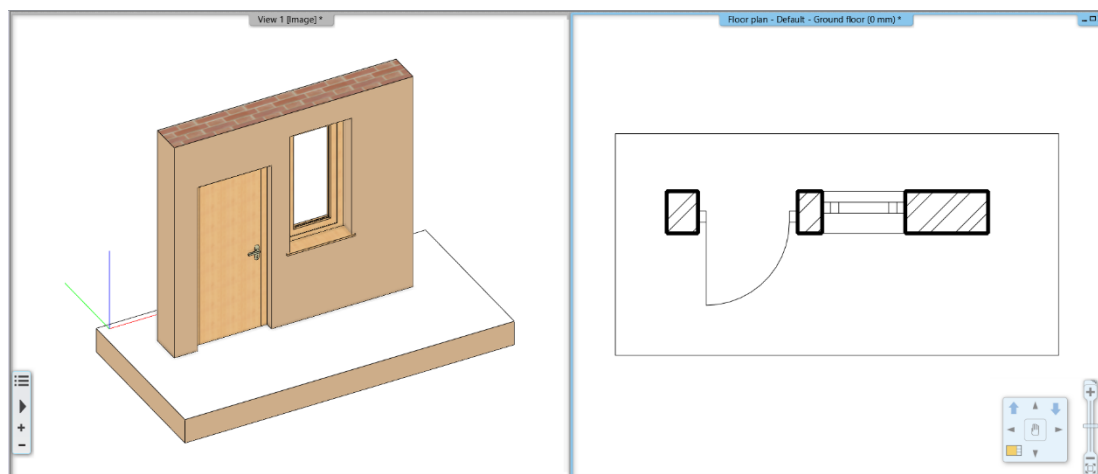
If the element that has already been demolished in a host element, in the 3D view the program displays the hole created by the demolished element. (e.g. wall - window, roof - window, slab - hole).  
Hole element cannot be edited.

### **New construction plan**

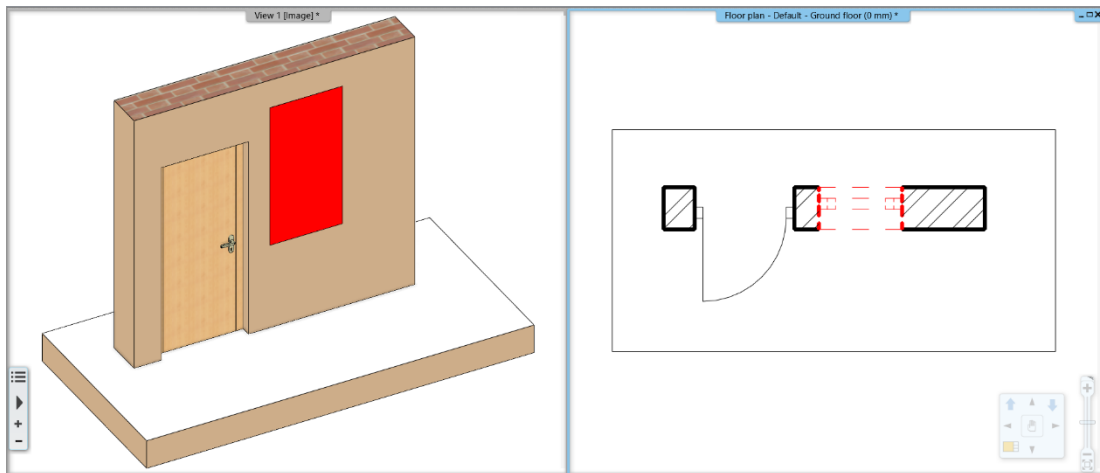
Displays the completed project, after demolition.

The representation of the demolished elements completely disappears in both the 2D and 3D views.  
Infill element is no longer generated.

The following images display a floor plan with existing wall, demolished window and new window in different phases:

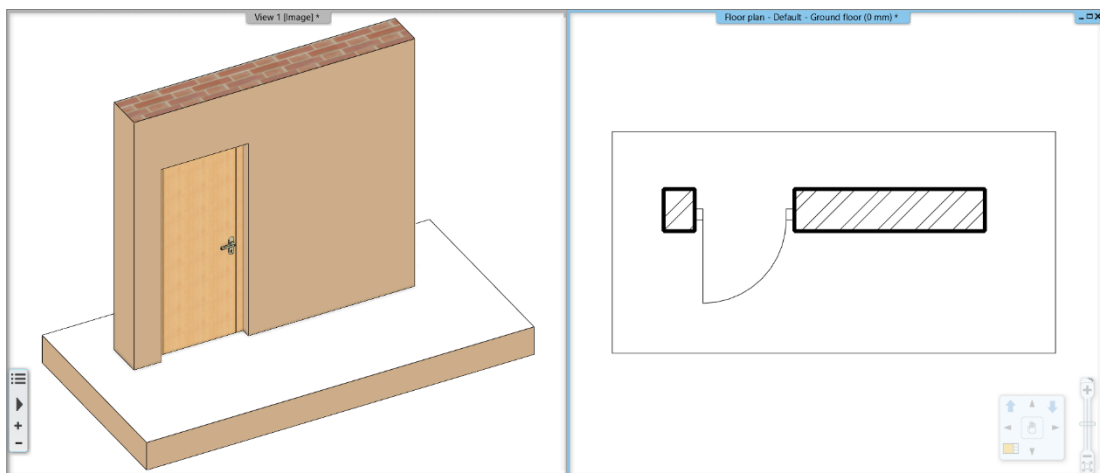


Phase filter: Existing plan



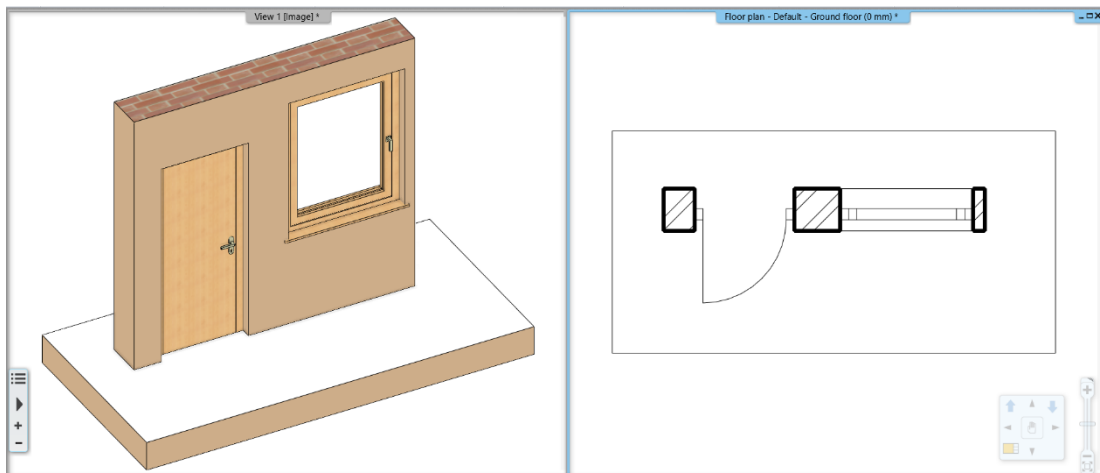
Phase filter: Demolition plan.

ARCHLine.XP in 2D marks with red and in 3D automatically refills the void in red left by the demolished window.

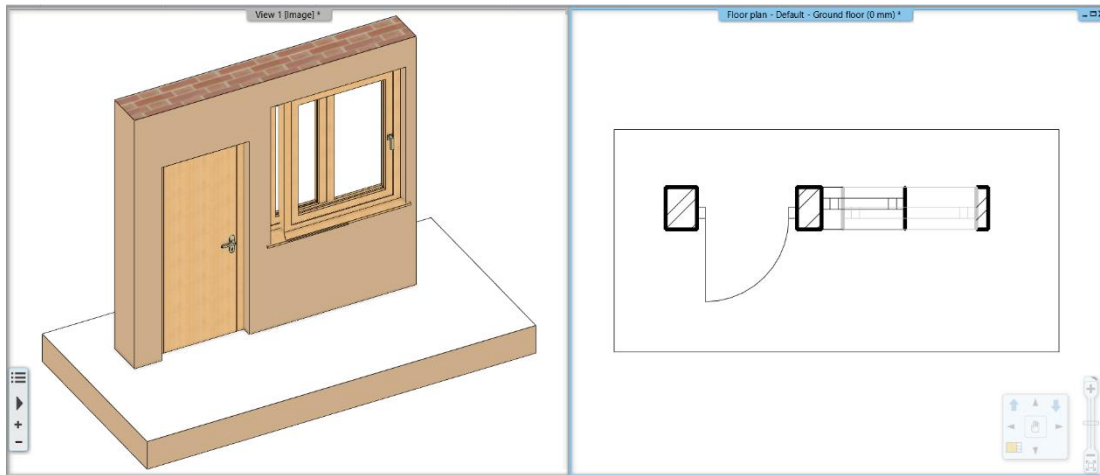


Phase filter: Existing plan after demolition

ARCHLine.XP in 3D will automatically refill the void left by the demolished window within the wall.

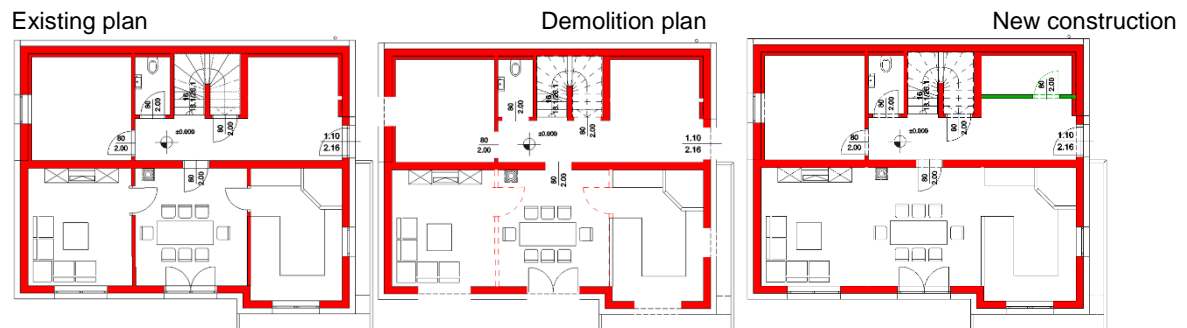


Phase filter: New construction plan



Phase filter: All  
ARCHLine.XP displays all elements with different colors.

The following image displays a real floor plan in different phases of a project:



## 8.8. Graphic overrides

Graphic Overrides provide different visual representation of elements in the view.

You can specify graphic override of color, line types, line weight, half-tone display, and hatch pattern. When the Halftone option is enabled the halftone of the element colour will be used for representation. Hatch pattern can be also overridden in case the element has hatch pattern representation

Location of the command: Ribbon > Edit > Phases > Graphic Override  
The View Control Bar displays the Graphic Override button as too.

ARCHLine.XP offers a number of ways to override the display of an element.  
The following list contains the visibility hierarchy.  
From highest (1) to lowest (5) the hierarchy as follows:

- ❖ 1 Drawing Settings Filters (Example: Line weights scale on screen, display proportional line weights)
- ❖ 2 Override Graphics in View > By Element (Example: Wall fill pattern)
- ❖ 3 Teamwork workspace graphic override
- ❖ 4 Design Phases graphic overrides
- ❖ 5 Original graphic attributes of element types

For each phase filter, you can specify how you want to display the elements for each phase status (New, Existing, Demolished).  
For phases that use the original graphic properties choose No override and for the graphic override settings, select Overridden.

Graphic override

Phase Filters	New	Existing	Demolished
All	Overridden	▼ No override	▼ No override
Existing plan	Overridden	▼ No override	▼ No override
Demolition plan	Overridden	▼ No override	▼ Overridden
Existing plan after Demolition	Overridden	▼ No override	▼ Overridden
New Construction plan	No override	▼ No override	▼ Overridden

Reset    Update each row with current one    Update each row with current one    Update each row with current one

Graphic overrides specify the display for new, demolished, and existing elements in all views that use the phase filters. You can define how you want to display the elements' phase status (New, Existing, Demolished) for each phase filters. Select Overridden to change the display of elements or **By category** to retain the original graphic properties.

OK    Cancel

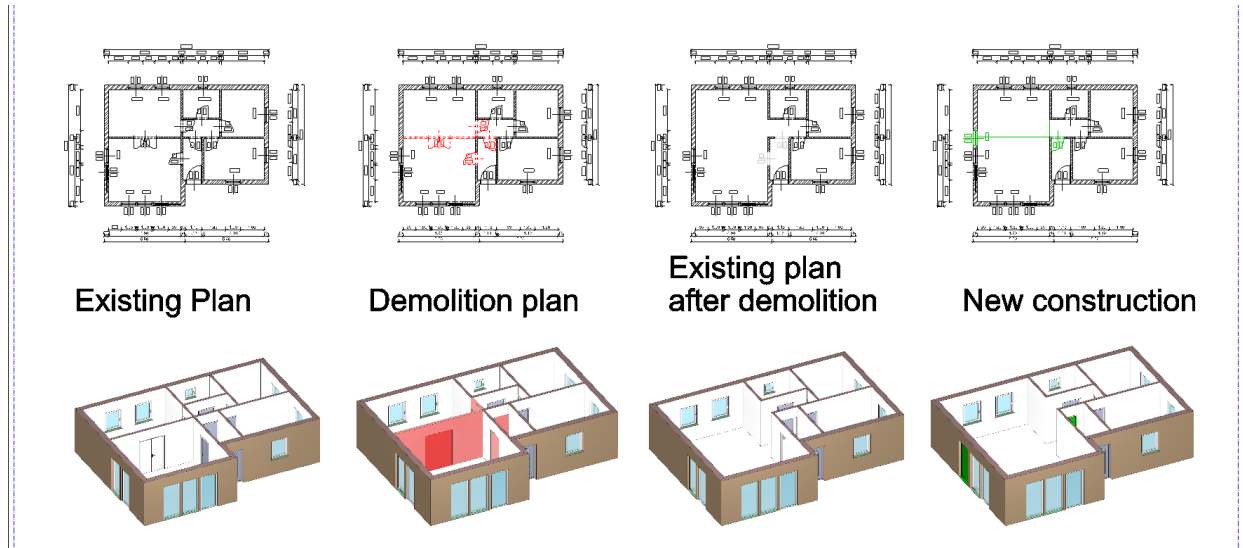


ARCHLine.XP preserves graphic overrides, and applies this feature to all views linked to the project.

On the image below the print layout contains the views of the same floorplan with different design phases and graphic overrides.

You can update any changes with design phases and graphic overrides made to the floorplan with Refresh command. Refresh command reloads the linked floorplan and applies graphic overrides.

The following image displays a real floor plan with different phase filters:



## 9. Site design

### Introduction

Site design in ARCHLine.XP helps you to design the overall environment around your architectural project. You can model the terrain model together with its components as plateau (building pads), streets, sidewalks, parking lots and mass studies.

### 9.1. Google Maps integration

When you create a project, specify the project location on the globe using the nearest major city or the latitude and longitude. This project-wide setting is useful for generating location-specific shadows for views that use them, such as solar studies, walkthroughs, and rendered images.

You can locate your project exactly on the planet using Latitude and Longitude or GPS coordinates. The project location is represented by a place mark on the Google Maps. The GPS coordinates are automatically saved into the ARCHLine.XP project and viewable each time you start Google Maps.



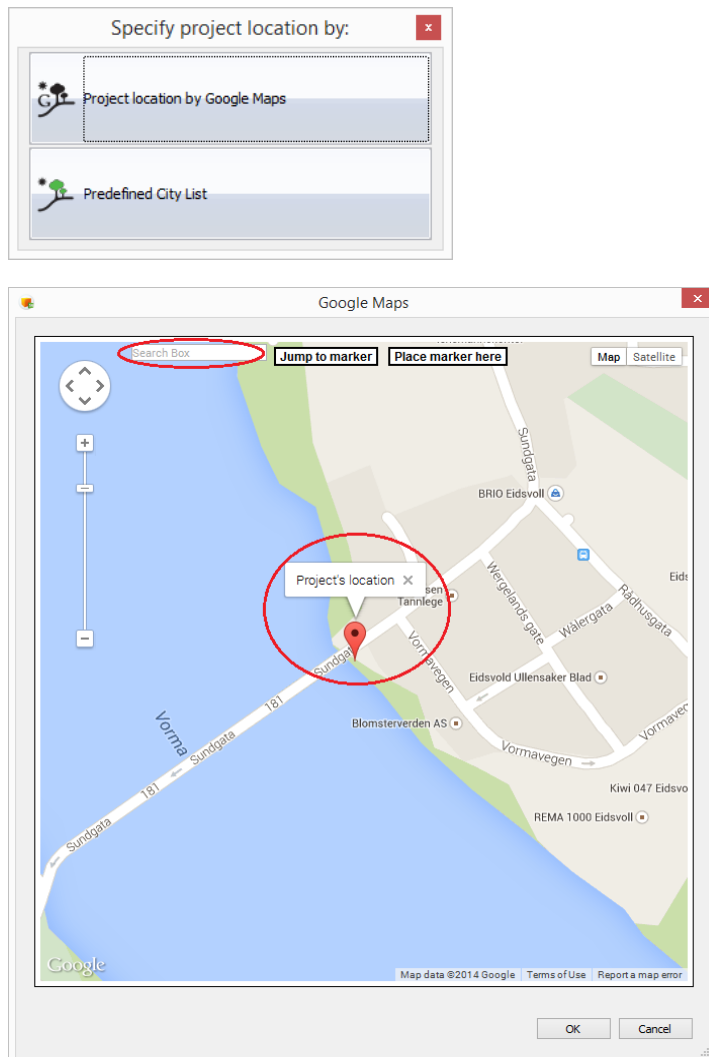
*This command requires internet connection.*

#### 9.1.1. Project location by Google Maps

The Project Location dialog is available from:

1. Building > Google Maps Integration > Project Location
2. File > Project Information dialog > Project Location

You can then quickly go to the marked location at any time by clicking on the Project location by Google Maps button.



To change the location chose one of the next steps:

1. Click Search box and type your address.
2. Click Project's Location to update your location.

### 9.1.2. Project Location by Predefined City List

Alternatively you can choose a predefined city to enter Project Location. Select your city from the Location list in the Location and Sun Settings dialog box. Choosing a city will automatically fill out the Latitude, Longitude fields.



You can add new cities to the cities list with Add button.

*It is recommended to use the Project location by Google Maps because it provides maximum accuracy, instead of choosing from predefined city list.*

### 9.1.3. Exporting your data into Google Earth

Use the Data Export feature to import your custom geographic data into Google Earth and view it as you would any of the layers in the Layers panel. When you use this import feature, you can import two basic kinds of data:

- **Vector Data**  
Vector data consists of 3D model that you define in ARCHLine.XP. Once you import vector data into the Google Earth application, you can change its appearance or content in the same way you would when editing place marks and folders. In addition, you can use Style Templates to format your data in visually meaningful ways.
- **Imagery Data**  
You can import imagery data such the 2D view overlay and have the imagery properly projected over the base imagery in the 3D viewer. For this to work, the imagery file itself must be exported from ARCHLine.XP in the proper KMZ file. Imagery of this type is referred to as 'GIS imagery'.

[https://support.google.com/earth/answer/148102?hl=en&ref\\_topic=2376768](https://support.google.com/earth/answer/148102?hl=en&ref_topic=2376768)

#### **Save the imagery overlay as a KMZ file**

You can save the 2D view overlay as a KMZ file to your computer's hard drive or other accessible file location. After that, you can open this KMZ file in Google Earth.

#### **Opening Imagery in Google Earth**

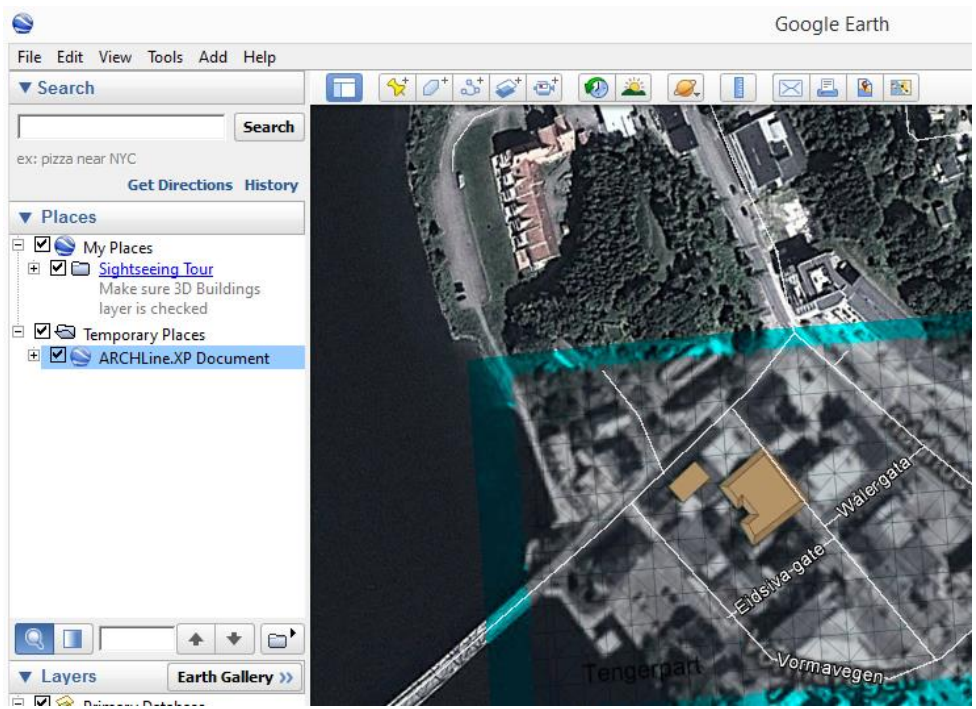
Use any one of the methods below to open the imagery file in Google Earth:

- Select Open from the 'File' menu.
- Drag the desired file from an explorer window and drop it over the viewer.

Google Earth then attempts to project the image to a WGS84 coordinate system. From this, it creates an overlay with the image converted to PNG format.

#### **Move the imported imagery to remain in your 'My Places' folder**

If you move the imagery overlay from Temporary Places to the 'My Places' folder, any changes you make to it are automatically saved and viewable each time you start Google Earth.



## 9.2. Terrain

### Introduction

You can define the terrain in several ways: with points, terrain contours, or by loading data from files. You have to regenerate the 3D model of the terrain upon each creation and modification.

You may add plateaus, roads and zones, or install building models and the constructed building on the terrain model. ARCHLine.XP automatically calculates the amount of earthworks needed.



You have to define the terrain elevation values in **meter** all cases, independent that, which model unit is given.

### 9.2.1. Terrain properties

Before you create a terrain, specify its properties.



You can access these properties by right-clicking the Terrain tool - **Properties** icon, or by selecting the **Building - Properties - Terrain** command.

Any changes you make to terrain properties in the appearing dialog box will be valid for all terrains created afterwards.

### Visualization properties

As all other objects in ARCHLine.XP terrain has colour, layer, line type, and line width and priority properties.



See:

- ❖ the description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.

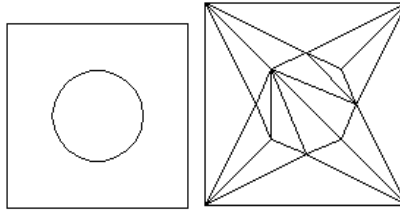
Property	Value
<b>General</b>	
Layer	###Terrain...
Colour	[Black swatch]
Line type	Simple Line
Line weights	0 mm
Draw Order	8 - Bottom-most
BIM parameters	Edit
BIM name	* VARIES *
GUID	33uyP5OdTDHVF...
<b>General properties</b>	
Arc resolution	5
Horizontal surface elevation	0 mm
Terrain surface material	Grass007
Body material	Default material
Road material	Terrain
Plateau material	Soil
<b>Elevation information</b>	
<input checked="" type="checkbox"/> Show heights	

### Terrain general properties

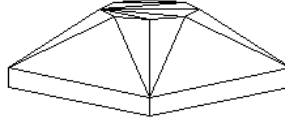
- ❖ **Arc resolution** – This value specifies the resolution at which the program displays arcs and splines that constitute the contours of the terrain when creating the 3D model.
- ❖ **Base height** – Specifies the base height of the terrain.
- ❖ **Terrain material** – Specifies the material of the terrain.
- ❖ **Road material** – Specifies the material of the road on the terrain.
- ❖ **Plateau material** – Specifies the material of the plateau on the terrain. Also, if you create a new zone, this will be the default material if other material is not selected.

**Example:**

The following schematic example shows how this function operates: Suppose the 2D drawing of the following terrain is available. The side length of the rectangle is 10 m, its terrain height is 0 m, the diameter of the circle is 5 m, its terrain height is 3 m:



Now, if you set *Arc resolution* = 8, you get the following top view and axonometric view of the 3D model:



You can see that the program divided the entire arc into 8 segments in the 3D model.

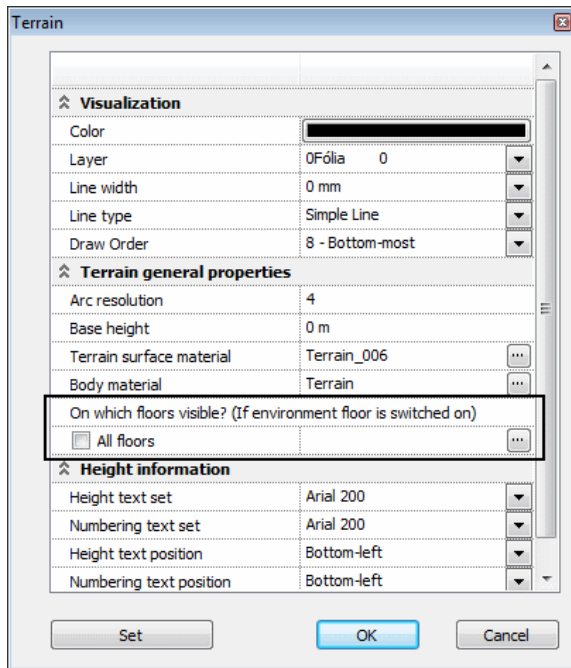
**Height information**

- ❖ **Height text set** – Specifies the text set used to display the elevation values of terrain points.
- ❖ **Numbers text set** – Specifies the text set used to display the numbering of terrain points.
- ❖ **Height text position** – Specifies the position of the displayed elevation value relative to the terrain point.
- ❖ **Numbers text position** – Specifies the position of the displayed numbering of the terrain point relative to the terrain point.

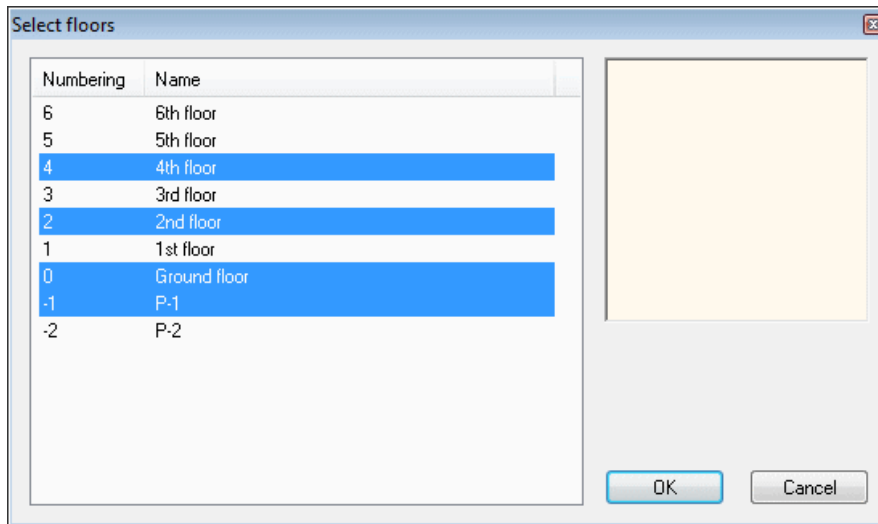
Different settings can be stored in sets.

**9.2.2. Visibility on different floors**

It is possible to define the visibility of terrain on the floor plan for each floor. This setting is available in the **Terrain** dialog by clicking **Modify...** in the shortcut menu.

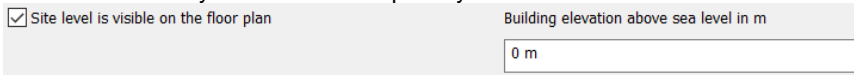


By switching the **All floors** checkbox on, terrain will be represented on each floor. By switching this checkbox off, you can use the ellipsis button to specify the visibility of terrain on each floor in the appearing dialog.



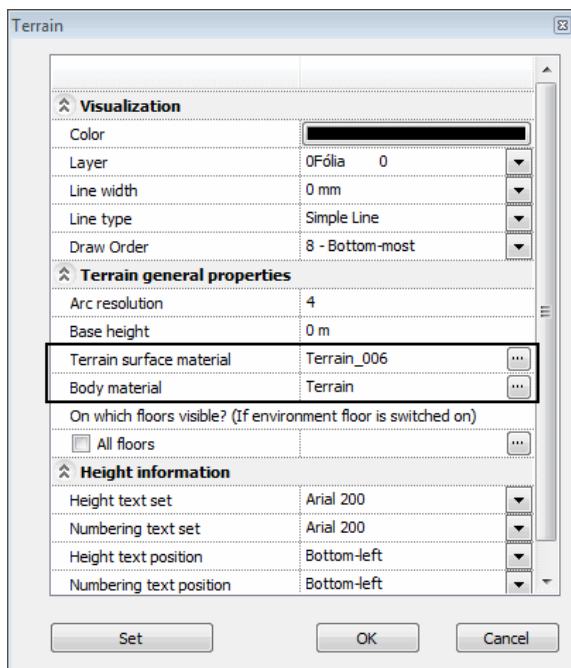
- ❖ Use CTRL/SHIFT keys and mouse click for floor selecting/deselecting.

When you open a file for print layout and click **Floor**, the status of **Terrain will be visible in the floor plan** checkbox defines the visibility of terrain on the plot layout.



### Terrain materials

In the Terrain properties dialog it is possible to define two materials for the terrain, one for the terrain surface and another one for the terrain body.

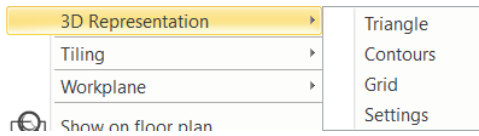


### 9.2.3. 3D representation

The terrain properties include its 3D representation.

You can define the way the program represents the terrain in 3D. These settings apply to all terrains. The options are the following:

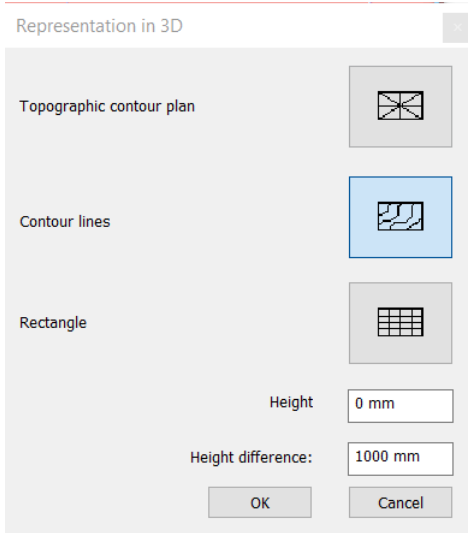
- ❖ Triangle,
- ❖ Contours,
- ❖ Grid.



The commands can be accessed from Toolbox menu and Terrain shortcut menu

### Settings

You can specify the 3D representation of the model, and enter values in the appearing dialog box.



Topographic contour plan	This representation cuts up the terrain into triangles. The model is created this way.
Contour lines	The terrain is represented by contours. <b>Height:</b> Define the starting height of the terrain contours. <b>Height difference:</b> Define the height difference between the contours.
Rectangle	The terrain is represented by a grid, i.e. it is divided by horizontal and vertical lines. <b>Delta X / Y:</b> Define the distance between the lines.

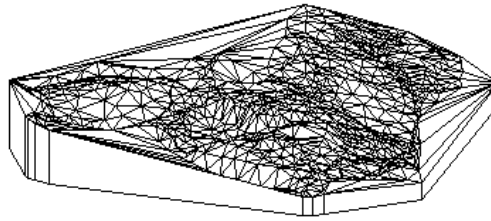
The 3D model of the terrain acquires the selected representation when, you build again the 3D model.

On the other hand, when you choose the following commands the program automatically applies the selected representation to the 3D model. Use the parameters specified in the Settings dialog box.



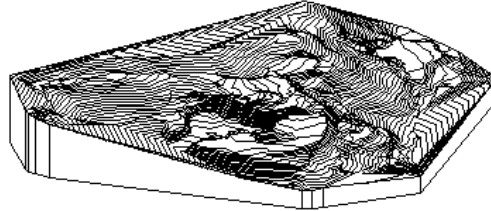
### Triangle

The program automatically displays the 3D model of the terrain by triangles.



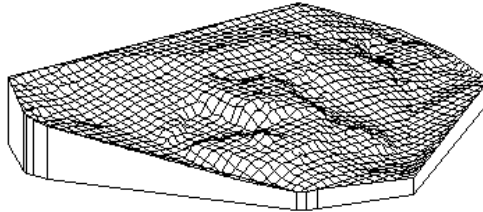
### Contours

The program displays the terrain by contours in the 3D model.



### Grid

The program displays the terrain by a grid in the 3D model.



## 9.2.4. Opening and creating terrains

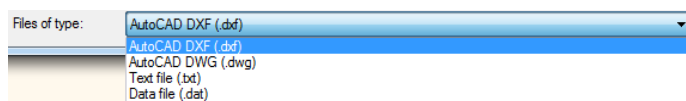
With the following commands, you can create a terrain by different methods:

- ❖ by loading data from files (TXT, CSV, DAT, DXF, DWG)
- ❖ with points
- ❖ with contours

## 9.2.5. Terrain from file

For the creation of terrains it is possible to load terrain data from DXF/DWG files or files including terrain point's data. These terrain points' data are mostly come from txt and xls files, or databases. Terrain point's data from geodetic survey are often stored in files with dat extension. In case of terrain points data, being in any file format, terrain points are defined by their X, Y and Z coordinates. Besides, input files can include the numbering of terrain points and notes, too. ARCHLine.XP gives the possibility to load these files in.

- Click **Terrain > Terrain from file** command to start the *Terrain Import* dialog.
- Click *Next* on the welcome page.
- First you have to choose a file including terrain data. Define the file format you wish to open, and then choose the terrain file to load in.

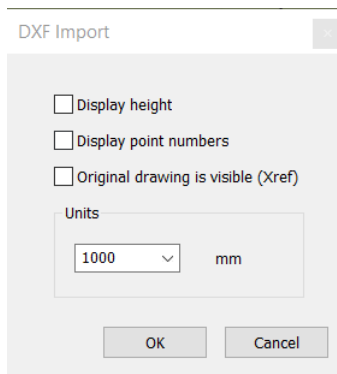


Depending on the terrain file format you import, the loading process can be different.

### 9.2.5.1. Loading terrain from DXF, DWG file


In case of opening a dxf or dwg file the program quits from the Terrain Import Wizard dialog and starts to load the terrain.

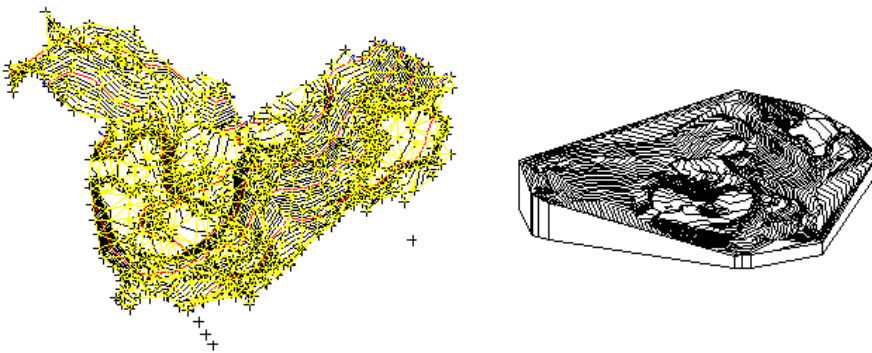
- Optionally you can display the elevation values and the numbering of terrain points.



- Specify the required DXF/DWG import options. The terrain will be loaded.



To create the 3D model of the loaded terrain, choose the  Build 3D model icon from the Status line.



### 9.2.5.2. Loading terrain from points data

Terrain point's data can be loaded from Text files (\*.txt or \*.dat),

Points data in any file format should include the surveyed points defined by their X, Y and Z coordinates.

TXT file format includes semicolon separated columns for the X, Y and Z coordinates of the terrain points and another column for the numbering of terrain points.

```
No;X;Y;Z;
1;98;20;20.1;
2;64.5;49.5;8.2;
3;45.7;50;5.1;
```

DAT file format includes comma separated columns for the X, Y and Z coordinates of the terrain points and another column for the numbering of terrain points.

```
1,98,20,20.1,
2,64.5,49.5,8.2,
3,45.7,50,5.1,
```

#### Load a terrain file

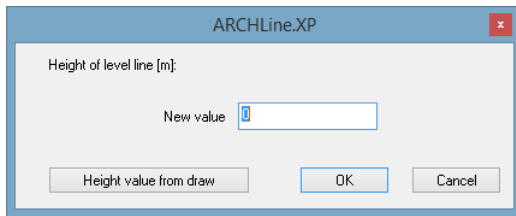
- Choose one file that includes the terrain data. The program tries to recognize the data source type and displays it under the file selection:

### 9.2.5.3. Create terrain by points or contours

With this command you can build up a new terrain with points or contours, or you can add new contours to existing terrains.

#### Creating a new terrain by points

- Use the **POPMENU** keyword and select the *Point* command in the *Profile definition* menu.
- Locate the point in the drawing and define its height.
- You can query the height from the design. Click on the *Height value from draw* button and click on the existing object.



- Locate the other points in the drawing and define their height.  
**Enter**            Ends definition of points.  
**Enter**            Ends the construction of the terrain.



If you designated the terrain points in a raster grid, we suggest that before starting the command you should define grid spacing and turn on grid snap. When creating the terrain, you can quickly assign height by selecting the points in the grid one by one.

### Creating a new terrain by contours

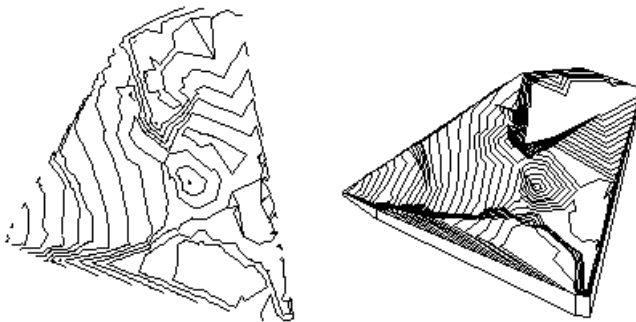
Terrain height remains the same along a contour. You can use this method in the case of a contour map or a key plan.

- Use the **POPMENU** keyword and choose from the *Profile definition* menu (any but the point command).



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Draw a contour and define its height.
- You can query the height from the design too, if you click on the existing object.
- Specify all contours and define their height.
- **Enter**        Ends definition of contours.
- **Enter**        Ends the construction of the terrain.




You can combine the two methods.

### Example:

If you have a contour map on paper, to create the terrain model the quickest possible way, use the following method:

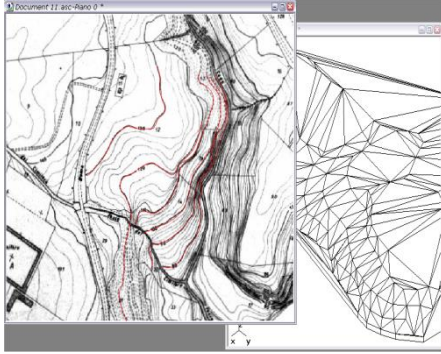
- Scan the map and save it as an image file.
- Load the image file by using the *Drafting menu - Raster image* command.
- You can calibrate the overlay so that it is fit to scale: *Adds-on menu - Raster image Calibration - Calibrate raster - new*.
- Use the *Adds-on menu - Raster image Calibration - Raster to vector* command.
- Turn off the overlay.

Now you have the vector image of the contour map.

- Click  *Create by point*
- Choose the *By chain* command (*Open* or *Closed*) in the *Profile definition* menu.
- Click on the contours one after another while defining their height.

The program recognizes open or closed chains, assigns their height and creates the terrain model.

### Adding a new point or contour to the terrain



- Select the *Add Points* command and select the terrain to which you wish to add a new contour.
- Specify the new point/contour by using the **POPMENU** keyword in the command line.
- Define the height of the point/contour.
- Insert additional point/contours, or
- **Enter** Ends the command.

#### 9.2.5.4. Terrain import from Google Earth

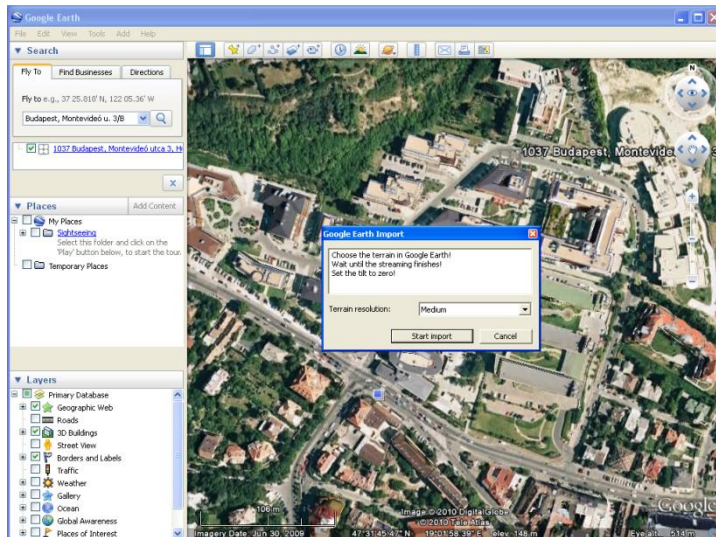
With ARCHLine.XP it is possible to import terrain from Google Earth.



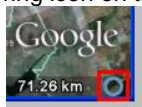
For using of this function you need to have Google Earth 4 or newer version installed on your computer. It can be downloaded and installed for free from <http://earth.google.com/>. Also, for Google Earth you need a live internet connection.

Terrain import from Google Earth in ARCHLine.XP works as follows:

- Click *Building menu – Terrain – Import from Google Earth* command. ARCHLine.XP starts Google Earth application. Before importing a small dialog appears with some instructions. Click Yes button to start the import or click No to cancel it.

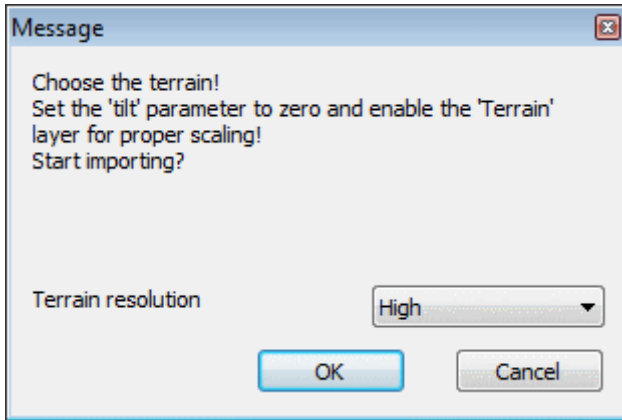


- Navigate to the desired position in Google Earth. Use mouse scroll for zooming, left mouse button for panning the map or use the search field to look for an exact address. You can find further information about using Google Earth in the help or on <http://earth.google.com/intl/hu/userguide/v5/> web page.
- Wait until the completion of downloading the whole terrain part. (Downloading of a terrain part is completed when the small ring icon on the bottom-right corner of Google Earth window doesn't spin.)

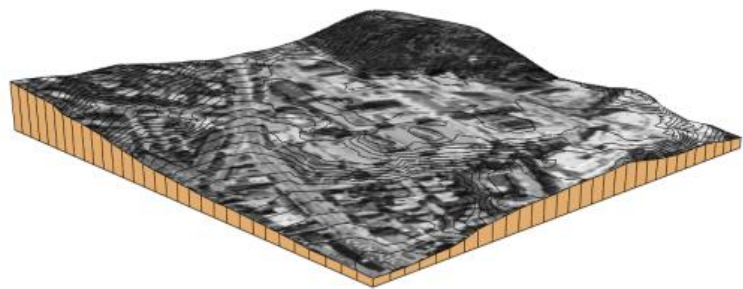


- Only maps in top view can be processed correctly in ARCHLine.XP. In case of tilted map view please use the SHIFT+UP arrow key combination to achieve the correct view.

- Before importing, set the desired terrain resolution in the appearing message box (low: 24x24, medium: 32x32, high: 64x64 terrain points) and then click **OK** for starting the import. Please wait until ARCHLine.XP® has finished downloading the map and creating of terrain.



Downloaded map on the floorplan

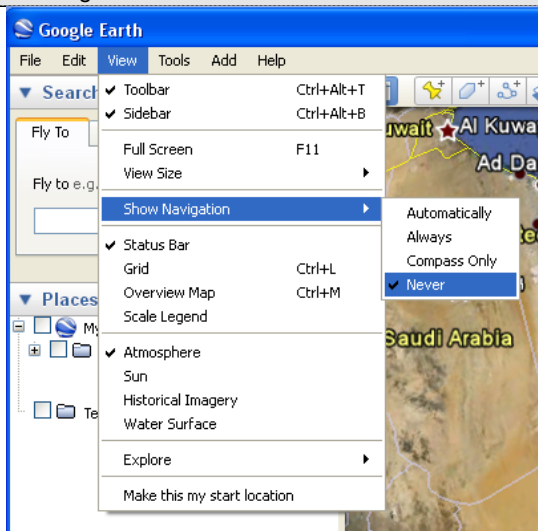


in 3D

The downloaded terrain appears on the floor plan and in 3D and then it works like other terrains.



ARCHLine.XP places exactly the same image what you see in Google Earth on the surface of the terrain. If you find disturbing navigation buttons or texts on the surface of the terrain, you can eliminate those by switches in the View menu of Google Earth.



### 9.2.6. Creating and modifying plateaus and roads

You can map plateaus (building sites) and roads on the finished terrain.

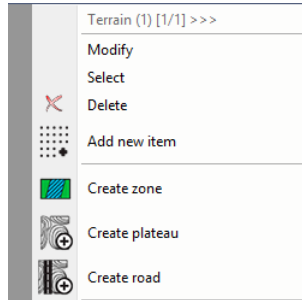
You can obtain information on the earthworks necessary for their creation in the *Add-On menu – Quantity Take-Off-Building calculation* dialog box.

In the following example we have created a plateau (building site) and a road in the terrain. The list shows the volume to be backfilled and excavated for the building site. We can define the width of the working room and the plateau inclination angle as well.

The Cut volume value is the volume removed (where the new surface is lower than the original surface).  
 The Fill volume value is the volume added (where the new surface is higher than the original surface).  
 The Width of the working room value is the distance later restored when the building is ready.

	A	B	C	D	E	F	G	H
1	<b>Plateau</b>							
2	Plateau	ID	Fill volume m3	Cut volume m3	Height	Plateau material	Width of working room m	Area inclination angle
3	Terrain	1						
4		1	10296 0.00	-567441.34	1.00	Soil	0.00	0

The plateau is a horizontal plane, but you can modify its inclination.  
 The commands can be accessed from the Terrain tool and Terrain shortcut menu:



### 9.2.6.1. Create and delete plateau

You can create a plateau or delete the selected plateau. The program cuts the required parts of the terrain, or completes and fills in the missing areas according to plateau height.

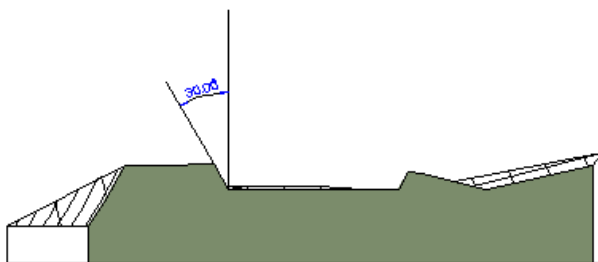
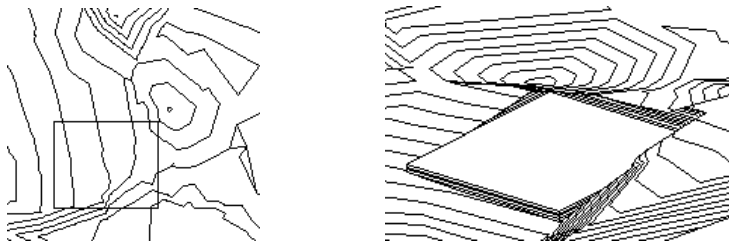
#### Creating a plateau

- Select the terrain.
- Specify the contour of the plateau by using the *Profile definition* tool in Toolbox.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Define the height of the plateau.
- Specify the angle of the slope (relative to vertical).



#### Deleting a plateau

- Select the terrain.
- Select the contour of the plateau you want to delete.

The program restores the original terrain by deleting the selected plateau.

#### Modifying plateau height

You can modify plateau height with the  *Modify terrain heights* command.

### 9.2.6.2. Modify plateau inclination

#### **Modify slope on all side**

The command modifies the angle of the slope (relative to vertical).

- Select the slope the angle of which you want to modify by clicking its contour line.
- Enter the new value of inclination in the dialog box. **Ok**.

#### **Modify slope on this side**

The command modifies the angle of the slope (relative to vertical) one by one.

- Select the slope the angle of which you want to modify by clicking its contour line.
- Enter the new value of inclination in the dialog box. **Ok**.

#### **Sloped plateau for existing plane plateau**

The plateau by default is plane, but you can modify its inclination using the Shortcut menu commands:

#### **Slant base by 3 points**

Give three points of the terrain and define its height.

#### **Slant base by reference lines.**

Define the reference line of the plateau and the inclination angle.

### 9.2.6.3. Modify plateau contour

Using this command you can modify the contour of the horizontal plateau.

- Select the plateau you wish to modify.
- Modify the contour of the plateau with the commands of the *Edit Profile tool* displayed in the Toolbox (e.g. move nodes, round off).
- **Enter** Ends the command.

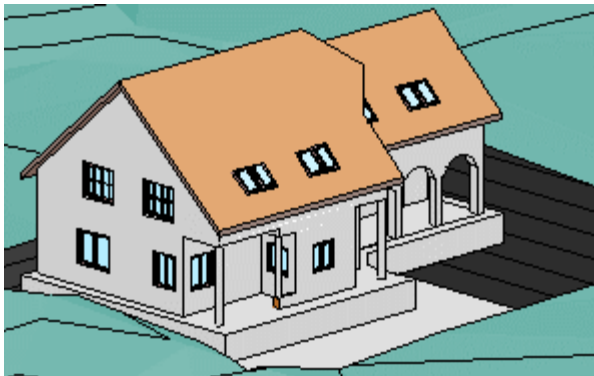


See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

### 9.2.6.4. Plateau - Work area width

In the **Terrain shortcut menu** you can define the work area.

The work area indicates the wide band in the plateau-defined trench that has to be backfilled after the building has been constructed.



- Right-click the plateau, which originally you added to calculate excavation, and select *Plateau - Work area width* from the shortcut menu.
- Define the work area width (band), which has to be backfilled after construction from the edge of the plateau towards the inside.

The program calculates the volume to be backfilled accordingly. You can query this data in the *Add - On menu – Quantity Take – Off - Buildings calculation* dialog box. It has no 3D representation.

#### **Example**

For the construction of the building indicated above, the following quantitative data are available before defining the work area width of the plateau:

Terrain volume	ID	Plus volume	Minus volume	Reload width	Reload volume
3947900.401m <sup>3</sup>					
Area					
1	7	161.82m <sup>3</sup>	-130.531m <sup>3</sup>		

We see that the width of the area to be backfilled and its volume are zero for the moment. Now if we define a work area width of 2 m, the parameters will be the following:

Terrain volume	ID	Plus volume	Minus volume	Reload width	Reload volume
3947900.401m <sup>3</sup>					
Area					
1	7	161.82m <sup>3</sup>	-130.531m <sup>3</sup>	2 m	43.867m <sup>3</sup>

As we can see, the program displays the specified work area width (width of area to be backfilled) and the volume of backfilling for the building site (plateau) in question.

### 9.2.6.5. Road

With this command you can create or delete the trace of a road.

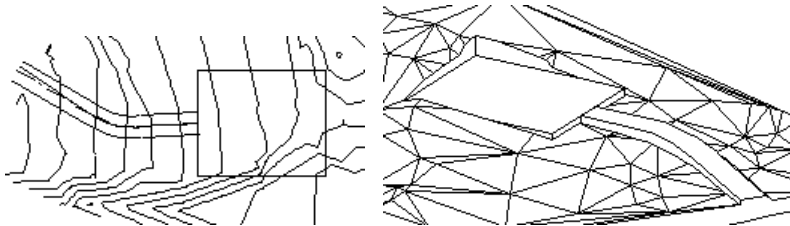
The program cuts the required parts of the terrain, or completes and fills in the missing areas according to road height.

#### Creating a road

- Select the terrain.
- Specify the points of the road. Doing so you define the axis of the road.  
**Enter** Ends definition of the road.
- Specify road width.
- One by one assign the height to the specified points of the road.

#### Option:

<b>SHIFT</b>	You can define the road (axis) by shifting it by a given distance from the trace.
--------------	---



#### Deleting a road

- Select the terrain.
- Choose the trace of the road you want to delete.

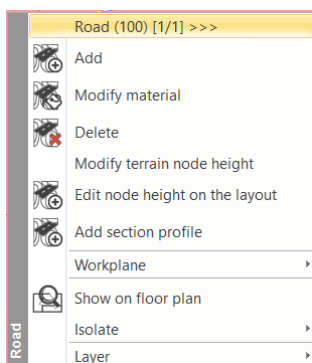
The program restores the original terrain by deleting the selected road.

#### Modifying road height

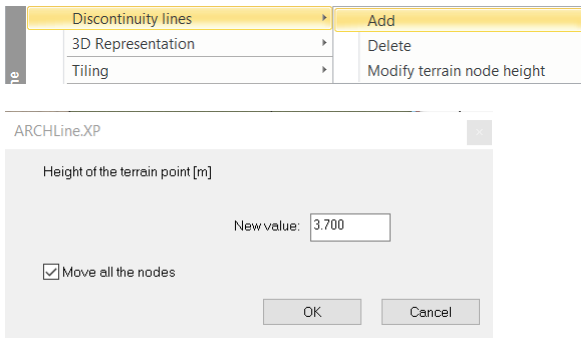
You can modify road height with the *Modify terrain heights* command.

### 9.2.7. Vertical shift of road/discontinuity line

When setting node height of a road/discontinuity line, modification of the height of all points can be executed by switching the **Move all the nodes** option on.







In that case all points are shifted vertically by the relative change of height of the selected road node.

### 9.2.8. Profile section definition of road

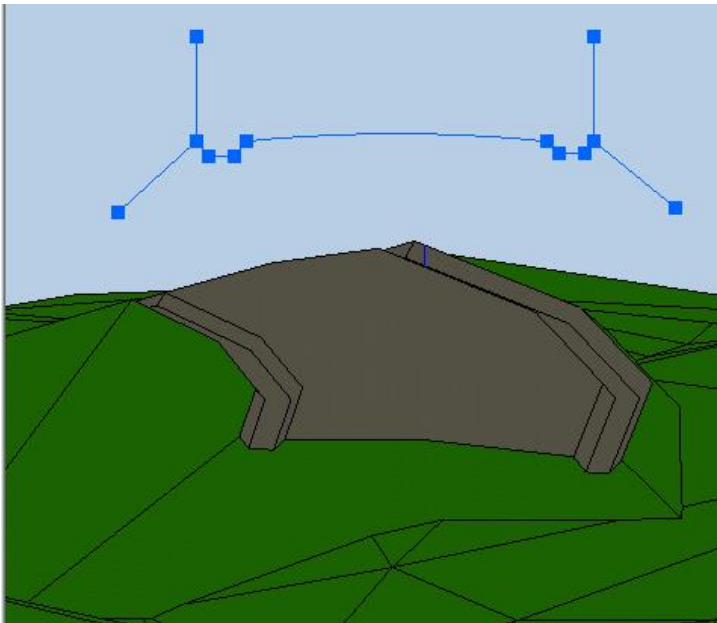
Section profile can be added to roads by the **Add section profile** command.



Using this command you can temporarily place the section profile on the screen and then you can use the **Edit profile** commands to modify road section. The road cuts out the surrounding terrain according to the section profile.

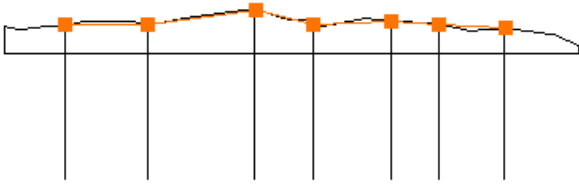
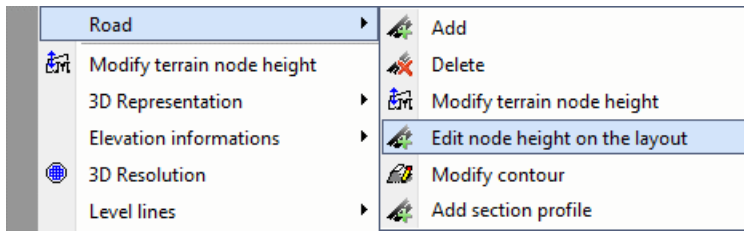


Six nodes appear by default as an H letter. The upper and lower nodes define the slant angle above and below the road surface, respectively. You can only move these nodes. The line between the middle two nodes defines the profile of the road top surface. Here you can add/delete nodes.



### 9.2.9. Road node height edition on layout

Using the **Edit node height on the layout** command you can place the layout of the vertical section of the road on the screen and then you can use the **Edit profile** commands to modify nodes.



## 9.2.10. Terrain zone

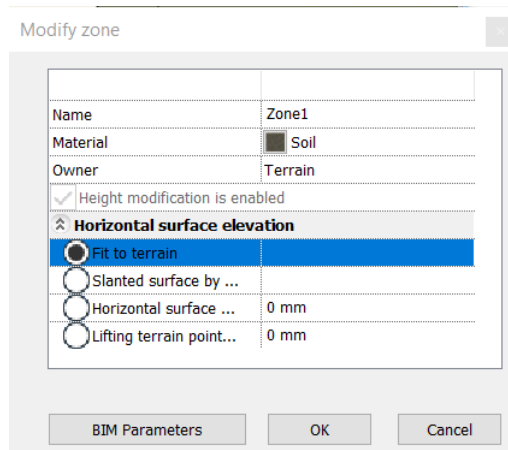
Zones are special areas inside a terrain by which you can gain information about bigger areas. In addition to this you can use zones to modify a terrain in a similar way as you do it with the plateaus.

### Create zone

- ❖ There are different possibilities to define a zone; by polygon, rectangle or point inside a closed polygon, etc.
- ❖
- Select a terrain to an area of which you want to assign a material.
- Specify the profile of the new area by using the *Profile definition* tool in the *Toolbox*.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



- Define the name of the zone and assign a material
- Choose the zone type:

### **Fit to terrain**

On the selected area the zone fits to the height of the terrain. Only its material representation can be different from the terrain.

### **Base level by 3 points**

Slant zone can be created. Fits the terrain points to the plane defined by three points.

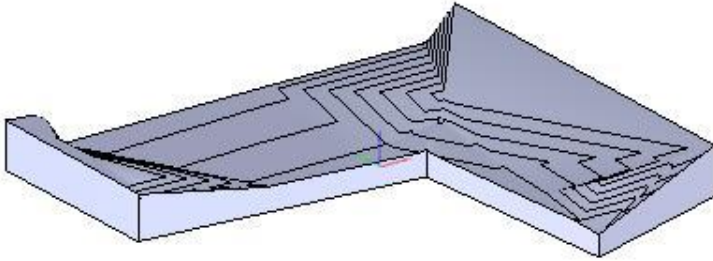
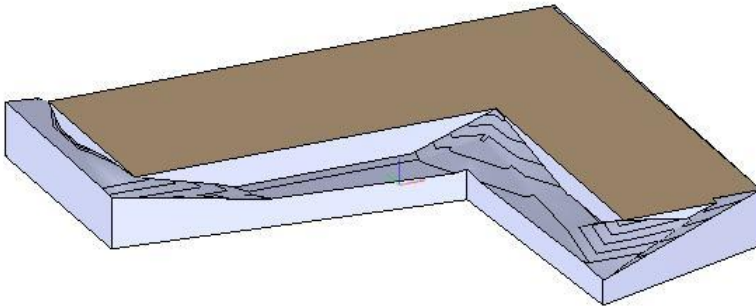
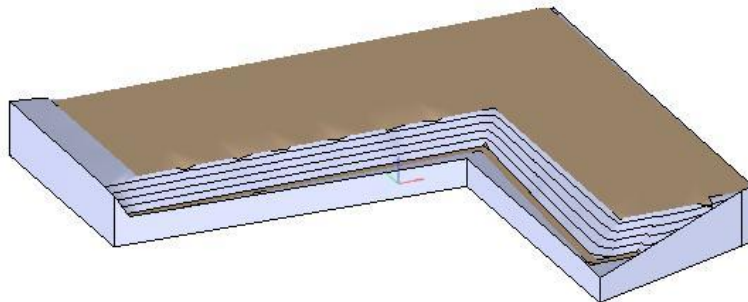
### **Base height**

On the area of the zone elevates the terrain points to the specified height.

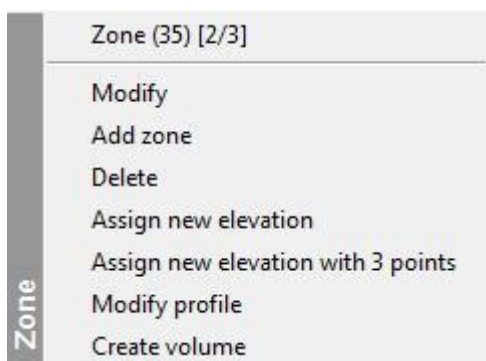
**Ok** close the dialog.

The difference between plateau and zone is that a zone fits the terrain points to the specified heights but no operation is performed on the solid.

The following example shows the difference between zone and terrain when a plain surface is created on the original terrain:

**Original terrain:****Terrain with plateau****Terrain with Zone****Modify zone**

From the shortcut menu you can choose the following commands:



A zone can be modified similarly to the plateau.  
New zone can be added to a zone.

### 9.2.11. Terrain change elevation for all terrain points

Pop Up Menu: Terrain > Raise/lower terrain height

The command helps to raise or lower all terrain points except the Zone and Plateau in one step.



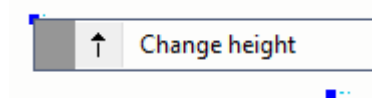
The result looks similar like that:



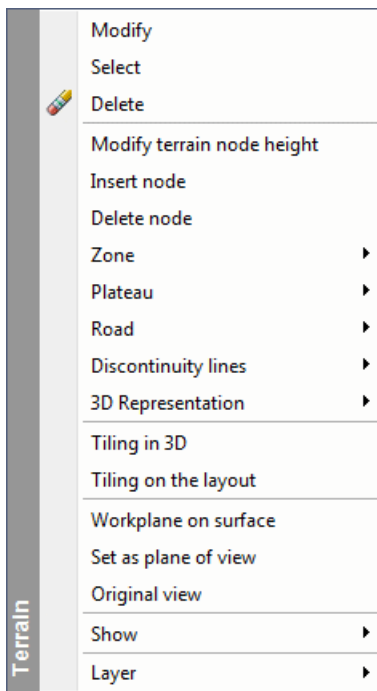
### 9.2.12. Terrain 3D commands

Zone, plateau, road and discontinuity line definition and modification is available in 3D. When you use a terrain command in 3D, there is no automatic switch to the floor plan.

**Modify** and **Select** shortcut menu commands are available in 3D View, too. **Change height** marker command is available for changing the height of each terrain point in 2D/3D Views.

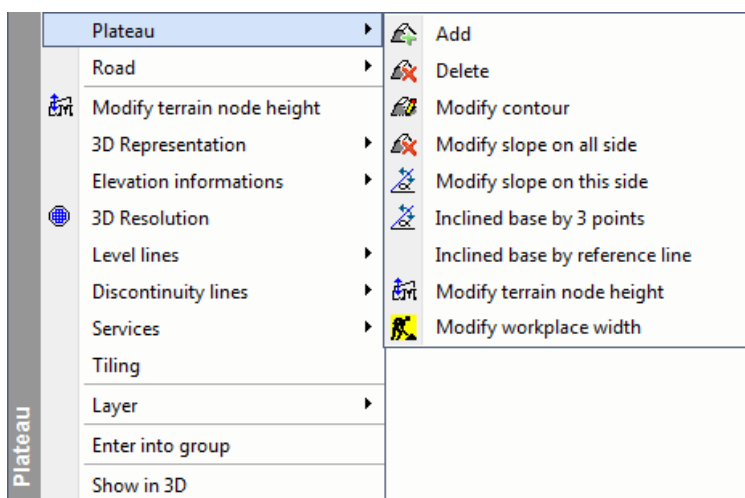
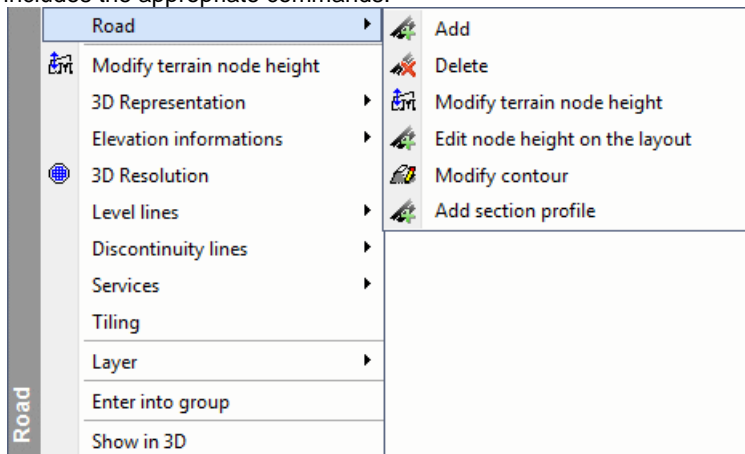


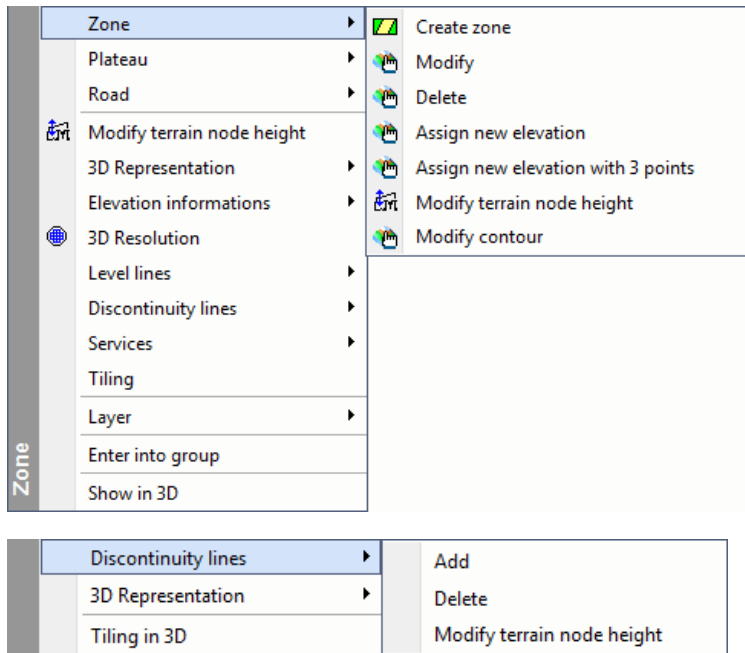
Terrain shortcut commands are rearranged:



### Terrain subtype recognition

When going over the terrain with the mouse cursor, terrain subtypes (road, plateau, and zone and discontinuity line) are recognized automatically in 2D/3D Views. Depending on the recognized terrain subtype, the appearing shortcut menu includes the appropriate commands.

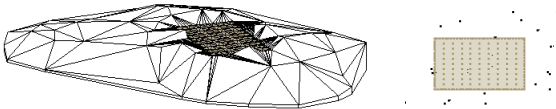




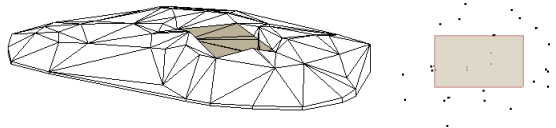
### Terrain zone

When creating a zone, instead of adding new points to the terrain inside the contour of the zone, zone contour is added to the terrain as discontinuity line. Compared to the previous versions, this enables a better zone representation, as especially at the border of the zone.

Previous zone representation:



New zone representation:



## 9.2.13. Modify terrain

Clicking on the terrain the *Property manager* visualizes the terrain property or clicking on the terrain *Shortcut menu – Property* command the *Terrain properties* dialog box appears. You can modify the terrain property.

You can access additional modifying commands In the *Shortcut menu*.

### 9.2.13.1. Modify terrain heights

With this command you can modify:

- ❖ a point of the terrain,
  - ❖ a horizontal plateau, or
  - ❖ Road height.
- Select the object of the terrain the height of which you wish to modify.
  - Define the new height in the dialog box. **Ok**.
  - Select further objects, or
  - **Enter** Ends the command.

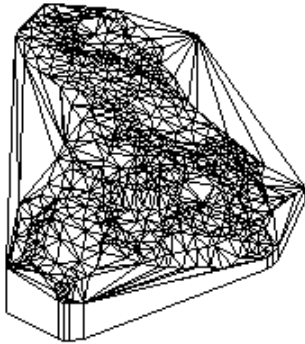
### 9.2.13.2. Terrain resolution in 3D

You can modify terrain resolution. The smaller value you define, the more detailed the resolution will be.

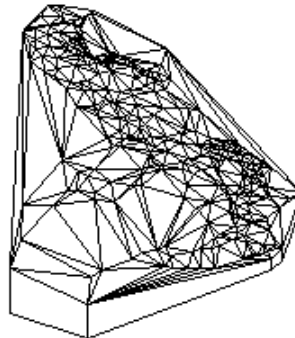
- Select a terrain to modify its resolution.

- Specify the new value ( $\geq 1$ ).

If the number defined as the value of resolution is  $n$ , the program will cover the terrain with cubes having edges the length of which equals  $n$ . Points of the terrain falling within the same cube are merged into one point and their height is calculated by means of weighting. The program reconstructs the model from the points thus defined.



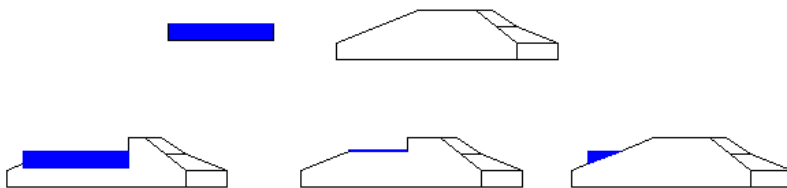
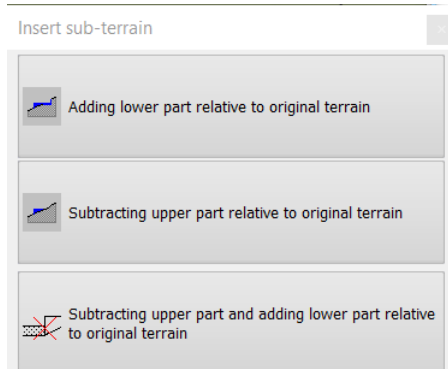
Original terrain



The same terrain at a higher resolution

### 9.2.13.3. Insert sub-terrain

The command inserts the selected sub-terrain into the original terrain. The result depends on the following operations:



The sub-terrain can be a road or plateau, or even a fully designed garden.

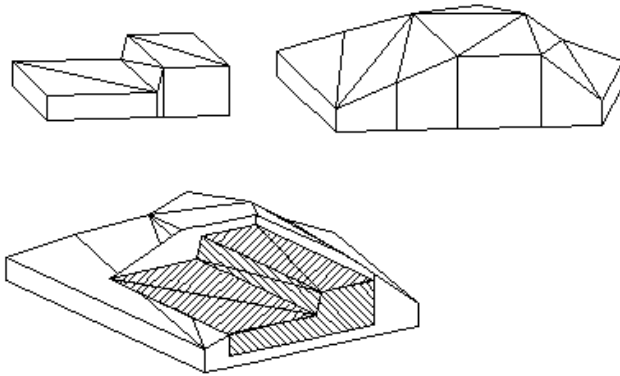
The structure is modelled by a terrain each height point of which - as is the case with the terrain - must be specified. So practically speaking, the sub-terrain is a pre-constructed terrain which you insert into the original terrain by using this command.

The sub-terrain is not identical to the road and the plateau you create with the **Road** and **Plateau** icons. Sub-terrains are a lot more sophisticated objects:

When you apply the **Road** function, the shape of the road will be fixed.

When you apply the **Plateau** icon, the foundation of the building will be horizontal. If you create a terrain as a sub-terrain and insert it into the original terrain, you obtain a much more complex configuration. You can freely alter its contour and it can also have an inclined surface.

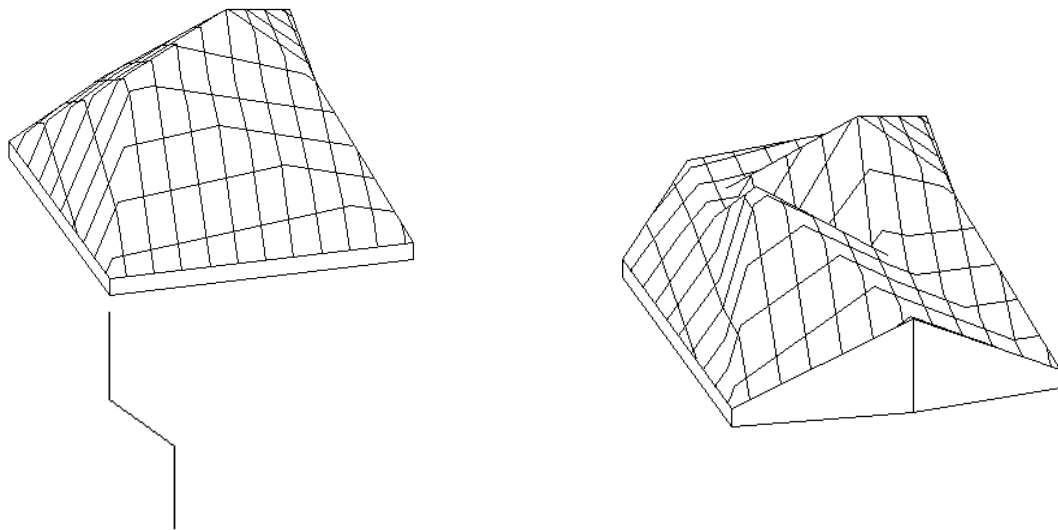
- Select the terrain you wish to use as a part of another terrain.
- Specify the origin of the selected terrain.
- Select the target terrain.
- Insert the sub-terrain into the target terrain by its origin.
- **Enter** Ends the command.



#### 9.2.13.4. Discontinuity lines

You can define edges by a chain of lines specifying the height of points in the chain. The program automatically cuts up the terrain into smaller triangles along the created discontinuity line. The inserted discontinuity lines gain significance in the case of e.g. roads, clefts, and pipes.

- Select the terrain in which you wish to draw a discontinuity line.
- Specify the first node of the chain of lines that defines the discontinuity line.
- Define the other nodes, then
- **Enter** Ends definition of the chain of lines.
- Define the height of the discontinuity line.
- Select the nodes of the discontinuity line to which you want to assign different heights and specify their heights. **Enter**.
- Define another discontinuity line in the terrain, or
- **Enter** Ends the command.



#### 9.2.13.5. Area with other material

You may select an area of any terrain by contour and assign its material. The areas appear in accordance with their assigned material in the 3D model of the terrain.

So for example you can display lakes, rivers, and woods in the terrain.

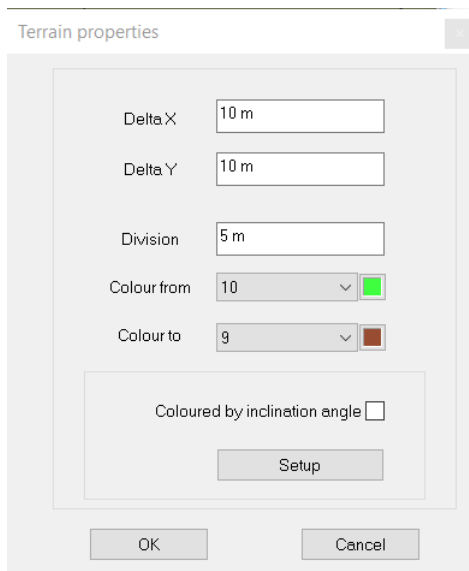
- Use the Terrain Tool – Zone command

#### 9.2.13.6. Terrain hatch

With this command you can display the terrain in colours on the floor plan. The colours indicate *different heights*, or *inclinations*.

- Select the terrain on the floor plan to which you want to assign colour hatches.
- The **Terrain properties** dialog box pops up.





### Different heights

If the **Colour by inclination angle** option is *turned off*, the colours indicate the *different heights* of the terrain. You can set the following properties:

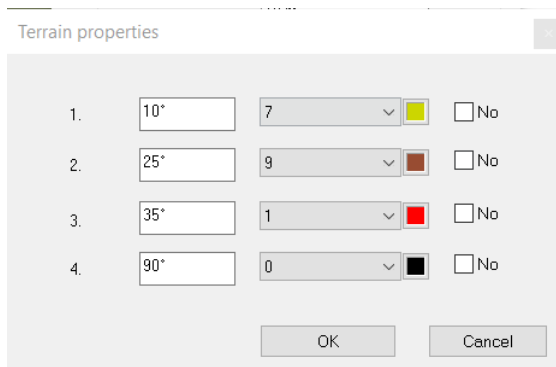
- with **Delta X** and **Y** the properties of the hatch grid in the *x* and *y* direction,
- **Division**, with which you set the height spacing of the grid.
- The **colour** of terrain hatch. The colours indicate the areas of the terrain that have *different heights*.

### Different inclinations

If the **Colour by inclination angle** option is *turned on*, the colours indicate the areas of the terrain that have *different inclinations*.

### Settings

If you click the *Settings* button, in another dialog box you can assign various colours to areas of the terrain that have different inclinations.



### 9.2.13.7. Modify base height

With this command you can modify the base height of the terrain. This change has no effect on the contour heights of the terrain.

- Select the terrain you wish to modify.
- Define the new value of the terrain base height in the dialog box. **Ok**.



Original value



-30 m

### 9.2.13.8. Modify material

With the **Material browser** command you can modify the material of the selected terrain object (plateau, road).

- Select the terrain object the material of which you want to modify.  
In the **Material** dialog box then displayed choose the new material. **Ok**.  
**Enter** Exits the command.

### 9.2.13.9. Elevation information

With commands in the submenu you can display or hide terrain information on the drawing.

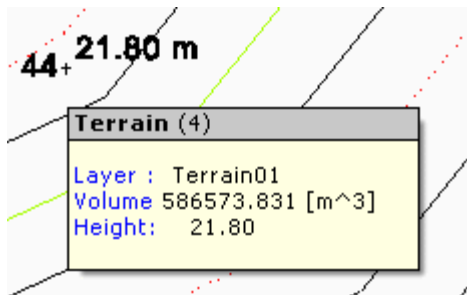
#### Query height

You can query the height of a given point of the terrain and insert its value in the drawing.

- Select the terrain the height of which you wish to query at a given point.
- Click on the point to query its height.  
**OK** Insert the value of the height in the drawing, or  
**Cancel** Do not insert the value of the height, exit the command.



Terrain height of a terrain point is displayed in the tooltip when you go over the terrain point with your mouse.



- ❖ **Display elevations** – Displays the elevation values of the terrain points.
- ❖ **Hide elevations** – Hides the elevation values of the terrain points.
- ❖ **Display numbers** – Display the numbering of terrain points.
- ❖ **Hide numbers** – Hides the numbering of terrain points.
- ❖ **Text size enlargement** – Increases the font size of the displayed information.
- ❖ **Text size reduction** – Decreases the font size of the displayed terrain information.

### 9.2.13.10. Information

You can gain information about roads, plateaus, zones of an existing terrain in a dialog in tables.

In the title of the dialog the ID of the terrain is displayed in bracket. In the top right part of the dialog you can read general information about the terrain. You can use the *Road*, *Plato* and *Zone* tabs to switch between tables with information about the appropriate parts of the terrain.

With the *Add Parameter* and *Delete Parameter* buttons you can add/delete columns to the tables so you can add your own information (for example notes) to each table row.

With the *Save to Excel file* button you can save the whole list in an XLS file, which can be viewed right after exporting the file if you use the View output file option.

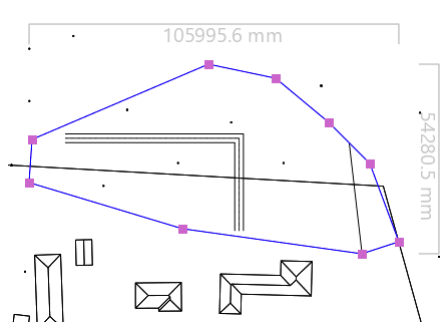
Close the dialog with the OK button after you finished with the modifications

### 9.2.13.11. Cutting perimeter

With this command you can erase unneeded parts of the terrain. If the form of the terrain on the floor plan is concave, as default the program displays the terrain in its entire convex form in 3D.

You can specify the contour by which you cut the 3D model, so that the unnecessary parts created by the bordering concave parts are erased.

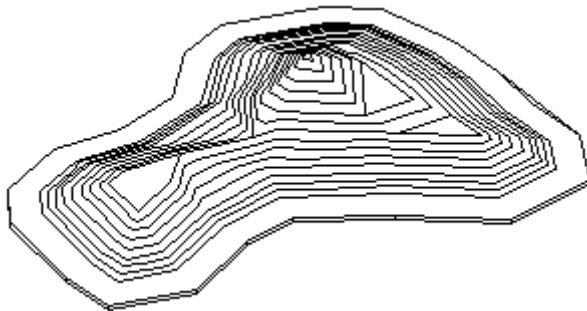
- Right-click the terrain on the floor plan. In the appearing shortcut menu select the *Cut perimeter* command. Then the contour of the terrain appears:



Using the *Edit Profile tool* you can quickly modify the contour of the terrain, so for example

- With the **Add node** icon you can select a segment of the contour profile and insert a new node. Doing so, you can adjust the convex form of the terrain to its concave form on the floor plan.

If you regenerate the terrain after modification, it will be displayed in a concave form also in the 3D model.



See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

### 9.2.14. Terrain consignment

Using the *Documentation > Quantity Take-Off > Excel List > Terrain calculation* command you can save terrain data in Excel (.xls or .xlsx) file. Terrain, Road and Plateau data can be found on different worksheets. ARCHLine.xP reports cut and fill volumes related to the terrain. It helps to define the costs of landscape modification during site development.

### 9.2.15. Lifting terrain points: change elevation for all terrain points

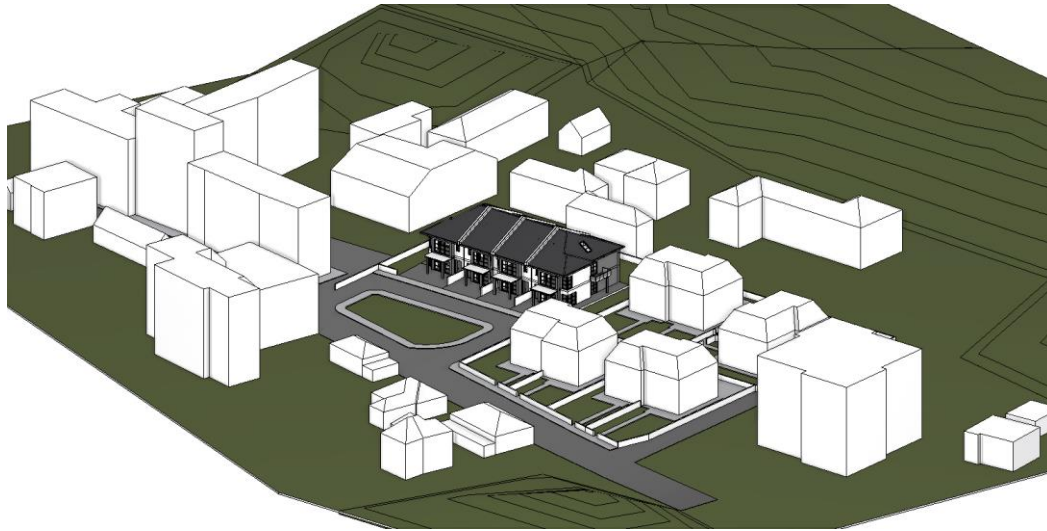
Pop Up Menu: Terrain > Raise/lower terrain height

The command helps to raise or lower all terrain points except the Zone and Plateau in one step.

## 9.3. Conceptual building model

Massing study is often the starting point of architectural design.

Massing study helps the architect the study the concept of building model in terms of masses or general shapes



### 9.3.1. Creating Building volume

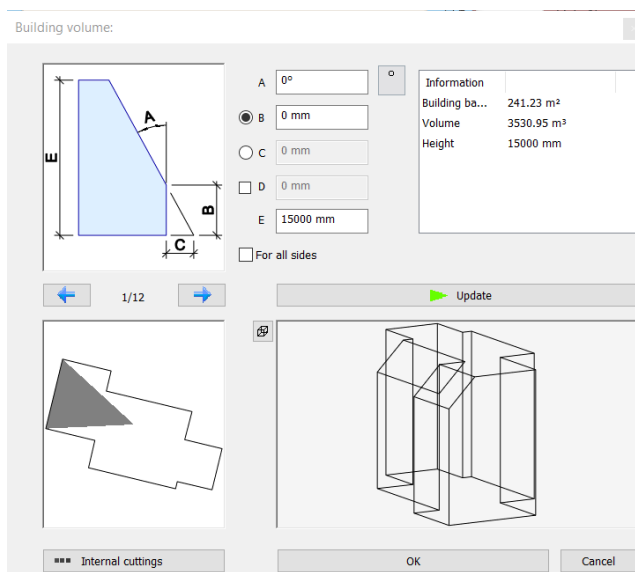
Location of the command: Building > Terrain > Building Volume

#### *The basic shape and height*

Create the desired shape using the *Profile definitions* panel. Then the *Building volume* dialog window appears.

#### *The volume of the building*

In the Building volume dialog window you can detail the rule system referring to the surfaces border the building volume control.



## Parameters

The left side picture helps to understand the meaning of parameters.

- A** The angle of selected plane compared to perpendicular. You can determine the angle value between 0 and 89 degree. In case of giving false value, the field's colour will be red. The angle counts from the line determined in B.
- B** The frontal height of the selected side: If you use this option, the C option can't be reached.
- C** Shifting the starting line of oblique limiting on the base plan: If you use this option, the B option is not definable.
- D** Inside perpendicular limit: You can use the option independently. You can determine with its help such building volume limits, which can't be definable in any other way.
- E** The maximum height of the building volume: Here you can see and modify the value of height determined at building volume base contour.

## For all sides

After switching on the option all sides of the refreshed volume model change according to the selected A-B-C-D-E values.

## Information list

These information help to get a picture continuously from the designing volume model according to the geometry information.

## Select sides

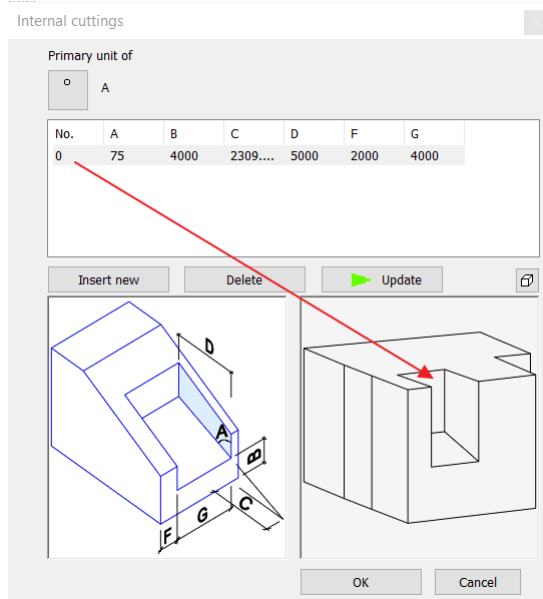
The sides of the polygon by creating base contour determine the sides of the volume model, which is lifted out from this. You can see the simplified plan of the volume model in the top view window. The selected side appears as a grey area. You can select between the sides with the button above the window. The numerical value shows how much sides exist and which one is selected now. 8/8 means, that there are 8 sides and the last one is selected. You can also select in the window if you click on the proper side.

## Preview

You can look at the changes during the drawing in the pre-view window. Each new change in the drawing can be transformed to the Pre-view window by clicking on the *Update* button.

## Internal cuttings

If you use the internal cuttings, you can graphically determine complex rules. In the appearing dialog window you can determine detailed limits on the selected side.



You can make a new rule with the *Insert new* button, so even periodic structures can be determined. The explaining figure helps with determine different rules and you can follow the changes on the actual volume model as well by clicking on the *Update* button.

## Parameters

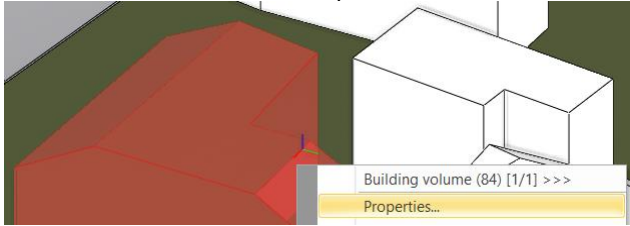
- A** The angle of the new cutting compared to perpendicular.
- B** The base height of the new cutting compared to the base line of the selected side. After the changing the C value is refreshed automatically.
- C** The value of shifting the base line of the new cutting plane compared to the base line. After the changing the B value is refreshed automatically.
- D** The depth of the new cutting compared to the perpendicular plane of baseline.
- F** The left side base plane of the new cutting. The limiting surface of the two side's vertical cutting is perpendicular to the vertical plane of the base line.

**G** The width of the new cutting. This value determines also the place of the perpendicular limiting on the right side.

### 9.3.2. Editing volume model

You can edit the building volume model from:

- ❖ **Shortcut menu:** click on the *Properties* command.



Building volume dialog appears where you can continue rule definition.

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## 10. Building

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### Introduction

Architectural objects (walls, doors, windows, slabs, etc.) are used to design 2D floor plan drawings and to develop 3D model of a virtual building. The modification of the position or dimensions of any of the architectural objects updates the model.

In this chapter you can find the commands to create a virtual building.

### 10.1. Floor and building management

In ARCHLine.XP levels allow designers to organize the walls, slabs, roofs and other elements of the building to the object's physical location. Levels help determine where all the important heights are in the building.

When you start a new project, a default floor structure is created automatically. Other floors have to be created by the architect.

Floors in ARCHLine.XP are not physical boundaries but comprise a single logical unit. An object located on a certain floor belongs to that floor; however, floor properties (i.e. headroom and height) do not influence its geometry. This means that any object placed on the floor does not have to be physically within the floor boundaries but may overhang. This is necessary for split-level buildings.

You can speed up drawing if you copy the objects of an existing floor to another floor. This is very useful when creating main walls on a number of floors, as their floor plans usually correspond to each other.

In ARCHLine.XP one drawing may comprise *a number of buildings*. These buildings can be created:

- ❖ as separate projects, which are imported to a single drawing by *Import* and *Merge to current drawing*, or
- ❖ within one drawing, where you can create several buildings.

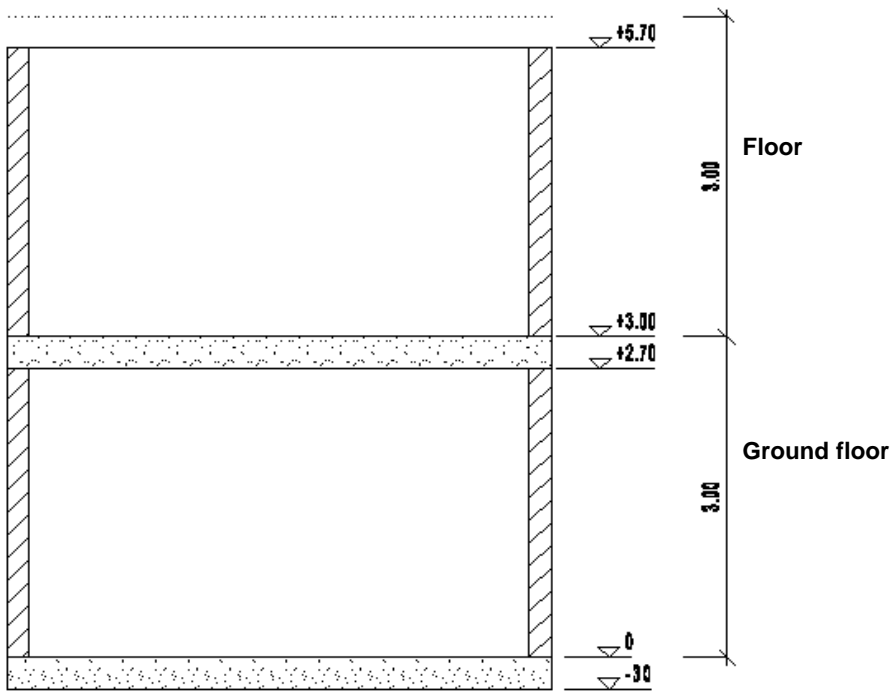
Depending on the terrain, you can assign different heights above sea level to buildings. There is only one active building at a time; others are displayed with a lower colour tone.

Floor properties are: number, name, height above sea level and own height. You can modify these at later stages.

### Example

Let's see an example of wall and slab arrangement in the case of two floors:

- ❖ ground floor starts at 0 m, with a height of 3 m,
- ❖ wall starts at 0.0, with a height of 2.7 m,
- ❖ slab starts at 0.0 m, with a width of -0.3 m,
- ❖ floor starts at 3 m, with a height of 3 m,
- ❖ ceiling slab starts at a relative 0.0 m, with a width of -0.3 m.

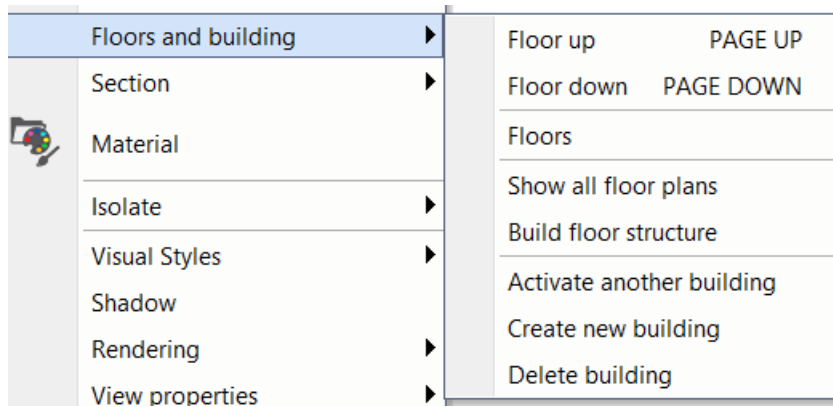


This means that the slab (floor slab) is situated under the wall and overhangs the height of ground floor. The 0.3 m space between the top of the wall and the height of the floor is occupied by a slab of the same position and of 0.3 m width.

### Floor management

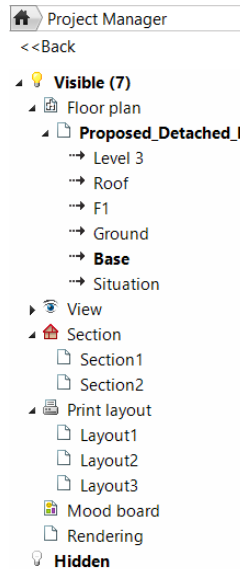
You can manage floors from different parts of the program:

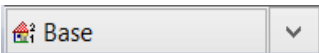
❖ in **View** menu: **Floors and building**:

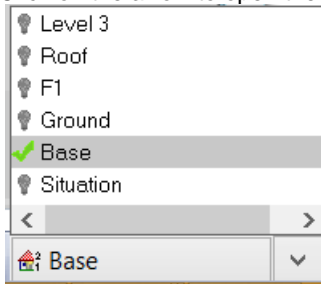




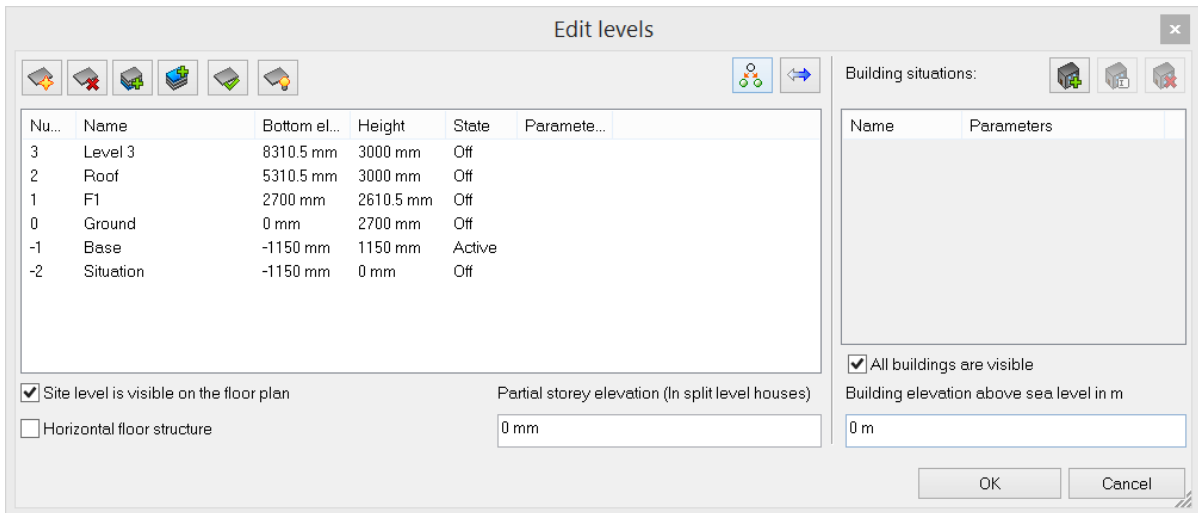
- ❖ In *Project Navigator*:  
Choose the appropriate drawing to display buildings and floors in Project Navigator. Click on the floor name to activate the requested floor.



- ❖ In the *Status bar*  with the **Floor** icon:
- ❖ Click on the arrow to open the current floor list and select the new active floor.



- ❖ Click on the button to display **Edit levels** dialog box, where you can create and edit floors. The properties in the dialog box always refer to the current building.









Let us see the options in this dialog box:

### 10.1.1. Creating floors

When you start a new project, the floor plan view and the ground floor level on the floor plan is created automatically. By default, floor height is 0 m and the full height is 3 m.

You can create and manage floors with these commands:

 Add up	Insert new floor above the top-most floor
 Add down	Insert new floor under the top-most floor
 Insert new floor below	New floor between two floors, under the active one
 Delete floor	
 Activate a floor	
 MAnage visible floors	

### 10.1.2. Activate a floor

Floors have three states: active, off and visible.

You can define the state of the desired floor by clicking the State column.

Nu...	Name	Bottom el...	Height	State	Paramete...
3	Level 3	8310.5 mm	3000 mm	Off	
2	Roof	5310.5 mm	3000 mm	Off	
1	F1	2700 mm	2610.5 mm	Off	
0	Ground	0 mm	2700 mm	Off	
-1	Base	-1150 mm	1150 mm	Active	
-2	Situation	-1150 mm	0 mm		

Active  
Visible  
Off

#### Active

The program places the objects on the **active** floor. Only one floor can be in active state. By default, you can only see the objects of the active floor in the floor plan window, but by clicking *Visible* you can make the objects of another floor visible, too.



You can activate the desired floor with the **PAGE UP/PAGE DOWN** keys or with **View – Floors and building – Floor up/ Floor down** as well. In these cases, you can activate the the floor above or below only. You can also activate the desired floor in the *Project Navigator* in the *Design Center* by clicking on floor name.

#### Off

If you activate a floor, the previously active floor turns off.

#### Visible

When editing, you may want to refer to some points of an object which is not on the active floor. This option helps you with this.

When a floor is **visible**, the selected floor will also be visible on the floor plan and you can refer to the objects on that level, without editing them. Visible objects will be displayed highlighted in grey.



More floors can be in visible state.

If you do not need to display the visible floor, either choose **Off** or use **PAGE UP/PAGE DOWN** to switch between floors to activate the desired floor.

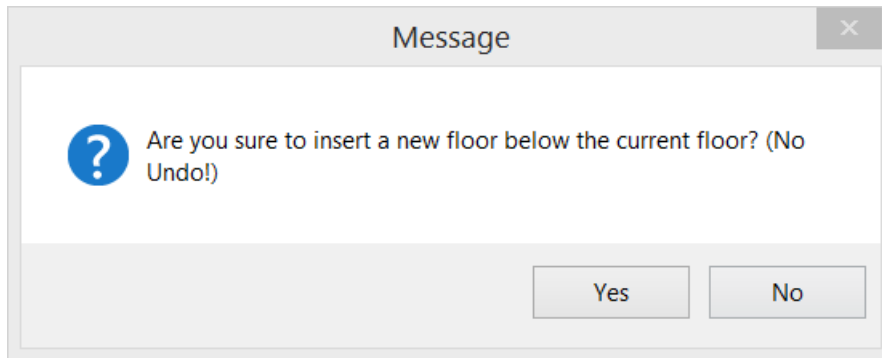
### 10.1.3. Insert a floor

The command will create a new floor under the active floor.

By default, any new floor will have the properties of the floor above which it has been inserted.

**!** When you *Insert a new floor* make sure that the active floor is the one under which you want to insert a new floor.

When you insert a new floor, a message box informs you the command has no Undo option.



#### 10.1.4. Floor properties

You can assign the following properties to floors:

- ❖ **Name**
- ❖ Floor height
- ❖ Height

Nu...	Name	Floor height	Height	State
1	Roof	3 m	3 m	Off
0	Ground	0 m	3 m	Active
-1	Cellar	-3 m	3 m	Off

##### **Name**

To change the name of a floor:

- Double click the **Name** field to be changed, and
- Type in the name of the floor and press **Enter**.

##### **Floor height**

Floor height refers to the starting height of the floor (floor-to-floor height). When you can place an object on the active floor, its height is specified according to the active floor's height.

To change floor height:

- Double click the **Floor height** field to be changed, and
- Type in the floor height and press **Enter**.

##### **Height**

Refers to the full height of the floor. This height defines the floor height of the next floor. Objects belonging to this floor do not need to be within this height.

To change height:

- Double click the **Height** field to be changed, and
- Type in the height and press **Enter**.



You can set 0.0 as floor height. You may need to set this value in some cases — e.g. in the case of pseudo copies, where there is no 3D modelling, so there is no height extension either.

#### 10.1.5. Building properties

Buildings are described by the following properties:

- ❖ **Height above sea level**
- ❖ Environment level visible
- ❖ Split levelling

### Height above sea level

Gives the absolute height of the building compared to the sea level. This is important when placing the building in its environment, i.e. on the terrain. Modifies the 0.0 m floor height of the building with the height above sea level.

- Type in a new value and press **Enter**.

### Environment level visible

You can only place the terrain on the environment level.

If you disable this option, the terrain placed on the drawing will not be visible in the floor plan and the 3D-model. If you enable this option, the terrain will be visible with each level.

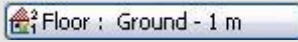
### Split levels

As we have mentioned before, an object placed on the floor belongs to that floor, though its geometry is not affected by floor properties (floor height and height). This means that it is not necessary for an object placed on the floor to be physically within floor boundaries, but it can overhang these boundaries.

*Modify floor levels – Level difference* shifts the floor height of the active floor with the specified value. The program will place the subsequent architectural objects at this height.

- Type in the value of the level difference and press **Enter**.



The value of level difference is displayed on the *Floor* button in the *Status* bar, separated from the name of the floor by a hyphen: . The level difference is valid for all floors.

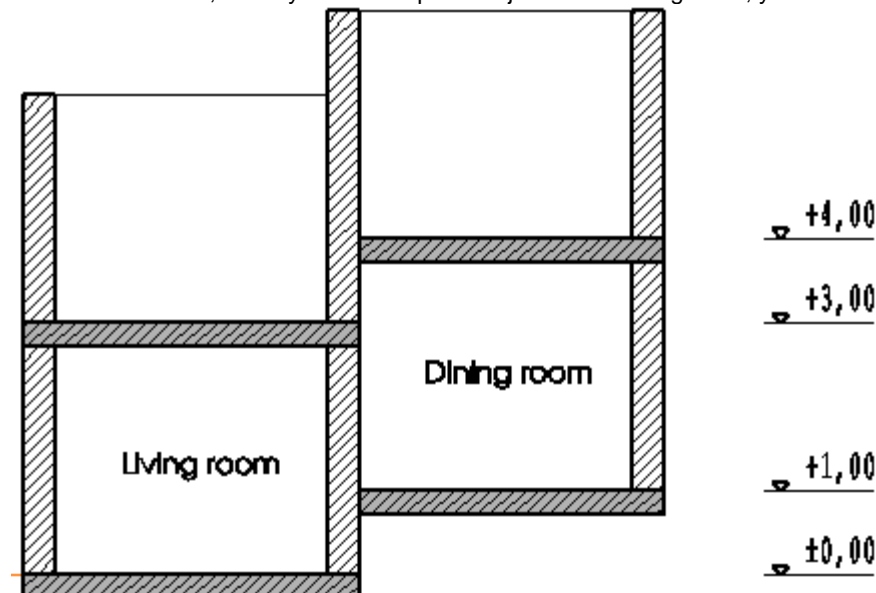
### Example:

The living room and the dining room are on the same floor in the house, on the ground floor. However, there is a 1 m difference between the levels of these two rooms with the dining room located higher.

You should place both rooms on the ground floor on the drawing, because they have to be displayed on the ground floor. The objects of the living room (e.g. walls) are placed on the 0.0 m height of the ground floor. The objects of the dining room are 1 m higher.

- ❖ In the case of the dining room objects, level difference can be defined by setting the height above floors to 1 m in the Properties dialog box for each architectural object.
- ❖ The other solution is that we set *Level difference* to 1 m in the *Modify floor levels* dialog box. In this case you do not have to set height for each object individually.

Please note, that if you want to place objects in the living room, you have to reset level difference to 0.0 m.



## 10.1.6. Floor management

In ARCHLine.XP, you can manage floors with the following commands:

- ❖ Delete floor
- ❖ Copy objects to other floor
- ❖ Move objects to other floor
- ❖ Renumber floors

- ❖ Separate floors

### 10.1.6.1. Deleting a floor

To delete the selected floor:

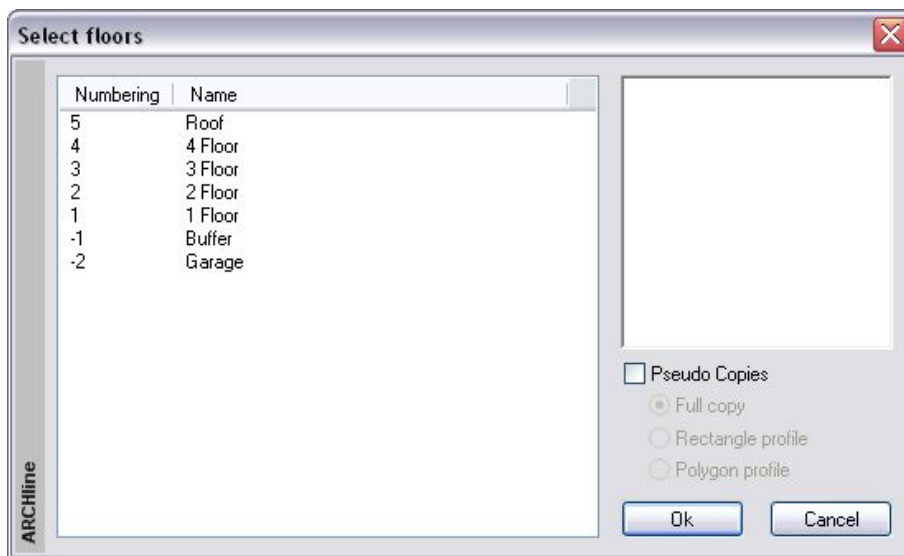
- Click the desired floor in the **Edit floor levels** dialog box, and
- Click **Delete**.

If you delete a floor, the floor height of the floors above the deleted floor will be reduced by the height of the deleted floor.

### 10.1.6.2. Copy or move objects to other floors

You can copy or move the selected objects with this command to one or more existing floors. The command can be activated only if you have several floors.

- In the *Edit floor levels* dialog box, click the Copy objects to other floor or Move objects to other floor button.
- Select the objects to be copied or moved on the drawing and press **Enter**.
- Select the floors you where want to copy or move the selected objects. Hold Ctrl and Shift to select more than one floor. If you click the name of the floor, you can see the current content of the selected floor in the drawing field.



#### ***Making pseudo copies***

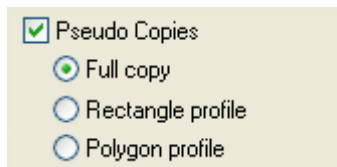
You can also use levels for other purposes as well.

You can copy the floor plan display of objects to another floor, without having a 3D model for these objects. This is what we call a pseudo copy.

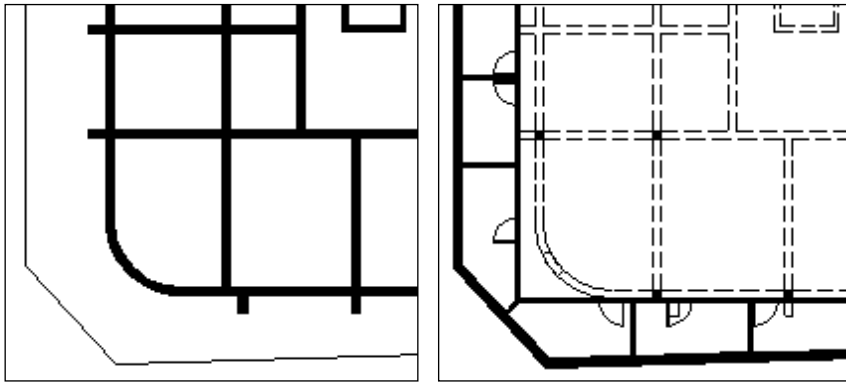
The copied object is displayed as a 2D group object on the desired floor.

This group is still connected to the original object. If you delete the object, the group is also deleted.

You can place the selected object as a pseudo copy. Going back to the floor plan, you can define the pseudo copied object by a rectangle profile or by a polygon profile. The program cuts the object at the boundaries of the rectangle or the polygon.



You can change the properties of the object created as a pseudo copy. In the group, you can modify the line type of the object. This method is very useful when e.g. you want to mark the location of the framing beams with a dotted line on other floors, too.



Buffer level

Garage level

### 10.1.7. Managing multiple buildings (for advanced users only)

In ARCHLine.XP one drawing can contain *several buildings*. You can create these buildings:

- ❖ as separate projects, then you can place these on the same drawing by the *Import* command –*Merge to current drawing* option, or
- ❖ as new buildings within the drawing.

Depending on the terrain, you can assign different heights above sea level to each building. There is only one active building at once; others are displayed with lower colour saturation.



Buildings marked with grey (i.e. inactive buildings) will be printed in real colour.

#### 10.1.7.1. Importing buildings

Having completed building drawings in separate projects:

- Open the project in which you want to place the building. This can be a new project.
- Load the floor plan from another project, which is imported into the open project as a new building. To do this, follow this method:
- Select the project desired in **File menu - Open project** dialog.
- In the *Open project* dialog box, enable **Import file** and **Merge to current drawing** options. Click Ok.
- Enable **Place with new origin** option in the dialog box.
- Enable **Place as new building** option.



If the floors of the building to be loaded differ from that of the building in the project, you cannot enable the **Place as new building** option (greyed) and the program creates a new building automatically.

Then you can find multiple buildings in the drawing.



The *Edit floor levels* dialog box contains the properties of the current building. Height above sea level applies to that current building only.

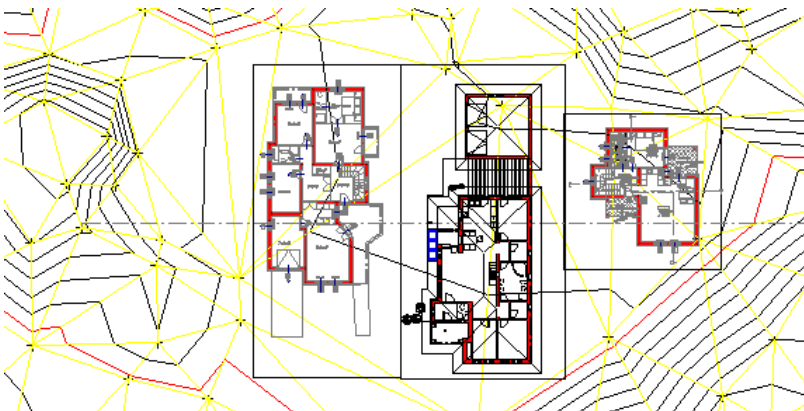
You can choose the building desired from the **Current building** pull-down list. Building names correspond to the original floor plan file names.

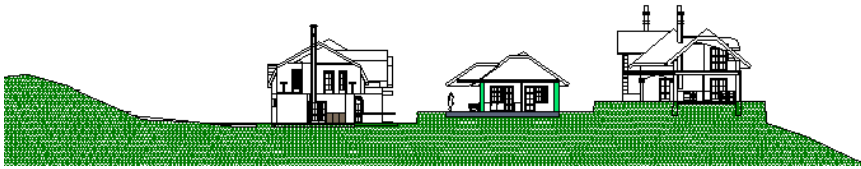
To change the name of the current building, click **Rename building**.

Click **Delete building** to delete the current building. Once you accepted this command, you cannot undo it.

To activate the building, select its name. You can go on with the drawing of this building. The other buildings are visible, but you cannot modify them.

In the following example you can see three buildings placed on the terrain at different heights above sea level. The building in the middle is active. The other buildings have lower colour tones.





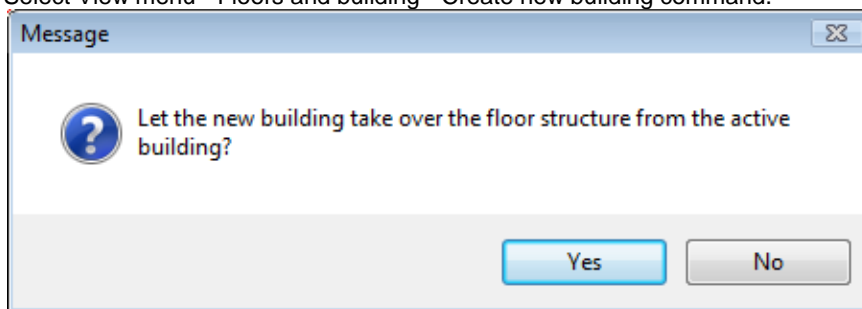
! When creating your 3D-model, enable the **Each building** option in the dialog box. The program will create a 3D model for each building.

### 10.1.7.2. Creating a new building

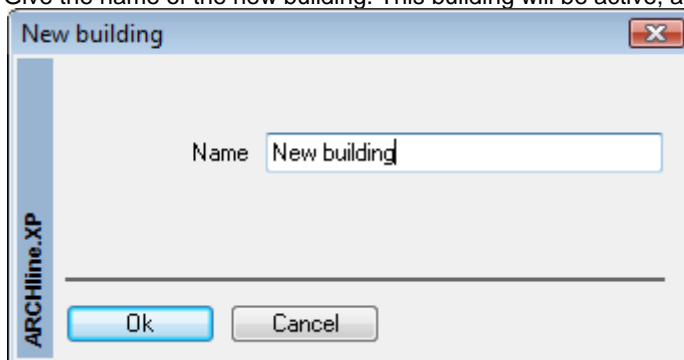
You can also draw multiple buildings in one project. In this case you cannot load the completed building from the project file, but you draw the building within the project.

This happens as follows:

- Create a new project. Draw building as usual.
- Select View menu - Floors and building - Create new building command.



- You can take over the floor structure from the active building or you can define the number of floors independently.
- Give the name of the new building. This building will be active, although at this point it is an empty building.



- The new building is active from now on; other buildings are deactivated and displayed in lower colour tones.

📄 You can define height above sea level in the *Edit floor levels dialog* box, and you can also modify the number of floors there.

### 10.1.7.3. Activating other buildings

You can activate another building by:

- ❖ Using the View menu - **Floors and building - Activate another building** command. Click the building desired.
- Or
- ❖ by selecting the name of the building desired from the **Current building** pull-down list in the *Edit floor levels* dialog box.

### 10.1.7.4. Deleting buildings

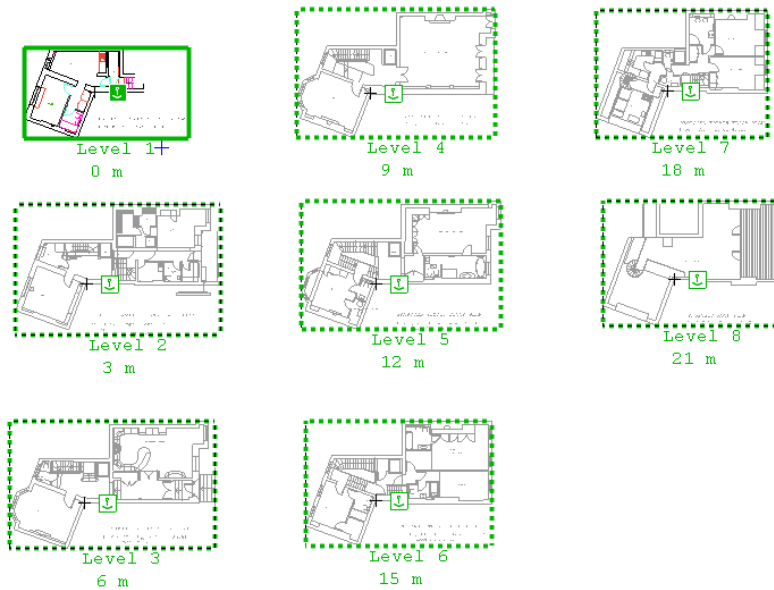
To delete redundant buildings:

- ❖ Click **View menu - Floors and building - Delete building** and select the building to be deleted, or
- ❖ select the name of the building to be deleted in the *Current building* pull-down list in the *Edit floor levels* dialog box and click **Delete building**.



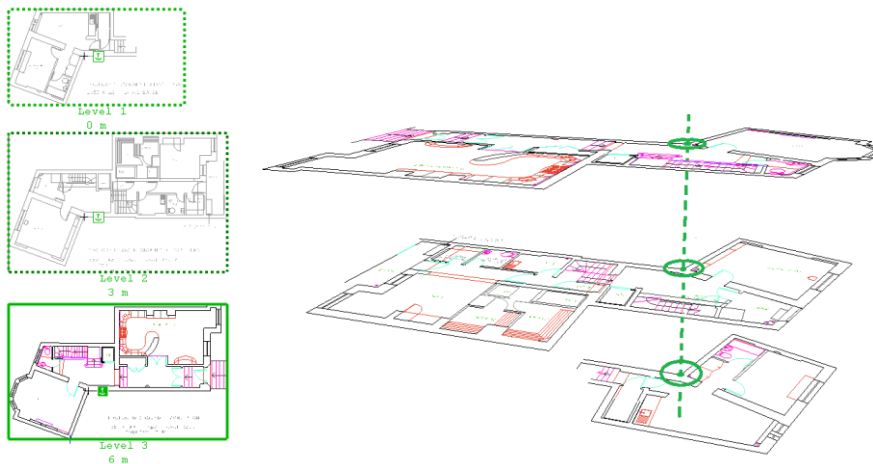
## 10.1.8. Horizontal floor management

Horizontal floor management allows you to handle the 3D vertical floor structure of your building in a horizontally aligned mode. It will let you handle floors as they would drawings next to each other, like it is used to do in some other 2D CAD software and AutoCAD as well.



This means that the content of your levels are visually aligned next to each other while they still keep their original position in the 3D model.

The horizontal floor management function comes with a couple of useful tools, which will help you to reorganize the contents and the connection between the objects and their floors.

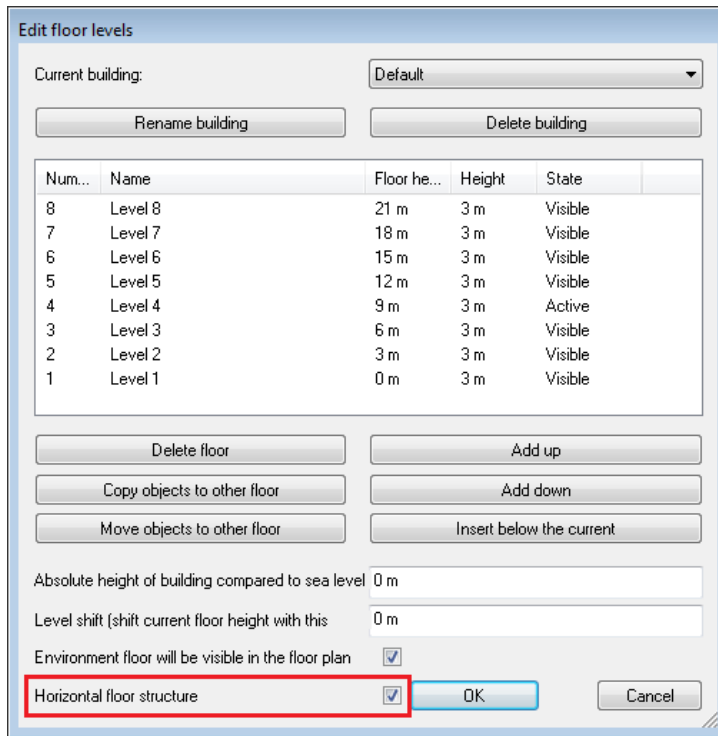


If horizontal floor management is enabled, an anchor point belongs to each floor. The 3D model is built up based on these anchor points: the floors will be aligned so that the anchor points of different floors will get on a vertical line, above each other.

### 10.1.8.1. Creating the horizontal floor structure

#### **Enabling / disabling horizontal floor management**

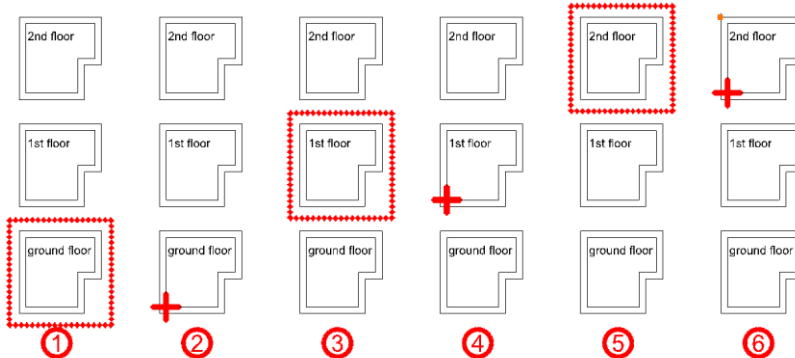
If your model has more floors, these floors can be represented in a horizontal floor structure. Select **View menu / Floors and Building / Floors** command. You can enable/disable the horizontal floor management in the appearing dialog.



If you enable the horizontal floor management for the first time, the floors will be shifted automatically to avoid overlapping each other. You can customize the resulting layout by using the Shift floor marker command on the active floor border.

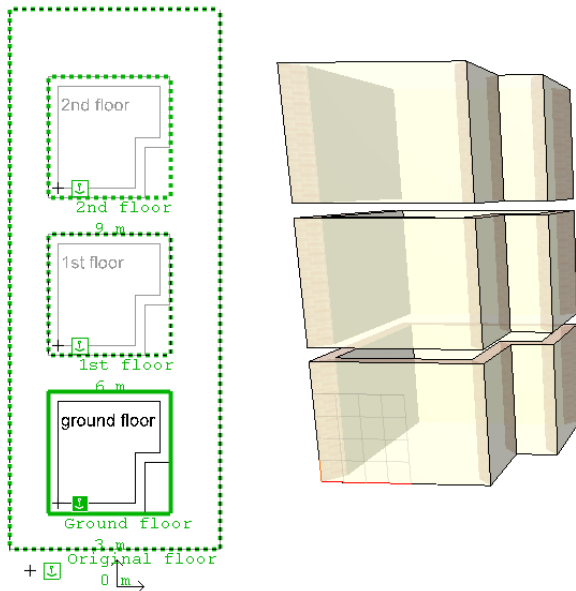
### 10.1.8.2. Building up a floor structure from a 2D drawing

You can start an ARCHline project by importing a DWG (or other 2D) drawing. These drawings haven't got floor structure, different floor levels are usually represented as simple floor plans next to each other. To build up a floor structure based on drawings like this select **View menu / Floors and Building / Build floor structure** command. Select an object of a floor, click on the reference point (anchor point) and repeat these steps for the other floors, finally press ENTER. The next figure shows how to build up a floor structure of a drawing with 3 floor plans in 6 steps:



Use a relevant point (like a corner of a chimney, a structural column, etc.) as reference point. Later you can refine or modify the position of these reference points selecting one of the anchor marker commands.

Once you have selected the objects of a floor and set the reference point a new floor will be created and the selected objects will be moved onto the new floor. Objects which do not belong to any floor created (like drawing stamps, frames) remain on their original floor. Therefore the previous example will contain finally 4 floors. You can delete the original floor if you do not need it anymore.



### 10.1.8.3. Marker commands

Once the horizontal floor structure is enabled, you can manage it by using the marker commands of the floor markers (borders and anchors).

#### Simple marker commands

You can access these commands if floor marker commands are enabled. If floor markers are disabled, you can enable them by clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command.

#### Activate floor

By clicking inside the dotted border of an inactive floor the clicked floor will be activated.

#### Floor name

By clicking on the floor name you can rename it.

#### Floor elevation

By clicking on the floor elevation you can change it. Values which change the order of floors will be rejected. To change the order of floors see Move active floor... commands of an inactive floor.

#### Active floor commands

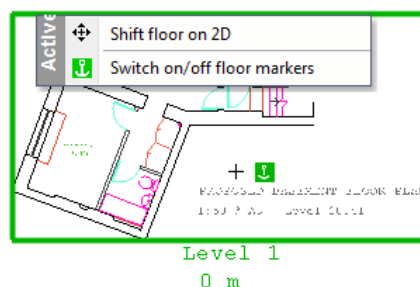
You can access these commands floor.

#### Shift floor on 2D

You can rearrange your floor plan moves the whole active floor with no effect in the 3D View.

### 10.1.8.4. Switch on/off floor

You can switch on/off the floor active floor. If floor markers are clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command again.

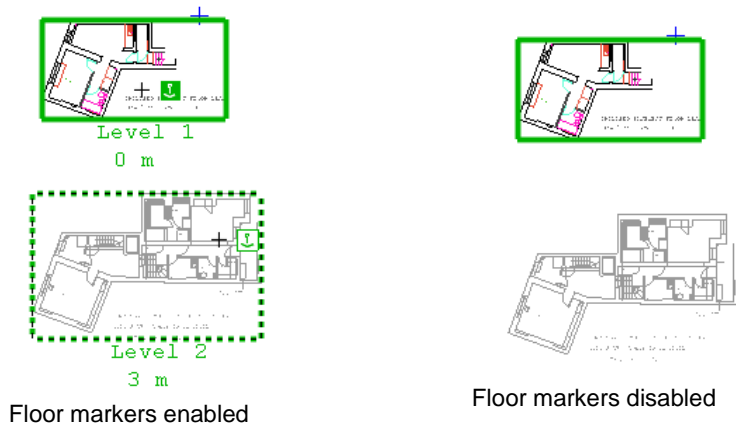


by clicking the solid border of the active

by shifting the active floor. This command the anchor; therefore this command has

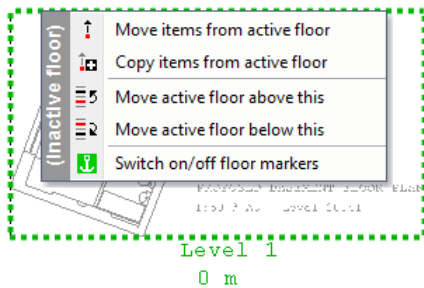
#### markers

markers except for the border of the disabled, you can enable them again by



### 10.1.8.5. Inactive floor commands

You can access these commands by clicking the dotted border of an inactive floor. If floor markers are disabled, you can enable them by clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command.



#### ***Move/Copy objects from active floor***

Select objects on the active floor and press ENTER. The selected objects will be moved or copied to the inactive floor.

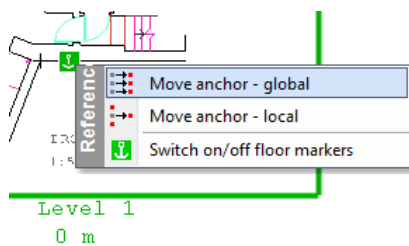
#### ***Move active floor above/below this***

You can rearrange floors by using these commands. They remove the active floor from its current position and insert it above/below the selected inactive floor.

#### ***Switch on/off floor markers***

You can switch on/off the floor markers except for the border of the active floor, see the Active floor commands.

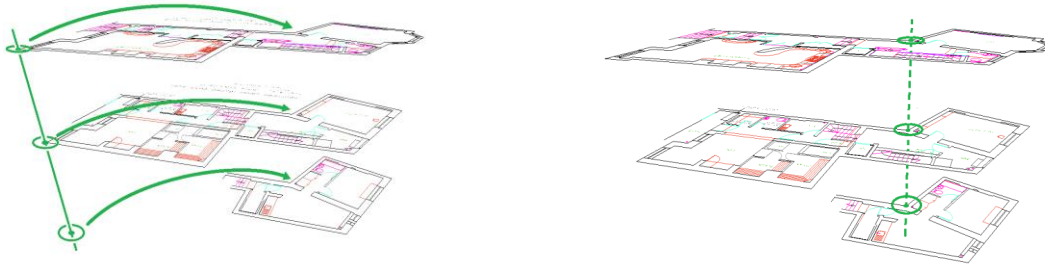
### 10.1.8.6. Anchor Commands



You can access these commands by clicking the anchor marker  of the active floor.

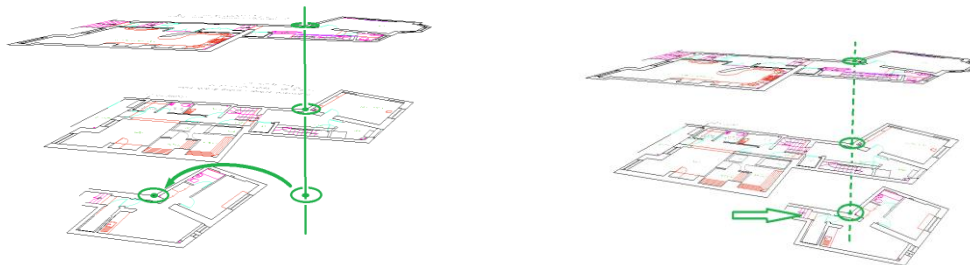
#### ***Move anchor - global***

Moving the anchor globally means that you move the anchor points of each floor by a given vector. Use this command to find an appropriate point (like a corner of a chimney) to align two or more floors to each other. The position of anchor points relative to each other do not change, therefore this command has no effect in the 3D View.



### Move anchor - local

Moving the anchor locally means that you move the anchor point of a given single floor only. Use this command to align a floor to other ones. In the 3D View the floors are aligned to each other based on the anchor points, therefore moving the anchor locally is interpreted in the 3D View as moving all the objects of the active floor while the anchor point keeps its position.



### Switch on/off floor markers

You can switch on/off the floor markers except for the border of the active floor, see the Active floor commands.

#### 10.1.8.7. Floor marker setting

You can set the colour of the floor markers in File menu / Preferences / General / Cursor and marker settings

## 10.2. Wall

### Introduction


Walls are drawn on 2D floor plan, but they have 3D characteristics as they are created. A wall, in ARCHLine.XP is not a series of lines drawn in floor plan, but represents a 3D shape having a width and a height structure. The walls can take any 3D shape (sloped, curved, layered, freely profiled) and you can then place a door or window in it.

### Surveying

If you started the drawing with the survey of an old building, you will have a surveyed room with walls transformed into real walls. Now you can continue your work with drawing the new part of the building and connecting it to the old building, of course, depending on the actual task.

### New building

You can start drawing - without any preparation - with the creation and modification of walls, and the drawing of the floor plan.


In both cases you will use the  *Wall tool* commands.

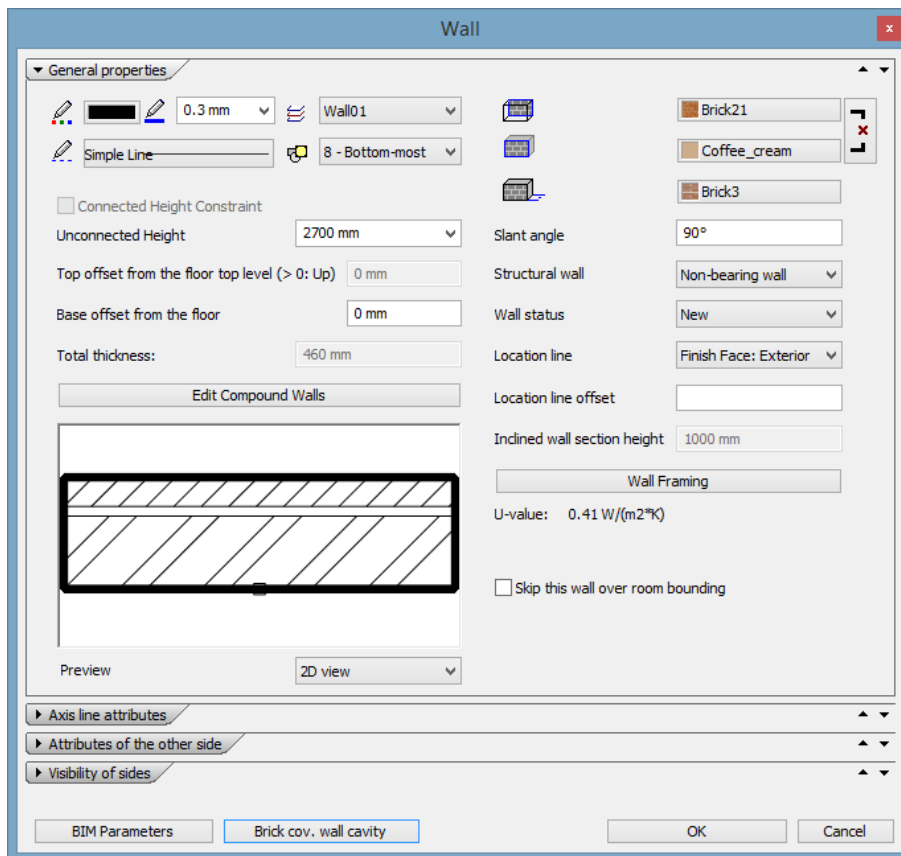
Walls are made up of one or more vertical layers (single or sandwich walls). Walls are independent and separate objects that are not linked to rooms, and they can be straight or curved.

In this chapter we will discuss the setting of wall properties, the creation of walls, wall editing and wall modification.

#### 10.2.1. Wall properties

Define wall properties before starting drawing.

You can set these properties by right-clicking  **Wall tool** or with the **Building - Properties - Wall** command. If you modify any of the wall properties that will affect the walls created later on.



### 10.2.1.1. Wall General Properties

Like any other architectural objects of ARCHLine.XP, walls have also their colour, layer, line type, and line width and priority properties.



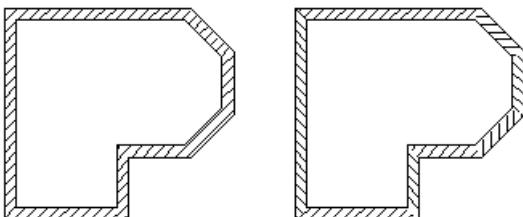
See:

- ❖ the detailed description of general properties in Chapter 3.2.1. *Specifying general properties*,
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning cost variables*.

Walls have further general settings: specific hatch direction and the position of the reference line, or enabled side marker. You can also set the exterior and interior wall material.

#### Hatching directions

Global hatch direction



You can select the global hatching direction or you can disable this option if you want to use a hatching direction related to the wall direction.

You can see a hatching angle of 45° in this example.

#### Side marker

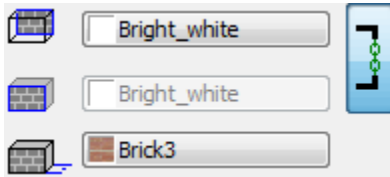
This is a global switch for marking wall reference lines on each wall. Side marker will not be plotted.

#### Offset



Enter the distance to specify how far the wall's reference line will be offset from the cursor line.

## Exterior and interior wall material



You can define different interior and exterior wall materials and the body material for the wall.

- Press the button referring to the material.
- Select material type in the **Material** dialog box. Click on the right side Link button to use identical interior and exterior wall materials.



You can perform material selection by selecting the appropriate material in the *Design Center, Material set* and dragging and dropping onto the wall. See chapter 8.5. *Modifying properties* for a detailed description.

## Wall status

There are four possible wall statuses:

- ❖ New wall
- ❖ Existing wall
- ❖ Wall to be demolished
- ❖ Wall not connected

### New wall

The New wall status is the default. Should be used for drawing walls in general if other statuses are not necessary to visualize.

### Existing, Wall to be demolished

The first three statuses make it possible to distinguish existing walls, walls to be demolished and new walls on your drawing in the case of the reconstruction or extension of an existing building.

You can assign colours to the existing walls and to the walls to be demolished in accordance with standards in force. The program will colour walls in the drawing with these colours. Colour assignment is global, so the program will apply settings to all the existing walls and walls to be demolished in the drawing. Walls to be demolished will not have 3D model.

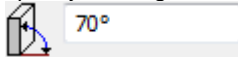
### Wall not connected

In construction, you might have situation that you want to keep walls separately. In these cases, you need to prevent wall ends from joining. You can do this by disallowing the wall joins.

Using the *Wall not connected* property, the end of the wall cannot join to the end of another wall.

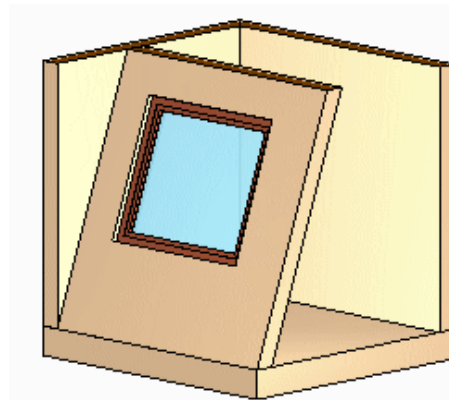
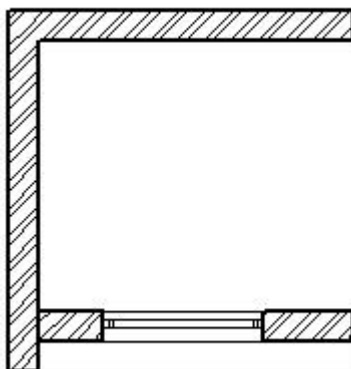
### Slanted wall

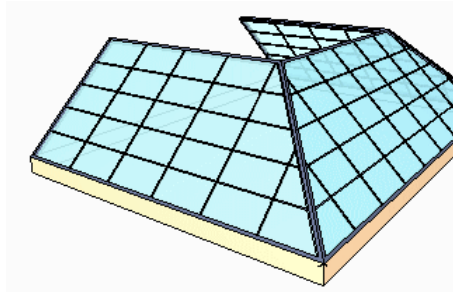
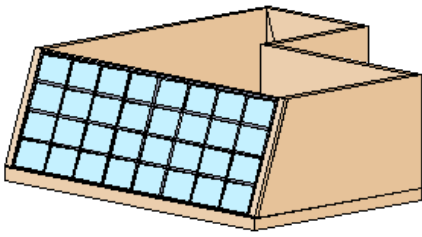
- Specify the angle of inclination. The positive direction is specified by the wall reference line.



- 

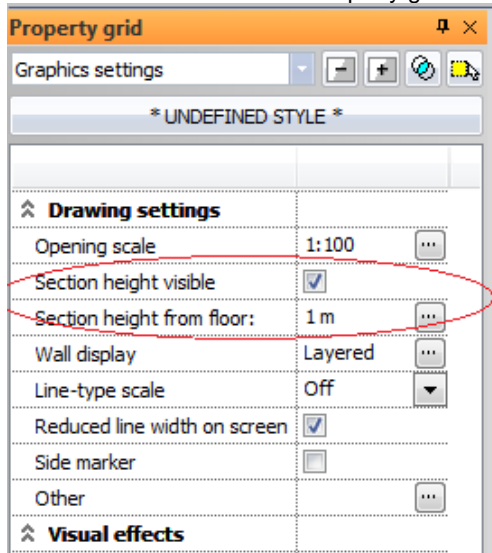
Slanted walls are displayed on the floor plan with their section view at the height of 1 m.





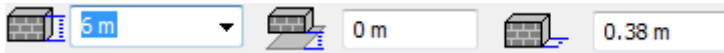
### Wall – No hatch under elevation 1 m

There is no wall hatch displayed when the wall elevation plus the wall height is under the **section height from floor** value. You can set this value in the Property grid when 2D floor plan is the active window.



### Geometry properties

In **Geometry properties** you can define the geometry specific properties of the wall: wall height, wall height related to the current floor and wall thickness.

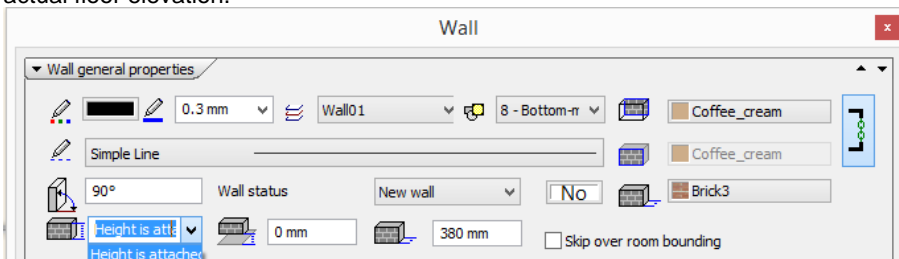


#### Wall unconnected height

You can define the unconnected height of a wall to a fixed value. In this case wall height will take the value set in the *Modify floor elevation* dialog box.

#### Wall height is attached to floor height

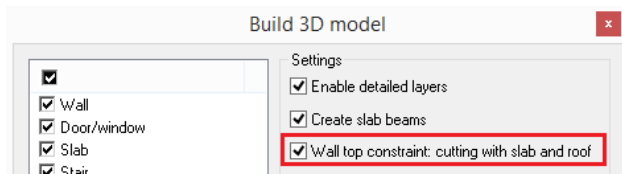
If you select the *Height is attached to Floor height* in the pull down list, the height of the wall will change in line with the actual floor elevation.



#### Attaching Top

You can attach walls to roofs, slabs and ceilings. The effect is, that if you build the 3D model the wall shape will be limited by the roof and slab geometry.





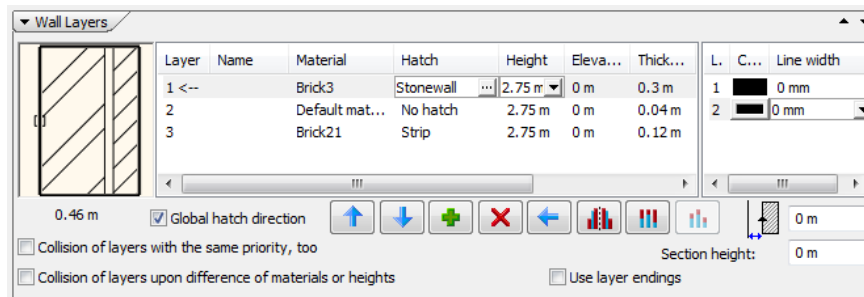
Walls do not automatically attach to roofs and ceilings. You have to explicitly attach them using the checkbox in the Build 3D model dialog.

### 10.2.1.2. Compound Wall

A compound wall is a wall that consists of multiple vertical layers.

You can set the thickness, hatch (pattern), material (such as concrete, insulation, and interior finish) and function of these layers.

You can create compound walls, consisting of up to 25 layers. You can select multi-layered wall structures from the sets or you can create your own compound wall layer by layer. It is worth creating and saving the compound wall often used. Click on the Wall Layers tab in the dialog.



Click on the **Insert new (green plus)** button to add new layers. Layers before the insertion will be intact, while layers after the insertion will be shifted.

Click on the **Delete (red X)** button to delete the wall layer selected.

The program displays the total thickness of the compound wall under the preview window on the left side.

### Displayed layer

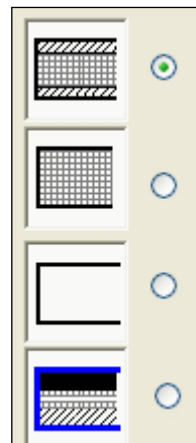
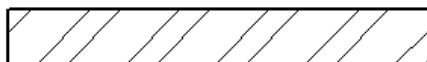
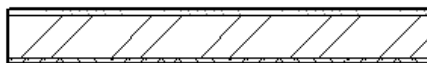
Select the layer in the list you want to display and click on the **Displayed layer** button. The *Arrow* will jump to the number of the layer to mark the representative layer (usually a brick or concrete layer).

This is very useful when displaying walls on the floor plan or in 3D without any layer. The program will use the marked layer's properties to display the wall.

In the case of the floor plan:

Enable the second icon at the wall in the View menu - Doors, windows, and wall scale dialog box.


The wall will have the properties of the hatches of the displayed layer.



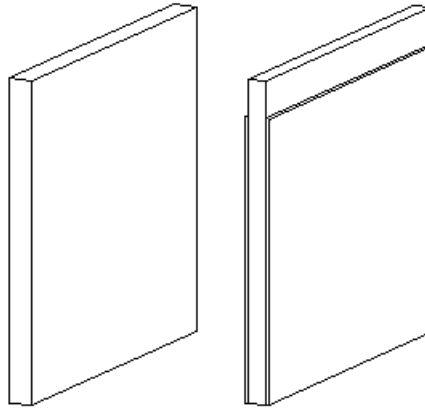
**In 3D:**

If you want to see the layered wall in 3D, the wall will be displayed with the properties of the displayed layers.

To display layers, enable the **With**

**laminated** option in the  3D

**Build 3D model** dialog box. You can see layers of different width in the example.



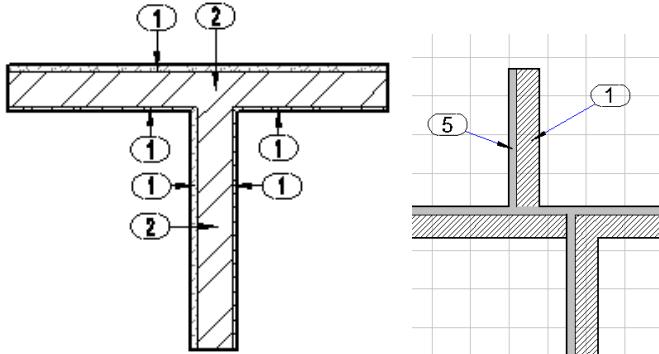
**Layer properties**

Layer	Name	Material	Hatch	Height	Elevation	Thickness	Priority	L
1 <--		Brick3	Ston...	2.75 m	0 m	0.3 m	5	P
2		Defaul...	No h...	2.75 m	0 m	0.04 m	1	P
3		Brick21	Strip ...		Floor elev.		1	P

Click on the field to activate the desired wall layer. To modify layer name, material, height, elevation and thickness, double-click on the actual field. You can also define wall height with specifying elevation. To do so, select the *Floor elevation* option in the drop down list.

**Layer priorities**




When walls are joined, certain rules for joining apply that define how the different layers meet and intersect. The priority is a number ranging from a minimum of 0 to a maximum of 10. High priority layers will cut through low priority layers. ARCHLine.XP connects layers with the highest priority first before connecting layers with a lower priority.

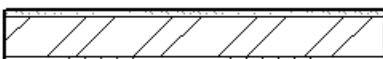


**Layer line**

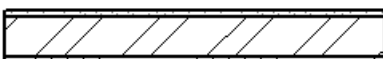
You can set the width and colour of the line between the layers of the multi-layer wall layer by layer.

The program will offer the 0 line width as a default.

L	Color	Line width
1		0 mm
2		0 mm
3		0 mm




Line width between layers: 0

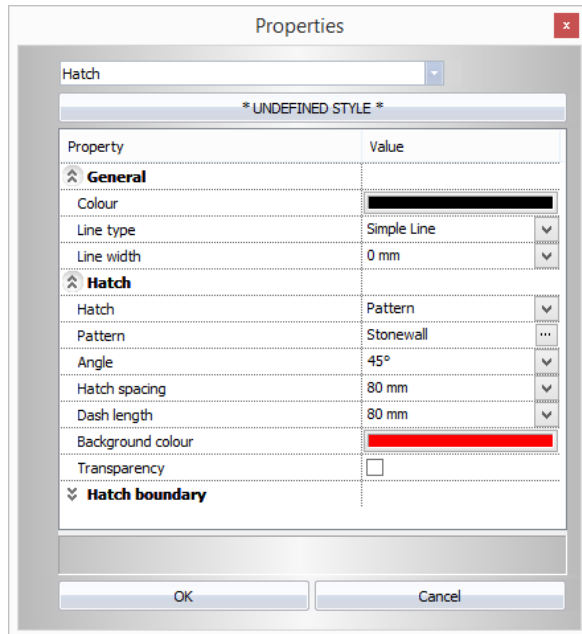


Line width between layers: 0.3 mm.

## Layer hatching

Select **Layer hatch** on the left hand side of the window to set the hatching parameters of the selected wall layer when displayed on the floor plan.

- Select the layer in the **Layers** dialog box, and
- Click on the **Modify layer hatch** button. 



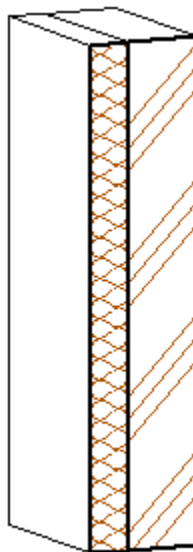
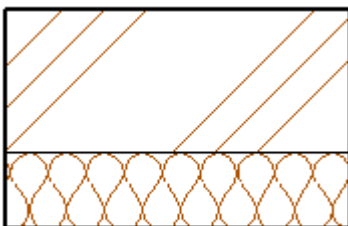
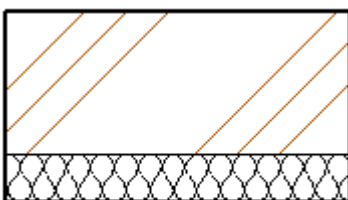
You can set the general hatching properties of the wall in the upper side of the dialog box, i.e.: colour, line type, line width. In the specific parameters section you can set the background colour, the pattern, the hatch density, the transparency, the visibility of hatch boundary, the angle of wall hatching and you can also turn it into a solid pattern.



In the case of walls you also have to define hatching parameters for the cross-section view. You can set this parameter by changing the appropriate material's properties of the actual layer.

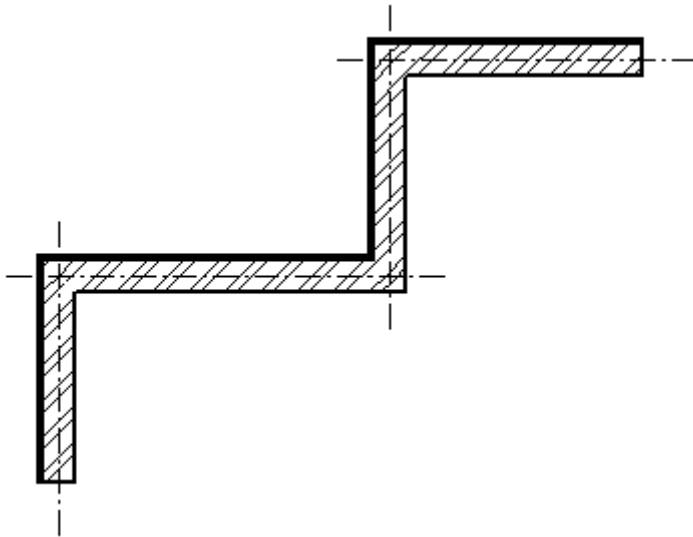


See Chapter 4.2.3.5 *Material properties dialog box* and Chapter 11.3.1 *Hatching properties*.



### 10.2.1.3. Walls with layer axis line representation

On the floor plan, the active wall layer axis line can be represented with different line properties. The line properties can be set in the *Displayed layer axis line* panel:

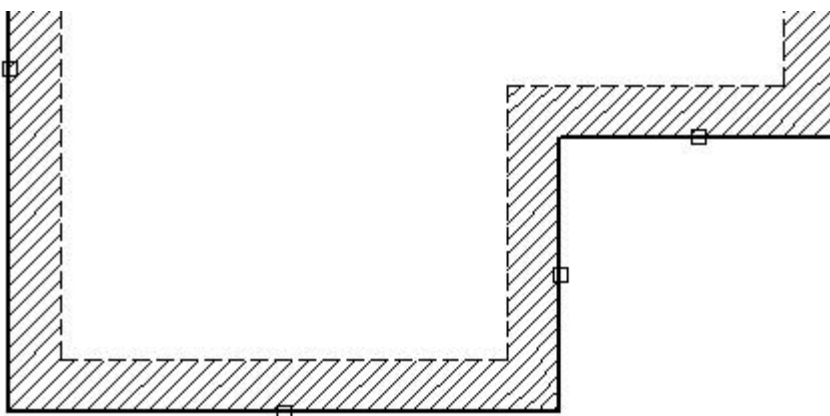
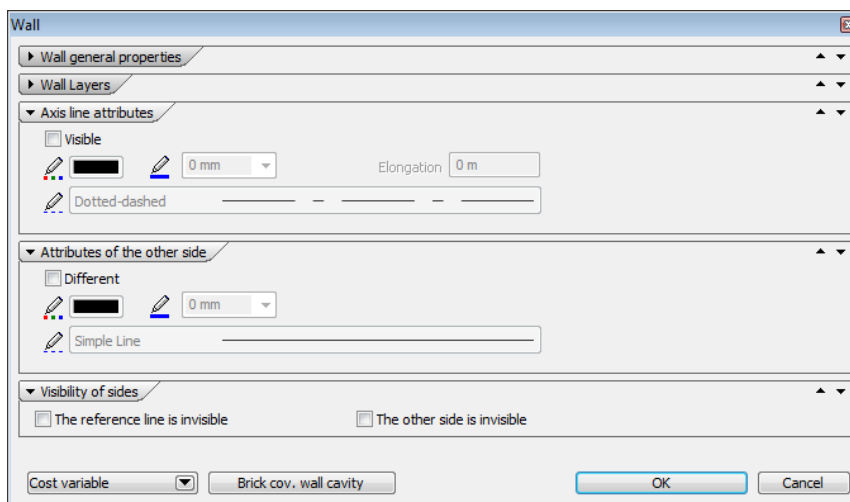


#### 10.2.1.4. Walls with different inner and outer line representation

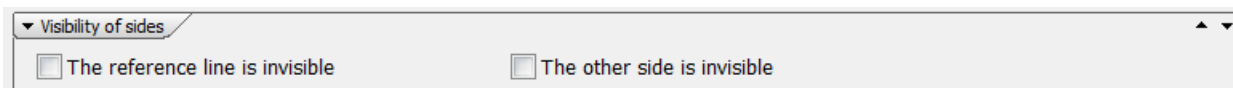
On the floor plan, the other side of the wall contour line can be represented with different line properties.

Other side means the opposite side to the wall reference line.

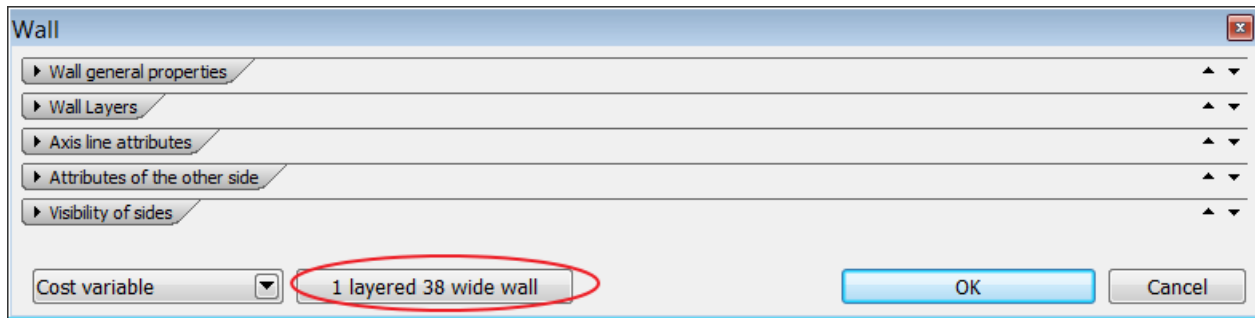
The line properties can be set in the *Other side* panel:



#### 10.2.1.5. Visibility of the sides



### 10.2.1.6. Wall sets



#### Sets

You can save your own wall properties into the sets, and you can also load wall properties from the sets.

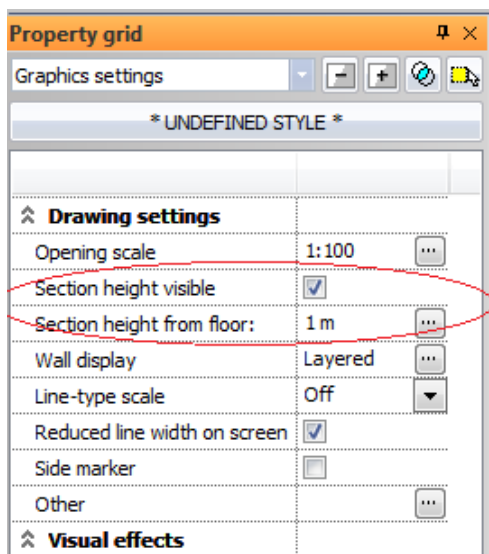
The program contains default wall properties; you can select any of them or add new properties.



See the description of sets in Chapter 3.2.3. *Using sets of properties.*



### 10.2.1.7. Property grid – Wall properties



### Wall – No hatch under elevation 1m

There is no wall hatch displayed when the wall elevation plus the wall height is under the **section height from floor** value. You can set this value in the Property grid when 2D floor plan is the active window.

## 10.2.2. Creating walls

You can create walls in different ways using

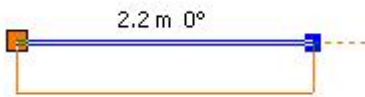
- ❖ **Building menu - Wall** commands or
- ❖ **Toolbox – Building - Wall** tools.

### Reference line

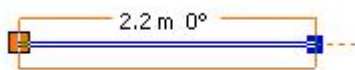
When you draw a wall, there are several options for the reference Line (in the Options Bar):

- Wall centerline
- Interior line
- Exterior line

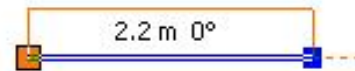
This image shows the wall line in all cases below.



The wall will be placed on the right side of the reference line.



The wall will be placed onto the axis.



The wall will be placed on the left side of the reference line.

### 10.2.2.1. Single Wall

With this command you can draw one or more walls along a reference line. Define the wall corner points one by one.

- Specify the start point of the wall and then the endpoint.
- Specify the endpoint of the next wall (the wall start point coincides with the end point of the preceding wall), or
- **Enter** start drawing a new wall, irrespective of the previous one.
- **Enter** completes the command.



Wall direction depends on the reference line orientation. Press F5 to flip the interior/centre line/exterior orientation of the wall.

### Options:

<b>In the middle</b>	Places the reference line centred.
<b>Right side / Left side</b>	Places the reference line on the right / left side of the wall.
<b>Smooth</b>	The next wall will be joined to the preceding one tangentially.
<b>Arc</b>	Draws arc wall.
<b>Tangent</b>	If the first object of a polyline is an arc, you can define a tangential vector for the arc. You can continue an existing wall with a tangential arc.
<b>Select an object</b>	Places the selected object into the contour of the profile.
<b>Inverse</b>	Places wall reference line to the other side.

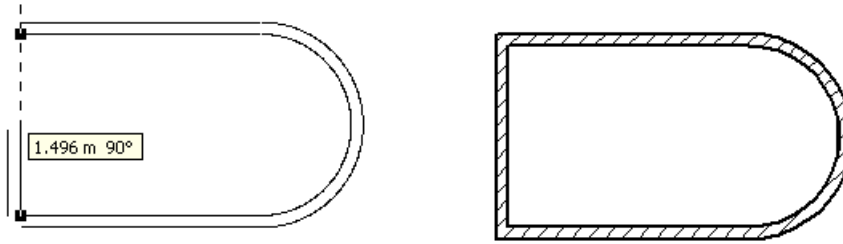
### Draw by polygon option

With this option you can draw a series of walls in one step. The wall endpoints will be connected. The reference line may contain arcs and lines too. It is different from the previous function because the program will draw wall alignment only until you end the command.

- Define the starting corner point of the wall and then the other nodes. The endpoint of the wall coincides with the starting point of the next wall.

- Define the endpoint of the next wall, or
- **Enter** you can start drawing a new wall, irrespective of the previous one.
- **Enter** completes the command.

The program will display the walls like that:



### Draw by rectangle option

With this option you can create wall along a rectangle contour with the base line and height.

- Define one corner of the rectangle base line and then the second one.
- Move the cursor into the perpendicular direction and define the height of the rectangle with its other corner point.
- **Enter** completes the command.

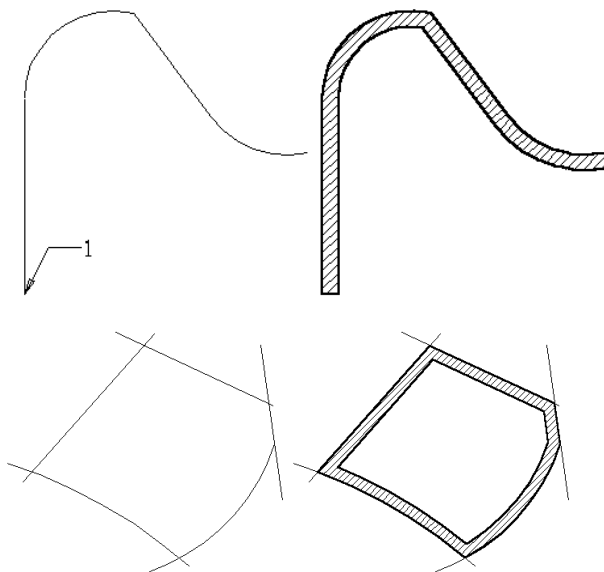


See Chapter 11.3.2 Commands for drawing polylines  - General rectangle.

### Wall by existing chain options

Use these options to place one or more walls along one predefined open or closed polyline.

- Select the corresponding option and the endpoint of the polyline and the program will draw the walls. The profile may contain lines and arcs.
- The program creates the wall along the profile.
- **Enter** Exits the program.
- 



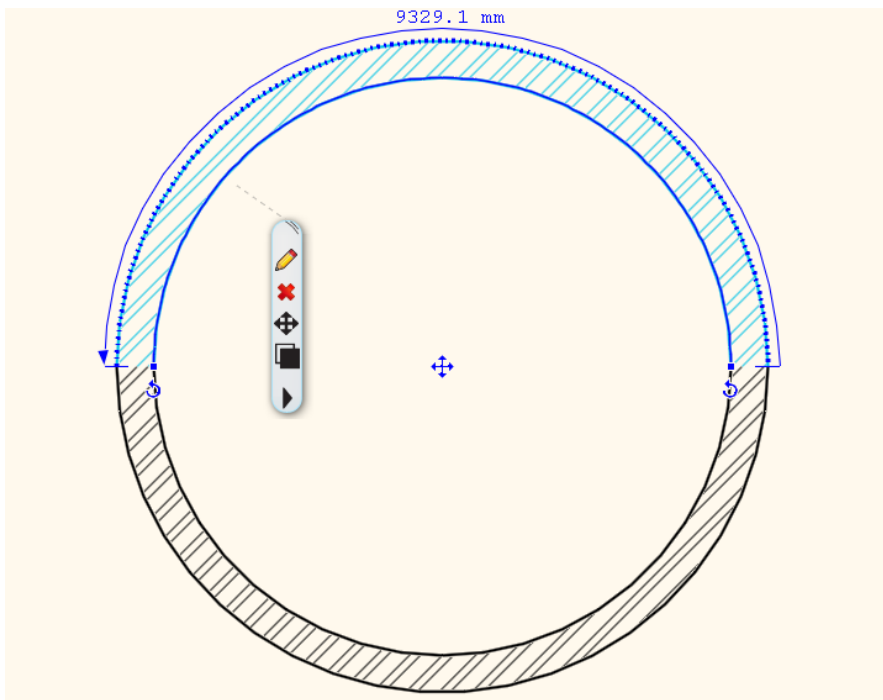
The polyline actually indicates the position of the reference line, because the program will place the walls depending on the value of the **reference line settings** which can be changed with the options.

#### 10.2.2.2. Curved wall

With this command you can draw arc wall passing through three points.

- Define the starting point, endpoint and an internal point of the arc wall. The wall endpoint coincides with the starting point of the next wall. The joint can be normal or tangential, and the next wall can be linear or arc.
- Define the endpoint of the next wall, or
- **Enter** you can start drawing a new wall, irrespective of the previous one.
- Press Enter to close the command.

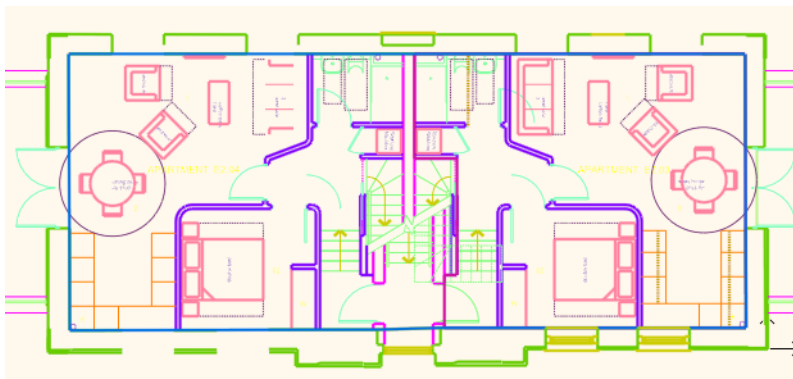
In ARCHLine.XP you can create a full-circle wall as 2 arcs joined together.



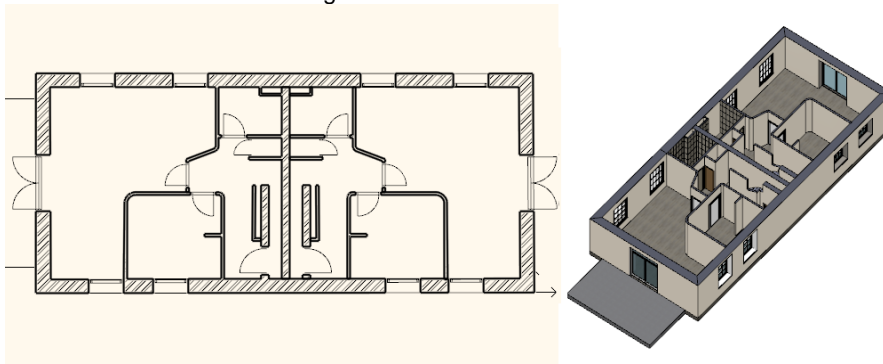
### 10.2.2.3. Walls on DWG drawing

The Walls on DWG drawing command is used to convert a 2D drawing into a 3D model, by using its lines.

Example:  
Imported DXG/DWG drawing



2D lines converted into drawing & 3D model



#### How to use the tool

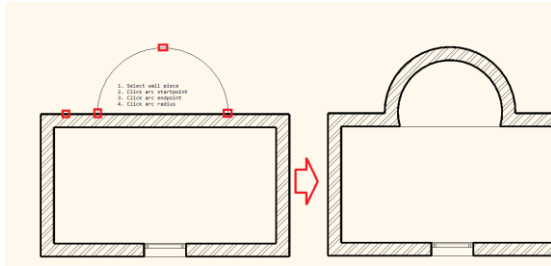
- ❖ Start the Walls on DWG drawing tool.
- ❖ Left click on a line near to its endpoint, which line represents one side of the wall.
- ❖ Left click on the same line, near to its other endpoint.
- ❖ Left click on the second line, which represents the thickness of the wall. When the tool is finished, you will see the wall object on the 2D and in 3D.



### 10.2.2.4. Further wall creating commands

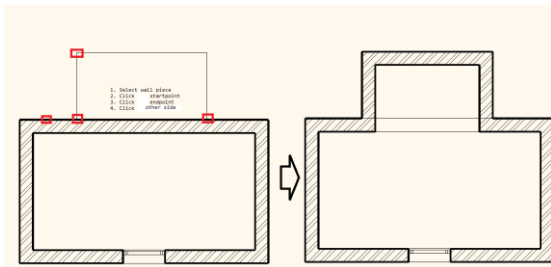
#### ***Insert Curved wall:***

1. Select wall, 2. Select arc starting point on the wall, 3. Select arc endpoint on the wall, 4. Enter radius



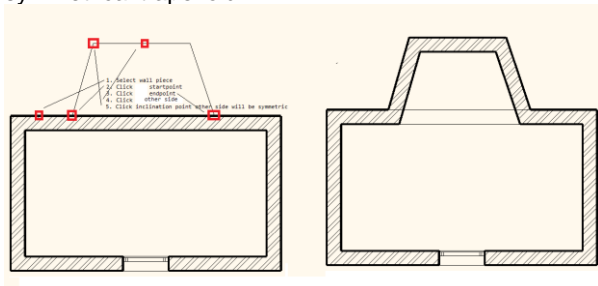
#### ***Insert Square add-on:***

1. Select wall, 2. Select starting point on the wall, 3. Select endpoint on the wall, 4. Offset the selected section



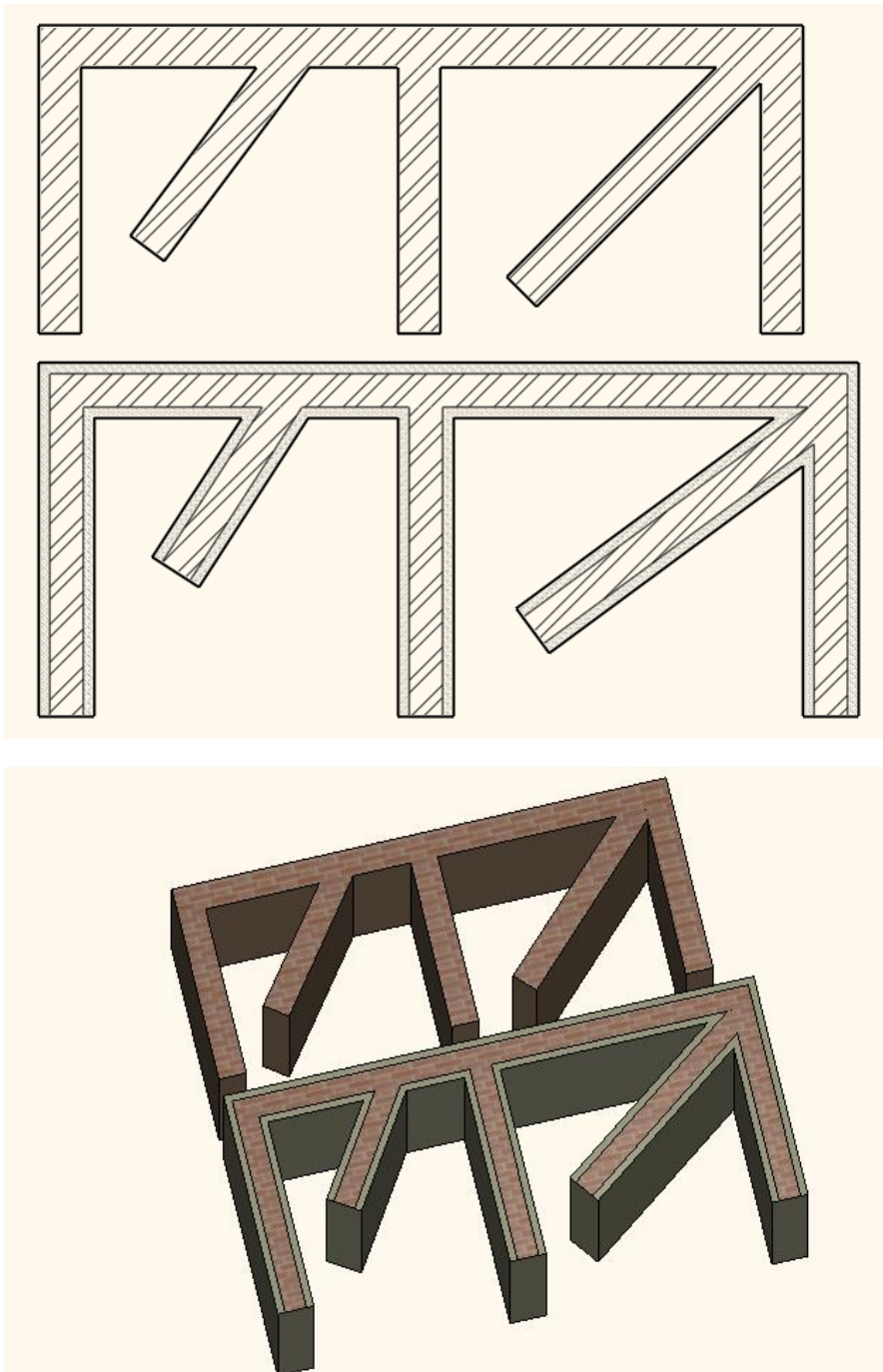
#### ***Insert Angle add-on:***

1. Select wall, 2. Select starting point on the wall, 3. Select endpoint on the wall, 4. Offset the selected section, 5. Define symmetrical trapezoid



### 10.2.3. Joining walls

When you create walls, ARCHLine.XP automatically joins them at their intersections.

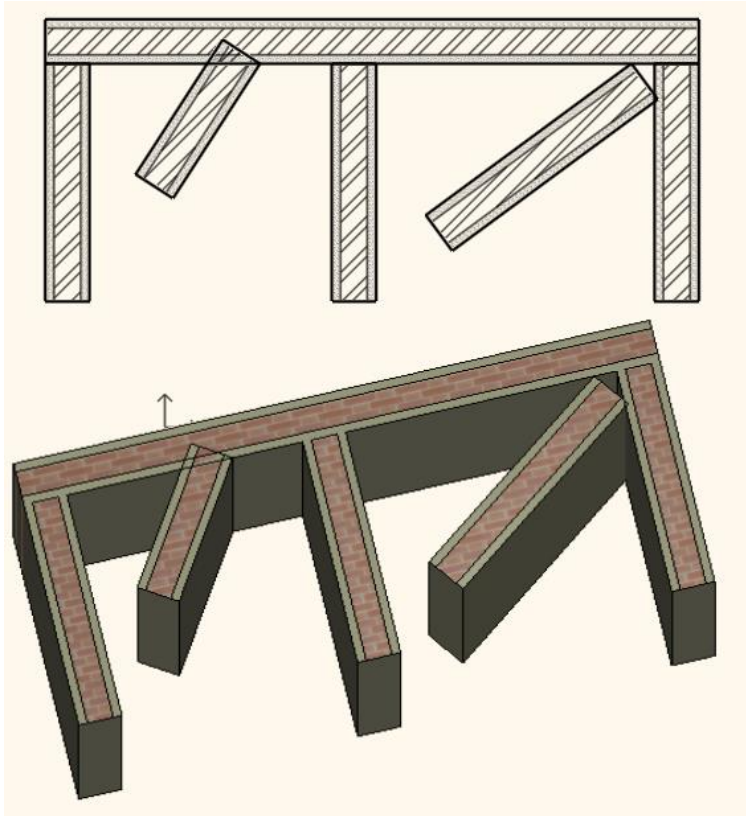
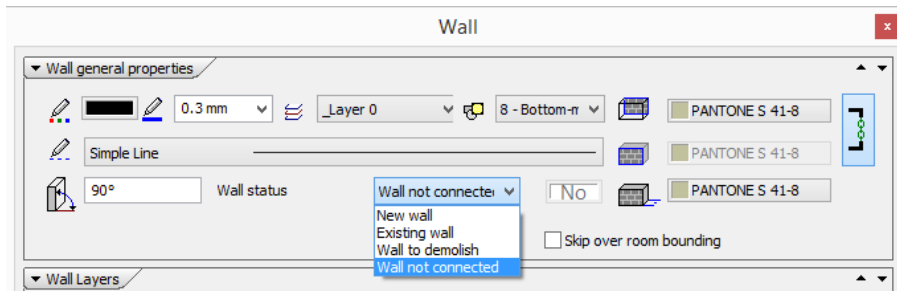


### Cleaning Wall Joins

Cleaning up wall joins affects display in a floor plan view only. Applying the *Wall not connected* status, you can create a special wall by which will not be automatically connected to other walls and cannot be connected manually also.

To prevent a join on a wall

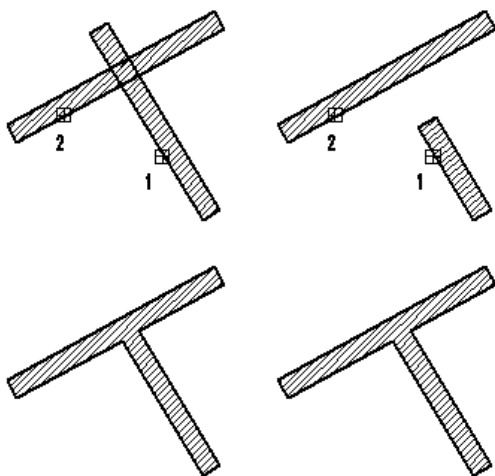
1. Select the wall where you want to disallow the join.
2. Click on the Properties command.
3. Select **Wall not connected** from the list box.



If you want to allow the join again between walls, Select **New wall** from the list box.

### 10.2.3.1. T connection

This command will join the first selected wall to the second one. The first wall will keep its selection side part, and the second wall will remain intact. Not joined endpoints of the first wall will keep their original position as well.



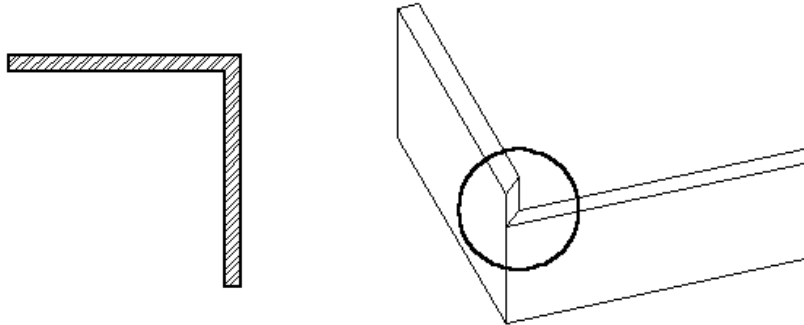
- Select the wall object you want to join to another wall. Select the section of this object you want to keep.
- Select the wall object you want to join to the previous one.
- **Enter**  
Completes the command.

### Walls connected perpendicularly


In the case of an existing L connection you can convert the corner connection to a perpendicular wall connection. For this, you have to use a T connection.

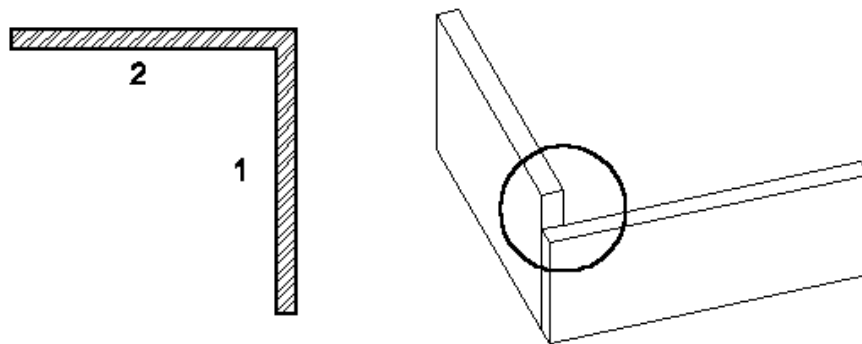
#### Example:

- Draw two walls of different height, having an L connection.



You can see in the hidden line 3D drawing that the walls do not close perpendicularly. Use a T connection to join them properly.

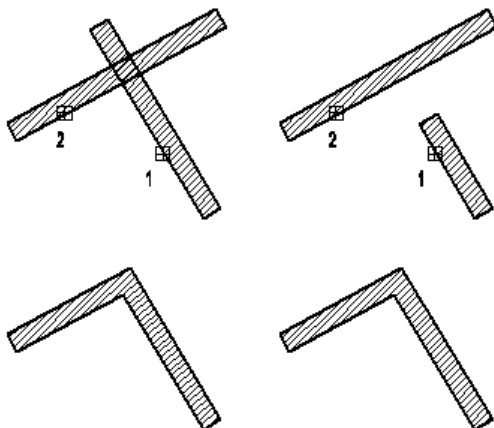
- In the wall Shortcut menu select *T connection* or the  *Trim first object (wall)* icon in the *Edit* toolbar.
- Click on wall 1 and then wall 2 (See figure).



Now you have the proper connection with perpendicular walls.

#### 10.2.3.2. L connection

This command will join two walls by cutting them at their intersection or lengthening them at their user defined part.



- Click on the wall you want to adjust to the other one. Select that part of the object you want to keep.
- Select the wall you want to join to the previous one.
- Click **Enter** to end command.

- Click on the wall you want to adjust to the other wall. Select the part of the architectural object you want to keep.
- Select the wall you want to join to the other wall.

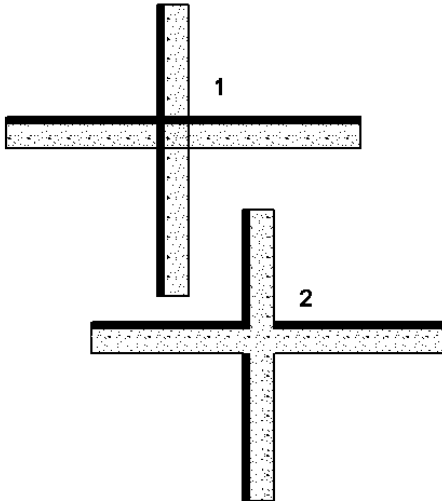


You can join the walls besides the Shortcut menu commands, also with the **Edit toolbar** - **Trim first object** and **Trim both objects** commands.

### 10.2.3.3. X connection

This command will join two walls by cutting both of them at their intersection. In the wall Shortcut menu select *X connection*.

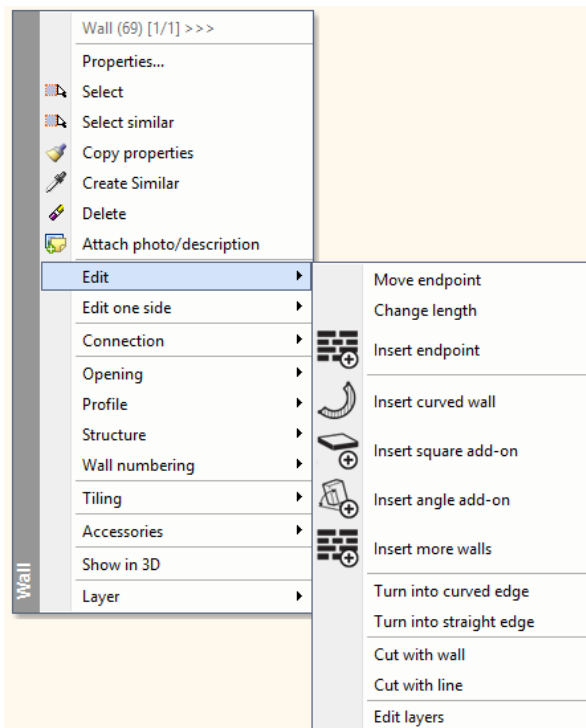
- Right click on the wall you want to adjust to the other one
- Select X connection from the pop menu Connections (See figure).



### 10.2.4. Editing walls

You can edit the walls. When editing, you can edit the entire wall (i.e. both sides together) or one side only.

- ❖ Use the **Shortcut menu** commands. Right click on the wall to display the shortcut menu

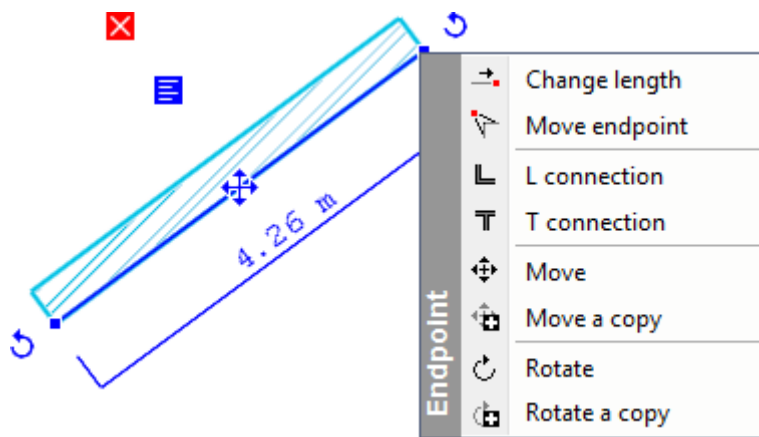
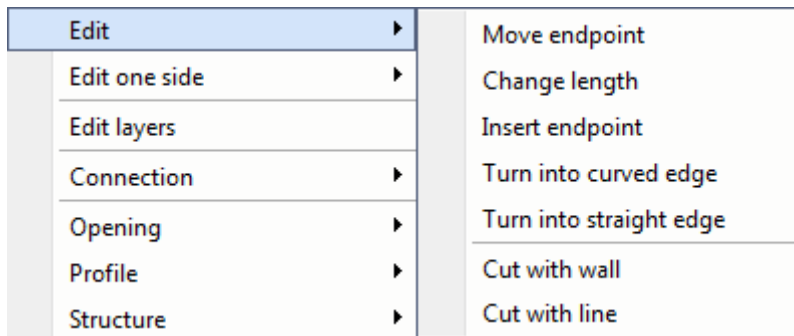


You can find edit commands for the entire wall and for one side of the wall in the *Shortcut menu*. The menu can be found on both the 2D and 3D views.

### 10.2.4.1. Change length

When modifying the length of a wall ARCHLine.XP automatically recognizes the direction of it. It is enough to select the endpoint and move the cursor to the appropriate direction, then type the relative length value on the keyboard. The positive value is measured in the selected direction along the direction of the object.

You can find this command in the *Shortcut menu - Wall – Edit Change length* or click on *the wall endpoint marker*.

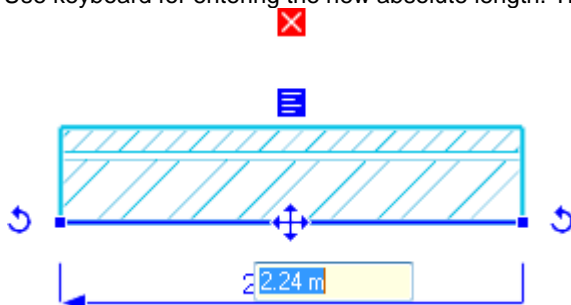


- Define the new length by moving the mouse, or use your keyboard for entering the shift value.

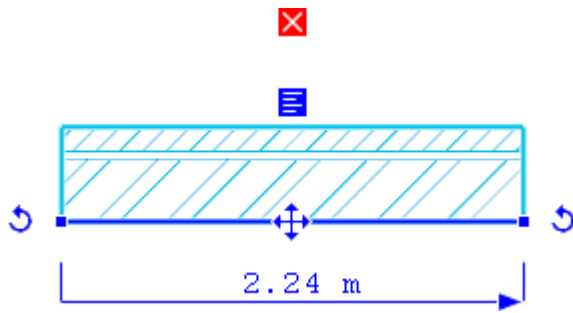


#### Modify length by typing the absolute length

- Click on the wall and next click on the length value.
- Use keyboard for entering the new absolute length. The length will change relative to the wall direction marker.



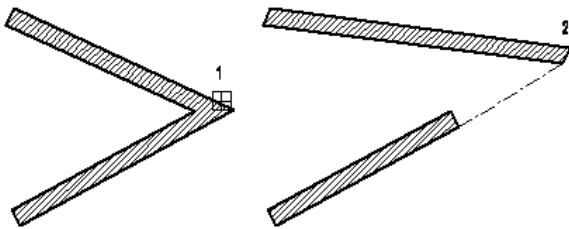
- If you wish to change the order of start point and endpoint positions click on the direction arrow marker to move it to the other endpoint of the wall.



### 10.2.4.2. Move endpoint

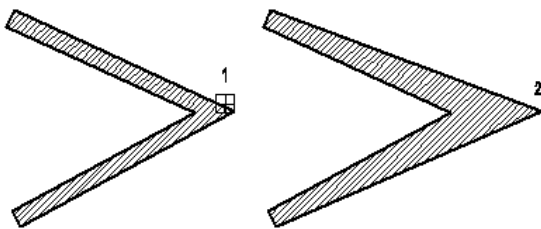
This command will change the location of any corner point of the wall without changing wall thickness. You can find this command in *Shortcut menu - Wall - Edit Move endpoint* or click on *the wall endpoint marker*.

- Select the endpoint you want to move.
- Define a new location for the endpoint.



### *Move endpoint on one side of the wall*

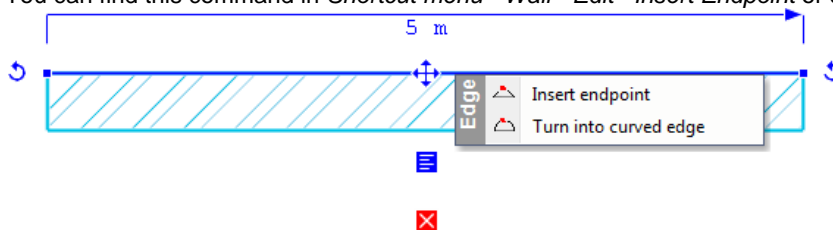
You can move a node to one side of the wall only, which will change wall thickness and the geometry of that wall side. You can find this command in *Shortcut menu - Wall - Edit one side - Move endpoint*



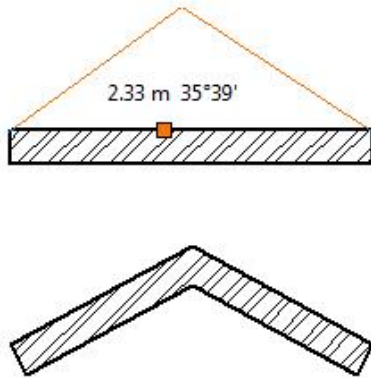
### 10.2.4.3. Insert endpoint

This command splits a wall to two connected walls by adding a new node on the selected side of the wall.

You can find this command in *Shortcut menu - Wall - Edit- Insert Endpoint* or click on *the wall edge marker*.

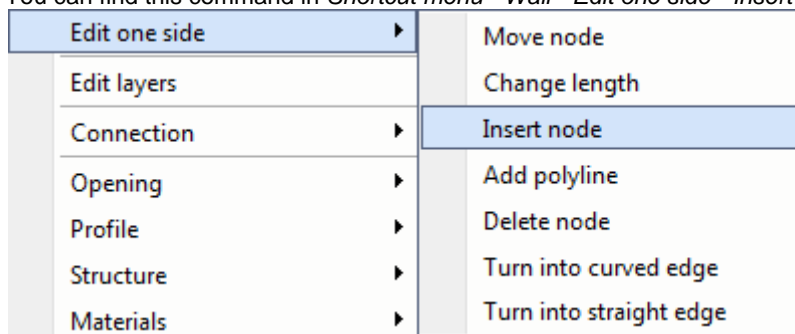


Define a new location for the inserted point.



#### 10.2.4.4. Insert node on one side of the wall

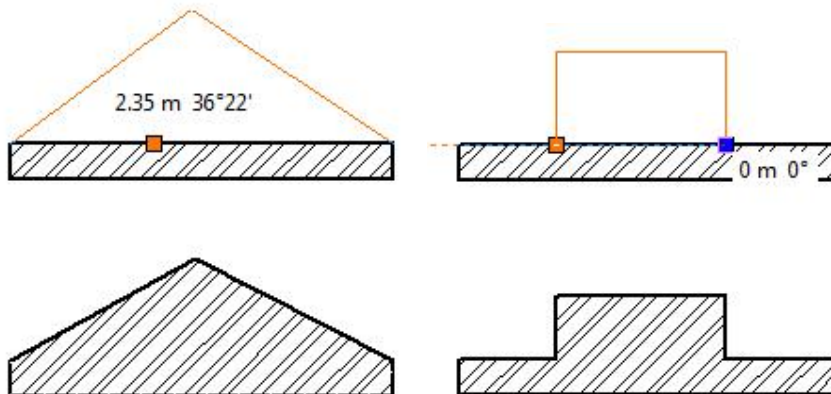
You can insert a node to one side of the wall only, which will change wall thickness and the geometry of that wall side. You can find this command in *Shortcut menu - Wall - Edit one side - Insert node*.



- Specify the location of the new node.

#### Options:

<b>Polygon</b>	You can define a polyline as new closed contour of the wall side. Specify the corner points to be inserted one by one.
----------------	--



Polygon

#### 10.2.4.5. Delete node

You can delete a node from the selected wall, if you have inserted that node to one side of the wall.

You can find this command in the *Shortcut menu - Edit one side - Delete node*.

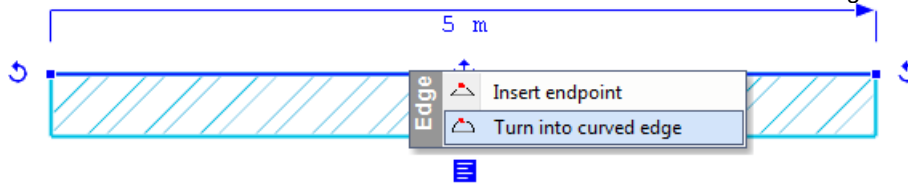
- Select a wall by clicking close to the node to be deleted.





### 10.2.4.6. Turn into curved edge

This command will convert straight linear walls to arc walls, or modifies the radius of an existing arc wall. You can find this command in *Shortcut menu - Wall - Edit - Turn into curved edge* - or click on *the wall edge marker*.



- Select the wall to be modified. You can select arc walls as well.
- Click on the desired point to define graphically the arc to be intersected by the arc wall.



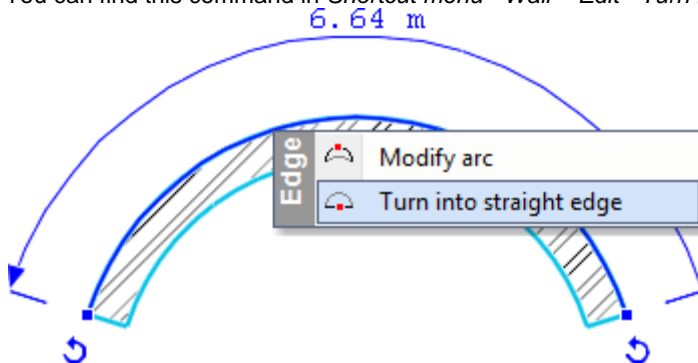
### Converting lines to arc on one side of the wall

You can convert one wall side to arc only, which will modify wall thickness and the geometry of the wall side concerned. You can find this command in *Shortcut menu - Wall - Edit one side - Turn into curved edge*



### 10.2.4.7. Turn into straight edge

This command will convert an arc wall to a linear one. You can find this command in *Shortcut menu - Wall - Edit - Turn into straight edge* - or click on *the wall edge marker*.



- Select the arc wall you want to convert to linear one.
- **Enter**      Completes the command.

### Converting arc walls to linear on one side of the wall

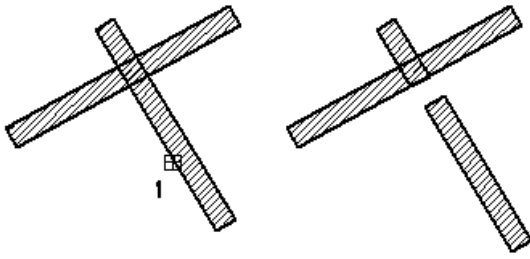
The command will convert one side of the wall to linear only.

You can find this command in *Shortcut menu - Wall - Edit one side - Turn into Straight Edge*.

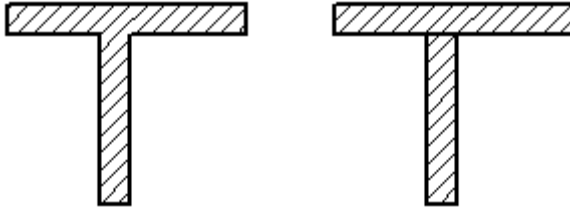
### 10.2.4.8. Cut with wall

This command will split the wall into two at the point of intersection nearest to the selected point. You can find this command in *Shortcut menu - Edit - Cut with wall*.

- ❖ The program will create two new walls as the result of this operation.
- ❖



This is also very useful when the intersecting walls are connected. This command will delete the wall T or L connection.

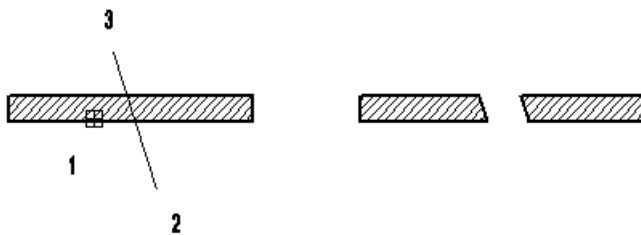


- Select the wall you want to split.
- Select further walls, or
- **Enter** Completes the command.

#### 10.2.4.9. Cut with line

This command will cut the selected wall along a specified line.  
You can find this command in *Shortcut menu - Wall - Edit - Cut with line*.

- Specify the wall you want to split (point 1).
- Specify the starting point and the endpoint of the secant line.
- **Enter** Completes the command.



#### 10.2.4.10. Hide/Show wall outline

This command will delete a part of the wall contour line.  
You can find this command in *Shortcut menu - Wall - Accessories - Hide wall outline* and *Show wall outline*.



- Select the appropriate part of the wall.
- Click on the start point of the wall outline from where it will be hidden.
- Click on the endpoint of the hidden part.

Using the *Wall shortcut menu- Accessories - Show wall outline* command you can show the hidden part of the wall contour.

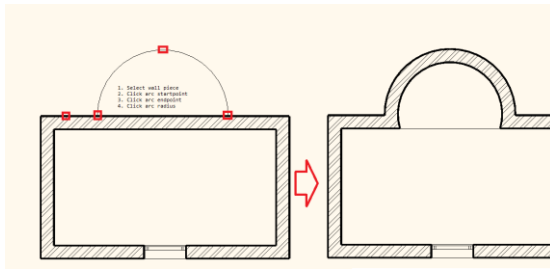
- Select an endpoint of the hidden part of the contour to make it visible.

#### 10.2.4.11. Insert wall(s) into wall

You can insert a segment of walls to the wall with these group of commands.

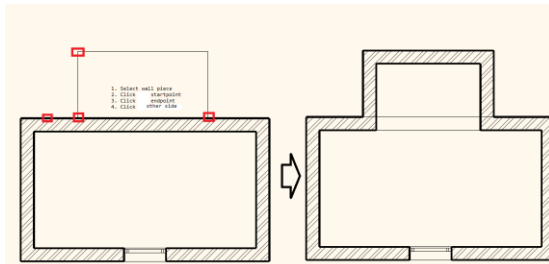
##### **Insert Curved wall:**

1. Select wall, 2. Select arc starting point on the wall, 3. Select arc endpoint on the wall, 4. Enter radius



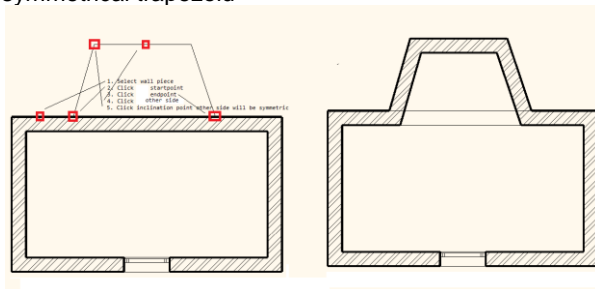
### ***Insert Square add-on:***

2. Select wall, 2. Select starting point on the wall, 3. Select endpoint on the wall, 4. Offset the selected section



### ***Insert Angle add-on:***

1. Select wall, 2. Select starting point on the wall, 3. Select endpoint on the wall, 4. Offset the selected section, 5. Define symmetrical trapezoid

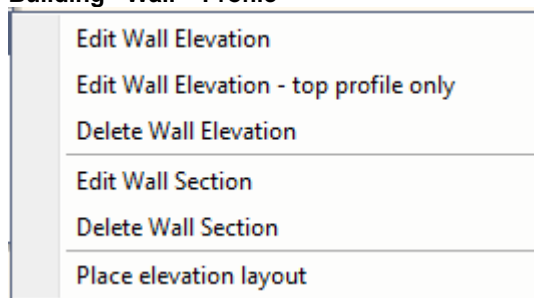


## **10.2.5. Sketching wall elevation, cross section**

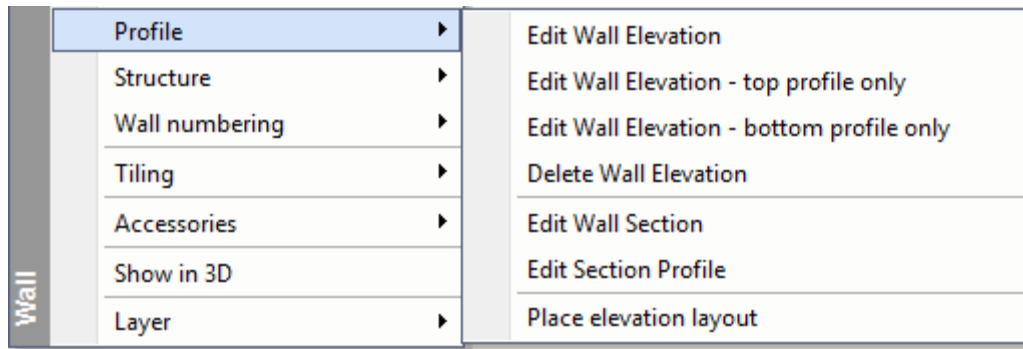
When you draw a new wall ARCHLine.XP draws a rectangular wall. The wall editing commands allows you to modify the shape freely in any dimension with polylines, curved, or circular items.

To edit a wall's elevation select one of the following commands:

### ❖ **Building - Wall – Profile**



- ❖ **Shortcut menu:** you can activate the commands from the floor plan or the 3D View.



### 10.2.5.1. Edit Wall Elevation - top profile only

This command modifies the wall elevation top profile only. You can modify the wall on the floor plan and in the 3D View as well.

- Select one side of the wall you want to change with a right click and choose from the appearing menu Profile/Edit Wall Elevation – top profile only.

Note: Most of the case the interior and exterior side of the walls are different. Please click on the appropriate side you want to edit!

Your screen should appear the elevation view of the selected wall in editable mode:

The 4 lines that appear represent the wall in an elevation view along the selected side. (If you have modified a wall profile before, the program displays the current elevation of this wall.)

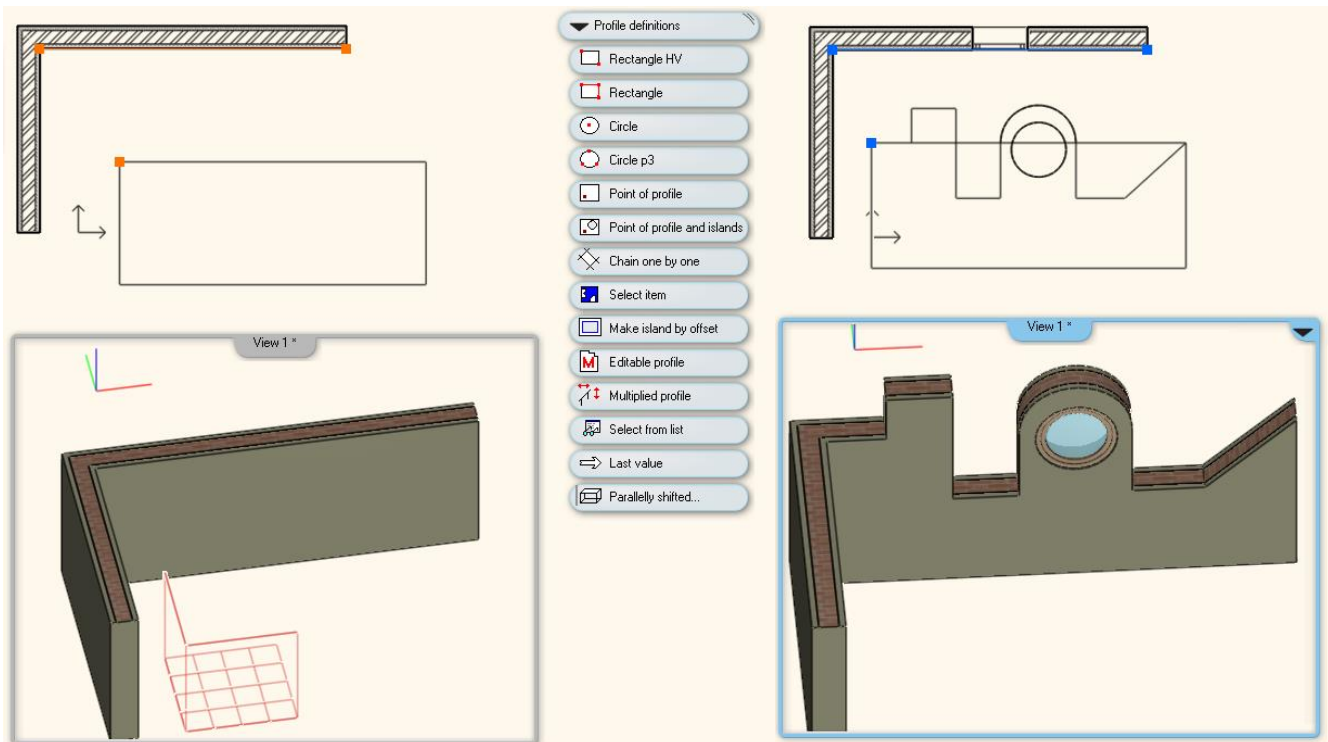
#### Options:



<b>NEXT</b>	You can select next corner point of the elevation to specify the reference point. Press F5 on keyboard to execute the command.
<b>STAIR</b>	The stair side view connected to the wall will appear on the wall elevation view - this helps the definition of the wall profile under the stair.

- Place the wall elevation view anywhere on the drawing.
- Specify a polyline over the elevation view. If it is a closed profile, the program randomly deletes a part of it. Select any option to specify the profile in the *Toolbox – Profile definition tool*.
- When you are finished, press Enter. ARCHLine.XP applies the new profile on the wall. The new shape will be displayed in the 3D views



For a description of the *Profile definition*, see Chapter 8.2. *Specifying profile*



 You can create a new profile with the menu Building/Object  Open profile command; and you can save your profiles in the profile library.

### 10.2.5.2. Edit Wall Elevation

This command modifies the wall elevation profile on each side. You can modify the wall on the floor plan and in the 3D View as well.

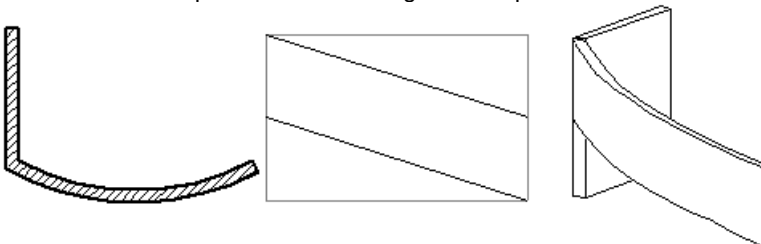
You will create a *closed* profile modifying the wall. The operation of this command corresponds to that of the **Edit Wall Elevation – top profile only** command. The difference is that you have to specify now a closed profile.



See Chapter 9.1.5.1. *Edit Wall Elevation – top profile only* for description.

#### 1. Example: the Edit elevation profile in 3D

- Select the wall you want to change with a right click on the wall surface in 3D and from the appearing pop menu choose Profile / Edit Wall Elevation.
- Use the Edit profile tools to change the shape of the wall surface.



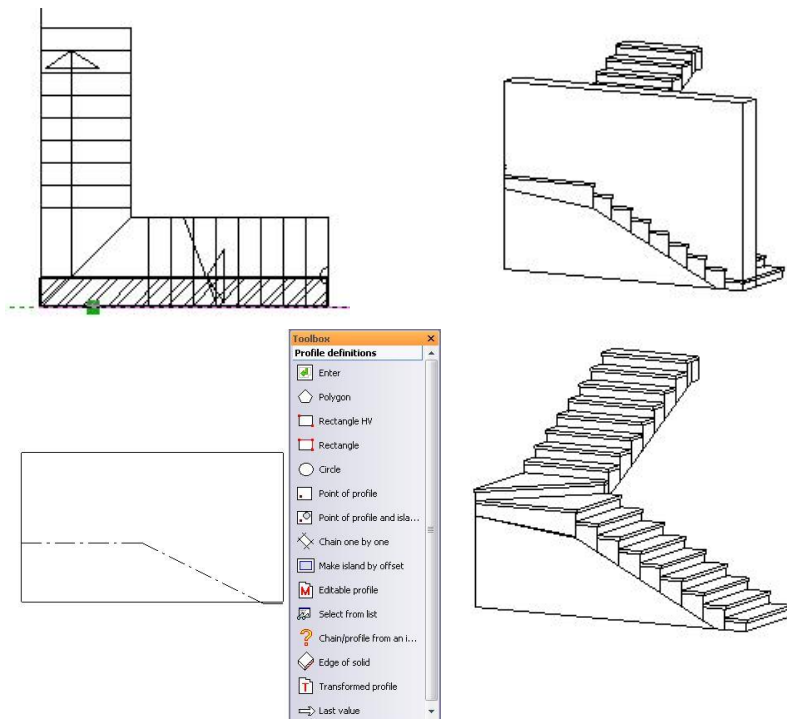
- Press **Enter** to complete the command.

#### 2. Example: Setting the wall elevation profile under the stair

##### Option: STAIRS

The layout image of the stair attached to the wall will be displayed on the front view of the wall. This helps you to define the profile.

- Select the stair to which you want to adjust the wall.
- When you set the profile define the closed profile under the stair.



### 10.2.5.3. Edit Wall Elevation - bottom profile only

This command modifies the wall elevation profile on bottom side only. You can modify the wall on the floor plan and in the 3D View as well.

You will create an open profile with this command; modifying the wall. The operation of this command corresponds to that of the **Edit Wall Elevation – top profile only** command. The difference is that you have to specify now the bottom profile.



See Chapter 9.1.5.1. *Edit Wall Elevation – top profile only* for description.

### 10.2.5.4. Edit Wall Section

This command modifies the wall cross-section profile.

- Select the wall to be modified in the floor plan. The program will automatically create the wall cross-section profile. (If you have modified a wall profile before, the program will display the current cross-section of this wall.)

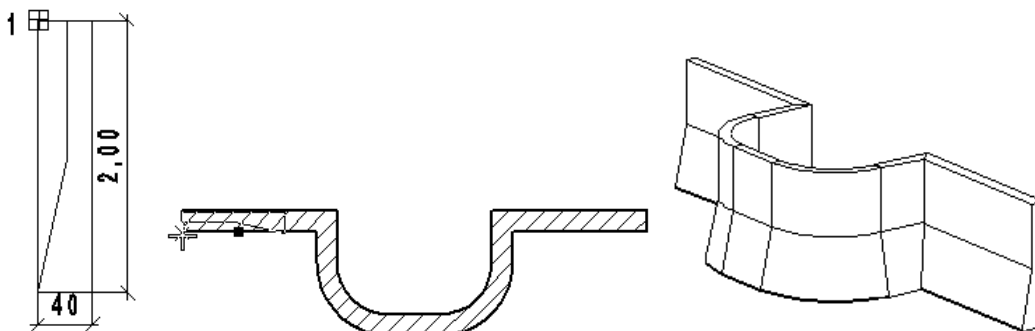
#### Options:

<b>NEXT</b>	You can select next corner point of the elevation to specify the reference point. Press F5 on keyboard to execute the command.
-------------	--

- Place the wall cross-section view anywhere on the drawing. All changes you make to the wall you will do in this preview.
- Specify a closed profile with which you can define the new cross-section of the wall. Select any option to specify the profile in the *Toolbox – Profile definition tool*. When you are finished, press Enter. ARCHLine.XP applies the new profile on the wall. The new shape will be displayed in the 3D views

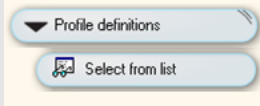


For a description of the *Profile definition*, see Chapter 8.2. *Specifying profile*.





If you wish to use a predefined profile, choose the Select from the list command and you can use any of the predefined objects of the profile library.



To create a new profile, use menu Building/Accessories/Define closed profile command; and you can save your profile in the profile library.

### 10.2.5.5. Mirror section profile

This command mirrors the wall cross section profile. The mirror axis is the imaginary middle axis of the wall cross section.

- Select a wall in the floor plan to mirror its assigned cross section profile.
- **Enter** Completes the command.

### 10.2.5.6. Edit section profile

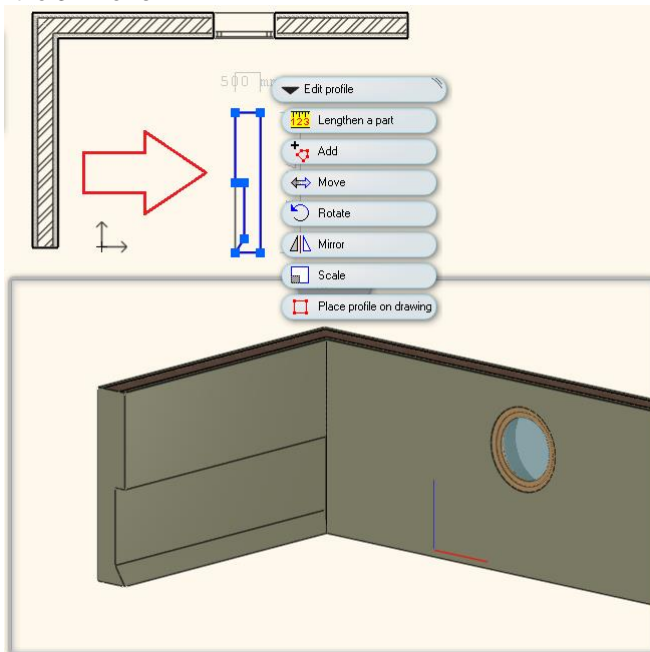
This command highlights the wall cross-section profile and you can edit it directly.

- Select the wall to be modified in the floor plan. The program will automatically create the wall cross-section profile. (If you have modified a wall profile before, the program will display the current cross-section of this wall.)
- Place the wall cross-section view anywhere on the drawing. Use the Markers' operation tools to modify the cross-section of the wall.



For a description of the *Markers operation*, see Chapter 2.15.1. *Markers' operation*.

- When you are finished, press Enter. ARCHLine.XP applies the new profile on the wall. The new shape will be displayed in the 3D views.



### 10.2.5.7. Delete wall elevation

This command removes the modified elevation profile and restore the wall to its original status.

- Select a wall in the floor plan to delete its elevation profile.
- **Enter** Completes the command.

### 10.2.5.8. Delete wall section

This command removes the modified cross-section profile and restore the wall to its original status.

- Select a wall in the floor plan to delete its section profile.
- **Enter** Completes the command.

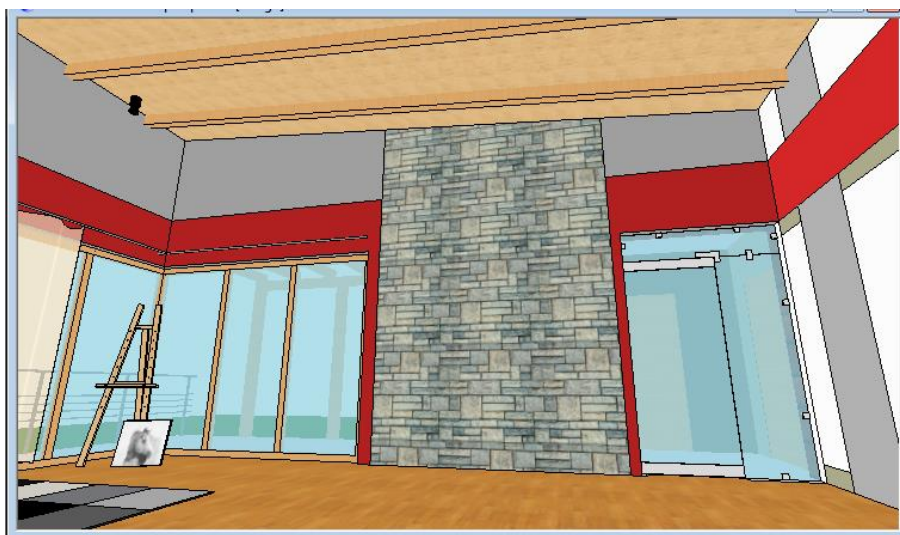
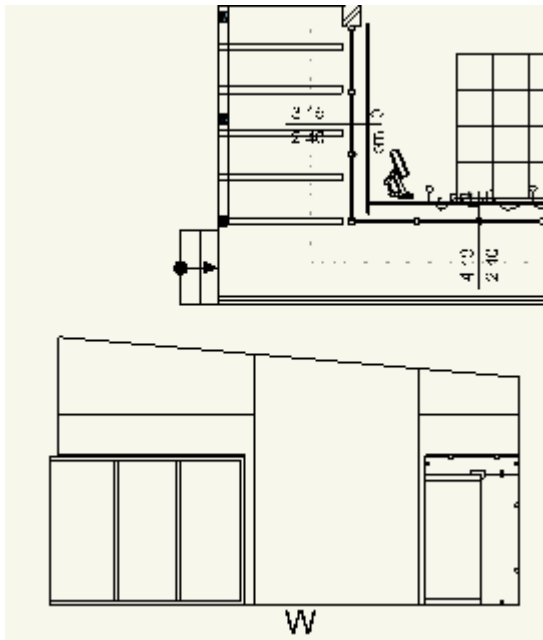
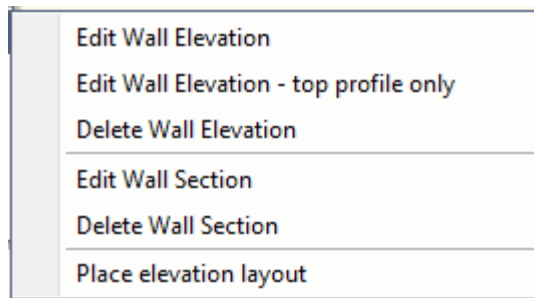
### 10.2.5.9. Place elevation layout

This command places on the drawing the wall elevation layout with openings and tiling. The wall layout indicates the wall orientation with the four cardinal directions, commonly denoted by their initials - N, S, E, W, or the intermediate directions as north-east (NE), north-west (NW), south-west (SW), and south-east (SE).

- Select any wall in the floor plan to place its facade.
- Place the facade view of the wall on the drawing.
- **Enter**      Completes the command.

To place a wall's elevation view select the following commands:

#### ❖ Building - Wall – Profile - Place elevation layout

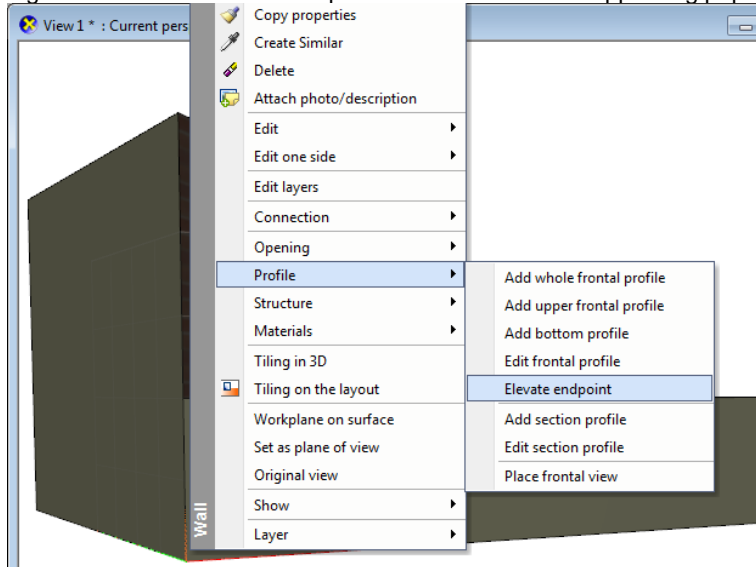




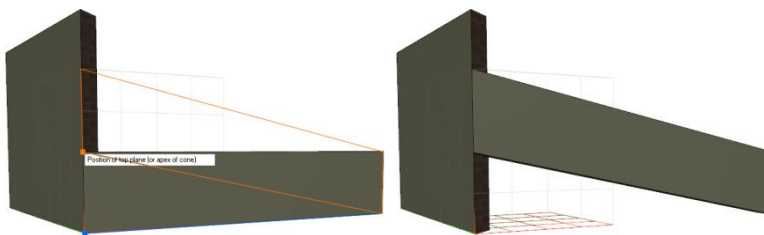
### 10.2.5.10. Elevate endpoint

This command elevates the wall start or endpoint in the 3D View. The other endpoint of the wall keeps its elevation.

- ❖ Right click near to the wall endpoint in 3D and from the appearing pop menu choose Profile / Elevate endpoint.



- ❖ Set the elevation graphically and left click or type a distance and press ENTER.



### 10.2.6. Wall Framing

The Wall Framing tool in ARCHLine.XP lets you generate timber structure for walls. Walls can be individually framed with the following framing parts, such as:

- Connections,
- Studs,
- Plates,
- Blocking,
- Cripple studs,
- Headers,
- Sills.

Wall Framing includes:

- Bottom plate
- Top plate,
- Wall stud – left,
- Wall stud – right,
- Inner stud,
- Cripple stud,
- Header,
- Saddle or sill,
- King stud,
- Horizontal bar"

The timbered buildings in the design you can specify the characteristics of the wall frame structure in detail. The allocation rules using settings according to the characteristics of the various systems work and of course arbitrary - you can use cross-sections too - even completely unique.

Doors and windows by changing the wall structure immediately create the necessary wall framing elements

You can save the wall framing structures into style, so you can use them for new plans or you can even share the co-planners.



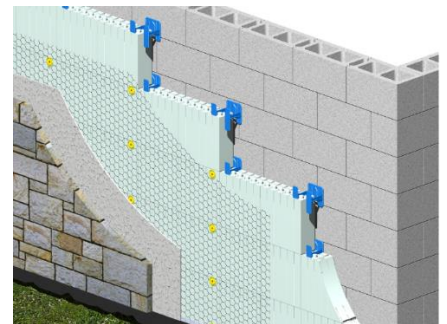
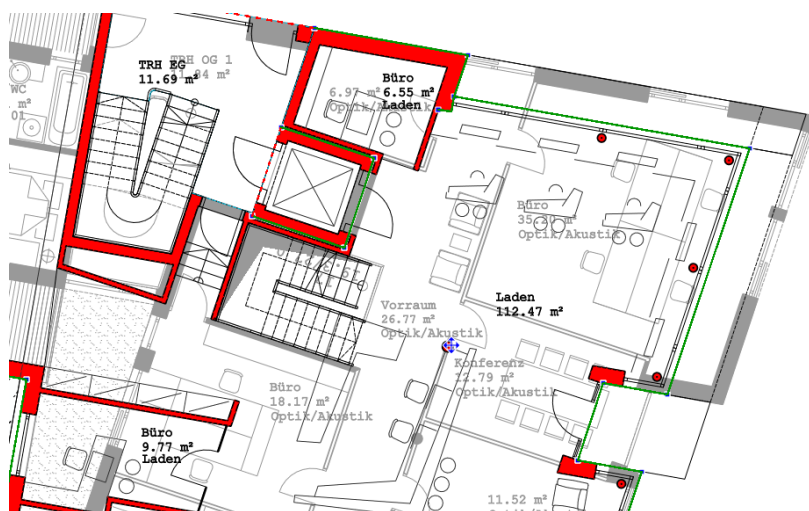
### 10.2.7. Insulation renovation for walls

Using this command you can add insulation to external walls.

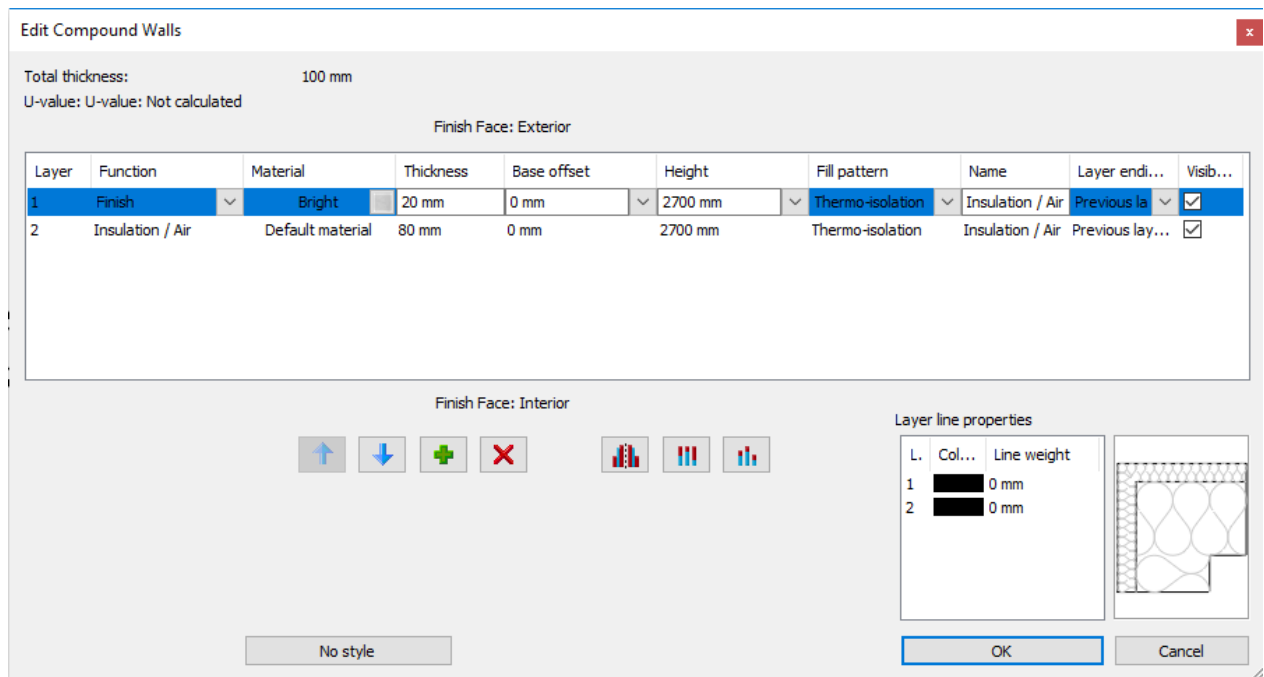
After starting this command the program automatically selects the external walls

To the walls marked by GREEN lines a new insulation layer can be added. By clicking on the green lines walls can be left out from the list and their line switch to RED.

Location of the command: **Building – Wall – Edit – Insulation renovation**



After that in the appearing dialog the insulation layer order which will be given to the layer order of the selected walls can be set.



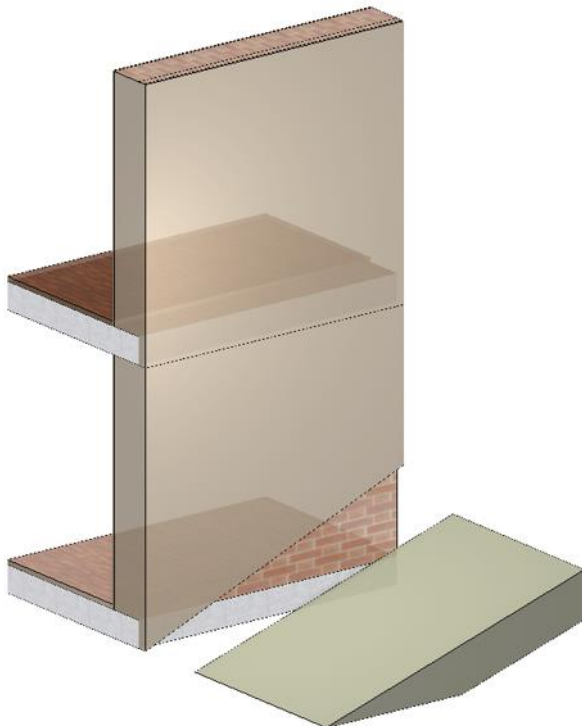
## 10.2.8. Other commands to modify walls

You can find other commands to modify walls in the Shortcut menu.

### 10.2.8.1. Reshaping individual wall layers


You can reshape the wall frontal view with an arbitrary polygon.

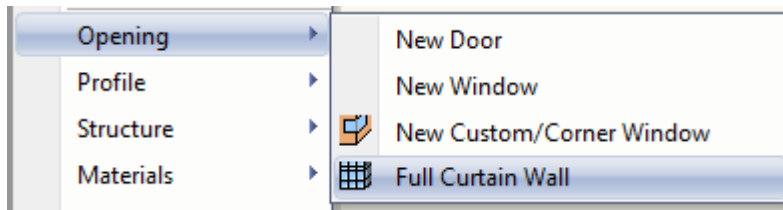
The principles of reshaping can be applied to a single wall layer too.



### 10.2.8.2. Full Curtain wall

Curtain walls can be created two ways:

- ❖ 1. By creating a corner window by the *Building/Window -  Edit custom/corner window* command. This command is advisable to use if you want to create windows with complex profiles and glass plane patterns in a single wall or in two connected walls at the corner.
- ❖ 2. Convert the whole wall into window use the *Wall shortcut menu- Opening - Full Curtain Wall* command.



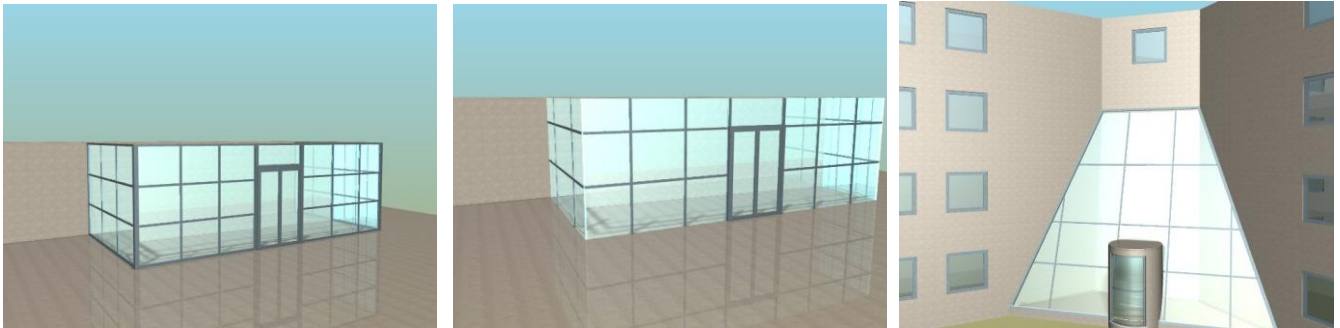
This command will convert the whole wall into a window. The glass properties can be set in the *Building/Properties - Curtain wall* dialog.



See Chapter 9.3.4.5. Corner window for a description.

Curtain wall has the following properties:

- ❖ The window can extend as far as the wall ends.
- ❖ Divisions can be created in X and Y directions by specifying either the number of divisions or the glass plane dimensions in horizontal and vertical directions. It is possible to define unequal divisions, too.
- ❖ At the sides of the window it is possible to switch off the frames so you can see only the glass plane edges.



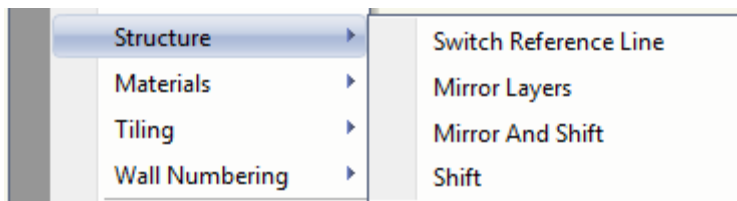
### 10.2.8.3. Layers

The reference line of the wall defines the sequence of the layers in the case of layered walls.



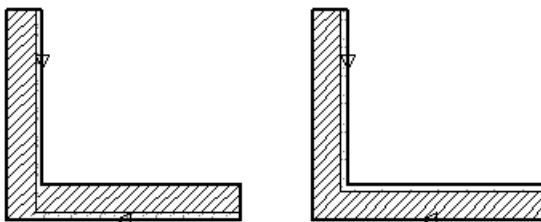
The wrong selection of the reference line may cause the inappropriate sequence of layers. As a result, layers cannot be connected. In this case you have to reverse the layers.

Use any of the following commands to reverse layers:



### Mirror layers

In the case of layered walls, click on the Mirror Layers command to change the layer order to be mirrored.



## Mirroring + shifting

With this command you can mirror the selected wall layers. The mirroring axis is the user specified side of the wall, which means that the wall will be offset at a distance corresponding to the value of the wall thickness. To achieve the proper status, use the *Shift* command, which will offset the wall automatically to its place:

## Shifting

You can offset the selected wall at a distance corresponding to its own thickness. This distance will be measured from the side you select.

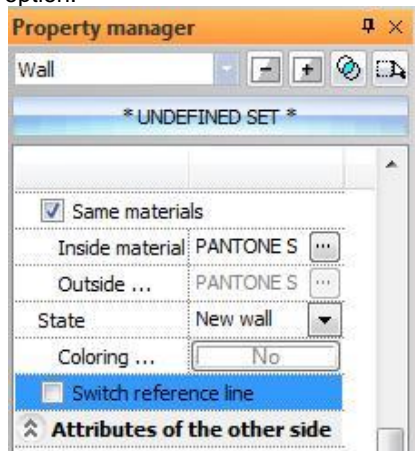
You can use this command when reversing layers as well as when simply offsetting walls with their own thickness.

## Switch reference line

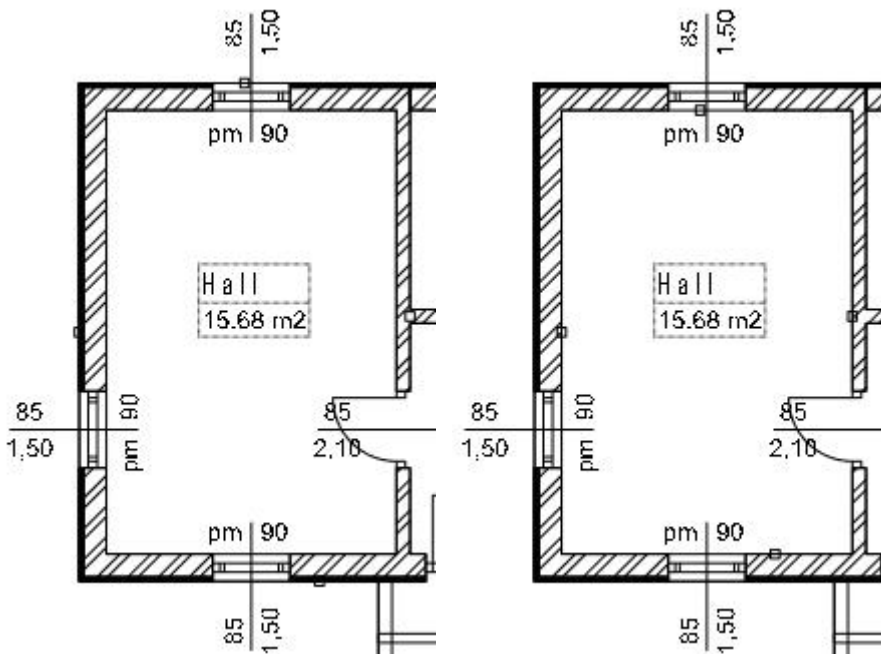
Wall is placed along its reference line on the left, right or in the middle. Reference lines on the left or right can be exchanged.

When you need to exchange the reference line of an existing wall, click the existing object with your right mouse button. Select the *Switch the reference line* command from the appearing shortcut menu. You can choose more walls to change the reference line.

In the property grid you can change also the reference line of the selected wall. Here click on the *Switch reference line* option.



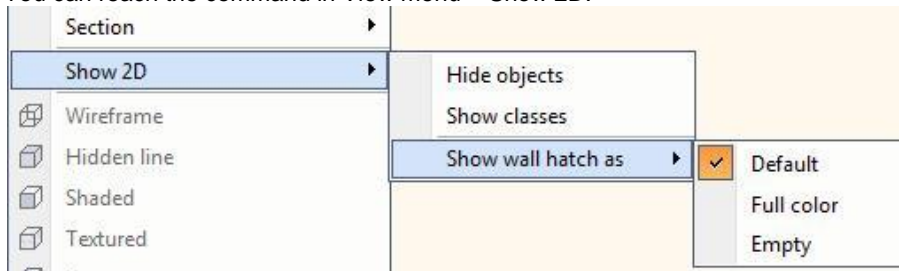
Before using the command, it is recommended to use the Side marker option in the general properties dialog of the wall. The command exchanges the reference line of the wall without changing the position of the wall.



The command changes only the location of the reference line used for the construction, and has no effect on the material settings of the wall surfaces.

### 10.2.8.4. Hatching

You can use different tools to display hatching:  
You can reach the command in View menu – Show 2D.



Display modes other than normal can speed up drawing without having an effect on hatching values set by the user.  
You are suggested to use normal display when printing.  
Display settings are valid for all the walls in the drawing, so it has got a global effect.

#### **Normal**

Use this command to hatch the wall with the value specified in the dialog box. This value is used when printing.

#### **Full colour**

Use this command to hatch the wall with the color specified at hatching.

#### **Empty**

Use this command to display walls without any hatching. This display mode is fast, but will not inform the user about the actual hatching.

#### **Normal Full color**



#### **Empty**

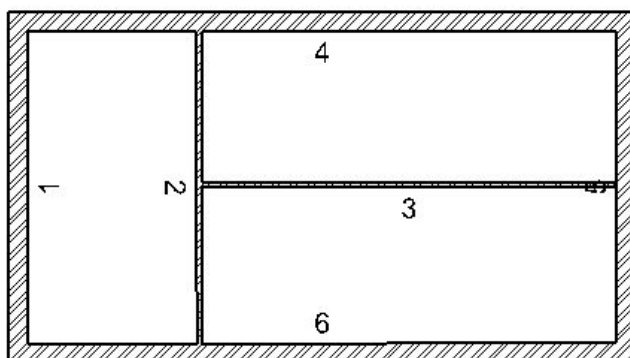
### 10.2.8.5. Data

You can number walls and delete wall numbers when needed.



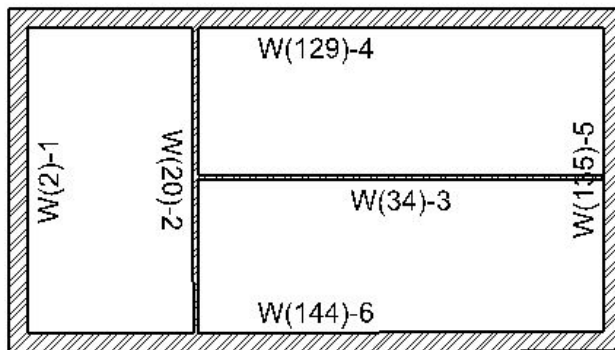
#### **Wall numbering**

Wall numbering means the sequential numbering of walls, starting from 1.



### Wall numbering with ID

Besides wall numbering, you can use wall IDs, together with a mark "W" (meaning wall). The same ID will be used in the List menu - Word, Excel and *Building calculations* lists. This way you can associate walls with their corresponding calculations.



Building calculation									
Floor	ID	Height	Av. Hei...	Thickne...	Volume	Length 1.	Length 2.	Area 1.	Area 2.
0	2	2.75 m	2.75 m	0.38 m	6.67 m3	6.002 m	6.763 m	16.507 ...	18.599 ...
0	20	2.75 m	2.75 m	0.1 m	1.648 m3	5.994 m	5.894 m	16.484 ...	16.208 ...
0	34	2.75 m	2.75 m	0.1 m	2.195 m3	7.984 m	7.984 m	21.955 ...	21.955 ...
0	129	2.75 m	2.75 m	0.38 m	12.233 ...	11.226 m	12.086 m	30.872 ...	33.237 ...
0	135	2.75 m	2.75 m	0.38 m	6.639 m3	5.974 m	6.733 m	16.428 ...	18.515 ...
0	144	2.75 m	2.75 m	0.38 m	12.233 ...	11.226 m	12.086 m	30.872 ...	33.237 ...
Total:					41.619	48.406	51.546	133.117	141.751



In the case of *Excel* lists, you can speed up the assignment of walls to the relevant calculations if you use the



Show ID in ArchLINE XP

command. The program will select the requested object in the drawing according to the ID of the object on the *Excel* list. See Chapter 12.2.3. *Excel* list.

### Delete wall numbering

This command deletes all wall numbering in the drawing automatically.

## 10.3. Structural and decorative objects

### *Structural objects*

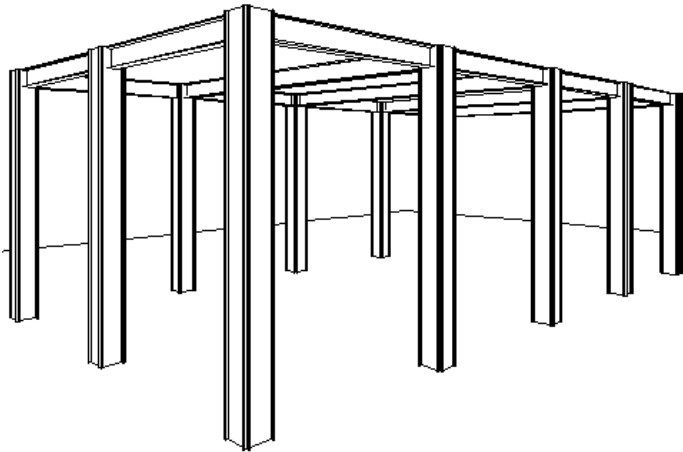
*Structural objects* are components of the building's supporting structure, e.g. columns, beams, plinth.

**When making calculations, the Structural objects can be collected and the data can be exported into static software.**

The program offers the same method for creating columns and beams:

After selecting the column or the beam profile, the program creates the object of the specified height and length. The architectural object thus created is not part of the object library.

Such objects placed as supporting structures are not identical with the columns and beams placed taken the object library.



### *Decorative objects*

The simplest method for creating individual facade decorations, foundations, string courses and gutters is dragging a selected profile along a specified trajectory on the floor plan. By doing this the object is created, its trajectory appears on the floor plan and the 3D model is displayed.

The architectural objects thus created do not belong to the object library either.

No calculation is made about the decorative objects.

You should specify the properties of the columns, beams and decorative objects when creating them. You can modify their properties later.

It is a common feature of the structural and decorative objects that both object types should be specified by the cross-sectional profile.

#### ***Objects of the Beam tool:***

#### ***Objects of the Column tool:***

#### ***Objects of the Railing tool:***

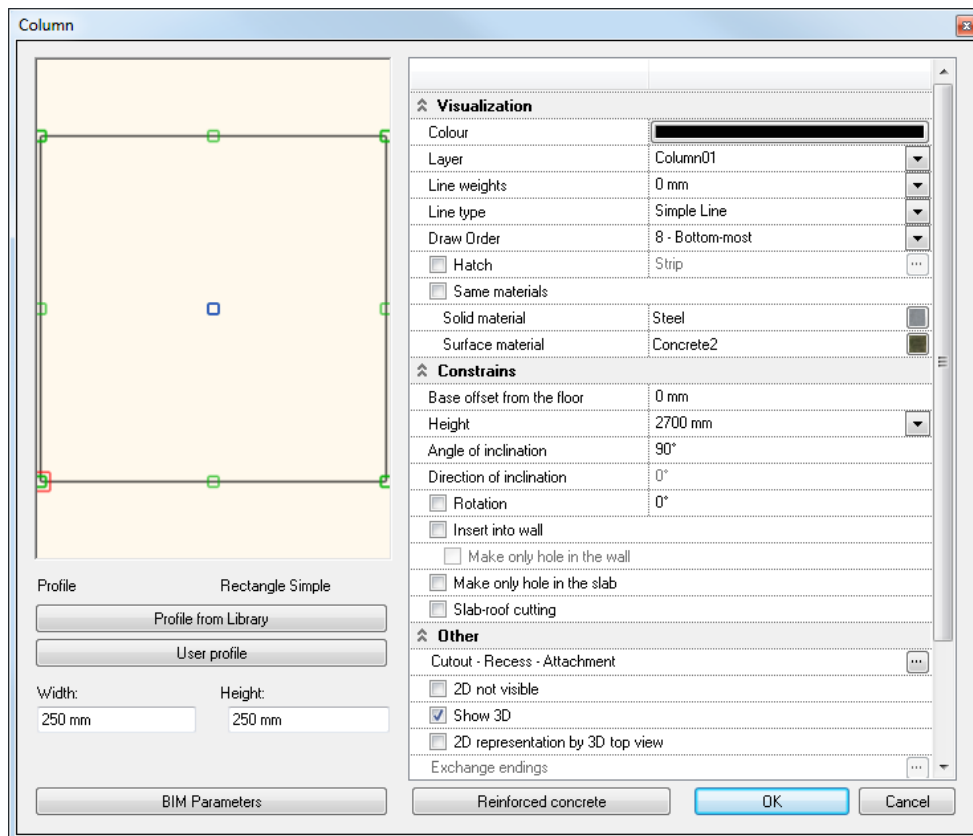
### 10.3.1. Column

A column in structural engineering is a vertical structural object that transmits, through compression, the weight of the structure above to other structural objects below.

ARCHLine.XP enables you to place columns on the current layer or on the terrain. Such columns can be placed into the wall and doing so the column and the wall will form one structural object.

The column properties can be set in the *Building - Properties - Column* dialog.





### Profile selection

Columns are characterized by their cross-sectional profile. First, specify the cross section in the *Edit profile* dialog by clicking *Profile from library* or clicking *User profile* and specify a custom profile on the floor-plan.



See the details of Profile editing in chapter 8.9.9. *Editable profile*.

The cross section previously specified appears in the drawing field on the left side of the dialog box. You can see/modify the width/height parameter of the profile in the *Width/Height* input field.

### Hotspot

You can select the column's hotspot for placing it. The active point is marked with red marker, while the other points are marked with green markers. Click on a green marker to select a new hotspot.

### Visualization

In the upper part of the dialog box you can set the general properties: colour, layer, line weights, line type, draw order. Other visualization properties are:

**On which floors visible?** Check *All floors* option to make it visible on all floors or use the ellipsis button to select floors. This option is available only in the properties of a placed column.

**Hatch** Check this option and use the ellipsis button to set the hatch properties if you want to represent the column by hatch on the floor-plan.

**Solid material** It defines the solid material of the column. By clicking the material name/icon you can select the appropriate material type in the **Materials** dialog box.

**Surface material** It defines the surface material of the column. By clicking the material name/icon you can select the appropriate material type in the **Material** dialog box.

**Same materials** Use this checkbox to apply solid material to surface material as well.



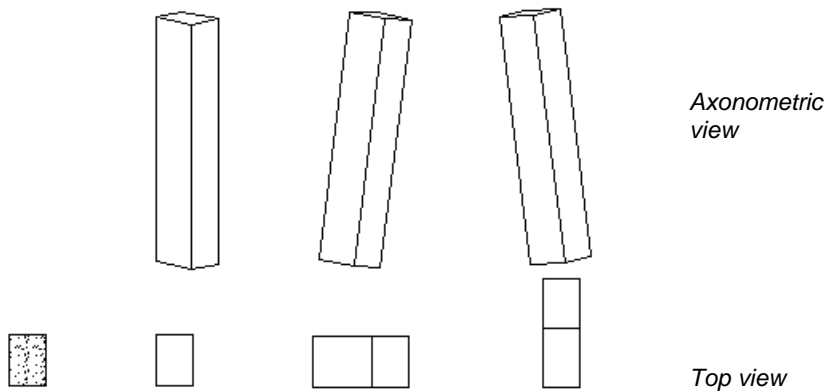
See:

the detailed description of the general properties in Chapter 3.2.1 *Specifying general properties*,  
the detailed description of the hatch in Chapter 11.7.1. *Hatch properties*,  
the description of Sets in Chapter 3.2.3 *Using sets of properties*.

### Constraints

Set the following properties of the column:

<b>Base offset from the floor</b>	Height relative to 0 m of the active floor
<b>Height</b>	Column height or pick up the floor elevation as column height.
<b>Angle of inclination</b>	It defines the inclination angle of the column according to the direction of inclination
<b>Direction of inclination</b>	<b>Rotating the inclination</b> defines the direction the solid will be inclined by the inclination angle. The result cannot be seen on the floor plan, only in the 3D view, since it is only symbolically displayed on the floor plan.



Floor plan			
Direction of inclination:	0°	0°	90°
Inclination angle:	0°	80°	80°

The floor plan view is the same in all the three cases.

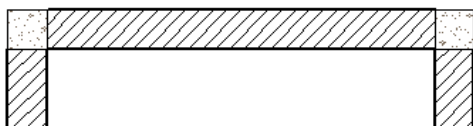
### Rotation angle

You can specify the Z-rotation angle to be used when placing. This rotation has an effect on the floor plan as well. If you do not specify the rotation angle at this point, you can also define it upon placing.



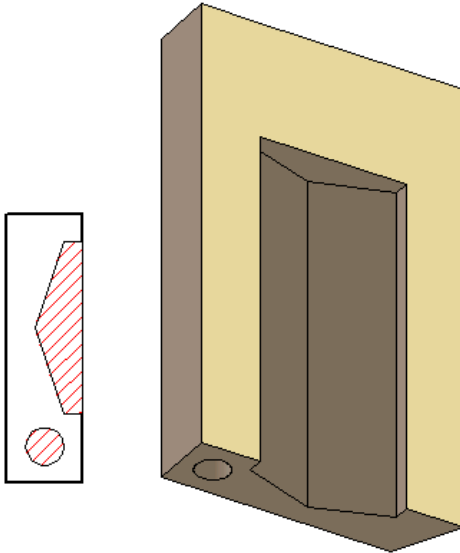
### Insert into wall

Automatically inserts the column into the wall, cutting its hole in the wall. This way the program does not display the wall hatch and the wall contour 'behind' the column. The object inserted into the wall has the same connection with the slabs and roofs as the wall itself. The object thus inserted becomes part of the wall, so when deleting the wall, the object is deleted as well.



Columns inserted into wall

### Make only hole in the wall




Automatically inserts the object into the wall, but in the 3D view extracts it from the wall, that is makes only its hole in the wall. This option can be activated only after turning on the *Insert into wall* option. With this method you can create vents, stacks and ducts. When requesting calculations concerning the wall, the program extracts the 'column holes' from the volume of the wall.



You can also access the last two options from the shortcut menu of the object.

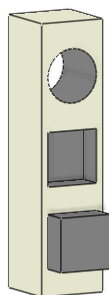
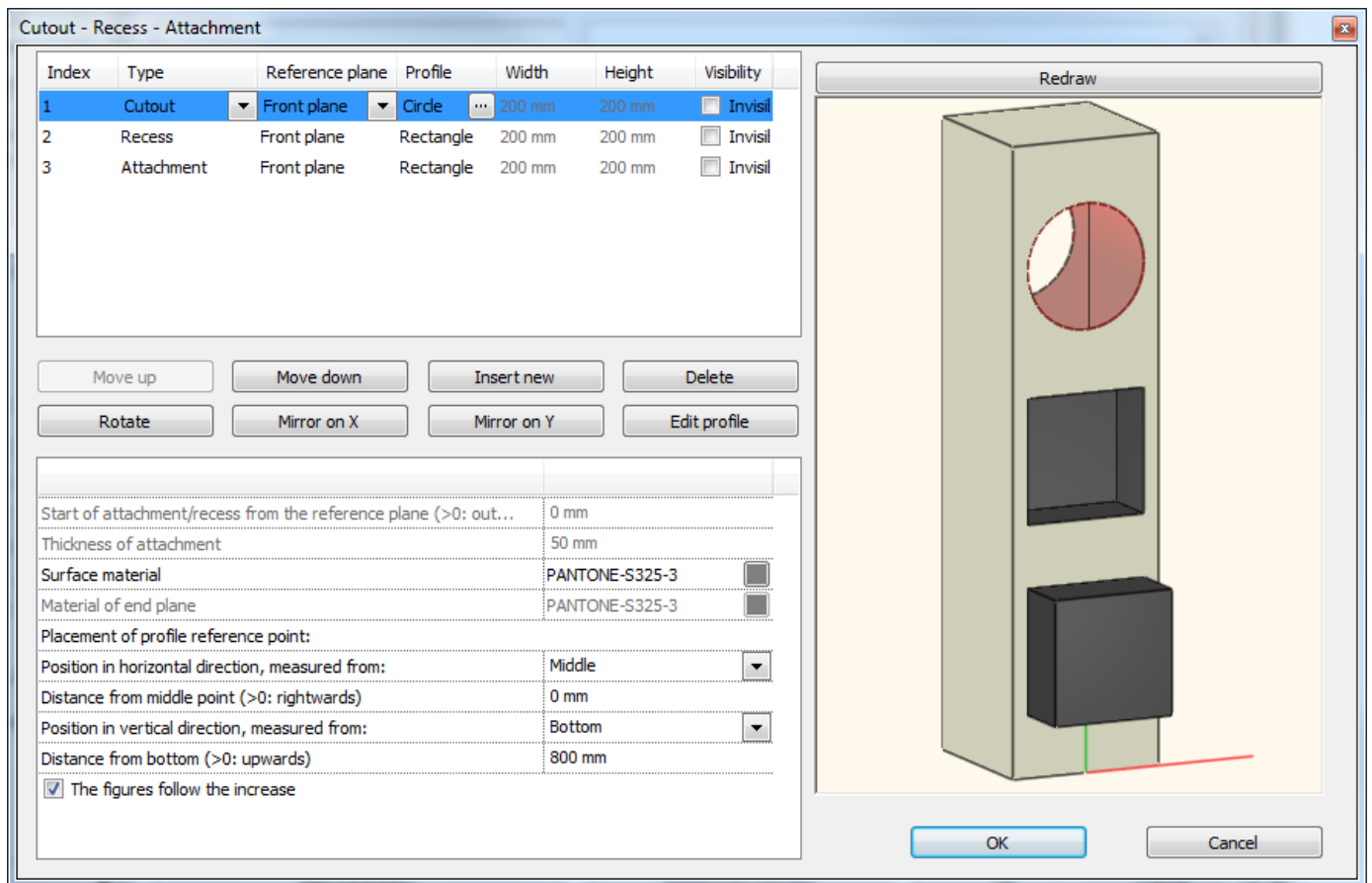
### Slab-roof cutting

When the *Wall-slab-roof cutting* option is turned on in the *Build 3D model*  dialog box, the slabs and walls for which cutting was selected will cut the columns together with the walls. The result is irrespective of whether the column is part of the wall.

### Other parameters

#### Cutout – Recess – Attachment

In addition to the prior mentioned possibilities, you can add cutout, recess and attachment to the column. Click the ellipsis button next to the **Cutout – Recess – Attachment**. The additions are listed in a table in the dialog. The selected addition in the list is highlighted in the preview window so you can easily identify it.



cutout

recess

attachment

### Adding a cutout/recess/attachment

- To add a cutout/recess/attachment, click **Insert new** button. In the top-left part of the dialog a new addition appears in the list with parameters of index, type, reference plane, profile, width, height and visibility.
- To define the type of addition, select cutout, recess or attachment for **Type**.
- Select the reference plane where the profile of the cutout/recess/attachment is applied. The front/back/bottom/top/right side/back side reference planes are defined by the sides of the bounding box of the column.
- To modify the profile of cutout/recess/attachment, click the ellipsis button next to the profile name. In the *Edit profile* dialog you can define the shape, size and reference point of the profile.
- The width and height parameters of the profile defined in the *Edit profile* dialog appear in list of additions in the *Cutout – Recess – Attachment* dialog.
- To create a custom profile, click **Edit profile** button and edit the profile on the floor-plan.
- To make a cutout/recess/attachment invisible, check the checkbox in the **Invisibility** column.
- Set the parameters of the selected addition:  
**Start of attachment/recess from the reference plane (>0: outwards from the solid)**. Of course, this parameter is not available for cutouts.  
**Thickness of attachment/ Depth of recess**. In case of attachment/recess, the profile of attachment/recess is swept along a path. The path start at the start of attachment/recess. The length of the path equals with the thickness of attachment/depth of recess. Of course, this parameter is not available for cutouts.  
**Surface material** defines the material on the surface of cutout/recess/attachment. To modify, click the name of material.  
**Material of end plane** defines the material of end plane in case of recess/attachment. To modify, click the name of material. Of course, this parameter is not available for cutouts.  
**Placement of profile reference point** parameters define the position of the reference point of the profile defined for cutout/recess/attachment. The horizontal and vertical distances relative to the left/middle/right and bottom/top of the column can be defined.

**The figures follow the increase.** With this option the rotation angle of the cutout/recess changes together with the inclination of the column.

- Use the **Move up/Move down/Delete** buttons to move the additions in the list up/down or to delete an addition.
- Use the **Rotate/Mirror on X/Mirror on Y** buttons to rotate/mirror the profile of the cutout/recess/attachment.

### 2D not visible

If you enable this option, the column is shown by a dotted line on the floor plan, while the model is displayed in the 3D View.

The column doesn't appear on the floor plan in print.

### Show 3D

If you disable this option, the model of the column is not represented in the 3D View.

### 2D representation by top view

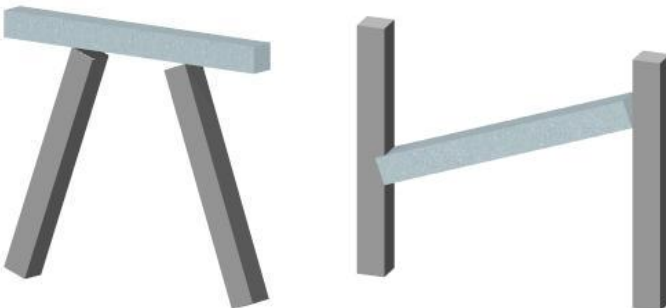
If you enable this option, the column is represented on the floor-plan by its top view in the 3D View.

### Bottom (start) ending/Top (other) ending/Exchange endings

Clicking on the ellipsis button you can define the bottom/top ending of the column in the *Beam ending* dialog. If you do not apply the *Equal to bottom (start) ending* option to the top ending, you can swap the bottom/top endings by clicking the ellipsis button next to **Exchange endings**.



Slant columns with horizontal ends. Slant beam with vertical ends.



Columns with perpendicular ends.

Beams with perpendicular ends

### Place on terrain

You can place a column not only on architectural floors but also on the terrain.

- After closing the dialog box, select a point of the terrain the height of which the program specifies.
- Place the column on it.  
The program places the column on the terrain at the height of the point you selected.

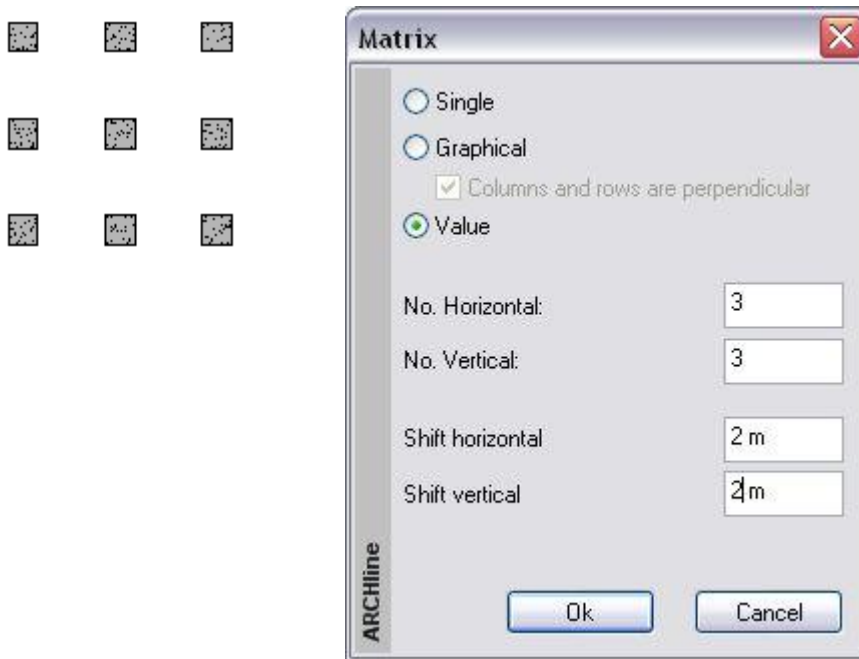
### Matrix

Clicking the matrix button enables you to place more columns in the matrix window at a time.

If you select the **Value** option, you can specify the number of the objects of the matrix and the distance between them.

If you select the **Graphical** option, the total width, height and the direction should be graphically specified so that the program can place the objects of the specified number.

If you select the **Single** option, you can restore the one by one placement.



### **BIM Parameters**

Click BIM Parameters button to assign BIM parameters to the column.

### **Placing**

After setting the column properties and closing the dialog box with **OK**.

Place the column with the selected hotspot in the drawing. If necessary, use the floating menu with the placement options.

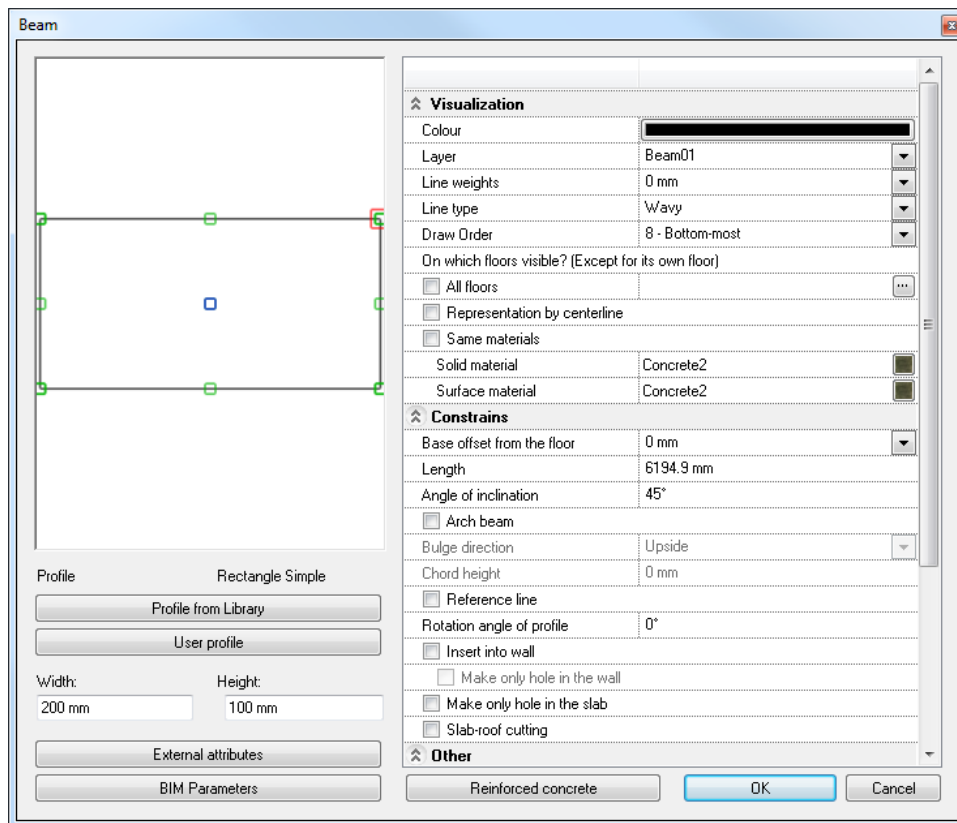
### **10.3.2. Beam**

A beam is a structural object that is capable of withstanding load primarily by resisting bending.

ARCHLine.XP enables you to place beams on the current layer or on the terrain. Such beams can be placed into the wall and doing so the beam and the wall will form one structural object.

The beam properties can be set in the *Building - Beam - Properties* dialog

The dialog box is very similar as in the case of the *Column* command.



The following options cannot be found:

- ❖ Hatch
- ❖ Direction of inclination
- ❖ Rotation

However, it has the following options:

### Visualization

#### Representation by centreline

You can give all type of beam representation with centre line on the floor-plan.

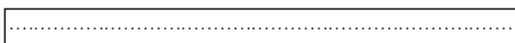
### Constraints

#### Arch beam

With this option you can define an arch beam by specifying the **Bulge direction** (left/right/upside/downside) and the **Chord height**. In case of arch beam, beam length always means the length of a straight line drawn between the start and end point of the beam.

#### Reference line

The program marks the centre line of the beam with a dotted line.



### Other

#### Cut in column gravity points

Let's place a beam with its starting and end point the way, that arch through more columns. When you switch on the option, the program divides the beam to each other joining parts.





! It's important, that beam fits to the columns.

#### Enable to adjust ends in beam chain

Switch on the option if you want to connect the beams in the chain.

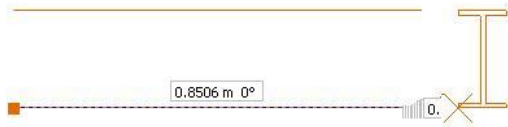
You can modify the adjust ends enabled beams to disabled, but if you didn't switch on the adjusting advanced, you can't set the adjust ends enabled afterwards.

See the  *Open chain of beams* and  *Closed chain of beams* commands.

### Placing beam on the drawing

After setting the beam properties

- You can place beam in 2D drawing and 3D view as well.
- Specify the starting point then drag the cursor in the proper direction and define the endpoint of the beam. Beside the endpoint appears the profile of the beam, which signs the active reference point.



The placing options in the floating menu are similar to the column, but completed with the followings:

<b>Mirror</b>	You can mirror the profile of the beam by clicking on the command
<b>Rotate</b>	You can rotate the profile of the beam by clicking on the command



You have to give the length of the beam, when you place it. The length field in the dialog box has only role, when modify: it signs the real length of the beam, or if you give the value you can modify the length.

### 10.3.3. Sweep - Profile along path

With this command you can create any decorative object, foundation, string course or gutter.

You should apply the following method: drag the selected profile along the specified trajectory. By this the object is created, its trajectory appears on the floor plan and the 3D model is also displayed.

The method is the following:

- ❖ First specify the trajectory you will drag the profile along. The trajectory can be open or closed.
- ❖ You must select the profile and set the appropriate parameters.

#### Specifying trajectory

- Choose a keyword on the command line, thus you can freely specify the trajectory of the profile.

#### Options:

<b>OPEN</b>	You can specify an open trajectory for the profile.
<b>CLOSED</b>	You can specify a closed trajectory for the profile. The command connects the endpoints of the decoration.

- Specify the points of the trajectory one after another.  
The trajectory may contain both lines and arcs. These can also be tangential to each other: **TANGENTIAL** and **ARC** keywords  
**Enter** completes the command.

#### Path points with the same height

After specifying the nodes of the path and pressing *Enter*, the *Profile with path* dialog will appear. On the last panel of this dialog you can specify a height. This height will be assigned to all nodes of the path. This means a quick solution for that common case.

#### Path points with different heights

- After specifying the nodes of the path you can select the node to which you want to assign a different height.
- Give the height of the node relative to the base points.
- Repeat the node selection and height specification with any other nodes. At this point we don't assign heights to the base points.
- Pressing *Enter*, the *Profile with path* dialog will appear. The height of the base points can be given on the last panel of this dialog.

#### Stair

For giving the height value you can choose a point of a stair.

- After selecting the node and the **STAIR** keyword, choose a point of a stair to obtain its height.



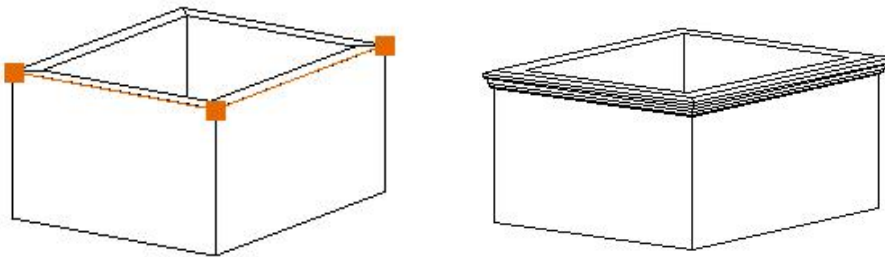
## Roof

Similarly, for giving the height value you can choose a roof.

- After selecting the node and the ROOF keyword, choose a point of an edge of a roof to obtain the required height. By default, the top height of the roof plane at the selected point will be assigned. By selecting the BOTTOM keyword, you can assign the bottom height of the roof plane at the selected point.

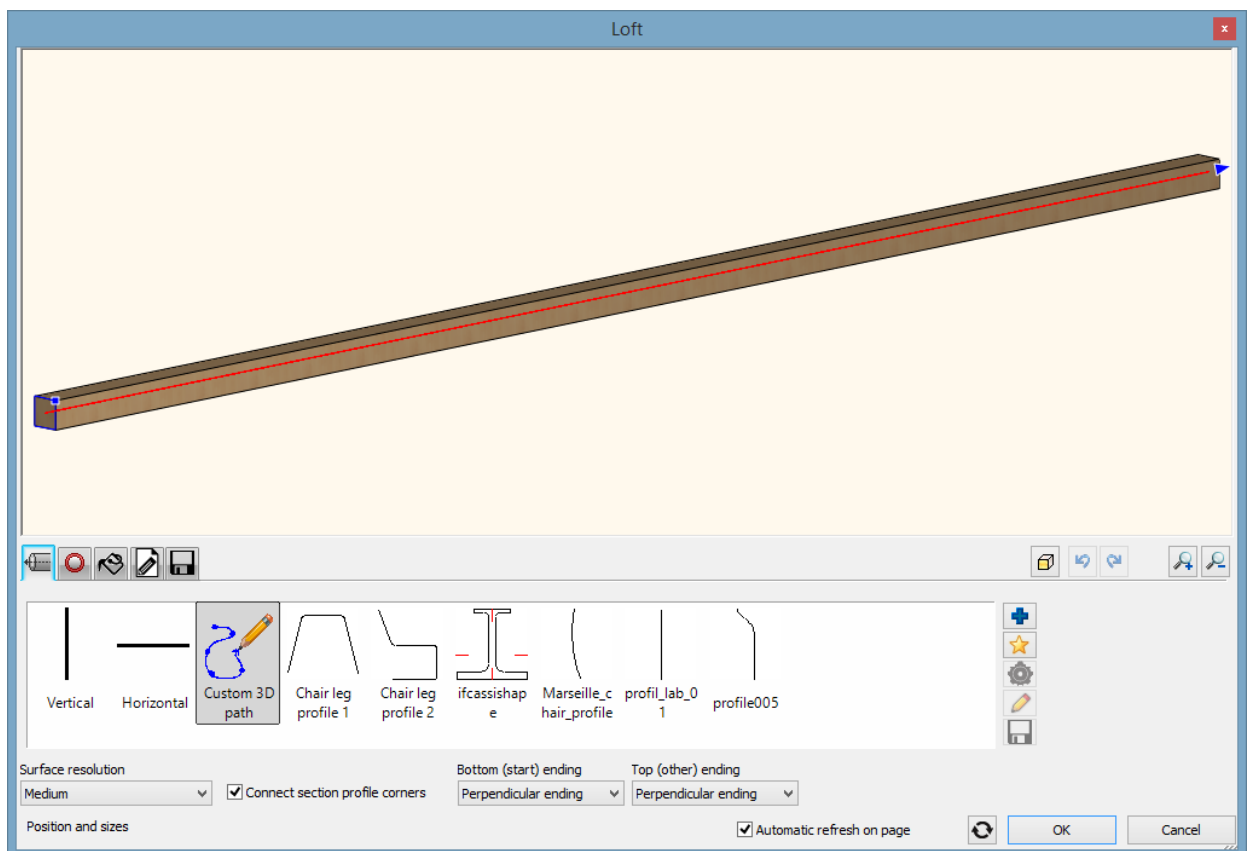
## Move profile along path in the 3D View

- Start the command from the 3D View.
- Specify the profile and its reference point in the *Insert profile* dialog.
- Define the path by selecting the next 3D curve clicking on the edges of the objects to sweep the profile along it.
- Using the CLOSED keyword it is not necessary to define the last curve; the program makes the connection automatically.
- During the path definition the NEXT/DEFHOTSPOT/MIRRORING/ROTATE keywords help you to redefine the reference point of the profile you defined previously in the *Insert profile* dialog.
- Use the BACKWARD/FORWARD keywords to undo/redo your moves.
- After specifying the path, the *Profile with path* dialog will appear. On the last panel of this dialog you can view the result.



## Profile definition

After specifying the trajectory, the program automatically displays the *Loft* dialog:



The decorative object is characterized by its cross-sectional profile. Click the button *Select profile* and select the cross-sectional profile in the *Insert profile* dialog box and define the cross-sectional parameters of the decorative object.



For a detailed description of the *Insert profile* dialog box see Chapter 8.9.10. *Select from list*.

Click **OK** to activate the *Profile with path* dialog box again.

The selected profile appears in the drawing field, and its properties can be set in the list below.

### Hotspot

Select the object's hotspot of placement. The active point is red, the other points are green.

### Shift

You can define the horizontal and vertical distance between the selected hotspot of the profile and the selected trajectory. As it can be seen in the figure below, you can specify negative and positive values.

### Material

Clicking the **No material** button the **Material** dialog box appears in which you can select the material you want to assign to the decorative object.

### General settings

Click the **Next** button to display the General settings dialog box.

Here the program displays the entire profile according to the specified values.

You can set the layer you want place the decorative objects on, or specify the colour and line width you want to use on the floor plan or in the 3D view.

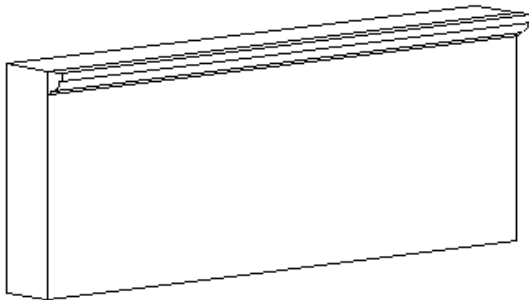
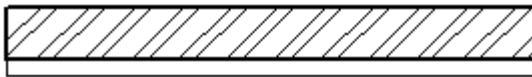
### Representation by centre line

You can give all type of decorative object representation with centre line on the floor-plan.

### Height

In the last field you can set the base height of the specified trajectory.

After setting the profile properties in the dialog box, and closing it with **OK**, the trajectory of the decoration appears on the floor plan. The decoration can also be displayed in 3D.



## 10.3.4. Sweep by points in 3D

With this command it is possible to define decorative objects in the 3D Views by the path definition

- ❖ with 3D objects,
- ❖ with 3D points, or
- ❖ with work plane.
- ❖
- Start the command from the 3D View.
- Specify the profile and its reference point in the *Insert profile* dialog.
- The *Solid with path and profile* dialog will appear which works the same like the Sweep – Create command in the 3D Object modeller.
- The difference is the result: instead of a 3D object, a real architectural object is created.



If you start the command from the 2D window, it will draw the decorative object along the side of the stair. The command is similar to the *Stair tool - Railing* command, with the difference, that here places just the handrail.

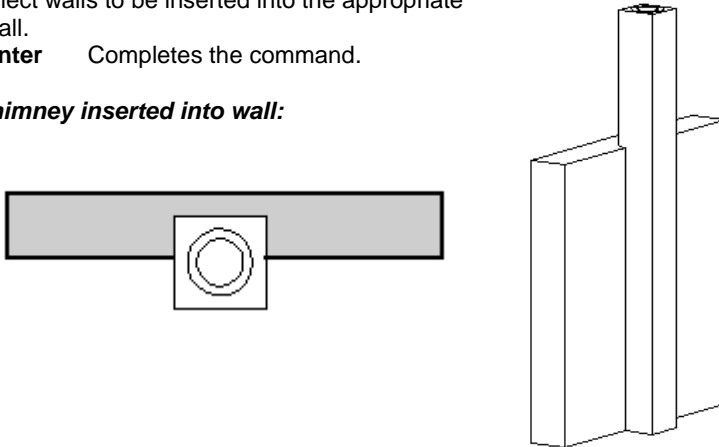
## 10.3.5. Place object in wall

The command inserts the object or the structural object into the wall while cutting out its hole from the wall. This way the program does not display the wall hatch and the wall contour 'behind' the object.

To execute the command use the *Object or Column or Beam shortcut menu- Place it into wall* command. This command can be replaced by enabling the *Object - Column - Beam properties - Insert into wall* option.

- ❖ The inserted object becomes part of the wall. The editing commands (delete, move, copy, etc.) are valid for the whole group.
- ❖ The inserted objects do not acquire the wall hatch.
- ❖
- Select walls to be inserted into the appropriate wall.  
**Enter** Completes the command.

**Chimney inserted into wall:**



The object inserted into the wall does not acquire the automatic slab-roof cutting that you set for the wall. Cutting depends on whether the *Slab-roof cutting* option in the *Object - Column - Beam properties* dialog box is turned on.

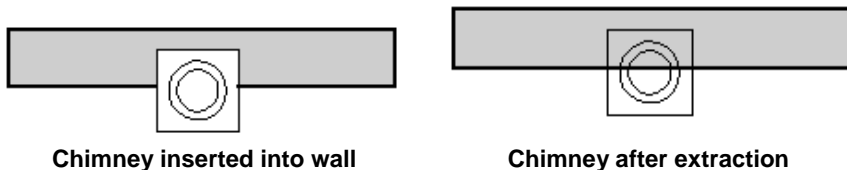
### 10.3.6. Extract object from wall

The command extracts the previously inserted and then selected object from the wall.

To execute the command use the *Object or Column or Beam shortcut menu- Extract from wall* command. This command can be replaced by disabling the *Object - Column - Beam properties - Insert into wall* option.

Following the extraction:

- ❖ The object regains its original properties and can be regarded as an individual object.
- ❖ Wall hatch is applied to the object as well.
- ❖
- Select architectural objects you want to extract from the appropriate wall.  
**Enter** Completes the command.



**Chimney inserted into wall**

**Chimney after extraction**

### 10.3.7. Modifying column, beam and decoration

In the case of columns, beams and decorations the modification of object properties works in the same way as for all objects.

Clicking on the object the *Property manager* visualizes its property or clicking on the *Shortcut menu - Property* command the *Properties* dialog box appears.

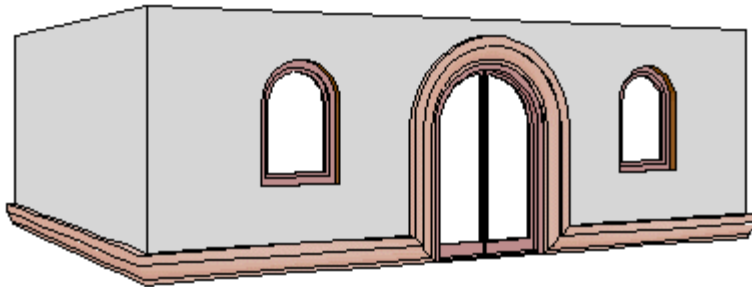
You can modify the object's property.

If you have locked the objects with the *Modify menu - Lock architectural object in 3D* command, the *3D fixed* option is on in the *Properties dialog* when the object is modified.

By turning off the option you can unlock the selected objects. You cannot lock the selected objects in the dialog box. Locking enables you to render 3D images to architectural objects, independent of their 2D drawing. This way you can create detailed 3D views without displaying these details in the 2D drawing.

In the **Decoration shortcut menu** you can select further commands to modify decoration trajectory. These are the following:


Modify balustrade path  
 Edit balustrade  
 Position balustrade layout



For a detailed description of the commands see Chapter 9.7. *Creating and editing Railings*.

### 10.3.8. Place plinth

The program enables you to place plinths from a predefined plinth library.


Select the **Building - Beam** tool  **Place plinth** icon. You can set the plinth properties in the *Position object* dialog.



See 9.11.1.  *Object properties and placement* chapter.

### 10.3.9. Define custom plinth

You can also create your own plinth and save it into a library in the following way.

- Design your custom plinth object in a 3D View.
- Select the **Building - Beam** tool  **Define custom plinth** icon.


Now you will create a 3D object:

- Select the objects of the 3D group.
- Specify the gravity point of the plinth.
- The *Free object* dialog will appear. First select the appropriate 2D and 3D group, and then specify the object name.
- Save your custom plinth into your own plinth library.

### 10.3.10. Closed chain of beams

With this command you can draw a closed chain of beams along a reference line, defining nodes with each click. The reference line may contain arcs and lines, too.

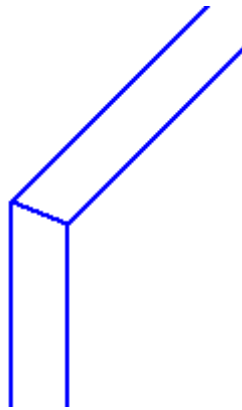
You can use this command to create footing, so the footing will get to the structure objects, when listing.

- Select the *Building - Beam* tool  **Closed chain of beams** icon. The beam dialog will appear where you can set the beam properties. Click **OK** to exit from the dialog.
- Define the starting point of the chain and then the other nodes. The endpoint of the beam coincides with the starting point of the next beam. The joint can be normal or tangential, and the beam can be linear or arc.
- Define the next endpoint of the beam, or
- **Enter** completes the command, and the last beam will be automatically drawn if the chain of beams you specified is not closed.
- The program displays the beams.

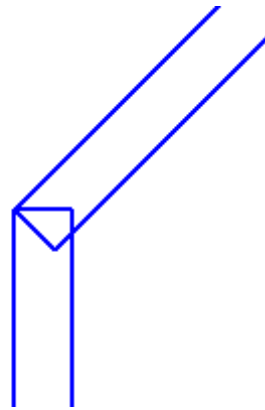
#### Options:

<b>SMOOTH</b>	The next beam will be joined to the previous one tangentially.
<b>ARC</b>	Draws arc beam
<b>TANGENT</b>	If the first object of a polyline is an arc, you can define a tangential vector for the arc. You can continue an existing beam with a tangential arc.
<b>SELOBJECT</b>	Places the selected object into the contour of the profile.
<b>BACKWARD</b>	Steps back with one command if you make a mistake.
<b>FORWARD</b>	Steps ahead with one command.
<b>INVERSE</b>	Places beam reference line to the other side.

In the *Beam* properties dialog use the **Enable to adjust ends in beam chain** option if you want to connect the ends of beams:



Adjust ends enabled



Adjust ends disabled

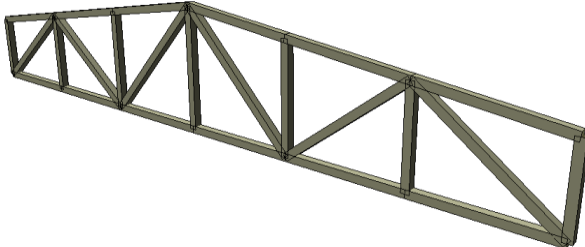


You can modify the adjust ends enabled beams to disabled, but if you didn't switch on the adjusting advanced, you can't set the adjust ends enabled afterwards.

### 10.3.11. Open chain of beams

This command works analogous with the **Closed chain of beams** command. The only difference is that the chain won't be closed by the program automatically and the adjustment of beam ends will not work in the last node. You can use this command to create footing, so the footing will get to the structure objects, when listing. .

### 10.3.12. Truss



In architecture and structural engineering, a truss is a structure comprising one or more triangular units constructed with straight slender members whose ends are connected at joints referred to as nodes. ARCHLine.XP manages planar truss where all the members and nodes lie within a two dimensional plane. For more details about truss see <http://en.wikipedia.org/wiki/Truss>. ARCHLine.XP enables you to place truss on the current layer.

#### 10.3.12.1. Truss preferences

Before you place a truss, you have to determine its properties. The truss properties can be set in the *Building - Properties - Truss* dialog. After the selection of command a dialog window appears with properties of Truss.

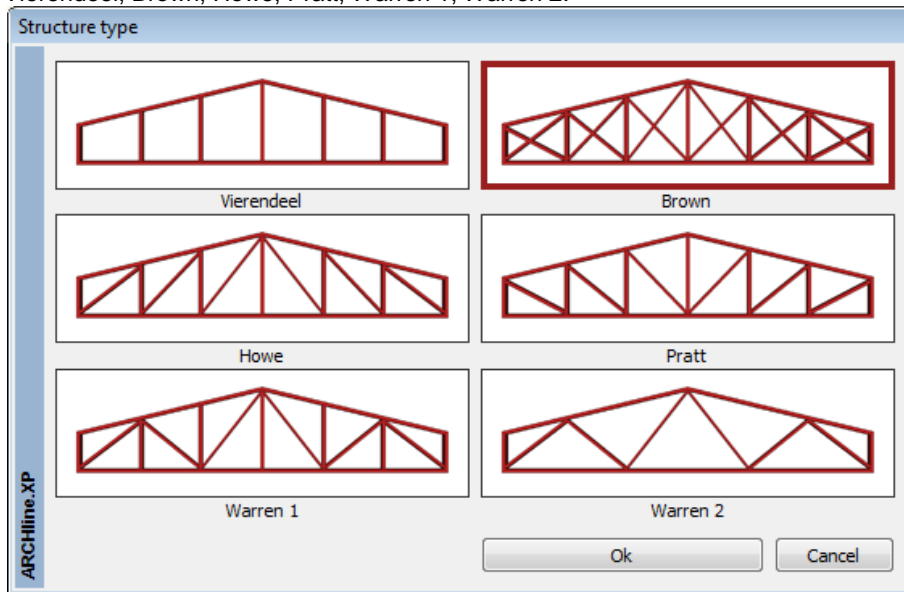
##### **General properties**

First there are the general properties of the truss: layer, colour, line type, line width, priority.

##### **Structure Type**

You can select the following types:

Vierendeel, Brown, Howe, Pratt, Warren 1, Warren 2.



### Relative height

The height of the actual floor compare to its 0 level.

### Middle height

The distance between the under and upper belt in the middle of the truss.

### Middle elevation

The height of the middle point of under belt compare to the height of the side points.

### Symmetric

In switched on status the length of the truss right and left side, the height of the truss on the two outside points, and the number of right-and left side divisions are the same. You can define these parameters separately in switched off status.

### Divisions

The number of perpendicular beams, that connect the under and upper belt on the right or left side. You can set the height of the right side only in that case if the *Symmetric* button is switched off.

### Side height

The distance between the under and upper belt on the right or left side of the truss: You can set the height of the right side, if the *Symmetric* button is switched off.

### Side width (%)

The length of the right or left side compare to the length of the truss, expressed in %: You can set the height of the right side, if the *Symmetric* button is switched off.

### Profile sections

Trusses are characterized by their cross-sectional profile. Therefore first select the cross section in the *Select profile* dialog box and specify the cross-sectional parameters of the column. You can assign profile for the following parts of the truss:

Bottom, Top, Side, Vertical, Diagonal



For a detailed description of the **Select profile** dialog box see Chapter 8.9.10. *Select from list*.

### Cost parameters

You can assign cost parameters to the truss, as to any other objects.  
You can create beam-structures with truss.

## 10.3.12.2. Placing truss

After setting the truss properties

- You can place truss in 2D drawing and 3D view as well.
- Specify the starting point then drag the cursor in the proper direction and define the endpoint of the truss. Beside the endpoint appears the profile of the truss, which signs the active reference point.

## 10.4. Door, window

### Introduction

Most of the cases doors and windows are hosted components that you can add to any wall. In case of roof window you can add to any roof.

You can place a door/window on walls of any shape, both on their straight and arched sections.

You can place doors and windows on floor plan and 3D views either.

First time you can select the default type, and then specify its location on the wall (except if you have chosen the **Door/window without wall** command to place a separate door/window).

If you want to place a door/window type other than the current one, select a different type from the Design Center, or with the Properties. Location of the command: Building > Properties > Window or Door

ARCHLine.XP automatically cuts the hole in the wall for opening and places the door/window in that hole.

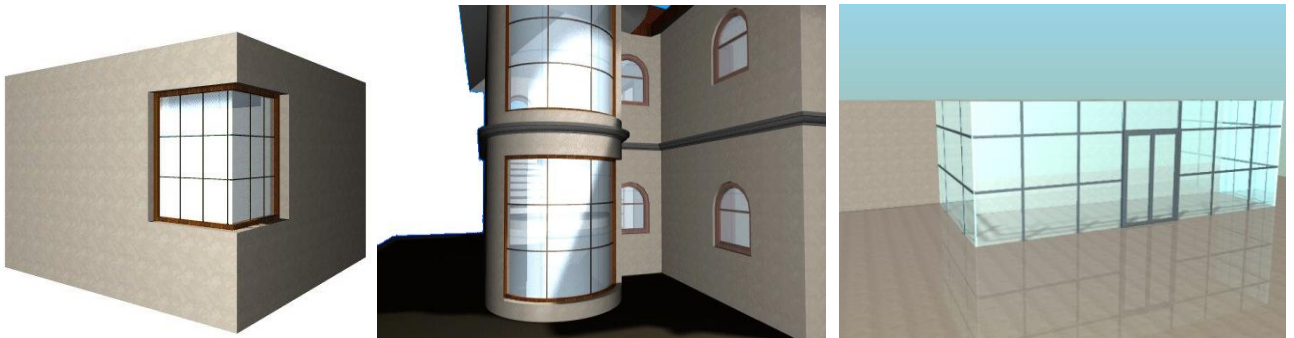
ARCHLine.XP displays 2D symbol of doors and windows with different detail level

Location of the command: Building > Window or Door > Opening Scale

### Custom doors/windows

ARCHLine.XP allows to create a door or window with any custom shape.

- ❖ The custom defined doors/windows are saved in the library, so they can be used in any other project.
- ❖ With Reshape curtain wall command you can design a window with individual shape and divisions on any wall or wall corner. You can use it even on an arched wall, where the glass will also be arched. The window created with this method is not part of the library.
- ❖ **Full curtain wall:** You can create full curtain wall. Location of the command: Building > Window or Door > Opening Scale



### 10.4.1. Door/window properties

To modify the properties of a door / window, you can change the value of the corresponding parameter in the Properties dialog.

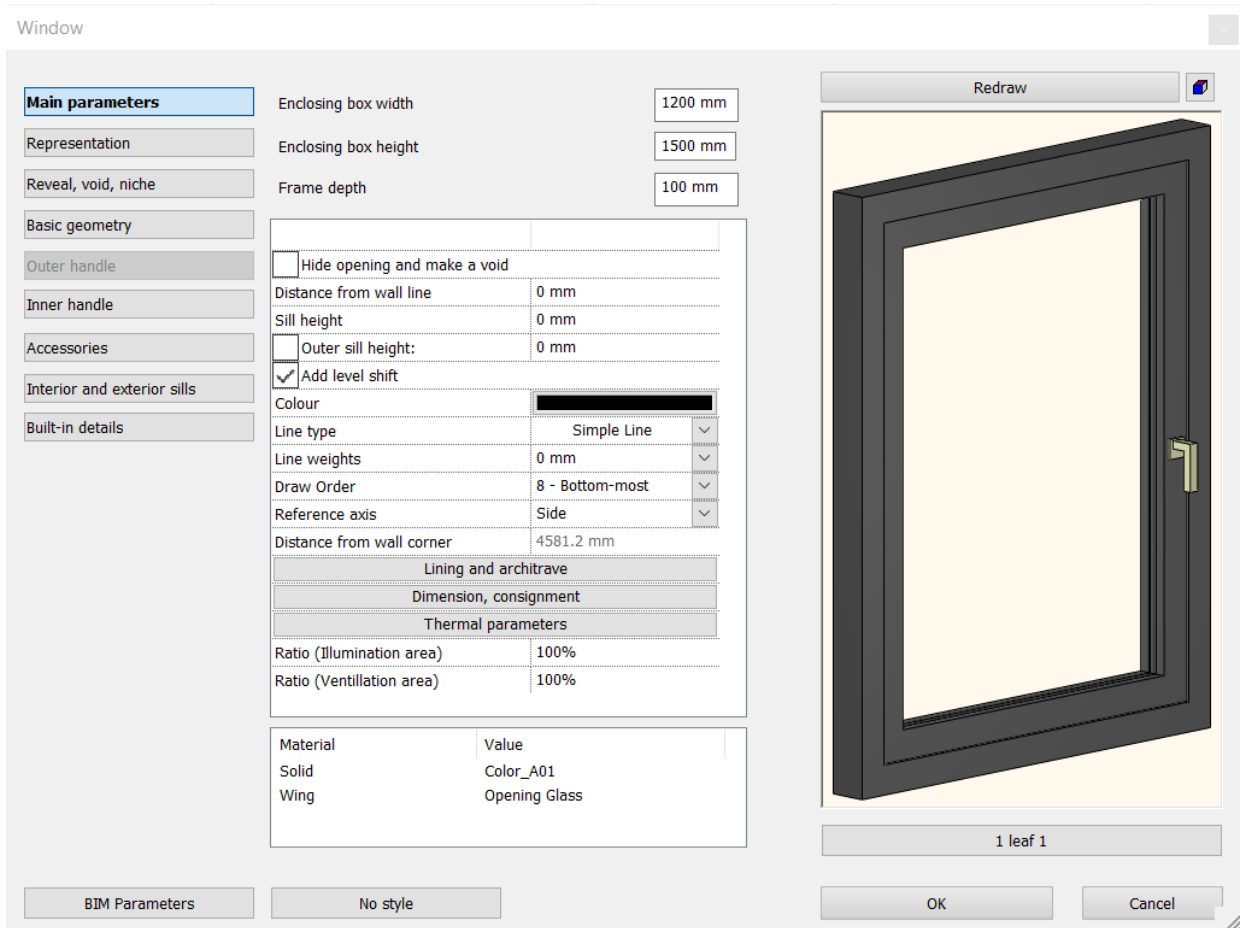
Properties can be activated by selecting the Building - **Door/window**, with a right-click on the icon, or by activating the *Building menu - Properties - Door/window* command.




You can select the door / window type from the *Design Center* too. See the chapter [Design Center](#).

The properties of the window are basically the same as those of the door.

Any change in the dialog is *valid globally*, which means that the doors/windows placed subsequently in the drawing will have similar values to the ones defined here.



 Doors/windows created with the Define custom door/window command also appear among the types. These have only three variables (X, Y, Z values), all the other values are fixed.

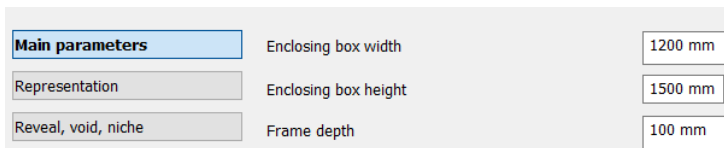
The properties of doors/windows are discussed under the following headings:

### 10.4.1.1. Type of the door/window

Select a category within the door/window directory, and select a type from the list there.

### 10.4.1.2. Main dimensions

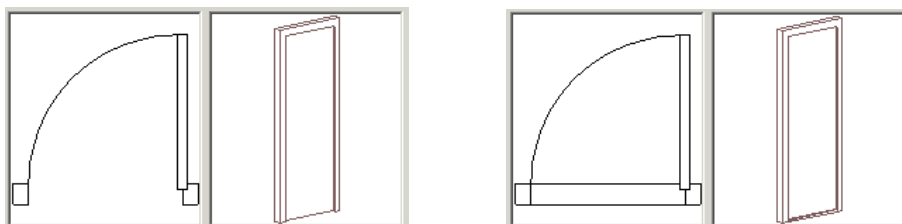
You can set the width, height and frame depth (thickness).



#### Threshold thickness:

This value influences not only the 3D model but the 2D representation as well:

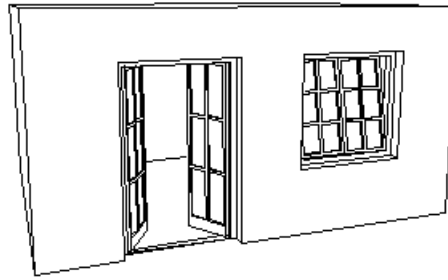
*Threshold thickness = 0:*                      *Threshold thickness = 0.02*





**Door/window angle:**

Doors/windows can be open. You can enter a value between  $0^\circ$  and  $90^\circ$ . For the most part of the window you can also define a value between  $0^\circ$  and  $-15^\circ$ , which means that the window is represented as a hopper window. This parameter only affects the 3D model.

**Materials and finishes**

Materials list depends on the door / window type.

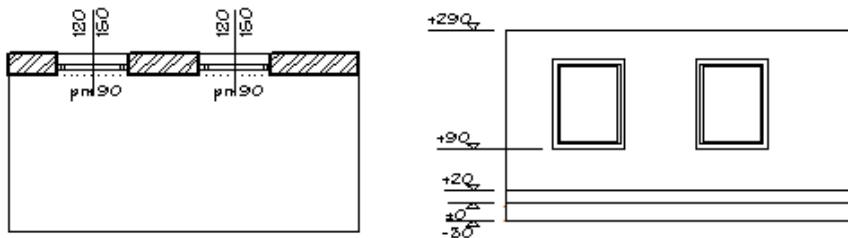
If you modified the parameters of the selected door/window, press **Redraw** to see the result of modification in the dialog box.

**Distance from wall line**

The distance between the frame of the door/window and the wall reference line.

**Sill height**

The program measures the sill height from the bottom of current level, and not that of the wall.

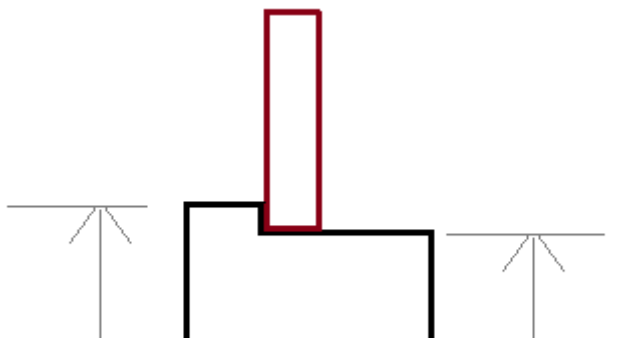


In this figure the wall starts at 20 cm height. 90 cm have been entered for sill height, which means that the distance is 70 cm between the bottom of the wall and that of the window.

You can also decide to define the internal floor elevation in the **Door/window properties - Dimensioning** dialog box.

**Different interior and exterior sill height**

You can define the interior and exterior sill height separately relative to the finished floor level or the external slab level. When you assign dimension to the door or window the displayed sill height value depends on the size of the wall where you click on.



Main parameters	
Representation	Width: 1200 mm
Reveal	Height: 1500 mm
Basic geometry	Thickness: 100 mm
Outer handle	
Inner handle	Distance from wall line: 30 mm
Accessories	Sill height: 900 mm
Interior and exterior sills	<input type="checkbox"/> Outer sill height: 0 mm
	<input type="checkbox"/> Add level shift

### 10.4.1.3. General properties

Define the colour, line type, line width and priority of the door/window. You can edit the *Distance from wall corner* when you modify an existing door/window. This field is disabled at definition.

Main parameters	
Representation	Width: 1200 mm
Reveal	Height: 1500 mm
Basic geometry	Thickness: 100 mm
Outer handle	
Inner handle	
Accessories	
Interior and exterior sills	
Built-in details	
Cost variable	
	Distance from wall line: 30 mm
	Sill height: 900 mm
	<input type="checkbox"/> Outer sill height: 0 mm
	<input type="checkbox"/> Add level shift
	Colour: <span style="background-color: black; color: black;">XXXXXXXXXX</span>
	Line type: Simple Line
	Line width: 0 mm
	Draw Order: 8 - Bottom-most



See:

- ❖ the detailed description of the general properties in chapter 3.2.1. *Specifying general properties*,
- ❖ the description of sets in chapter 3.2.3. *Using sets of properties*.
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning cost variables*.

### 10.4.1.4. Door / Window Frame around - Lining and architrave

You can assign frame to the inside or the outside of the doors or windows, and specify cross section.

The frame is the property of the door or window, so it stays, when you copy it. You have to specify separately the inside and the outside properties of the frame

#### **Frame properties**

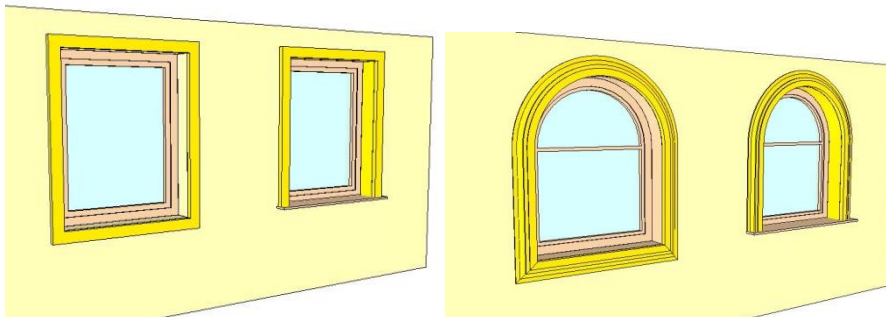
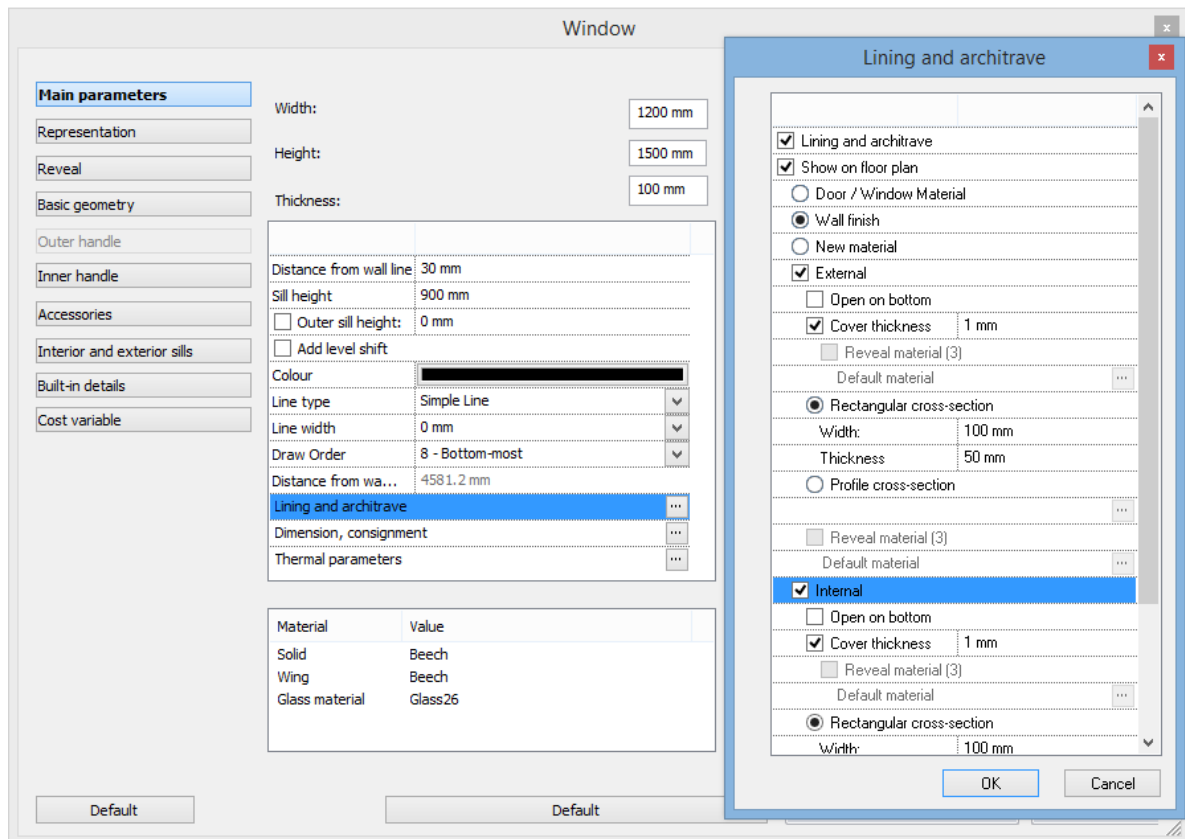
You can assign full frame or down open frame.

The cross section can be rectangular or profile selected from the library.

You can put covering between the frame and reveal, and you can assign thickness and material to it.

If you don't assign any material to the frame or covering, then it copies its material from the wall.

Click on the *Door / Window Properties - Lining and architrave* button to define the frame properties.



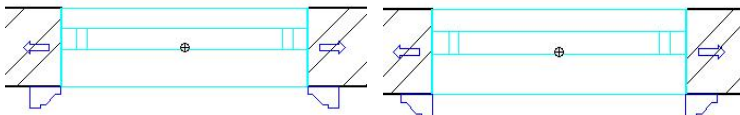
### Changing the position of the cross section

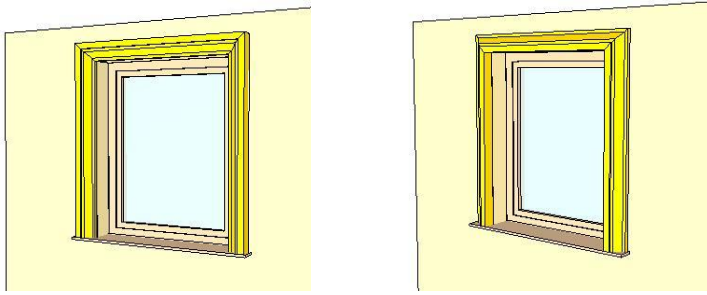
- After clicking on the door / window on the floor plan the profile of the assigned frame is displayed.
- You can mirror or rotate the profile by clicking on the profile and choosing **Mirroring** or **Rotate** keywords in the command line.
- **Enter** finishes the command.

The advantage of the method is (contrary to changing Insert profile window in the Property window) the result of the changing is viewable on the floor plan as compared to the door or window, so it is evident.

*Expanding frame*

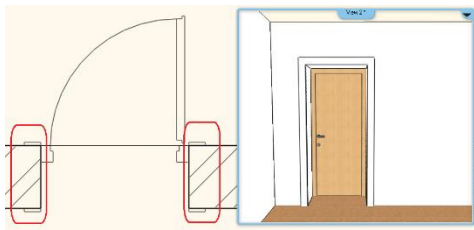
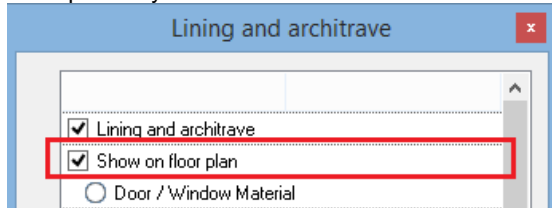
*Tapering frame*





### Show on floor plan - lining and architrave


You can display the lining and architrave section on the floorplan. It makes easier to place elements like switches and sockets more precisely.



### 10.4.1.5. Visualization group

When you click the  sign in front of the *Visualization* group, you can specify the following properties:



Where names are followed by the  icon, double-click the name or click the  icon to see the dialog box.

#### Representation in 3D

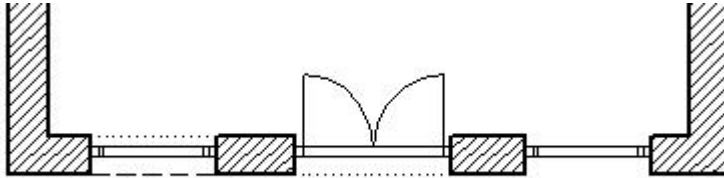
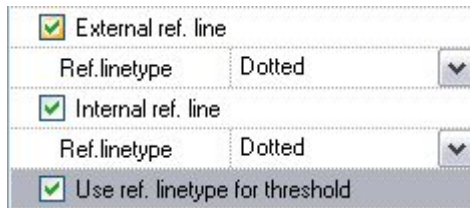
If you switch this function off, the 3D model of the door/window does not appear.

The door/window will only have a 2D symbol, the contour cuts an opening in the wall in the 3D model, but there will be no 3D representation.

This can be useful when drawing staircases for instance. This way the door/window installed on the ground floor has the full height, it has got a 2D symbol, and also a 3D model. The window on the next floor has no 3D representation, but it has a 2D symbol. The contour of this window cuts an opening in the wall, which is filled by the full height door/window placed one level lower.

### Reference line

If you switch on the options the program draws the external and internal reference line of the wall at the door/window. You can define the type of the internal/external reference line from the pull-down list:

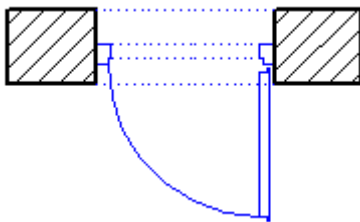


### Threshold line type

In case of doors we can represent the line of threshold on the openings' floor plan symbol, if we determine the height of threshold ( $\geq 1$  mm) between the parameters. (Naturally the threshold will appear in the 3D model too.)

In case of parametric doors in *General* category, there is a possibility to represent the threshold's line with the external, internal reference line type (for example: in case of hidden threshold).

- Set the thickness of threshold among the door parameters.
- Switch on the external, internal reference line.
- Select the reference line type.
- Switch on the Use reference line type for threshold
- 



### 3D fixed

If you use the **Modify menu - Lock architectural object in 3D** command to lock the 3D image of a door/window to a wall for instance, the 3D fixed option is switched on. By switching it off you can unlock the object. You cannot switch on the 3D fixed option in the dialog box.

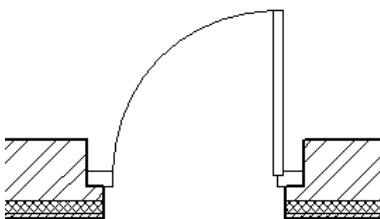


For a detailed description see chapter 8.5.6. *Locking in 3D*

### Form reveal - Bend layers

You can define a door/window by a reveal. To do so, you need to define the reveal width among the parameters you set when installing into wall.

*Reveal width* means the overhanging of the external side of the wall on the frame of the door/window. It equals the total width of the bending wall layers.



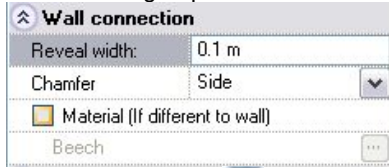
If the reveal width is higher than zero, the program displays it by default as shown in the picture; wall layers are not bent to the frame of the door/window.


In the case of layered walls you need to bend layers to form a reveal:

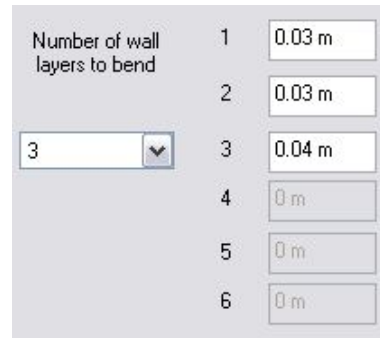
Layers can only bend if:

- ❖ the wall containing the door/window consists of at least two layers, and
- ❖ the value of reveal width is not 0.

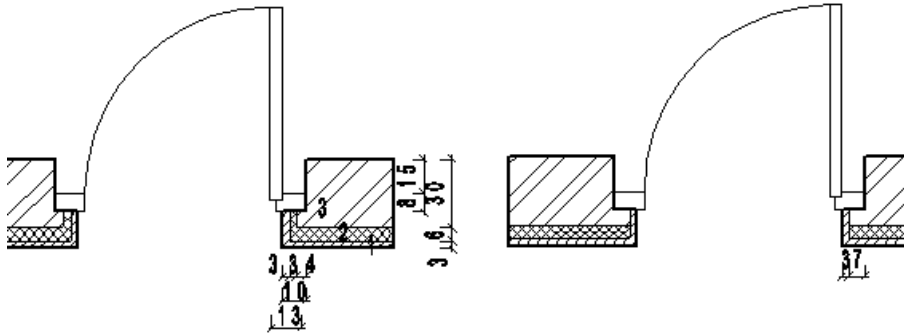
- Define reveal width in the Parameters group: 0.1 m




- Click the *Bend wall*  icon to see the dialog box appear.
- Select from the list the number of wall layers you wish to bend to the frame (max. 6).
- Define the width of each layer to bend. The total of these values cannot exceed the reveal width of the door/window.




The width of wall bending can be 0 as well:



## Dimensioning

When you click the *Dimensioning*  icon, the dialog box appears where you can specify the dimensioning properties of the door/window.

The Dimension  **Dimension - Openings** command places the dimensioning of the door/window with the values set here.

When you switch on the **Associate a dimension to the opening** option, dimensioning will also appear automatically when placing the door/window.

Dimension style

Associate a dimension to the opening  Dimension, consignment

Visible parameters

Width

Width / Height

Width  
Height

Taking into consideration of built-in details

Width/height PLUS blindframe

Adjust dimension to width value

Reveal: constant

Height minus reveal on top/bottom (where exist)

Height minus frame

Height plus sill

Sill height

Sill height: pm

Internal floor elevation: 0

Top height of door/window

Relative  Absolute

OK Cancel

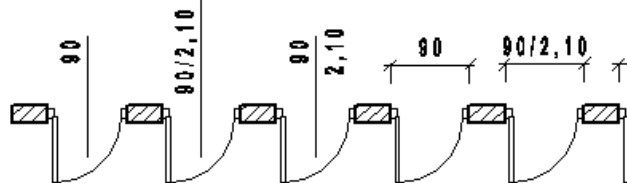
Visible parameters

Width

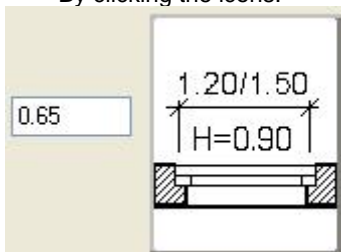
Width / Height

Width  
Height

Specifies the parameters fitted to the dimension.

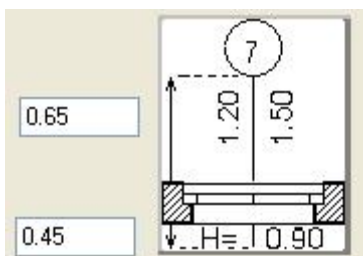


By clicking the icons:



Dimensioning is parallel with the direction of the door/window.

You can specify the distance of the measurement line in the field. This value can be negative as well, in that case dimensioning is put on the other side of the door/window.



Dimensioning is put on the axis of the door/window.

This way you can define the length of the line at the side of the text or on the other side. You cannot enter a negative value here.

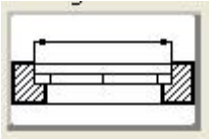
Consignment

Additional

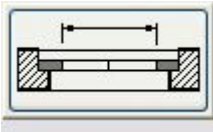
7

If you switch on consignment, you can enter a number in the dimension circle of the door/window. If the number is 0, the program replaces it with the ID number of the door/window in the field.

You can complete the consignment number with an alphanumeric expression.



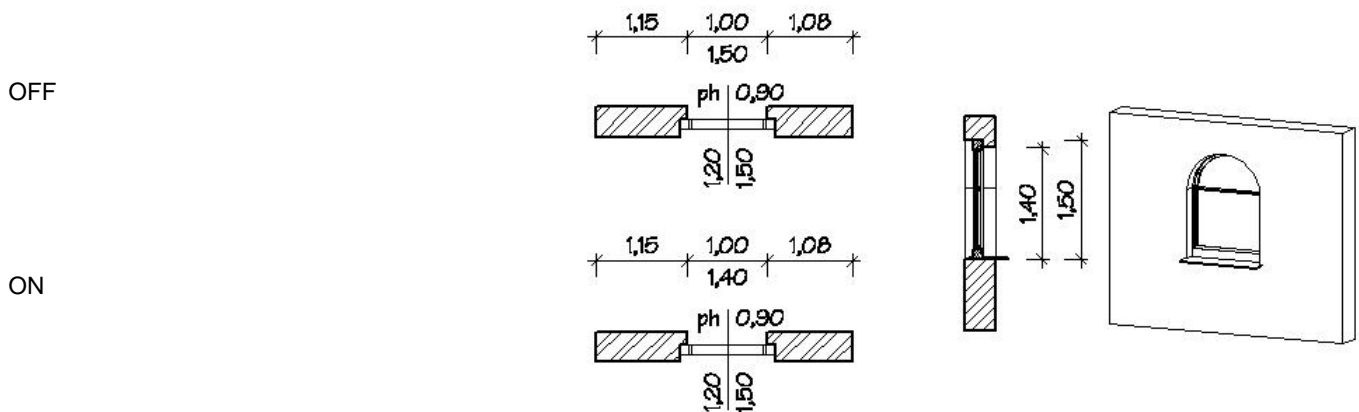
External dimensioning of the door/window (with frame).



Internal dimensioning of the door/window (width of casement, which means the width of the door/window without frame).

#### Height minus reveal on top/bottom (where exist)

When you use reveal for the opening, you can define, the height of the opening contains the reveal or not. You can switch on / off the Height minus reveal on top/bottom (where exist) option:



If you use an opening with rectangle form, you have to set the state of the chamfer to go on the top or around also.

#### Height minus frame

By switching on this option the height of the door/window is calculated without its frame.

#### Height plus sill

With this option you can decide whether or not to include the *height of the threshold* in the height of the door. In case of windows it is important if the parapet wall under the window is removed and replaced with the structure of the window. In this case the total height of the window has to contain the height of the parapet wall („threshold”) as well.

Reveal: constant

Here you can decide whether to change the width of the window when forming the reveal. (According to the standard you should keep this option switched on.)

Sill

ph=

Internal floor elevation:

0

When the **Parapet height** option is switched on, the parapet height is also entered after the text given in advance (for instance: ph = ).

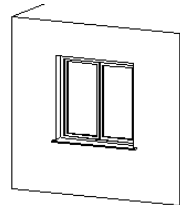
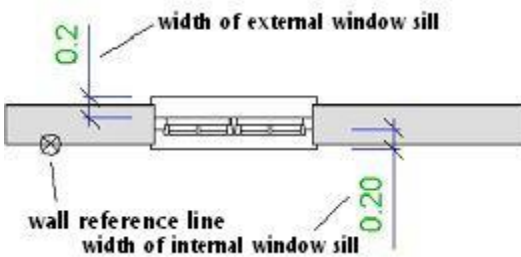
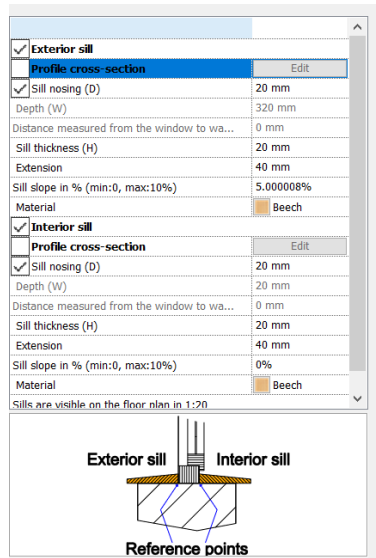
You can enter the internal floor elevation in meters. This way the parapet height is measured from this level.

#### 10.4.1.6. Interior and Exterior sills

*External, internal sill:* can be switched on, values can be specified:

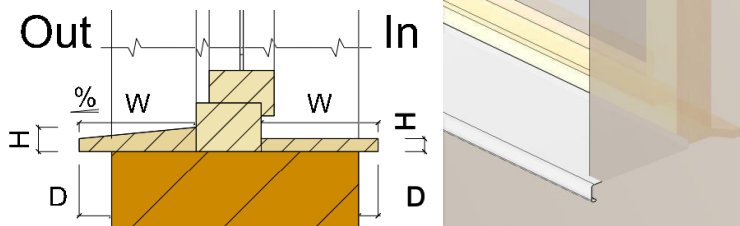


- depth:**  
 Defines the width of the external/internal sill, measured from the external/internal frame level
- overhanging (ext):** overhanging of the external/internal sill, parallel with the wall.
- height**  
 Specifies the thickness of the external/internal sill. (The upper level of the sill is the same as the lower level of the window.)
- material:** material of the external/internal sill can be specified.



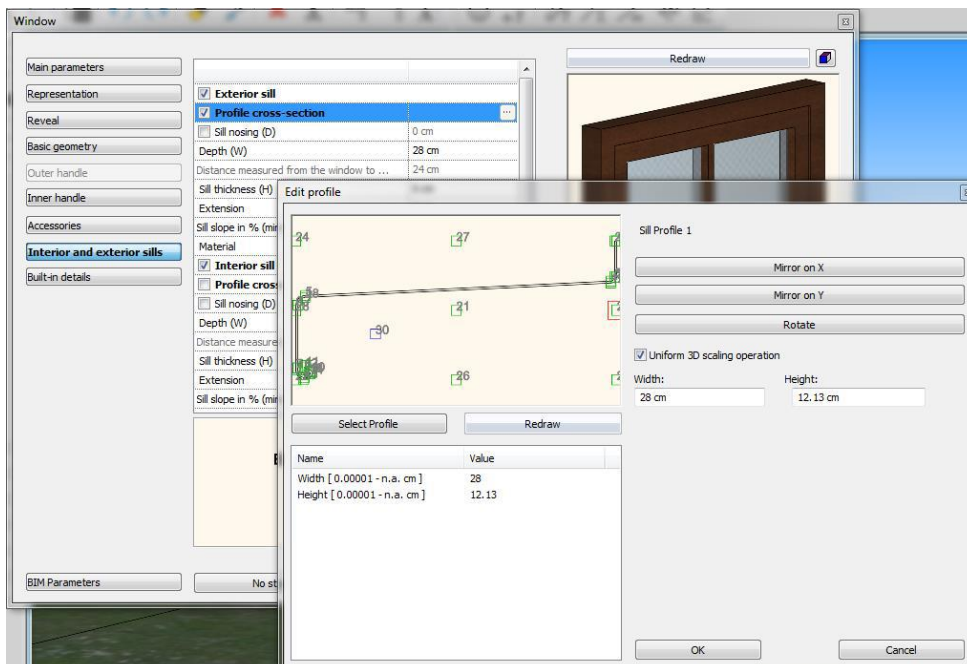
**Sill slope in %**

The exterior and interior window sill slope angle can be defined between 0 and -10 degree.



**Sill profile cross-section**

You can choose from several default window sill profiles and its size can be customized.





The sill only appears on the floor plan if the door/window detail level is 1:50 or 1:20.

### 10.4.1.7. Reveal, void, niche group

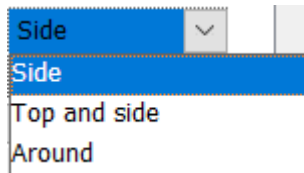
#### Reveal width

Overhanging of the external side of the wall on the frame of the door/window.

Reveal width (1)	10
Chamfer	Side
<input type="checkbox"/> Reveal material (3)	Default ...
Wall layer wrap (2)	
Niche	
<input type="checkbox"/> Depth	0 mm
Bottom elevation	0 mm
<input type="checkbox"/> Niche material	Default m...

#### Chamfer types

It is possible to create a door/window with a chamfered frame. You can modify the opening-wall connection line with the *Move insert point* command from the *Shortcut menu – Wall connection*. You can create three types of chamfer:



The chamfer is created only on the two sides of the door/window.

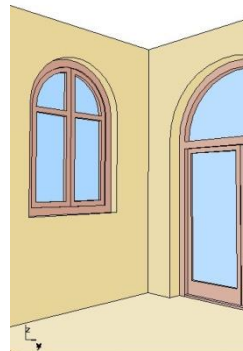
The chamfer is created on the two sides and the top of the door/window.

The chamfer surrounds the door/window.

#### Material of wall connection

This command can be important when working in 3D view. The material of the wall ending around the door/window can be set here. *Material (switch off)*, this material is the same as the wall texture. Once you have turned on this option, by clicking the name you can select another material for the wall connection from the **Material** dialog box (for instance *Wall paint*) instead of the current material.

<input checked="" type="checkbox"/> Material (If different to wall)	
Wallpaint	...

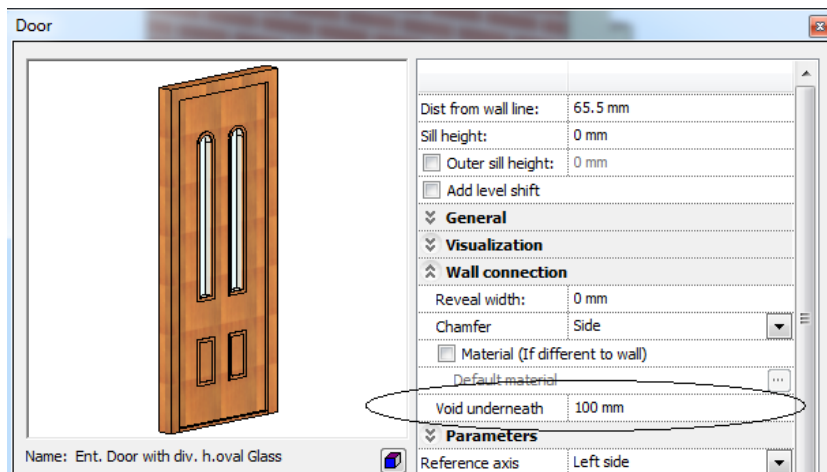


#### Void underneath

Gap under door (called void underneath) is a technical extension of the door opening hole at the bottom side of the door. It extends the door hole in the wall by a value defined in the properties dialog. It can be used to make space for floor layers to create the proper connections.

The void underneath value can be found in the Door properties dialog, in the Wall connection section. Its default value is Zero.

Door with void underneath as 100 mm:



### Sign

The program puts the value entered in the box parallel with the door/window. If a # character is entered, parapet height appears.



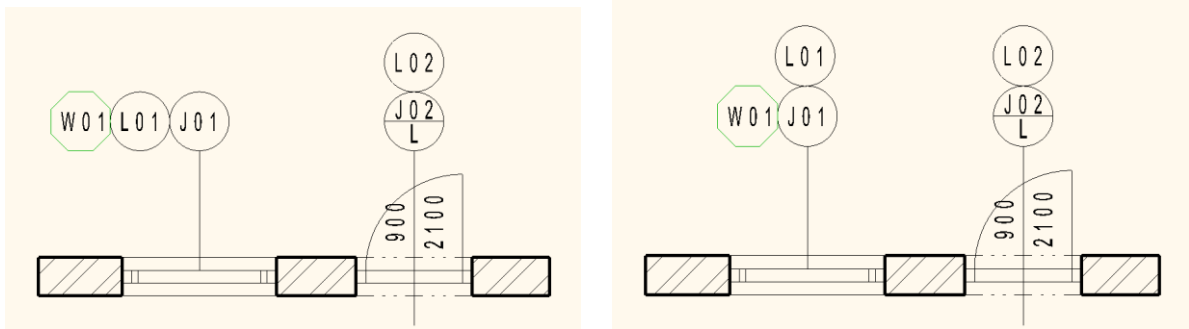
### Distance from wall corner

When setting the properties, this field appears in gray in the dialog box. If you want to modify the door/window that you have already placed it in the wall, the **Door/window properties** dialog box shows the distance of the *Reference axis* of the door/window from the wall corner. Now you can modify the distance between the door/window and the wall corner.

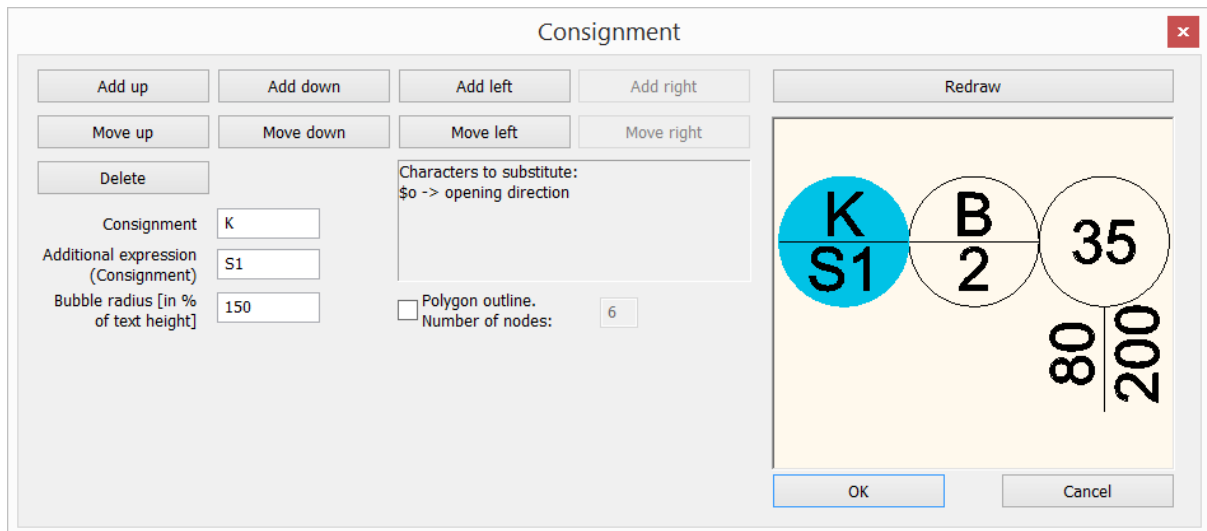


### 10.4.1.8. Multiple bubbles for openings

Enhanced Detail Bubbles—Control the appearance and placement of bubbles on custom form for even more graphic detail.



The bubble radius is defined in % relative to the text size.  
Further display and layout options:

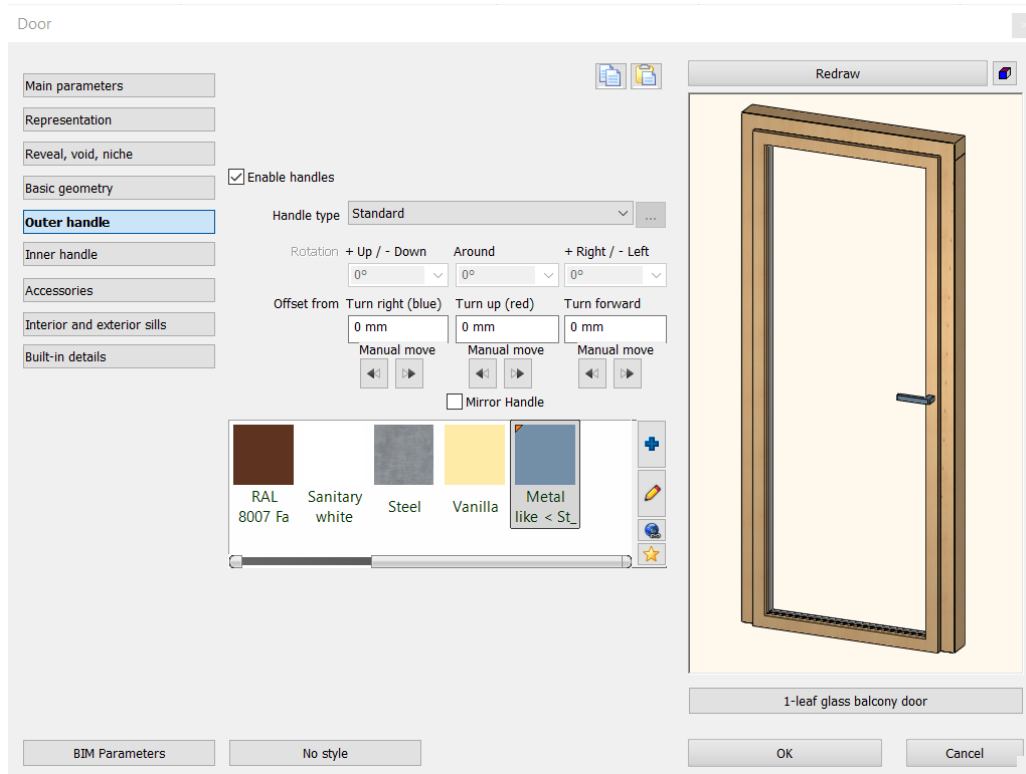


#### 10.4.1.9. Handles

On the Inner and outer handle page you find the geometry settings for the door and window handles and knobs. Window dialog enables to apply inner handle only.

##### Enable handle

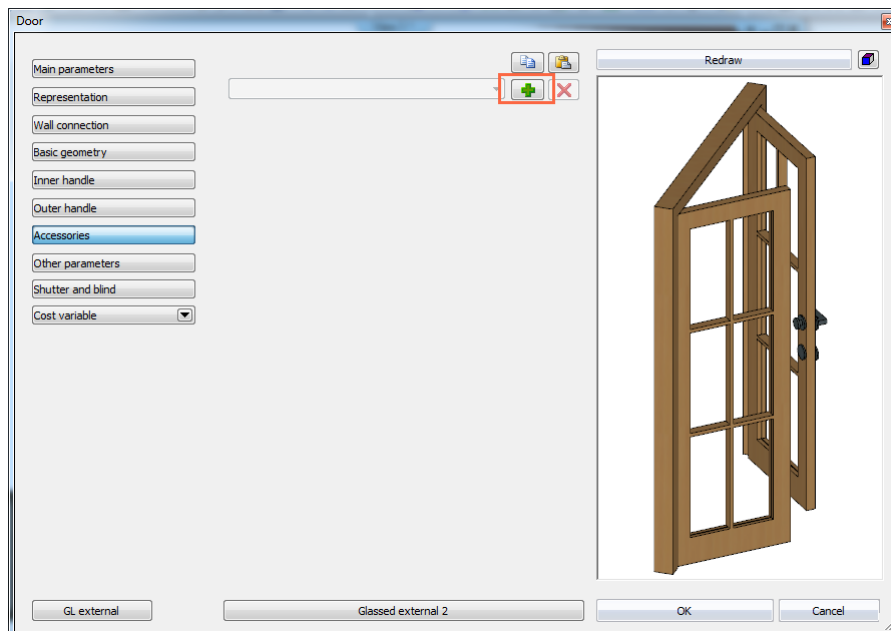
The Enable Handle option enables the handle and lock for the current door and window. Enable this option if you would like to use handles and locks.



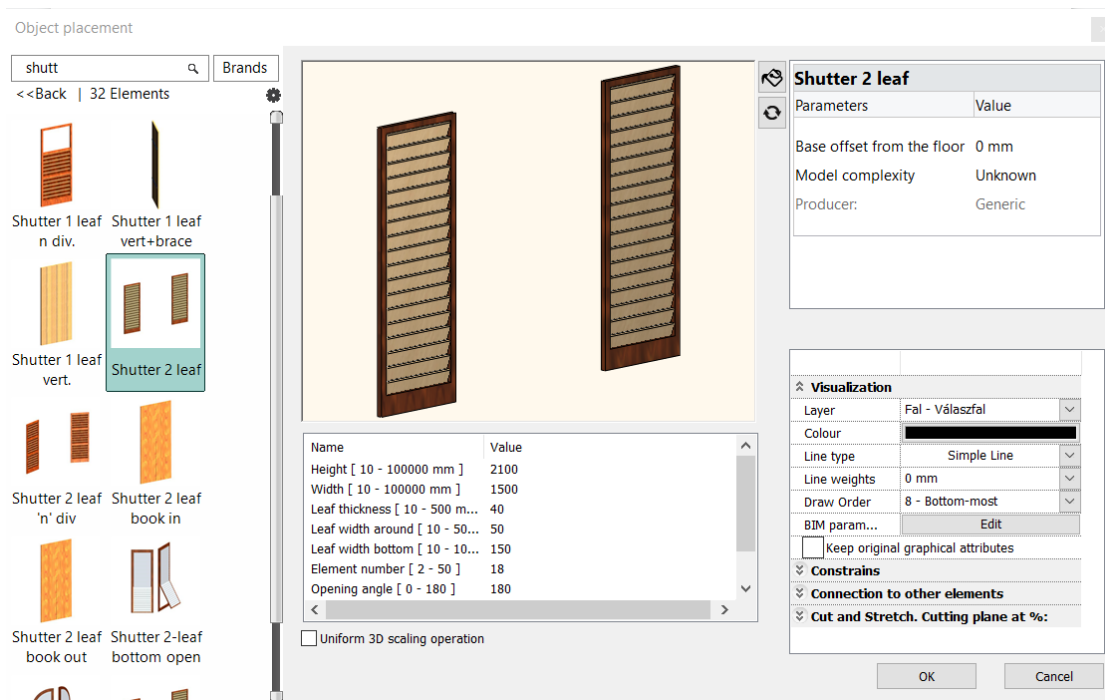
### 10.4.1.10. Accessories

On the Accessories page you can add accessories to the door and window and you can define the geometry settings of the accessories.

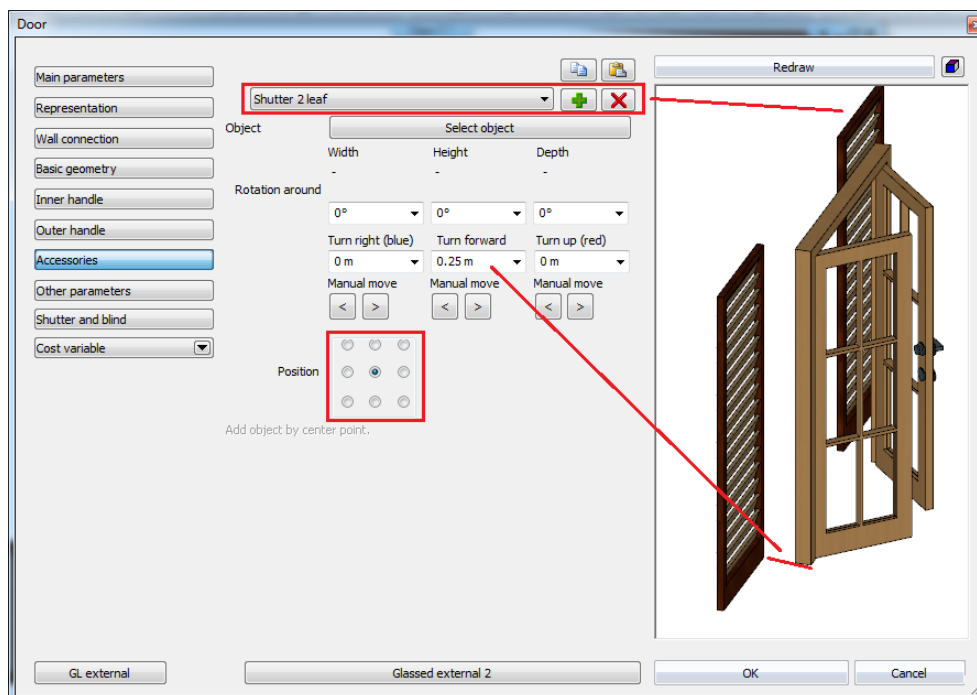
Press the green plus button to select an object from Design Centre.



Select the object to insert as accessory.  
You can resize the selected object according to the door/window width and height values.

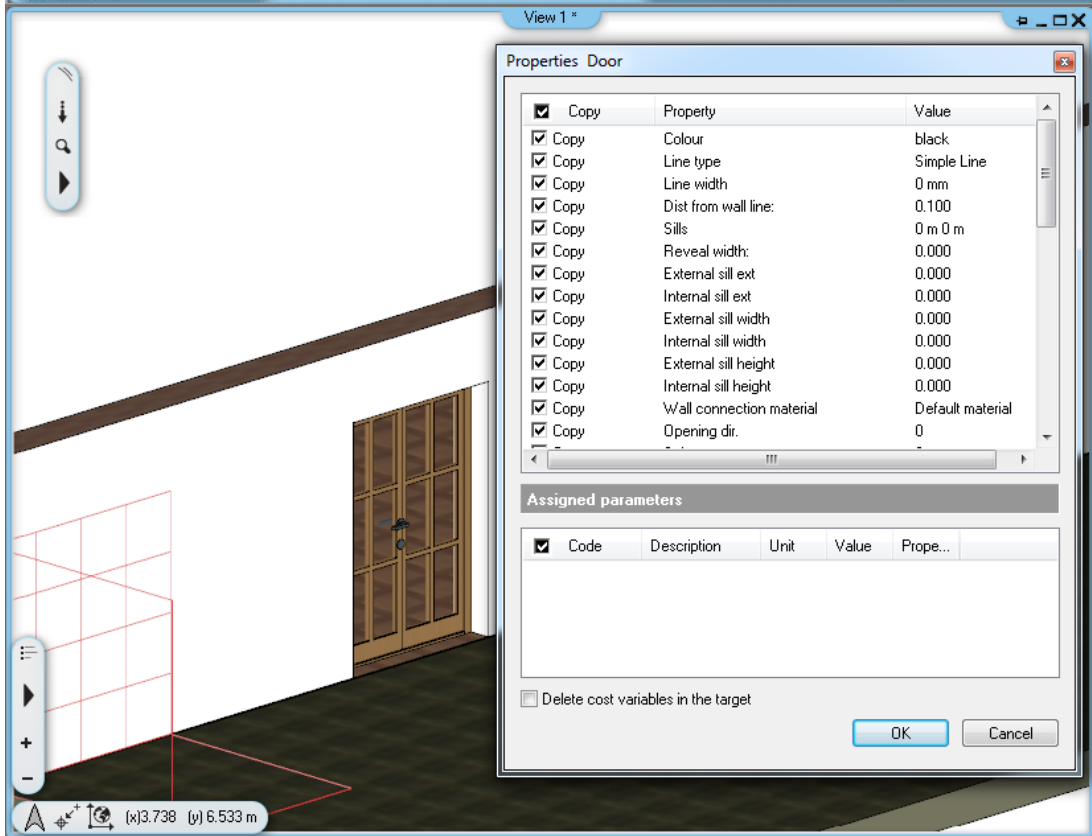
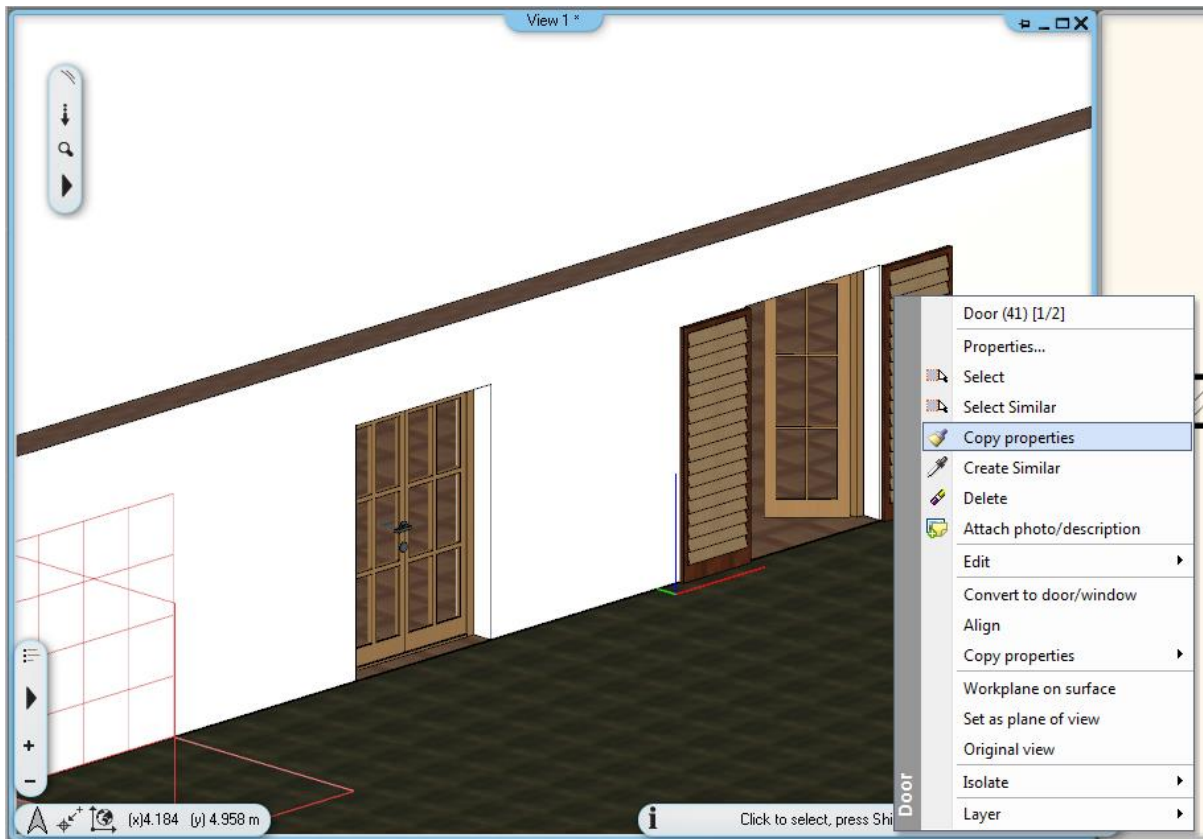


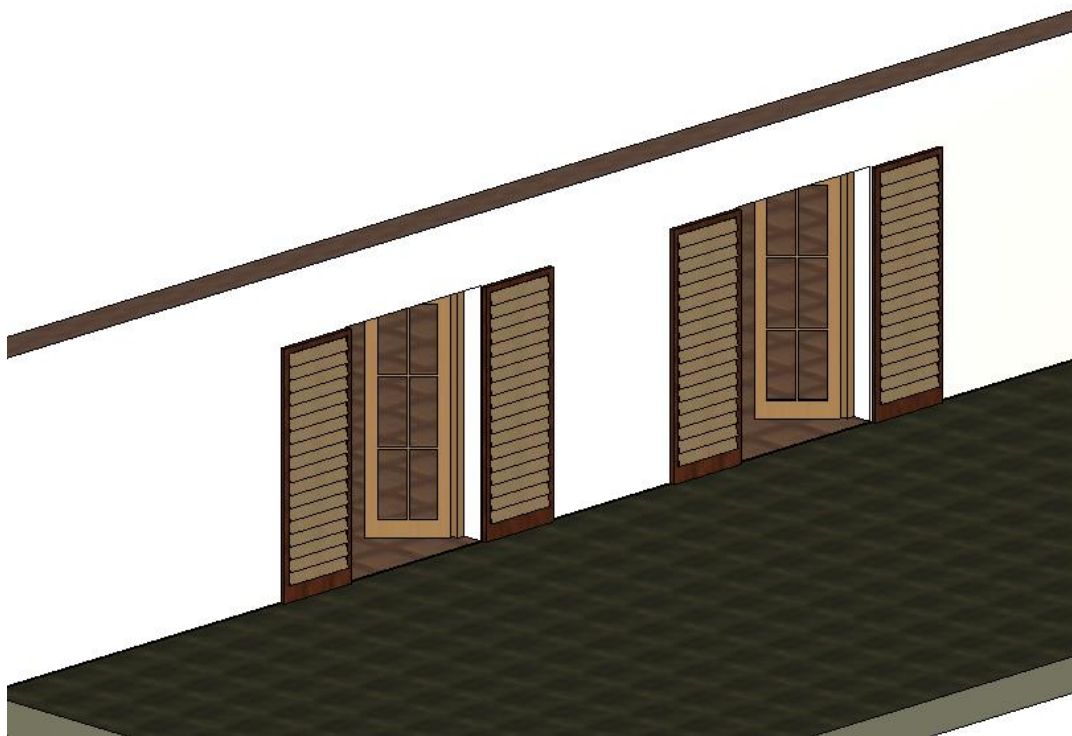
You can change the object reference point in Position and its offset in X, Y, Z direction.



When you are ready with the accessory assignment press ok and place the door/window on a wall. The accessories are integral part of the door and window so it follows the movements and you can copy to other doors and windows as well.

Example: Copy attributes to another door:





### 10.4.2. Placing a door/window

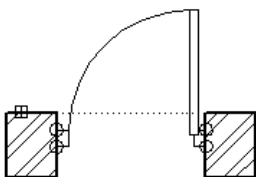
It is useful to place the door/window on the internal side of wall by default. This way its floor plan symbol (scale 1:20), the door/window dimensioning, the opening direction of window casement in the 3D model, and, in case of a window with reveal, the reveal is put to the appropriate place.

In practice, however, you often know the external values only, so it is more useful to install the window on the external side. In such cases, the door/window has to be mirrored to obtain a correct representation.

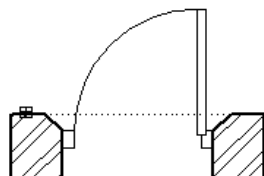
#### **Ways of placing a door/window:**

- ❖ by defining the distance between the nearest wall endpoint and the door/window.
- ❖ to the left or to the right from a given point of the wall,
- ❖ by defining two points on the wall, thereby determining its width,
- ❖ as an individual object, independent of a wall,
- ❖ window on a roof plane

#### **Reference points**



The door/window is connected to the wall by its reference points. Every floor plan representation contains four reference points (two at both wall connections). The door/window appears on the external or the internal side of the wall depending on your choice of side at the time of placing the door/window.



By default, reference points are created perpendicular to the internal wall, but you can move them with the help of the Move **insert point** command.

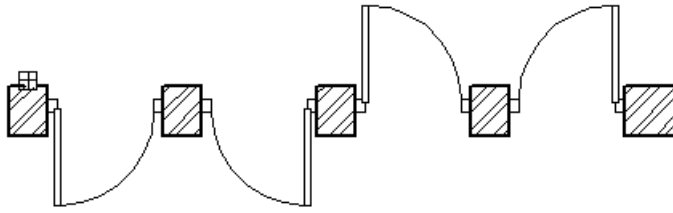
#### **Reference axis**

The reference axis can be the right or left reference point, or the middle axis of the door/window. The program places the door/window by the reference axis set in the *Properties* dialog box. In the case of *Install door/window from wall corner* command, press **TAB** to change it.



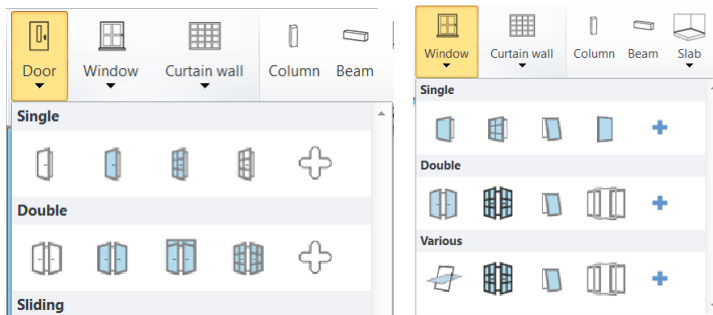
### Opening direction

The opening direction of doors can be modified by clicking on the required side, or later using the **Change opening direction** command in the shortcut menu.



### Ribbon bar menu access to most common door / window types

Clicking on type icons you can place directly the most common door / window types. In addition clicking on the + icon the program displays the selected category in the Design Center. You can place the content of the category with drag and drop method.



#### 10.4.2.1. Place door/window from wall corner

With this command you can place the door/window in several ways:

- ❖ graphically on the floor plan,
- ❖ at a given distance from one wall endpoint on the floor plan,
- ❖ at a given distance from one wall endpoint by repeat on the floor plan,
- ❖ Graphically in 3D view.

Location of the command: **Building > Door > Placing Door** or **Building > Window > Placing window**.

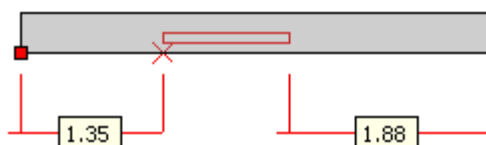
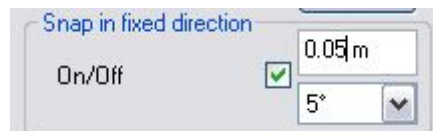
#### Placing by graphically on the floor plan

- Select the wall where you would like to place a door/window.

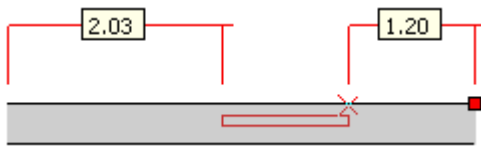
When you move the mouse pointer, the program indicates the distance of window endpoints from wall endpoints. The window can be moved by the set snap spacing.

With this method you can define the place of the door/window graphically.

You can switch on and enter snap in direction in the *File menu - Options - Snap Grid* dialog box



- Before you insert a door/window, press **TAB** so that you can switch the *reference axis* of the door/window. Thus by selecting the other corner point as reference axis, moving by snap in direction also takes place in relation to the other corner point of the wall.



- If you click on the **MIRRORING** keyword, the program will mirror the openings on the wall.
- Use the keyword if for example you clicked on the external side of the wall to place the window, because the external size is available. In this case You have to mirror the window to be- it's floor plan symbol (1:20 scale), the scale of openings, the opening direction of the casements in the 3D model, or in case of reveal window the place of the reveal -in the right place.
- Place also graphical the opening.
- In case of door click on the placed opening to set the proper opening direction.  
**Enter** Finish opening direction selecting.  
**Enter** Finish the command.

### Placing by a given distance on the floor plan

- Select a wall where you would like to place a door/window.
- When you move the mouse pointer, the program indicates the distance of window endpoints from wall endpoints.
- Pressing **TAB**, the *reference axis* of the door/window can be changed, if needed.
- By clicking **MIRROR** the program mirrors the door/window on the wall.
- Instead of inserting the door/window graphically, enter the distance between the reference axis of the door/window and the wall corner point.

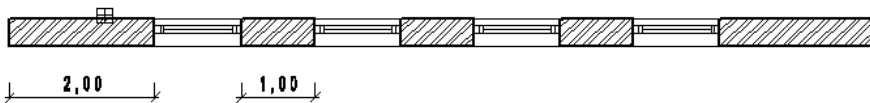
If the reference axis is on the axis of the door/window, the program records the distance from the wall endpoint closer to the click.

If the reference axis is a corner point of the door/window, the distance is measured from that wall corner point between which and the reference axis the wall section does not contain the door/window to be inserted.

- **Enter** Finishes selecting the direction.
- **Enter** Completes the command.

### Placing on the floor plan with repeat:

- Select the wall.
- Select the **REPEAT** keyword.
- Enter the number of copies: e.g. 4. **Enter**.  
Enter the distance between the doors/windows: e.g. 1.
- Enter the distance from the selected wall node: e.g. 2 m.
- In the case of doors, click on the placed door to set the appropriate opening direction.
- **Enter** Finishes selecting the direction.
- **Enter** Completes the command.



When placing a door/window, a message may warn you if it is outside of the wall, or intersects other objects. When using the REPEAT keyword, the program inserts only that number of doors/windows for which there is enough room without intersecting other objects.

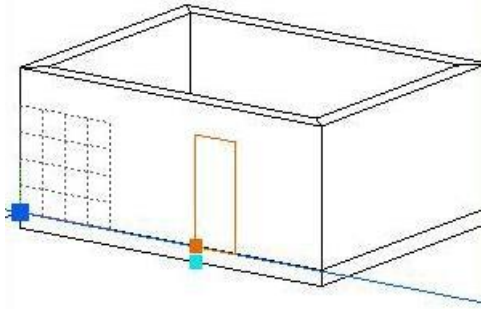


When you insert a door/window with repeat, the program uses the *reference axis* set in the *Door/window properties* dialog box.

### Placing in 3D view:

- Activate the 3D View, and, after selecting the command, click a vertical plane of the wall where you would like to place the door.
- Place the door/window on the wall plane. It places the opening always to the given parapet height in relation to the layer.

**Enter** Completes the command.

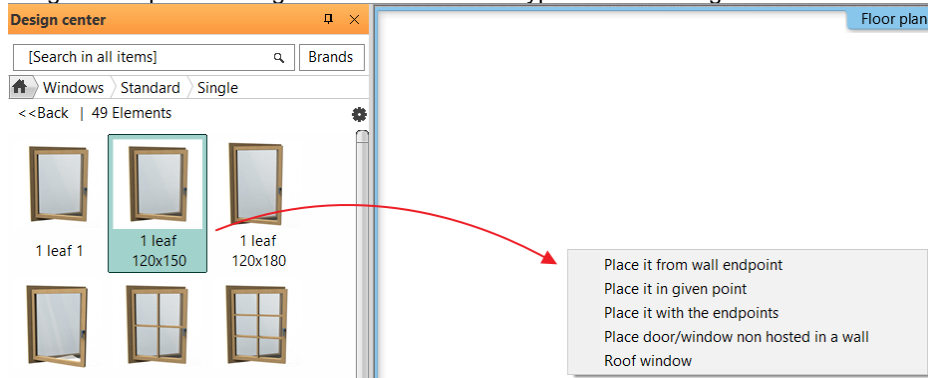


### Option:

<b>SOLID</b>	Use this keyword, if the selection of the surface is not evident. Click the appropriate wall, then one of its vertical surfaces. <b>Enter</b> .
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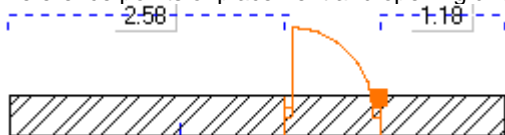
### 10.4.2.2. Placing door/window by drag and drop

Drag and drop from Design Center the selected type to the drawing area:



### Placing door/window on the floor plan

- Move the mouse pointer over a wall or use the **Wall** keyword to select a wall where you would like to place a door/window. When you move the mouse pointer, the program indicates the distance of door/window endpoints from wall endpoints, reference points of placement and opening directions.



- Using the mouse pointer and/or keywords and/or entering the distance values you can define the final place of door/window.
- Use the **Repeat** keyword and then enter the required distance values to place multiple doors/windows with equal distances from each other.
- Click with your left mouse button to finish the placement graphically or press **ENTER** to finish entering the distance value measured from wall endpoint.
- In the case of doors, click the door placed to set the appropriate opening direction.
- Install subsequent doors/windows or close the command by **ENTER** or right mouse button click.

### Placing in 3D view

- Use the mouse pointer to select a wall plane where you would like to place door or window.
- Using the mouse pointer and/or keywords and/or entering the distance values you can define the final place of door/window.
- Click with your left mouse button to finish the placement graphically or press **ENTER** to finish entering the distance value measured from wall endpoint.
- Install subsequent doors/windows or close the command by **ENTER** or right mouse button click.

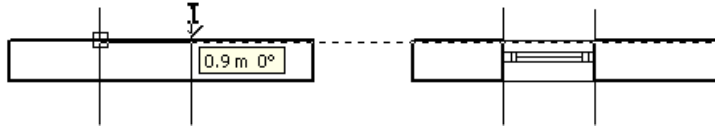
### 10.4.2.3. Place door/window by two points

This command allows you to insert a door/window by defining its width graphically, giving its starting point and endpoint. This way the program ignores the width values set in the **Door/Window properties** dialog box.

You can execute this command on floor plan view only.

- Click a point of the selected side of the wall to define the place for the endpoint of the door/window.
- Drag the mouse pointer in the appropriate direction, and click on the appropriate place to define the place of the other endpoint, thereby specifying the width of the door/window graphically, or after selecting the direction enter the width of the door/window: 1 m. **Enter**.

The program inserts the door/window in the wall.



#### 10.4.2.4. Door/window non-hosted by wall.

With this command, doors/windows can be placed to arbitrary places as individual objects, non-hosted by wall.

Door/window is typically an architectural element. Receiving project from structural engineers this method makes unnecessary to go in and place doors in structural walls.

- The command warns you that the doors/windows placed from then on are created without wall connection.
- **OK** Close the warning dialog box.
- Install the door/window.

#### Options:

<b>XANGLE</b>	Rotates the door/window by a given angle before placement.
<b>GRAPHIC</b>	Enter the origin of the door/window, and then define the direction of its axis graphically.

**Enter** Completes the command.



The opening direction of doors placed this way, can only be changed by the **Shortcut menu - Change opening direction** command.

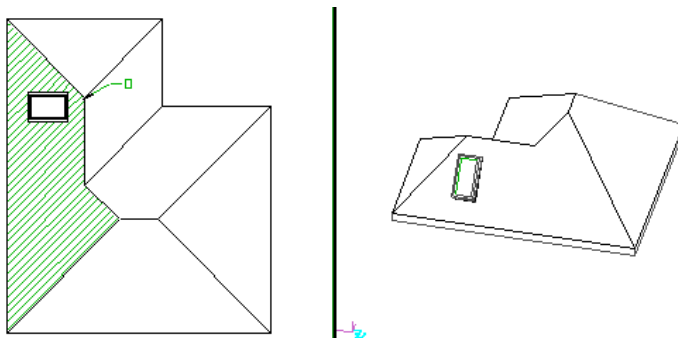
#### 10.4.2.5. Place roof window

With this command you can place a roof window on the selected roof plane. The program identifies the angular offset of the roof plane, and cuts an opening in the roof under the window.

- Select a roof plane where you wish to place the roof window.
- Select the required window type from the **Roof window** category in the appearing dialog box. **Ok**.
- Select the place of the roof window.
- **Enter** Completes the command.



The **Roof shortcut menu- Info - Level line -out and - Info - Level line -in** command can help placing windows more precisely.

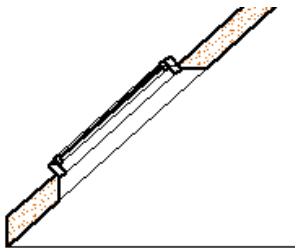


#### Modify roof window

Click on the roof window, in the toolbox the Property manager visualizes the individual parameters:

⌄ Roof connection	
Reveal width:	0 m
<input type="checkbox"/> Material	
Beech	...
⌄ Parameters	
Dist. from plane	0.1 m
Top hole	Perpendicular
angle	0.00°
Bottom hole	Perpendicular
angle	0.00°
Additional expressio...	

- Define the required parameters:
  - 
  - ❖ **Distance from roof plane:** Defines the distance between the plane of the window and the roof plane.
  - ❖ **Top hole:** In the pull-down list you can decide about the top hole of the roof window in relation to the roof plane:  
Perpendicular  
At angle  
Horizontal
  - ❖ **Angle of top hole:** If you define the top hole with angle, the value of the angle means the angle from the horizontal plane upwards.
  - ❖ **Bottom hole:** In the pull-down list you can decide about the bottom hole of the roof window in relation to the roof plane:  
Perpendicular  
At angle  
Vertical
  - ❖ **Angle of bottom hole:** If you define the bottom hole with angle, the value of the angle means the angle from the vertical plane towards the roof plane.
- This way you can define the following roof window - roof connection:



⌄ Parameters	
Dist. from plane	0.1 m
Top hole	Horizontal
angle	0.00°
Bottom hole	Vertical
angle	0.00°

#### 10.4.2.6. Design center - Doors/Windows

If you activate the **Design Center** it appears on the left side of the screen by default. Here you can select the Doors and Windows directory where the door/window types are classified into different categories (so-called *.oli* files).



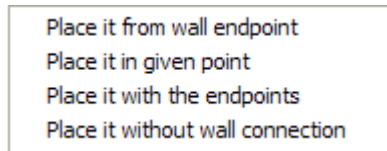
For the detailed description of the Design center see Chapter 2.16.9. *Design center*.



Doors/windows already selected and assigned the appropriate properties can be placed on the drawing by dragging. This is the so-called '*drag and drop*' method, which, in the case of doors/windows, consists of the following steps:

### Inserting with a right-click

- Right-click the appropriate door/window.
- Hold the right mouse button, and drag the object to the drawing area.
- Release the button. Select the way of placement from the appearing shortcut menu:



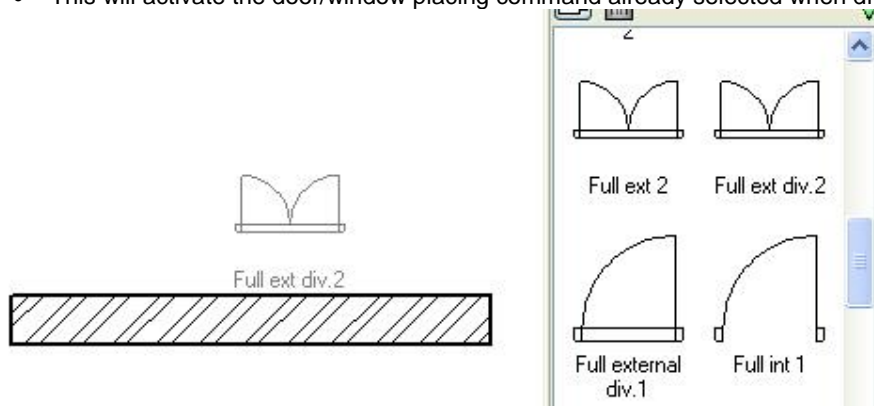
The program will install the door/window according to the selected placing command.



If you continue dragging the object to the drawing with the left mouse-button, the placing command already selected from the list is activated automatically.

### Inserting with a left-click

- Left-click the appropriate door/window.
- Hold the left mouse button, and drag the object to the drawing area.
- Release the button.
- This will activate the door/window placing command already selected when dragging with a right-click.



### 10.4.3. Join two windows as corner window

Any combination of standard windows can be joined.

Wall ends allow window joins. It is allowed to pull them apart and using the trim/extend to wall corner.

There are two methods to create the corner windows:

1. Automatic
2. Manual

#### Automatic

To create a corner window place two windows on each side of a corner where two walls meet.

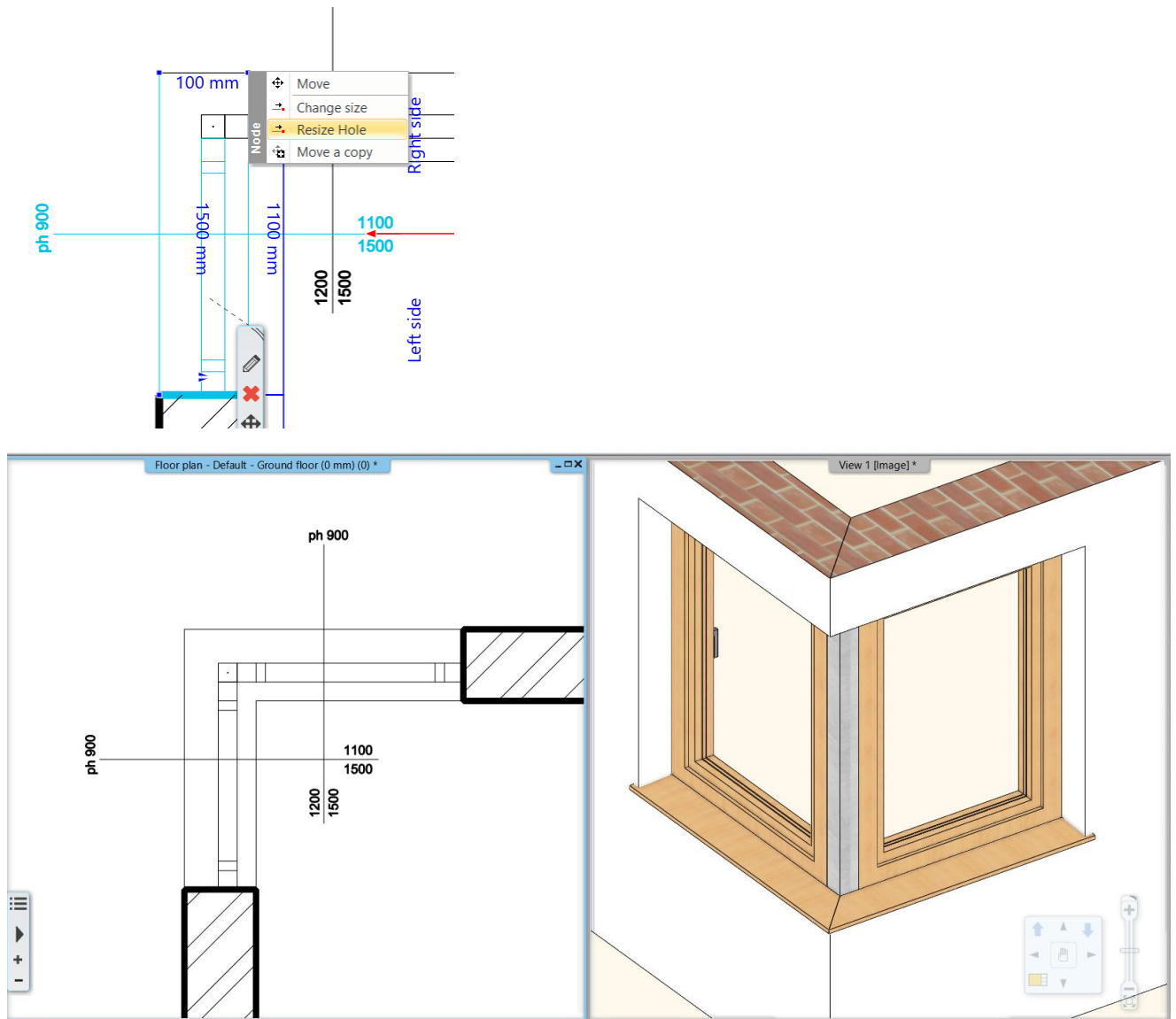
Using the Join two windows/doors on wall corner command select the first and second window.

ARCHLine.XP can create a corner post between two windows.

#### Manual

Select the first window, and drag it to the corner until you see the window snap to the end of the wall.

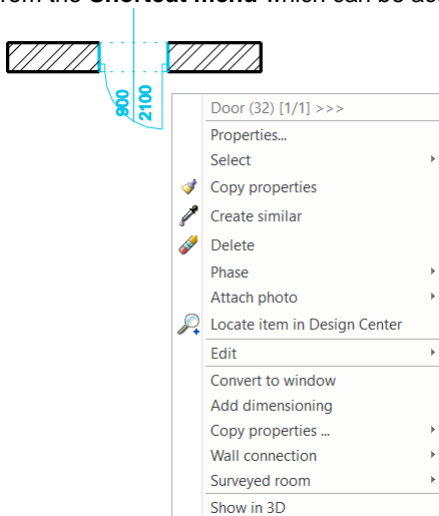
Using the Resize empty void command you can extend the void separately on left or right side of the door / window, breaking the wall properly on wall junction.



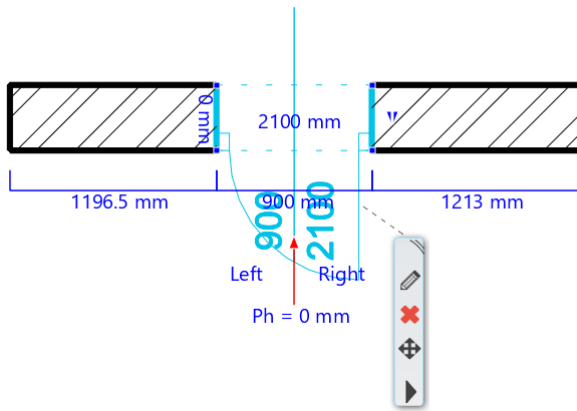
#### 10.4.4. Edit or modify doors/windows

The commands below modify doors and windows in the drawing. You can select these commands:

- ❖ from the **Shortcut menu** which can be accessed with a right-click on a door or window



- ❖ **Using marker**  
Clicking on the opening the marker appear

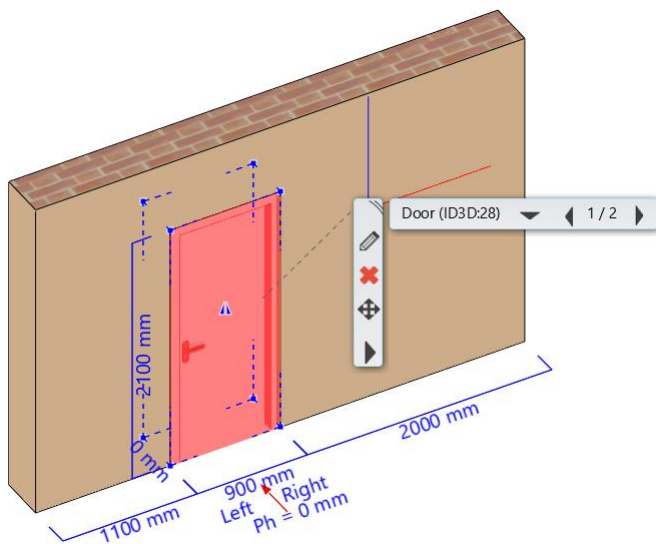
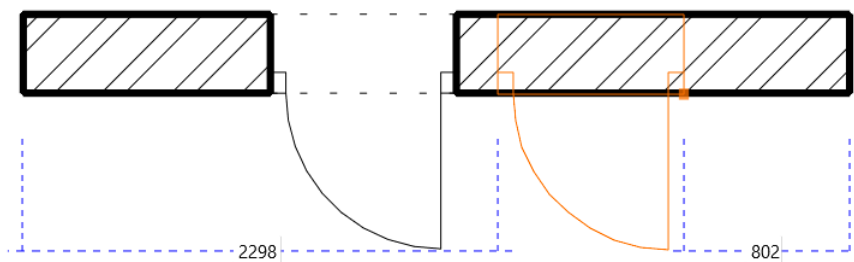


#### 10.4.4.1. Move door/window in wall

You can move the selected door/window along the wall in different ways:

##### **Move graphically**

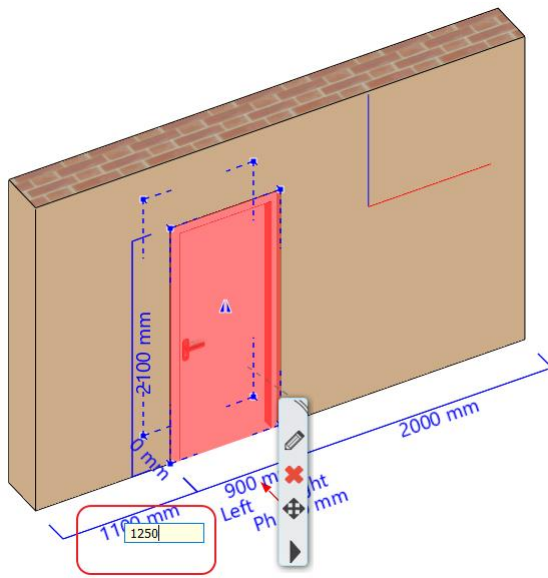
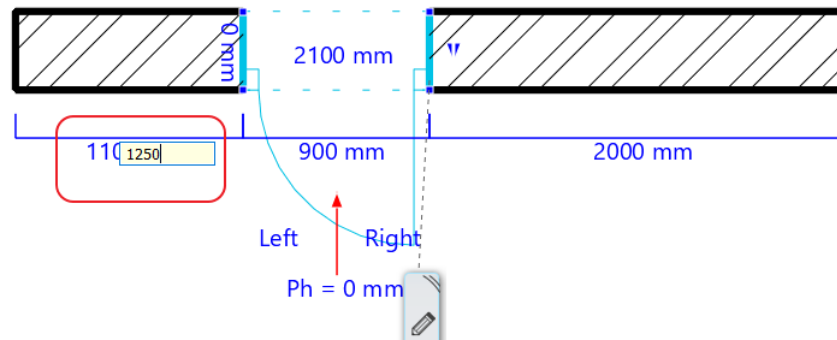
- Select the door/window you would like to move.
- Click on the corner point blue dot and choose the Move command. Moving the mouse, the program indicates the distances from the wall endpoints. Specify the new position with left click.  
You can switch on and enter snap in direction in the *File menu -Options -Snap Grid* dialog box.



##### **Shift by a given value**

- Select the door/window you would like to move.
- Click on the right or left dimension from wall endpoint then enter the new value of the distance in the input field.
- **Enter**      Completes the command.



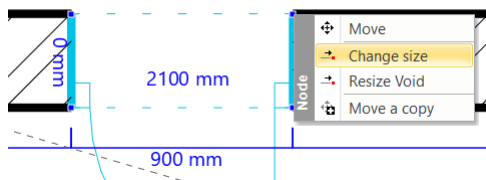


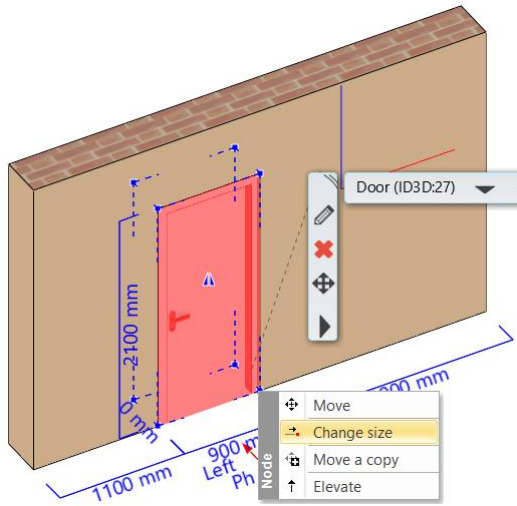
On the floor plan, the active reference axis of the door/window is the one which is near to the selected door/window.

#### 10.4.4.2. Resize door/window

The command changes the width of the selected door/window.

- Select the door/window you would like to change size.
- Click on the corner point blue dot and choose the Change size command. Moving the mouse, define the new width value for the door/window, or
- 2D: Enter the new width of the door/window.
- 3D: Resize the door/window in 3D. The door/window 2D representation follows the modifications.

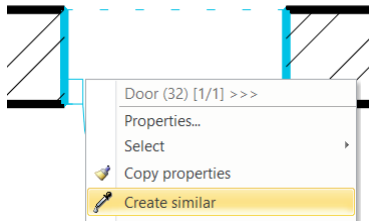




### 10.4.4.3. Create similar door/window

When you select a door/window placed earlier, the program puts its copy to the required place. You can apply this command e.g. copying a door to a different wall.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Create similar command.
- Move the cursor over the wall, and when the preview image is in the required location, click to place the door.



Select the **Go to: lower floor** or **Go to: Upper floor** command from the floating menu, if you would like to copy the door/window to another floor. You can step up or down any number of floors.

### 10.4.4.4. Copy properties - one by one

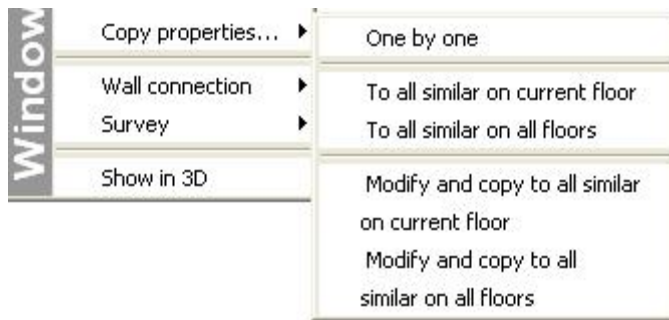
The program copies the properties of the selected doors/windows to the required doors/windows. The command also copies the wall connection.

- Click on the door/window with the required properties with mouse right click.
  - Select from the **Shortcut menu** the Copy properties / One by one command
  - Select the doors/windows you wish to modify.
- Enter** Closes the command.

#### Options:

<b>BELOW</b>	Select a door/window one floor lower.
<b>UPPER</b>	Select a door/window one floor higher.

For **Copy properties** of doors/windows, this command and its further subversions can be found in the **Shortcut menu**. These are the following:



#### **To all similar on current floor**

The program copies the properties of the selected door/window to all other doors/windows of the same type on the current floor.

#### **To all similar on all floors**

The program copies the properties of the selected door/window to all other doors/windows of the same type on all floors.

#### **Modify and copy to all similar on current floor**

With this command you can modify a door/window, the properties of which the program later copies to the other doors/windows on the current floor automatically.

- Select a door/window which shows the properties you wish to copy to the other doors/windows.
- The **Door/window properties** dialog box appears, where you can define the required values.  
**Ok** Closes the dialog box and copies the properties.

#### **Modify and copy to all similar on all floors**

With this command you can modify a door/window, the properties of which the program later copies to the other doors/windows on all floors automatically.

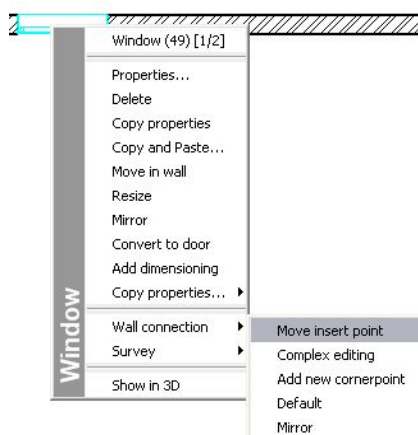
When the *Shortcut menu - Copy and paste* command is used, the **UPPER** and **BELOW** keywords can be selected from the command line; the door or window can be copied to another floor.

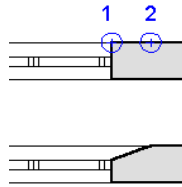
If you would like to copy the properties of doors and windows you can also use the *Modify menu - Copy properties* command. In this case you can select which properties of the door or window you want to copy.

### **10.4.4.5. Move insert point**

With this command you can move the connection points of the door/window on walls to create a chamfer. The chamfer belongs to the door/window, and not to the wall, which means that it cannot be changed by editing the wall or moving the door/window. When copying properties of the door/window, this property is also copied.

- Click on the door/window near to the corner point of the door/window that you would like to move with mouse right click.
- Select from the **Shortcut menu** the **Wall connection / Move insert point** command.
- Specify the new place of the corner point on the wall, or define the distance of the corner point's displacement after moving the mouse pointer in the required direction.
- Select another door/window corner point to move, or press **Enter** Completes the command.





### Options:

<b>ENDDISTANCE</b>	Defines the distance of the corner point measured from the selected wall corner.
--------------------	--

### 10.4.4.6. Complex editing

With this command you can edit the connection between the window and the wall. The program offers the options of the *Profile editing* tool, with the help of which you can edit the connection. The only limitation is that the edited profile cannot fall outside of wall thickness.

- Click on the door/window near to the corner point of the door/window that you would like to edit with mouse right click.
- Select from the **Shortcut menu** the Wall connection / Complex editing command.

**!** Warning! Don't select the corner point of the door/window!

- Select an editing command from the *Toolbox - Profile editing tool*.



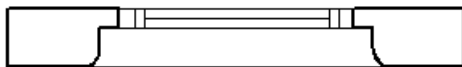
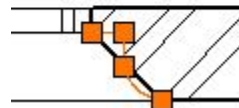
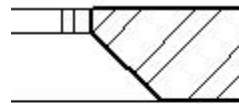
See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

- In the course of editing the program retains the original contour and indicates modification.

**Enter** Finishes editing. You can select another connection point of the door/window to create a chamfer, or  
**Enter** Finishes the command.

In order to create the chamfer shown in the picture, first use the *Move corner point* command, then add nodes with the *Edit door/window-wall connection* command, and finally use the *Line > Arc* command to chamfer. When editing is complete, the finished chamfer appears.

Apply the *Mirror door/window-wall connection* command to create a chamfer on both sides of the door/window.

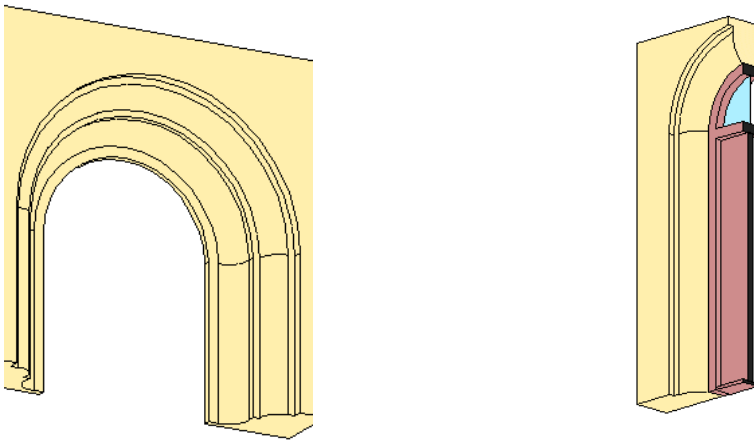


### Add new point

If you only want to add new points to the wall connection when the chamfer is edited, use the *Shortcut menu - Add new corner point* command.

### Examples:

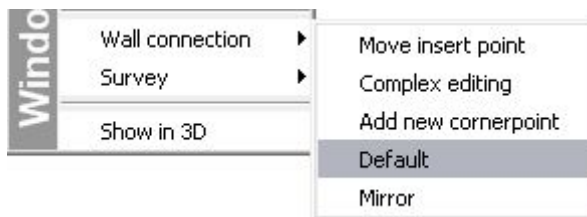
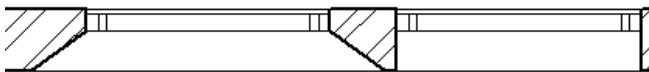




#### 10.4.4.7. Delete door/window-wall connection

This command deletes the door/window connection points created earlier from the wall, and restores the default connections.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Wall connection Default command
- Select the door/window you would like to delete the chamfer.  
**Enter** Completes the command.



#### 10.4.4.8. Mirror door/window-wall connection

This command mirrors the selected corner connection point of the door/window on the axis of the door/window.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Wall connection Mirror command
- Select that corner of the door/window whose connection you wish to mirror.  
**Enter** Completes the command.



#### 10.4.4.9. Area of doors/windows

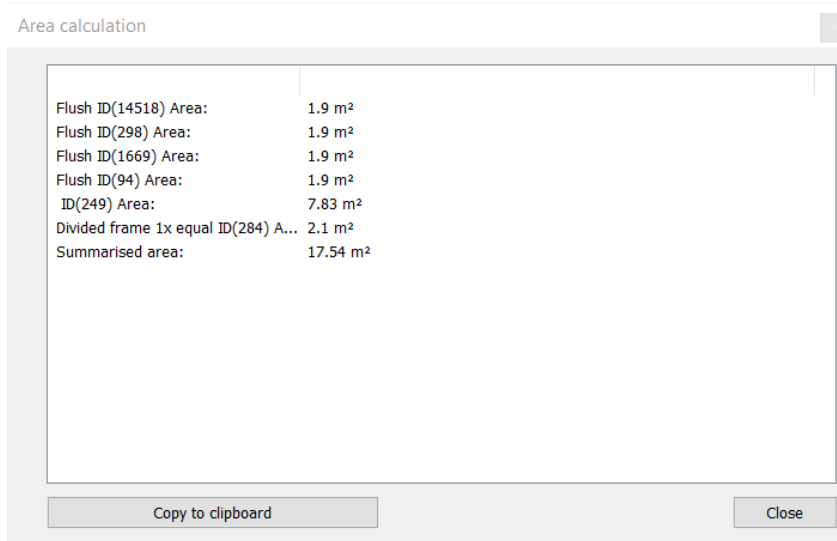
Calculates the area of the selected doors and windows, and totals the result. The identification number of the doors/windows is indicated in the list in brackets.

Location of the command: **Building > Door > Area of Openings** or **Building > Window > Area of Openings**.

- Select ALL command to list all elements, or select the required doors/windows.

- **Enter** Completes the selection.


The command creates a list containing the type, identification number and area of all selected doors and windows, and the total area of all doors and windows.

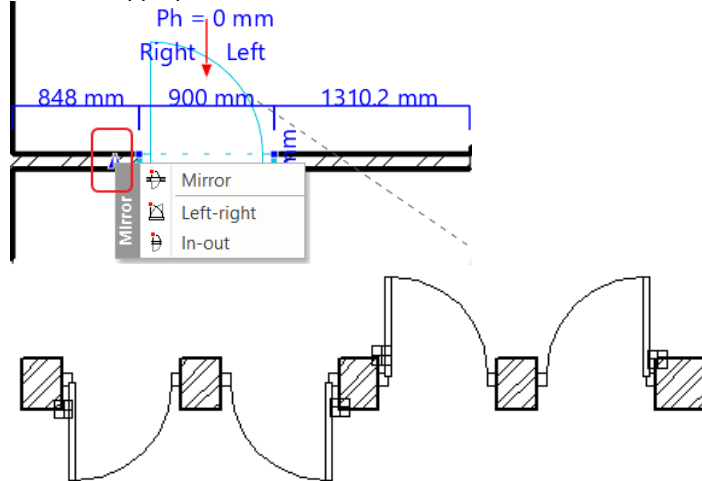


Press the **Copy to clipboard** button to transmit these data to Word or Excel.

#### 10.4.4.10. Change opening direction


Changes the opening direction of doors/windows.

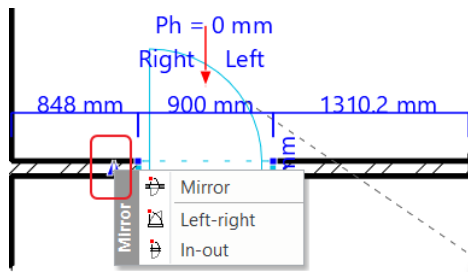
- Click on the door with mouse right click.
- Select the  two triangles marker.
- Select the appropriate command.



#### 10.4.4.11. Mirror

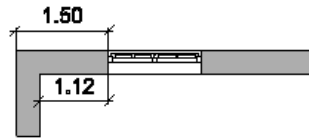
The command mirrors the selected door/window on the wall.

- Click on the door with mouse right click.
- Select the  two triangles marker.
- Select the appropriate command.

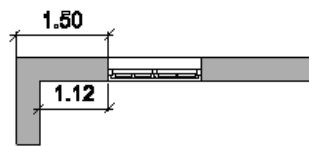


It is useful to place the window on the internal side of the wall by default. This way its 2D symbol (scale 1:20), the dimensioning of the door/window, the opening direction of the casement and, in case of a window with a reveal, the reveal is put to the appropriate place.

However, in practice the architect often knows external values only, so it is more useful to place the window on the external side (for instance 1.50 m).



In this case use the *Mirror* command to obtain a correct representation in the abovementioned cases.



! Don't mix up the mirroring with the opening direction change!

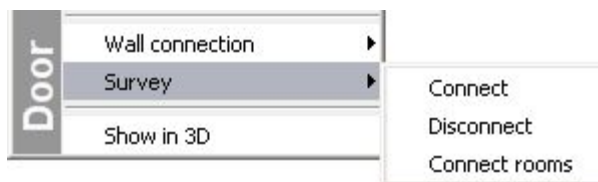
#### 10.4.4.12. Convert to door/window

By activating this command the *Door/window properties* dialog box appears. You can select a door instead of a window, or a type of window instead of a door.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Convert to door or the Convert to Window command.

#### 10.4.4.13. Survey

In case of a survey you can connect or disconnect doors or connect rooms with the available commands.



For the description of these commands see also 15.5. *Survey*.

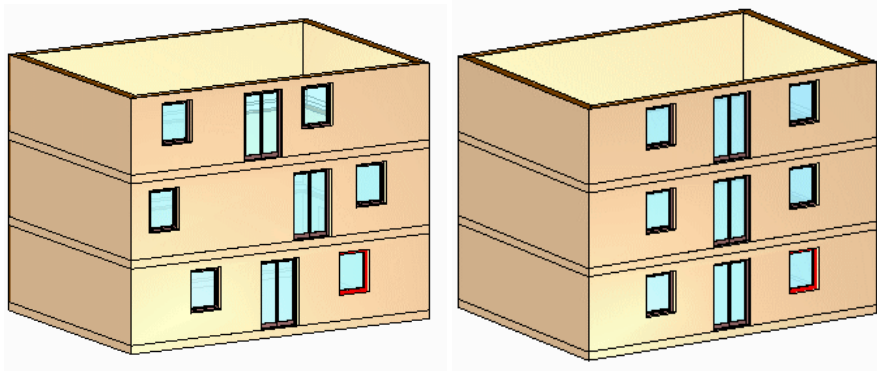
#### 10.4.4.14. Doors and windows aligning in 3D

You can align doors and windows on the same façade but different floors in the 3D View.

The only requirement is that the walls on different floors (where you want to insert the doors/windows and make the alignment) must be identical. Also, the doors and windows must be placed on the same side of the walls.

This command is very useful when you just drop the doors/windows on the façade in 3D View. In that case, of course, the distances from the wall corners are not correct. It is enough to specify the correct doors/windows positions on one floor, and then you can align the doors/windows on the floors below/above.

- Activate a 3D view (axonometric, for example).
- Click with your right mouse button on the door/window to which you want to make the alignment.
- Select the *Align* command from the shortcut menu.
- Select the door/window you want to align.
- Repeat the command with each door/window by selecting the reference door/window first, and then the door/window you want to align.



### 10.4.5. Define custom door/window

If you cannot find any appropriate type of door/window among the objects of the directory, you can create your own door/window, as complex as you like.

*The program offers you several ways of defining a door/window*

:

- ❖ **Define by 2D hatches:**

Defines a new object of the directory on the basis of the front view and 2D symbol of a door/window of any form. Draw the front view of the door/window in 2D. After identifying by different hatches the surfaces in different planes, define the thickness of surfaces, and select their place. Save the object created this way in the given category of the Door or Window directory. For this method use the Building or **Toolbox - Accessories - Define custom door/window in 3D** command, and enable the **Define by 2D hatches** option. You will have to provide the 2D symbol.

- ❖ Define by solid modeller:

You can use solid modeller, and save the solid created this way in the appropriate category of the door or window directory.

To do so, use Building or Toolbox - Accessories - Define custom door/window from 3D model command, but this time disable the *Define by 2D hatches* option. When you use this command, it is your task to select the reference points. There is a fast way of creating the door/window from the solid model. To do so, use Building or Toolbox - Door/Window - Simplified definition of custom door/window command. This way reference points are created automatically.

- ❖ The Door Wizard

Using the door wizard you can design complex door structures in a few steps. This tool is designed to offer simple and easy to use options and possibilities to create a new hinged door. It is possible only by setting the main properties such as the Handles, Materials (even photos of the original door), framing with profile, threshold with profile, additional object Accessories and Profile tool for decorating the door surface.

- ❖ Edit in the layout of wall:

You may often need an individual door/window that is not part of the directory, and is not needed anywhere else, which means you do not want to overload the directory with it. With the **Building – Curtain wall - Reshape corner window** command you can create a single or corner window specified in 2D layout of the wall.

If the wall where you install the door/window is arched, the glass will also be arched.

### 10.4.6. Define custom door/window - Define by 2D hatches

With this command you can freely create as complex doors/windows as you wish, but it requires careful preparation.

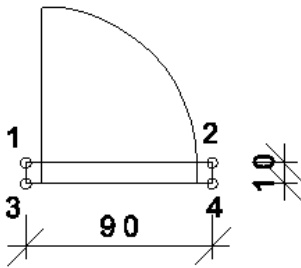
*Preparations:*

- ❖ Prepare the floor plan symbol of the door/window.
- ❖ Draw the front view of the door/window.
- ❖ Assign the same hatch to surfaces in the same plane and with the same thickness.  
*Using the Building or Toolbox – Accessories - Define custom door/window in 3D command:*
- ❖ Assign a thickness to the surfaces with the same hatch, and define the depth of position.
- ❖ Define the contour that the door cuts from the wall in 3D.

#### 1. Preparing the 2D symbol of the door/window

With the help of the geometric objects (lines, arcs, etc.) draw the 2D symbol of the required door/window with the appropriate values. The program will use this symbol to put the door/window on the wall.





### Defining a group:

Create a 2D group by using the **Tools menu - 2D group - Create** command. Select the objects of the 2D symbol and define the reference points. This method requires four points, which will be the connection points between the wall and the door. **The order of defining the points is important.**

Define the points following the numbers in the picture.

Assign a name to the group in the appearing dialog box: door1, and save it to the appropriate category.

If you do not define any category, and the *User defined* category has not been created yet, press *OK* to create it, and save the group there.



You can use an already existing 2D symbol as well: Apply the Door/window without wall command to install an appropriate door/window, which has the 2D symbol you can use. Convert it into lined drawing by **Modify menu - Explode** command. Watch out for the hidden lines that also appear on the 2D drawing.

## 2. Creating front view for the door

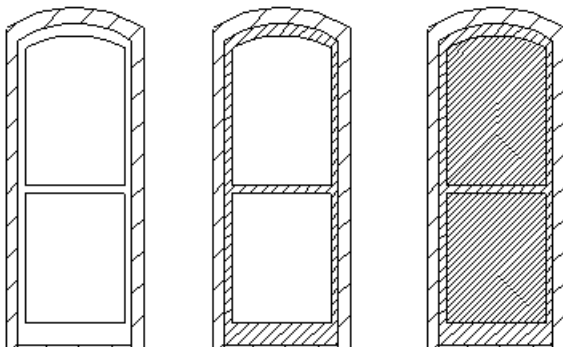
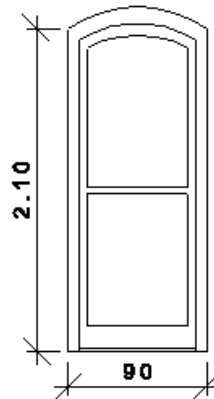
- Draw the front view of the door in 2D.  
Use the Drawing tool of the Toolbox (line, arc, etc.).

### Define the components:

The components of a door include the frame, leaves, threshold, glass, etc., which all have different depth values.

## 3. 2D hatch

Identify the different components of the door with different hatches (for instance with a different colour, pattern, direction, etc.). This means that the same type of hatch is assigned to surfaces in the same level and of the same thickness.

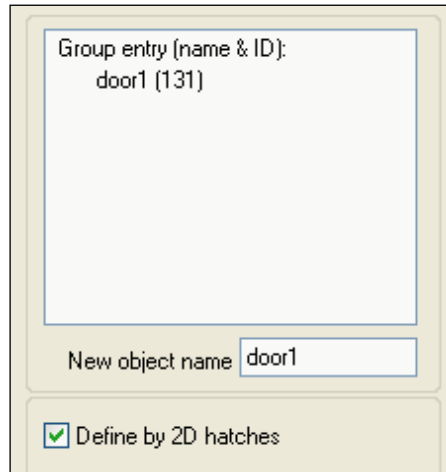


#### 4 Using the Building or Toolbox - Accessories - Define custom door/window in 3D command

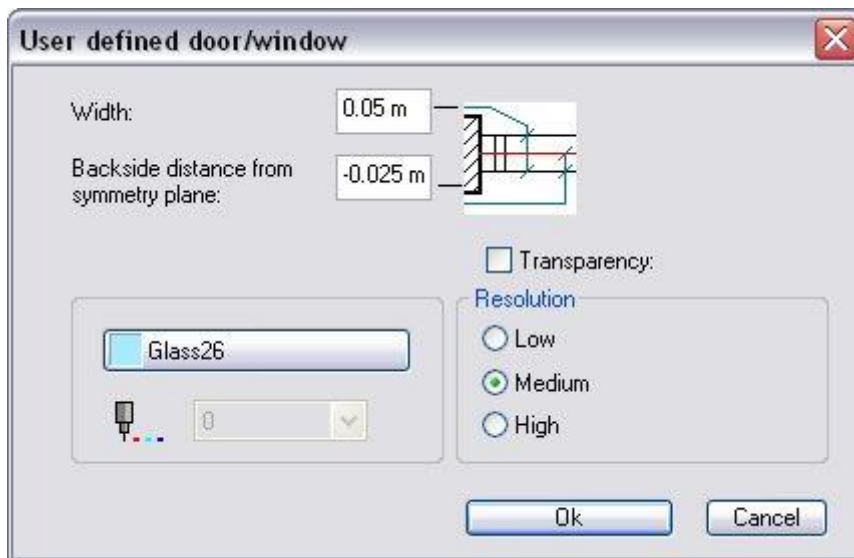
Select the command. In the appearing dialog box:

- Click the name of the 2D group.
- Enter the name of the new door.
- Enable the *Define by 2D hatches* option. **Ok**.
- Select the 2D hatches with the same properties, i.e. surfaces in the same plane and of the same thickness.

**Enter** Completes the selection.



A dialog box appears where you can define the 3D properties belonging to the selected parts of the door:



- Specify the width of the selected components.
- Enter the distance of the component measured backwards from the median plane. This way you can define the distance of the parts with different hatches from the median plane.
- In this dialog box you can also modify the colour and material of the different parts of the door/window.
- If the material of the selected component is glass, activate the *Transparency* option.
- Setting the resolution can be important in case you create an arched form in the door.
- Define resolution. It is important for arched objects.
- **Ok** Closes the dialog box.
- Select other hatches with the same properties in the front view of the door, and enter the required values in the dialog box.
- Go on selecting further hatches.
- **Enter** Completes the selection.

#### 5. Defining the opening around the door

- Define the profile that is the contour of the front view of the door.  
You can use the appearing *Profile definition* tool in Toolbox.

#### Options:

<b>ENTER</b>	Select the <b>ENTER</b> option, if you wish to put the door/window in a rectangle-shaped opening.
--------------	---

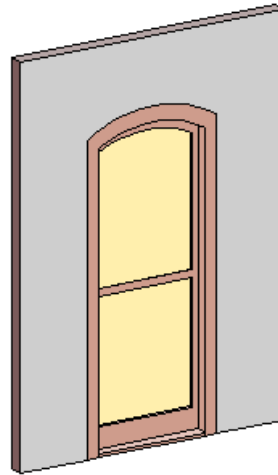
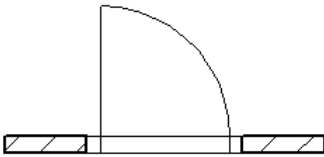


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Example: Select the **Polygon** command, and outline the contour of the front view of the door.
- Mark the reference point of the opening profile, by selecting the lower left corner of the front view of the door. This is also the first reference point of the door.

The program shows you the dimensions of the door, and asks if you would like to save the door you just created.

The program saves the new door in the given category of the Door directory.

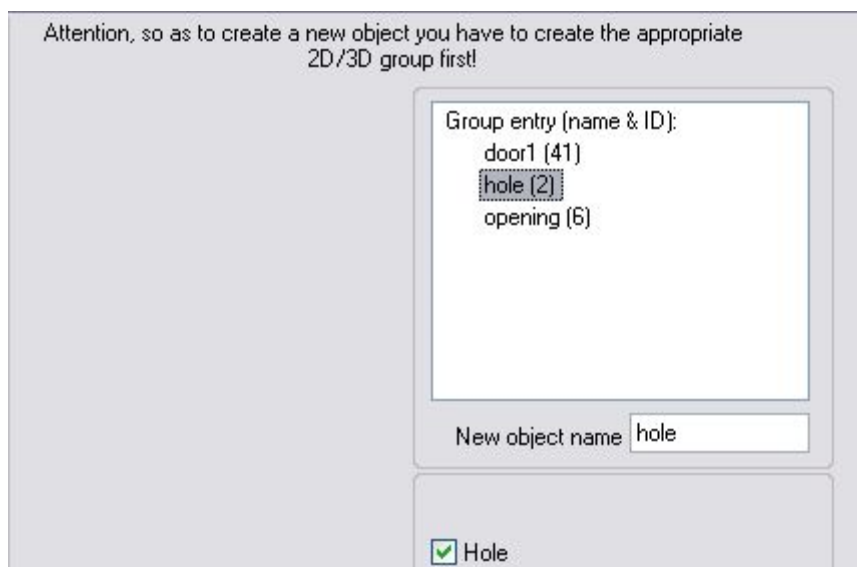
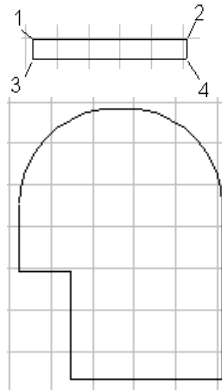


If you do not name any category, and the *User defined* category has not been created yet, press *OK* to create it and save the door there.

### Create an opening

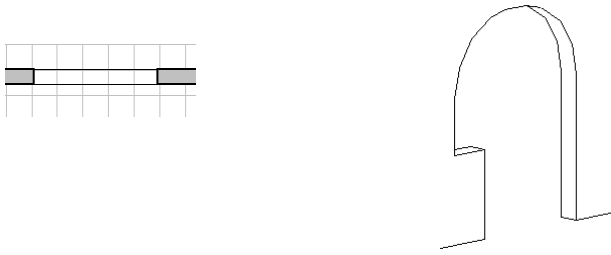
The method is the same as above:

- Draw the 2D form of the opening, and create the 2D group.
- Draw the front view of the opening in the 2D window.
- Apply the Building or Toolbox - Accessories - Define custom door/window in 3D command.
- Select the 2D group: *opening1*
- Enter the name of the new door: *opening1*.
- Select the *Openings* option in the dialog box.



- Define the profile that describes the contour of the front view of the opening around the door.
- Select the **Polygon** command in the menu, and outline the external contour of the shape of the opening.
- Select the reference point of the opening profile (lower left corner).  
This is also the first reference point.

The program shows you the dimensions of the door, and asks if you would like to save the opening you just created to the required category of the Door/window directory.



### 10.4.7. Define custom door/window - from a 3D model

First you have to prepare a 3D solid model of the required door/window.

The complexity of 3D modelling allows you a great deal of freedom in creation. You can also define a door/window whose surface is not plain.

*Preparations:*

- ❖ Prepare the 3D model for the door/window.
- ❖ Create a 3D group from the model.
- ❖ Prepare the 2D symbol of the door/window using the **Building - Accessories** or **Toolbox - Door/Window - Define custom door/window from 3D model** command:
- ❖ Select the 2D and 3D groups you already prepared.
- ❖ Define the opening around the door.

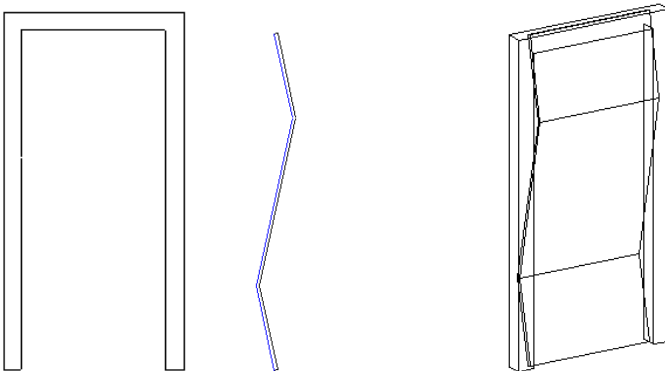
#### 1. Create a model in 3D

Create the 3D model of the door/window with the help of the solid modeller.

*For example:*

In order to extrude the two profiles in the picture use the **Extruded solid** icon:

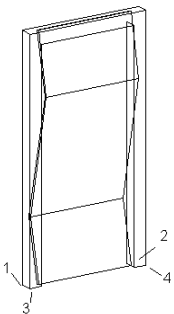
- ❖ for the front view of the frame of the door, and
- ❖ for the left side view of the decorated central part of the door.



#### 2. Preparing the 2D symbol of the door/window



Prepare the 2D symbol as described in 9.3.4.1. *Define by 2D hatches.*

#### 3. Creating the 3D group



- Create a group in 3D by the **3D menu - Group in 3D - Define object** command:
- Enter the name of the group: *newdoor1*.
- Select the solids constituting the new door.
- Define the reference points of the 3D group according to the picture.  
If the reference points are the four corner points of the box enclosing the solid, it is enough to click the **ENTER** keyword.
- 

When you create a 3D group, 2D symbols are generated automatically as the top-view of the 3D model. These are a usually not suitable door/window symbol, that is why you have to create your own symbol.

4. Using the Building or Toolbox - Door/Window   Define custom door/window
- Select the 2D group in the dialog box which will be the 2D representation of the door: *newdoor1*.
  - Select a 3D group: *newdoor1*.
  - Enter the name of the door/window.
  - **Ok** Closes the dialog box.

### 5. Creating the profile of the opening

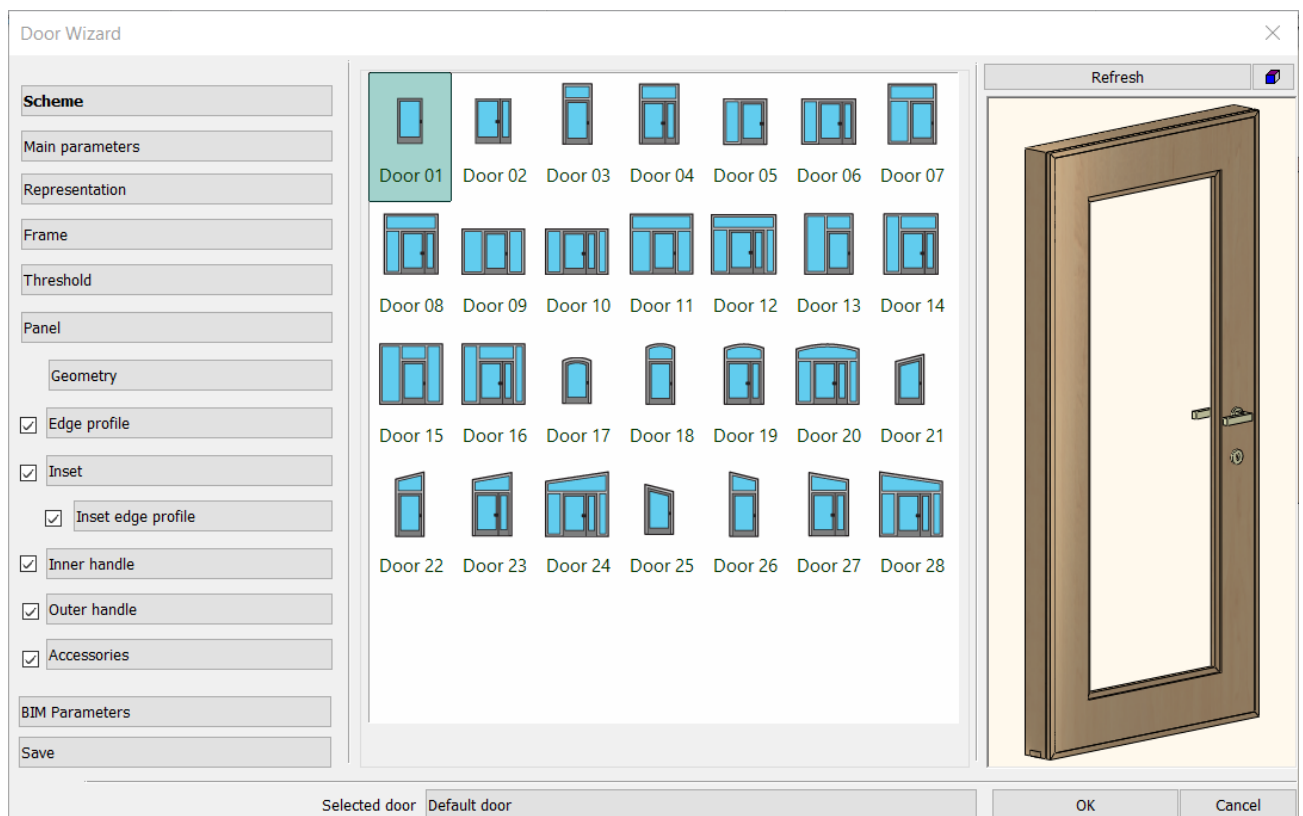
- Select a profile for the opening to be cut from wall.  
Define the profile which is the contour of the front view of the door.  
To do so, it is useful to copy the front view of the 3D model to the 2D window, and define this as profile.  
If you select the **ENTER** keyword from the command line, the program automatically defines the rectangle enclosing the opening as profile.

The program shows you the dimensions of the door, and asks if you would like to save the new door. The program saves the new door in the required category within the *Door* directory.

The door/window dialog box shows the main dimensions of the new door/window: its height, width and thickness. All of these can be modified.

## 10.4.8. Door / Window wizard

ARCHLine.XP comes with a very detailed parametric library of doors and windows. Beyond these build-in doors and windows ARCHLine.XP offers custom door and window designer tool that guides you to design openings to your own specification.

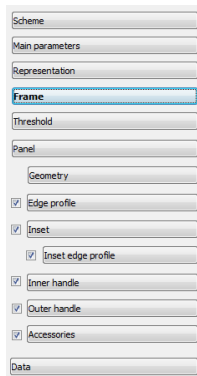


The door / window wizard is designed to offer simple and easy to use options to create a new hinged door or window. It is possible only by setting the main properties such as the Handles, Materials (even photos of the original opening), framing with profile, threshold with profile, additional object Accessories and Profile tool for decorating the door surface.

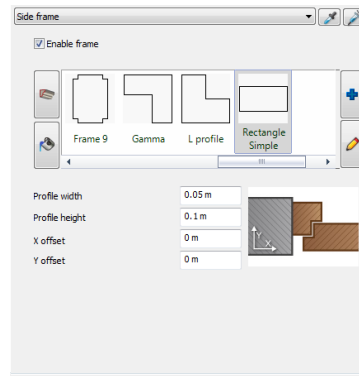
The new custom door and window can be saved in the appropriate library category to use it later on any project. Doors and windows can be drag and drop on place on wall either in 2D or 3D from their category within the Design Center. The wall openings automatically created on the fly. Clicking on a door or window and selecting the "Opening properties" command you can reopen the door and window wizard to edit the structure and redefine the current opening or create and save a new type in the library.

While drafting takes place in 2D, walls, doors windows and other objects include height data so a 3D model is actually being built in parallel. This makes it easy to produce elevations and sections and the entire design can also be viewed in an interactive 3D preview window.

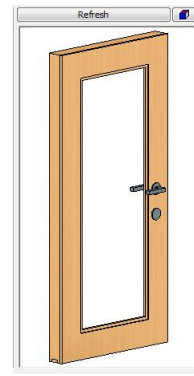
The structure of Door Wizard contains different parts: the left side Control bar, the middle Properties panel, the right side 3D preview.



Control bar

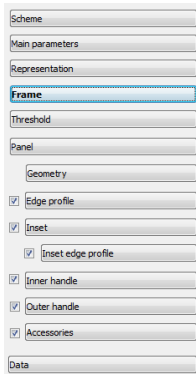


Properties



3D preview

### 10.4.8.1. How to use the Door / Window wizard



Open the Door Wizard and edit the properties. When a value is changed, you can build it in 3D by pressing the Refresh button at the top of the 3D Preview. When you finished with the settings, you can type the name of the new door at the left side of the Control bar pane and press the OK button to save the new door type and place it on a wall right away.

### 10.4.8.2. Control bar

On the control bar you can navigate between pages of the Property panel. Some features like handles, accessories etc. can be entirely enabled or disabled by using the corresponding checkbox front on the control bar.

### 10.4.8.3. Scheme



On the Scheme page you can select an opening scheme. Any other settings on the opening wizard depend on this selection.

### 10.4.8.4. Main parameters

Full width	2.8 m	<input checked="" type="checkbox"/>
Left Panel width	0.6 m	<input type="checkbox"/>
Left wing width	1 m	<input type="checkbox"/>
Right wing width	0.8 m	<input type="checkbox"/>
Right panel width	0.4 m	<input type="checkbox"/>
<input type="checkbox"/> Symmetric wings		
<input type="checkbox"/> Symmetric panels		
Full height	2.7 m	<input checked="" type="checkbox"/>
Top panel height	0.6 m	<input type="checkbox"/>
Bottom panel height	2.1 m	<input type="checkbox"/>

On the General page you can set the main sizes of the opening. Depending on the selected scheme you can see different values here.

Horizontal and vertical sizes are grouped into two different groups. You can mark a single parameter in each group as "stretched" by pressing the  button. Once a parameter is marked this way, this value will follow the changes while other parameters remain unchanged.

For example, if the left panel is marked as "stretched", it will be compressed when we change the full width from 1.8m to 1.5m. The wing width remains unchanged.



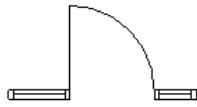
### 10.4.8.5. Representation

2D representation	
<input type="checkbox"/>	Show threshold in 2D
<input checked="" type="checkbox"/>	Show frame profile bounding boxes on 2D symbol
Opening direction symbol	
Arc	
3D representation	
<input type="checkbox"/>	Show opening direction in 3D
<input type="checkbox"/>	Open panels in 3D

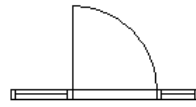
On the Representation page you can set some options related to the 2D and 3D representation of the opening.

#### Show threshold in 2D

If enabled, a simple threshold symbol appears on the floor plan. (The 3D threshold can be adjusted on the Threshold page separately.)



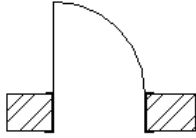
Threshold in 2D disabled



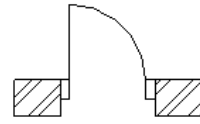
Threshold in 2D enabled

### Show frame profile bounding box on 2D symbol

If enabled, the frame profile is represented as a rectangle on the floor plan instead of the real profile shape.



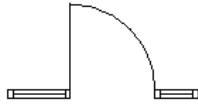
Frame profile bounding box disabled



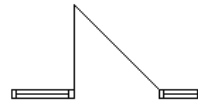
Frame profile bounding box enabled

### Opening direction symbol

You can choose one of the available symbols to represent the opening direction on the floor plan. The shape of the symbol depends also on the "Opening angle in 2D" setting of the Panel page.



Arc



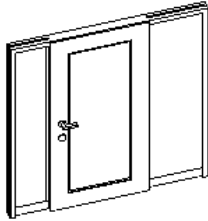
Triangle



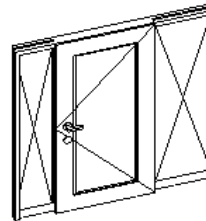
None

### Show opening direction in 3D

If enabled, opening direction symbols appear on the 3D views.



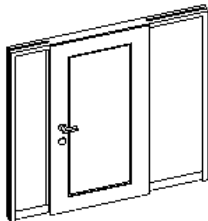
Show opening direction disabled



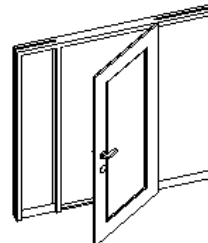
Show opening direction enabled

### Open panels in 3D

If enabled, panels are represented as open on the 3D views according to the "Opening angle in 3D" setting of the Panel page.



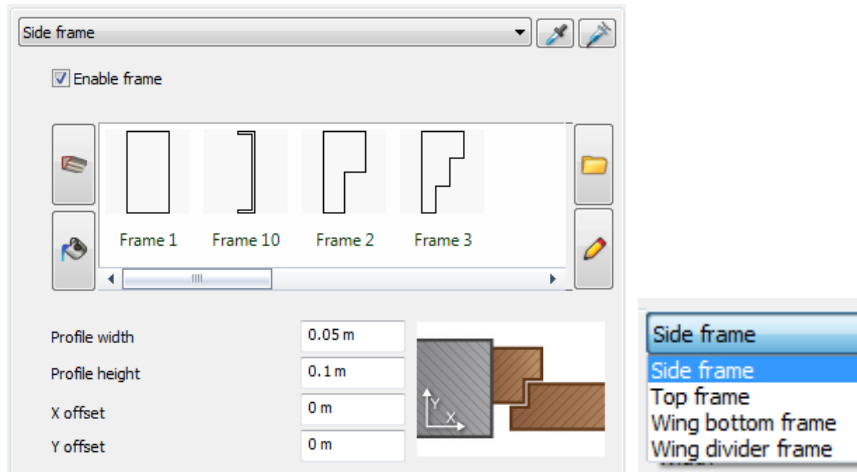
Open panels in 3D disabled







Open panels in 3D enabled





### 10.4.8.6. Frame



On the frame page you can edit different frame parts of the opening separately. On the top of the page you can see the available frame parts; the content of this list depends on the current scheme. All of the settings below concern the selected frame part only.

 and  buttons serve for copying and pasting frame data. For example, to make the top frame similar to the side frame, first select the side frame, press  button, select the top frame and then press  button.

By pressing  or  buttons you can switch between profile and material list.

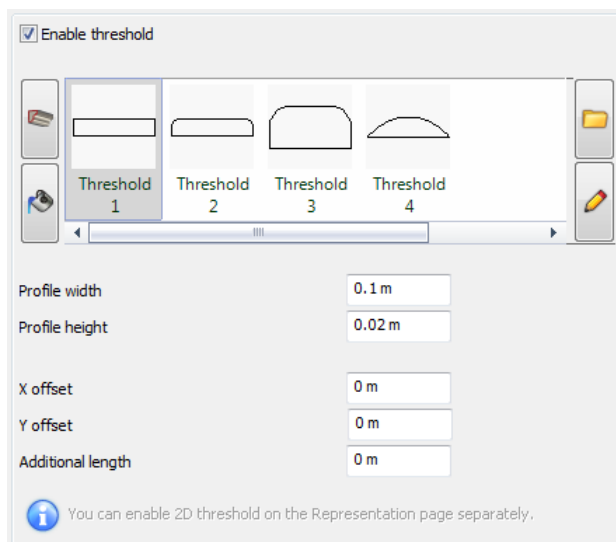
#### **Width and Height**

These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.



#### **X and Y Offset**

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile; see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

### 10.4.8.7. Threshold



On the threshold page you can assign a profile and a material to the threshold. .

By pressing  or  buttons you can switch between profile and material list.

### Enable threshold

You can enable or disable the 3D threshold. The threshold lines on the 2D symbol can be enabled or disabled on the Representation page independently.

### Width and Height

These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

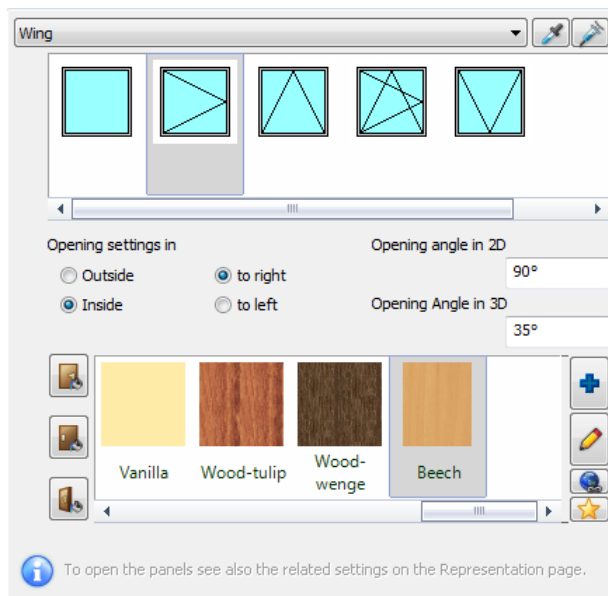
### X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile. After modifying a value press the Refresh button to apply changes.

### Additional Length

The Additional length extends the original length of the threshold. After modifying a value press the Refresh button to apply changes.

## 10.4.8.8. Panel





On the panel page you can edit different panels of the opening separately.



On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.






buttons serve for copying and pasting panel data. For example, to make the right wing similar to the left one, first select the right wing, press  button, select the left wing and then press  button.

### Opening direction

You can define the opening direction by choosing one icon from the list and setting the in/out and left/right directions. To visualize this setting enable *Open panels in 3D* or *Show opening directions in 3D* on the Representation page.

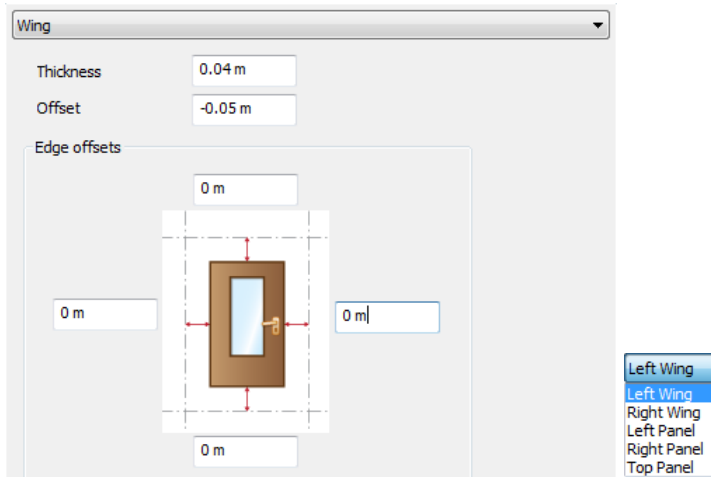
### Opening angle 2D and 3D

You can define the opening angle in the 3D View here. Note that if *Open panels in 3D* checkbox is not checked, the Opening angle 3D setting has no effect. After modifying a value press the Refresh button to apply changes.

By pressing ,  or  buttons you can set the front, back and edge materials of the door panel, respectively.

### 10.4.8.9. Geometry

On the geometry page you can find the detailed geometry settings of the panel.



On the geometry page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.

#### Thickness

The thickness value defines the door panel thickness, without decorations and handles.

#### Offset

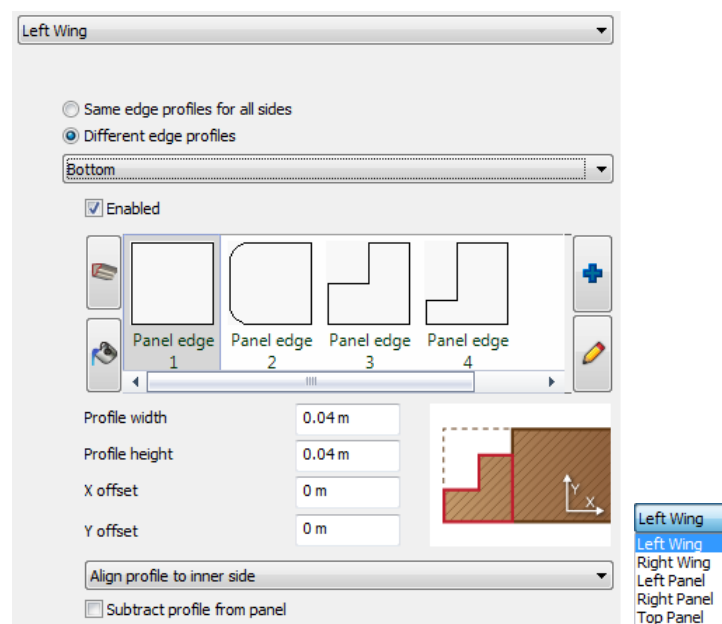
The Offset option is for setting up a distance between the door panel and the framing, if necessary. If the value is 0, then the door is perfectly aligned to the primary plane of the opening. If the value is different than 0 then the door panel will be shifted perpendicularly to the panel surface in a positive or negative direction face (forwards or backwards), depending on the sign of the value.

#### Edge offsets

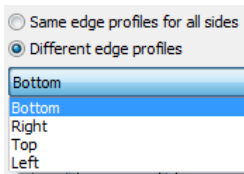
The Edge offset option is for setting up a distance between the door panel edges and the framing. If the value is 0, then the door is perfectly aligned to the reference line of the corresponding frame profile. If the value is different than 0 then the door panel will be reduced (positive value) or enlarged (negative value) at the selected edge.

### 10.4.8.10. Edge profile

On the Edge profile page you can customize the edges of a selected panel.



On the Edge profile page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.





Once a panel is selected, you can customize the edges together or separately.

### Enable

If you would like to customize the panel edge by a given profile, enable this checkbox.

### Profile and materials

By pressing  or  buttons you can switch between profile and material list.

### Width and Height






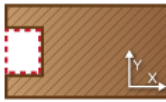
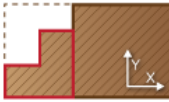

These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

### X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile, see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

### Align profile and Subtract profile

You can align the selected profile to the middle, to the front or back face of the panel or stretch it to the panel width. If you enable Subtract profile, the selected profile will be subtracted from the panel, otherwise the panel will be reduced by the edge profile width and the profile itself will be added to the panel. See the eight combinations in the table below:

	Add profile	Subtract profile
Stretch profile to panel width		
Align profile to inner side		
Align profile to middle		
Align profile to outer side		

#### 10.4.8.11. Define panel profile for doors/windows

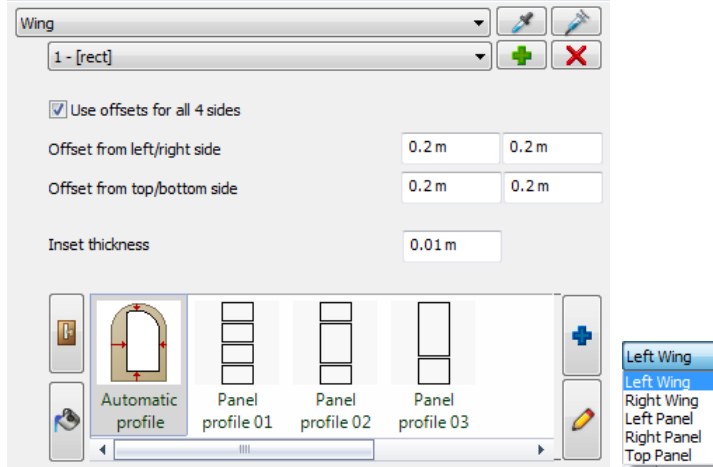
Before creating holes or insets in a panel, you may need to add new panel profile to your existing panel profile library. You can do it with the *Building menu – Accessories – Define panel profile for doors/windows* command.

- Start the command and read the necessary steps of the procedure on the *Additional information* dialog. Click **Ok** to start the procedure.
- Use the *Profile definitions* commands to draw a closed chain (e.g. *Rectangle*). This will be the outline of the hole in the door panel.
- Once you have the hole outline, you can draw opened chains into it with the *Profile definitions* commands (e.g. *Polygon*). Press **Enter** to close the definitions.

- In the *Create new 2D group/object* dialog specify the name of the new panel profile and select *Opening panel frontal profiles* category.
- Click **Ok** to save the new panel profile in the library.

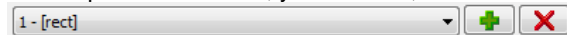
#### 10.4.8.12. Inset

On the Inset page you can create holes or insets in a panel



On the inset page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.

Once a panel is selected, you can add, remove inset profiles. All the setting below is relative to the selected profile only.



##### **Use offsets for all 4 sides**

If enabled, you can define the position and side of the selected inset profile by setting the distances between the panel and the inset, otherwise the midpoint coordinates and the sizes of the profile must be defined.

##### **Use offsets for left/right/top/bottom side**

If “Use offsets for all 4 sides” is enabled, here set the distances between the panel and the inset. In case of complex geometries, the offset is interpreted as the distance between the bounding boxes of the panel and the inset.

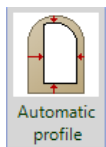
##### **Inset width/height/X offset/Y offset**



If “Use offsets for all 4 sides” is disabled, you can set here the midpoint coordinates and the sizes of the profile.

##### **Inset thickness**

The setting this value to zero results an empty hole in the panel.

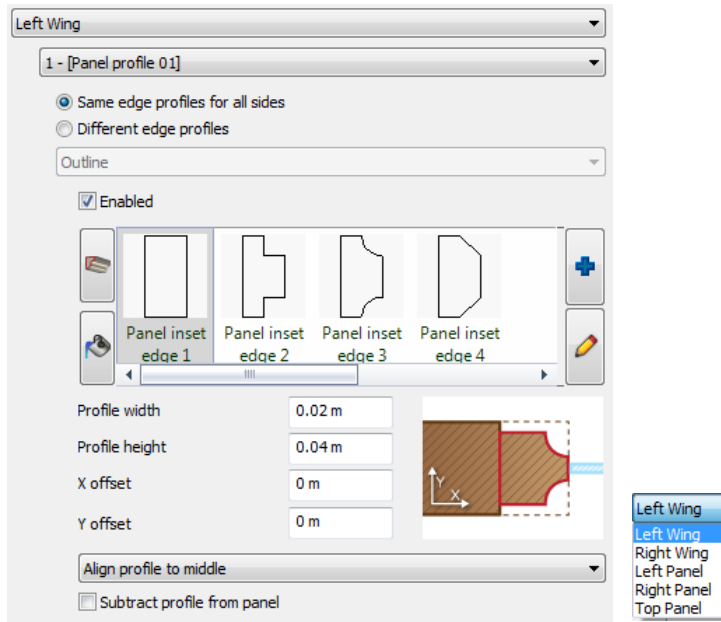
##### **Profile and materials**



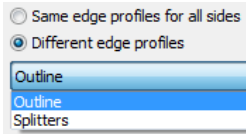
By pressing  or  you can switch between profile and material list. The first object in the profile list is a custom one: Automatic profile is created by shifting the sides of the original panel profile with the offset values of the 4 sides, separately.

#### 10.4.8.13. Inset edge profile

On the Inset edge profile page you can customize the edges of a selected panel's insets.



On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.





On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is relative to the selected panel only.

Once a panel is selected, you can select one of the inset profiles defined on the inset page. You can customize the edges of the selected inset profile together or the outline and splitters separately.

**Enable**

If you would like to customize the inset edge by a given profile, enable this checkbox.

**Profile and materials**

By pressing  or  you can switch between profile and material list.

**Width and Height**

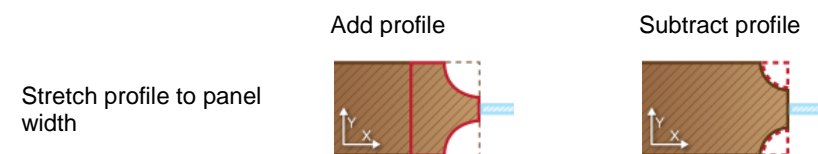
These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

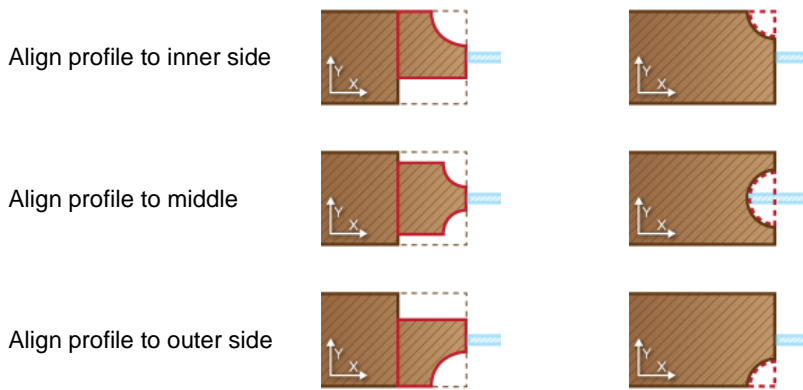
**X and Y Offset**

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile, see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

**Align profile and Subtract profile**

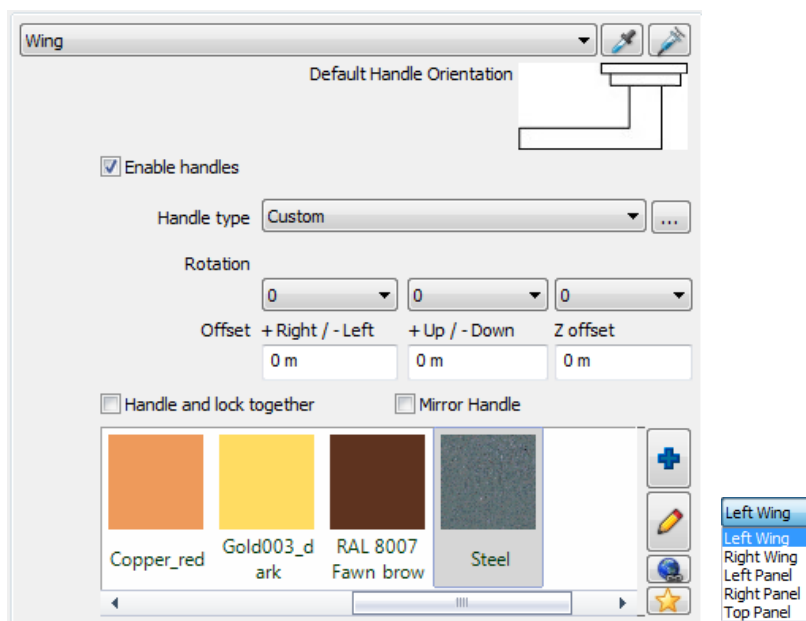
You can align the selected profile to the middle, to the front or back face of the panel or stretch it to the panel width. If you enable Subtract profile, the selected profile will be subtracted from the panel, otherwise the panel will be reduced by the edge profile width and the profile itself will be added to the panel. See the eight combinations in the table below:





#### 10.4.8.14. Inner and outer handle

On the Inner handle page you find the geometry settings for the door handles and knobs.




On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.

#### **Enable handle**

The Has Handle option enables the handle and lock for the current door panel. Enable this option if you would like to use handles and locks.

#### **Handle type**

The list allows you to select a handle and also to choose any object you can access with the Design Center. Click on the combo box to open the dropdown list and choose Standard, Circle Shaped, Sphere Shaped or Custom. Each choice will define a different door handle with lock.

To define an object for the door handle, select Custom from the list, and click on the Browse button.  When you do so, the Insert objects dialog will appear, in which you can use the Object Selection button to browse a new object.

#### **Rotation around X/Y Axis**

You can rotate the selected handle by changing the values of the Rotation around X/Y/Z Axis. The default is 0, 0, 0 and the unit is degrees. Select the desired angle to rotate the handle by a specific angle.

#### **X/Y/Z Offset**

The X/Y/Z Offset values of the door Handle properties let you to define a free offset of the selected handles in every direction. The left bottom alignment point is the origin (0,0,0). The three values are the X, Y, and Z directions.

### Handle and Lock Together

The Handle and Lock Together option will weld the handle and lock object into one object if Standard, Circle Shaped or Sphere Shaped handle was selected. If Custom handle is selected, the Handle and Lock Together option won't change anything.

### Mirror handle

You can mirror the handle by this setting to position the handle correctly

### Material

You can set the material of the handle here. This setting has no effect if a custom handle (an object) is selected.

## 10.4.8.15. Accessories

The screenshot shows a configuration panel for 'Left Wing'. It features a dropdown menu at the top set to 'Left Wing'. Below it are two columns of input fields: A1, A2, A3, A4, and C on the left; B1, B2, B3, and B4 on the right. Each field contains a numerical value followed by 'm'. At the bottom, there are two more input fields labeled 'Thickness' and 'Offset'.

A1	0 m	B1	0.02 m
A2	0 m	B2	0.02 m
A3	0 m	B3	0.02 m
A4	0 m	B4	0.02 m
C	0.02 m		
Thickness	0.04 m		
Offset	0.025 m		

On the Accessories page you can add accessories to the door and you can define the geometry settings of the accessories.

On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is relative to the selected panel only.

The screenshot shows a configuration panel for a 'Wing' accessory. At the top, there is a dropdown menu set to 'Wing' and two icons (a pencil and an eraser). Below that is another dropdown menu set to '1 - [gomb]' with a green plus icon and a red minus icon. The main section is titled 'Object' and contains a 'Select object' button. Below this are three columns for 'Width', 'Height', and 'Depth', each with a numerical value and 'm'. Underneath are three dropdown menus for 'Rotation around', each set to '0'. Below these are three more dropdown menus for '+ Right / - Left', '+ Up / - Down', and 'Z offset'. At the bottom, there is a 'Position' section with a 3x3 grid of radio buttons, where the center one is selected. To the right of the grid are two dropdown menus: 'Attached to' (set to 'Object') and 'Side' (set to 'Inside').

### Accessories list

The Accessories list shows list of added objects and lets you select one to edit. If there is no object added yet, this list is not visible.

### X Offset

Change the X Offset value to displace the current accessory to the left or right direction.

### Y Offset

Change the Y Offset value to elevate the current accessory up or down.



**Z Offset**

Change the Z Offset value to displace the current accessory perpendicular to the door surface. 0 (zero) means that the object is on the surface.

**Rotation around X/Y/Z Axis**

Change the Rotation around X/Y/Z Axis values to rotate the current accessory. 0 (zero) is the default position. The values are the X/Y/Z rotation angles in this order.

**Side**

The Side list has two options to define the placement side for the actual accessory.

**Object – Select Object**

The Select Object button opens the Insert objects dialog. You can browse for an object to set it as an accessory object for the current door.

**Positioning**

The Accessories Positioning grid helps you to set the alignment point of the actual accessory. Tick the desired radio button to set the accessory position to one of the alignment points.

**Add Object**

Use the Add Object button to add a new accessory. By pressing the Add Object button, the Insert object dialog window will open, to let you browse any object. When an object is selected, you will return to the Door wizard Accessories page and you can set the properties of the accessory. The selected object name will be visible at the top of the page in the Accessories list with a numbering.

**Remove Object**

Use the Remove object to remove the current accessory object. Note that this operation cannot be undone. If you accidentally remove an accessory object, you might need to browse it again.

**10.4.8.16. Data**

Name	<input type="text" value="Door1"/>
Producer:	<input type="text"/>
Article number:	<input type="text" value="FT-34234"/>
Description	<input type="text" value="Simple door"/>
U Value	<input type="text"/>

**Name**

Use the Name field on the Data page of the Door wizard to type a unique name for the newly created door.

**Producer**

Use the Producer field on the Data page of the Door wizard to define a producer.

**Article number**

Use the Article number field on the Data page of the Door wizard to type an article number or bar code.

**Description**

Use the Description field on the Data page of the Door wizard to type a short description text.

**U-Value**

Use the U-value to define the door's U-value for possible energy calculations.

### 10.4.8.17. 3D Preview panel



On the right side of the Door wizard dialog you can find the 3D preview panel. Use this panel and its controllers to examine the changes during the design process in the wizard.

#### **Refresh button**

On the top of the 3D preview panel you can find the Refresh button. This can be used to refresh the 3D preview content after changing certain values in the Door Wizard. When you press the Refresh button, the software will update the door preview by using the current values.

#### **Presentation settings button**

The Representation settings button can be used to switch between Wireframe, Hidden lines and textured views. Click on the button to switch to the next view. When you reach the last view, click on it again to set the first visual style again. On slower machines, this button can be used to turn off the 3D preview also, by setting the "X" state on it.

#### **3D Preview area**

The 3D preview area is the largest part of the 3D preview panel on the Door wizard dialog. Click and hold your left mouse button and move your mouse to rotate the preview content. Use the scroll-wheel of the mouse to zoom in or out and pan the 3D preview content.

## 10.5. Curtain wall

Similarly to other ARCHLine.XP objects, you can set the properties of corner window end curtain walls – together called **glass structure**. You can store these properties in sets. *Glass structures* are created with their actual properties.

- **Full curtain wall:**  
You can transform the wall to the curtain wall using the *Wall shortcut menu - Full curtain wall* command see also 9.1.5.1. *Full curtain wall*.
- ❖ First specify the properties of glass structure.  
For this use the *Building menu –Properties –Curtain wall* command.
- ❖ In case of full size curtain wall select the *Full curtain wall* command from the shortcut menu of wall.  
or
- ❖ In case of curtain with custom size wall select the *Building menu - Curtain wall – Edit corner window* command.

#### **Corner window**

With this command you can create a corner window drawn in 2D on the layout of the wall, or a divided door/window of any complex form.

If the wall where you install the window is arched, the glass will also be arched.

Use this command when you create an individual window, which does not need to be saved in the directory.

Definition consists of two phases:

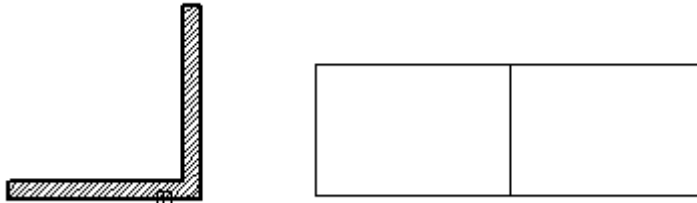
- ❖ defining the profile,
- ❖ setting the properties.

#### **Defining the profile**

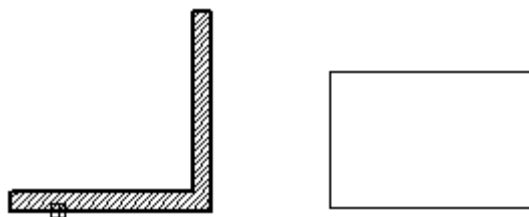
The real work is done on the front layout image of walls. In the course of drawing it is possible to:

- ❖ define a rectangle of almost the appropriate size. Values can be adjusted in the appearing dialog box.
- ❖ construct the window profile precisely.

- After selecting the **Building** or **Toolbox - Curtain wall**  **Edit corner window** icon, click the wall where you wish to place the window. If you create a corner window, click on the wall, from its midpoint in the direction of the required corner, as shown in the picture.  
The program then lays out the front view of the selected wall and the other wall connected to it.



If you selected that part of the wall which is not connected to another wall, the layout image shows only this wall.




- Place down the layout image. The program asks whether or not to display the layout image. Choose the latter if you have already drawn the profile for the door/window, and now you would like to use it without, for instance, the corner edge hanging into the profile. In this case it is important that you put the reference point of the virtual visible layout to the appropriate point of the drawn profile.

Then follows the definition of the profile, for which you have two possibilities:

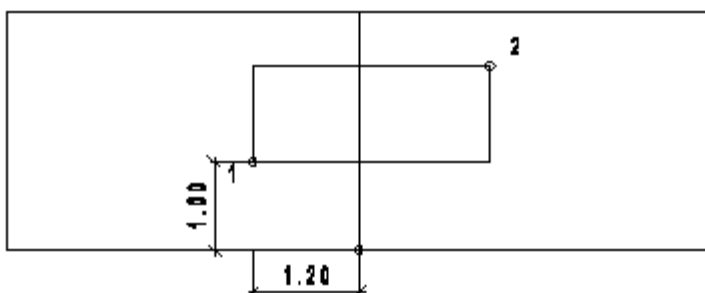
- ❖ defining the profile on a rough estimate
- ❖ defining the profile by drawing

### Defining the profile on a rough estimate

- Select the **Rectangle HV** command from the *Toolbox - Profile definitions* tool.
- Define the lower left corner point of the rectangle. The starting point has to be at that point where the window will start.

Therefore, use the  **Relative distance** icon from the Reference toolbar. With the help of this, place the starting point to -1.2 m to the left and 1 m up from the wall corner point. (You last clicked on the wall corner; therefore values are measured from there.)

- Define the upper right corner of the rectangle. An approximate value defined graphically is enough this time.



In the **Glass definition** dialog box appearing you can define the width and height of the rectangle, that is the width and height of the window, in the *Enclosing box length* and *Enclosing box height* field.

Structure settings	
Enclosing box length	2.035 m
Enclosing box height	1.237 m

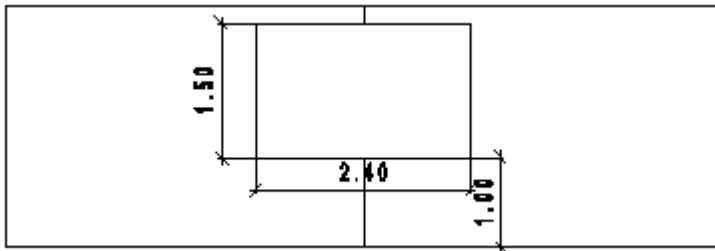
Structure settings	
Enclosing box length	2.4 m
Enclosing box height	1.5 m


### Defining the profile by drawing

- If you would like to draw the profile precisely, place down the layout image of the wall.
- Ask for displaying the layout image.
- Press **Enter** to finish the **Edit window corner** command. The visible layout image remains in the drawing.
- Select the appropriate geometrical objects from the menu to create the required profile.

### Example:

- With the help of the *Polyline tool - General Rectangle – BOXSIZES option*, place a rectangle sized 2.4 m x 1.5 m with its lower mid-reference point 1m high from the wall corner.
- Delete the edge of wall corner within the profile.
- 



- Activate the  **Edit corner window** command again.
- Click the previous wall. The program lays out the image wall again.
- Place the layout image precisely on top of the previous one.
- The program asks whether or not to display the layout image. Select *No*. This is necessary so that corner edge does not hang into the window profile.
- Select the **Point of profile** command from the *Toolbox - Profile definitions* tool.
- Click the window profile. The program takes the whole rectangle for the profile.

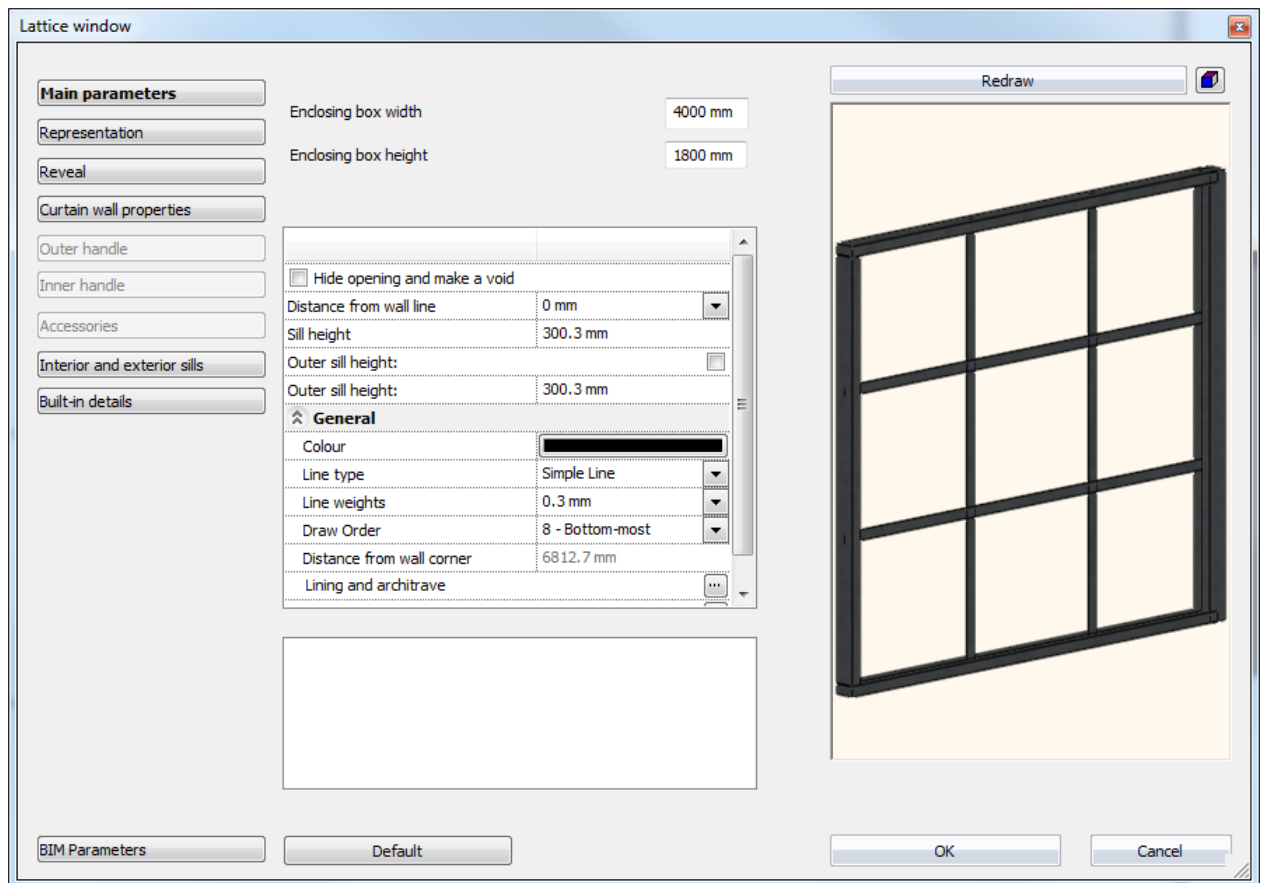
*Lattice window settings* dialog box appears.

### Setting the properties

The structure of the dialog similar to the normal window properties dialog except with the *Main parameters* and *Curtain wall properties* pages.

On the *Main parameters* page the *Enclosing box width* and *Enclosing box height* refer to the size of the entire opening, so width in this case means the total of the width of the windows located on two sides of the corner. If you defined the profile on a rough estimate, you have to enter the exact values now. If you drew the profile precisely, the exact values appear here.

The next fields refer to the first window only, the one to the left from the corner. You can specify the same parameters for the second window, the one to the right of the corner, after clicking OK.



### **Curtain wall properties**

On that page you can define the glass structure of the lattice window: *Mullion properties*, *Curtain wall properties* and *Frame properties*.

Mullion properties	
Mullion thickness	50 mm
Mullion width	5 mm
<input checked="" type="checkbox"/> Offset of mullion (>0: away f..	47.5 mm
Mullion placement	Middle
Mullion material	Steel
Curtain wall properties	
Glass width	6 mm
Offset of glass (>0: away fro...	47 mm
<input type="checkbox"/> Fixed Distance	
Horizontal Spacing	...
Vertical Spacing	...
No. of glasses in horizontal:	3
No. of glasses in vertical:	3
<input checked="" type="checkbox"/> Glass Transparency	
Glass material	Glass26
Frame properties	
Frame width	50 mm
Frame Thickness	100 mm
<input checked="" type="checkbox"/> Top frame	
<input checked="" type="checkbox"/> Bottom frame	
<input checked="" type="checkbox"/> Left frame	
<input checked="" type="checkbox"/> Right frame	
<input checked="" type="checkbox"/> Corner column exists	
Frame material	Steel
<input type="checkbox"/> Mullion on right side when frame is OFF	
<input type="checkbox"/> Mullion on left side when frame is OFF	

### Mullion properties

- ❖ You can define the thickness, width and material of mullion.
- ❖ The position of mullion can be defined either by the *Offset of mullion* option, specifying the exact distance from the reference side of the corner window, or relative to the glass by the *Mullion placement* setting (outside/middle/inside).

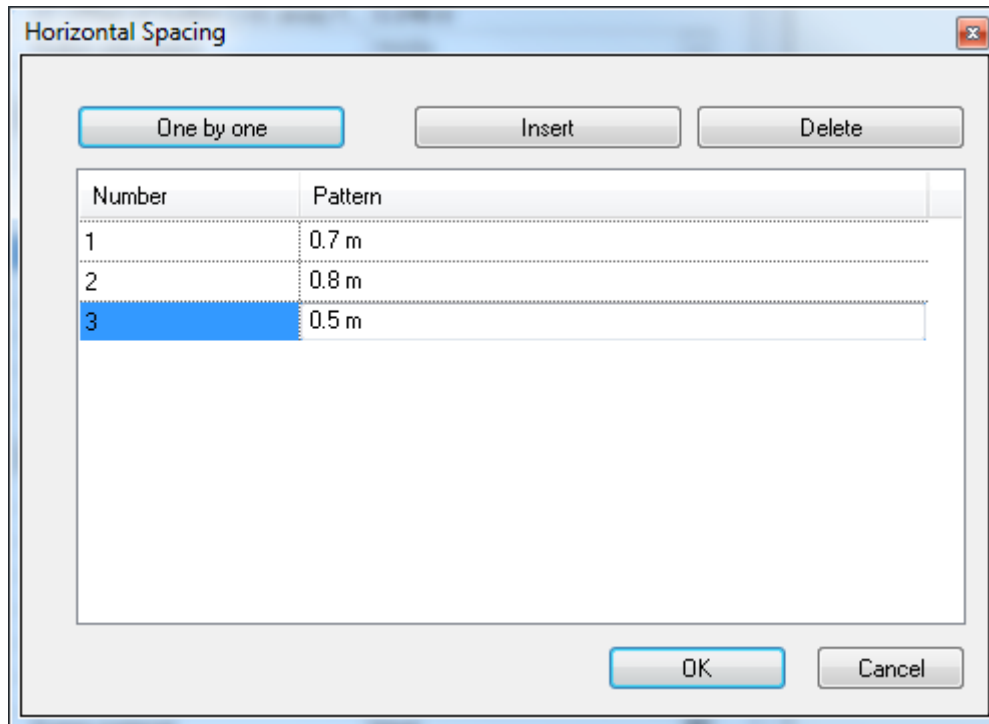
### Curtain wall properties

- ❖ Here you can define glass width, glass material and the offset of glass relative to the reference side of the corner window.
- ❖ You can switch on/off the glass transparency.
- ❖ **Fixed distance.** If you switch off this option, you can determine the sectioning with the No. of glasses in horizontal/No. of glasses in vertical values. The Horizontal Spacing and Vertical Spacing are not available in that case. Then you will get glass faces in the same size (equal division).

### Unequal division of glasses

If you switch on the *Fixed distance* option, you can define the exact number and size of glasses horizontally and vertically by the Horizontal Spacing and Vertical Spacing settings. The divisions can be set one by one in both horizontal and vertical directions.

- For this please click on the **Horizontal Spacing / Vertical Spacing** button.
- In the Horizontal Spacing/Vertical Spacing dialog you will see the glass plane sizes (width or height data) according to the previously defined number of glass planes. After clicking the **One by one** button the sizes will appear for each division.



- Modify:** The numbering sequence is left to right in horizontal direction, and bottom to top in vertical direction. Click on the dimensions to modify.  
 If the sum of the defined glass plane dimensions is greater than the full window size, the program removes the unnecessary rows from the table and corrects the dimension in the last row, if necessary.  
 If the sum of the defined glass plane dimensions is smaller than the window size, the program will add new rows to the table.
- Click **Insert** to increase the number of divisions. The insertion is always made above the selected row. If there is no row selected, the insertion will be made above the first row.
- You can delete a selected row by the **Delete** button.
- Using the **One by one** button you can let the program to recognize the **REPETITIONS** in the defined divisions. For example we can define two divisions for a 10 m long curtain wall: 1 m and 2 m. In that case the program assumes the repetition of this division pattern and adds the missing rows automatically.

1	1 m
2	2 m
3	1 m
4	2 m
5	1 m
6	2 m
7	0.94 m

### Frame properties

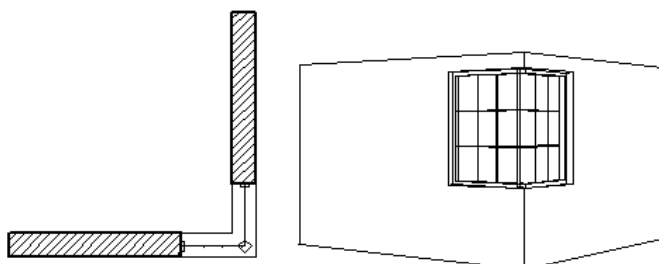
Here you can define the width, thickness and material of the frame. You can make the top/bottom/left/right frame visible by checking the appropriate options on. With the **Corner column exists** option you can put a column in the corner.

**Mullion on right side when frame is OFF/Mullion on left side when frame is off:** when you do not define frame on the left side/right side, you can put there mullions instead.

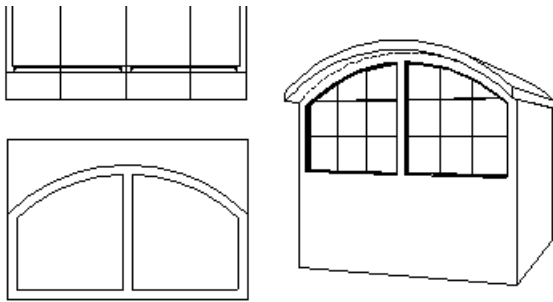
The corner window consists of two windows; therefore, after you closed the dialog box, another one appears, containing the properties of the second window, the one to the right from the corner.

The full size of the opening cannot be modified this time, but all other parameters still can.

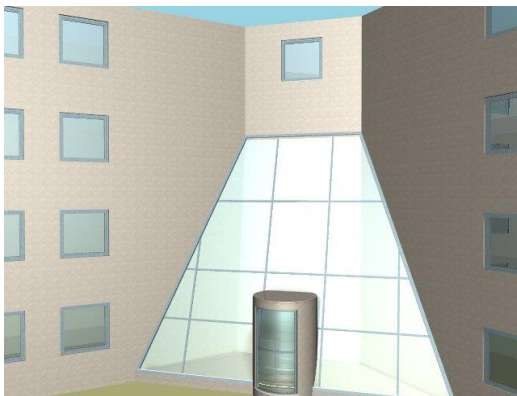
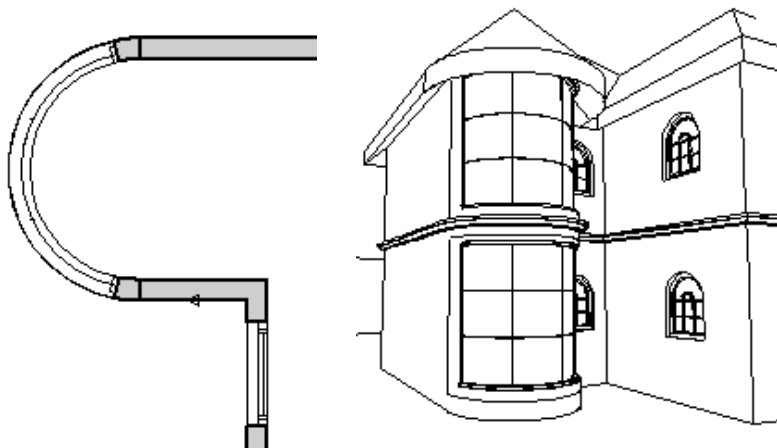
After closing this dialog box, the corner window will be generated.



Apart from creating corner windows, this method can also be used for normal windows placed on the wall the user defines him/herself. With regard to its really simple nature, we can recommend this method beside the 3D solid modeller and definition by 2D hatches.



You can use this technique for defining windows if you would like to place a window on an arched wall. Contrary to the other methods, the glass will also be arched this time, which means it follows the arch of the wall.



Unequal division oblique glass wall

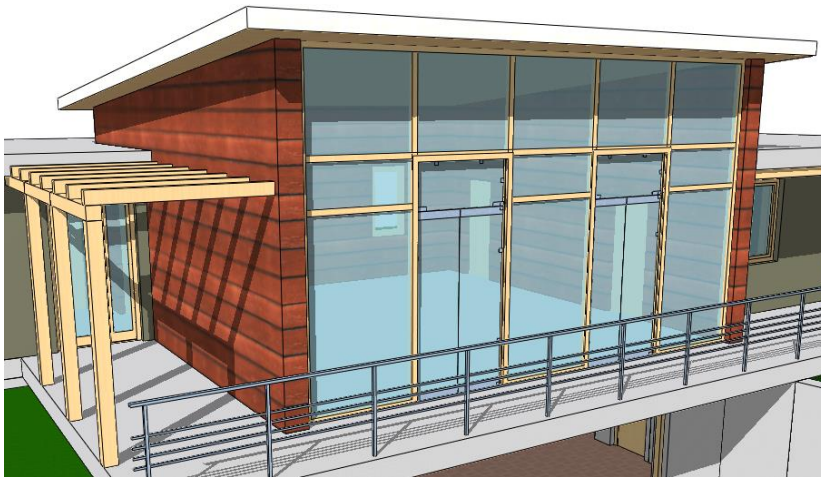
### **Full curtain wall**

Full Curtain walls can be created when you use the selected wall *Shortcut menu - Full Curtain wall* command. This command will convert the whole wall into a curtain wall. The glass definition of this curtain wall can be made in the Building menu - *Properties – Curtain wall: Glass structure settings* dialog.

#### **10.5.1. Openings in the Curtain wall**

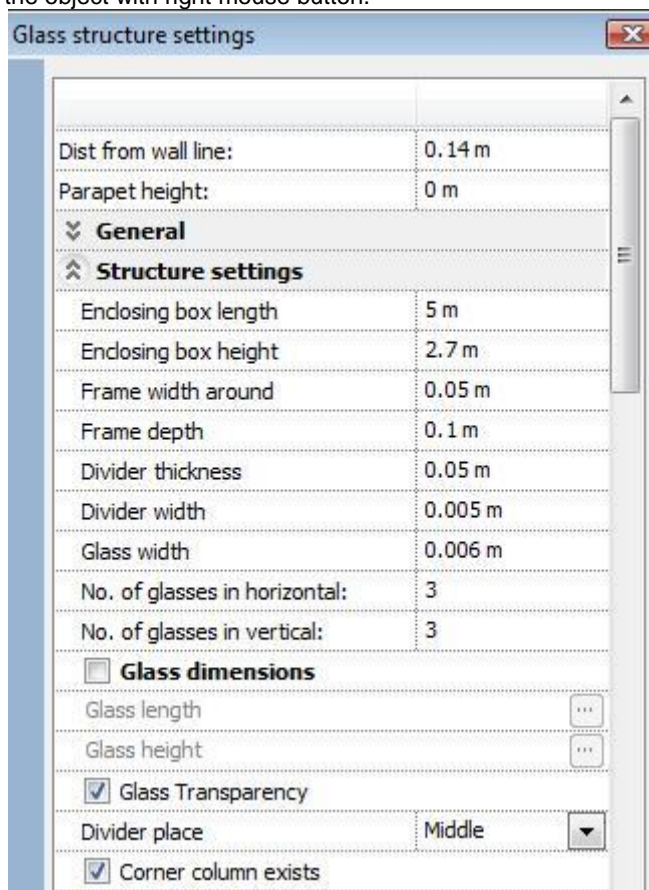
You can prepare complex glazed structures, curtain walls. After preparing the main structure objects you can fit without restriction openings to the curtain wall fitting to the structure objects.



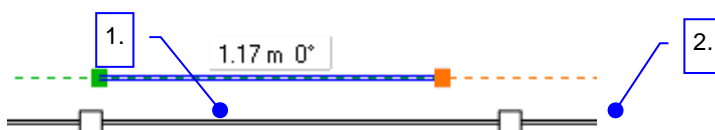


### Use

First prepare the curtain wall, and set the position of the main structure objects: set the properties of *Number of glasses* and *Glass dimensions* (After selecting the object these properties can be found in the Property manager under the *Structure settings* headword or they can be found in the shortcut menu under the Properties menu point after clicking on the object with right mouse button.



After setting place the division ribs, you can also set the openings fitted to these ribs in the floor plane. Select from the Toolbox the **Door - Window by two points** command, then click on the proper points of the border ribs of the future opening.



If the external contour of the opening is modified as the result of fitting in the opening the reveal structure of the curtain wall follows these changes.

### 10.5.2. Converting object to door / window

Selected objects can be converted to door or window and saved into OLI libraries with the **Create door / window command** in the shortcut menu of objects.

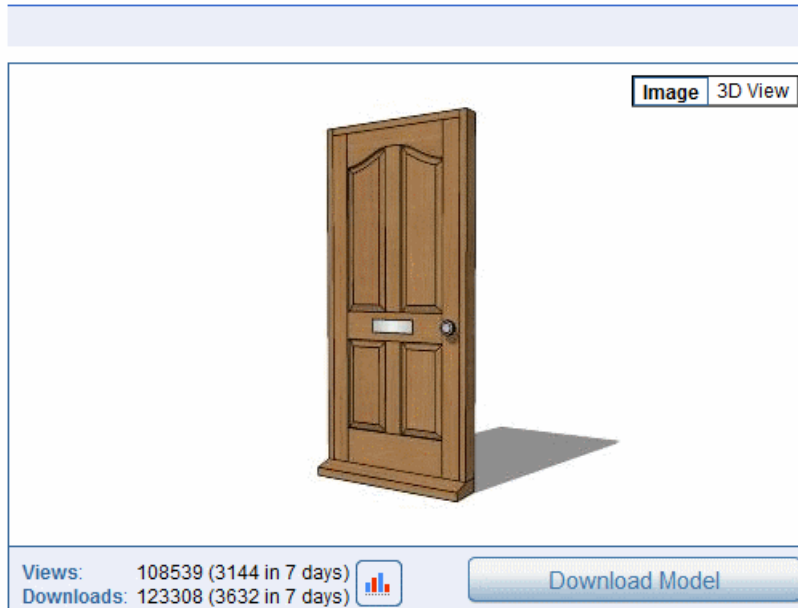
For example, using this function you can convert door or window objects imported from 3D warehouse to architectural door or window that can be placed into wall.

#### 1. Step.

Import object from Google 3D warehouse.

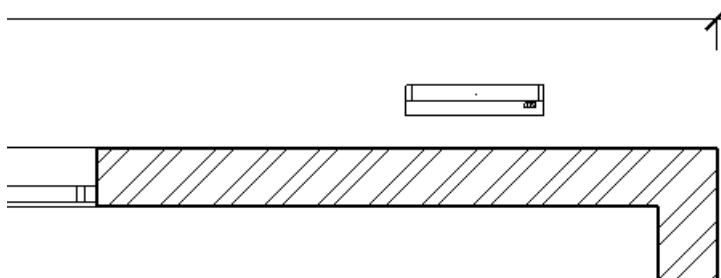
[Doors](#) > Door

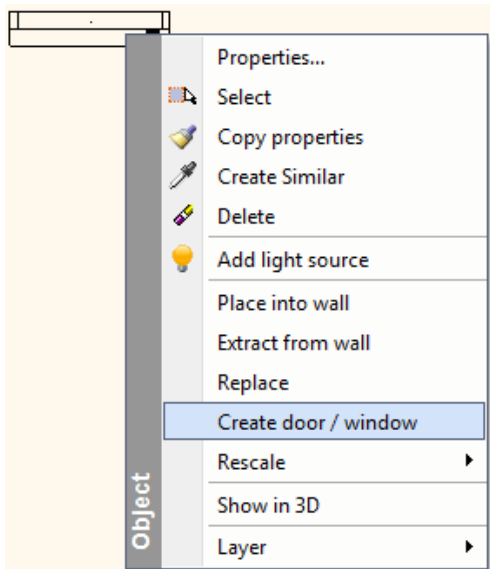
Door



#### 2. Step.

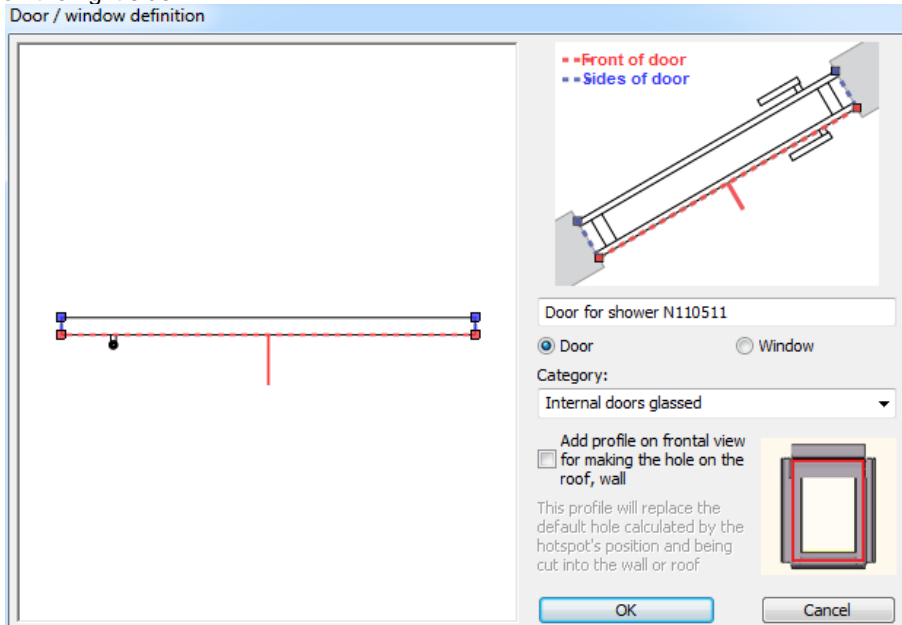
Place the object on the drawing then click with right mouse button on the object. Choose the **Create door / window** command.



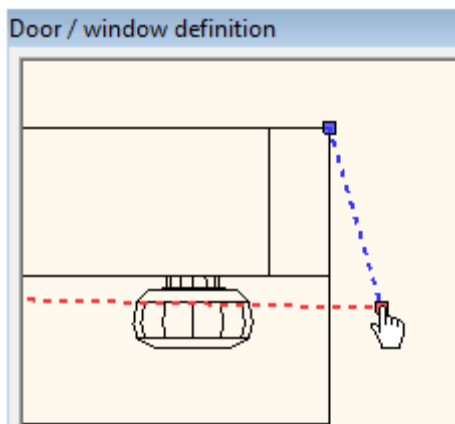


### 3. Step.

Relocate the 4 hotspots of the door/window on the left side by drag & drop, if necessary, according to reference drawing on the right side.



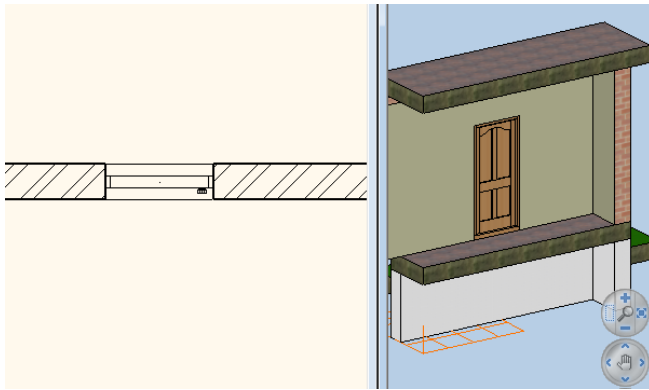
Use the mouse wheel to zoom the door or window shape and locate the hotspot precisely.



Choose the Door or Window category or type the type name and the new category name.

**4. Step.**

Select the door from the library and place it into a wall.



## 10.6. Slab

### Introduction

Use the slab commands to create regular or irregular slabs, sloping slabs, and foundations and to cut slabs and also to modify slab properties.

You can create single layered slabs (single slabs) or layered slabs.

You can modify individual layers in the case of layered slabs. This way you can create standard structures complying with the detailed construction drawing and also elaborate wall to slab connections in the floor plan and in the 3D drawing.

You can create beams in the slab, and you can order the beams to slab layers.

If you give the cross section profile, you can place for example beam to the slab.

You can even create slab with wood beams.

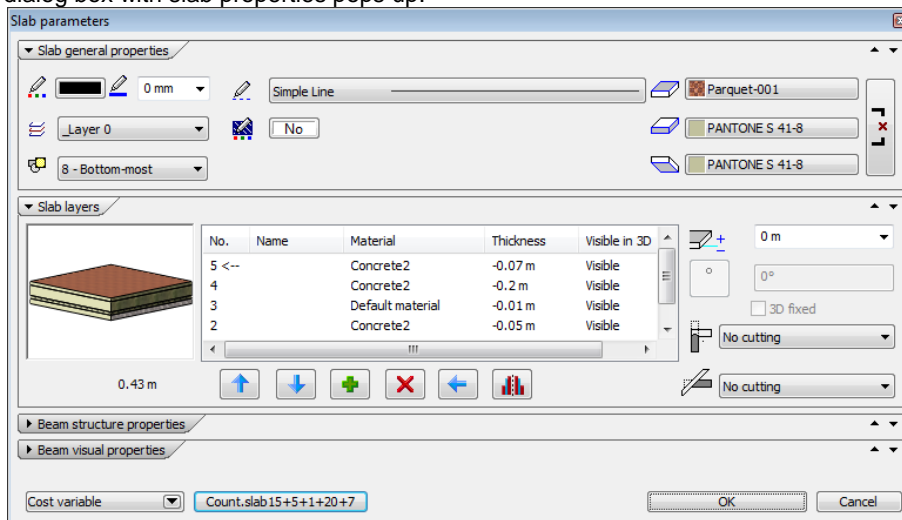
Modify slab profiles to create custom made slabs, like annular vaults, cross vaults, etc.

In ARCHLine.XP you can define floor tiling and ceiling patterns. You can assign different materials with the proper size and direction to these patterns. You can display tiling in the floor plan, and in the case of the 3D drawing and the photorealistic display. You can make a list from the quantity of used floor tiling.

### 10.6.1. Slab properties

Before placing the slab, you have to define slab properties.

Right-click the **Toolbox Slab** tool to access these properties, or use the **Building menu-Properties - Slab** command. The dialog box with slab properties pops up.



#### General properties

Firstly, you can modify general slab properties, like colour, line width, layer and line type.



For the description see Chapter 3.2.1. *Specifying general properties.*

#### Sets

1 layered 30 r.c.

You can save your customized slab properties into sets and you can store sets in the environment. This way you can use the desired slab structure in any of your drawings. If you click on the button, the pre-defined slab sets will be displayed on the right side of the dialog box.

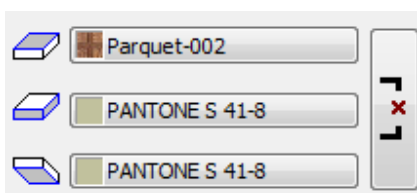


For the description see Chapter 3.2.3. *Using sets of properties.*

#### Slab material properties

Under general properties, you can set slab material and slab-to-slab height.

Enable the *Same materials* option to assign the same material to all 3 sides of the slab.



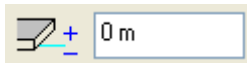
- material for top surface - floor
- material for side surface
- material for bottom surface – ceiling

If you click on the *Material* name, the **Material** dialog box will pop up.

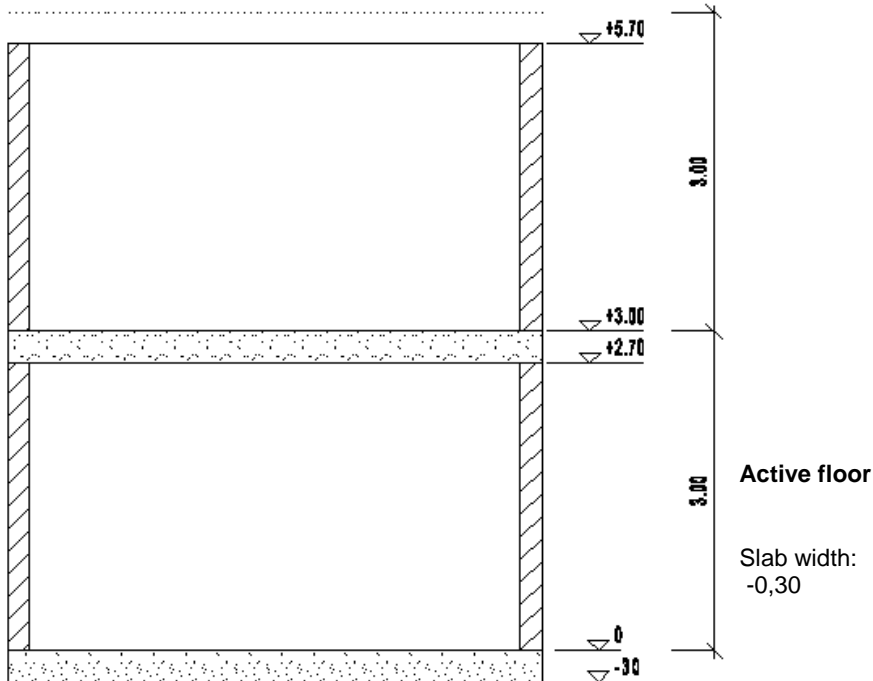
- Select material type.
- **OK** Ends selection.



For the description see Chapter 3.2.2. *Material properties*.



- Enter the relative height of the slab as compared to the active floor.



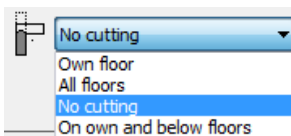
### Angle of the sloped slab

In the case of sloped slabs you can modify slope angle in the **Slab properties** dialog box. This field is greyed (i.e. disabled) when defining general properties.

### Slab cut

You can set automatic cutting of slabs by walls or by the roof.

- ❖ Cutting by walls  
The slab cuts down wall sections over the slab. You can use any of the following options to cut walls:



- own floor,
- all floors,
- no cutting - the slab will not cut any wall
- the slab cuts walls on its own floor and below.

This method is very useful if you want to create an arched slab and you want to cut walls so as to fit this arched slab.



In the case of columns and other objects placed into the wall, slab cutting works only if you enable it in the object property dialog box. This means that you can cut any wall with a slab without cutting the chimney in the slab.

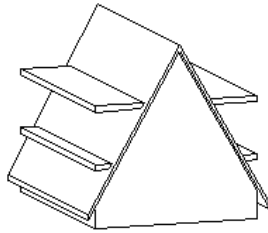
- ❖ Cutting by roof  
You can cut slabs with roofs in the following ways:



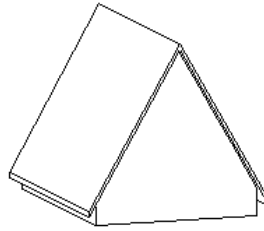
- the roof cuts the slab at each floor
- the roof does not cut the slab

If you draw an alpine-style building for instance, it is necessary to enable the cut all floors option:

No cutting:



Cutting by the floor:



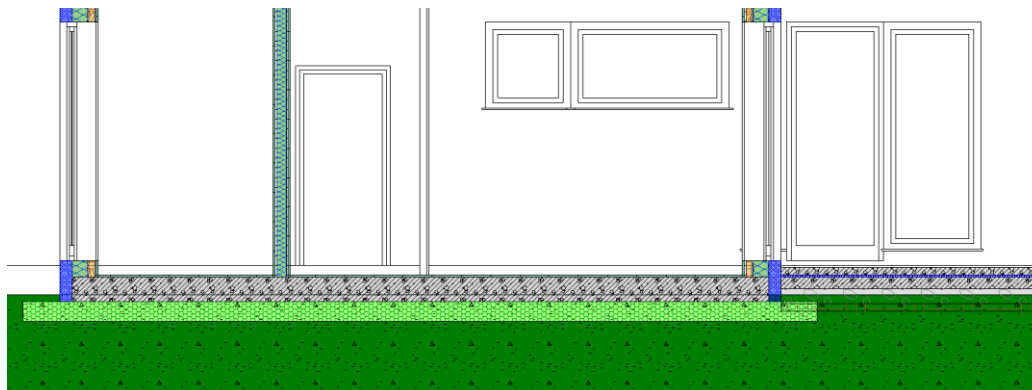
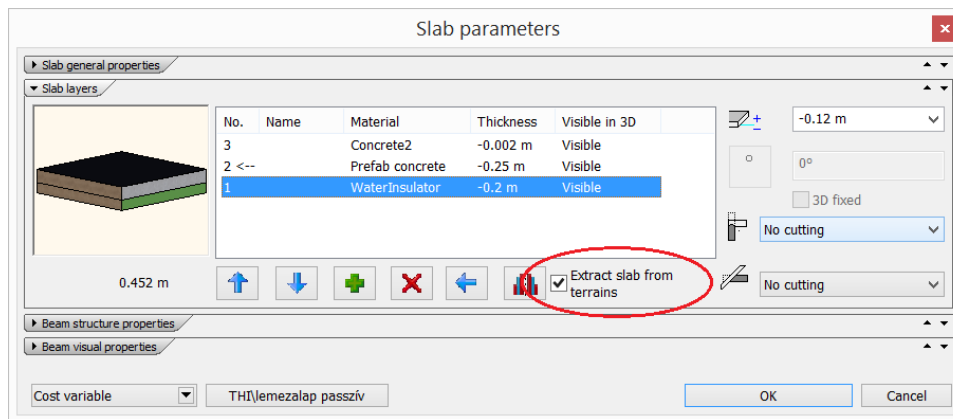
You can see the result of these two cutting options if you enable the *Wall - slab - roof* cutting option in the *3D model* dialog box.



Build

### Extract Slab or Foundation from Terrains

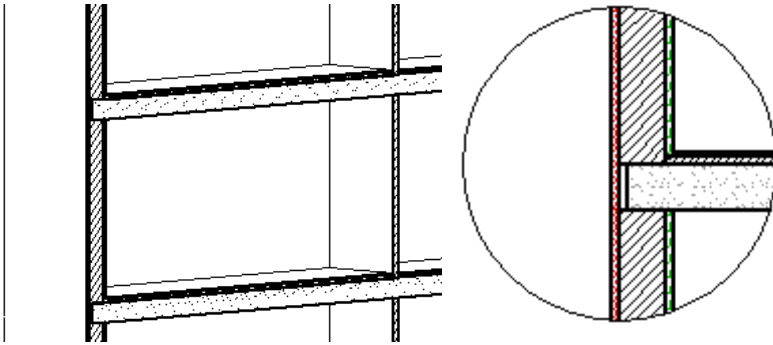
The Extract Slab or Foundation from Terrains Feature cuts the slab body from terrain.



#### 10.6.1.1. Slab layers

If you click on *Slab Layers*, the **Slab layers** dialog box appears.

With this option, you can create multilayered slabs (15 layers maximum). You can select such slab structures from the pre-defined sets or you can create your own slab layer by layer. It is worth creating and saving your most often-used slab structures. You can display nodal points on cross sectional drawing with the elaborateness of a construction drawing. To achieve this, you should use layered walls.



### Insert new *button*

You can add new layers to the slab with the **Insert new** button. The new layer added will always be topped onto the previous layer and will have the properties of that layer. Other layers remain intact. Layer 1 is the bottom-most one.

### Delete *button*

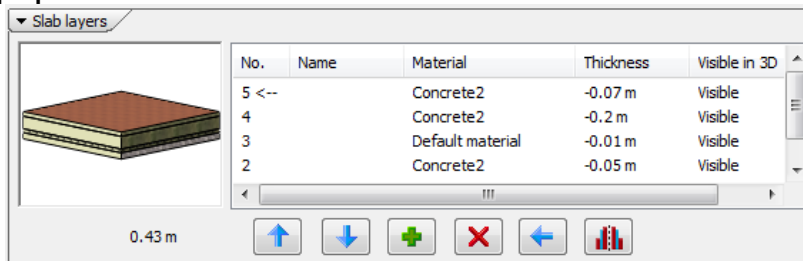
Use the **Delete** button to delete any selected layer. Layers above the deleted one will shift one layer down.

### Displayed layer

In the list click on the layer you want to be displayed, and then click on the **Displayed layer** button. The *Arrow* will jump to the number of the desired layer, indicating that this is the displayed layer on the floor plan.

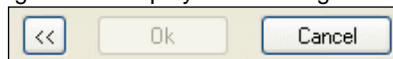
This is very useful if you want to edit slabs layer by layer, i.e. there are different layers with different geometry. The layered slab editing commands are only valid for the displayed layer.

### Layer properties



Click on the field to select the desired layer. Double-click this field to modify layer name, material and width. If the layer width is negative, the layer should be measured downwards, and if layer width is positive, it should be measured upwards.

The dialog box will display the 3D image of the layered slab with its total width.



Use the **Arrow** button to return to the *Properties* dialog box.

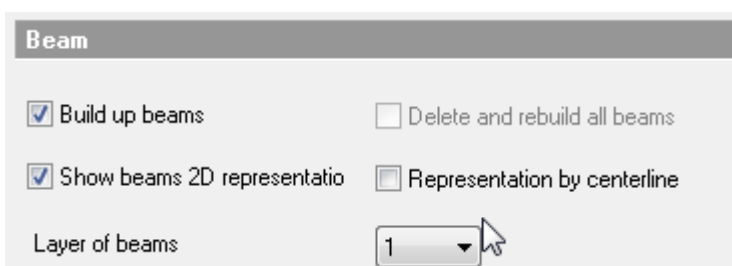
Visibility of a layer can be set for each slab layers one-by-one in the slab layer settings dialog.

No.	Name	Material	Thickness	Visible in 3D
1 <--		Reinforced_concrete	-0.03 m	Visible
				Off

## 10.6.1.2. Slab with beams

### Slab properties

Similarly to the rafters in the roof, it is possible to define slab with beams. In the *Beam properties* dialog you can switch on the building up of beams and their representation in 2D.





**Build up beams**

By switching this option on the program builds up the beams. This will appear in the 3D model only when the **Slab beams** option is selected in the Build 3D model dialog.

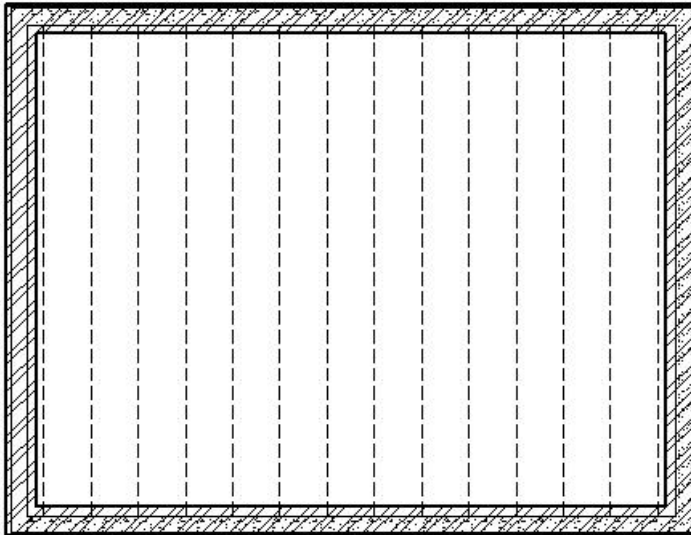
**2D representation**

This option allows you to see slab beams on the floor plan. Beams are connected a slab layer. You can specify this connection in the Layer of beams field.

Beams are visible on the floor plan (by switching on the 2D representation option) only when the layer to which the beams are connected is activated.

**Beam representation with centreline**

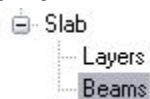
With this option, beams can be represented by their centrelines on the floor-plan.

**Delete and rebuild all beams**

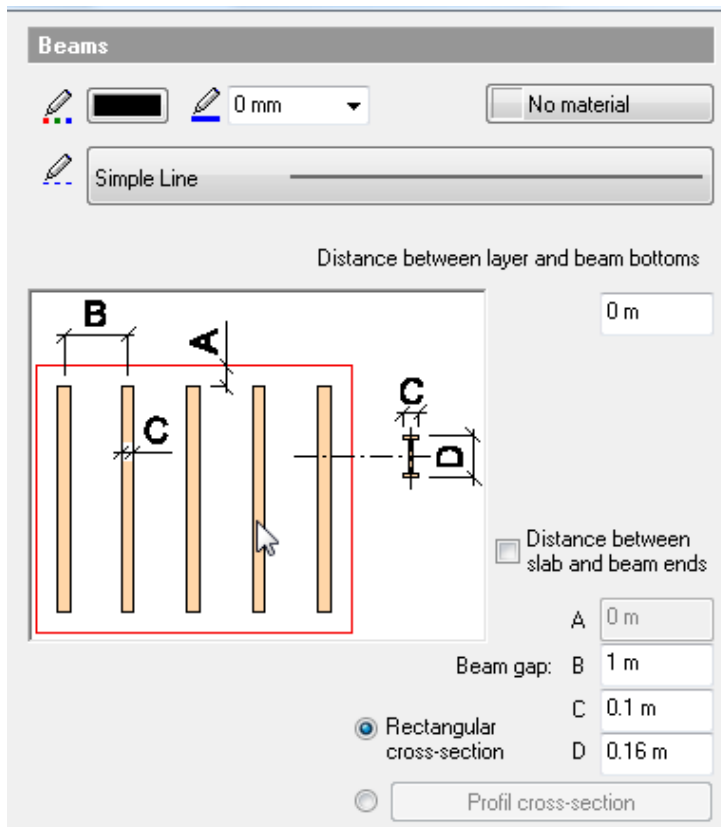
An existing slab with beams can be modified by the *Slab* shortcut menu - *Slab framing* commands. After you have carried out modifications with these commands, the original state can be reset by this option.

**Colouring of slab**

With the selection of a colour you can represent a slab with a solid hatch on the floor plan:

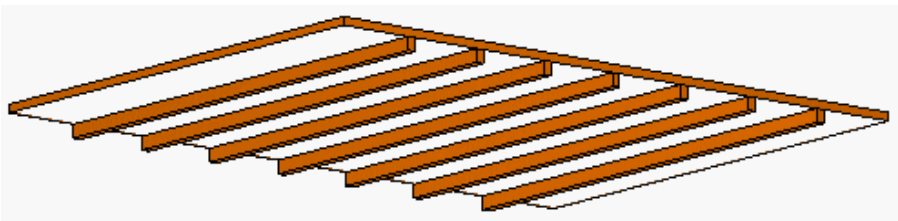
**Beams properties**

In the beams dialog you can specify the properties of beams.

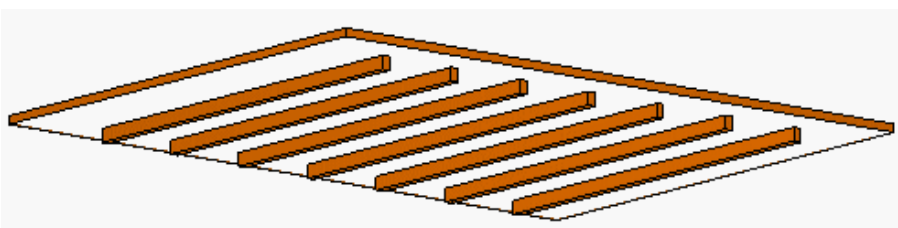


#### Distance between layer and beam bottoms

Here you can set the distance between the bottom surface of the beams and the bottom surface of the layer of beams. If you specify a negative distance, the beams will appear below the slab layer.



You can specify the **A** distance between slab and beam ends and the **B** beam gap (see the figure in the dialog).



#### Cross-section - C, D

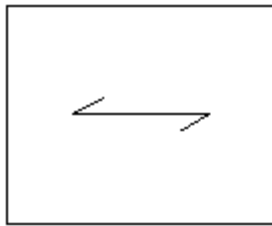
The cross-section profile of the beams is rectangle, which values can be set. Beside a rectangle cross section, you can choose any other profile as cross section from the profile library.



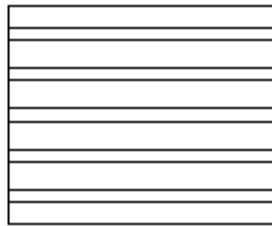
#### Creating slab with beams

Creating of slab with beams goes the same way as the creating of simple slab.

If the *2D representation* option is switched off or the displayed slab layer is different from the layer to which the slab beams had been connected in the properties dialog, beams and their direction are represented only with a symbol:

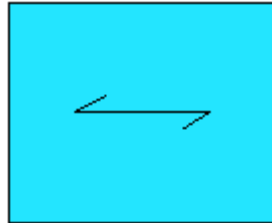


Switched off



Switched on

In the slab properties dialog you can specify a solid hatch for the slab representation on the floor plan.



### Modify the slab beams

Slab beams can be modified by the *Slab framing* shortcut menu commands. These commands are similar to the *Roof framing* commands.



### Modify direction

With this command you can modify the direction of the beams. Of course, this command deletes and rebuilds all beams, thus you will lose all of your modifications you made before.

## 10.6.2. Creating slabs

Click the **Toolbox – Building - Slab** tool to access these commands, or use the **Building menu- Slab menu** commands. You can create the following types of slabs: general slab/ceiling, foundation and sloped slab.



Ceiling is a slab where the **Height is attached to floor elevation** option is switched on automatically so it will be placed at the height of the active floor.

### 10.6.2.1. Creating slab with selection

You can define slabs with their contour lines. There are many options to define the contour:

- ❖ The area defined by the walls defines the slab.
- ❖ Subcommands can be used to define contours in a more complex way. There are many options to define contours. For example you can offset slab at a defined distance related to the contour. This is very useful if the slab overhangs walls or fails to reach the outer isolating wall layer in the case of multiply layered walls.

#### Areas defined by walls

- Pick walls one by one or select the room/building by the selection rectangle. The slab will be created along the outer contour.
- **Enter** Ends selection.

### Using subcommands

- Instead of selecting walls, select one of the available subcommands and follow the instructions.

### Shifting slab contours

- Before selecting walls, click **Parallel shifted...** subcommand.
- Select **Type the value...** from the appearing distance setting options.
- Specify the distance of shifting. If the slab is smaller than the contour defined by the walls, give shifting distance as a negative value.
- Select walls and then close the command by pressing **Enter**.

### 10.6.2.2. Creating slab with polygon

You can Create slab by sketching it, using the Polyline tool.

- Before specifying the points select the Parallel Shifted option if you want to place the slab to a given distance from the sketched contour. Specify the distance for the shifting. If the slab is smaller than the contour, use a negative value to specify the distance for shifting.
- Specify slab profile using the *Profile definition* menu commands.



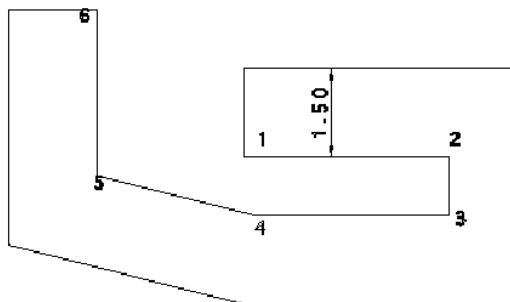
For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

### Further options

You can use any of the following options to define slab contours with polylines:

#### Options:

<b>CIRCLE</b>	The polygon forms a circle.
<b>SHIFT</b>	Enlarges or reduces the limiting polygon with a defined distance.
<b>WIDTH</b>	The limiting polygon is a polyline with a given line width.



### 10.6.2.3. Creating closed foundation

With this command you can create closed foundations. Foundation height and elevation will be defined by the values set in the *Slab properties* dialog box.

- First define the width of the foundation in the dialog box popping up.
- Define the closed contour of the foundation.

#### Options:

<b>CIRCLE</b>	The closed contour will be a circle
<b>DIAMETER</b>	Specify the internal diameter of the circle shaped foundation. Use the <b>LIKE</b> option to pick up the diameter of an existing circle or arc.
<b>RADIUS</b>	Specify the internal radius value of the circle shaped foundation Use the <b>LIKE</b> option to pick up the radius of an existing circle or arc.
<b>CPOINT</b>	Specify the centre point of the circle shaped foundation
<b>P3</b>	Specify the internal contour of the circle shaped foundation with three points
<b>AXIS</b>	Specify the two end points of the internal diameter of the circle shaped foundation.
<b>SELOBJECT</b>	Select an object to draw the foundation along its contour.

Options not mentioned above shall be those referred to in line drawing.

- **Enter** Ends the command and closes the contour by connecting the last defined point with the first one.

#### 10.6.2.4. Creating open foundation

This command is similar to the one for creating closed foundations, with the only difference that the foundation cannot be closed within itself.

- In the dialog box popping up enter the width of the foundation.
- Specify the open contour of the foundation.

##### Options:

<b>SELOBJECT</b>	Select an object to draw the foundation along its contour.
------------------	--

Options not mentioned above shall be those referred to in line drawing.

- **Enter** Completes the command.

#### 10.6.2.5. Sloped slab with reference points

With this command you can create sloped slabs by defining three reference points.

- Create slab by sketching it, using the Polyline tool.
- Before specifying the points select the Parallel Shifted option if you want to place the slab to a given distance from the sketched contour. Specify the distance for the shifting. If the slab is smaller than the contour, use a negative value to specify the distance for shifting.
- Specify slab profile using the *Profile definition* menu commands.
- Pick on a boundary point to specify its elevation. If you want to specify an upper surface point of the slab, use the keyword **UPPER**.
- Specify elevation value or select the keyword **LIKE** to select an object and pick up its elevation in the click point. Click on the **UPPER** or **BELOW** to define the height of the selected point in the top or bottom point of the selected object. The program will display height value in a dialog box; you can accept or refuse this value:
- Specify the elevation in a similar manner for the other two reference points.
- **Enter** Completes the command.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

#### 10.6.2.6. Creating sloped slabs with reference lines

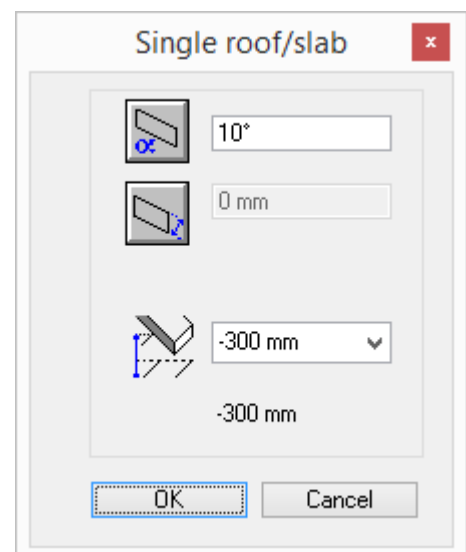
With this command you can create a sloped slab by defining a reference line and the angle of the sloped slab.

- Create slab by sketching it, using the Polyline tool.
- Before specifying the points select the Parallel Shifted option if you want to place the slab to a given distance from the sketched contour. Specify the distance for the shifting. If the slab is smaller than the contour, use a negative value to specify the distance for shifting.
- Specify slab profile using the *Profile definition* menu commands.



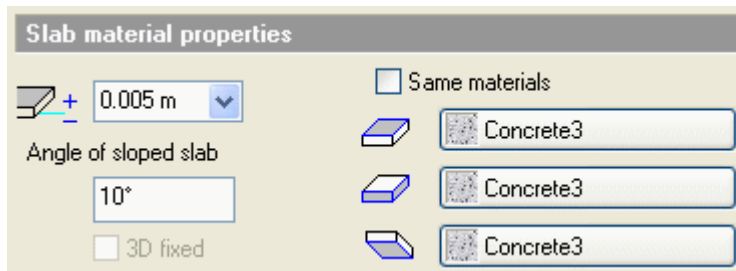
For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- After defining the slab profile, specify the reference line with two points. These points will have the same elevation. The slope arrow perpendicular to the reference line displays the sloping direction. If the slope arrow direction is not acceptable, prior to the definition of the second point, press ENTER to return to the definition of the first point once again. A dialog box will pop up where you can enter the elevation of the reference line and the slope angle.
- **Ok** Completes the command.



### 10.6.2.7. Angle of the sloped slab

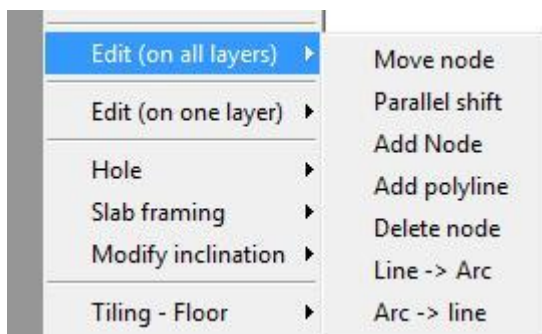
The angle of sloped slab can be modified in the *Slab properties* dialog afterwards.



### 10.6.3. Editing commands for whole slabs

With this command you can edit the corner points and edges of the entire slab. In the case of layered slabs, editing will affect each layer.

You can access editing commands from the *Shortcut menu*:



#### **Move node**

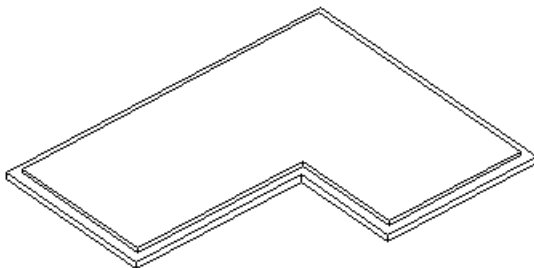
Click on any corner point of the slab to change its position.



#### **Parallel shifting (offset)**

With this command you can offset one side of the slab or enlarge or reduce the entire contour of the slab.

- Select the slab side you want to offset.
  - Specify the new position for the slab side. You can also specify the offset by entering its value; to do so, move the mouse pointer in the desired direction and enter the value;
  - or
  - Select the **ALL** option of the prompt to move each side of the slab contour together.
- Enter**            Completes the command.



#### **Inserting nodes**

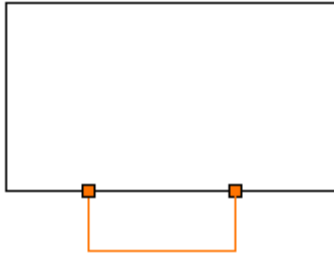
Click on any side of the slab to insert a new node.

<b>SPOLYGON</b>	If you select the <b>SPOLYGON</b> keyword, this will activate the Add polyline command
-----------------	--



### Adding polylines

Click on any side of the slab to add multiple nodes by a polyline to the slab.



### Deleting nodes

This command deletes any selected corner point of the slab.



### Converting lines to arcs

This command performs the following conversions:

The command converts linear slab sides to arced ones; you can also modify the radius of the arch in the case of an arced slab.

- Select the slab side to be converted.
- Specify a point. The arced slab will intersect this point. Select one of the following options:

#### OPTIONS:

<b>DIAMETER</b>	Enter diameter value.
<b>RADIUS</b>	Enter radius value.
<b>PERIMETER</b>	Enter perimeter value (arc length).
<b>ARC</b>	Enter chord value for the arc.



### Converting arcs to lines

Use this command to convert arced slab sides to linear ones.

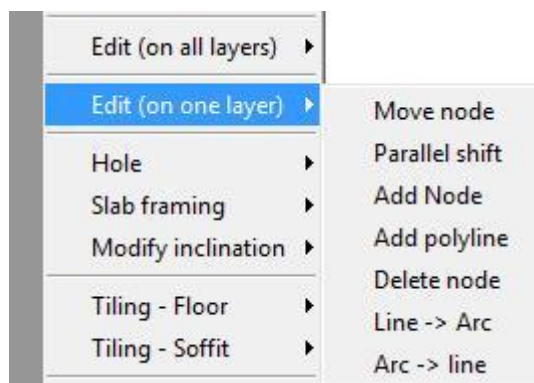
- Select any arced slab side to be converted.

## 10.6.4. Editing commands for slab layers

With these commands you can edit the corner points and edges of the displayed (i.e. active) layers of slabs. Select the displayed layer in the *Slab properties - Layers* dialog box. An arrow marks the displayed layer.

No.	Name	Material	Thickness
3		Ceramic2	-0.07 m
2		Concrete	-0.3 m
1 <--		Default material	-0.01 m

You can access editing commands from the *Shortcut menu*:



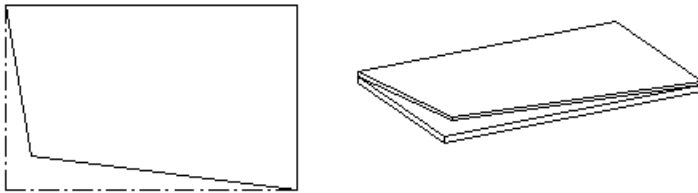


The operation of this command corresponds to those described in chapter 9.4.3. *Editing commands for whole slabs.*



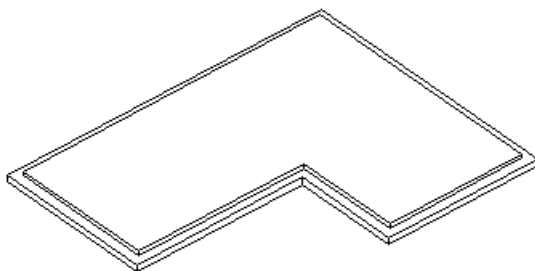
### **Moving nodes**

Click on any corner point of the active slab layer to modify its position



### **Parallel shifting (Offset)**

With this command you can offset one side of the active slab layer or enlarge or reduce the entire contour of the slab.



### **Inserting nodes**

Click on any side of the active slab layer to insert a new node to that layer.



### **Adding polylines**

Click on any side of the active slab layer to add multiple nodes by a polyline to the slab.



### **Deleting nodes**

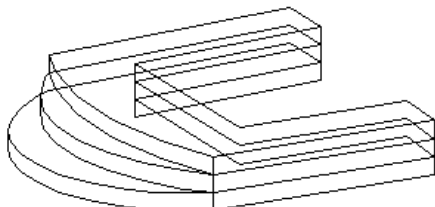
This command deletes any selected corner point of the active slab layer.



### **Converting lines to arcs**

This command performs the following conversions:

The command converts linear slab sides to arced ones; if the selected side of the slab is arced, you can also modify the radius of the arch.



### **Converting arcs to lines**

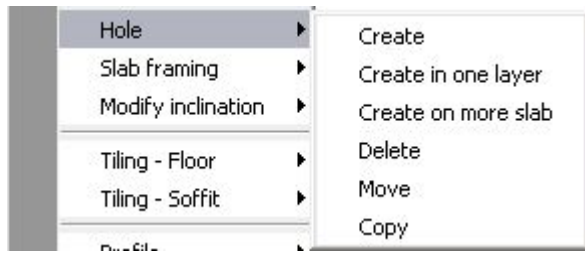
Use this command to convert arced slab sides to linear ones.

- Select any arced slab side to be converted.



### 10.6.5. Creating and editing slab holes

You can access these commands from the *Shortcut menu*:



#### 10.6.5.1. Creating slab holes

In most cases you need slab holes when editing stairways and chimneys. Slab holes always comprise parts of slabs, you can specify their form without any restriction and you can edit them afterwards.

You can access the command from the Toolbox, the *Building menu* and the *Shortcut menu*.

##### **Creating slab holes over stairs**

You can create slab holes for stairs with the **STAIR** keyword of the command. You can select the stairs under the slab and then the hole will be created automatically for the actual stairs. In this case the profile will not be displayed as the top view of the stairs; therefore it is preferable not to use this function for stair spaces created with galleries.

The program will calculate the contour as follows:

- ❖ The width of the hole is defined by the width of stairs.
- ❖ For the depth the program will find the particular stair with a distance to the bottom of the slab equalling the free height set. This aims at allowing an adult to walk up the stairs in an upright position.

You can set the "Free height above stair" value in the dialog box *File menu - Options - Stair standard*:



- Select a slab you want to open.
- Specify the slab hole profile by the *Profile definition* tool in the Toolbox. Draw the profile with the option selected, or
- Select the keyword **STAIR** from the prompt.
- This command will automatically create the hole in the slab for the actual stairs under this slab. If there are no stairs under this slab (the program warns you about it), select the keyword **BELOW**. Use this keyword to select the stairs of the next floor downwards.

**Enter**            Completes the command.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



If you select stairs, the stairs must be under the slab.

#### 10.6.5.2. Creating slab holes in multiple slabs

It is often the case that there are slabs covering the entire floor of a building and there are different layered slabs in each room. This means that there are several slabs on each other.

In this case you have to create a slab hole in the reinforced concrete slab and also in the layered slab.

This command offers a very simple solution to this problem. You can create slab holes on multiple slabs. To do so, select the slabs for the slab holes. Enter.



The operation of this command corresponds to those described in Chapter 9.4.5.1. *Creating slab holes*.

#### 10.6.5.3. Creating slab holes in layered slabs

This command creates slab holes in the active slab layer.

Slab holes always comprise parts of slabs, you can specify their form without any restriction and you can edit them afterwards.



The operation of this command corresponds to those described in Chapter 9.4.5.1. *Creating slab holes*.

### 10.6.5.4. Deleting slab holes

With this icon you can delete existing slab holes.

- In order to delete, select the contour of the slab hole.  
**Enter** Exits the command.

### 10.6.5.5. Moving slab holes

With this command you can move existing slab holes.

- To move, select the contour of the existing slab hole.
- Specify the reference point of the slab hole for moving.
- Specify the new position of the slab hole.  
**Enter** Completes the command.

### 10.6.5.6. Copying slab holes

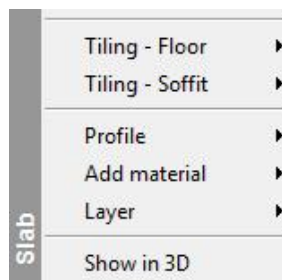
You can copy slab holes within particular slabs.

- After selecting the command, specify the reference point of the slab hole, or select the keyword **REPEAT** if you want to create multiple copies, and then enter the number of copies. **Ok**.
- Specify the position of the new slab hole. **Enter**.

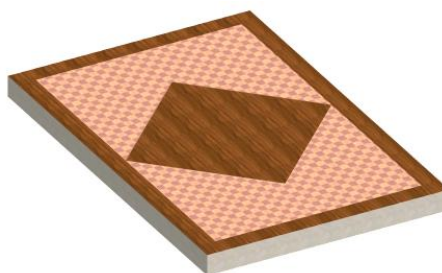
### 10.6.6. Decoration

With this command you can specify tiling for the floor and the side of slabs and also patterns for the ceiling. You can assign different materials with the proper size and direction to each pattern. You can display tiling in the floor plan, and in the case of the 3D drawing and the photorealistic display, you can use tiling with materials. In the case of multiple layered slabs, the tiling will be created on the active layer.

You can access the commands in the *Shortcut menu*



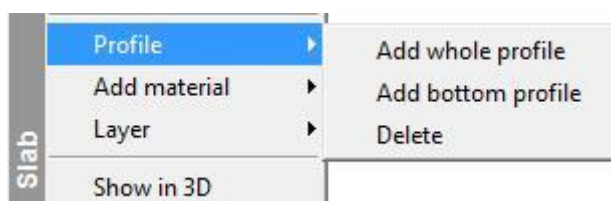
For a detailed description of this command see chapter 15.1. *Tiling*.



### 10.6.7. Modifying slab profiles

Use the following commands to modify the whole (i.e. entire) and bottom slab profiles and to delete them.

You can access the commands in the *Shortcut menu*:



### 10.6.7.1. Total slab profile

If you want to create special slab structures (like arched slabs), you have to modify the front view profile of the slab. With this command you can create closed profiles. You can place the profile on either side of the slab, and you can cut the profile from several sides. The program cross-sections these profiles, so you can create sophisticated structures like cross vaults. You can modify the profile in the floor plan and in 3D if you want.

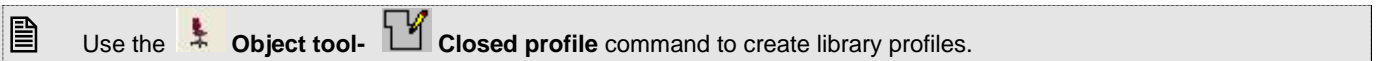
#### Modifying slab profiles on the floor plan:

- Select one side of the slab to be modified in the floor plan. The program lays out its front view. (If you have modified a slab profile earlier, the program will use dotted lines to display the actual front view.)
- Place the laid out image. Use the **NEXT** keyword to change the reference point of the image laid out.
- Specify a closed profile to represent the frontal shape of the slab using the *Profile definition* tool in the Toolbox:

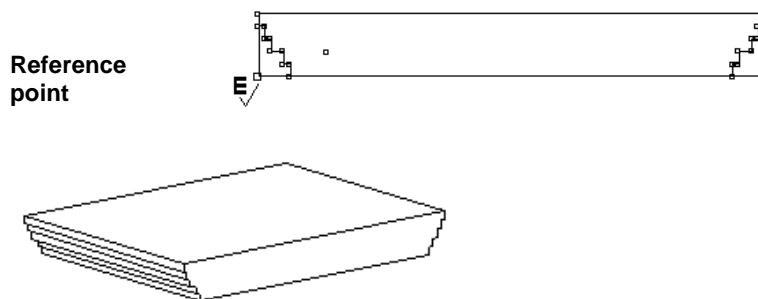


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

If you want to use a pre-defined profile of the profile library, click the *Select from list* command.

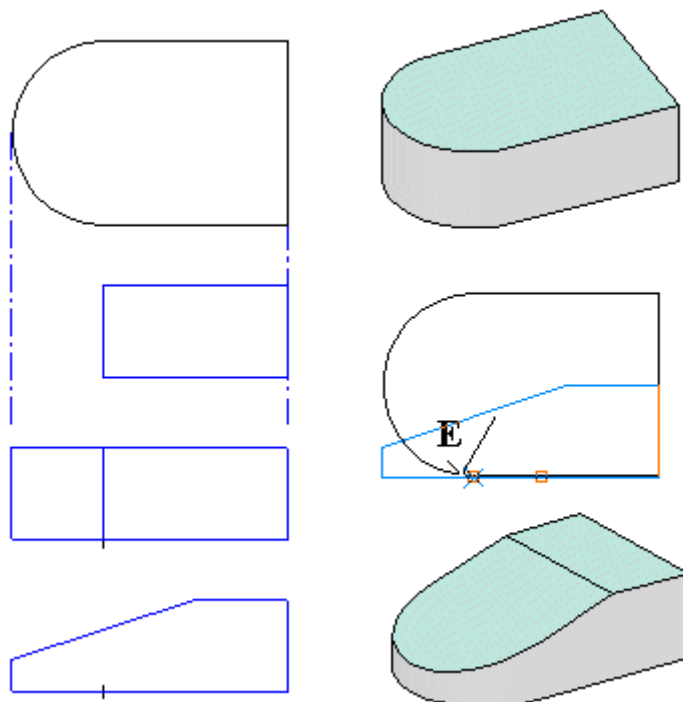


If the *View menu - Automatic refresh* option is enabled, you can see the result in the 3D view.



#### Example

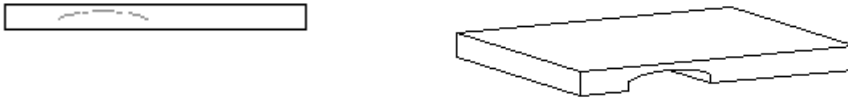
You can cut a profile onto a slab having an arced side connected to the cut side. In this case you have to complete the automatically laid out slab side so that the profile will contain the entire projection. Otherwise the Bool operation will cut the arced side of the slab.



### 10.6.7.2. Bottom open profile

In the case of the previous command (*Add whole profile*) you had to define a new, full profile of the slab. When creating an open profile, you define a section (which can comprise arcs and lines too). The program connects this open profile with the lower part of the slab and then cuts this profile out of the slab.

If the profile selected is a closed one, the program automatically deletes one side of it to create an open profile.



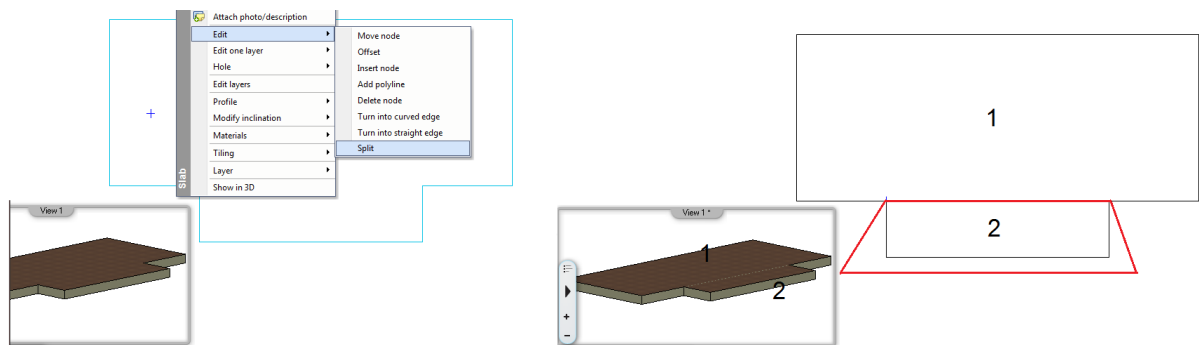
### 10.6.7.3. Deleting slab profiles

Deletes the profile assigned to the slab.

- Select any slab on the floor plan to delete the profile assigned to it.  
**Enter** Completes the command.

### 10.6.8. Split the slab

The command splits a slab into two slabs. All properties will be copied to the separated slabs as layer, geometry, materials etc.



### 10.6.9. Assign materials

When defining slab properties, you can define the material of the top and bottom surface and also the side surface of the slab. When you define the material of the side surface, you can apply the same material on each side of the slab. If the building has got walls of different colour, you may have to define a slab colour corresponding to that of the wall. To do so, you have to use the command *Assign material*, by which you can assign new materials to the selected slab or to particular layers of that slab.

In the example below you can see that in the case of walls of different colours we changed one side of the slab to correspond to the colour of the wall and to share the same texture.

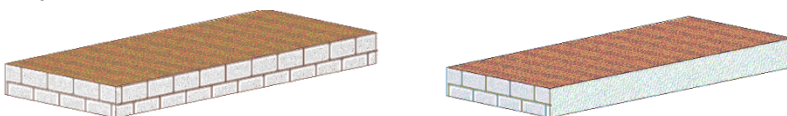
#### Options for assigning materials:

You can access commands in the *Shortcut menu*:



#### On one side

- Select the slab to whose side you want to assign material.
- Select the desired material in the dialog box. **OK**.
- 



#### On one side of a layer

- Select the desired slab having the side with the displayed layer you want to assign the new material to.

- Select the material from the dialog box popping up. **OK**.

***Deleting on one side***

- Select the slab on whose side you want to delete the material.  
**Enter**            Completes the command.

***Deleting on one layer of a side***

- Select the slab having the displayed layer with the material you want to delete.  
**Enter**            Completes the command.

## 10.7. Ceiling

Ceiling is a host element. It means the ceiling is able to host components into its structure. It can include light fittings, ceiling fans, CCTV cameras, etc. Placing a ceiling will create 3D model and it appears in Sections and 3D Views.

You can create a ceiling three ways:

1. in Sketch mode drawing out the boundary of the ceiling,
2. with clicking in a room, and
3. automatically in all rooms in one step

Ceiling is displayed with boundary lines, along the ceiling perimeter.

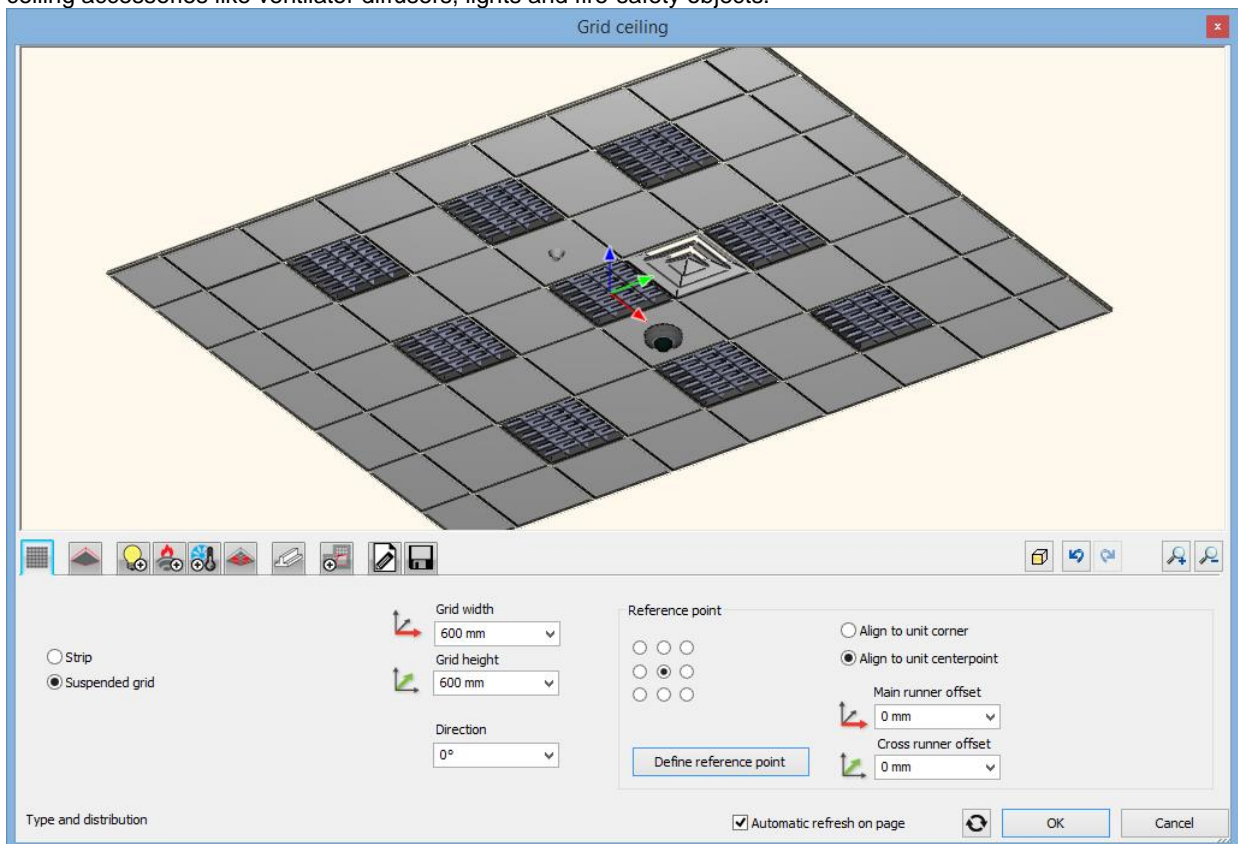
Ceilings have two main types:

1. Plain ceilings (such as plasterboard) and
2. Grid ceilings (such as a suspended grid system).



### 10.7.1. Grid Ceiling properties

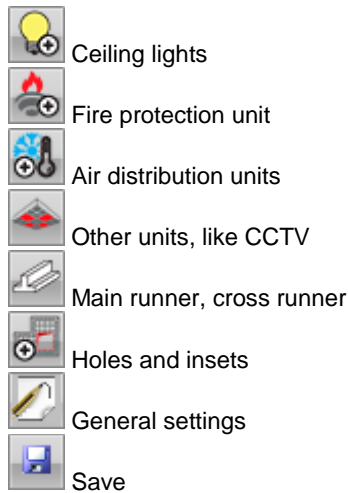
The parametric ceiling editor allows you to parametrically control the Ceiling object, set the grid, along with additional ceiling accessories like ventilator diffusers, lights and fire-safety objects.



Type and distribution – You can specify the main geometrical parameters like grid size, direction, alignment, etc.

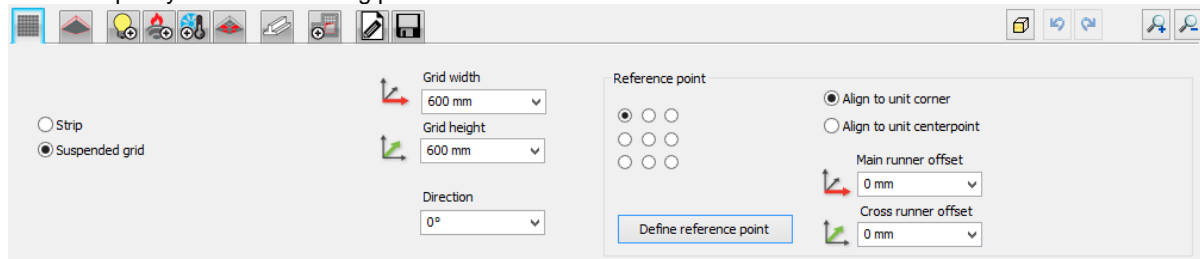


Default units of the ceiling



### 10.7.1.1. Type and distribution

You can specify the default ceiling parameters here.



#### **Strip or suspended grid ceiling**

You can define the ceiling structure as strip or suspended grid ceiling.

#### **Grid width**

You can specify the grid width.

#### **Grid height**

You can specify the grid height.

#### **Direction**

You can specify the grid main direction.

#### **Reference point**

The eligible reference points are shown by small circles in the dialog that can be activated by clicking. The active reference point is black while the others are white.

#### **Alignment to unit corner**

The alignment is calculated relative to a selected cornerpoint.

#### **Alignment to unit centerpoint**

The alignment is calculated relative to the ceiling centerpoint. Proper alignment helps you to achieve professional-looking result by balancing the borders around the edges of the room.

#### **Main runner offset**

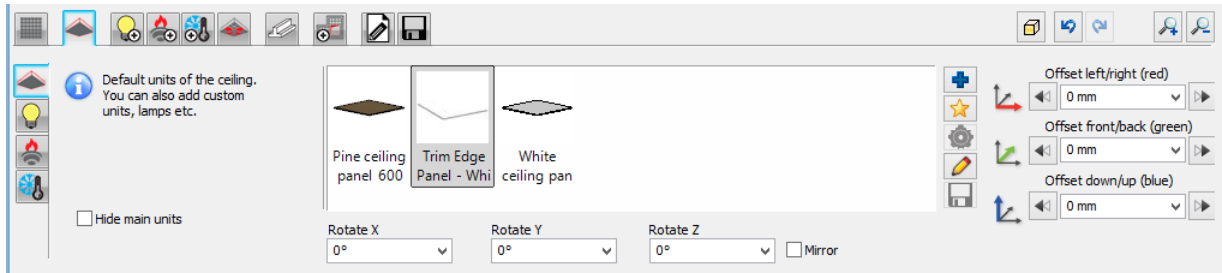
You can specify the main runner offset relative to the reference point.

#### **Cross runner offset**

You can specify the cross runner offset relative to the reference point.

### 10.7.1.2. Default units for ceiling

You can specify the default units for each component here.



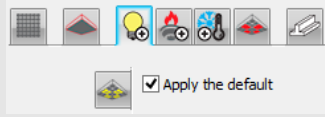
**Default units**

You can specify here the default unit for each component that will apply in the entire ceiling.

Select the proper object from the predefined ones or choose a new one from the Design Centre.



In general the default unit means that whenever a different objects for that setting is not specified at local scope, the



default unit will be applied.



**Lighting**

You can specify the default built in lamp unit.



**Fire protection**

You can specify the default fire protection unit.



**Air Distribution**

You can specify the default air distribution unit.

**10.7.1.3. Unit distribution**

You can specify the distribution rules independently for the following four units:



Ceiling light units



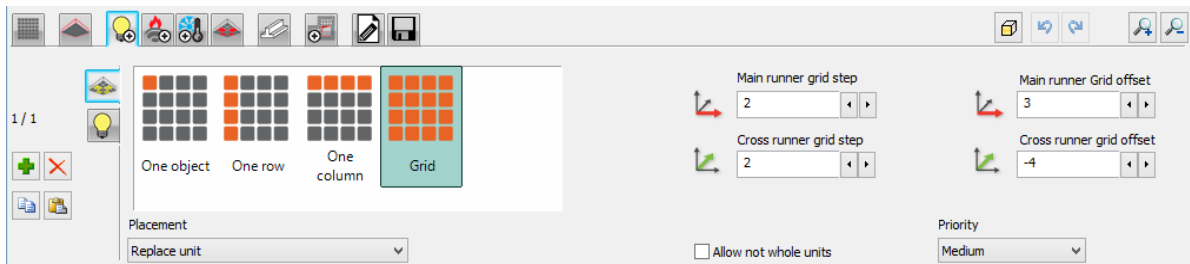
Fire protection unit



Air distribution units



Other units



**Layouts**

You can choose among the following layouts:

- ❖ **One object** - Only one object is placed – example: fire protection unit.
- ❖ **One row** - The objects are placed in a row.
- ❖ **One column** - The objects are placed in a column.
- ❖ **Grid** - The objects are placed in a grid structure.





### **Main runner grid step**

You can specify the Main runner grid step here.



### **Cross runner grid step**

You can specify the Cross runner grid step here.



### **Main runner offset**

You can specify the Main runner offset here.



### **Cross runner offset**

You can specify the Cross runner offset here.

## **Priority**

Criteria for priorities. When coincidence case occurs, the priority should be used to define the rules governing the situation, e.g if you place two units on the same position the program displays the unit with higher priority.

## **Hide panel units**

You can define a beam ceiling when you switch on the Hide panel units option.



## **Allow not whole units**

The distribution rules may occur units along the border which are greater than the space available. When this checkbox is on the distribution cuts these units. When this option is off the distribution will place the whole units only.

It is recommended to switch on this checkbox mainly for lighting or air distribution units to prevent the design of unreal layout.

### **10.7.1.4. Unit**

You can specify the object you will place using the Layout rule.



## **Apply the default**

You can overwrite the default unit with a local selection when you switch this checkbox off.

## **10.7.2. Main and cross runner**

You can specify on this panel the main runner, cross runner and perimeter wall angle units, extension, offset distances and rotation values.

### **Main runner**

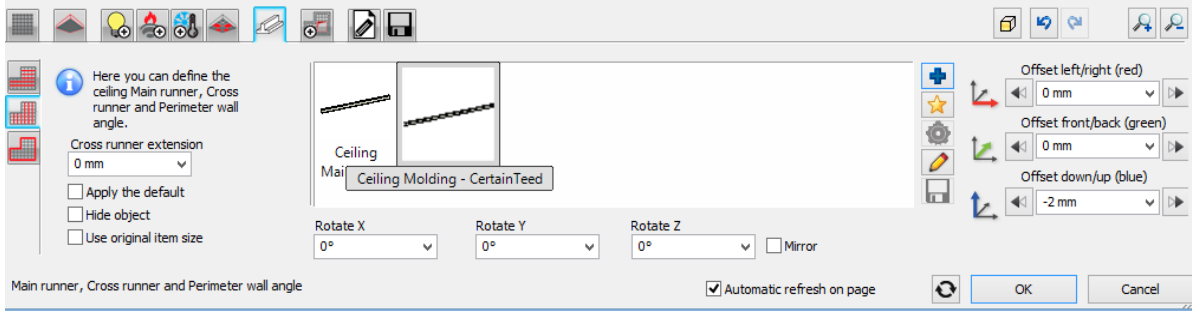
Main runner can be defined by two methods:

1. Select existing main runner object from the Favourites.
2. Click on the blue plus icon. Select the new main runner object in the upcoming DC dialog. Press Ok to return. The selected profile will be inserted into the Favourites List.



**Cross runner**

Cross runners can be defined in the same way as main runners.



**Perimeter wall angle unit**

Perimeter wall angle can be defined in the same way as main runners.

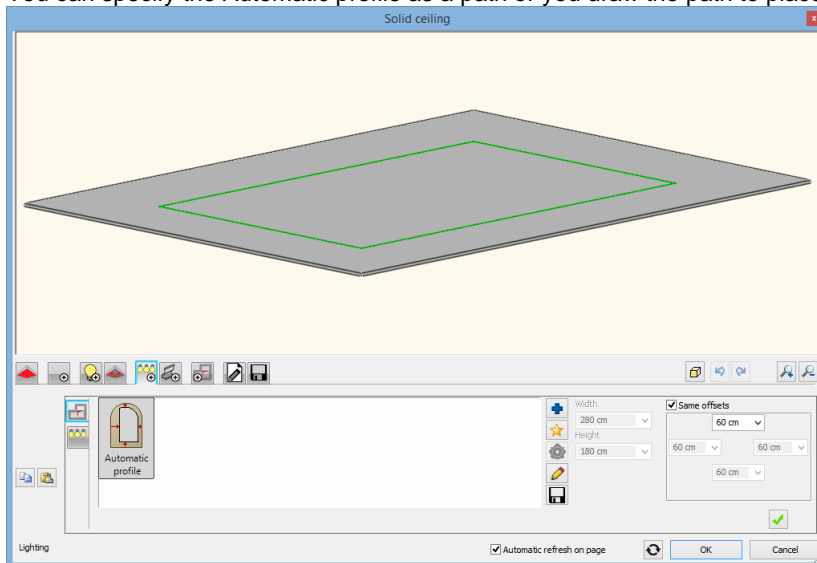


**10.7.3. Lighting on Plain ceiling**

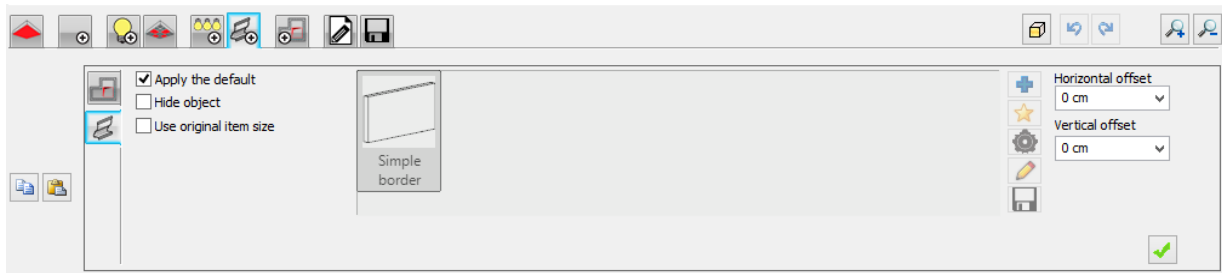
Lighting on Plain ceiling allows you to distribute lamps on the ceiling

**Lighting path**

You can specify the Automatic profile as a path or you draw the path to place the lamps along it.



### Element on Moulding path








### Moulding path



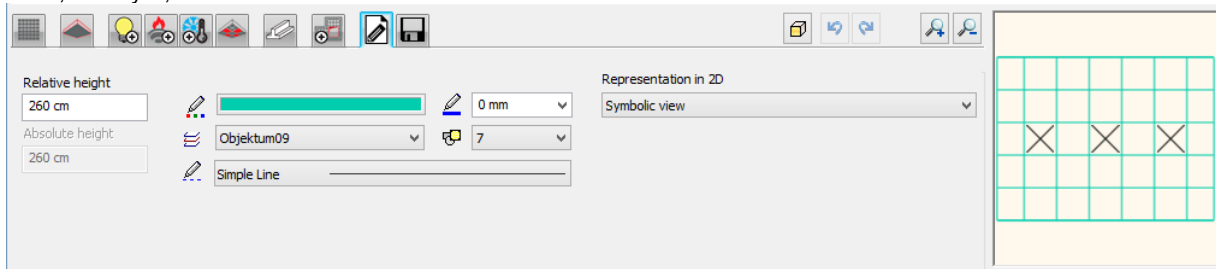
### 10.7.4. Holes and insets



You can select profiles from the favorites or from the existing profile libraries (  ). You can create (  ) custom profile or edit (  ) the currently used profile. Custom profiles can be saved (  ) into the profile libraries. The orientation of a pre-defined profile can be modified (  ).

### 10.7.5. General settings

You can specify the general properties of the ceiling, for example relative height, the 2D representation properties, the color, the layer, etc.



#### Relative height

You can specify the **relative height** of the ceiling from the floor level.

#### Absolute height

Elevation including the floor level. This field is not editable.

#### General properties

You can specify the general properties of the ceiling, like colour, line width, layer, line type, priority.

#### Representation in 2D

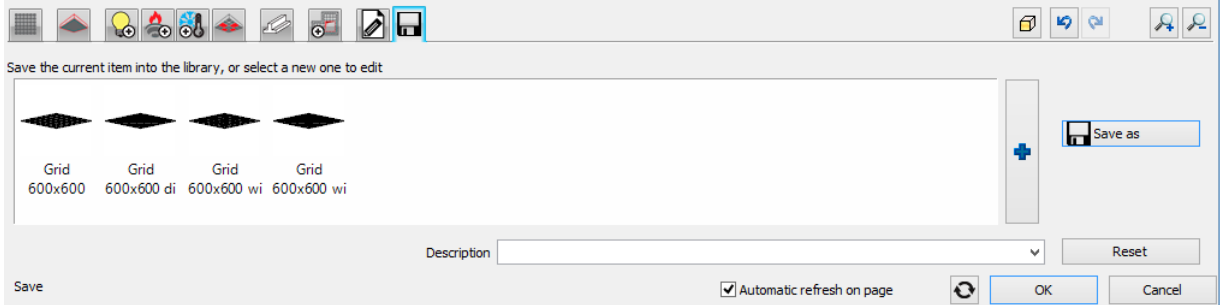
You can specify the 2D representation properties.

There are four modes of representation in 2D:

- ❖ Top view – shows the ceiling in hidden line removal mode,
- ❖ Symbolic – shows the ceiling in hidden line removal mode together with the 2D symbol on the place of lamps,
- ❖ Top view – shows the top view.

### 10.7.6. Save

You can save the created or modified ceiling into the Design Centre by using *Save* or *Save as* option. Here you can load those ceilings which are already exist and modify them as well.




### 10.7.7. Create ceiling

You can create ceiling in a various way related to a room, a free polygon shape and for all rooms in one step

#### 10.7.7.1. Grid Auto Ceiling


If the room is bounded by walls use the Grid Auto Ceiling command to place a ceiling.

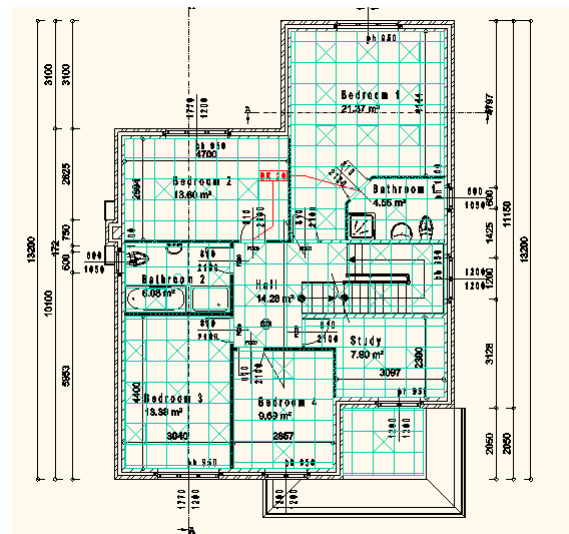
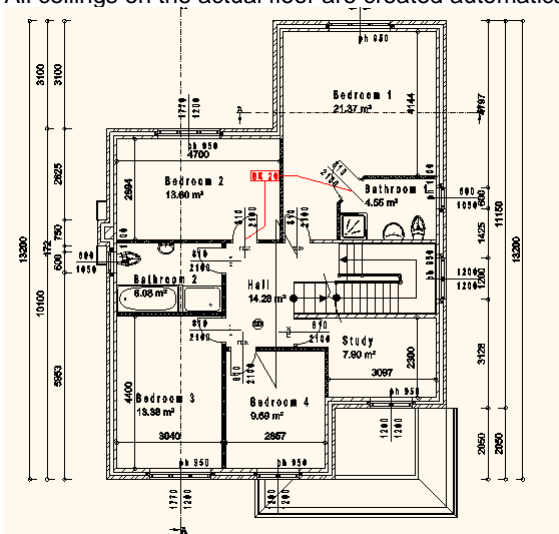
- Select the  Grid Auto Ceiling command.
- Click inside the room bounded by single walls, The ceiling is created.

 You can also set the ceiling properties before the placement. Click on Ceiling tool with the right button of the mouse, or use the *Building menu - Properties – Grid Ceiling or Plain Ceiling* command.

#### 10.7.7.2. Grid Auto Ceiling in all rooms

By this command you can quickly create ceilings for all rooms in one step on the actual floor.


- Select the  Grid Auto Ceiling command. All ceilings on the actual floor are created automatically.



#### 10.7.7.3. Grid ceiling by polygon

Using the command the ceiling is created by the user defined polygon.

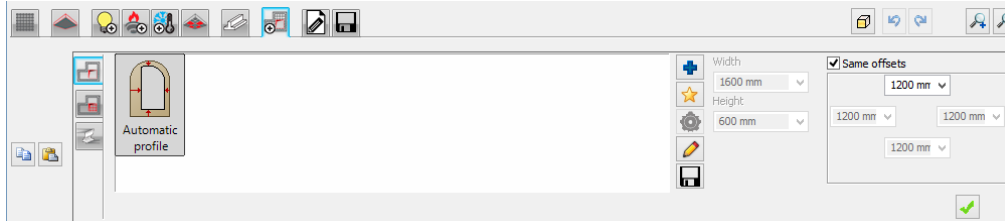
You can modify its boundary and the ceiling calculation follows the modifications.

- Select the  Grid ceiling by polygon command.
- Define a closed polygon.
- The ceiling is created.

! This command does not consider the surrounding walls only a right prism with a polygon base will be created.

#### 10.7.7.4. Profilok kezelése és szerkesztése

##### Automatic profile



Automatic profile is created by shifting the sides of the original profile with the offset values of the 4 sides, together or separately.

##### Same offsets

If enabled, you can define the offset values of the 4 sides together.

##### Use offsets for left/right/top/bottom side

If "Same offsets" is off, you can specify the offset values separately. In case of complex geometries, the offset is interpreted as the distance between the bounding boxes of the panel and the inset.

##### Edit Profile

You can edit the profile with  Edit profile command.  
At this point you can edit the profile on the floor plan (in top view).

You have to place the profile on the drawing and edit it with clicking on the curves or corner points. When you finish the profile definition press ENTER and the dialog comes back again displaying the ceiling with the new profile. See on the picture below.



See the description of the *Edit Profile tool* in Chapter 8.2.9 *Editable profile*.

##### Profil átméretezés

You can resize the profile width and height values here.

## 10.7.8. Multiple lamps

### *Design the lighting with groups of lamps*

Multiple lamps command allows you to plan lamps on the ceiling, or running front of the cornice, or build recessed lighting with profiled mouldings, or with false ceiling.



With the Multiple lamps command you can quickly create variations of lighting with the changes of

- ❖ location of the luminaires,
- ❖ the number of light sources,
- ❖ the host wall or ceiling's profiles, shape, colour, texture.

### 10.7.8.1. Place multiple lamps

**Multiple lamps** command allows you to plan lamps on the ceiling, or running front of the cornice, or build recessed lighting with profiled mouldings, or with false ceiling.

You can find this command in

You can find this command in *Interior menu / Lighting* or in the *Interior menu of Toolbox / Lighting*.

Draw an open or closed chain along which the lamps will take place. You can use the appearing commands to draw the chain. By clicking on the right mouse button you can reach the **Profile definitions** commands. When entering a closed chain lights can be created within the enclosed area.

After drawing the chain the *Lighting* dialog box shows up. Here you can specify the final allocation of lights.

In the *Lighting* dialog box you can follow up the changes on top in the 3D and in the 2D preview in the right side of the window. Use the tab buttons (left side in the middle) to change between pages with various operations.



#### **Lamp selection**

Select the lamp what you would like to use. If you would like to search for another lamp or modify the properties of the object use the buttons on the right side. Use the *Mirror* option if you would like to mirror the object.

It is possible to rotate objects around the X/Y/Z axes or move them along the X/Y/Z axes.



#### **Profile**

You can specify the properties of the profile on the path and false ceiling in this tab with the use of three buttons on the left side of the window.



On the **Section Profile** tab you can add the profile section of a solid which you would like to create on the path. Using the buttons next to the selection of profiles you can choose another profile from the library or define a new one with profile editor commands. The width and height values of the predefined profiles are flexible, you can edit them and save the changes. Switch off the *Show profile on the path* option if you don't want a profile along the drawn shape. If the *False ceiling* option is on and you define a closed chain as a profile, a false ceiling will be created in the enclosed area. To specify thickness of the false ceiling, enter a value into *Thickness*.



The program cuts the solid or false ceiling around the lamps. It is possible to specify these holes with a profile. This command (with the chosen profile) creates the hole from the bottom to the top of the lamp. Using the buttons next to the selection of profiles you can choose another profile from the library or define a new one with profile editor commands. The width and height values of the predefined profiles are flexible, you can edit them and save the changes. Switch off the *Make holes in false ceiling* option if you don't want holes around the lamps.



On the **Material** tab you can specify the material of the created swept solid.



### Distribution mode

On this tab you can specify the distribution of the lamps along the path. If you placed the group of lamps along a closed path, you can distribute the lamps in the enclosed area.



You can define on this **along path** tab the distribution of the lamps along the path and on nodes and endpoints. You can allow the lamps along the path with the *Lamps enabled on path* option and choose between the *Full path* or *Each path one by one* distribution. According to this you can enter the *Number of items*, *Distance*, *First and Last value* (because it depends on placement options). Fix these values with the padlock buttons next to them or the program calculates automatically them.

Specific parameters:

Number of items – the number of placed lamps

Distance – the distance between the lamps

First – the distance of the first lamp from the starting point

Last – the distance of the last lamp from the endpoint

Use the *Lamps enabled on nodes* option to place lamps on nodes of the path.



On this **Area** tab you can define the matrix distribution of the lamps in the enclosed area by the path if the *Lamps enabled on area* option is on. This tab is disabled in case of open chain. The details of the distribution and the placing options are similar to the distribution in along path tab but the values of rows and columns of matrix can be specified separately in the left/ right side if the *same as horizontal* option is switched off. It is possible to enter the rotation angle of the matrix as well.



### General settings

You can specify the general properties of the group of lamps, for example relative height, the 2D representation properties, the colour, the layer, etc.

There are four modes of representation in 2D:

- ❖ Top view – shows the false ceiling and the lamps in hidden line removal mode,
- ❖ Symbol – shows only the selected 2D symbol on the place of lamps,
- ❖ Top view with profile – shows the top view and the profile of the path,
- ❖ Symbol with profile – shows the symbol and the profile of the path.



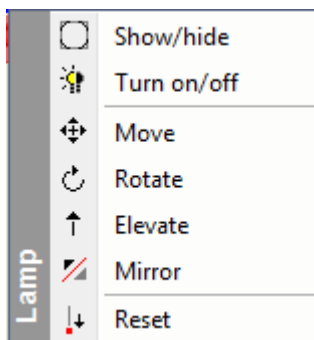
### Save

You can save the created or modified group of lamps into the Design Centre by using *Save* or *Save as* option. Here you can load those group of lamps which are already exist and modify them as well.

## 10.7.8.2. Modify some lamps in the group

You have the possibility to modify the items of group of lamps one by one in 2D and 3D View as well.

- Press Alt on the keyboard and click with the mouse in the same time on the group of lamps. The items of the groups become visible and the (open or closed) path.
- It is possible to show or hide lamps, turn on or off the lights, move, rotate, elevate and mirror by clicking on the markers of the items of the group.
- Choose *Reset* to delete these modifications.
- You can delete all of the individual modifications by clicking on *Reset custom lamps* in the local menu of the group.



The **Elevate** is enabled only in 3D View.



The specific changes or a part of them may be lost if your modification of group of lamps in *Lighting* dialog box affects the distribution of lamps as well.

### 10.7.8.3. Modify the light source of the Multiple lamps

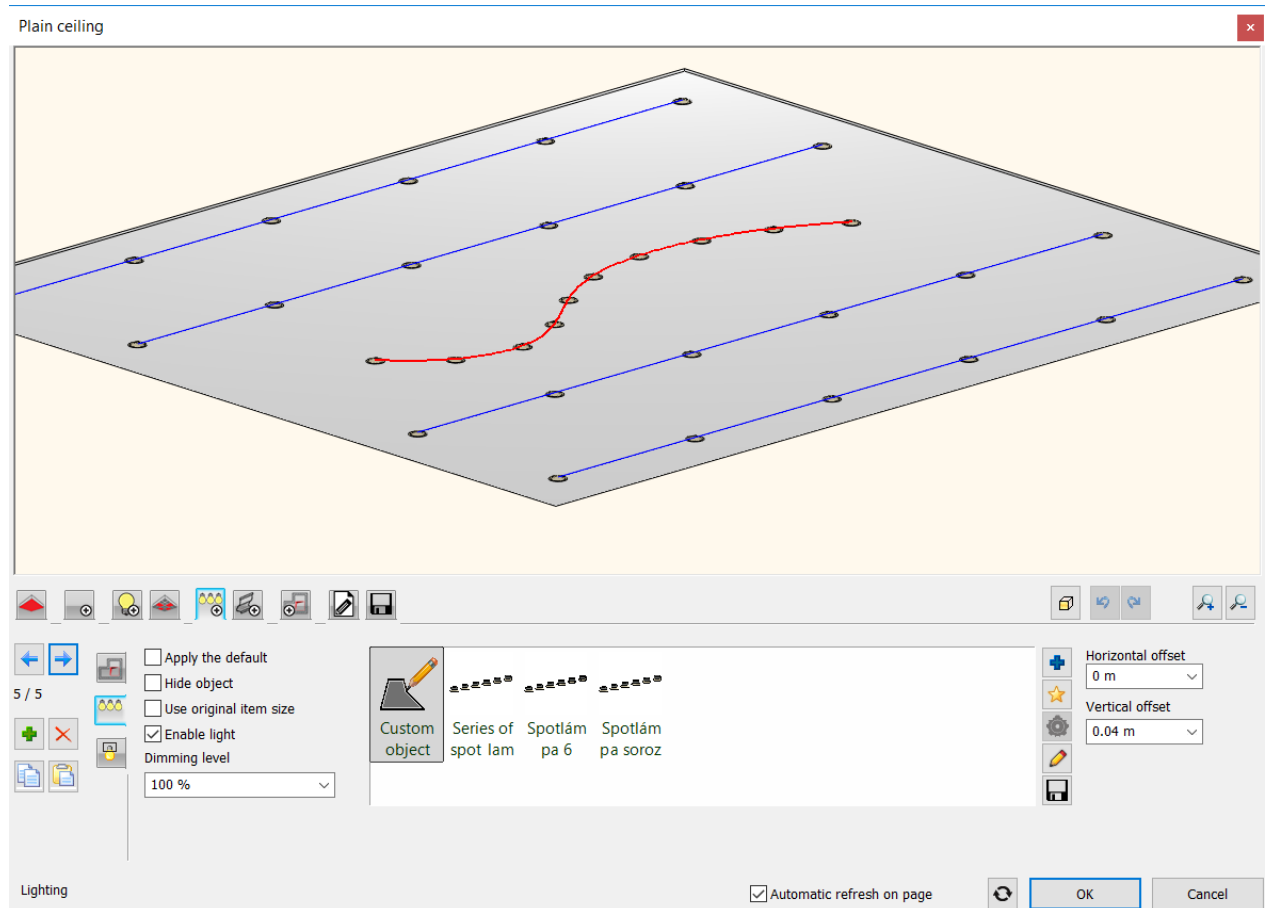
The group of lamps uses only one kind of lamp and light sources of these lamps have the same settings. So one lamp represents the whole group.

How to reach the light source settings?

- Select the group of lamps.
- Click on *light sources* button in the **Properties** tab. The light source properties of the selected group shows up.
- The method of set light source properties is the same as in case of custom lamps.

### 10.7.8.4. Recessed spot lamps

You can recess spot lamps into the false ceiling and cut the ceiling around them. This feature can be set on the properties dialog of the false ceiling. A profile can be selected based on which the program creates the hole in the ceiling. The lamp groups can be turned on and off together and their brightness can be set as one.





## 10.8. Room and area

### Introduction

The room collects general information about the closed areas in the building.

Room has a closed boundary of room bounding elements, which can be walls or room contour lines. The room bounding elements are used to make rooms and compute area, volume and other detailed information.

You can specify the floor finish and the wall finish for each room.

Inside a room it is possible to define detailed facing materials for walls, ceilings and floors along with the connected material and labour costs. Layers with negligible thickness but high costs like scouring or smoothing can be also defined.

With a help of *Room* the program automatically recognizes the inner border surfaces of a room and matches the defined covering layers of walls, ceilings and floors to the room dimensions. All these can be represented in 3D so the internal surfaces of various rooms will get realistic facing materials, which have special importance in interior architecture.

*Room* functionality includes predefined room templates. Room templates make available to change or give the same internal covering layers to similar rooms. In room templates even user defined settings can be saved. *Room* follows the modifications made on the project.

Detailed cost estimations can be created on the covering layers and rooms.

	A	B	C	D	E	F	G	H
1	Name	Total	Side	Ceiling	Parquet	Pedestal	Price	Cost
2			m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>	m		
3	Plaster	167,04	167,04				0,60 €	100,22 €
4	Inner finishing plaster	232,24	167,04	65,2			0,10 €	23,22 €
5	Knot	217,06	167,04	50,02			0,10 €	21,71 €
6	Disperzit	57,93	40,88	17,06			1,40 €	81,10 €
7	Hera	34,58	34,58				1,20 €	41,50 €
8	Wallpaper	30,94	30,94				4,00 €	123,76 €
9	Mosaic tiles	22,56	22,56				5,00 €	112,80 €
10	Textile wallpaper	54,72	38,08	16,64			4,30 €	235,30 €
11	Skirting D1	0,37				0,37	0,30 €	0,11 €
12	Skirting	0,92				0,92	0,25 €	0,23 €
13	Fitted carpet skirting	1,16				1,16	0,43 €	0,50 €
14	Ceiling plasterwork	50,02		50,02			0,60 €	30,01 €
15	Internal painting	10,52		10,52			1,60 €	16,83 €
16	Air / Frame	15,18		15,18			0,00 €	0,00 €
17	RIGIPS plasterboard suspended	15,18		15,18			9,00 €	136,62 €
18	Wash proof painting	5,8		5,8			3,30 €	19,14 €
19	AUSTROTHERM AT-N100	65,2			65,2		6,00 €	391,20 €
20	Upper concrete	65,2			65,2		2,00 €	130,40 €
21	Parquet O2	17,06			17,06		5,60 €	95,54 €
22	Cement mortar pillow	16,32			16,32		0,80 €	13,06 €
23	Granite floor tile	10,52			10,52		6,00 €	63,12 €
24	Carpet floor O3	31,82			31,82		5,60 €	178,19 €
25	Marble floor tile	5,8			5,8		14,00 €	81,20 €
26								1 895,76 €

### Norms

It is very important to ensure that the format and data of room stamps satisfy the requirements of various norms. In addition to the difference between various norm requirements architects have to cope with a lot of calculations that would be time consuming with the use of conventional methods. With a help of *Room* these calculations are made automatically which improves the architects' work efficiency a lot. With certain limitations it is also possible to alter from the standard formats, which gives more flexibility to the user.

### Bordering surfaces

*Room* is not only for creating standard room stamps which include the area, volume and other geometry parameters information but makes available the determination of real covering materials on side walls, slabs (on floors and ceilings) and roofs on the border surfaces inside a room. This means that all the inner covering information about bearing and partitioning walls, slabs (floors and ceilings) and roofs can be provided for a room, including plasters, coating materials, footings etc. The coverings of border surfaces of a room will determine 3D representation of a room inside. Additionally, basic data are provided for various cost estimations. These border surfaces may consist of more covering layers so the modelling of different work phases is also possible. This way *Room* will tell the information if the wall is wallpapered, painted or tiled, or if the floor is covered by carpet or parquet.

*Room* makes difference between 4 basic surfaces inside a volume:

- ❖ sidewalls,
- ❖ footing,
- ❖ floor,
- ❖ ceiling.

## Cost estimation

Since *Room* includes geometry information (area, perimeter, volume etc.), materials and properties (thickness, layers, costs etc.) of the inside coverings (floor, wall, ceiling, footing), it makes cost estimations available. These estimations may include both material and labour costs. Lists can be created about the calculations in a required Excel format.

Room is a complex object including a lot of data. Its properties can be specified in **Room wizard** dialog. The data are categorized and the left side gives information about the required inputs. At the bottom left of the dialog there is a preview of the actual Room that is being prepared.

## Room types

The Room has two types:

### Room inside a wall

If the room is bounded by walls use the *Room inside a wall* command. Clicking inside the area bounded by walls the Room is created. The Room is associated to the walls. This means the Room follows the modification of the walls automatically or after the refreshing.

### Room inside a free polygon

We suggest you to use *Room inside a free polygon* command if the rooms haven't got side walls, e.g.: balconies or rooms that have different functionalities but are not separated by walls or other border surfaces.

In this case the Room is created by the user defined polygon.

You can modify its boundary and the Room calculation follows the modifications. Of course this type of the Room is not associated to the walls, therefore does not follow the wall modifications.

The Room tooltip signs the type of the Room.

## 10.8.1. Room inside a wall and Room wizard

If the room is bounded by walls use the *Room inside a wall* command.

Clicking inside the area bounded by walls the Room is created. The Room is associated to the walls. This means the Room follows the modification of the walls automatically or after the refreshing.

- Select the Room tool - Room inside a wall command with the left button of the mouse.
- Click inside the room bounded by single walls, The **Room wizard** dialog appears. This is the place where you can define the data you would like to visualize on the room stamp.

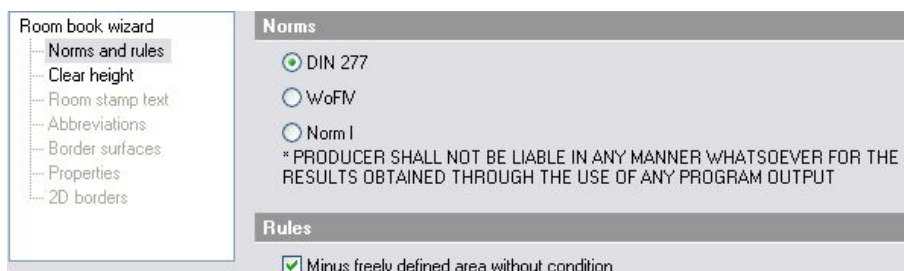


You can also set the Room properties before the placement. Click **Room** tool with the right button of the mouse, or use the *Building menu - Properties - Room* command.

First we describe how the **Room wizard** works in general, independently from the geometrical parameter inputs. It will help us in the area calculations of rooms defined by free polygon contours, too.

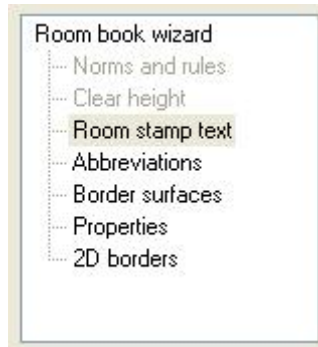
When you place a Room you have to give the settings in the sub dialogs that can be found on the left side of the main dialog. The order of definition is arbitrary; it depends only on the optional area definitions you would like to take into consideration. These options can be found in the *Norms and rules* dialog. This is the place where other graphical information is needed from the drawing. (E.g.: freely defined areas have to be added or the transparent doors are also considered, etc.) In these cases you must enter the data of **Room wizard** in more steps.

- First fill in the data of **Norms and rules** and **Clear height** sub-dialogs. If you select at least one option among the optional rules to which you have to define an input, the other dialogs (*Room stamp text*, *Abbreviations*, *Border surfaces*, *Properties*) become gray until you give all input necessary for applying the rules. Gray dialogs will be unavailable (see the gray colour text below because of the **Minus freely defined area without condition** option).



- Click Ok to leave the dialog temporarily and give the necessary information from the drawing (in our example you have to define a freely defined area that should be subtracted from the room area).

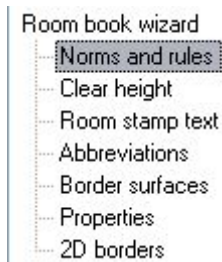
- After giving the necessary optional inputs the **Room wizard** appears again and you can go on defining the Room in the *Room stamp text*, *Abbreviations*, *Border surfaces*, *Properties* and *2D borders* sub-dialogs in an arbitrary order. When you get back after the inputs have been defined, the *Norms and rules* and the *Clear height* sub-dialogs are going to be gray.



- **OK** Close the Room wizard.
- Insert the Room on the plan.
- Insert also the flat name if the Flat option is switched on in the Room stamp text dialog.

The Room tooltip signs the type of the Room:  
*Room inside a wall*

### 10.8.1.1. Norms and rules



Click *Norms and rules* to specify the norms and rules that have to be considered for creating a room stamp.

#### Norms

Three norms are available:

- ❖ **DIN 277**
- ❖ **WoFIV** (Wohnungsfläche Verordnung)
- ❖ **Norm I**

In each norm (depending on the norm) you can specify rules that should be considered in Room calculations. The norm defines which parameters have to be considered to create the area calculations. We are not going into details concerning the norms here. Based on the selected norm optional areas can be considered when the room stamp is calculated. These are as follows:

#### **DIN 277 auxiliary rules**

##### **Minus freely defined area without condition**

With this option you can specify areas that should be subtracted in room area calculation.

##### **Plus freely defined area without condition**

With this option the user-specified areas should be added to the room area calculation.

##### **If the stair has more than three steps**

For stairs with more than three steps you can specify if the stair area that goes below 2 m or the whole stair area should be subtracted in room area calculation.



At Din 277 auxiliary rule you don't have to consider the area under the door in calculation.

#### **WoFIV auxiliary rules**

##### **Minus freely defined area without condition**

With this option you can specify areas that should be subtracted in room area calculation.

##### **Plus freely defined area without condition**

With this option the user-specified areas should be added to the room area calculation.

##### **If the stair has more than three steps**

For stairs with more than three steps you can specify if the stair area that goes below 2 m or the whole stair area should be subtracted in room area calculation.

**Include area under doors**

With this option room area under doors should be also considered, too.

**Norm I auxiliary rules****Minus freely defined area without condition**

With this option you can specify areas that should be subtracted in room area calculation.

**Plus freely defined area without condition**

With this option the user-specified areas should be added to the room area calculation.

**Minus stair area under height**

It doesn't consider the stair area under height. You can determine this with the value on the right side. This rule considers all stairs inside the room.

**Plus niche area if >**

With this option niche areas will be added in the room area calculation if the recess of the niche is bigger than the value given in the input field.



This rule applied to such niches that have been created by **objects** using *Insert into wall* and *Make only hole in the wall* options.

**Transparent doors**

This option has importance in transparent area calculation. If you check this option the program will ask you to select doors with transparent parts (doors with windows).

**Minus columns area if >**

With this option only column area bigger than the value given in the input field will be calculated in the room area.

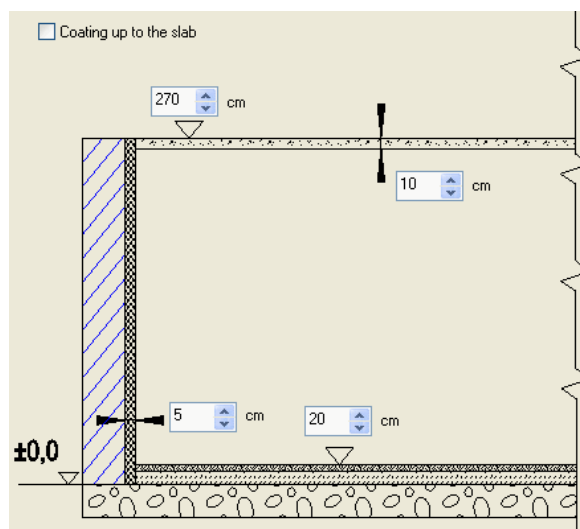
**Norm I other options****Automatic search for columns**

With this option all columns inside the room will be identified automatically and their areas will be considered in room area calculations according to the other settings. (Otherwise you have to select each column you would like to include in room area calculations manually.)

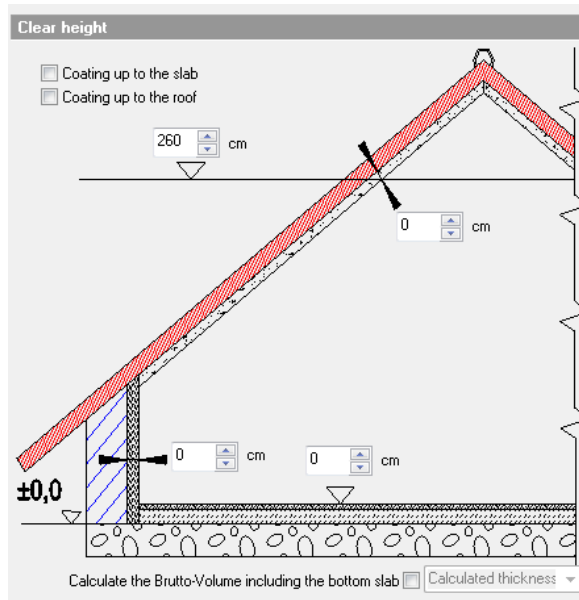
**10.8.1.2. Clear height**

The usage of the *Clear height* dialog depends on what you want to specify within the room. You can either define the inner wainscotings in details, using the border surfaces or simply the total thickness of wainscotings should be defined. In the last case switch on the *Disable room border surface templates* option in the *Border surfaces* dialog.

However, you can use the *Clear height* dialog to define the total thickness of wainscotings. This wainscoting thickness will be taken into consideration in the area and volume calculations.



In case of building in attic the following figure appears in the dialog:



By turning on the *Disable room border surface templates* option the input fields for wainscoting thickness appear. These wainscotings will not appear in 3D representation but the thickness values will be taken into consideration in the area and volume calculations according to the selected norm. In this case 3 thickness parameters can be defined:

- ❖ Thickness of the wainscoting of the floor (in the example above it is 20 cm).
- ❖ Thickness of the wainscoting of the wall (in the example above it is 5 cm).
- ❖ Thickness of the wainscoting of the ceiling (in the example above it is 10 cm).

By turning off the *Disable room border surface templates* option the 3D model representation includes the wainscoting layers according to the settings made in the *Border surfaces* dialog. The wainscoting layer thickness will be taken into consideration in the area and volume calculations.



It is a general rule that surfaces under the level of Room height will be covered by the wainscotings.

### Room height

Room height means the height of the room without wainscotings and this is the basis of the clear height calculation. The room height can be defined one of the followings:

- ❖ an input value,
- other room bordering architecture objects:
  - ❖ the bottom face of slab,
  - ❖ the highest point of the roof inside.

### Input value

Room height means the height where the wainscoting of the ceiling starts from downwards (in the example above it is 270 cm). (This way suspended ceilings can be created.) In case of building in the attic the top plane of the ceiling will be placed on this height. Above that height the roof will not be covered inside.

### Coating up to the slab

The room height will be defined by the bottom face of the slab above the room. The requested wainscotings start from this height and go downward.

### Coating up to the roof

In this case the room height will be defined by the highest point of the roof inside. This means that the whole roof will be covered inside.

### 10.8.1.3. Room stamp text



Click *Room stamp text* to specify the room stamp data you want to place on the 2D drawing.

Depending on the norms you can check the following data:

#### DIN 277 norms

##### Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one. (The list is loaded on the basis of DIN277.\* file of the *Support* directory.)
- ❖ *Room code*. Select a standard code from the roll down list.
- ❖ *Flat*. You can decide to which flat the room should belong, and whether to place the flat name in the room stamp or not.
- ❖ *Undercutting type*. Select a standard type from the four different types of the combo box.

##### Room parameters

- ❖ *Gross area*. Automatically calculated by the program or specified by the user.
- ❖ *DIN 277 area*. Automatically calculated according to DIN 277 standards or specified by the user. To calculate the net area, the program uses the 1.90 inner height according to the norms
- ❖ *WoFIV area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.

##### Other parameters

- ❖ *Hatch*. The background colour of the room on the 2D drawing can be specified here.
- ❖ *Room number*. Any numbering or text can be specified here.
- ❖ *Floor level*. The floor level can be specified here independently from the values given in the *Clear height* sub dialog.
- ❖ *Slab level*. The slab level can be specified here independently from the values given in the *Clear height* sub dialog.
- ❖ *Floor material*. Select a floor material from the roll down list or specify another one.
- ❖ *Wall material*. Select a wall material from the roll down list or specify another one.
- ❖ *Ceiling material*. Select a slab material from the roll down list or specify another one.

#### WoFIV norms

##### Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one.
- ❖ *Flat*. With this option you can select a name from a roll down list or specify another one. After placing a room stamp you can place this string separately on the 2D drawing.
- ❖ *Room kind*. Select a standard type from the roll down list.

##### Room parameters

- ❖ *Gross area*. Automatically calculated by the program or specified by the user.
- ❖ *DIN 277 area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *WoFIV area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.
- ❖ *Area factor*. Depending on the type of room you may have to apply a factor for the official area calculations. Select a factor from the roll down list. Room areas will be multiplied by the area factor.

##### Other parameters

The same as for DIN 277.

#### Norm I norms

##### Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one.
- ❖ *Room code*. Select a standard code from the roll down list.
- ❖ *Flat*. With this option you can select a name from a roll down list or specify another one. After placing a room stamp you can place this string separately on the 2D drawing.

### Room parameters

- ❖ *A - Net area*. Automatically calculated by the program or specified by the user.
- ❖ *Volume*. Automatically calculated by the program or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too. Calculation results depend from the settings under *Light transmission of openings*.
- ❖ *Ratio (Area)*. The ratio between illumination area and room area.
- ❖ *1/A*. With this option the *Ratio (Area)* is given in 1/A form, where A is an integer.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.

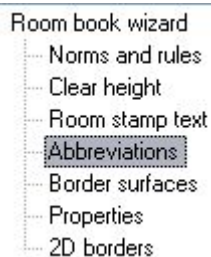
### Other parameters

The same as for DIN 277.

### Illumination area calculation

- ❖ *Openings*. Select an opening to set its light transmission parameters. On the right side the drawing of the selected opening appear in a small window so that it could ease the identification. The first number of the field is an identification that is also a part of the gray header of the Tooltip, and identifies all objects of the drawing.
- ❖ *A - Net area*. Transparent area of the opening calculated by the program according to the subsequent settings.
- ❖ *Under slab*. With this option you can specify a ratio. Net area will be calculated using this multiplier. Generally it is used for openings that are partially hidden from light (for example openings under balcony).
- ❖ *Ratio (Area)*. This is the multiplier the program will use if the *Under slab* option is checked.
- ❖ *Considered part under 60cm*. In case of doors glass surfaces below the height of 60 cm are considered in illumination area calculations.

## 10.8.1.4. Abbreviations

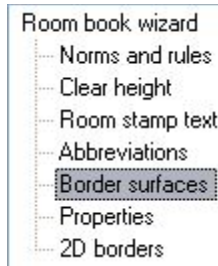


Click *Abbreviations* to specify the abbreviations assigned to the room stamp text data.

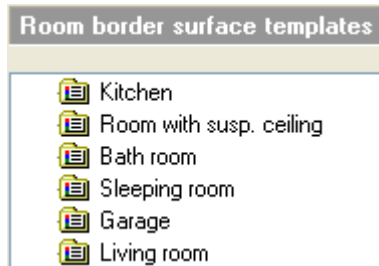
You can specify the abbreviations for each room stamp text data. The abbreviations and room stamp text data will appear together on the room stamp:

Abbreviations	
Gross area	GA: <input type="text"/>
DIN277 area	DIN: <input type="text"/>
WoFIV area	WF: <input type="text"/>
Illumination area	IA: <input type="text"/>
Perimeter	P: <input type="text"/>
Height	H: <input type="text"/>
Floor level	FL: <input type="text"/>
Slab level	SL: <input type="text"/>
Floor finish	FF: <input type="text"/>
Wall finish	WF: <input type="text"/>
Ceiling finish	CF: <input type="text"/>

### 10.8.1.5. Border surfaces



Click *Border surfaces* to specify the finishing (covering materials, work phases) of the room border surfaces.



Here you can specify the covering materials and the connected work phases of room border surfaces. These are real layers with thickness and other properties that can be represented by 3D generation. On the right side you can select from the **room border surface templates** that have already been prepared.

- Switch off the *Disable room border surface templates*, and then the names become active.



These are the templates which can apply covering materials and work phases to the given border surfaces according to the materials of the room border surfaces (wall, slab, roof). It means that when the wall is created we define the material of it (brick wall, glass wall, steel structure, etc), and we create rules within the templates. These rules define the covering materials of the given room border surfaces (floors, walls and ceilings). The program creates these layers automatically based on the settings of the templates. (They can be visualized in 3D and they are also a part of the cost calculation list.) These Room border surface templates can either be modified or new can be created according to your own needs.

Do not forget that the modification of these Room border surface templates modifies all the room stamps of this kind that have already been placed.

E.g.: If you have selected the Flat/WC room border surface type for the toilettes of the building and you change the covering material to a more expensive one in this Flat/WC room border surface type, the covering will be modified in all rooms of the building that uses this room border surface type. The advantage of this function is that these kinds of modifications can be compared to each other; therefore cost calculations can be made quickly.

If there is a type you would like to use, select it from the list. If you cannot find the room border surface template you like, create your own as it is defined below, or modify the existing types, or just have a look at their contents. The usage of the following dialog defined below is offered only for advanced users:

Double clicking on the selected room border surface template the **Conditional material surfaces** dialog appears. On the left side of the dialog you can find the template names in a directory structure, on the right side the conditional material surface settings can be seen:



Wall plane				
				* Walls
Code	Thickness	Description	Factor	Material
WA2-1	0.015 m	Plaster	1	Plaster1
WA3-2	0.01 m	SAN-A 100% Wallpaper	1	Wallpaper2
WA2-13	0 m	Plastering work phase	0	
WA3-22	0 m	Hang wallpaper	0	

Footing, plinth				
				* Any
Code	Width	Description	Base height	Material
WA12	0.1 m	Tile footing	0.01 m	indien_sanc

Ceiling				
				* Any
Code	Thickness	Description	Factor	Material
FU-43	0.025 m	Plasterboard	1	Stucco2

Floor tile				
				* Any
Code	Thickness	Description	Factor	Material
HF1	0 m	Floor heating	0	
Floor-02	0.002 m	Felt Z21	1	Textil-lace
P04	0.025 m	Parquet F03 laminated	1	Wood66

If room border surface materials are known in the rooms, room border surface templates determine the subsequent finishing materials and the connected work phases. The program searches for room border surface materials on the room border: on floor, wall plane and ceiling. Depending on the found material the program assigns subsequent covering (finishing) materials and work phases to each border surface.

The program searches for the room border surfaces first: the floor border surface must be slab, the wall plane border surface must be either wall or column, and ceiling border surface must be slab or roof. After that the finishing (covering materials and work phases) will be created for each border surface depending on the Room wizard - Border surfaces settings.



The files for **room border surface templates** can be found in the installation directory in *Support\AttrsetsEng\Room Templates* folder. These files are in XML format.

Conditional material assignments to the **wall plane**, **footing**, **ceiling** and **floor** can be specified for each selected template on the right side of **Conditional material surfaces** dialog.

### Conditional material surface settings for floors, wall planes, ceilings and footings

Material and work phase assignments to wall planes, ceilings and roofs go the same way.

- First select a material category from the combo box. A '\*' before the category name denotes that some assignment already exists to that category:



Walls	▼
* Any	
Walls	
Wood constructions	
Glasses	
Light constructions	

Each room border surface material belongs to a material category. Depending on the material category of a room border surface you can define the finishing (covering materials, work phases) of the surface in table rows, going inside towards the inner part of the room.



Material assignments to the material categories (except with the category named Any) can be found in the installation directory in *Support\RoombookEng.mc* file. This file has XML format. Material names in the categories refer to the material names found in *.mtr* material description files (by default these *.mtr* files can be found in the installation dir in the *Materials* folder. Click **Edit material categories** to modify these categories. See the details later in this chapter.

If the surface material of a bordering architecture object (wall, slab, column,) is not found in any material category then the Any category will be considered for that surface.

- Click  to assign a new description code to a material category. A description code can be either a covering material or a work phase. Description codes can be selected in the **Select code name** dialog. See the details later in **Handling of description codes**.
- **Code, thickness, description, factor** and **material** fields can be specified in one row. By clicking on the *code* field you will get back to **Select description code** dialog. **Thickness, factor** and **material** fields are freely editable in this dialog. The *Factor* field is a multiplier for the cost calculations. The *Material* field shows the name of the material that is used when this layer is visualized in 3D.
- Click  to delete an existing layer. Select the row first: click in the *thickness, description* or *factor* fields to do so.

### Conditional material surface settings for footings

Conditional material surface settings for footings works similarly to the conditional material surface settings for wall planes, floors and ceilings. The difference is that instead of thickness and factor there are width and base height fields. The value given in base height field determines the bottom height of the footing. The value given in the width field determines the strip width of the footing. This way more decoration strips can be created. Footings are different from the other border surfaces. Footings have no material thickness so they will appear in 3D visualization as decoration stripes.

### Handling of room border surface templates

With the buttons on the bottom-left of the **Conditional material surfaces** dialog room border surface templates can be handled similarly to the sets:

- Click **New** to create new template.



With the example above you can create a Living Room template in the Exclusive Flat directory.

- Click **Delete** to remove a selected template.
- Click **Activate** to make the template active.
- Click **Modify** to save the modifications you made in the active template. The modifications will be saved in your project file. If you open a new project you will not see these modifications.
- Click **Rename** to rename an existing template.
- If you have modified any templates and try to leave the dialog the following message appears:



- Choose **Overwrite the original set** if you want to overwrite the original template. By choosing **The changes will be saved in a new set** you can save the modified template with another name or get back to the dialog.

You can save the created room border surface templates into sets, then the sets to template files. So you can use the new preferences in the new project too.



See 3.2.3. *Using sets of properties* and 4.6. *Managing templates* chapters.

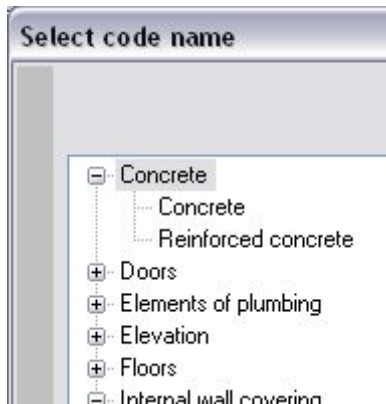


Don't confuse room border surface template with Template file!

### Handling of description codes

In the **Conditional material surfaces** dialog you can assign description codes to material categories. These description codes are handled in a separate file. You can manage these names in **Select code name** dialog. By default the *Support/RoomMatEng.rbm* file that can be found in the installation directory is loaded. However, you can load any other file with *.rbm* extension and similar format by clicking on **Load external code file**.

On the left side you can select the required main group and sub group:



The entries belonging to a sub group can be found on the right side of the dialog. These are codes of covering materials and work phases needed for finishing the room border surfaces that can be assigned to material categories of each border surface and footing. You cannot modify the original entries. New main groups, groups and entries can be created/deleted/renamed right mouse click or double click. An entry consists of code, description, material and price fields. Entries can be modified by double clicking.

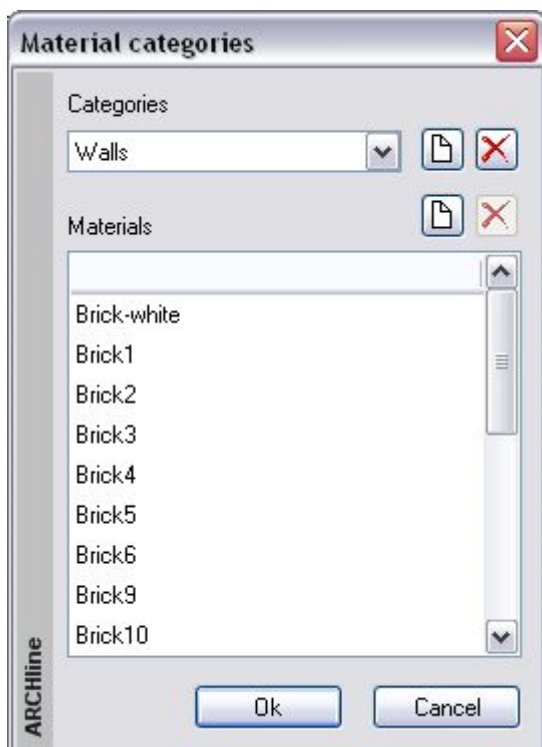
Code	Description	Material (repr)	Price
C 4		Concrete3	0
C 6		Concrete3	0
C 8		Concrete3	0
C 10		Concrete3	0
C 12		Concrete3	0



Click Ok to get back to Conditional material surfaces.

The selected description code will be assigned to the actual material category and room border surface. Click Cancel to close the dialog without any modification.

### Edit material categories

- Click **Edit material categories** in the **Conditional material surfaces** dialog to modify the existing material categories.



- Click  to add a new category or add a new material to the selected category.
- Click  to delete the selected category or delete the selected material from the selected category.
- Select the **Save to global environment** option and Click **Ok** to overwrite the content of your *RoombookEng.mc* file in the *Support* directory of program installation dir. In that case you will see these material categories when you create a new project file. Without this option the changes will be saved only in your project file.

### Embedded wainscotings option

Depending on countries there are different requirements against the modelling of Room wainscotings.

In some countries it is preferred to start from clean walls and cover these walls with wainscotings layers:

In other countries it is preferred to take wainscotings into consideration the as part of the walls:

In that case the wainscotings start from the inner wall surface and go to the outside direction. As a result, wainscotings thickness will not increase the wall thickness in the 3D model. The same is applied on other room bordering objects like slabs, roofs etc.

- In the *File menu - Options - Room* dialog box select **Embedded wainscotings** option if you want to handle wainscotings as part of room bordering architecture objects.

Embedded wainscotings (ON: Inside wall, OFF: inside the room)



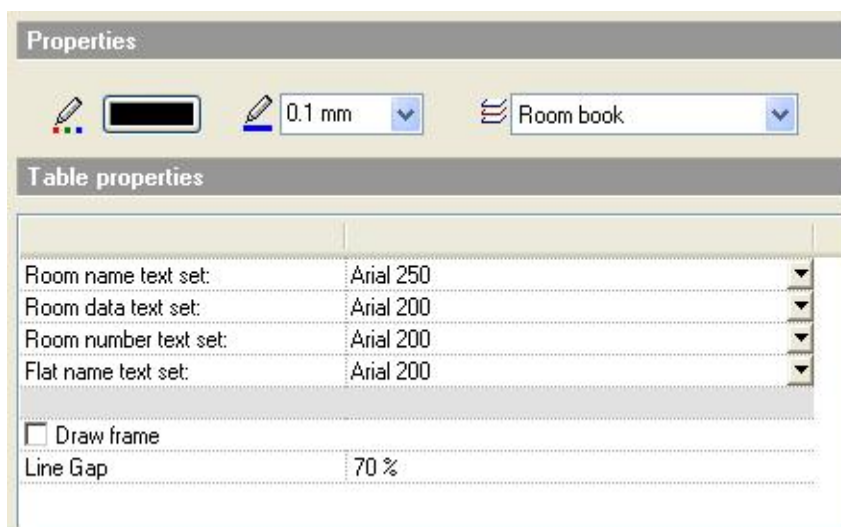
Also, you can create wainscotings for the outer walls by the **Calculate Room outside the building** Room command. However, we do not recommend using this option because of the incorrect wainscotings connections in the wall corners.

### 10.8.1.6. Properties



Click *Properties* to specify the visualization settings of room stamp.

Room stamp data are organized in a table. On the top of the dialog you can specify the borderline type, borderline colour, border line thickness and priority, layer properties.





In the *Room wizard* dialog the table text parameters of room name, room data, room number and flat name can be selected from text sets.

You have to determine the features of text sets in advance in the *Text Properties* dialog box, or you have to create the proper set. So when you give the table properties of the Room, you just have to select the proper text set.

You can also determine the line gap.

With the **Draw frame** option the room stamp text will be bordered.


### Room partitioning properties

On the bottom of the dialog you can switch on the *Room partitioning enabled* option. With this option the room will be partitioned into triangles, rectangles and circle pieces and the program automatically creates the dimensioning (side lengths) of these partitions. It works like  Room tool -  Room partitioning and dimensioning command on the left side. The only difference is that the details of area calculations will not be placed.) If you create room partitioning and the *Room partitioning enabled* option is switched on, you can specify the properties of the partitioning objects: the font type and height of the text used for the length dimensions, line type for the partitioning lines, colour and layer for the text and lines.

**Room partitioning properties**



Room partitioning enabled


Character types

 Arial

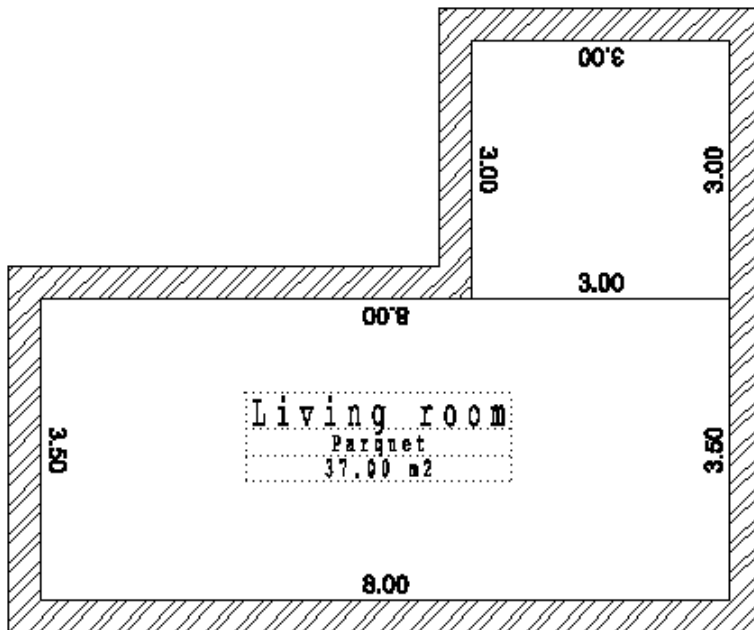
Text margin

96 mm

  A ↑ 200 mm

 CarryOver01

Simple Line





#### 10.8.1.7. 2D borders

Room book wizard

- Norms and rules
- Clear height
- Room stamp text
- Abbreviations
- Border surfaces
- Properties
- 2D borders

**Roombook profile**



Enabled

  0 mm

Simple Line

**Net area**

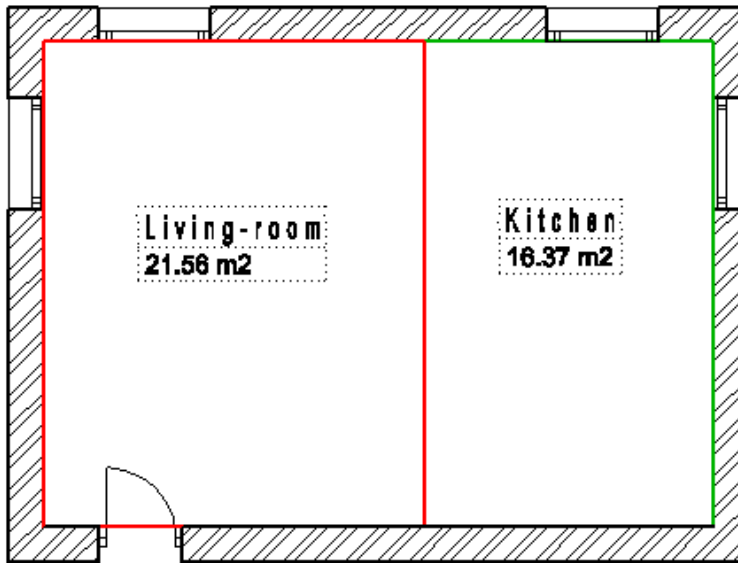
Enabled

  0 mm

Simple Line

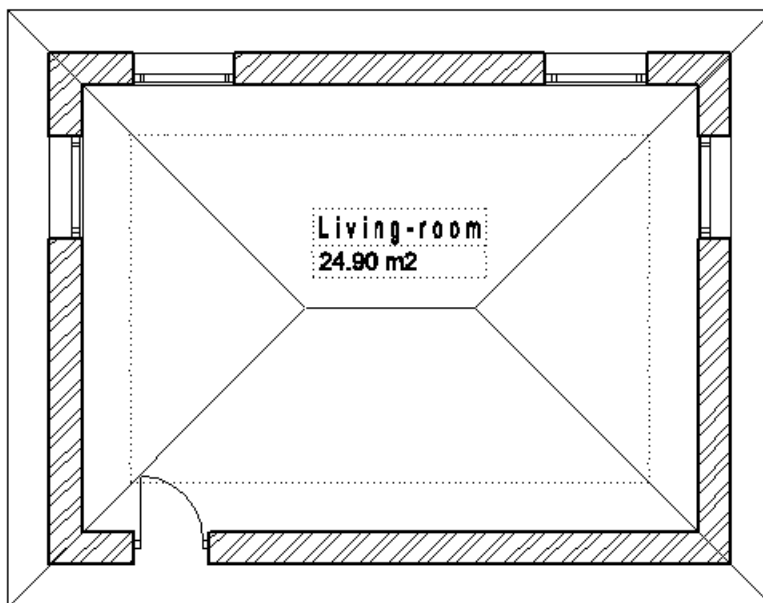
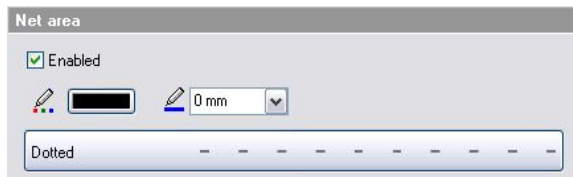
### Room profile

By turning this option on the room stamp will include the room boundary, too. If you created this Room with free polygon, this boundary can be modified. In the following example there are two room stamps with Room profile in one room.



### Representing the net area

Using the options in the *Room wizard* dialogs it is possible to represent the real room boundary and the contour lines of the net area belonging to height of 1.9 m height. Also, the properties of these lines can be set here:  
For example on the floor plan of a building in the attic different line properties can be used for the room boundary and the net area contour.



At calculating of net area the program takes the default 1.9 m, in *File menu - Options - Room dialog box*, for basis.

### 10.8.1.8. Room Custom Stamp

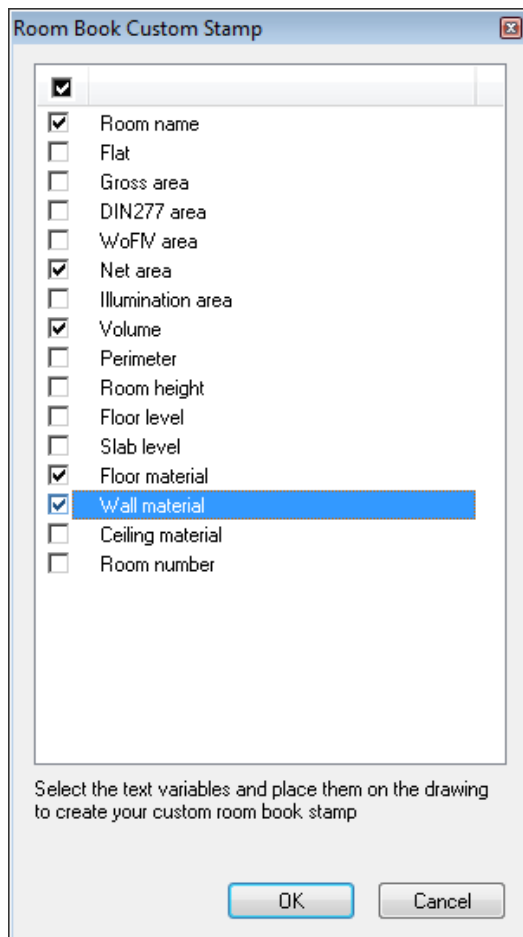
Instead of using the rigid form and look of room stamp defined on **Room stamp text** and **Abbreviations** pages, you can create and use your own style of Room stamp with a better look and free text layout.

#### Creating a new room stamp template

- Create a room stamp on the floor plan using drafting elements like lines, texts and hatches. This will be the skeleton of your customized Room stamp.

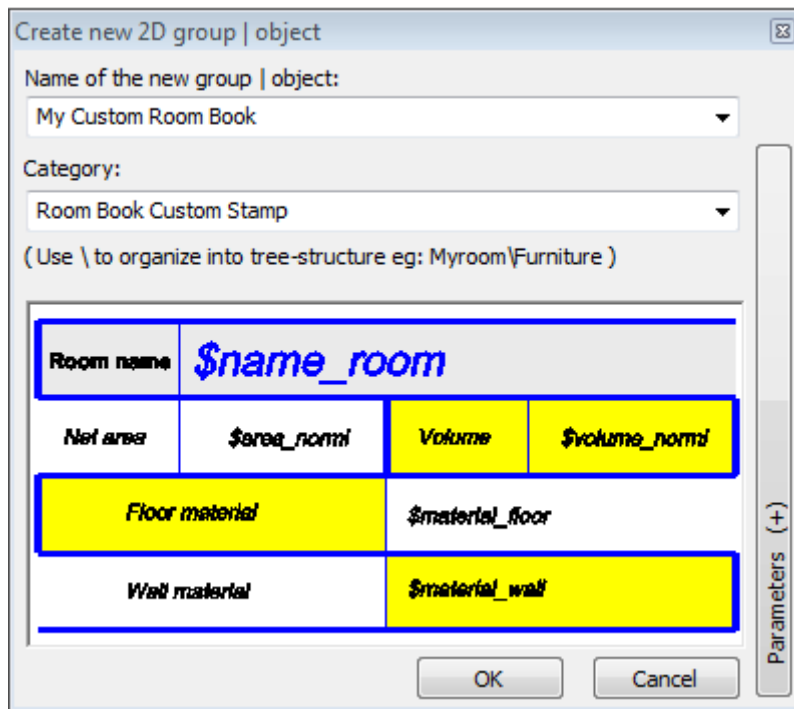
<b>Room name</b>			
<i>Net area</i>		<i>Volume</i>	
<i>Floor material</i>			
<i>Wall material</i>			

- Use the **Building menu – Room – Customize – Add parameter** command to insert Room data variables into the skeleton.
- Select variables you would like to insert into the skeleton in the **Room Custom Stamp** dialog and then place variables in the appropriate order into the skeleton. After that you can still change the text format of the variables, if necessary.



<b>Room name</b>	<b><i>\$name_room</i></b>		
<i>Net area</i>	<i>\$area_norm1</i>	<i>Volume</i>	<i>\$volume_norm1</i>
<i>Floor material</i>	<i>\$material_floor</i>		
<i>Wall material</i>	<i>\$material_wall</i>		

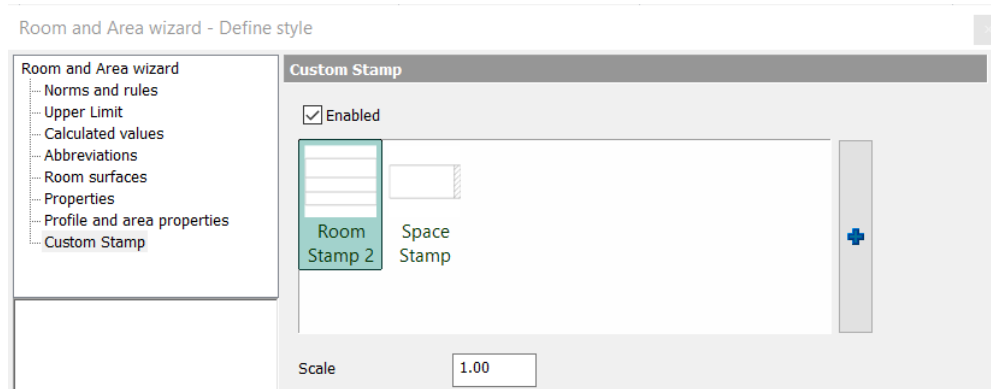
- Use the **Building menu – Room – Customize – Create Stamp** command to create and save the final form of your customized Room stamp.
- Select Room stamp elements you created before with rectangle selection.
- Specify the reference points you can use when you will place your customized Room stamp.
- Specify the name of your custom Room stamp to save it into your group library.



### Using a predefined custom Room stamp

As soon as you created and saved your custom Room stamp into the Custom Stamp category, you can use it for placing a Room stamp.

- Click *Custom Stamp* in Room wizard.
- Make the list enabled and select a predefined Room custom stamp.



- Be sure that you enabled the necessary variables on *Room stamp text* page.
- Enter a different scale factor if you want to make your room stamp larger or smaller.
- Click **Ok** to close *Room wizard* dialog and place your customized Room stamp with the actual data.

### 10.8.1.9. Connection between Room sets and room border surface templates

Similarly to other sets of architectural objects it is possible to manage Room sets, too. Click **Sets** in the *Room wizard - define set* dialog to manage Room sets. **Sets** dialog will appear on the right side. You can manage sets as usual using the buttons on the bottom of the dialog.

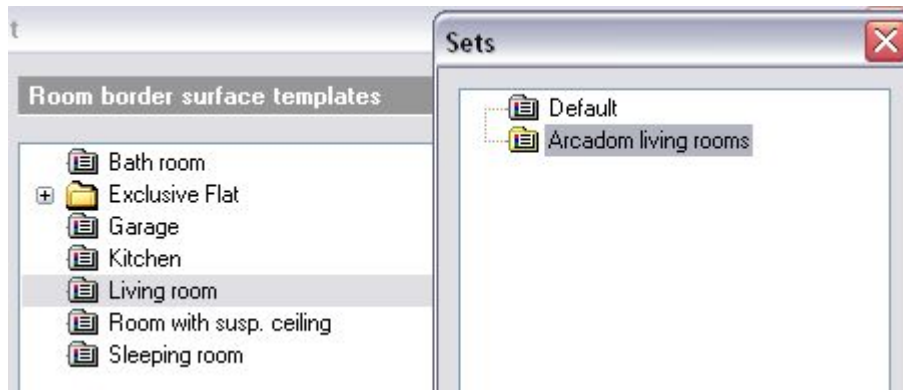
For a given Room set the following Room settings are stored:

- ❖ Norms and rules.
- ❖ Clear height.
- ❖ Room stamp text.
- ❖ Abbreviations.
- ❖ Border surfaces: only the name of the room border surface template.
- ❖ Properties.

The room border surface template settings (conditional material surface settings - description codes) don't get saved in a Room set. Only the name of the used template is stored in the set. This means that a modification in a room border surface template will modify all the Rooms which use this template.



Let's create a set with the name *Arcadom living rooms*, for example. *Arcadom living rooms* set uses the *Living room* template.



The conditional material surface settings of wall plane in *Living room* template are the followings:

Code	Thickness	Description	Factor	Material
Plaster	0.01 m	Simple plaster	1	Wallpaint
Inner finishing plaster	0.001 m		1	Wallpaint
Knot	0.001 m	Knot	1	g110
Disperzit	0.001 m	Internal painting	1	Stucco2

Let's modify the *Living room* template so that the last layer (emulsion paint called Disperzit) is replaced by wallpaper.


Code	Thickness	Description	Factor	Material
Plaster	0.01 m	Simple plaster	1	Wallpaint
Inner finishing plaster	0.001 m		1	Wallpaint
Knot	0.001 m	Knot	1	g110
Textile wallpaper	0.001 m	textile	1	tapete064

- Click on **OK** and select the *Overwrite the original set* option.

From now on if you create Rooms by *Arcadom living rooms* set or update your existing Rooms based on *Arcadom living rooms* set then the last layer of these Rooms will be set automatically to wallpaper without changing the settings of *Arcadom living room* set.

### 10.8.2. Serial placing of more Rooms

By this command you can quickly create Rooms in different rooms in sequence. In this case the program will use the activated Room set and there is no way of applying rules that require input (for example manual selections of freely defined areas are not possible).


- If You click right on the  Room tool, in the appearing Room wizard dialog select the proper Room set (or set the preferences), which You would like to use by Room placing. **Ok**
- Point inside a room bounded by single walls.
- Place the room stamp.
- Repeat the above steps for other rooms, too.

### 10.8.3. Room inside a free polygon

Using the command the Room is created by the user defined polygon. You can modify its boundary and the Room calculation follows the modifications.

**!** Of course this type of the Room is not associated to the walls, therefore does not follow the wall modifications.

This command does not consider the surrounding walls, slabs or roofs; only a right prism with a polygon base will be created.

We suggest you to use  *Room inside a free polygon* command in the next cases:

- ❖ To create separate Rooms to areas that have different functionalities but are not separated by walls or other border surfaces.

- ❖ This command is also very handy if you have areas you want to include in the room stamp calculations but these areas haven't got side walls and roofs like balconies. In this case it is enough to define the coverings for the floor only so other coverings will not appear in 3D.

- Define a closed chain. Use the keywords if necessary.
- Define the height of the room.
- In the **Room wizard** dialog specify the Room parameters and close the dialog.
- Place the room stamp on the drawing.


The tooltip signs the type of the inserted Room:  
*Room inside a free polygon*

#### 10.8.4. Modify the boundary of the Room

With this command you can modify the contour of an existing Room.

- Select the room stamp of the Room you want to modify.
- Modify the profile of the room contour using the profile editing tools.
- According to the changes made in the contour the Room will be updated.



The command is valid for the Rooms, which were created by the  *Calculate Room inside a free polygon* command.

#### 10.8.5. Calculate Room outside a building

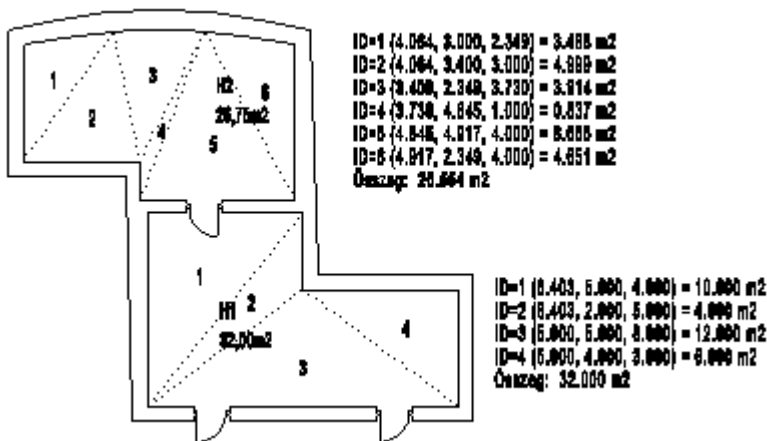
With this command you can place room stamps where room stamp data calculations (area and volume calculations) are applied on the outer contour of the bordering walls / buildings. Conditional material surface settings do not work here.

- Select the outer walls of the building or define the outer contour using the **POLYGON** keyword.
- In the **Room wizard** dialog specify the Room parameters and close the dialog.
- Place the room stamp.

#### 10.8.6. Diagonal measuring

By this command rooms bounded by walls can be divided into triangles using the diagonal measuring method. The program divides the room into triangles and creates a list, including the area of each triangle and sum of the triangle areas. This method is used as a verifying procedure for area dimensioning.

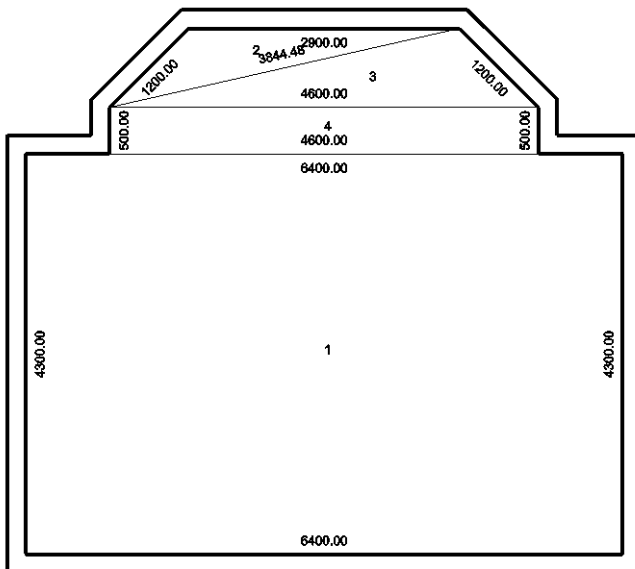
This method can be used even for arched walls. In this case we have to define the resolution of the arc.



#### 10.8.7. Room partitioning and dimensioning

The area of a room can be divided into rectangles. The program assigns numbers to the partitioning and shows the main dimensions in the selected rooms, and it is possible to place expressions verifying the results.

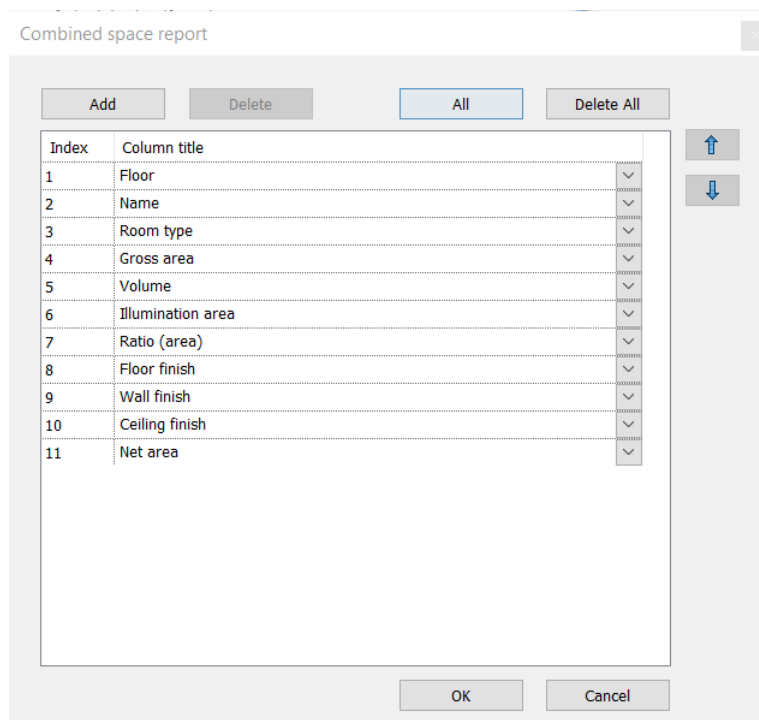
- Click inside a room to create its division into rectangles.
- The program automatically divides the room, numbers the parts and writes the parameters.



### 10.8.8. Summarize flats

A table summary can be created about flats and rooms with room stamps based on the current floor or the whole building. You can customize the tables as follows.

The *Combined space report* dialog appears. Here you can compose your table for the report. Each row in the dialog represents a column in the report.



- Use the *Add* button to add a new column to your report. The new object will appear in the last row.
- Click *All* to add all options in a default order to the report.
- Select an index and click *Delete* to delete a column from the report.
- Click *Delete all* button if you want to delete all columns and start the composing again.
- Use the arrow buttons to move the selected object up and down.
- Click on a column title to select another title from the roll down list. In the roll down list you can see all options available.
- Click **Ok** to finish the composing of the table and then
- Select the option *Current floor* or *All floors* to create the table based on the current floor or the whole building.
- Insert the table on the drawing.

For the composing of the table we suggest the following methods:


- ❖ First use the *Add* button to add all columns you need in the appropriate order, then delete the unnecessary ones.
- ❖ Use the *Add* button to create as many columns as you want to see in the table, and then do the column title assignment in each row.

The alphabetical ordering in the table is made first by floors, and then by flats.

The table structure is saved into the Support/RoomBookStamp.xml file so next time the program will remember to the previously defined table structure.



Empty columns are automatically detected by the program and will not appear in the table you place on the drawing.

The  *Refresh all* command refreshes all the Rooms which were created by the *Room inside a wall* command on the drawing and the related summary table of all Rooms. The automatic refreshment will be executed on the first placed summary table on the drawing. The automatic refreshment is only an option. You can cancel the refreshment. In that case the table will be deleted.

### Room and area consignment

The command lists the used area of the rooms and sums them based on the apartment and floors in .rtf format (e.g. Word).

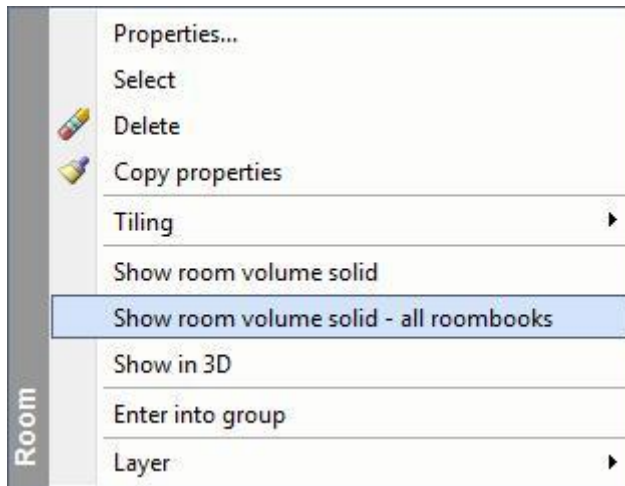
<b>CALCULATION OF USED AREA</b>						
office_building_2007_05.pro				Date:2008/08/11		
Level	Room Name	Length	Width	Brutto Area	Sub. 2%	Netto Area
<b>Lakás</b>	17 premises					
	0 Szoba			11.90	0.00	11.90
	0 Fürdő			3.95	0.00	3.95
	0 Szoba			8.94	0.00	8.94
	0 Előszoba			8.54	0.00	8.54
	0 HTH			2.02	0.00	2.02
	0 Fürdő			3.25	0.00	3.25
	0 Kamra			2.44	0.00	2.44
	0 Konyha			5.76	0.00	5.76
	0 Nappali-Etkező			22.77	0.00	22.77
	0 Előszoba			7.16	0.00	7.16
						<b>76.73</b>
	0 Kamra			2.77	0.00	2.77
	0 Fürdő			7.44	0.00	7.44
	0 Konyha			7.23	0.00	7.23
	0 Nappali-Etkező			31.79	0.00	31.79
	0 WC			1.45	0.00	1.45
	0 Szoba			9.53	0.00	9.53
	0 Szoba			13.71	0.00	13.71
						<b>73.92</b>
Used area						<b>150.65</b>
Total used area						<b>150.65</b>

### Info rooms

The command prepares a detailed list about the rooms in .rtf format (e.g. Word):

## 10.8.9. Show Room volume solid

The command: Show room volume solid – all Rooms. Generates the 3D volume of Room.



### 10.8.10. Refresh all Room

The command Refresh, refresh all the Rooms which were created by the *Room inside a wall* command on the drawing and the related summary table of all Rooms.

#### Refreshing Room

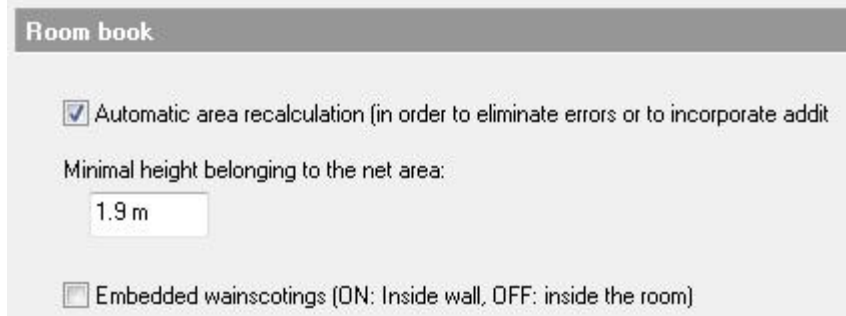
When you made changes on existing rooms that have room stamp data and these data are not valid because of the changes, by this command you can update all room stamp data automatically.

#### Refreshing summary table

If the summary table exists on the plan, before closing the *Refresh* command the *Summarized Room report* dialog appears and you can refresh the first instance of the Summarized room-book table placed on the drawing. Attention: Closing the dialog with Cancel button the first instance will be deleted from the drawing!

#### Automatic area recalculation

If you switch on the *Automatic area recalculation* option in the *File menu- Preferences – General – Room dialog*, the Rooms which were created by the *Room inside a wall* command follow the area modification.



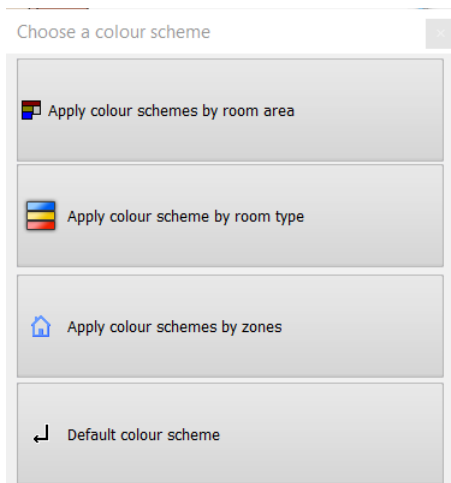
The refreshing might take a long time, therefore we suggest you to switch off the option and use the *Refresh* command.

### 10.8.11. Colour schemes

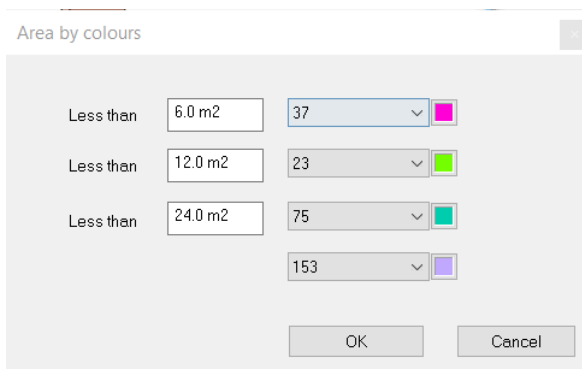
Colour schemes are useful for visual representation of room categories. You can create a colour scheme by room area, type, or zones.

Colour schemes represents rooms in floor plan by colours that you define.

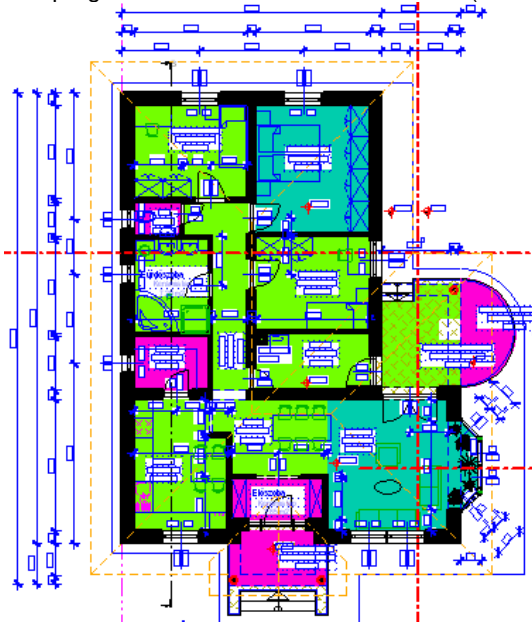
- Click Building - Room & Area – Colour Schemes.
- In the Choose Color Scheme dialog select the color scheme and click OK,



- In the Edit Color Scheme dialog, assign colours from the list and click OK.



- Click **Ok** to execute the command. The program will search and colour Rooms (set the hatch property for each Room) according to the settings.



To cancel the colouring switch off the *Hatch* room option in the *Room Properties* dialog.

## 10.9. Stair

### Introduction

ARCHLine.XP stair tools provide different possibilities of creating stairs. The stair is one of the most complex architecture objects, especially in case of irregular stairs. In case of new projects it is very handy to use *predefined* stair types first. You can modify stair railings at any time after their creation.

The method of *stair by threads* can be used for special stair geometry or for stairs with given dimensions in a surveyed building.

### Stair ergonomics

It gives help in design, in case of stairs chosen from the stair folder, if you look after continuously during the design, that ergonomics requirements specified in standards be realized. The ARCHLine.XP signs the stepping over limits according to the DIN standard with red colour to the user.

It doesn't forbid the creating of the stair, if it doesn't come up to ergonomics requirements.

### Cutting out slabs above stair

The program enables to cut out slabs above stair. The program recognizes the slab(s) above the selected stair and cuts them out by command. The cutting width is determined by the stair width. The cutting length is determined by the free height defined by the user among the stair standards: the program searches for the stair step where the level difference between the bottom of the slab and the stair step reaches the free height. This way a man who is not taller than the given free height can go up to the stair.

### 10.9.1. Stair standards

If you monitor continuously the ergonomic requirements defined by standards in case of stairs selected from the stair library, it can help you in the drawing of stairs. For this give possibility the **File -Preferences - Stair standard** dialog box.



See the description in the chapter 3.1.5. *Setting stair standard*.

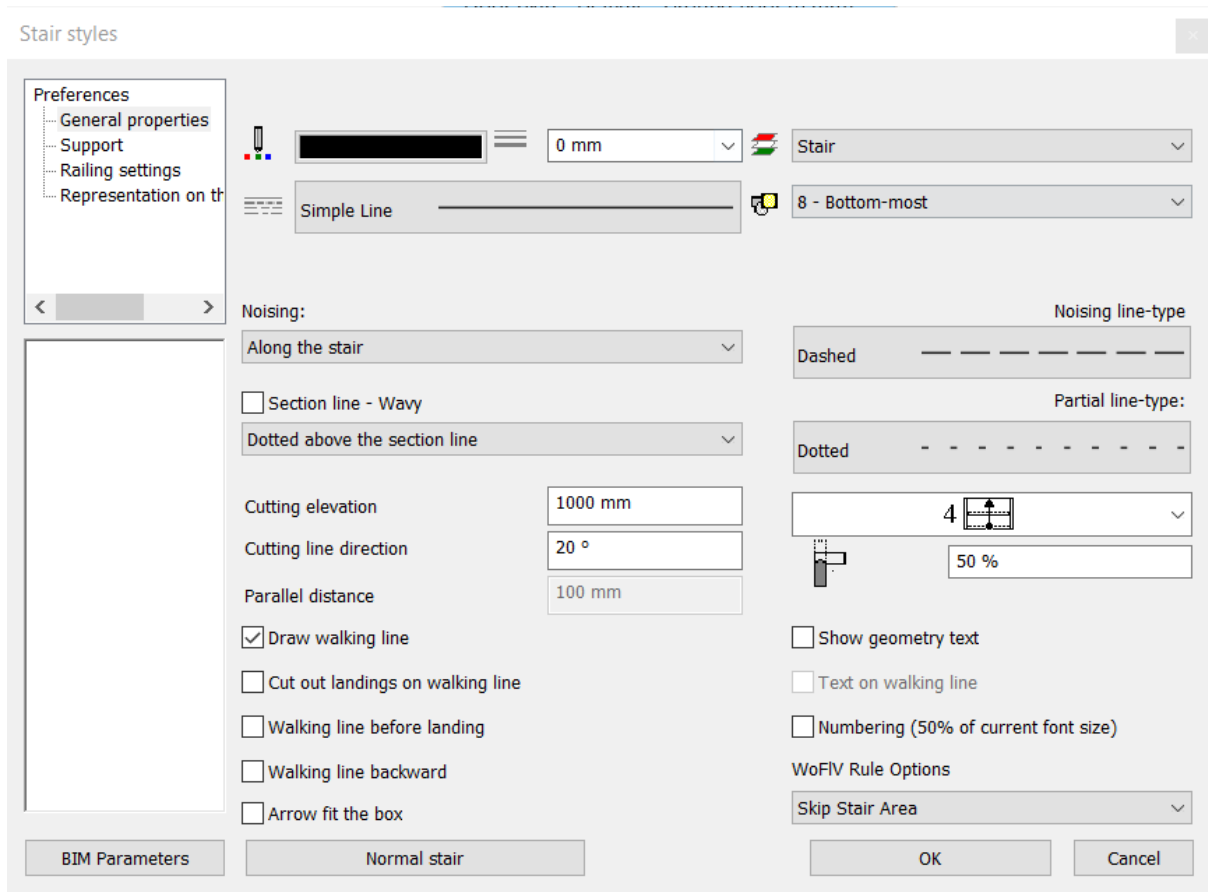
### 10.9.2. Stair properties

The general stair properties have to be defined before placing a stair. These properties are available through either the **Stair tool** by right mouse click, or in the **Building -Properties - Stair** menu.

Any change in the settings will be applied to the stairs constructed afterwards.

#### 10.9.2.1. Stair parameters

Click *Stair property* to set the stair parameters.



### General properties

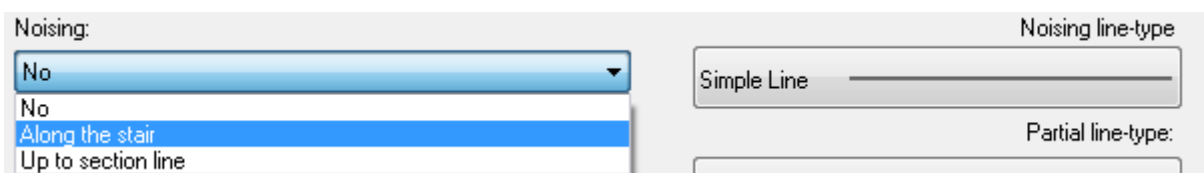
General 2D view settings can be made here: colour, width, layer, line type, priority.



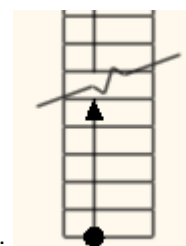
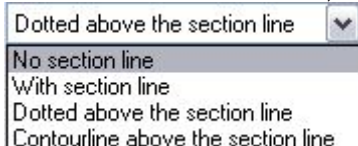
For detailed description of *Stair properties* see chapter 3.2.1 on *Specifying general properties*, for BIM parameters see [this chapter](#), for *Sets* see chapter 3.2.3. on *Using sets of properties*.

### 2D view

- ❖ You can specify the **Nosing line type** and its visualization. You can select from three visualization options: without nosing line, with nosing line along the stair and with nosing line up to the section line.

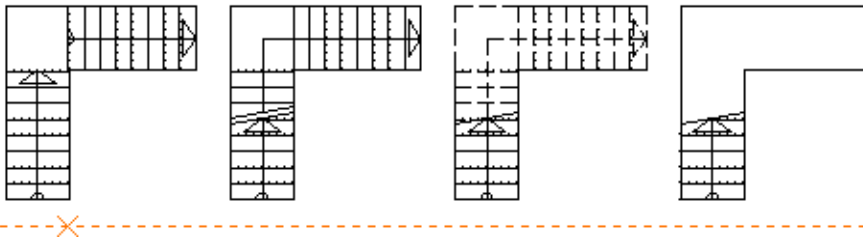


- ❖ The visualization of cutting line is optional: the cutting elevation and the cutting line direction can be set. **Partial line type** and its visualization can be set, too.

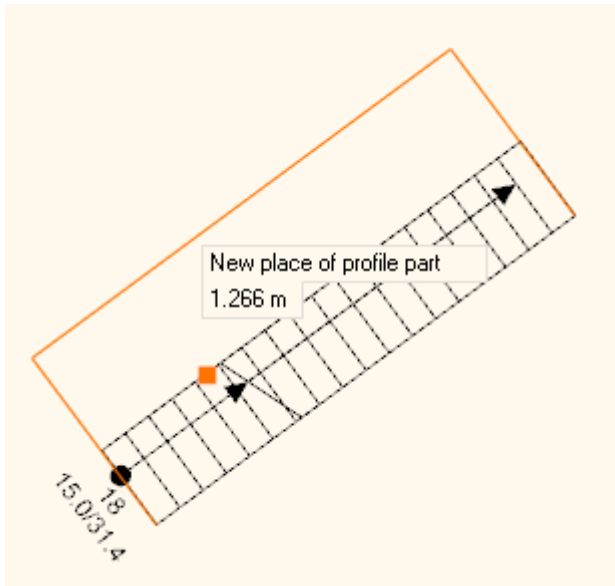


With the **Section line – Wavy** option you can make the section line wavy:





Right clicking on the stair symbol and choosing Edit one side / Offset lets you handle one side of a stair as a single unit, instead of edit it thread-by-thread or node-by-node.

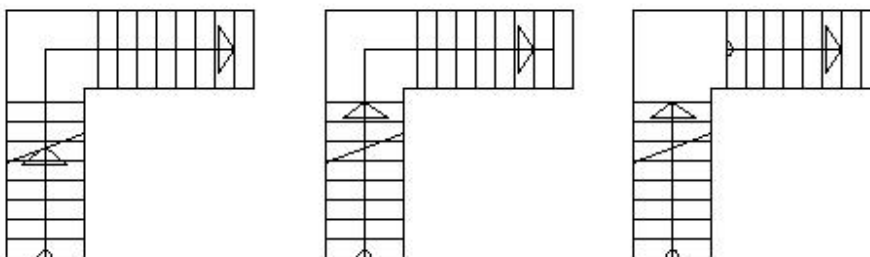


#### Cut out rest of walking line

Using this option, the program cuts the rest section from the walking line.

#### Walking line before landing

Using this option, the arrow of the walking line goes through the section line and stops before the landing.



OFF

ON

ON

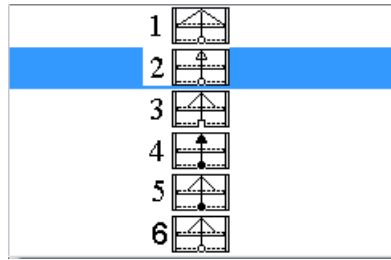
On the last image the *Cut out landings on walking line* option is switch on.

#### Walking line backward

Using this option, you can reverse the direction of walking line.

**Arrow fit the box**

The visualization mode of the walking line can be selected from a drop-down list. Different arrow types and the arrow fit the box option are available.

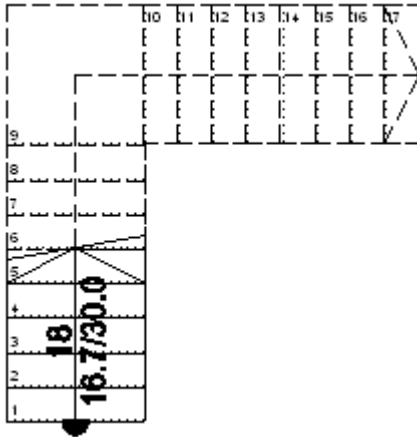


**Numbering**

The numbering of the stair steps is also possible.

**Show geometry text**

Show geometry text option will place the number of stair steps, the riser and tread on the walking line when the **Text on walking line** option is switch on, otherwise it will go below the 2D drawing of the stair. It doesn't place, if you switch off the Show geometry text option.



**10.9.2.2. Support**

Click Support the left side. 3D view properties will appear

Stair styles

Preferences

- General properties
- Support
- Railing settings
- Representation on th

**Support**

Elevation 0 mm

3D creation

Cut the walls No cutting

Waist slab material  Bright\_white

Waist slab Thickness 150 mm

Construct the landing like a slab

Tread Material  Beech

Noising depth 20 mm

Tread thickness 40 mm

Riser board Riser board material  Wood66

Riser board thickness 20 mm

**Support** Support material  Wood66

Same on both sides

Left support type None

**Connection to the upper slab**

A: 100 mm B: 100 mm C: 300 mm

**Connection to the bottom slab**

A: 100 mm B: 100 mm D: 150 mm E: 200 mm C: 300 mm

BIM Parameters Normal stair OK Cancel

- ❖ You can specify the **elevation** where the stair starts from. Elevation is relative to the related floor.
- ❖ **3D creation.** In the 3D View, the stair will not appear if you switch off this option.
- ❖ **Cut the walls.** With this option, walls can be cutted by the stair. The cutting options are: own floor, all floors, no cutting, on own floor and below,
- ❖ The architecture of the stair is optional. Either you can define a ramp with the *Ramp* option, or a stair with its components: *Waist slab*, *Tread*, *Riser board*. In case of **ramp** choice you cannot select the options of stair components. Independently from ramp or stair selection, you can apply the *Support* option.

### Ramp settings

In case of ramp selection the program converts the stair into ramp. A message asks you to confirm this operation. The material of ramp can be defined by the waist slab material. The thickness of the ramp can be defined by the waist slab thickness parameter. You can also use the *Construct the landing like a slab* option.

### Section profile

By default, the section of the ramp is rectangular. With the *Section profile* option you can define a different section by specifying a profile for the section. Either you can select a profile from the profile library or define a custom profile by editing the profile on the floor plan with the profile editing commands. Both profile definition options have an ellipsis button. Once you have selected a profile from the profile library by clicking on the ellipsis button for profile selection, the name of the profile appear beside the ellipsis button. Once you have edited the profile by clicking the ellipsis button beside *Edit profile*, *User profile* appears beside the ellipsis button for profile selection.

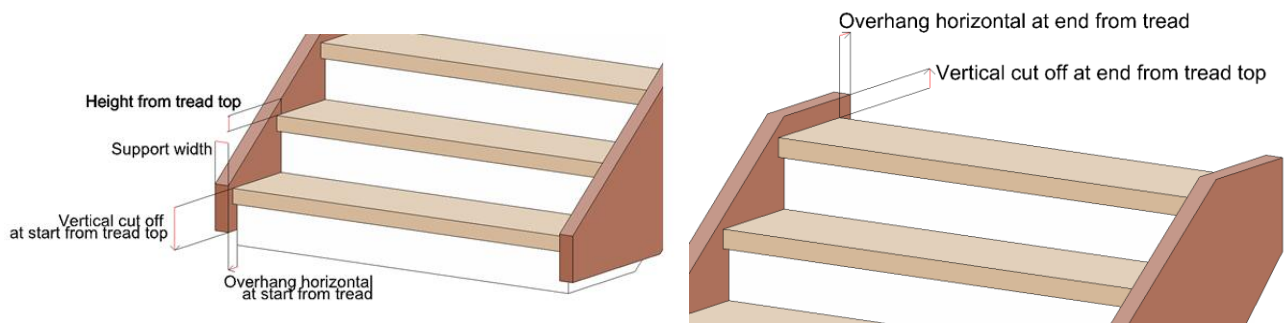
By selecting the *Waist slab* option, you can convert the ramp into stair and the stair setting options will be available.

### Stair settings

- ❖ In case of **waist slab** choice the **waist slab material** and **thickness** are available to set.
- ❖ By the **tread** option you can place cover slips on the waist slab. Without waist slab option only the cover slips will appear. This way stairs with steelwork can be constructed.
- ❖ For the tread you can specify the **material**, **nosing depth** and **tread thickness**.
- ❖ You can place **riser board** between stair steps by checking this option. You can specify their **material** and **thickness** independently from treads.

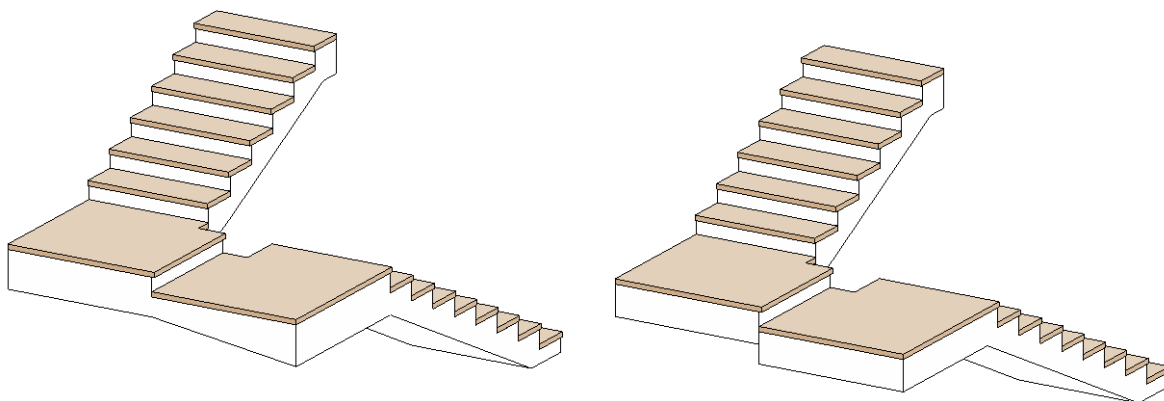
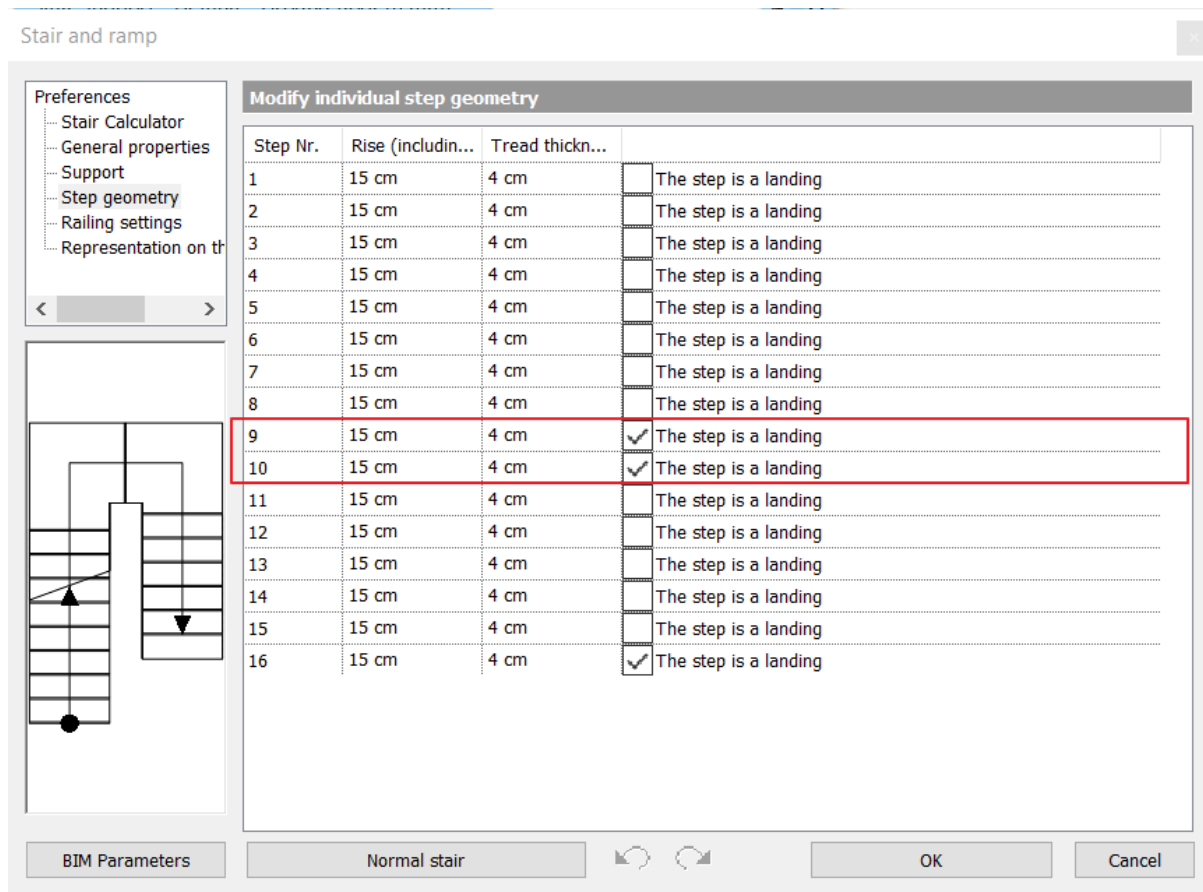
### Support settings

- ❖ By **support** option you can place supports on one side or on both sides of the stair or ramp.
- ❖ Explanation to the support cutting settings:



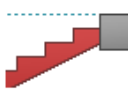
### Construct the landing like a slab

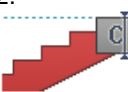
Enable *Construct the rest like a slab* option to convert the bottom surface of the rest to a horizontal plane in case of stairs with rests. See the U form divided stair, for example.

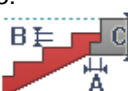


### Connection to the upper slab

You can define the connection to the upper slab. There are three options:

- 



In this case you can align the bottom of the connected slab with the bottom of the last step of the stair by the C parameter.
- 

In this case the bottom of the stair may run behind the last step of the stair, giving the possibility to keep the bottom of the stair straight. The C parameter must be equal with the thickness of the slab.
- 

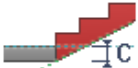
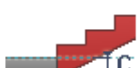
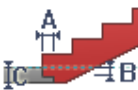

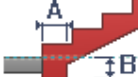
In this case you can use the A, B and C parameters as shown on the figure, to create a smooth connection between the stair and the upper slab.

### Connection to the bottom slab

You can define the connection to the bottom slab, too. There are seven options:

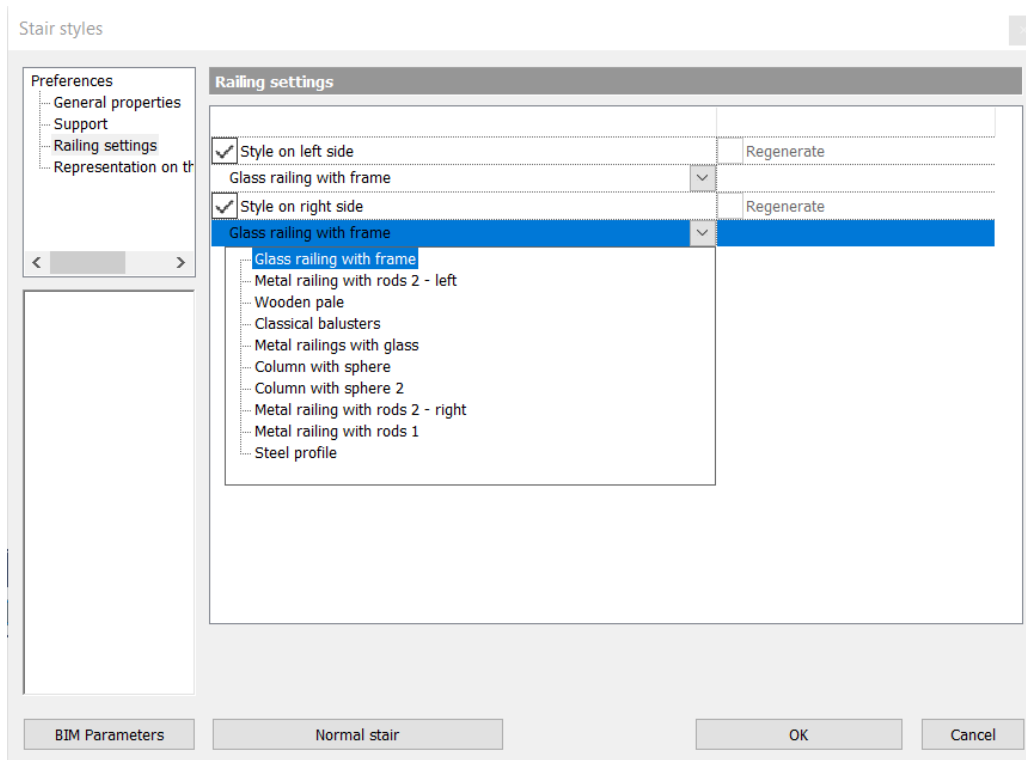
1.  In this case the stair is independent from slab. The C parameter is irrelevant.
2.  In this case the stair starts from the base height. This connection is independent from slab thickness. The C parameter is irrelevant.

The next connection types are used between floors:

3.  The bottom of the stair is aligned to the bottom face of the slab. Slab thickness (C parameter) is required. C parameter also defines the waist slab thickness, therefore you cannot modify the waist slab thickness.
4.  The bottom of the stair is cut horizontally according to the slab thickness. Slab thickness is required. Stair waist slab thickness will not change.
5.  The A, B and C parameters can be used to define the smooth connection between the stair and slab, in case of the connection type shown on the figure.
6.  The A, B, D and E parameters can be used to define the smooth connection between the stair and slab, in case of the connection type shown on the figure.
7.  The A and B parameters can be used to define the smooth connection between the stair and slab, in case of the connection type shown on the figure.

### 10.9.2.3. Railing settings

Click *Railing settings* on the left side. Predefined Railing types will appear:

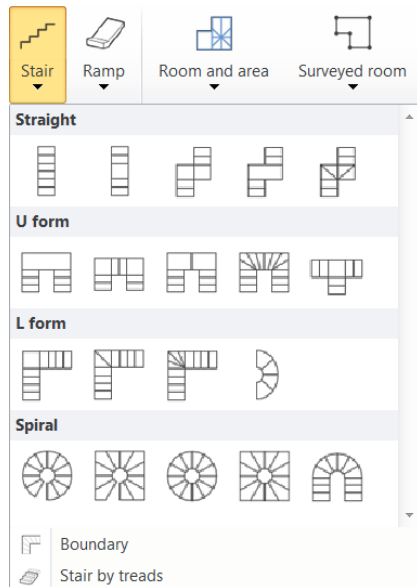


- ❖ You can specify whether the *Railing* will be generated **on the left side** and **on the right side**.
- ❖ The **Regenerate** checkbox can be activated when you modify an existing stair. The regenerate Railing feature restores the original Railing form deleting all eventual manual changes you did on it

### 10.9.3. Creating stairs

There are three ways of creating stairs.

- ❖ Predefined stairs (stair library)
- ❖ Stair by outline and landing (Boundary)
- ❖ Stair by threads (only the profile of the stair steps are given)



#### Stair – Predefined

The common stairs can be constructed with predefined stair forms as,

- ❖ Straight
- ❖ U form
- ❖ L form
- ❖ Spiral

#### Stair - By boundary

When you create a stair in this way, first you have to define the location of the stairway, and then you can divide this stairway area into stair steps. First you have to decide on the location of the stair by giving its route. This will be a stairway defined by the right and left sides of both arms. All stair steps will be inside this area. The next step is to divide this area into stair steps by giving the geometry.

The line sections given on both sides of the arms will be divided by the number of stair steps. The tread of stair steps will be equal to the length derived from the divisions. The rest will be resulted from the area between the arms.

#### Stair by threads

Many times you need stairs that are not found in the predefined stair library and cannot be created by defining simply the arms, or even the rising of the stair steps is not equal along the arms, e.g. in case of surveyed stairs. *Stair by threads* method will help in these situations. In that case the step height can be assigned to the individual stair step profiles.

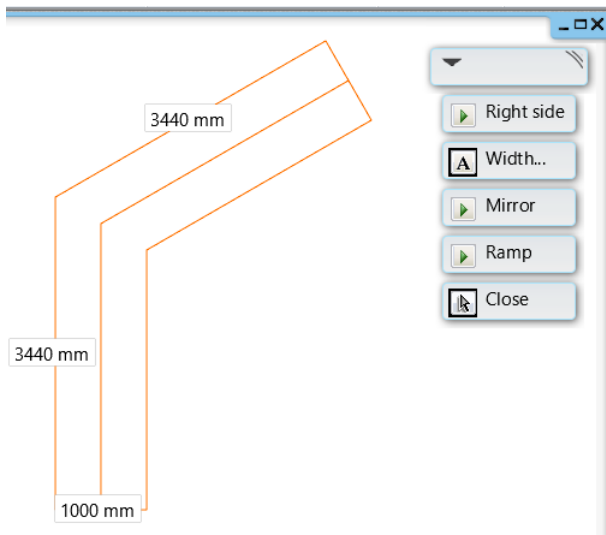
#### 10.9.3.1. Predefined stairs

This is the simplest way of creating new stairs. The predefined stairs library contains the most commonly used stair types. The method is the following:

- ❖ Stair type and reference point
- ❖ Graphic placing
- ❖ Construction parameter settings
- ❖ 2D view properties
- ❖ 3D view properties

#### Stair type and reference point selection

- Select your stair type. You can place now the stair in the drawing. Press F5 to change the reference point.
- Place the stair on the floor plan with the cursor by giving the main geometrical points.
- At the main geometrical points you can use the Mirror, Width and Other one keywords from the floating menu if you want to change the stair route direction or you want to define a new width.

**Options:**

<b>Right/left side</b>	You can define the point on the opposite side of the stair.
<b>Mirror</b>	In case of spiral stairs you can change the route direction.
<b>Width</b>	Define the width of the stair
<b>Ramp</b>	Convert to ramp

**10.9.3.2. Stair by boundary**

Creating a stair/ramp by sketching the right and left side boundary. The arms must be pre-drawn with 2D tools like lines and arcs connected

1. First pick the right side boundary elements from the bottom point upwards and press ENTER.
2. Then pick the left side boundary elements from the bottom point upwards and press ENTER.

3.1. Pick on **start point** of the arm on the **right side**.

3.2. Pick on **end point** of the arm on the **right side**.

The start point of the arm on the left side is automatically defined. This point corresponds to the first point given on the opposite side

3.3. Pick on **end point** of the arm on the **left side**.

Repeat the workflow below for each segment:

4.1. Pick on **start point** of the arm on the **right side**.

4.2. Pick on **end point** of the arm on the **right side**.

4.3. Pick on **start point** of the arm on the **left side**.

4.4. Pick on **end point** of the arm on the **left side**.

5. Specify the stair height and slope in the dialog box Press Ok to close the dialog and create the stair.

Both sides of the arms will be divided to equal lengths. The rest will be the area between the arms defined.

**Some rules:**

- ❖ The point given first must be the endpoint of the stair. The stair will start upwards from here.
  - ❖ The hotspots of the arms are denoted by small squares. If you click outside the arms the program will select the closest existing hotspot on the arm automatically. However, if you select a point on the arm, the automatic hotspot selection function will switch off and the selected point will be accepted.
- Specify the first point of the bottom arm on the left side (3). This point corresponds to the first point given on the opposite side.
  - Specify the second point on the left side (4). This point corresponds to the second point given on the opposite side. This way the arm before the rest is defined.
  - You can specify the point couples on the next arm similarly (5-6, 7-8). This way the arm after the rest will be defined.

**Option:**

PREVIOUS	The first point of the couple will be the second point of the pervious interval. Available only when there is an existing couple.
----------	---

**Enter** Close the definition.

**Divide into steps** dialog box will pop up then. Here you can define the number of stair steps in two ways:

- ❖ Use the **Calculate n step by all intervals** option if you want to specify the total number of stair steps along the stair.
- ❖ Use the **Specify n step of intervals** option if you want to specify the number of stair steps individually on each arm.

In case of stair the most important requirement is that it must go up to the next floor.

It has to be specified in the dialog the base level and the top level of the stair, the requested number of steps and the requested height of step. There are two ways to do this:

#### Specifying the height difference

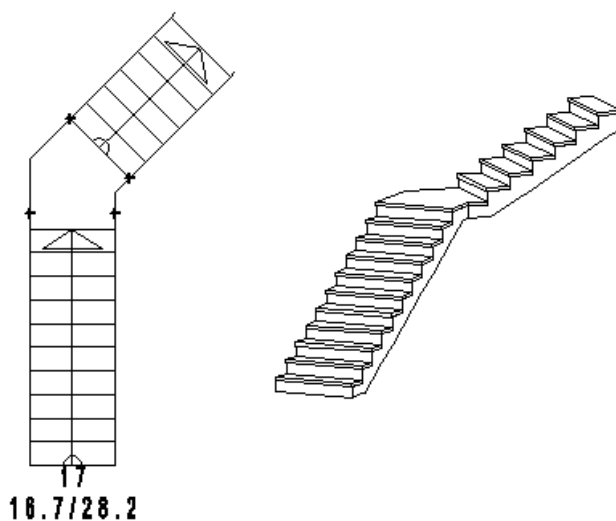
- Enter the base level of the stair.
- Choose the **Top level** option.
- Enter the top level of the stair.
- Enter either the requested number of steps or the requested height of step.

#### Specifying the number of steps and the height of step

- Choose the **Top level not defined** option. In this case you have to specify both the requested number of steps and the requested height of step. These two data determine the top level of the stair.

In both cases the program calculates the width of steps, the possible number of steps and rests, the number of risers and the height difference. All the calculated data are represented in the dialog.

The stair appears and the main parameters will be placed: the number of steps, riser and tread.



#### 10.9.3.3. Stair by threads

The stair by threads method assigns the rising to each stair step profile individually.

##### Some rules:

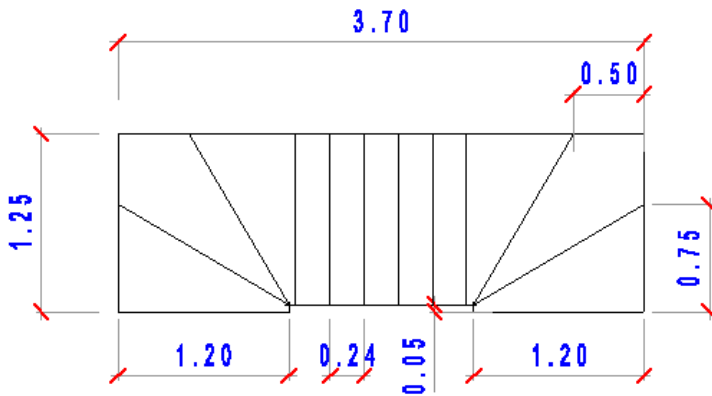
- ❖ Regarding the stair step profile there is no limitation but it must have a closed contour.



- ❖ First the 3D model will be represented by cover slips. Later you can change it by 3D view settings. This is available when you modify the stair.
- ❖ If there is no connection between two stair steps then:
  - the walking line will not be created automatically,
  - it is not possible to build the support and the body of the stair in 3D view.

This means that stair by threads functionality is available only when the back contour of a step will coincides with the front contour of the next step (or shifted parallel by the nosing depth).

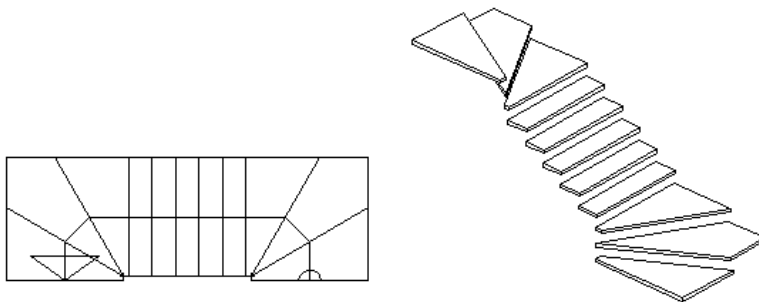
- Construct the closed profile of each stair step:



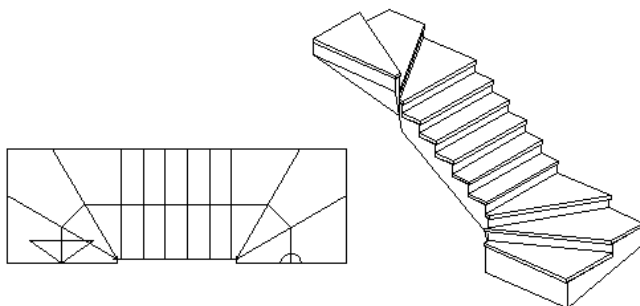
- Click Stair by threads.
- Give the stair step contour for each step using the *Profile definition* tool in the Toolbox. Use the Internal point of a chain command if you have closed stair step profiles.
- Give the rising of the stair steps.
- Give the stair step contours of the remaining steps.
- **Enter** Close the stair definition.
- Right click on the stair and select the *Shortcut menu – Property* command,
- In the **User defined stairs** dialog click Geometry of the staircase to modify the rising of each step individually.

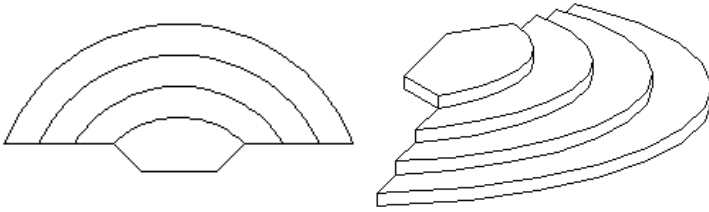


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



First the 3D model will be represented by cover slips. Later you can change it by 3D view settings. This is available when you modify the stair.





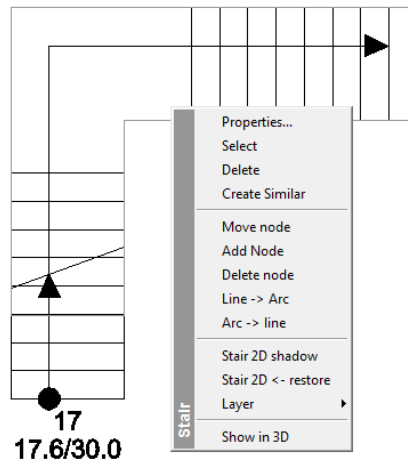
### 10.9.4. Modification of the stair geometry

You can modify the geometry of the placed stairs.

Modification is available in the **Predefined stairs** or **User defined stairs** dialog box or by using the edit commands. The available edit commands are as follows:

- ❖ Cut the slabs above the stair,
- ❖ Move, add, delete nodes of thread,
- ❖ Modify the sideline of the step contour,
- ❖ Query stair heights

Commands can be chosen from the *Shortcut menu*:

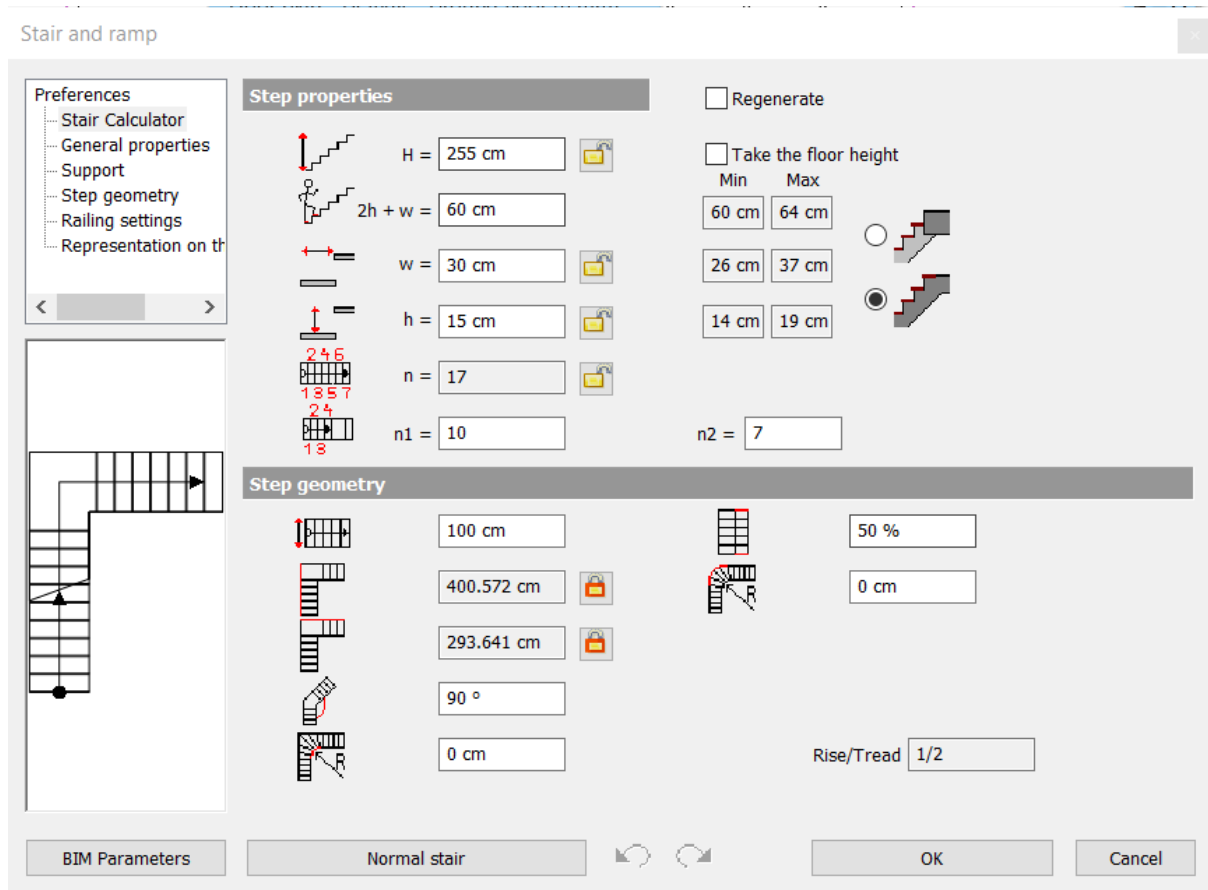


#### 10.9.4.1. Modification of stairs

- Right click on the stair and select the *Shortcut menu – Property* command, make available either the **Predefined stairs** or **User defined stairs dialog**. This dialog box gives different constructional opportunities, compared to that dialog box, which is selected from the stair folder at placing stair.
- ❖ If the stair is a predefined one, the *Stair Calculator* menu will be available.
- ❖ If the stair is not a predefined one, the *Stair Calculator* menu won't be available.
- ❖ If the geometry of steps is modified in the case of predefined stairs, the staircase does not suit the requirements of predefined stairs; this is the reason why the *Edit* command cannot be used in the dialog.
- ❖ The *Geometry of the staircase* is available independently from the original stair type.

#### **Stair Calculator**

Click *Stair Calculator* to modify the parameters of the steps and the geometry of staircase. The stair geometry parameters depend on the stair type.



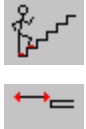
### Parameters of the steps

Depending on the stair type different parameters appear. Each parameter is denoted by a drawing symbol as follows:



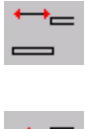
#### Total height of the stair (H)

Check the *Take the floor height* option if you want to make the stair and floor height equal automatically.



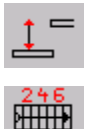
#### Stair ergonomics (2h + w)

Beside the actual value the minimum and maximum values defined in the stair standards are shown here. If the actual value exceeds the stair standard limit the background of the field will change to red.



#### Tread (w)

Beside the actual value the minimum and maximum values defined in the stair standards are shown here (see the description of *Stair standards*). If the actual value exceeds the stair standard limit the background of the field will change to red.



#### Riser (h)

Beside the actual value the minimum and maximum values defined in the stair standards are shown here. If the actual value exceeds the stair standard limit the background of the field will change to red.



#### Number of steps (n)

This is the number of steps necessary to cope with the total height of the stair.

In case of gathered stairs and stairs with more arms the number of stair step edges for each arm appears under the *Number of steps*.

Two types of **connections to the top slab** can be chosen:



One option is when the last step of the stair goes on the slab. If the total stair height is 3 m and the riser is 16 cm for example, the stair body goes up to 2.84 m and the last step will be on the slab.



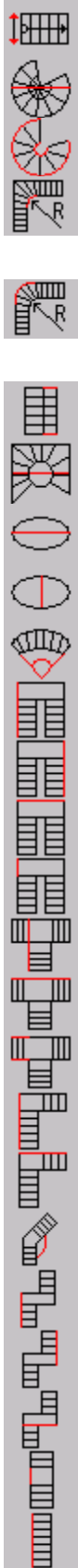
The other option is when the level of the last stair step is equal with the top of the slab. In this example the stair body goes up to 3 m. In that case it is worth to cut out the profile of the last stair step from the top slab. The thickness of the slab can be specified in the *3D view* dialog.



When you choose the **Ramp** option in the *3D view* settings the types of connections to the top slab options are not available.

### Geometry of the staircase

Depending on the stair type you can specify different geometry parameters. Each parameter is denoted by a drawing symbol. These can be as follows:

**Stair width**

This parameter is available for all stair types.

**Outer diameter of spiral**

This is available only for spiral stair types.

**Convolution angle**

Available only for spiral stairs.

**Inner radius or taper off distance**

Depending on the stair type this symbol represents either the inner radius or taper off distance of the stair. For example it means inner radius in case of spiral stairs, and inner taper off distance for U form winded stair.

**Outer radius or taper off distance**

Depending on the stair type this symbol represents either the outer radius or taper off distance of the stair. For example it means outer radius in case of spiral stairs, and outer taper off distance for U form divided stair.

**Walking line distance**

The distance between the walking line and the side of the stair.

**Square side length**

Available only for *Spiral square* stairs.

**Major axis length of an ellipse**

Available only for elliptic stair.

**Minor axis length of an ellipse**

Available only for elliptic stair.

**Twisting angle**

Available only for elliptic stair.

**Length on the left side**

Length of the stair on the left side measured in 2D view.

**Length on the right side**

Length of the stair on the right side measured in 2D view.

**Total stair width****Length of the rest****Total stair length**

Available only for T form stair.

**Total stair width**

Available only for T form stair.

**Length of the left arm of the stair**

Available only for T form stair.

**The length of the longer side of the bottom arm in 2D view****The length of the longer side of the top arm in 2D view**

Available only for L form and angled stairs.

**Angle**

Available only for angle gathered and angle divided stairs.

**Total length of the lower arm and the rest****Total length of the upper arm and the rest****Total stair width****Length of the rest****Length of the stair**

- During the construction of the stair you can specify both the parameters of the steps and the stair geometry. The architect can use lock buttons beside the parameters. According to the state of the lock buttons it is able to give constrains or leave the parameters to be changed. The locks can have three states:

- 



Open



The value of the parameter can change as a result of modification of any parameter. By clicking on an open-state lock you can switch to closed-state.

#### Closed

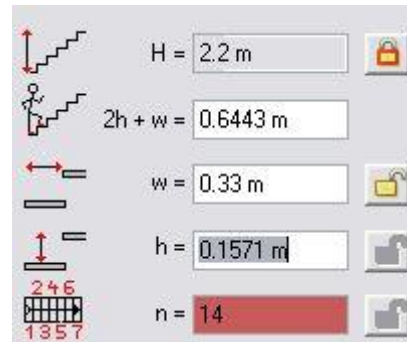
The value of this parameter is a given constrain and it will not change if we change any other parameter. Click the lock button again to turn its state into *open*.



#### Inactive

The value of this parameter may change if we modify other parameter values. Depending from the other parameter values you can either modify the value in the input field or not. It is not possible to change the state of this button by clicking on it. In this state there is no way to get to the *open* or *closed* state.

- One change made in a state of a button can change the state of other buttons that are not *closed*. The parameter values in the fields are calculated automatically. Any change made in a field will be followed by a recalculation in the other fields. The time needed for the automatic recalculations depends on the modified parameter and the computer configuration but takes no more than a few seconds.
- Sometimes the given constrains do not allow us to change a parameter value to the one we give in the input field. In that case all the parameter values remain unchanged; even the one we wanted to change. In that case the background of the geometry constrain parameter field turn into red.

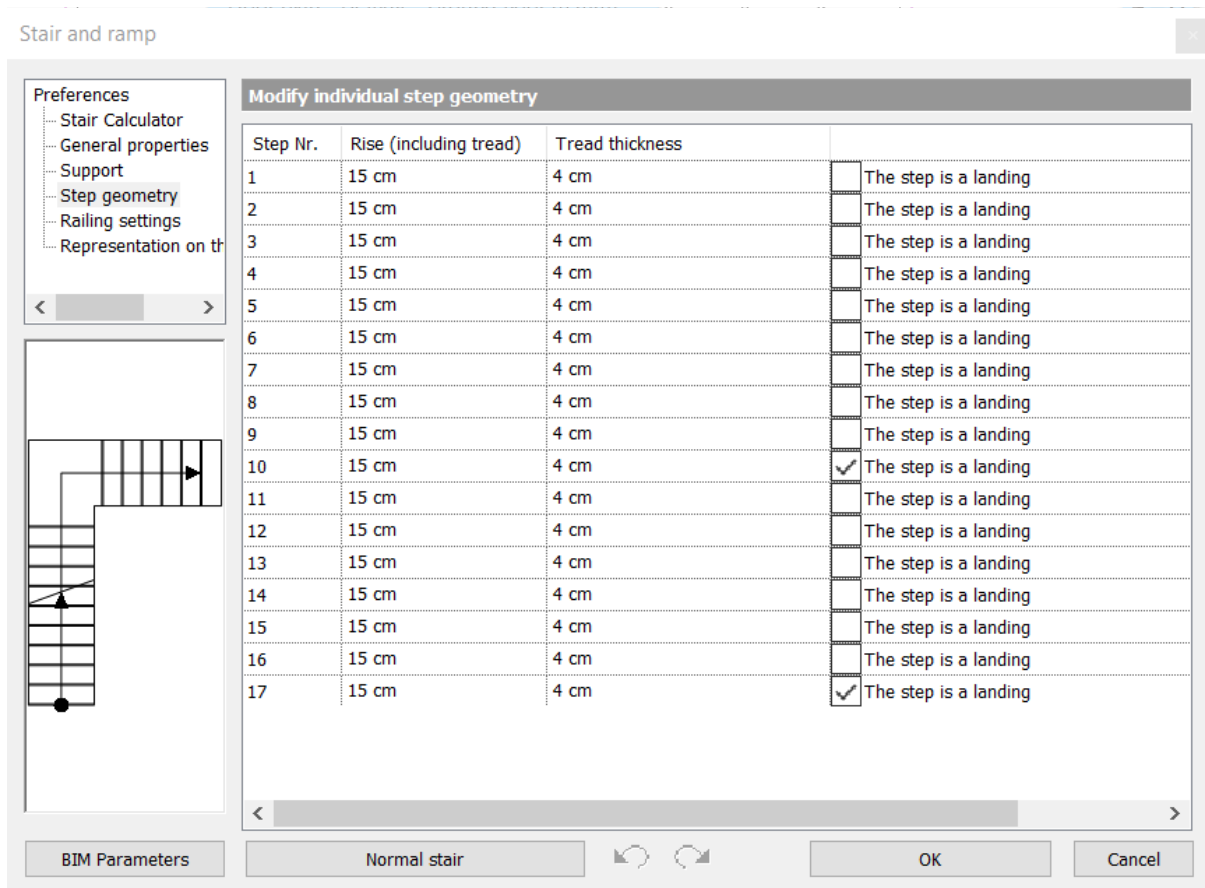


### Setting the step geometry

Click *Step Geometry* to specify the geometry of individual steps. This menu is available after placing a stair.

The riser pro step and step thickness can be set for each step. You can check if the step is a rest.

As we have seen, if the staircase is created by a user or it is a predefined one, but the staircase geometry has been modified, the *Edit* dialog cannot be selected, the height cannot be set there.

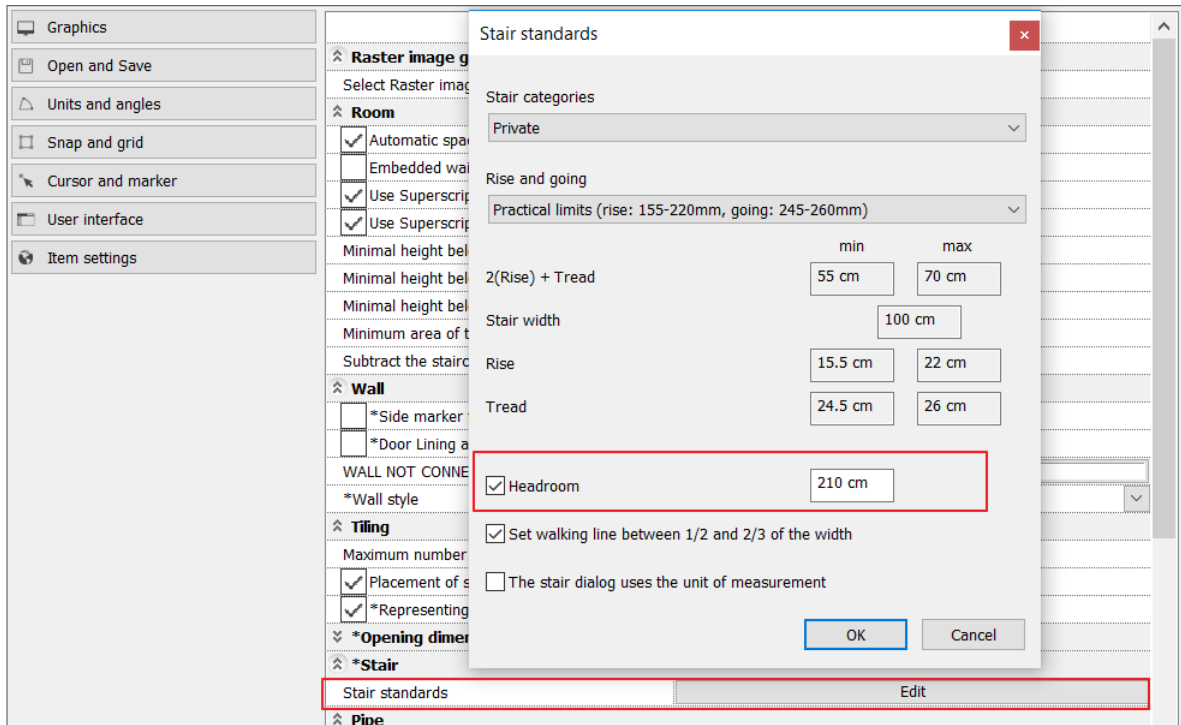


When such staircases are modified, the Stair geometry dialog contains the stair height that can be varied.

### 10.9.4.2. Cut slabs above stair

The command selects a stair and cut a hole in the upper slab. The width of the slab cut is defined by the width of the staircase.

You can define the head room clearance required over the stair in Options > Item Settings > Stair standards dialog.



### 10.9.4.3. Move, add, delete nodes, offset

With the Shortcut menu you can move or delete nodes and add new ones to the existing stair steps.

#### Moving nodes

To change the position of a tread, click on one of its corner points.

#### Delete nodes

Click on a corner point of a tread to select it, and delete it by choosing the **DELETE NODE** keyword from the command line.

#### Add nodes

To add new corner points to the stairs, click on one of the stair edges.

#### Offset

To add an offset to the left or right side of the stairs, click on one of the stair edges.

### 10.9.4.4. Straight to arc and Arc to straight

For this purpose you can use the following commands in the shortcut menu:

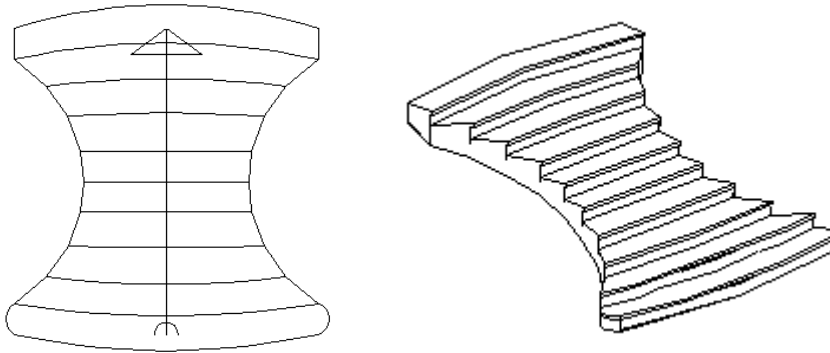
- ❖ Turned into curved edge
- ❖ Turned into straight edge
- Select a straight edge of the stair you want to modify or select an arched edge of the stair. In this case you can modify the radius of the arc.
- Specify a point. The arched edge of the stair will touch this point.

#### Options:

<b>DIAMETER</b>	Specify diameter.
<b>RADIUS</b>	Specify radius.
<b>PERIMETER</b>	Specify perimeter (the length of the arc).
<b>ARC</b>	Specify the height of the arc.

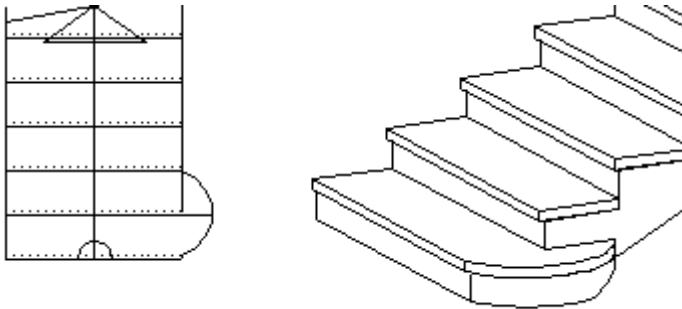
#### Arc → Line

- Select an arched edge of the stair you want to make straight.



### ***Rounded stair with water drip***

The program creates automatically the water drip, in case of stair rounding off, for the straight parts with the given value. It stretches the not cutting arch, so it will be ellipse arch from the circle arch.



## **10.10. Editing the 2D stair symbol**

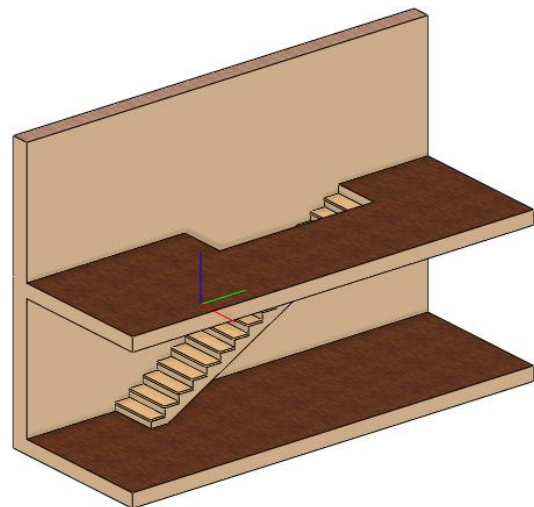
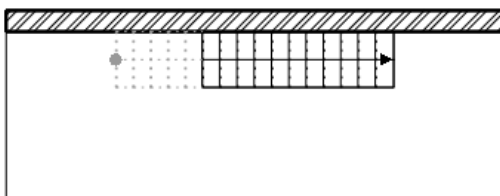
You can change the appearance of the 2D symbol of the stairs to the schematic representation. In schematic mode, the components (lines, texts, etc.) are freely editable.

As a result of this command, the representation of the staircase switches to schematic representation on the floor plan, which is a freely editable group. Entering the group, the stair components (lines, texts, etc.) are freely editable. Editing does not affect the 3D model.

Location of the command: Building > Stair > Edit Stair symbol > Edit Stair symbol components

Click on the stair to convert it freely editable group on the floor plan

Entering the group, you can freely edit the staircase on the floor plan.  
Editing has no effect on the 3D model.



## **10.11. Restoring the 2D of the stair**

It is used to restore the original state of the stair symbol previously converted to a freely editable group.

Restoring the original symbol also involves discarding all the changes you made.

Location of the command: Building > Stair > Edit Stair symbol > Edit Stair symbol components

Click on the stair. The command restores the symbolic floor plan representation of the staircase.



## 10.12. Ramp

### Introduction

Ramp behaves much like the stair tools, so you find very similar creating a ramp with or without handrails using the Ramp tool.

You can create ramp by sketching the run of the ramp or by sketching the boundary lines.

Ramps walking line by default is going up, so you can sketch ramp from the lower to the upper part.

### 10.12.1. Creating ramp

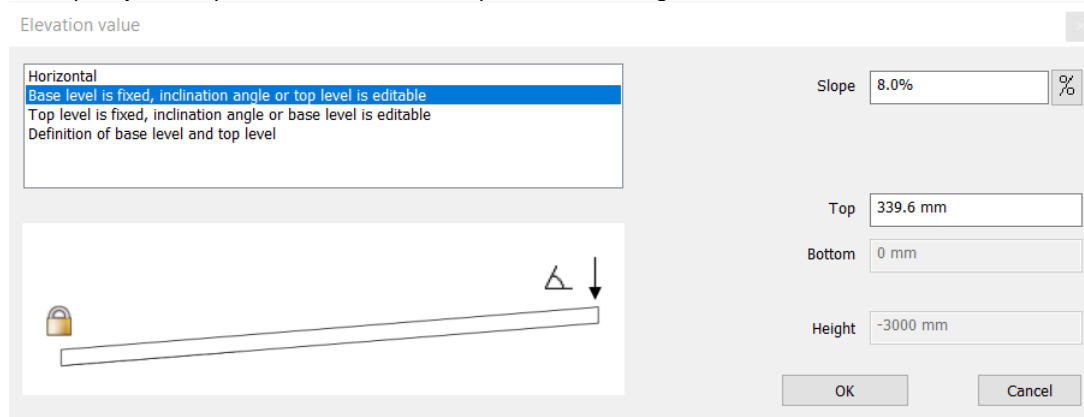
There are several ways of creating ramps.

- ❖ Straight ramp
- ❖ Arc ramp
- ❖ Boundary
- ❖ Predefined shapes

#### 10.12.1.1. Straight ramp

While in your 2D floor plan view, select Building > Ramp > Straight ramp to draw a ramp.

1. Click to place the ramp lower left point.
2. Click to place the ramp lower right point. You defined the ramp width.
3. Click to place the ramp upper left point.
4. Specify the slope / elevation in the Ramp Elevation dialog.



#### 10.12.1.2. Arc ramp

While in your 2D floor plan view, select Building > Ramp > Arc ramp to draw a ramp.

1. Click to place the ramp lower left point.
2. Click to place the ramp lower right point. You defined the ramp width.
3. Click to place the ramp upper left point.
4. Specify the slope / elevation in the Ramp Elevation dialog.

#### 10.12.1.3. Ramp by boundary

You can create ramp by editing the right and left side boundary. The arms must be pre-drawn with 2D tools like line, arc, etc. After launching the command, pick the sides in the order you see in this image.

Hit Enter at the end to create the ramp.

You can set the slope in the dialog box that appears when you finish the boundary definitions.

1. First pick the right side boundary elements and press ENTER.
2. Then pick the left side boundary elements and press ENTER.

- 3.1. Pick on start point of the ramp segment on the right side
- 3.2. Pick on end point of the ramp segment on the right side
- 4.1. Pick on start point of the ramp segment on the left side
- 4.2. Pick on end point of the ramp segment on the left side

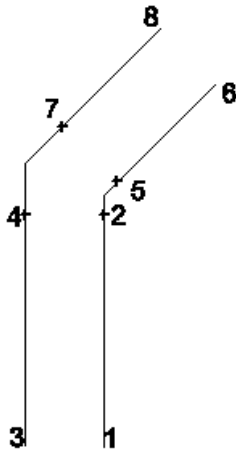
5. You can set the ramp slope in the dialog box

6. Repeat the workflow for each segments.

Hit Enter at the end to create the ramp

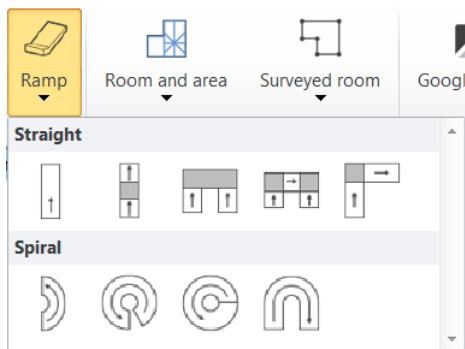
**Some rules:**

- ❖ The point given first must be the endpoint of the ramp. The ramp will start upwards from here.
- ❖ The hotspots of the arms are denoted by small squares. If you click outside the arms the program will select the closest existing hotspot on the arm automatically. However, if you select a point on the arm, the automatic hotspot selection function will switch off and the selected point will be accepted.

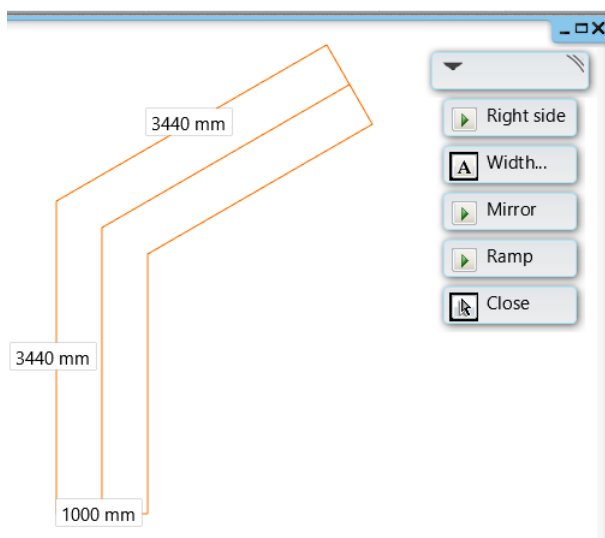
**10.12.1.4. Predefined ramp types**

The predefined ramp type library contains the most commonly used ramp types.

Location of the command: Building > Ramp



- Select your type. You can place the first point in the drawing area. Press F5 to change the reference point.
- Place the ramp by giving the main geometrical points.
- When you specify the main geometrical points you can use the Mirror, Width and Other one keywords from the floating menu if you want to change the stair route direction or you want to define a new width.

**Options:**

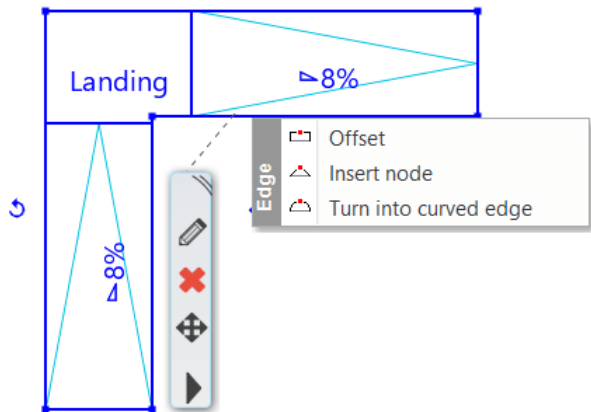
<b>Right/left side</b>	You can define the point on the opposite side of the stair.
<b>Mirror</b>	In case of spiral stairs you can change the route direction.

<b>Width</b>	Define the width of the stair
<b>Ramp</b>	Convert to ramp

### 10.12.2. Modification of the ramp geometry

You can modify the geometry of the ramps. The available edit commands are as follows:

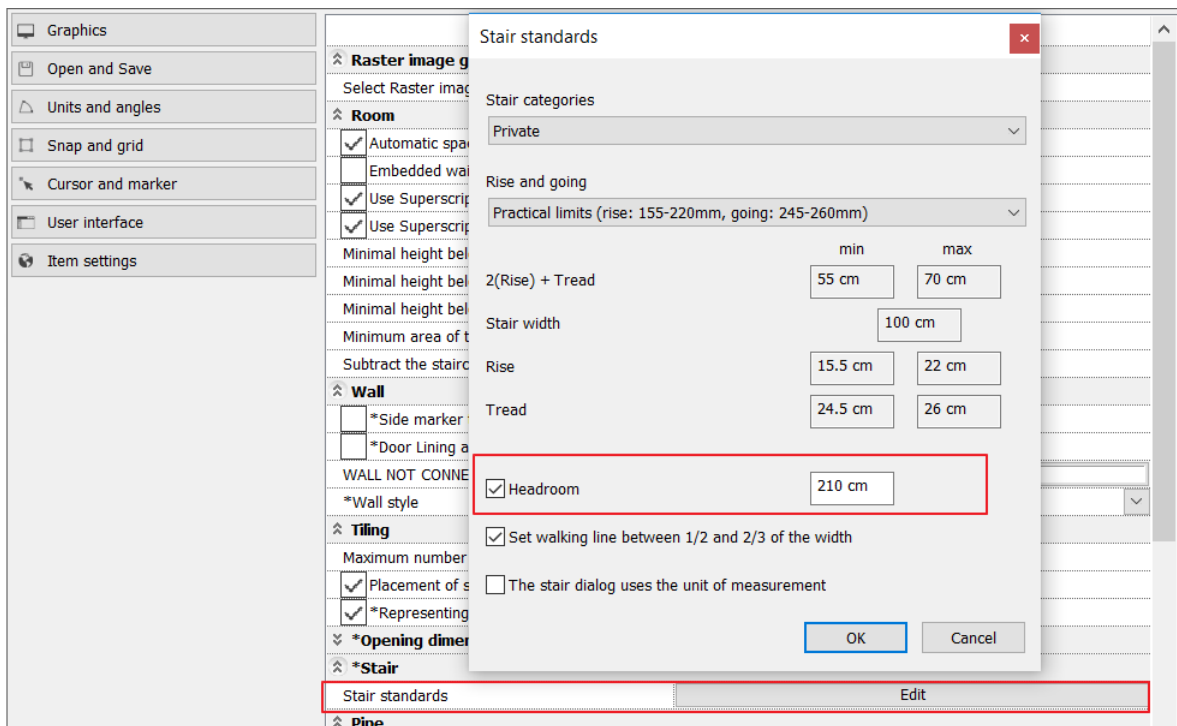
- ❖ Cut the slabs above the ramp,
- ❖ Move, add, delete nodes,
- ❖ Offset the sideline,
- ❖ Offset internal segment border,
- ❖ Straight to arc and Arc to straight edge.



#### 10.12.2.1. Cut slab away above ramp

The command selects a ramp and cut a hole in the upper slab. The width of the slab cut is defined by the width of the ramp.

You can define the head room clearance required over the ramp in Options > Item Settings > Stair standards dialog.



- To execute the command, click on the ramp, above you want to cut the slab.

#### 10.12.2.2. Move, add, delete nodes

##### Moving nodes

To change the ramp shape, click on one of its corner points.

**Delete nodes**

Click on a corner point of a ramp to select it, and delete it by choosing the **DELETE NODE** keyword from the command line.

**Add nodes**

To add new corner points to the ramp, click on one of the ramp edges.

**10.12.2.3. Straight to arc and Arc to straight**

For this purpose you can use the following commands in the shortcut menu:

- ❖ Turned into curved edge
- ❖ Turned into straight edge

### 10.12.3. Ramp properties

The general ramp properties have to be defined before placing a ramp. These properties are available in the **Building - Properties - Ramp** menu.

Any change in the settings will be applied to the ramps constructed afterwards.

#### 10.12.3.1. Ramp parameters

Click *Ramp property* to set the ramp parameters.

Properties

Ramp

Wheelchair ramp with railing 1

Property	Value
<b>General</b>	
On which floors visible? (Except for its own floor)	
<input checked="" type="checkbox"/> All floors	Edit
Connection to the bottom slab	
Horizontal	
Waist slab depth	100 mm
Waist slab height	100 mm
Visible in 3D	
<input checked="" type="checkbox"/> 3D creation	
Waist slab material	Prefab concrete
Thickness	150 mm
Railing	
<input checked="" type="checkbox"/> Style on left side	
Metal railing with rods 1	
<input checked="" type="checkbox"/> Style on right side	
Metal railing with rods 1	
Representation in 2D	
Section line	No section line
Partial line-type	Dotted
Draw walking line	<input checked="" type="checkbox"/>
Cutting elevation	100 mm
Cutting line direction	20°
<input type="checkbox"/> Show geometry text	
Elevation	0 mm
Upper level elevation:	* VARIES *
Absolute elevation	* VARIES *
Representation on the floor above	
Categorize in IFC as:	Default
Use explicit geometry in IFC export	<input checked="" type="checkbox"/>

OK Cancel

#### General properties

General 2D view settings can be made here: colour, width, layer, line type, priority.



For detailed description of *Ramp properties* see chapter 3.2.1 on *Specifying general properties*, for BIM parameters see [this chapter](#), for *Sets* see chapter 3.2.3. on *Using sets of properties*.

#### 2Representation in 2D view

- ❖ Section line: The visualization of cutting line is optional: the cutting elevation and the cutting line direction can be set. **Partial line type** and its visualization can be set, too.

Dotted above the section line

No section line

With section line

Dotted above the section line

Contourline above the section line

**Cut out rest of walking line**

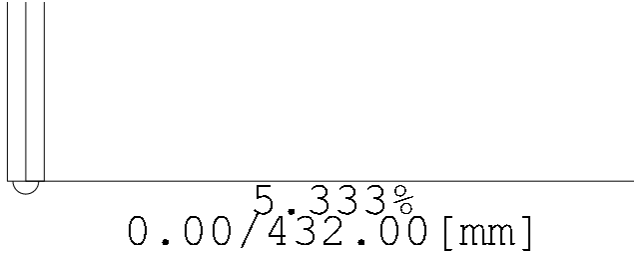
Using this option, the program cuts the rest section from the walking line.

**Draw walking line**

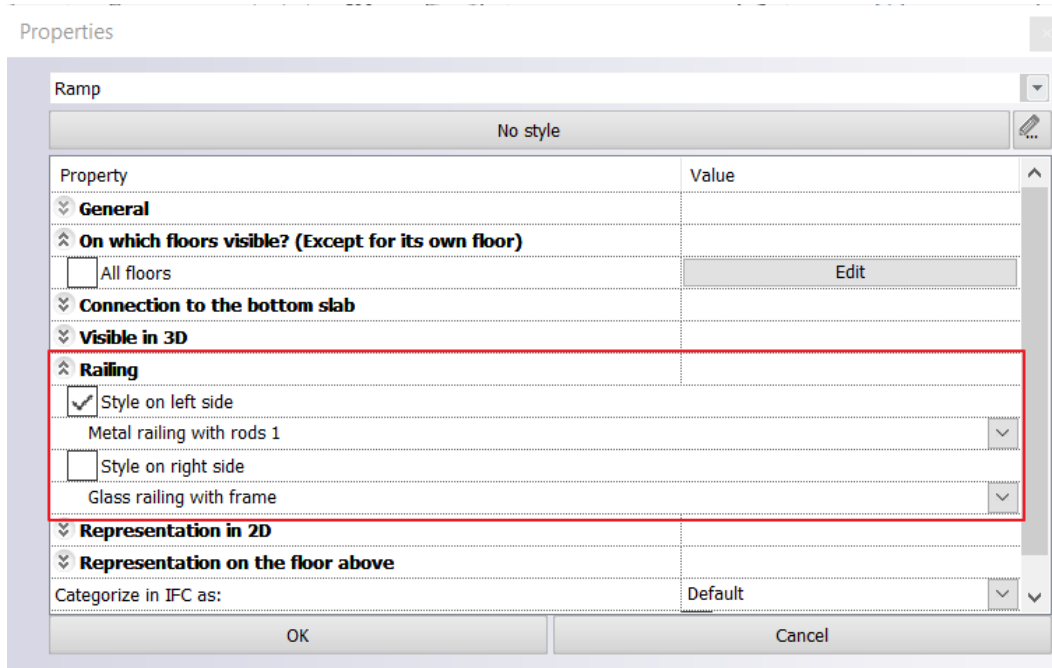
Using this option, the arrow of the walking line goes through the section line and stops before the landing.

**Show geometry text**

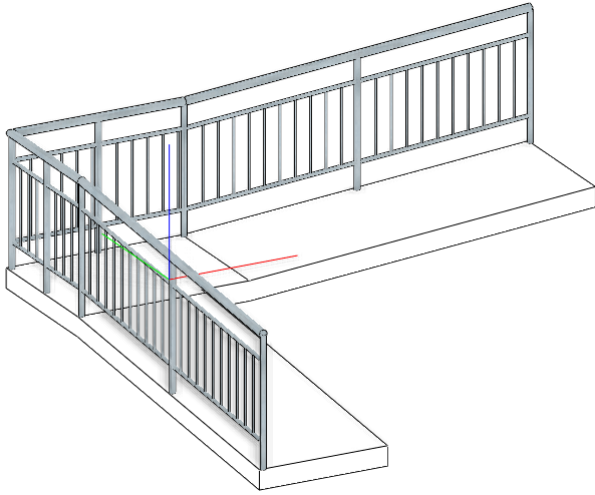
Show geometry text option will place the ramp slope, the initial and ending elevation.

**10.12.3.2. Railing settings**

Click *Railing settings*. Predefined Railing types will appear:



- ❖ You can specify whether the *Railing* will be generated **on the left side** and **on the right side**.



## 10.13. Railings

In ARCHLine.XP you can control every aspect of Railing design. Railings can be freestanding or anchored to stairs.


### Railing properties and creating Railings

When you create a Railing, you have to define:

- ❖ the Railing properties using the Railing wizard,
- ❖ the Railing path.

### Railing properties - Railing wizard

The method enables the modelling of Railings or other separator elements like fences on a final construction drawing level.

Click with right mouse button on  *Railing tool* or use the *Building menu - Properties - Railing* command. After you activated this command, a *Railing dialog* pops up. This wizard includes the setting possibilities of all Railing components.



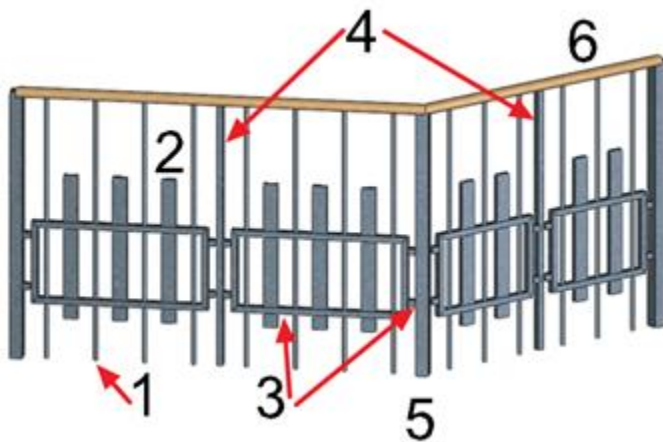
After defining Railing properties, save those into a **style**. When placing a Railing, Railing wizard will not appear. Instead, it will be created along the defined path with the properties of the active style.

### 10.13.1. Railing properties

In the Railing dialog box you can set baluster and handrail properties.

The general settings and the Railing component properties are available on the following pages:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>❖ General settings</li> <li>❖ Distribution of primary balusters between balusters by big steps</li> <li>❖ Intermediate balusters between primary balusters</li> <li>❖ Individual panels and bars</li> <li>❖ Distribution of balusters by big steps between newel posts</li> <li>❖ Balusters on nodes of path segments</li> <li>❖ Handrail</li> </ul> | <p>(General settings of the Railing)</p> <p>(1 - Primary balusters button)</p> <p>(2 - Intermediate balusters button)</p> <p>(3 - Panels and bars button)</p> <p>(4 - Balusters by big steps)</p> <p>(5 - Newel post at the turn button)</p> <p>(6 - Handrail settings)</p> |
|---|---|



On every pages you can use the following options:

#### Automatic refresh on page

With this option each modification on the Railing will be visible immediately in the preview window.

#### Update button ()

With this button you can update the 3D model of the Railing in the preview window manually.

#### Preview mode button ()

Click this button to select from wireframe, hidden line removal, textured or no preview options. The 3D model of the Railing will be represented in the preview window according to the selection.

#### Increase or decrease the height of all balusters

With this option you can increase or decrease the height of all balusters, panels and bars, handrail at once, relatively to their defined heights. To do so, click the checkbox, enter a height value (positive or negative) in the input field and click the



update button or press Enter. You can see the change in the preview window. Please note that you may apply the **Exclude from general increasing/decreasing of height** option individually to the Railing components. Depending on your choice, the increasing/decreasing of height will be applied selectively on the Railing components.

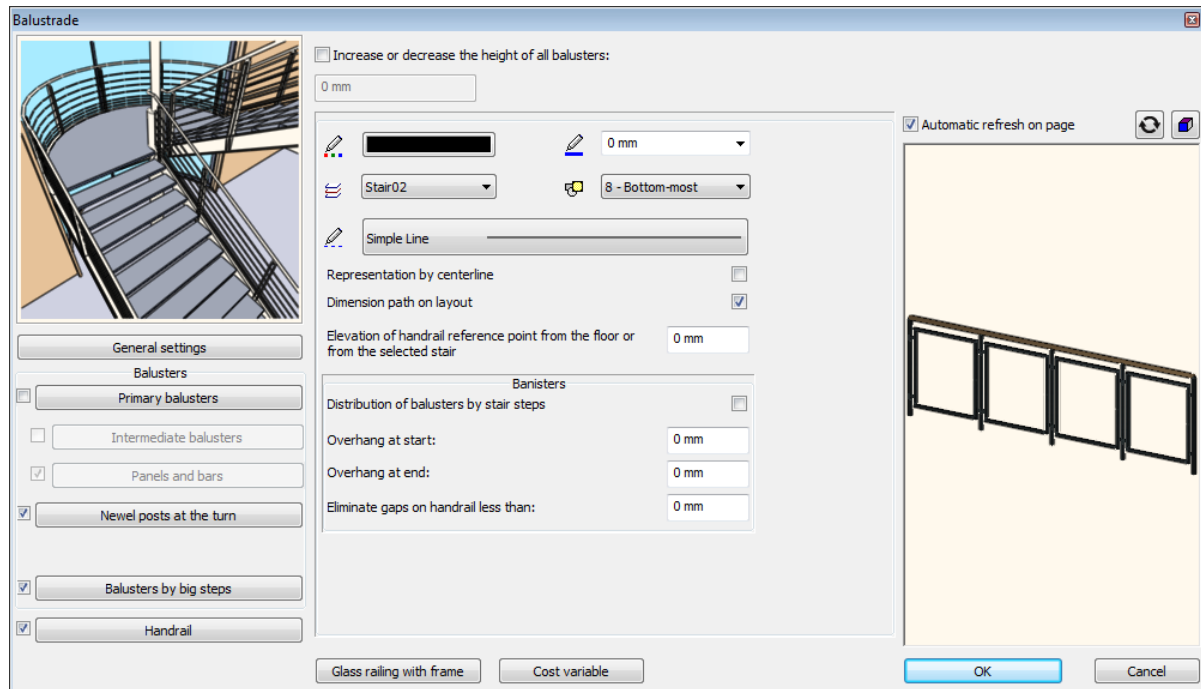
### 10.13.1.1. General settings

Click **General settings** button to set the general settings like color, layer, line type, line thickness and priority.

Use the **Representation by centerline** option if you want to represent the Railing by line on the floor plan. If you don't use this option, the top view of the 3D model of Railing will be represented on the floor plan.

**Dimension on layout:** use this option for automatic dimensioning of the Railing on the floor plan.

**Elevation of handrail reference point from the floor or from the selected stair:** you can define the elevation of Railing relative to the stair or the path of Railing. When you place a Railing by specifying a path, the elevation is measured from the zero level of the active floor. The elevation of each Railing path node can be defined during the placement procedure.



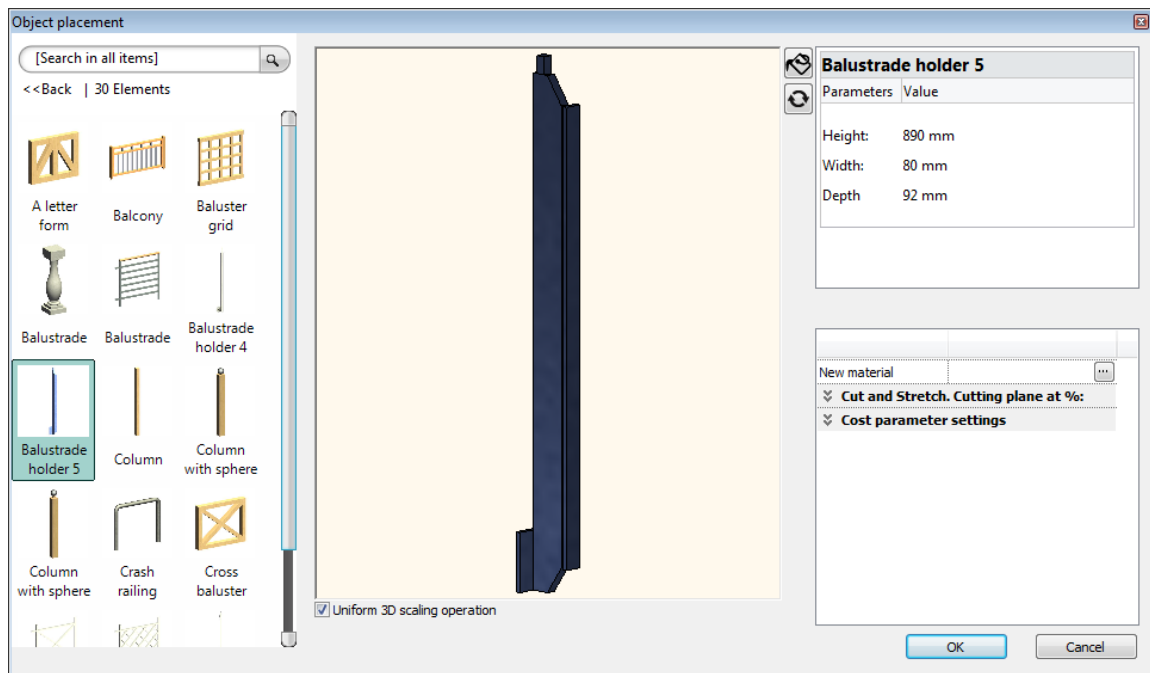
### 10.13.1.2. Primary balusters

Click the **Primary balusters** button to define primary balusters and the distribution and placement settings of primary balusters.

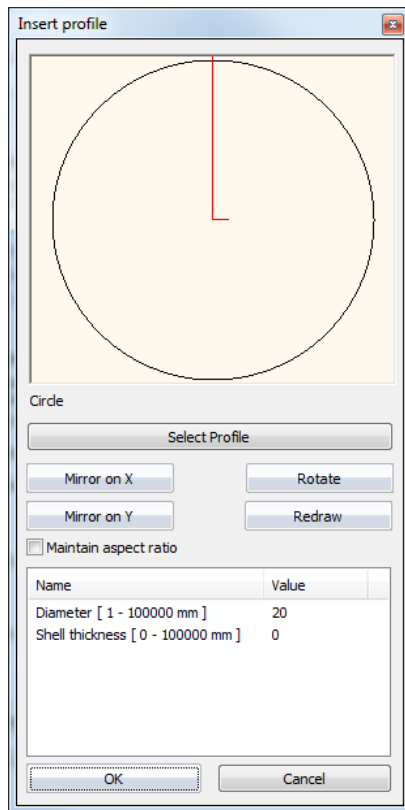
You can define balusters by objects or profiles.

#### **Baluster by object**

- Click on the **Object** option, then the **Object selection** button to display the *Object placement* dialog box.
- Select the desired baluster from *Railings* category.
- Set the parameters of the selected object. Define the material of the object, as well.
- **Ok** Returns to the *Railing* dialog box.



### Baluster by profile



If you want to define balusters with a sectional profile instead of an object:

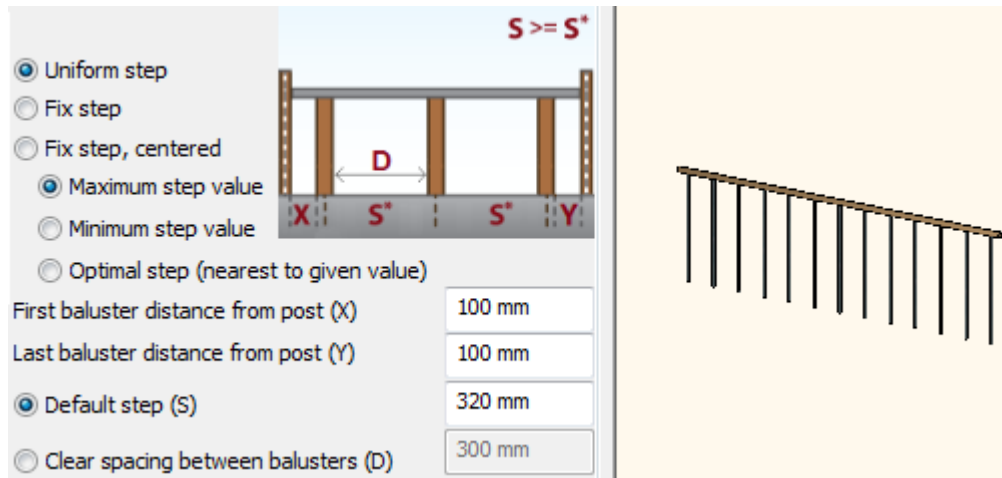
- Click the **Profile** option, then the **Select profile** button to display the **Insert profile** dialog box.
- Select the desired profile from the profile directory.
- Set the parameters of the selected profile.
- **Ok** Returns to the *Railing* dialog box.



Read about the **Insert profile** dialog box in detail in Chapter 8.2.10. *Select from list*.

You can define balusters by objects or profiles when you use the **Primary balusters**, **Intermediate balusters**, **Newel posts at the turn** or **Balusters by big steps** options.

### Primary balusters distribution settings



**Uniform step.** The distance between balusters are equal and the distance of the first and last baluster from post is fix. Distance between balusters can be defined either by **Clear spacing between balusters (D)** or **Default step (S)** parameters. These two options make the definition of distance easier because in some cases you know the gap between two balusters, in other cases you know the distance between two balusters. The distance between two balusters (S) will always be longer than the gap between two balusters (D) by the width of baluster (object or profile). You can set the **First baluster distance from post (X)** and **Last baluster distance from post (Y)** parameters, too. This is the distance between the first/last baluster and the start/end of the Railing part. Primary rule is the correspondence to X/Y parameters, secondary rule is the correspondence to D/S parameters. Since D/S distance matches rarely to the specified X/Y distances, you can select between **Maximum step value** and **Minimum step value** options. In the first case the gap/distance between balusters will be D/S or less, in the second case the distance between balusters will be D/S or more.

Example: if  $X=Y=7$  cm,  $D=5$  cm and the width of a baluster is 13 cm, 16 pieces of balusters will be created along a 2.85 meter long path with the option of maximum step value, with the gap of  $D^*=4.2$  cm between balusters. With the option of minimum step value 15 pieces of balusters will be created with the gap of  $D^*=5.4286$  cm between balusters.

**Fix step.** The distance between balusters (S or D) and the first baluster distance from post (X) are fix values, exactly the same as defined. The **Last baluster distance from post (Y)** is not editable in that case. **From the beginning** and **From the end** options define whether the measuring of X must be started at the beginning or the end of the Railing part. Based on our previous example, 16 pieces of balusters will be created with the gap of  $D=5$  cm between balusters. However, the last baluster will be drawn with the width of 8 cm instead of 13 cm.

### Primary balusters placement settings

Offset from path(>0:right)	0 mm
Elevation from path(<0:down)	0 mm
Baluster height	1000 mm

**Offset from path (>0: right).** Horizontal alignment relative to the path of Railing. E.g. balusters can be placed on the side of a staircase structure.

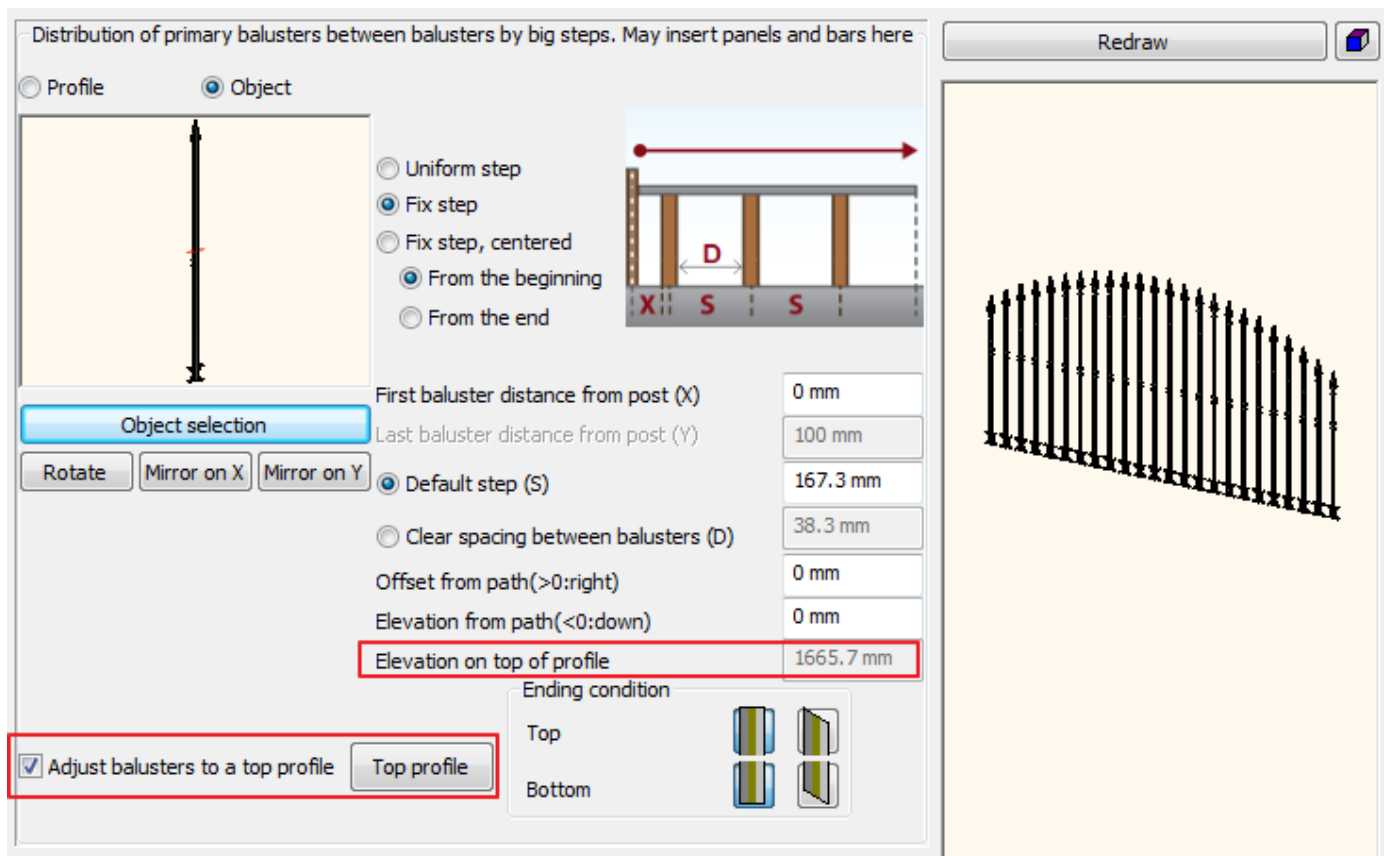
The value specified in the *Offset from path* aligns only the primary balusters. The offset of handrails can be defined in another dialog.

**Elevation from path (<0: down).** Elevation of balusters relative to the path of Railing.

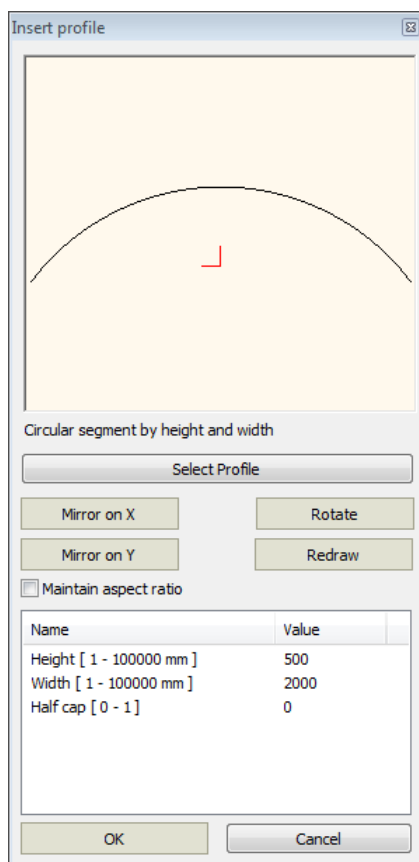
**Baluster height.** The height of balusters can be set here. If the baluster is created by object, its height cannot be modified here.

### Adjusting balusters to a top profile

Inside a period you can define an open profile to which you can adjust the height of balusters.



- Switch on the Adjust balusters to a top profile option.
- Click **Top profile** button and select *Circular segment by height and width* profile.

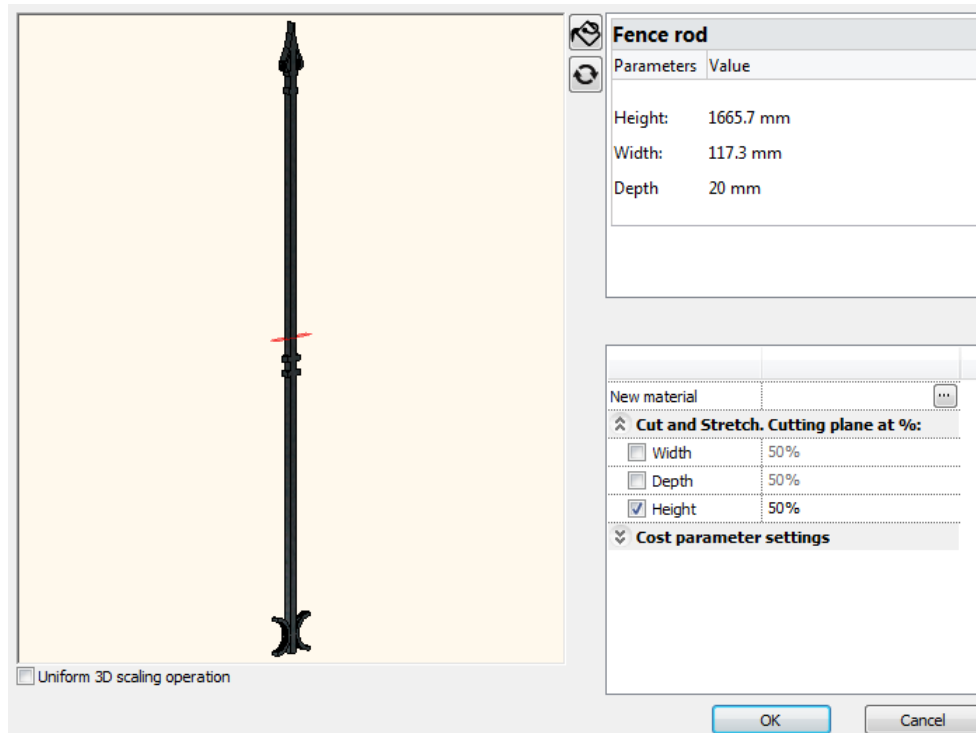


- After defining the top profile, the top of balusters will be adjusted to the profile.  
 The stretching of the object is available by defining a cutting plane.

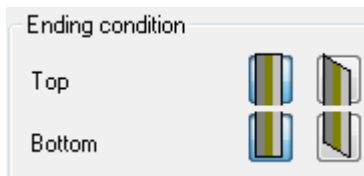
This is the so-called **Cut and Stretch** property. In the three main directions cutting planes can be positioned in percentage of the main dimensions. The program cuts the object with the cutting plane at the defined position and inserts an appropriate piece with homogenous cross section at the place of cutting.

Thus you can achieve changes in the dimensions with a non-linear transformation.

After stretching, that's why you find the decoration in the middle of the fence rod still with a constant height, horizontally along the Railing part.



### Top and bottom ending of balusters



You can define the top and bottom ending of balusters that can be horizontal or slanted. It comes into the picture when the path of Railing is not horizontal. In that case the baluster endings can follow the slope if you select the slanted option.

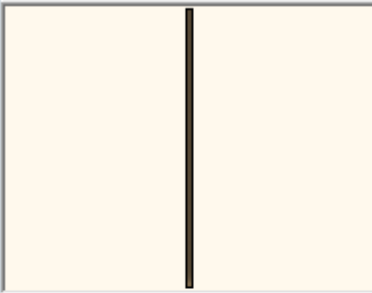
### 10.13.1.3. Intermediate balusters

It's a frequent case when balusters in a fence are placed in two rows behind each other with an offset. This way the second row hides the gaps between balusters in the first row. With the intermediate balusters function it is available, too.

- Click check box for **Intermediate balusters** button and then click the button itself.
- You can define secondary baluster and its distribution and placement settings.

Insert an intermediate baluster between primary balusters

Profile  Object



Select profile

Steel



Offset from middle point (>0: forward) 20 mm



Offset from path(>0:right) 0 mm

Elevation from path(<0:down) 0 mm

Baluster height 1250 mm

Ending condition

Top  

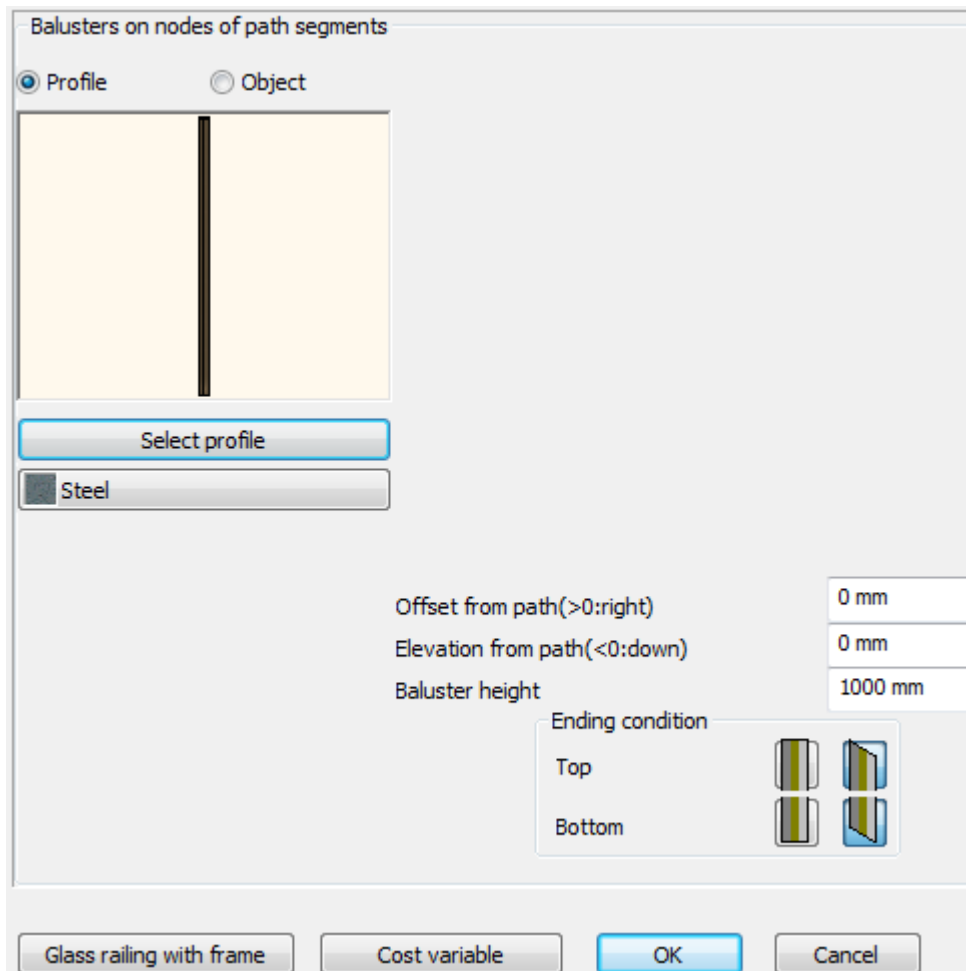
Bottom  

Adjust balusters to a top profile Top profile

The baluster definition and its distribution and placement settings are the same as for the **Primary balusters**. You can select a different profile or object for balusters, a different top profile to adjust the top of intermediate balusters. An **Offset from middle point (>0: forward)** defines the offset relative to the midpoints primary balusters. In addition, you can specify the **Offset from path (>0: right)**, **Elevation from path (<0:down)**, **Baluster height** parameters. Also, you can define the baluster ending conditions.

#### 10.13.1.4. Newel posts at turn

Newel post is a tall post at the head or foot of a stair, supporting the handrail, for example. These are balusters in the nodes of Railing path segments.



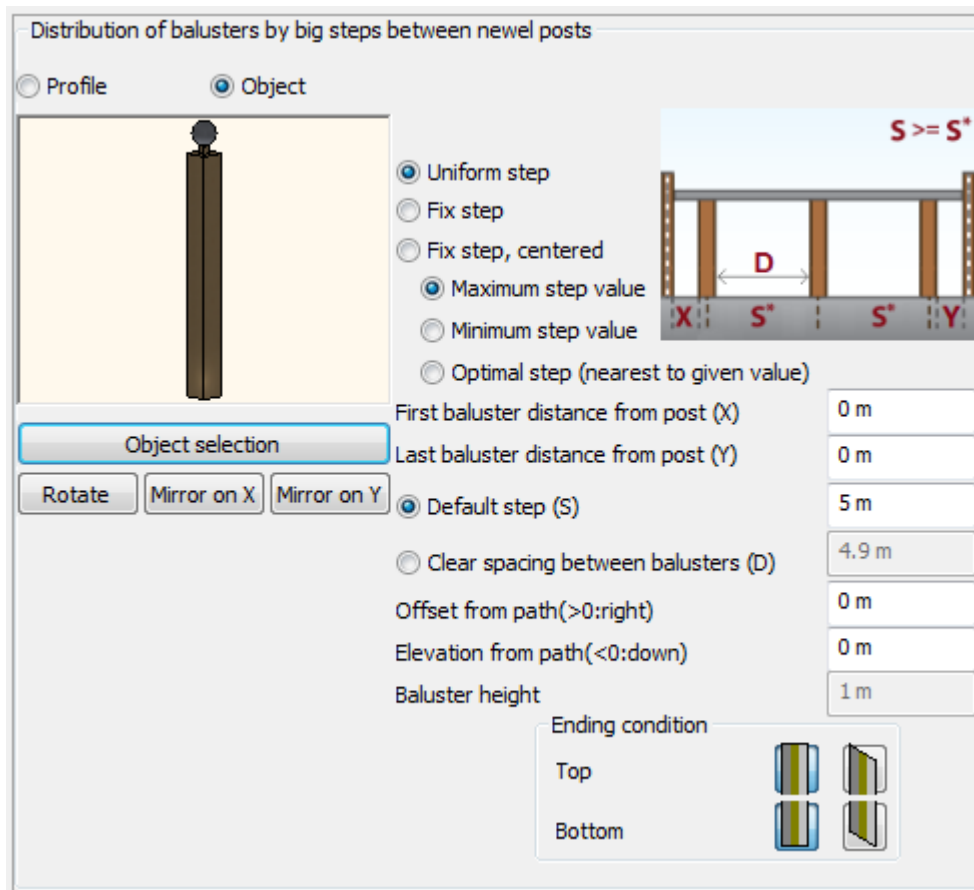
- Click the checkbox for **Newel post at turn** button, select a profile or object, then specify the profile/object parameters and placing conditions. The specified newel post will be placed in each node of the Railing path.
- Newel posts at turn may modify the distribution of primary and secondary balusters, therefore click **Update** button to see the changes in the preview window. The newel posts make the distribution period shorter on both ends of the Railing part by the width of a newel post.



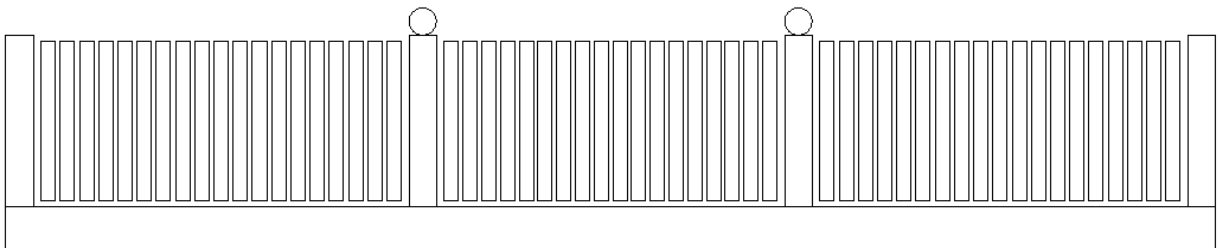
#### 10.13.1.5. Balusters by big steps

Balusters can be placed between the nodes of Railing path with different distribution rule than the rule applied to primary and intermediate balusters distribution. Primary and intermediate balusters are distributed between these balusters.

- Click the checkbox for **Balusters by big steps** button and then click the button. Here you can define balusters by profile or object and their distribution between two nodes of the Railing path similarly as you can do it for the primary balusters.

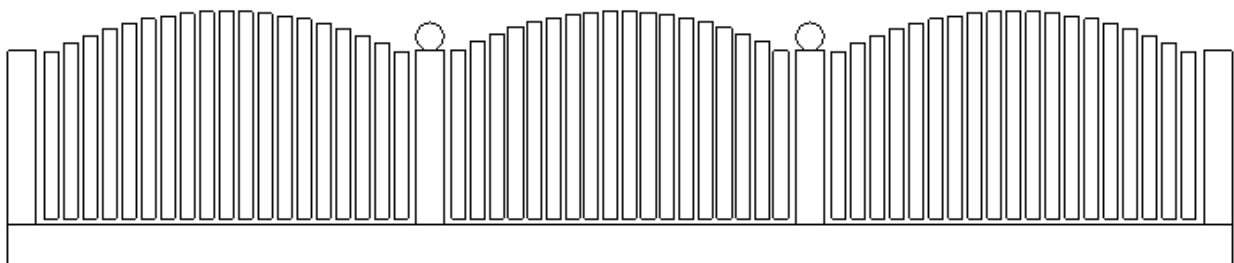


On the figure below you can see two newel posts created by **Newel posts at the turn** and two balusters created by **Balusters by big steps**.



Between balusters created by **Balusters by big steps** the distribution rules of primary balusters and intermediate balusters are applied. As a consequence, **Top profile** option used for the primary balusters is applied to each distribution between two balusters created by **Balusters by big steps**.

This case is shown on the next figure:



### 10.13.1.6. Panels and bars

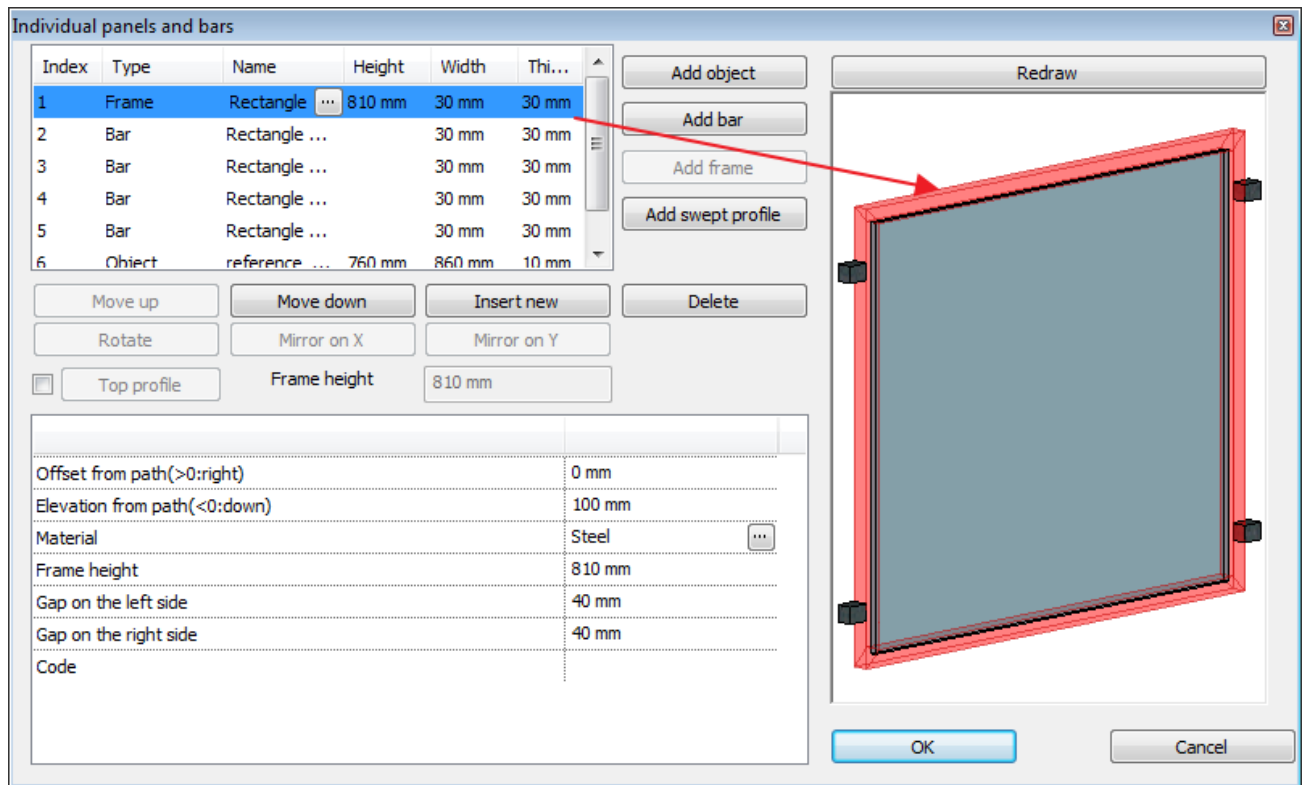
In addition to the prior mentioned possibilities you can add individual components to the Railing. For this you must click the checkbox next to the **Panels and bars** button first, and then click **Panels and bars** button. You can add the following individual components in the appearing **Panels and bars** dialog:

- ❖ Object
- ❖ Bar
- ❖ Frame



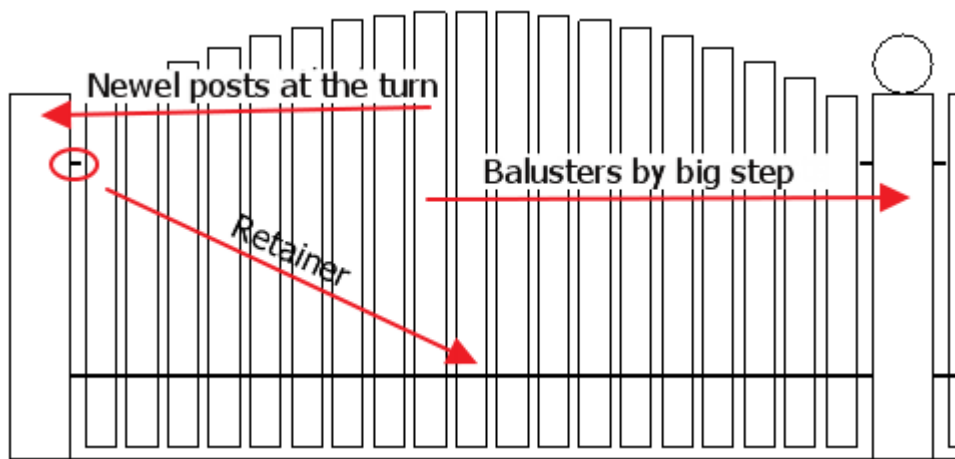
### ❖ Swept profile

The individual elements are listed in a table in the dialog. The selected element in the list is highlighted in the preview window so you can easily identify it.



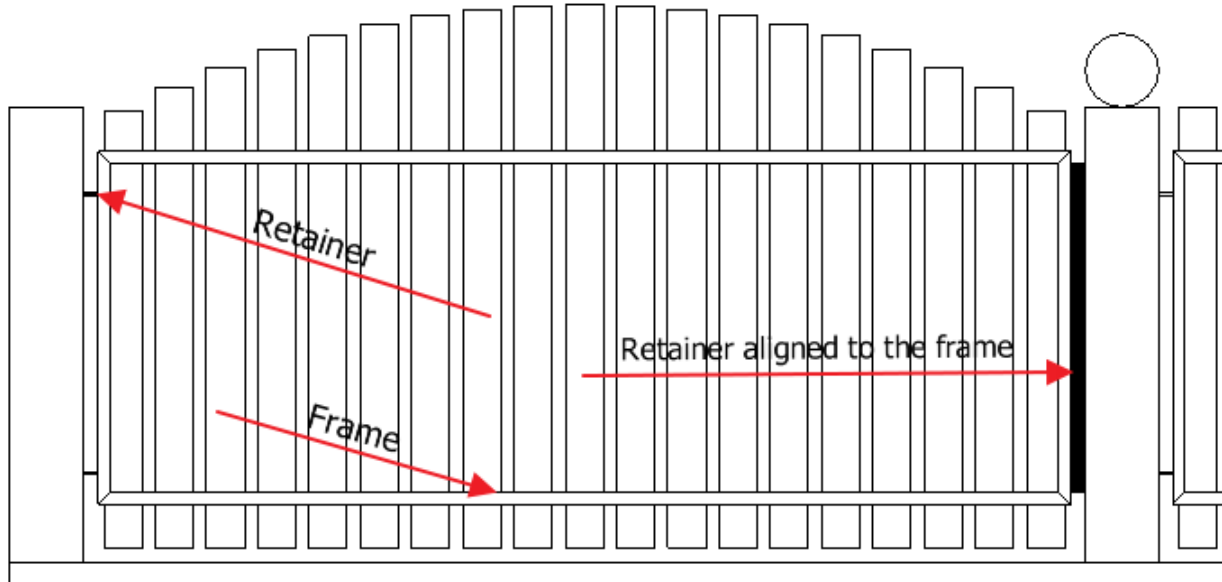
### Adding objects

- To add an object, click **Add object** button. In the top-left part of the dialog a new component appears in the list with parameters of index, type, name, height, width, thickness and visibility.
- To modify the object, click ellipsis button in the name column. The *Object placement* dialog comes up, where you can browse for an object and then define the parameters of the selected object.
- With the buttons below the list of panels and bars you can rotate (**Rotate** button) and mirror (**Mirror on X** and **Mirror on Y** buttons) the selected object.
- In the bottom-left part of the dialog you can specify the placement conditions.  
**Offset from path (>0: right)**: defines the horizontal offset relative to the path of Railing.  
**Elevation from path (0<: down)**: vertical distance between the bottom of the object and the path of Railing.  
**Enlarge object to the available length**: stretches the object so that it fills the gap between balusters created by **Newel posts at the turn** or **Balusters by big steps**. For example when you place a retainer as an object and you apply this option to this retainer, the program stretches this object between balusters created by **Newel posts at the turn** or **Balusters by big steps**. Using this option, you can define the **Gap on the left side** and **Gap on the right side** parameters, too.



**Trim overhanging sides:** when you specified an object that hangs over the space between balusters created by **Newel posts at the turn** or **Balusters by big steps**, the program cuts the overhanging parts automatically, avoiding the disturbing of the next baluster distribution period. Using this option, you can also define the **Gap on the left side**, **Gap on the right side** and **Cut** parameters. Gap means the gap between the object and newel posts at the turn/balusters by big steps. Cutting options are: symmetric, trim left, trim right.

**Adjust height to the frame:** this option is available when frame is defined in the *Panels and bars* dialog. In that case the height of object is aligned to the height of the vertical side of the frame, which modifies the **Elevation from path** parameter of the object, too.



**Placement from:** you can define whether the object should be placed to the left, right or middle of the Railing period. Depending on the choice of **Left/Right/Middle** there are other tuning possibilities: **Distance from left (>0: inside)**, **Distance from right (>0: inside)**, **Offset from the middle point (>0: forward)**.

**Cut balusters by top profile:** this option is available when you use the **Top profile** option in the *Panels and bars* dialog. With this option the top of the defined panels and bars will be cut with the defined top profile.

**The figures follow the increase:** when the path of Railing is not horizontal, you can set the object either to stay horizontal or follow the slope along the path.

**Exclude from general increasing/decreasing of height:** this option defines the application of the **Increase or decrease the height of all balusters** to the object.

**Code:** you can write any information here, for example the part number of the individual object.

### Adding bars

- To add a bar, click **Add bar** button. In the top-left part of the dialog a new component appears in the list with parameters of index, type, name, width, thickness and visibility. The field for height remains empty.
- Click ellipsis button in the name column to open the *Insert profile* dialog, where you can define the section profile of the bar you want to create. The width and height values you define here will appear as width and thickness in the in the list of panels and bars.
- In the bottom-left part of the dialog you can specify the placement conditions.
 

**Offset from path (>0: right):** defines the horizontal offset relative to the path of Railing.

**Elevation from path (0<: down):** vertical distance between the bottom of the object and the path of Railing.

**Material:** you can define the material of the bar.

**Direction:** you can define horizontal, vertical, diagonal or tilted (with free angle of slope) directions. In case of diagonal direction you can select from left bottom -> right top or left top -> right bottom options. If there is a frame defined as individual component, you can use the **Adjust to the frame** option.

**Use available length:** depending from the bar direction selection, you can use this option. In that case the bar extends to the available length. The available length depends on your choice: either spacing between newel post at the turn or spacing between posts (balusters by big steps). In case of **Horizontal** bar direction you can set **The figures follow the increase** option for the case the path of Railing is not horizontal.

**Bar length:** you can define custom bar length. In case of custom bar length definition you can set the position of the bar inside the Railing period to the middle, right or left. Additional adjustment possibilities are the **Offset from middle point (>0: forward)**, **Distance from right (>0: inside)** and the **Distance from left (>0: inside)** options.

**Bottom (start) ending:** you can define the ending of the bottom of the bar. Click the ellipsis button to set the desired ending.

**Top (other) ending:** you can define the ending of the top of the bar. Click the ellipsis button to set the desired ending.

**Exchange endings:**

With the **Multiple placement** option multiple copies of bars can be created by different rules. You can define the direction and spacing for the multiplication. The direction of multiplication can be horizontal, vertical or perpendicular to the direction

of bar. You can define the spacing between bars with the **By step of bars** and **By clear spacing between bars** options. In case of horizontal and vertical bar orientations there are only two options for the direction of multiplication. You can specify the number of multiplication upside and downside by the **Repeat upside** and **Repeat downside** values.

**Wavy bar:** check this option if want to turn straight bars to wavy bars. You can define the **Wavelength** and **Amplitude** as well.

**Code:** you can write any information on the bar here, for example the part number of the bar.

#### Adding a frame

- To add a frame, click **Add frame** button. An element with frame appears in the list of individual components and then the **Add frame** button becomes inactive. Only one item can be created from this type of component.
- Click the ellipsis button in the name column to open the *Insert profile* dialog, where you can define the section profile of the frame you want to create. The width and height values you define here will appear as width and thickness in the in the list of components in the *Panels and bars* dialog.

The following properties can be set:

**Offset from path (>0: right):** defines the horizontal offset relative to the path of Railing.

**Elevation from path (0<: down):** vertical distance between the bottom of the frame and the path of Railing.

**Material:** you can define the material of the frame.

**Frame height:** the distance between the bottom and top of the oriented frame. This parameter appears in the list of components in the height column.

**Exclude from general increasing/decreasing of height:** this option defines the application of the **Increase or decrease the height of all balusters** to the object.

**Gap on the left side:** at the beginning of the Railing period this is the gap between the first Railing component and the frame.

**Gap on the right side:** at the end of the Railing period this is the gap between the frame and the last Railing component.

**Code:** you can write any information on the frame here, for example the part number of the frame.

#### Adding profile along path

With this function you can add individual ornamental elements to a Railing.

- Click **Add swept profile** button. In the list of individual components appears a new component with the type of profile along path.
- Click ellipsis button in the name column to open the *Insert profile* dialog, where you can define the section profile of the component you want to create. The height value you define here will appear as thickness in the in the list of components.

The following properties can be set:

**Offset from path (>0: right):** defines the horizontal offset relative to the path of Railing.

**Elevation from path (0<: down):** vertical distance between the bottom of the component and the path of Railing.

**Material:** you can define the material of the component.

**Frontal profile:** this profile defines the path on which the section profile specified in the name column of the individual component is swept along.

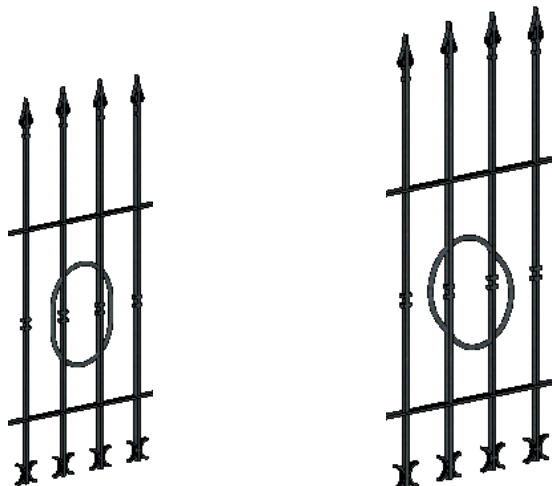


Only closed profile can be selected for frontal profile.

**Placement options:** you can select from a drop-down list whether the component should be placed to the left, right or middle part of the Railing period. Depending on the **Left/Right/Middle** selection you can specify the **Distance from left (>0: inside)**, **Distance from right (>0: inside)** or **Offset from middle point (>0: forward)** parameters.

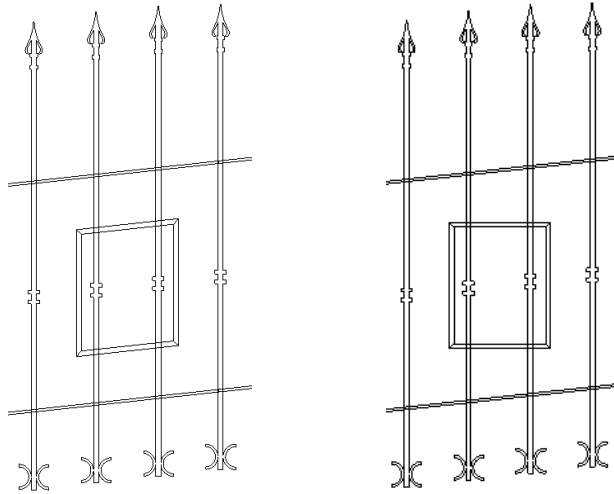
**Angle:** the frontal profile can be rotated on a vertical plane with this angle relative to the vertical direction.

Example: profile along path in the middle of the Railing period, without rotation angle and with rotation angle of 45 degrees.



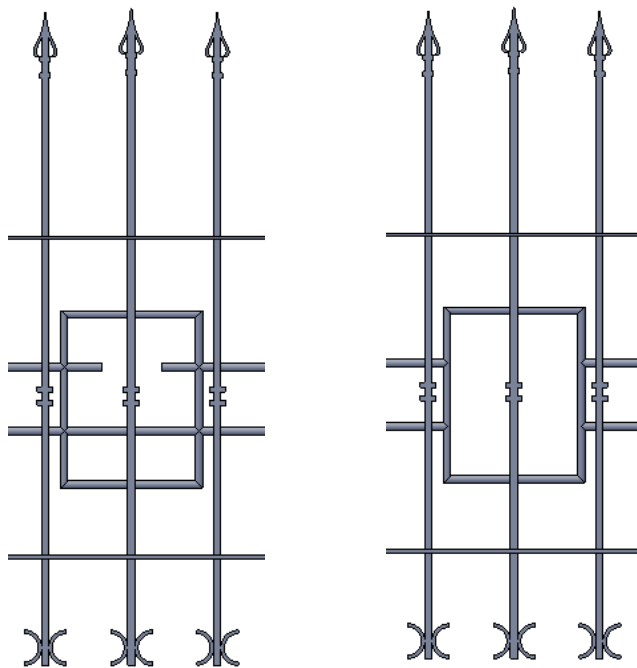
**The figures follow the increase:** when the path of Railing is not horizontal, you can set the swept profile either to stay horizontal or follow the slope along the path.

Example: profile along path with rectangle frontal profile, with and without the option of the figures follow the increase.



**Cut bars:** when the frontal profile of the component intersects with bar components, you can define if bar parts inside the frontal profile must be removed or not. The cutting operation is executed even if different offset from the Railing path values are specified for the swept profile and the bar.

Example: profile along path, rectangle frontal profile, with and without cut bars option.

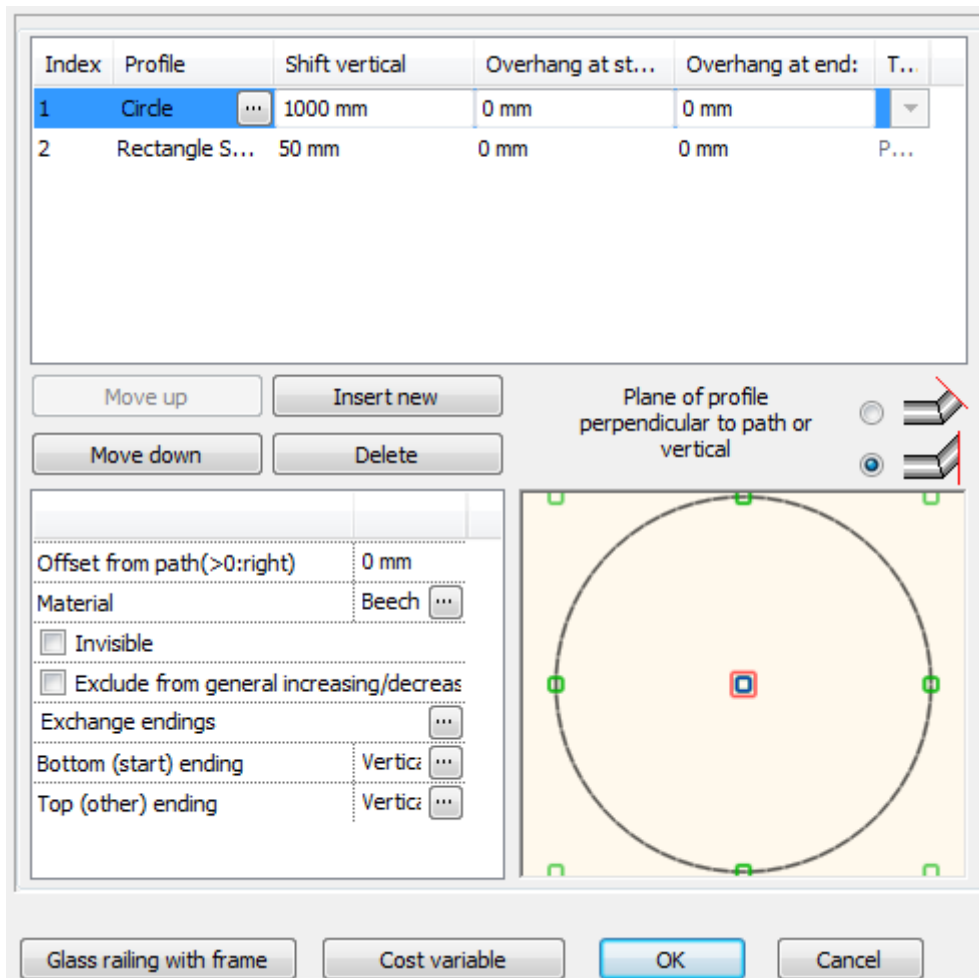


**Code:** you can write any information on the individual component here, for example the part number of the ornament.

- Click **Update** button to see the changes in the preview window in the *Panels and bars* dialog.
- Click **OK** to get back to the *Railing* dialog. Click **Update** to see the changes in the preview window.

### 10.13.1.7. Editing handrails

To add handrails to the Railing, click the checkbox next to the **Handrail** button and then click the button. Here you can define handrails.



The created handrails are organized in a table. Each row in the table represents a handrail. In the table rows you can read the following properties:

- ❖ **Index:** row (handrail) number.
  - ❖ **Profile:** section profile of the handrail.
  - ❖ **Shift vertical:** this is the vertical distance between the bottom of the handrail and the path of Railing.
  - ❖ **Overhang at start:** the overhang of handrail at the beginning of the path of Railing.
  - ❖ **Overhang at end:** the overhang of handrail at the end of the path of Railing.
  - ❖ **Type of path:** describes the path of the handrail. For example a handrail can go along the path of the Railing or it can follow an individual path from layout.
- To change the order of handrails in the table, use the **Move up** or **Move down** buttons.
  - Click **Delete** to delete a row (handrail).
  - Click **Insert new** to add a row (handrail).
  - To change the cross section of the handrail, click the ellipsis button in the Profile column. In the **Insert profile** dialog you can choose the appropriate profile.
- ❖ In the middle of the page you can select whether the section profile of the handrail should be vertical or perpendicular to the path of Railing.



Vertical section profile:



Perpendicular section profile:

There are other setting possibilities on the bottom of the page:

- ❖ **Offset from path (>0: right):** defines the horizontal offset relative to the path of Railing.
- ❖ **Material:** you can define the material of the handrail by clicking the ellipsis button.
- ❖ **Invisible:** use this option to make the handrail invisible.
- ❖ **Exclude from general increasing/decreasing of height:** this option defines the application of the **Increase or decrease the height of all balusters** to the handrail.
- ❖ **Exchange ending:** click the ellipsis button to exchange the settings of bottom (start) ending and top (other) ending.
- ❖ **Bottom (start) ending:** you can set the ending of the start of the handrail by clicking the ellipsis button. The **Beam ending** dialog appears where you can set the appropriate ending.

- ❖ **Top (other) ending:** you can set the ending of the start of the other end of the handrail by clicking the ellipsis button. The **Beam ending** dialog appears where you can set the appropriate ending.

At this point you have defined all parameters of the Railing. On the preview image displayed in the dialog you can check the result of your settings. To accept your settings, click Ok.

### 10.13.2. Placing Railing

If you saved Railing settings in a **style** and you made it active, the Railing will be created along the specified path without showing up the Railing editor dialog.

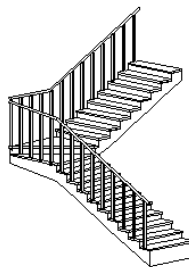
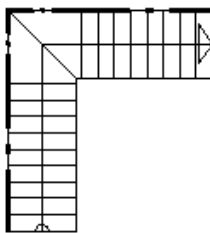
The *Railings tool* offers two possibilities for placing a Railing:



#### **Create Railing on stair**

Select one side of the stairs. The program uses this side as the alignment path of the Railing.

- Click on one side of the stairs.  
The program creates the Railing on the stair with the active Railing settings.



#### **Create Railing by path**

You have to define a path for the Railing. The path can be either open or closed.

- Define the points of the alignment path after each other.  
The path can contain lines and arcs. When these are joined, the next line or arc can join to the tangent of the previous arc.
- **Enter**      Completes specifying the alignment path.

#### **Path points with the same height**

- After specifying the nodes of the path and pressing *Enter*, base height defined in the Railing settings will be assigned to all nodes of the path.

#### **Path points with different heights**

- After specifying the nodes of the path you can select the node to which you want to assign a different height.
- Give the height of the node relative to the base height defined in the general Railing settings.
- Repeat the node selection and height specification with any other nodes.
- Pressing *Enter*, the Railing is created.

#### **Height defined by stair**

For giving the height value you can choose a point of a stair.

- After selecting the node and the **STAIR** subcommand, choose a point of a stair to obtain its height.

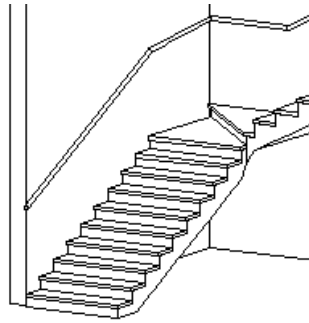
#### **Height defined by roof**

Similarly, for giving the height value you can choose a roof.

- After selecting the node and the **ROOF** subcommand, choose a point of an edge of a roof to obtain the required height. By default, the top height of the roof plane at the selected point will be assigned. By selecting the **BOTTOM** subcommand, you can assign the bottom height of the roof plane at the selected point.

### Railing without balusters

With the handrail settings defined in the Railing properties dialog there are three possibilities to draw Railing without balusters in the Building menu - Railing submenu: Create sweep, Create sweep on stair, Create sweep on wall



#### Create sweep

It works the same as *Create Railing by path* command with the difference that only the handrail is created.

#### Create sweep on stair

It works the same as *Create Railing on stair* command with the difference that only the handrail is created.

#### Create sweep on wall

With this command you can place handrails along the side of a wall.

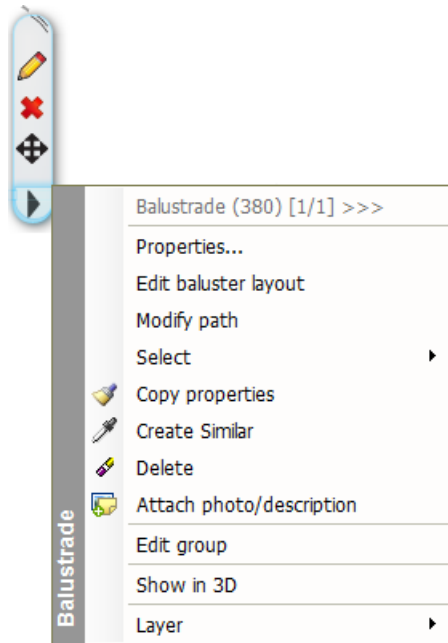
- Start the command and then click on the side of a wall.
- Place the layout of the side view of the wall on the floor plan.
- Draw the open path of the handrail on the layout.
- Press Enter to finish.
- Specify more handrails by drawing open paths again on the layout or close the command by pressing Enter.
- A message appears: Do you want to stop editing layout of Railing? Click yes to exit from the command and to delete the layout.

## 10.13.3. Modifying Railings

You can modify a Railing after you have created it. You can change its:

- ❖ *properties*,
- ❖ *alignment path*,
- ❖ *geometry and components*.

If you click right of left mouse button on Railing, shortcut menu appears with commands for modifying the properties or editing Railing.

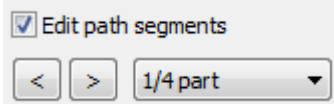


### 10.13.3.1. Modify Railing properties

The Railing editor dialog box that has been used before creating the baluster comes up. In this dialog box you can modify the properties of all Railing path segments (Railing parts) at once or each Railing part separately.

The additional options are the followings:

### Edit part segments



With this option you can set the properties of each Railing part separately. To switch between Railing parts, use the arrow buttons or select a part from the drop-down list.

### Disable handrails on this part

With this option you can remove handrails from the selected parts.

### Full regeneration using the same distribution on all parts

With this option you can regenerate all parts (path segments) with the current settings. If the distributions are different on path segments, or there are individually modified balusters, you will lose them after this operation.

### Regeneration by parts

With this option you can regenerate only those parts with the current modifications that hadn't been modified separately from other parts.

### Copy to baluster clipboard / Paste from baluster clipboard

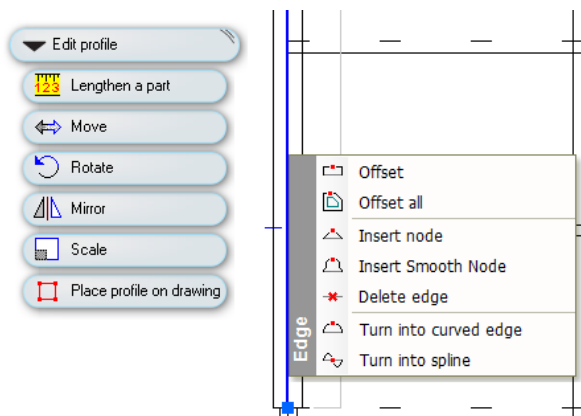
On the pages where you can edit balusters, you have the possibility to copy the current baluster settings to the clipboard or paste the Railing settings from the clipboard. For this you can use the **Copy to baluster clipboard** or the **Paste from baluster clipboard** buttons.



If you want to customize the settings of a Railing path segment (part), use the **Edit baluster layout** command.

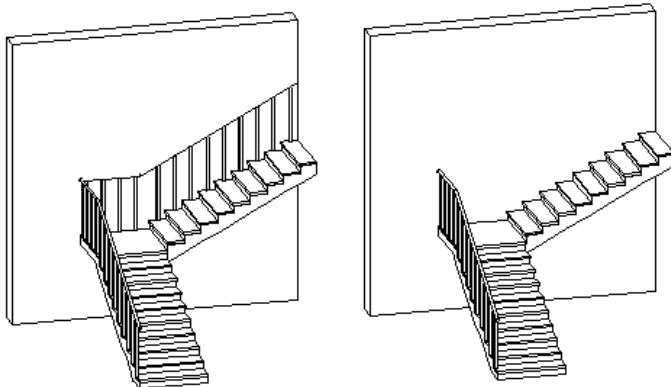
### 10.13.3.2. Modify Railing path

To edit Railing paths, select the Modify path command from the local menu. *Edit profile* commands appear in the floating menu. At this point you can edit the Railing path on the floor plan (in top view).



See the description of the *Edit Profile tool* in Chapter 8.2.9 *Editable profile*.

With the **Modify path** command you can easily install a Railing on only one side of the steps, instead of both sides. To do this, apply the *Delete edge* command.

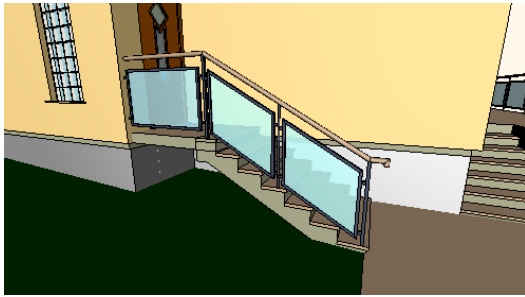


You can also use the marker commands by clicking on the node or edge of a selected Railing part.

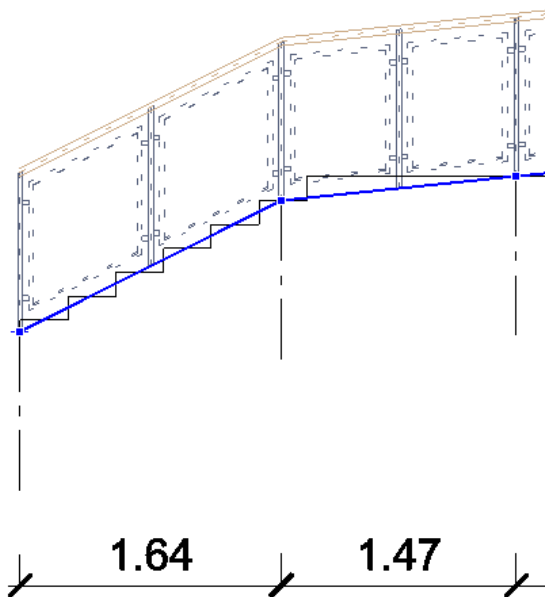


### 10.13.3.3. Edit baluster layout

In the local menu of a Railing or a Railing layout you can find the Edit baluster layout command. With this command you can modify the geometry and components of an existing Railing.

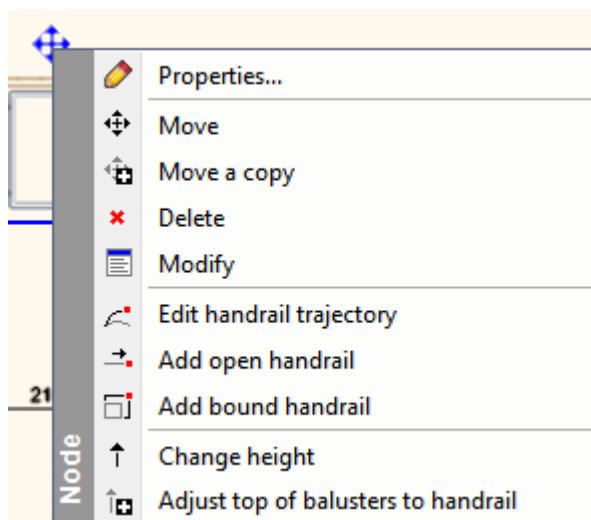


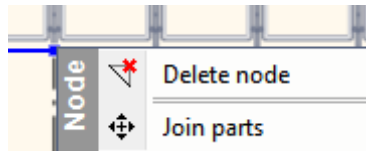
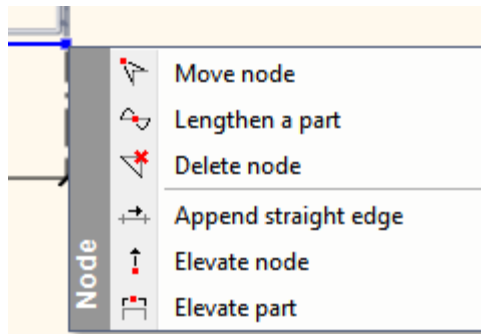
- Place the side view of the Railing layout on the floor plan.
- side view of the Railing layout appears on the floor plan with dimensions



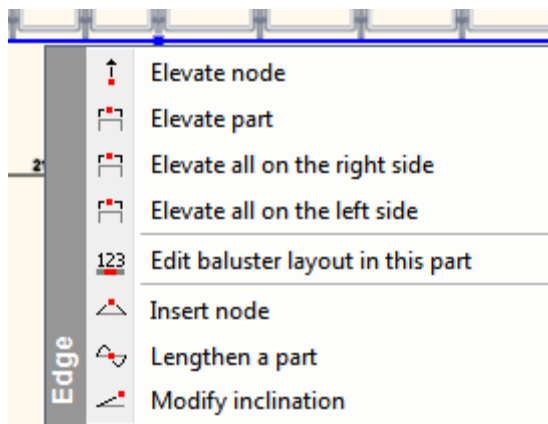
Markers appear on the layout, by which you can activate the edit commands. Depending on the node or edge you click, different commands are available.

Node marker menu items:





Edge marker menu items:



### ***Elevate node***

With this command you can modify the elevation of the Railing node nearest to the click point graphically or entering a value.

### ***Elevate part***

Graphically or entering a value, with this command you can elevate the whole Railing period at once.

### ***Elevate on the right side***

Graphically or entering a value, with this command you can elevate the selected Railing periods and all the other periods that located to the right side of the selected period.

### ***Elevate on the left side***

Graphically or entering a value, with this command you can elevate the selected Railing periods and all the other periods that located to the left side of the selected period.

### ***Edit baluster layout in this part***

With this command you can edit baluster layout of a Railing period independently from the other Railing periods on the *Edit baluster* page of the Railing editor dialog. In addition to the editing possibilities we you have met before, two new options appear in the dialog:

- ❖ **Add baluster on the first post:** check this option you to remove the baluster at the beginning of the Railing period.
- ❖ **Add baluster on the second post:** check this option to remove the baluster at the end of the Railing period.

### ***Copy distribution***

With this command you can copy the baluster distribution from one Railing period to other periods. You only have to click on the targeted Railing periods to copy the distribution from the selected period.

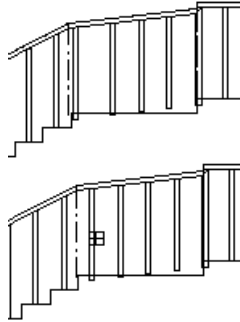
### ***Insert node***

With this command you can insert a new node between two existing Railing nodes.

### **Move handrails or balusters**

With the **Move** command you can move

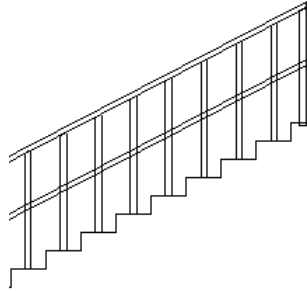
- ❖ the selected handrail or
- ❖ the selected balusters according to the direction of the Railing.
- ❖
- Select the balusters or the handrail.
- Define the reference point.
- Define the new position of the balusters/handrail.



### **Move a copy of handrails or balusters**

With **Move a copy** command you can duplicate:

- ❖ the selected handrail or
- ❖ the selected balusters, which you can move according to the direction of the Railing.
- Select the balusters or the handrail.
- Define the reference point.
- Define the new position of the balusters/handrail.



### **Delete balusters and handrails**

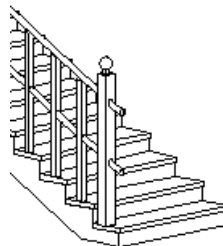
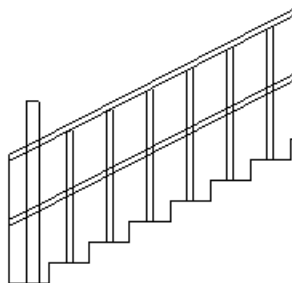
With **Delete** command you can delete the selected balusters or handrails.

- Select balusters and handrails you want to delete.
- Press **Enter** to complete the deletion.

### **Modify balusters and handrails**

With **Modify** command you can modify the type of the selected handrail or baluster.

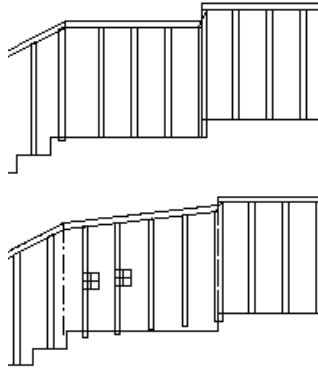
- Select the balusters or the handrail.
- A dialog box appears, in which you can modify the properties of the selected object.
- E.g. modify the last baluster of the Railing:



### Modify Railing inclination with balusters

You can adjust the Railing to the stairs. The handrail follows the angle of the stairs and the balusters follow the stairs. Select two balusters to define the part of the Railing to be aligned with the stairs.

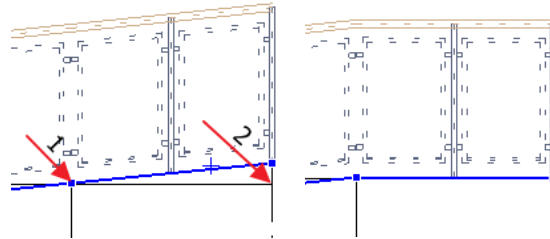
- Select two balusters which indicate the part of the Railing you want to adjust to the stairs.



### Modify Railing inclination with points

With **Modify inclination** command you can define the angle of the selected Railing period with the direction defined by the two selected points.

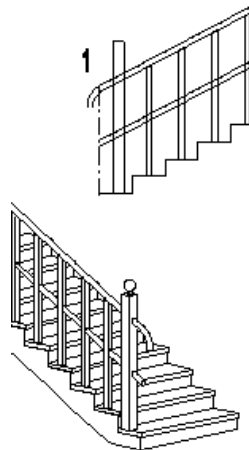
- Select the handrail whose angle you want to modify.
- Select the first point.
- Select the second point to define the angle of the handrail.



### Add open handrail-extension

You can add an overhanging end-part to the handrail.

- Using the *Profile definition* tool in the Toolbox define the path of the overhanging handrail, which you add to the layout image of the Railing. Apply also the **OPENCHAIN** subcommands.
- Specify the reference point of the selected profile. (See point 1 in the figure.)
- Add the new handrail part to the layout image of the Railing. (Select point 1 in the figure.)
- 

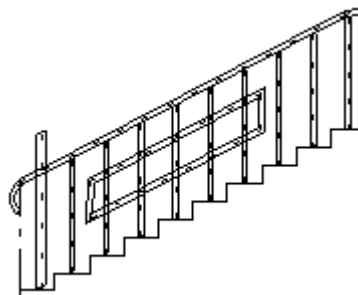


For a description of the *Profile definition*, see Chapter 8.2. *Specifying profile*.

### Add bound handrail extension

You can add a bound end-part to the handrail:

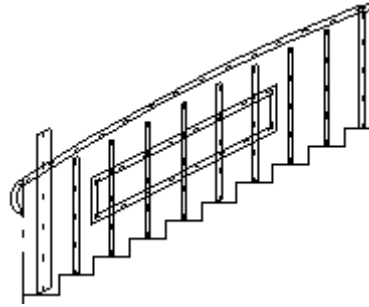
- Using the *Profile definition* tool define the path of the bound end-part, which you add to the layout image of the Railing.
- Specify the reference point of the selected profile.
- Add the handrail path to the layout image of the Railing.



### Edit handrail trajectory

You can modify the trajectory of the selected handrail section.

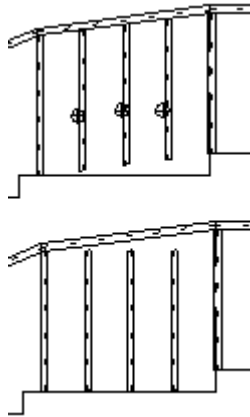
- Select that part of the handrail you want to modify.
- Apply the **Edit profile** commands (e.g. the **Line -> Arc** command).



### Adjust balusters to stairs

Adjusts balusters to the stairs. Only the bottom of the baluster is fitted to the stairs. The *length of the balusters does not change*. To adjust the baluster precisely to the stairs, apply the **Adjust balusters to handrail** command.

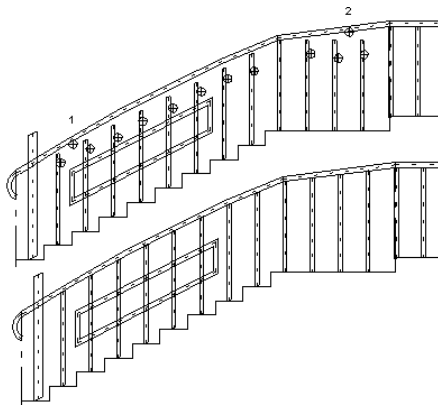
- Select the balusters you want to adjust to the stairs.
- 



### Adjust top of balusters to handrail

You can adjust the top of the balusters to the handrail.

- Select the (appropriate side of the) handrail, to which you want to adjust the top of the balusters.
- Select the balusters whose top point you want to adjust to the Railing.
- 



### Change the height of balusters vertically

With the **Change height** command you can apply this command to balusters in two ways:

- ❖ You can adjust the bottom of the selected balusters vertically to the specified point. The length of the balusters does not change.
- ❖ You can modify the length of the balusters by defining a new top point.
- Select a baluster on the layout to move its elevation (click the bottom point of the baluster) or change its height (click the top of the baluster).
- Specify the new position/height of the Railing.

### Append straight edge

This command is available at end node markers. With this command you can add a new Railing period to the beginning or the end of Railing.

- Click a point on the layout to define the new endpoint of the Railing.

**Join parts**

This command is available at node markers inside a Railing path. With this command you can join two neighbouring Railing periods together.

- As soon as you click on the command, the program automatically joins the neighbouring periods.

**Split part**

This command is available at a node marker if formerly two periods were joined at this node with the **Join parts** command. With this command you can split the two parts that were joined together earlier.

- As soon as you click on the command, the program automatically splits the formerly joined parts apart.

**Delete node**

With this command you can delete the selected Railing node.

**Move node**

With this command you can move the selected Railing node.

**Elevate node**

With this command you can modify the elevation of a Railing node graphically or entering a value.

## 10.14. Roof

### Introduction

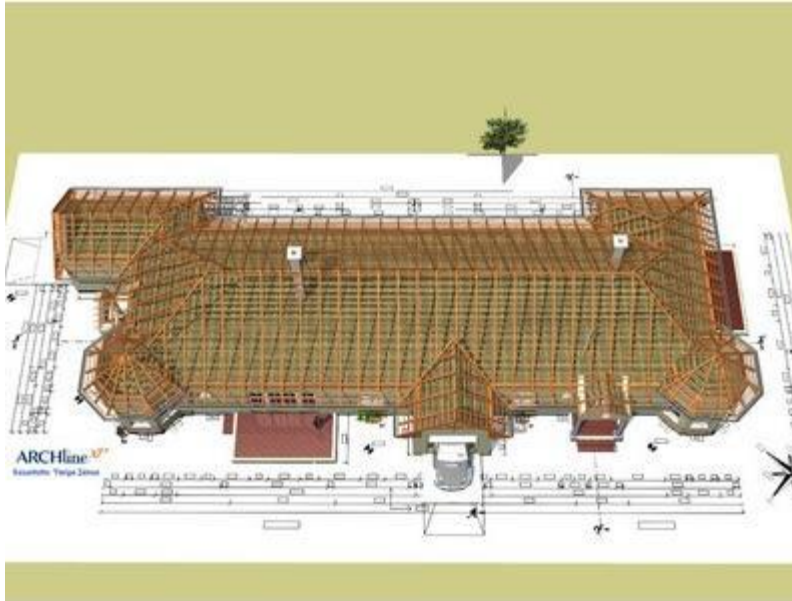
Constructing roof is one of the most complicated processes in architectural design.

ARCHLine.XP offers you a variety of options to create roofs.

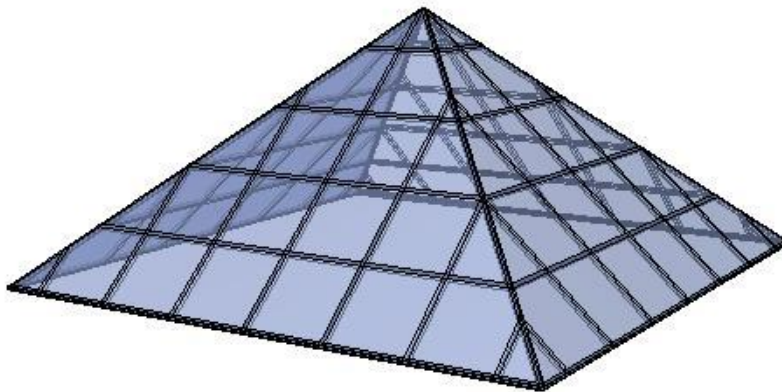
You can create roof *automatically* – the program performs the necessary calculations (works out the intersection lines of the roof planes) and immediately creates the complete roof.

In case of simple roofs, you can create your roof by planes.

In case of traditional roof types you can choose from a long list of default options (pitched roof, tent roof, mansard, arched roof etc.) When you need something different from the default forms, specify a profile and the program creates the desired roof.



(János Varga, architect)



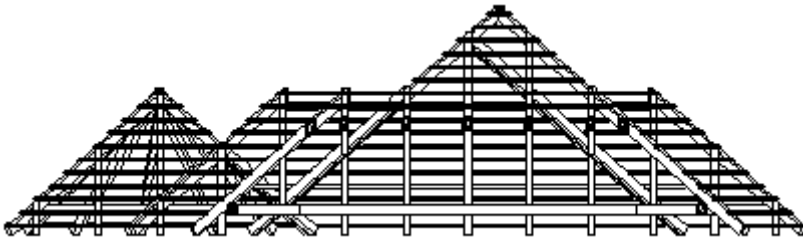
There is no geometrical restriction for either the contour of the roof outline or the profile of the vertical sectional view. This enables you to draw a roof on the floor plan without any difficulty. You can modify the roof later, even by adding new roof planes, or you can add new roofs, glass roofs, extruded roofs, skylights or dormer windows, openings in the roof etc.

The program is able to calculate the roof structure.


The roof structure includes: *rafters, eaves purlin, middle purlin, ridge board, collar beams, and battens for roof tiles*. The position of these structural objects can be modified later, e.g. you can use beams in case of chimneys.


The program is able to list the roof quantity take-off.

The program lists the sizes of roof surfaces and the applied structural objects, which makes it simple to carry out a cost calculation.



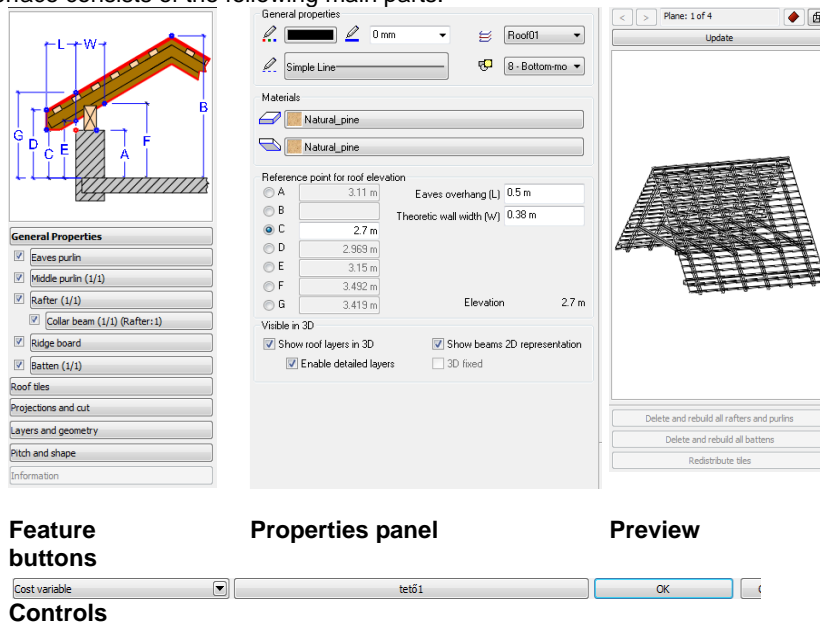
### 10.14.1. Roof properties

Before creating a roof, you can specify its properties. To do so, right-click on the Roof icon in the toolbox or select the *Building menu - Properties* –  *Roof* command.

 When you define an automatic roof, the command activates the *Roof properties* dialog.

The **Roof properties** dialog comes up where you can set the roof properties.

The interface consists of the following main parts:



#### Feature buttons

You can find the Feature buttons at the left side of the Roof properties dialog. These buttons can be used to switch between main structural objects and properties of the roof. The schematic figure on top of the buttons will change according to the selection. (e.g.: when you select the Rafter button, you can see the rafter figure, explaining the values on the properties page.)

There is a very important special feature for these buttons. They have a checkbox to enable / disable a structural part of the roof.

#### Properties panel

In the middle of the Roof properties dialog, you can find the Properties panel, which shows the properties of the selected feature (Rafter, Batten, Projections and Cut, etc.).

#### Preview

You can find the Preview at the right side of the Roof properties dialog. Click on the Refresh button when you would like to see the changes that you made in the settings. You can also switch between roof planes, by using the “<” and the “>” buttons on top of the 3D preview. You can cycle through the model representations with the Presentation settings button. Also, in some cases, when you need you can actually completely drop your changes for the rafters or battens if you use the Delete and rebuild all rafters and purlins and the Delete and rebuild all battens buttons.



## Controls

You can add Cost parameters, save or open sets by using the buttons on the Controls bar. Use the OK button to accept the changes and close the dialog, or use Cancel if you would like to drop all changes you made after opening the Roof properties dialog.

### 10.14.1.1. How to use the Roof properties dialog

When you work with the Roof properties dialog you should use the Feature buttons on the left hand side of the dialog to switch between main roof features and structural parts. You can use the checkboxes next to the Feature buttons to enable or disable a specific structural part.

You can make changes on the Properties pages for each feature and after using the Refresh button at the right top corner of the dialog, you can update the changes to the 3D preview.

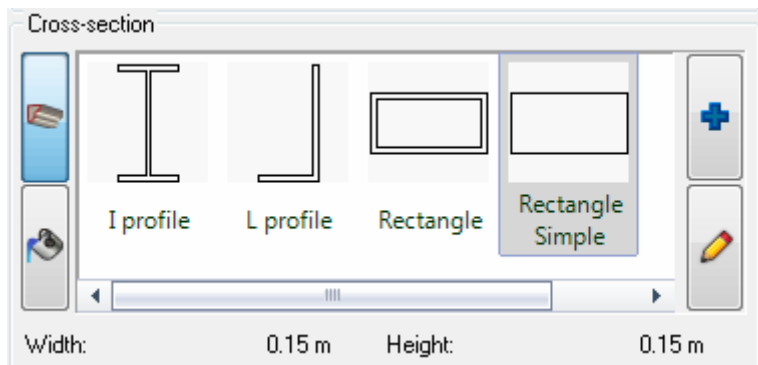
Finally you can use the Set button to store and/or recall sets to spare time. Use the OK button to accept the changes and close the dialog, or use Cancel if you would like to drop all changes you made after opening the Roof properties dialog.

## Multi-level roof structures

By adding multiple raster for the same structural object ARCHLine.XP allows users to create complex and architecturally correct roofs in the details. This way it becomes very easy to handle one roof object with main rafters and raster for sub-rafter.

## Eaves purlin, Middle purlin, Rafter, Batten, Ridge board

On these four pages there is a profile cross-section button, used for defining the cross-section profile of the actual object.

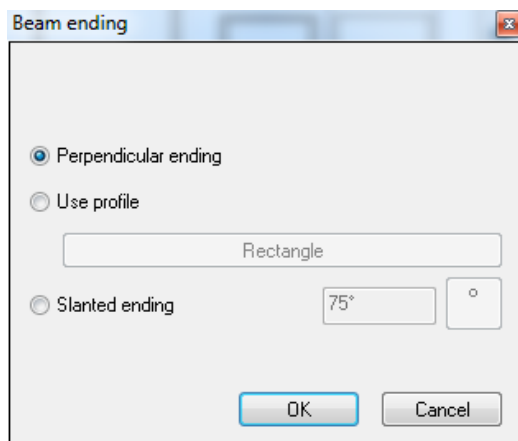


Also, on these pages of the Roof properties dialog window you can change these structural objects' (except battens') endings. You can set bottom and top endings one by one, and you can use profile endings also.



## Bottom (start) ending

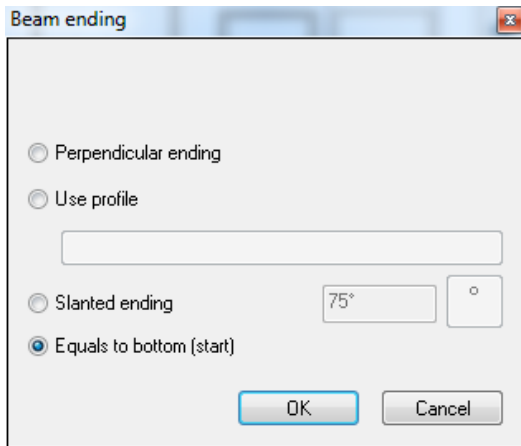
When you click to change Bottom (start) ending, you will see the following dialog window.



You can choose from a list of ending types and you can set the desired one.

**Top (other) ending**

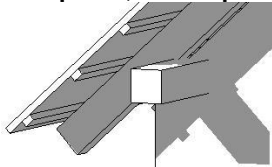
When you click to change Top (other) ending, you will see the following dialog window.



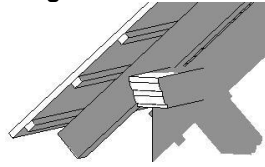
You can choose from a list of ending types and you can set the desired ending. By using the Equals to bottom (start) option you can make both endings similar in one single step.

**Exchange endings -**

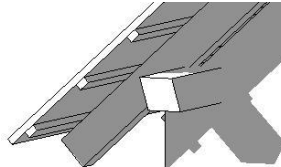
If you defined different endings you have the possibility to exchange them in one single step by clicking on Exchange endings button.

**Endings of certain objects****Eaves purlin, Middle purlin, Ridge board**

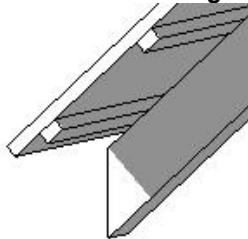
Perpendicular ending



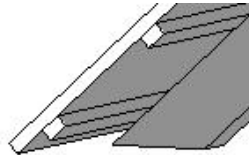
Profile ending



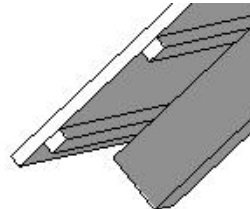
Slanted ending

**Rafter - bottom ending**

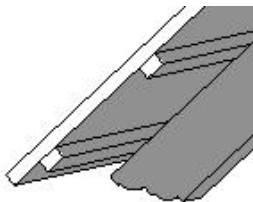
Vertical ending



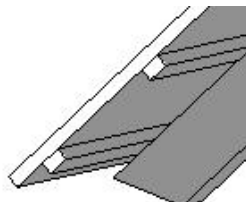
Horizontal ending



Perpendicular ending

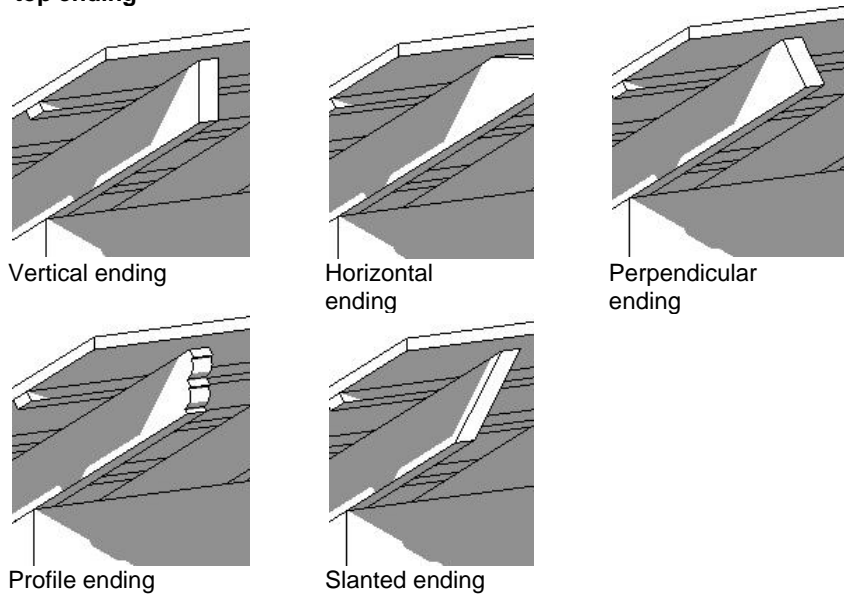


Profile ending



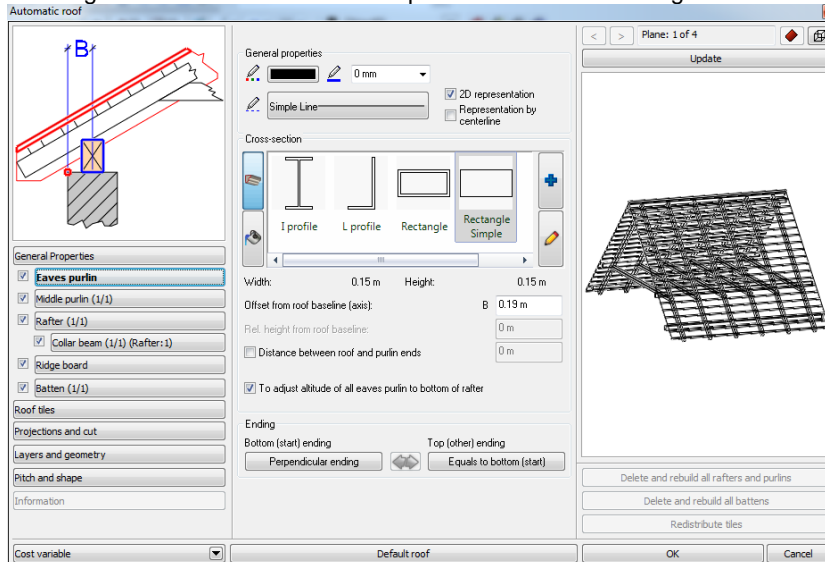
Slanted ending

## Rafter – top ending



### 10.14.1.2. Eaves purlin

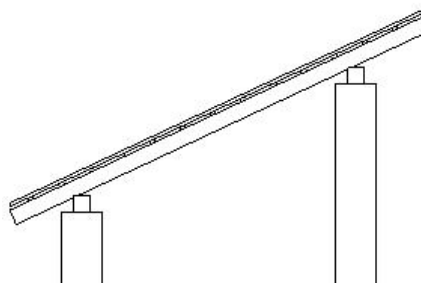
The height of the bottom of the eaves purlin determines the height of the roof.



#### **To adjust altitude of all eaves purlin to bottom of rafter**

With this option it is possible to represent those eaves purlins which do not match on the reference line. This is the case when the roof plane is defined by a reference line.

By switching the option on, the eaves purlin on the opposite side of the reference line will be represented with the appropriate height, too. See the figure.



#### **Offset from roof baseline (axis) – B**

You can define how far the centreline of the eaves purlin indicated in the figure should be horizontally from the roof baseline.

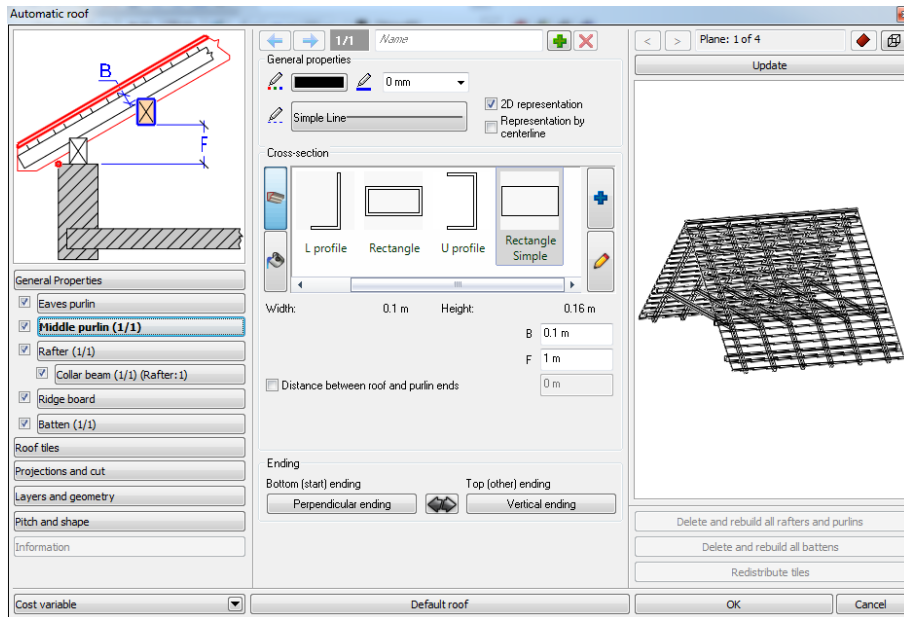
#### **Distance between roof and purlin ends**

If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.

### Relative height from the roof base line

This field is active when you specify the eaves purlin properties individually. (Shortcuts menu – Roof framing – Properties... command). This way you can specify the height of the selected eaves purlin relative to the reference line so it can be different from the height of other eaves purlins.

#### 10.14.1.3. Middle purlin



### Relative height from roof baseline– $F$

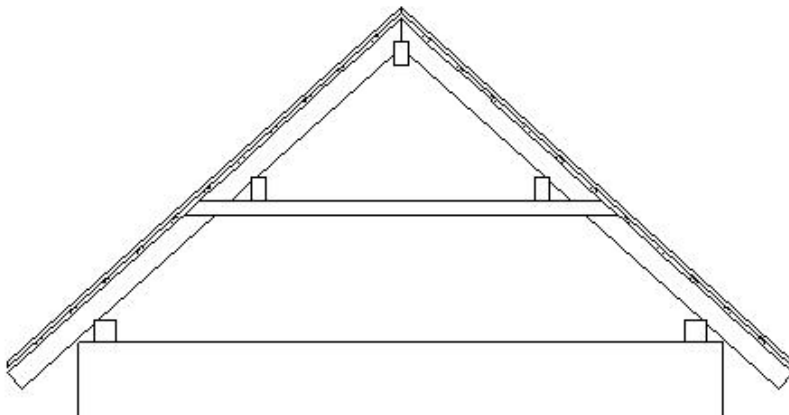
Of the individual properties, first specify the **relative height** of middle purlin from the roof baseline.

### Deepness in rafter– $B$

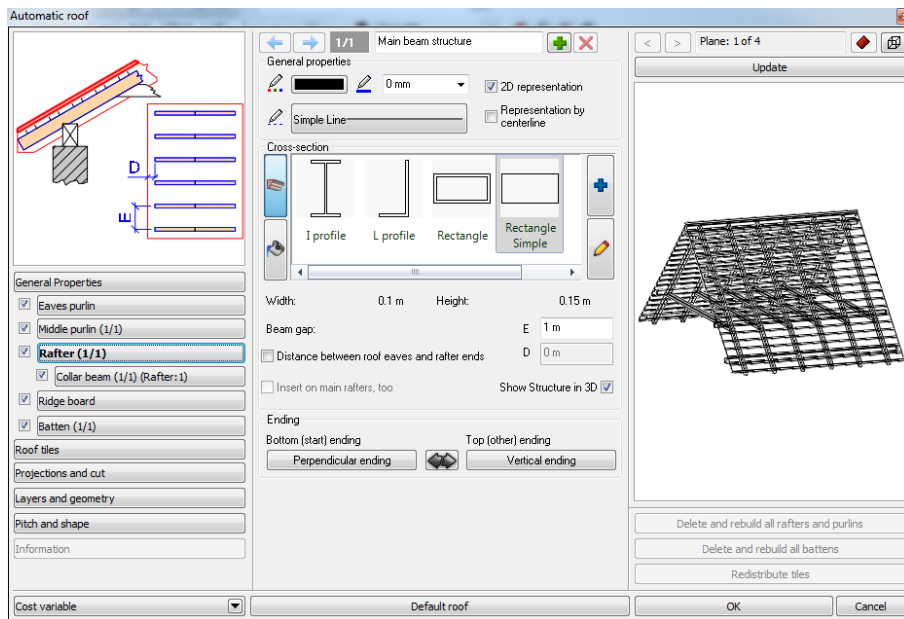
After specifying the deepness the middle purlin should cut into the rafter. The parameters  $F$  and  $B$  define precisely the place of the middle purlin.

### Distance between roof and purlin ends

If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.



#### 10.14.1.4. Rafter



### **Distance between roof and rafter ends – D**

If this option is disabled, rafters reach to the edge of the roof. Enable the option to specify distance between roof and rafter ends.

### **Beam gap – E**

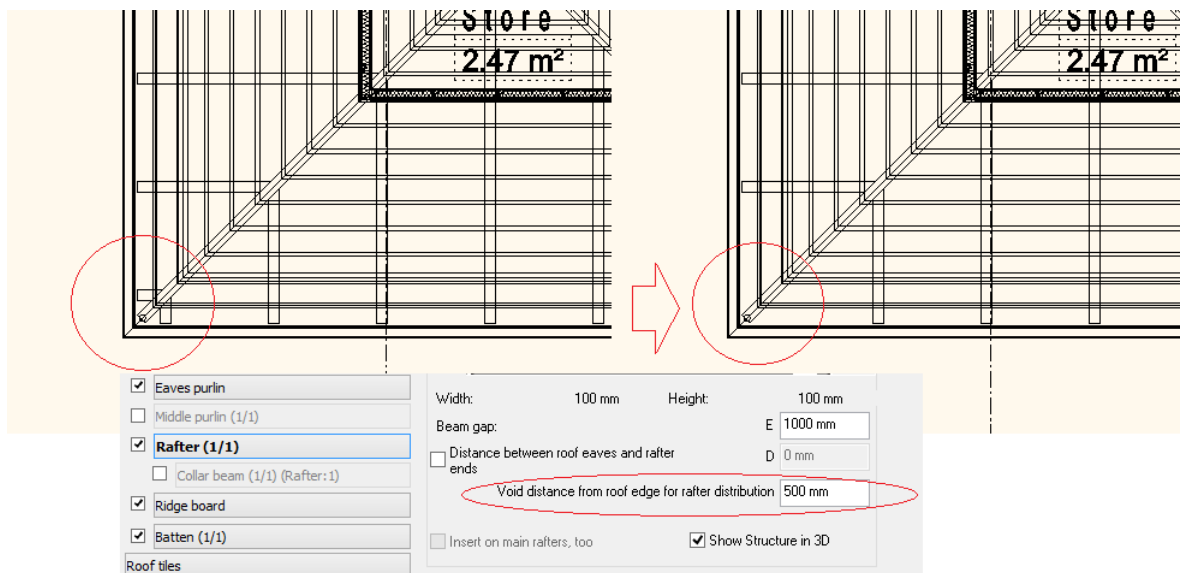
To put rafters into place specify the distance between the axes of the beams.

### **Roof structure – representation by centreline**

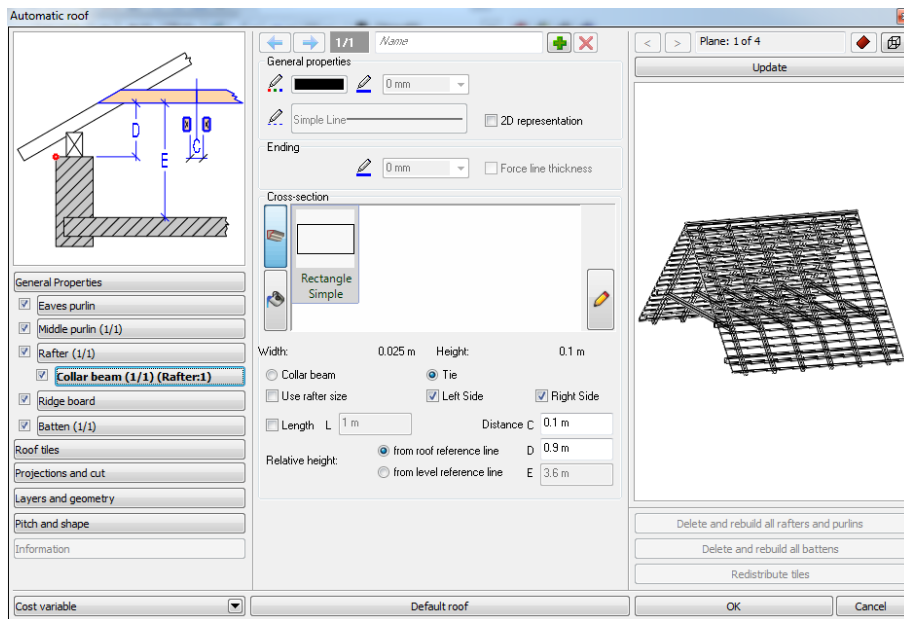
Representation of each main structural parts of the roof (rafter, batten, purlins...) can be set one-by-one. To represent each structural part by centreline enable the option on the setting page of the object.

### **Rafter placement with minimum distance from roof boundary**

In order to avoid the placement too short rafters you can define the minimum distance from roof boundary where the calculated rafters are ignored from placement rule.

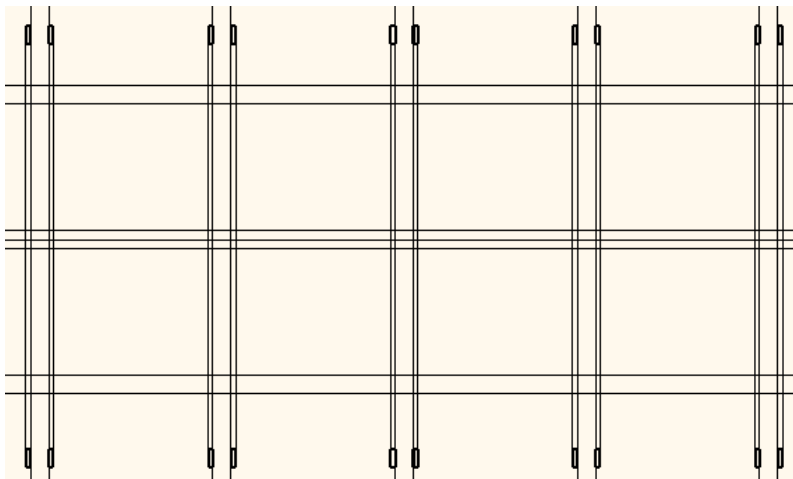
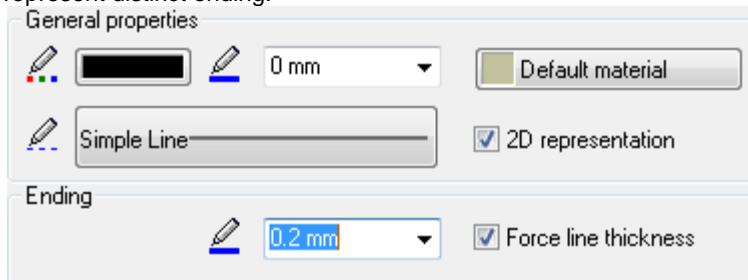


## **10.14.1.5. Collar beam**



## 2D representation

The collar and tie representation is extended. According to some EU countries norm, the standard of these objects also represent distinct ending.



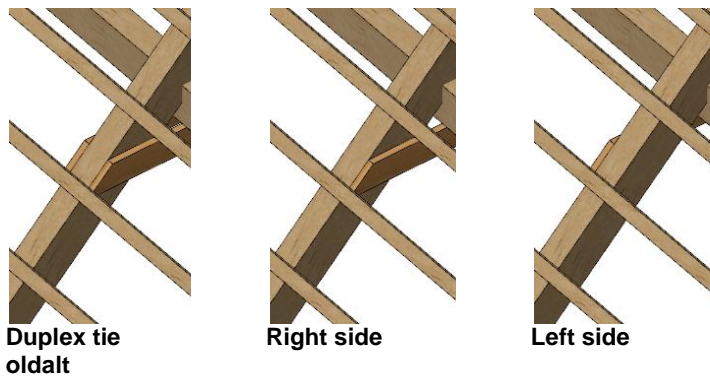
## Distance

You can specify the distance: **C**, in case of tie. The Left side and Right side options allow you to create one-sided ties; tick both for duplex ties.

You can use this parameter from the rafter, if you switch on the *Use rafter size* option.

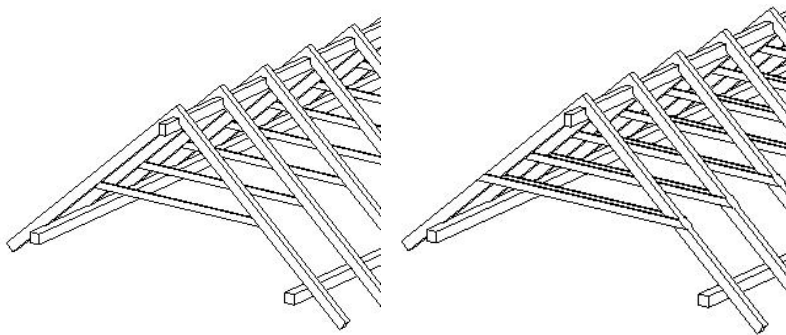
## Roof tie: one-sided or duplex tie

The tie can be switched on and off side-by-side. This option lets you specify one-sided left, one-sided right ties or duplex tie as well.

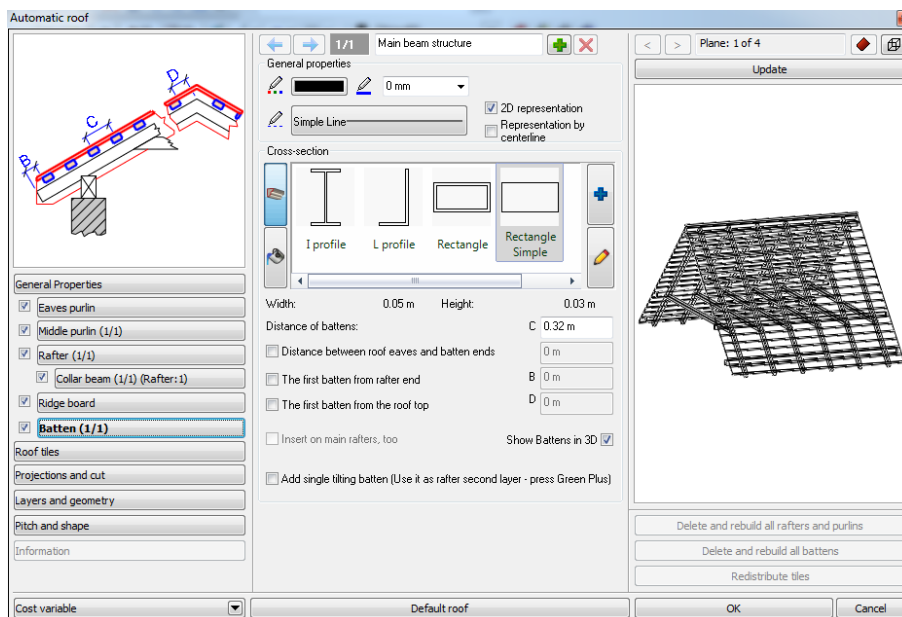


### Height

You can specify the height of the collar beam: **D** relative to the roof reference line or relative to the actual floor: **E**.



### 10.14.1.6. Batten



#### **Distance between roof and batten ends**

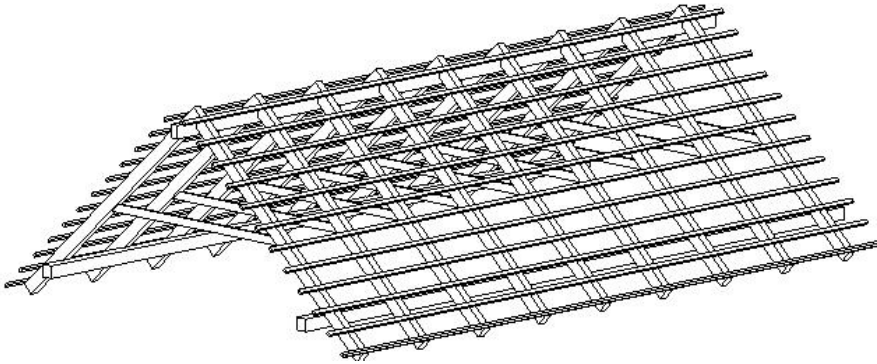
If disabled, battens will be adjusted to the roof ends.

#### **The first batten from rafter end – B**

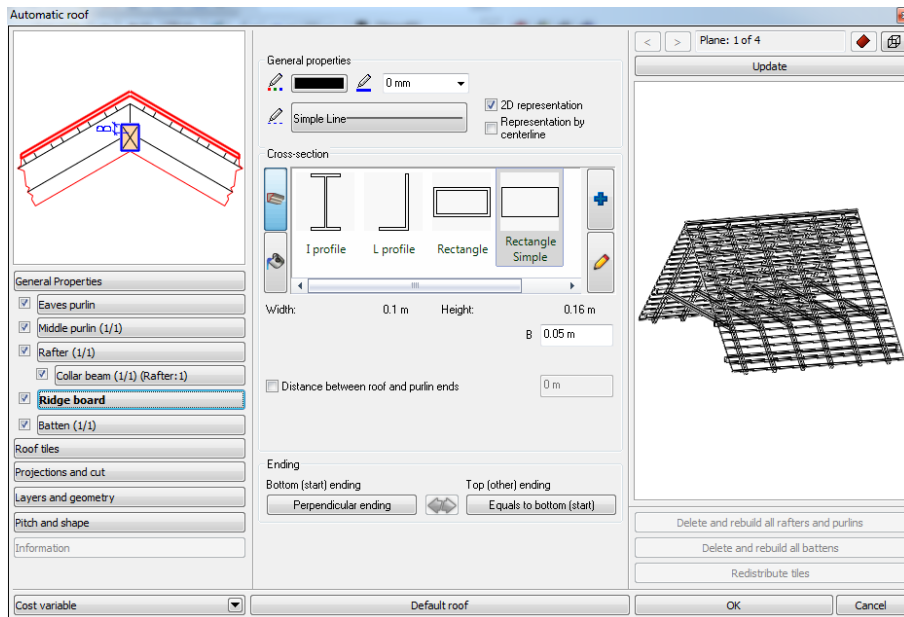
If this option is disabled, batten reach to the rafter end. Enable the option to specify distance between the first batten and rafter end.

#### **Distance of battens – C**

To put battens into place specify the distance between the axes of the beams.



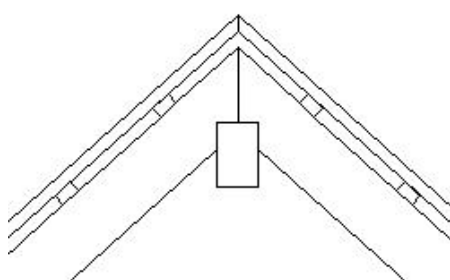
### 10.14.1.7. Ridge board



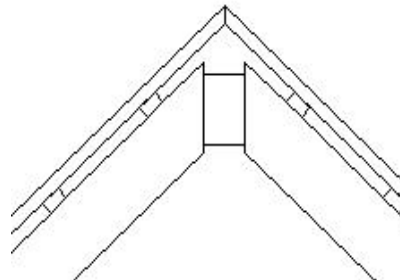
#### **Relative height from rafter intersection – B**

You can specify the **relative height** of ridge board from the rafter intersection.

**!** If a  $B < D/3$ , then rafters ends are met at the top. Otherwise the rafter ends on the top are adjusted to the ridge board. (D is the height of the ridge board.)



B = 1 cm, D = 16 cm



B = 13 cm, D = 16 cm

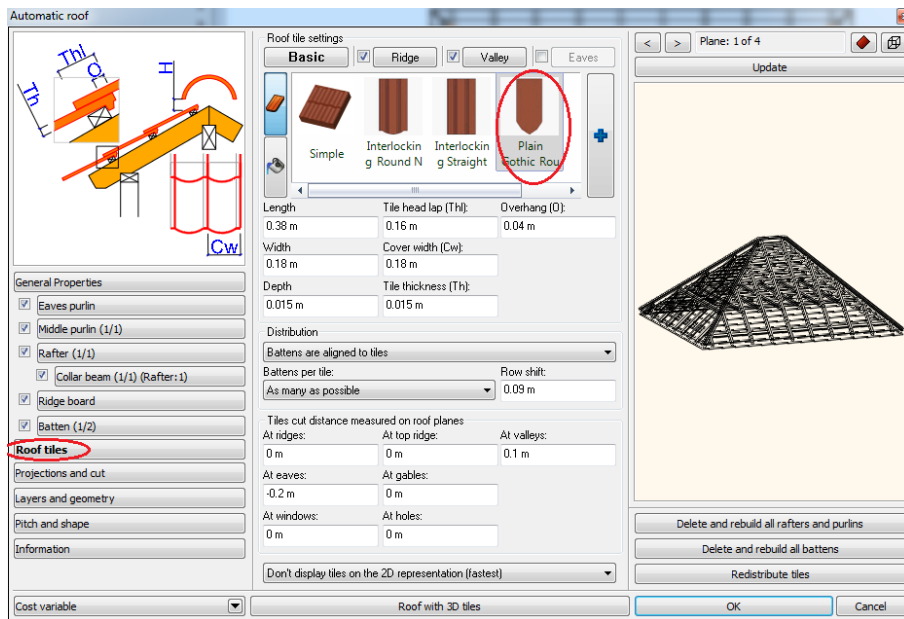
#### **Distance between roof and purlin ends**

If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.

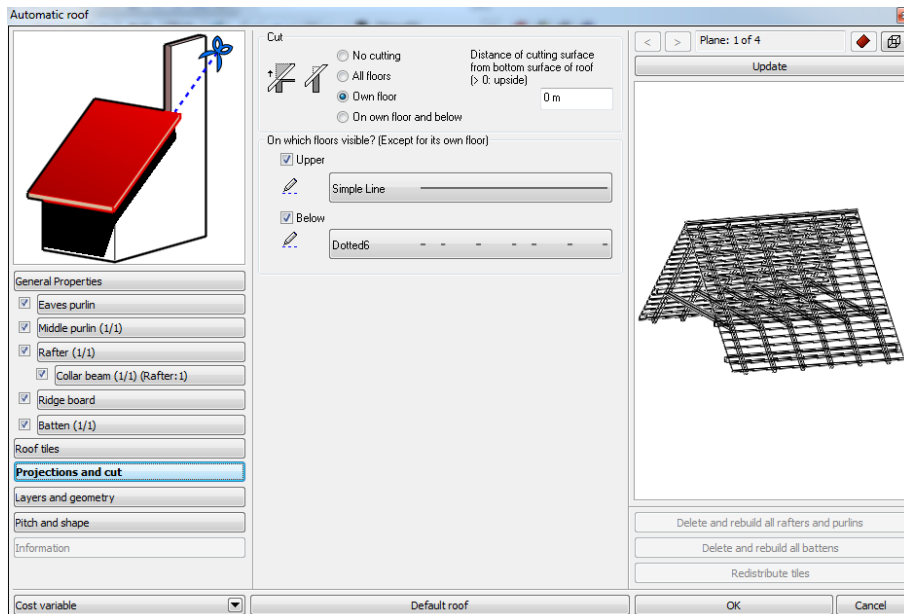
### 10.14.1.8. Roof tiles

The roof tiles will let you generate and manage tiling for roofs in ARCHLine.XP.



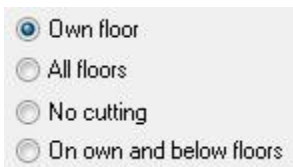


### 10.14.1.9. Projections and cut



#### Cut

You can choose from the following options:



- ❖ Cuts the walls on the current floor.  
Switch on this option in case of attic rooms.
- ❖ Cuts the walls of all floors.  
This option is useful in case of alpine houses.
- ❖ Does not cut walls automatically.
- ❖ Cuts the walls on the current floor and on the floor below.  
This option is useful in case of walls under a so called “dog’s house roof”.

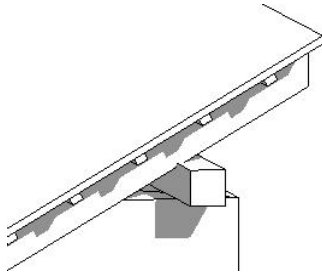
#### Distance of cutting surface

The software is able to cut the walls by the bottom surface of the roof plane. You can set the distance measured from the bottom roof plane surface by changing the value in the Roof properties dialog window’s Projections and cut page.

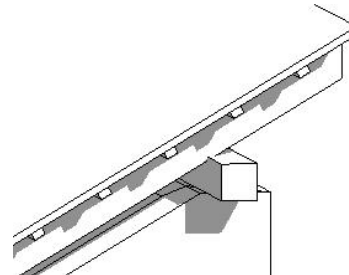
Distance of cutting surface from bottom surface of roof (> 0: upside)

0 m

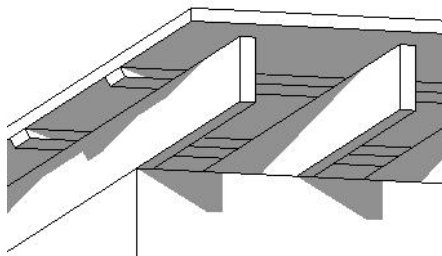
If you keep the value of Distance of cutting surface from bottom surface of roof (>0: upside) unchanged, the walls will be cut by the bottom roof plane surface. If you set a value that is different from zero, then the software will reposition the cutting surface measuring the given value from the roof bottom surface.



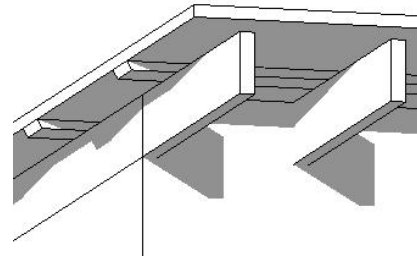
Distance of cutting surface is 0m



Distance of cutting surface is -0.1m



Distance of cutting surface is 0m



Distance of cutting surface is 0,15m

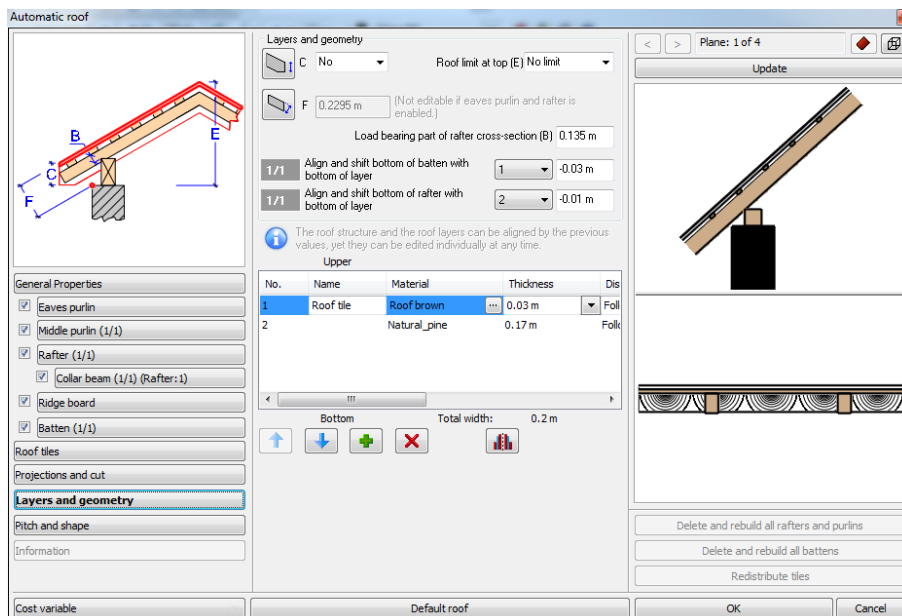
#### On which floors visible?

The roof can be shown on the 2D view, one floor above and/or below the roof level. The floors and the certain line types can also be defined.

#### Ridge tile and roof valley

You can set whether the section of the roof planes are covered with ridge tiles and roof valley or not. If enabled, you have to define their width, thickness and material.

#### 10.14.1.10. Layers and geometry



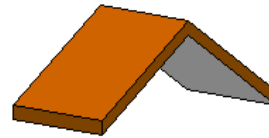
#### Geometry

##### Roof thickness - B

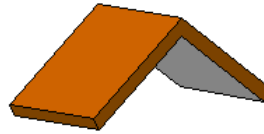
You can define roof thickness vertically or perpendicular to the roof plane.



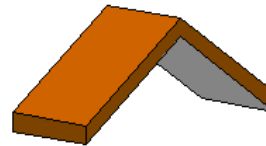
Relative to the vertical projection, while the end of the roof is vertical.



Roof thickness is perpendicular to the roof plane; the roof ending is also perpendicular.



Roof thickness is perpendicular to the roof plane; the roof ending is vertical to the roof plane.

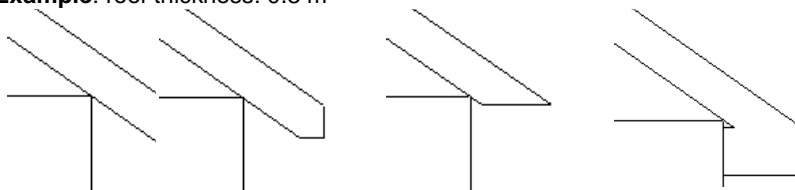


#### ❖ **Roof thickness at end - C**

You can apply this method with the different eaves types (see the examples). You can cut the end of the roof by using a value smaller than the one applied to the vertical projection. The **No** option means that there is no horizontal cut.

- Click on the icon to create the desired roof, which connects to the wall, and then specify thickness.

**Example:** roof thickness: 0.3 m



Roof thickness at end:



No



0.2 m



0 m



0.3 m

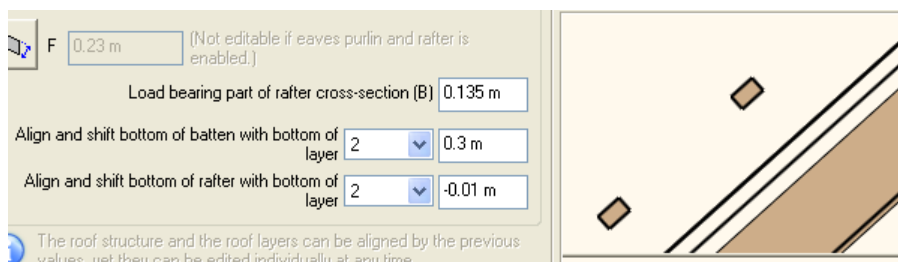
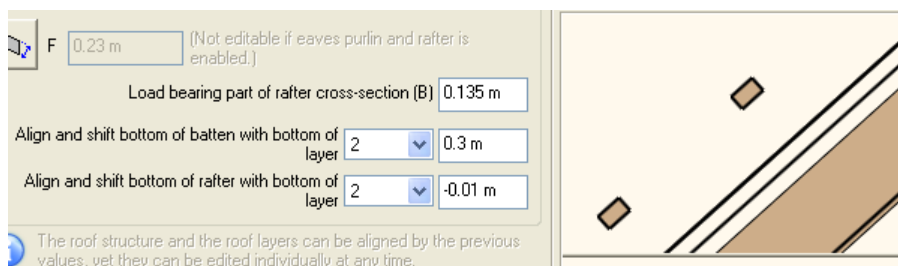
#### ❖ **Roof limit at top (E)**

The maximum height of the roof, parts above this value will be cut.

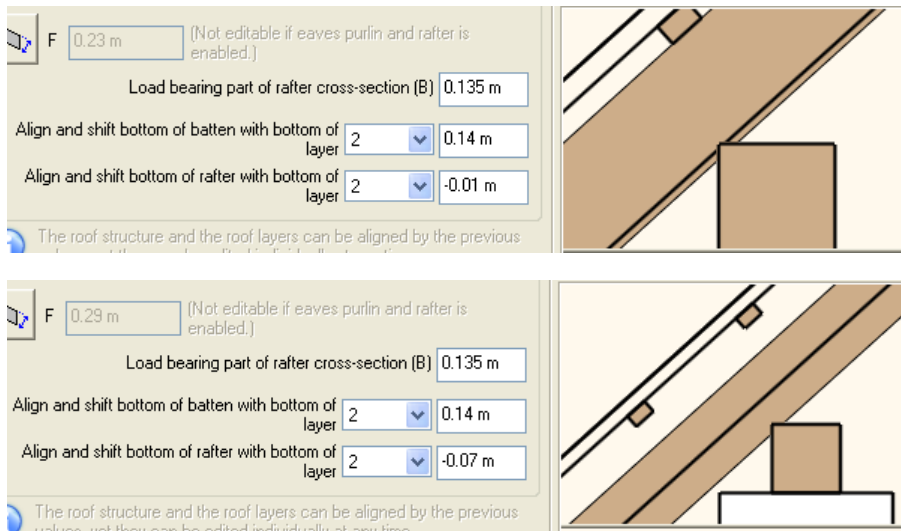
#### ❖ **Load-bearing part of rafter cross-section**

Load-bearing part (dimension) of the rafter, this can be used for statics calculations.

#### ❖ **Align and shift bottom of batten with bottom of layer**



#### ❖ **Align and shift bottom of rafter with bottom of layer**



### Layer list

At the top of the Roof layers dialog window you can see the layer list ordered from top to bottom as the top and bottom layers of the roof structure. In layer list you can check and edit roof layers.

### Layer number

The No. column shows the number of each layer.

### Name

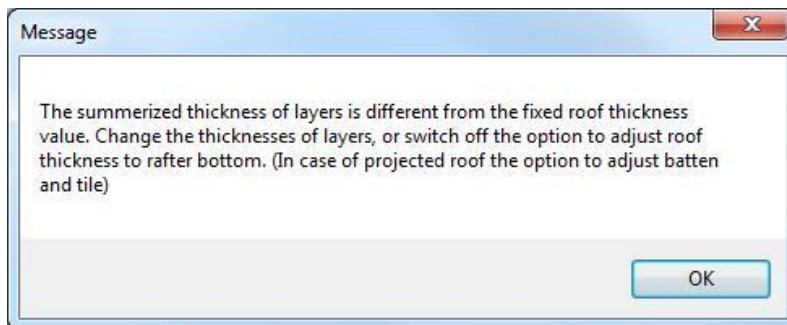
The Name column shows the given name of each layer. You can modify these names. Please click on one name to retype it.

### Material

In Material column you can change one layer's material. The given material will be represented on sections and in 3D views.

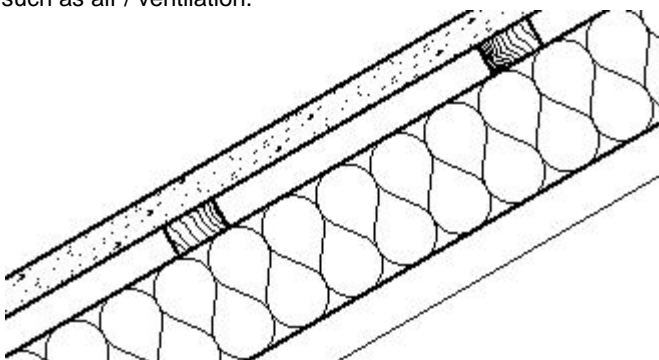
### Thickness

In Thickness column you can change the thickness of each layer. If you already set adjustments for roof previously and this affects the roof layers, you may see the following message when pressing OK.



### Representation in 3D

Representation in 3D option makes each layer visible or invisible in 3D and on section views. You can use it for layers such as air / ventilation.



## Editing roof layers

In Roof layers dialog window you can change the order of layers, add new layers or remove existing ones.

### Move layer up

You can change the order of the roof layer list by selecting one layer and pushing Move layer up if it is possible.



### Move layer down

You can change the order of the roof layer list by selecting one layer and pushing Move layer down if it is possible.



### Add layer

You can add new layer to the layers of the roof.



### Remove layer

You can remove the selected layer from the roof layers.

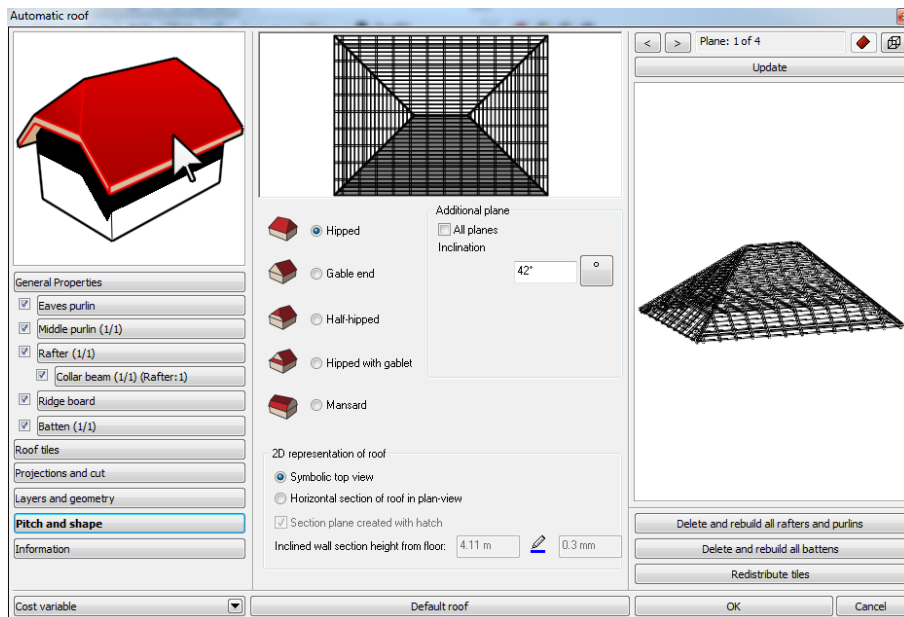


### Mirror layers

You can mirror the complete order of the layers of the roof.



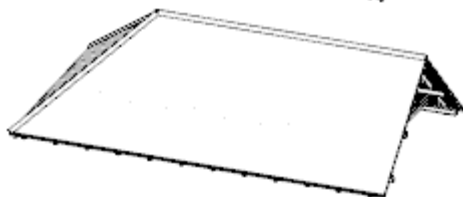
## 10.14.1.11. Pitch and shape



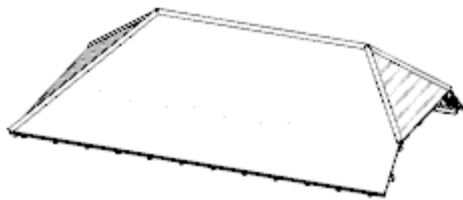
Edit roof planes to create a roof of various pitch and shape:



**Hipped**



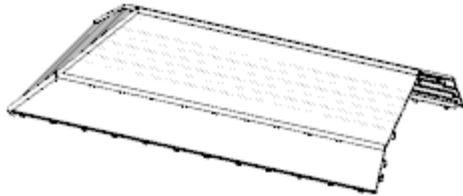
**Gable end**



Half-hipped



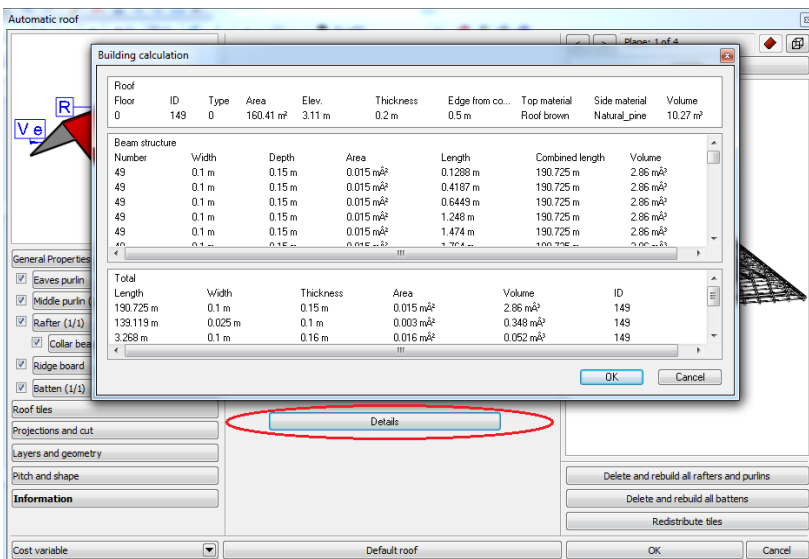
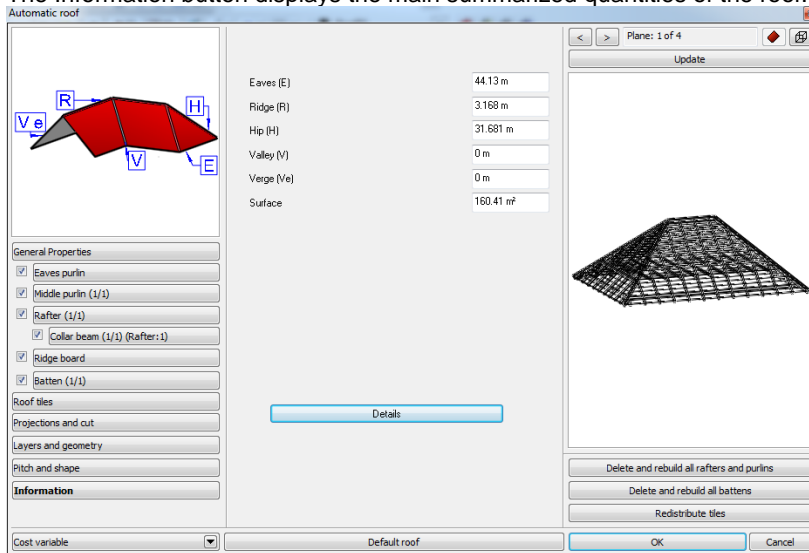
Hipped with gablet



Mansard

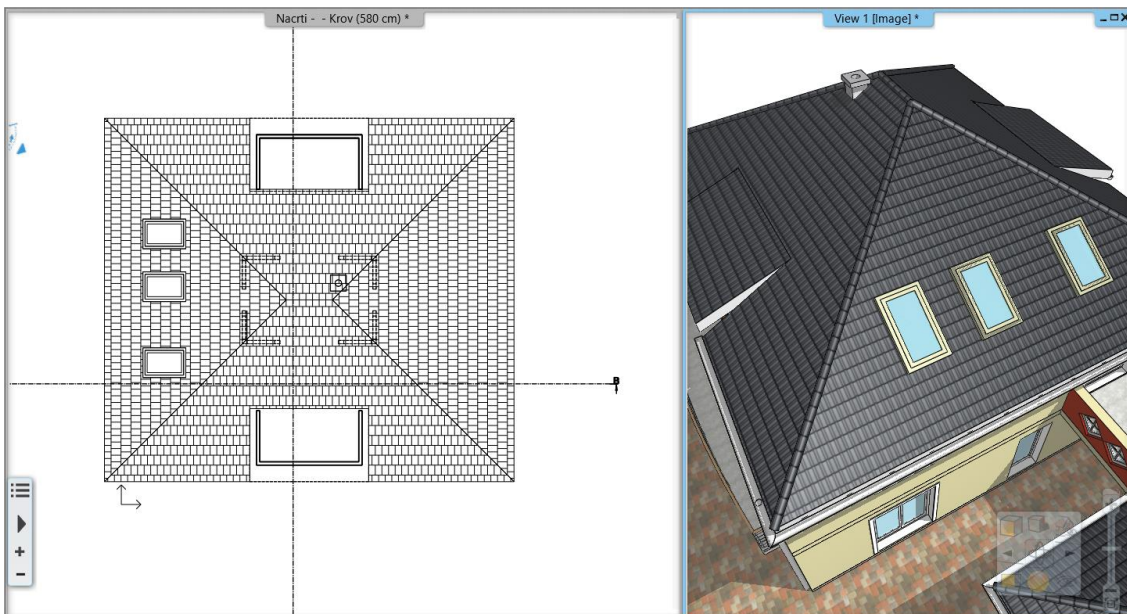
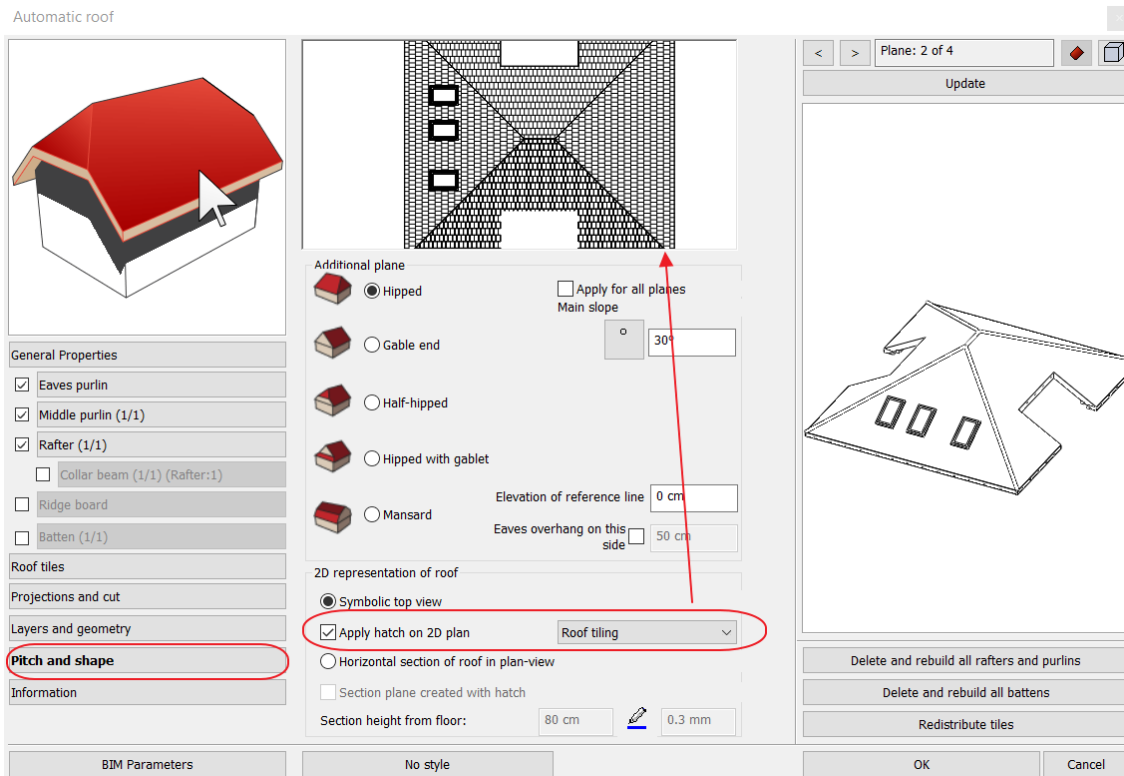
### 10.14.1.12. Information

The Information button displays the main summarized quantities of the roof.




### 10.14.1.13. Roof hatch on floorplan

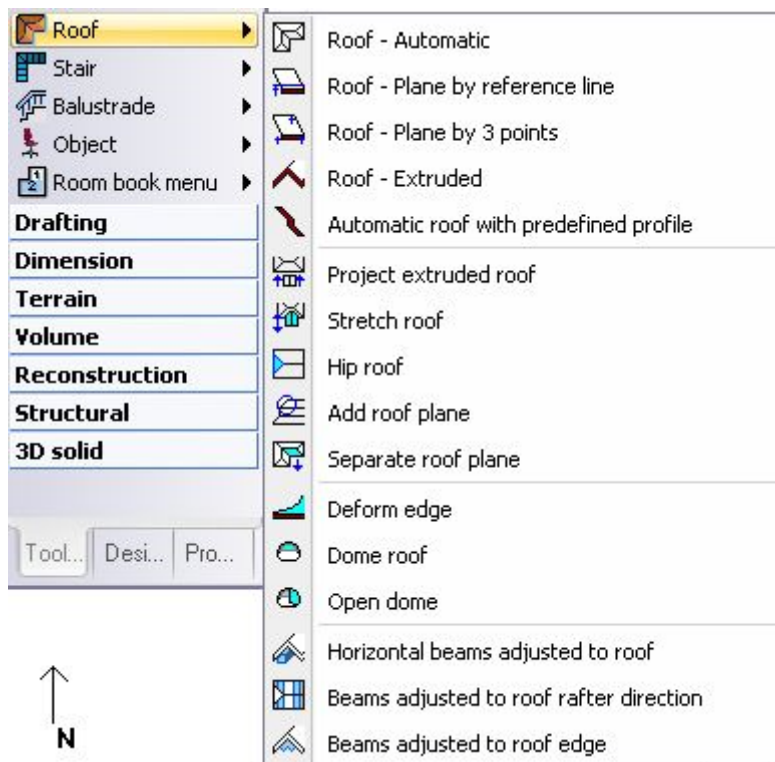
When you place a roof on floorplan you can assign a hatch style representing the roof tiles. Attention, hatch properties are part of the hatch style, change is possible if you redefine the style. The Apply hatch on 2D plan is available under the Roof Properties dialog / Pitch and Shape panel.



### 10.14.2. Creating roofs

Creating roofs is one of the most complicated tasks in architectural design. The program offers various methods to create roofs - besides frequently used roof-types you can also create special roof structures.

With the icons of the  **Roof tool** you can create roofs using different methods.



Working in 2D environment, you can use the icons of the Roof tool to create the following:

- ❖ **Automatic roof**  
Automatically creates roofs made up of roof planes of a given slope.
- ❖ **Roof plane by reference line**  
The command creates a roof as individual roof plane. Having specified the roof surface, the roof plane is defined by the reference line and the roof slope.
- ❖ **Roof plane by 3 points**  
Creates a roof plane by defining 3 height points. This method is useful if there are walls of different height in buildings where a survey has been carried out.
- ❖ **Extruded roof with predefined or free profiles**  
Creates roof structures with various predefined profiles (pitched roof, mansard roof etc.). You can create even the most complicated roofs with the help of the properties you specify. It is also possible to define special profiles i.e. the vertical cross-section of the roof can be defined freely.
- ❖ **Automatic roof with profile**  
Creates a roof automatically with the help of a user-defined profile.

#### 10.14.2.1. Automatic roof

You can create roof *automatically* – the program performs the necessary calculations (works out the intersection lines of the roof planes) and immediately creates the complete roof according to the reference contour on the floor plan. After you define the reference contour of the roof, *Properties* dialog is displayed. It is important to specify the height of the roof reference line. With automatic roofs the reference lines of all roof planes are in the same height. In *Roof Plane dialog* you can specify the inclination of each roof plane. (In this case you do not have possibility to define the inclination in the Roof geometry dialog.)

##### **Define roof reference line**

The command offers two possibilities to define the reference line of the roof:

- ❖ The reference line is defined by *the area enclosed by the walls*.
- ❖ The reference line is created by the commands in *Profile definition* pop menu.

In both cases you are allowed to offset the reference line *horizontally, with the desired distance*, relative to the given contour.

##### **Area enclosed by the walls**

- Select the walls one by one, or select the building with the selection window. The reference line of the roof is created along the outlining contours of the selected object.  
**Enter**            Completes selection.



### Profile definition pop menu

- Select **POPMENU** keyword from the Command line to display *Profile definition* menu. Use this menu to draw the reference line of the roof.



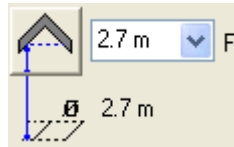
For description see Chapter 8.9. *Specifying profile*.

### Shifting the reference line

- Before defining the reference line, choose **SHIFT** keyword from the Command line.
- Specify the length of the shift. If the reference line is within the specified contour, you have to define the length of the shift with a negative value.

### Defining roof planes

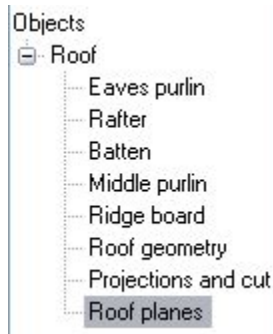
After you define the reference line, **Properties** dialog box comes up. Specify the height of the reference line in the *Eaves purlin* dialog box.



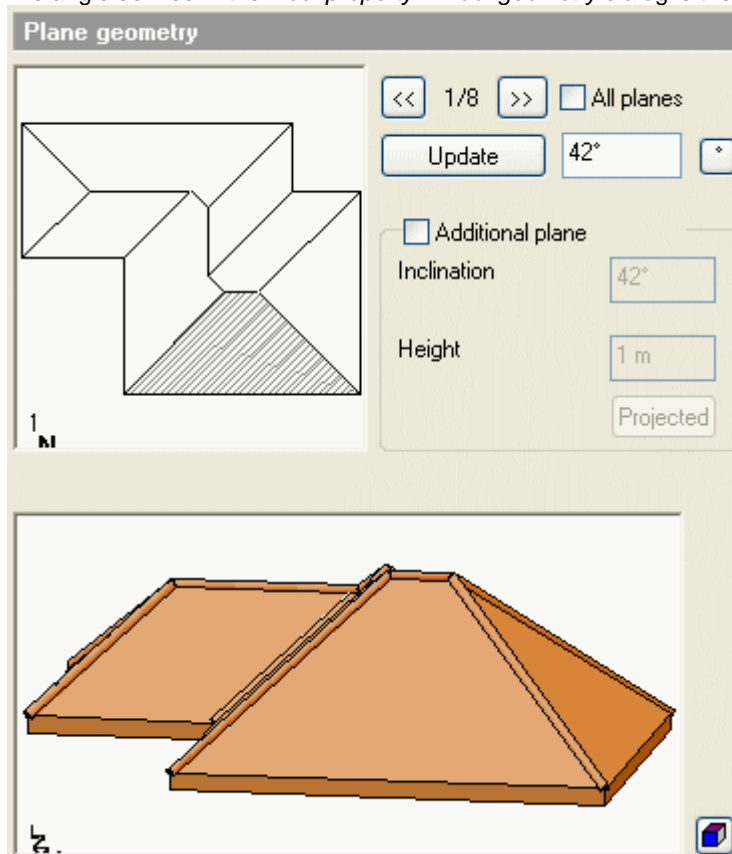
For description see Chapter 9.8.1. *Roof properties*.

Select **Roof planes** dialog.



Here you can modify the slope of the roof planes one by one or together. You can also insert a new roof plane e.g. you can create a hip roof.



The angle defined in the *Roof property – Roof geometry* dialog is the default value. You can modify it:

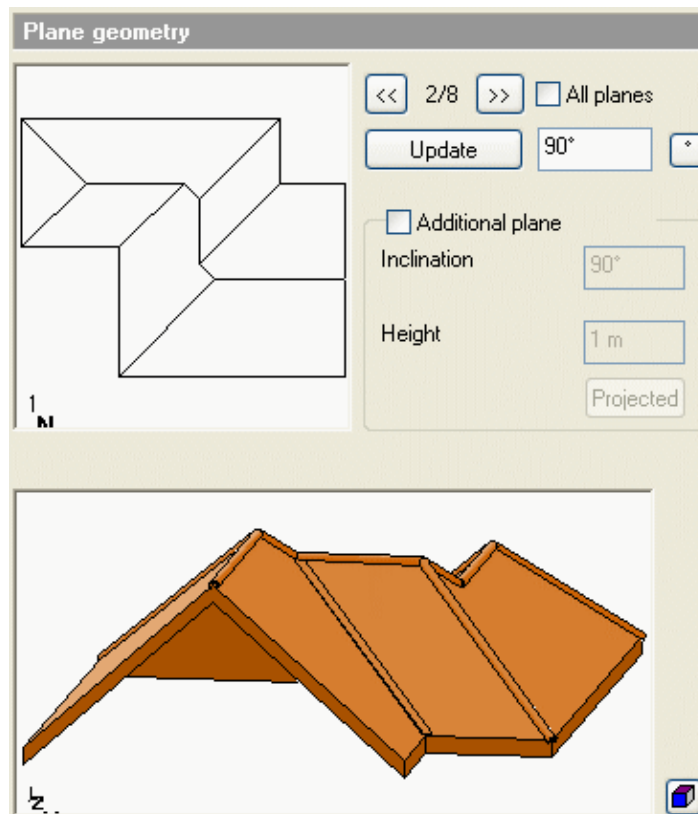


You can select the roof planes to be modified from the top figure in the dialog box. In the figure the active roof plane is indicated with gray. You can move on to other roof planes by using the arrow or by clicking on the desired plane.

- Select the roof planes to be modified one by one, and then specify their slope. To select the roof planes you can use the arrows, too.  arrows, too.  
If you want to assign the same inclination to all roof planes, select *All planes* option.
- After specifying the inclination of the roof plane, apply *Update* to see the result in the dialog box.
-  By clicking on this icon you can specify whether to display the image in a wireframe model, with hidden lines or with shading. In case of larger models it is recommended that you use a wireframe model or turn off the display.



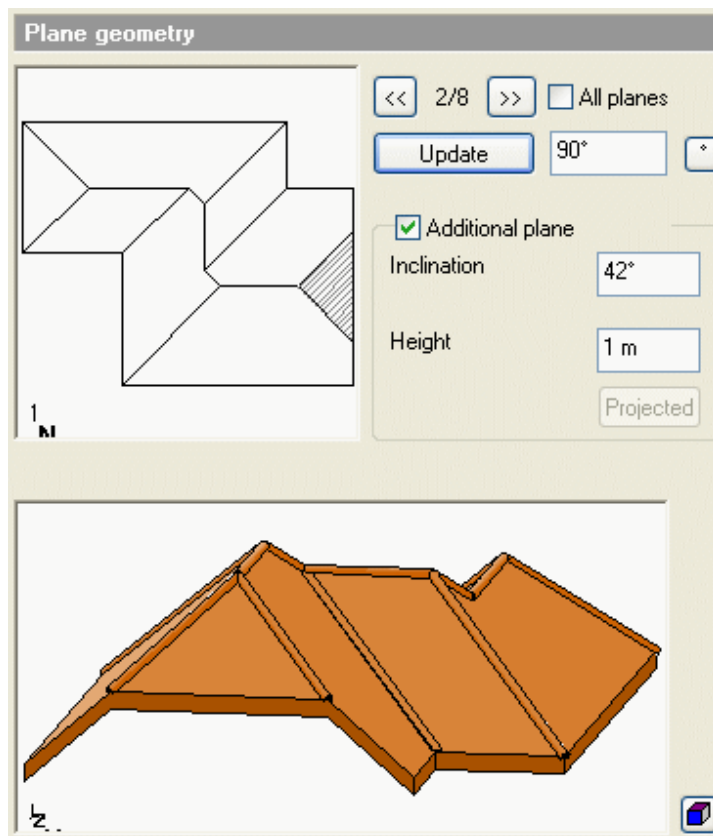
If you set the slope of one of the planes at 90°, the roof plane disappears on the actual side, giving way to the pediment.



### Adding a new roof plane

Create a hip roof: add a new plane to that side of the roof whose inclination you set at 90°:

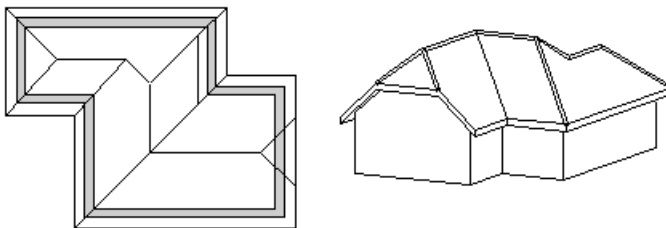
- Select the side with 90° slope; for the selection use the arrows.
- Enable *Additional plane* option.
- Specify the inclination of the roof plane as well as the height of the reference line of the new roof relative to the reference line of the roof.
- Click *Refresh*.



After defining the roof planes, you can return to the *Properties* dialog by using the arrow button




- **Ok** Closes the dialog box.  
The program creates the roof:



#### Deleting the added roof planes

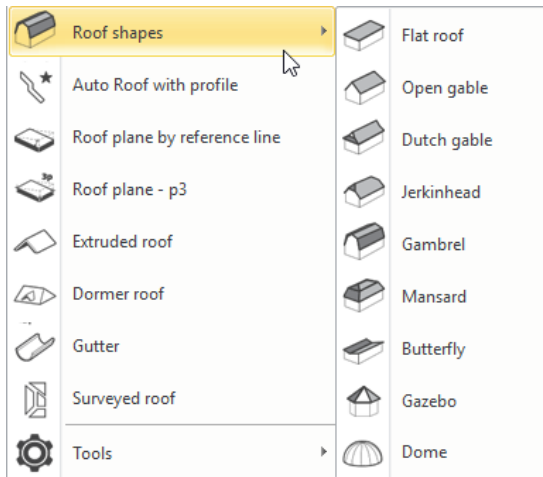
- Select the roof plane to which you added the new roof plane.  
Additional plane option is enabled, which indicates that the roof plane contains an additional roof plane.
- Disable *Additional plane* option.
- Click *Update*.  
The additional roof plane is deleted.
- 



To add a new roof plane you can also apply  *Hip roof* icon

#### 10.14.2.2. Creating roof shapes

You can create some specific roof shapes directly using the *Roof shapes* command.



### 10.14.2.3. Roof plane by reference line

With this command you can design each roof plane individually.

You can also use this command when you wish to create a roof on walls of different height i.e. the reference lines of the roof planes are not in the same height.

The steps are the following:

- ❖ Define the contour of the roof plane
- ❖ Define the reference line
- ❖ Specify the height of the reference line and the angle of the roof plane

#### Defining the contour of the roof plane

- Define the contour of the roof plane:
  - either by selecting the walls (the walls must form a closed contour),
  - or by applying a command from **POPMENU** - *Profile definition* menu.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

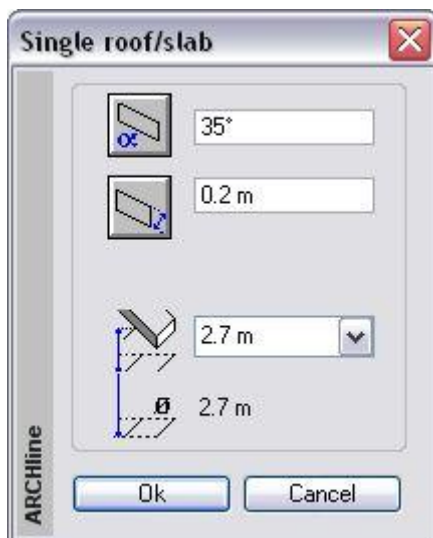
#### Option:

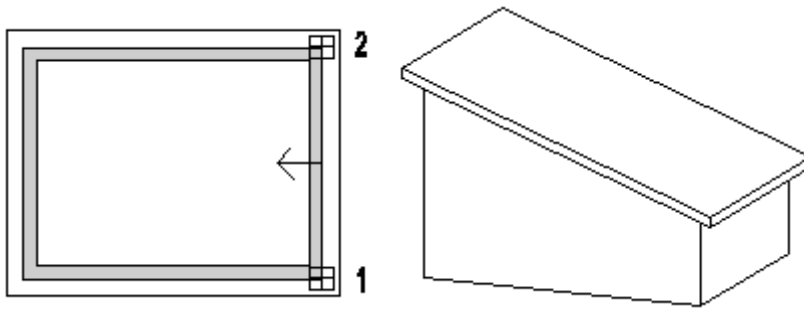
<b>SHIFT</b>	Apply this keyword if the contour of the roof plane reaches beyond the defined profile, or is smaller than that.
--------------	--

#### Defining the reference line and the angle of the roof plane

After defining the contour of the roof

- Specify the reference line of the roof plane by its endpoints. (In the example below the line specified by endpoints 1 and 2.) The value for the actual elevation concerns this line. The arrow in the middle of the reference line symbolizes the upward direction. If you want to modify this direction, click on **ENTER** keyword. After this you can select the first point of the reference line again.
- Define the roof slope, roof thickness and the height of the reference line in the appearing dialog.





#### 10.14.2.4. Roof plane by 3 points

If you do not know the inclination of the roof planes when drawing your roof, you have to rely on other data. In case of surveys the known value usually is not the roof slope, but the roof height at different points. So, if you have these values it is recommended that you draw a roof plane by specifying 3 height points.

When you define height you have the possibility to use the height of the object on the drawing.

The steps are the following:

- ❖ Define the contour of the roof plane
- ❖ Specify three height points

##### Defining the contour of the roof plane

- Define the contour of the roof plane:
  - either by selecting the walls (the walls must form a closed contour),
  - or by applying a command from **POPMENU** - *Profile definition* menu.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.


##### Options:

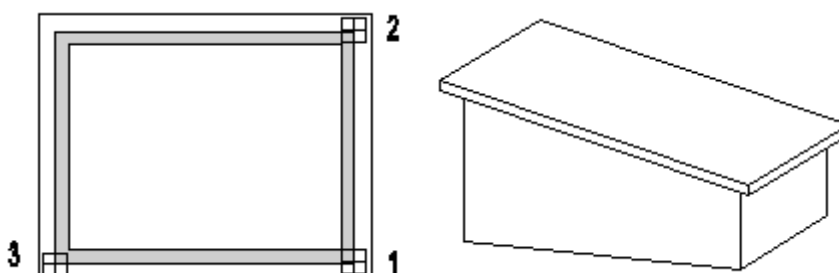
<b>SHIFT</b>	Apply this keyword if the contour of the roof plane reaches beyond the defined profile, or is smaller than that.
--------------	--

##### Specifying three height points

- Specify the first point of the roof plane.
- Specify the height of the bottom of the roof plane at the given point (2.5 m - wall height). You have to define the height of the points in relation to the active floor. By default, the program asks for the height of the bottom of the roof plane at the given point. By clicking on **UPPER** keyword you can specify the height of the roof plane top.
- If you want to specify height by using the height of an already existing object, click on **LIKE** keyword. Select an object. Select a point on it. Using the icons, specify if you want the height of its bottom or top point. For instance, in case of walls you can decide whether you wish to apply the top or the bottom of the wall as reference height. The program interprets the height relative to the current floor.
- Specify the second point of the roof plane and enter its height (2.5 m - wall height).
- Select the third point of the roof plane and enter its height (3.5 m - wall height). These three points you specified clearly define the roof plane.

##### Options:


<b>UPPER</b>	Point height means the height of the roof plane top.
	Uses the height of the top/bottom of the object as reference height.



### 10.14.2.5. Creating extruded roofs

- ❖ You have the possibility to create roof structures with various predefined profiles (pitched roof, mansard roof, arched roof etc.) More complicated roofs can also be created by using properties that you specify.
- ❖ You can design a roof of any form by defining an individual profile i.e. you define the vertical cross-section of the roof with a special, individual profile.

Drag the selected profile along a straight line, or along an open or closed path to create the roof.

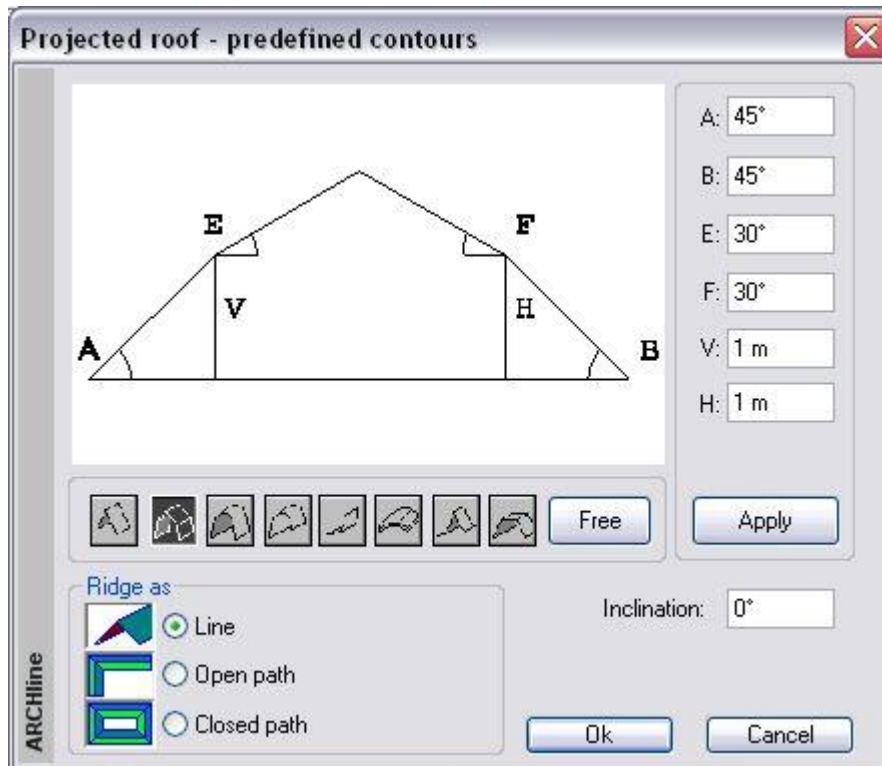
The roof thus created can be projected into an automatic roof with  Project extruded roof command, and this way you can create e.g. so called "bull's eye or dog house type roofs".

Follow these steps:

- ❖ Define the profile; the profile can be predefined or free
- ❖ Define ridge slope
- ❖ Select the type of the path: line, open or closed path
- ❖ Drag the profile along the path

We discuss creating extruded roofs in two steps: first, when we use a predefined profile for the cross-section, second, when we define the cross-section with a free profile.

### 10.14.2.6. Creating extruded roofs by predefined profiles

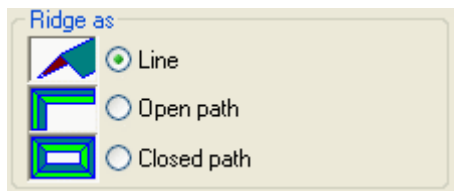


- Select the icon the profile you want to apply.
- Set the geometrical values for the profile.

Some of these parameters are the same in case of some profile types.

- A** Inclination or the angle of the tangent of the side that is drawn first, relative to horizontal direction.
- B** Inclination or the tangent angle on the opposite side.
- E** Inclination of the second roof plane relative to horizontal direction (e.g. in case of mansard roofs)
- F** Inclination of the second roof plane on the opposite side (e.g. in case of mansard roofs)
- H&V** Height difference between the reference lines of the two roof planes.

- After you modified the values press **Apply** to refresh the image.
- Set the inclination of the ridge, relative to horizontal direction.
- Select the type of roof contour path by choosing from the following options:



- **Ok** Closes the dialog.

After this you can define the path, according to the selected path type:

### Line

The profile is set onto a straight line. The top view of the roof is a rectangle:

- Define a line by specifying two points (in the example below points 1 and 2) to define the first side of the roof (it is also the reference line of the first roof plane).
- Drag the cursor and specify a third point (point 3) to define roof width.



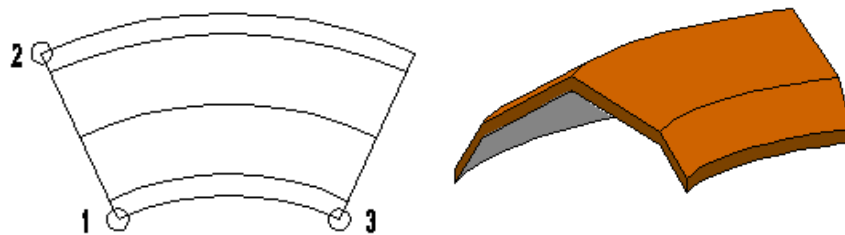
### Open path

- Define a line by specifying two points. (In the example below points 1 and 2). These define the roof width.
- Define the length of the first line of the roof with a new point (point 3).
- Drag the cursor and specify other points to define the open paths of the other lines of the roof.
- **Enter** Completes defining the path.

### Options:

<b>ARC</b>	Choose this keyword if you wish to define an arched path.
<b>SELOBJECT</b>	Choose this keyword if you select an already existent object as part of the contour of the path.
<b>INVERSE</b>	Choose this keyword if the width of the path is not in the appropriate direction.

- Define the height of the points after each other. The program indicates those points whose height it requires.
- If the height is the same in case of every point, after you specify the first value, press Enter for the other points.
- 



### Closed path

In this case the contour of the roof forms a closed path. The determination of path is the same as in the former point, except if you press **Enter**, the program closes the roof contour i.e. joins the starting point and the end point of the contour.

Let's see the predefined roof types in detail:



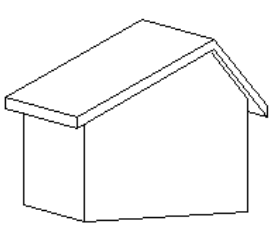
### Pitched roof

The program creates the roof by two roof planes. The reference lines are in the same height.

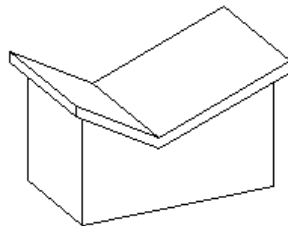
### Example:

	1.	2.	3.
<b>A</b>	25°	-20°	35°

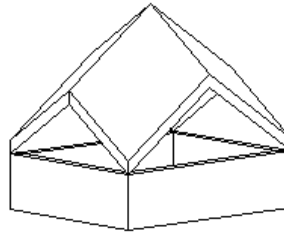
<b>B</b>	50°	-30°	35°
<b>Ridge angle</b>	0°	0°	35°



1.



2.



3.

Two pitched roofs with sloping ridge, joined

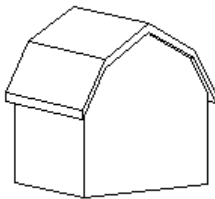


### Mansard roof

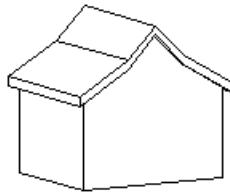
The program creates a mansard roof on the defined path.  
The reference lines are in the same height.

Example:

	1.	2.
<b>A</b>	60°	30°
<b>B</b>	60°	30°
<b>E</b>	30°	40°
<b>F</b>	30°	40°
<b>H</b>	1.6 m	1 m
<b>V</b>	1.6 m	1 m



1.



2.

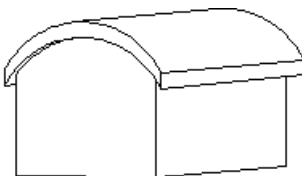


### Vault 1

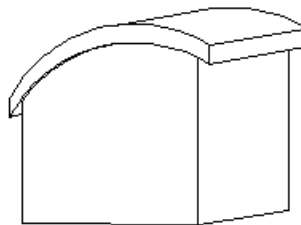
The program builds a vault following the contour of a rectangle. The convex vault follows the arc defined by two of its tangents.

Example:

	1.	2.
<b>A</b>	60°	60°
<b>B</b>	60°	30°



1.

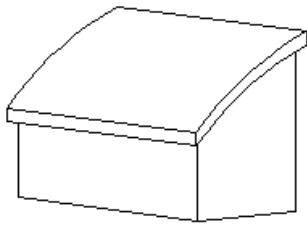


2.





### Vault 2



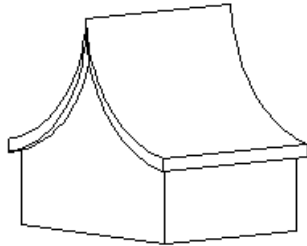
The convex vault follows the arc defined by one of its tangents, where you have to define the height difference between the reference lines of the opposite roof planes.

**Example:**

A	45°
V	2 m



### Vault 3



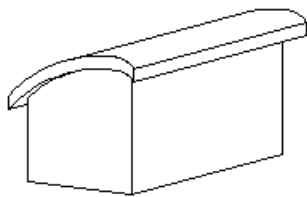
The concave vault follows the arc defined by one of its tangents, where you have to define the height difference between the reference lines of the opposite roof planes. In the example below the created arched surface is mirrored on its ridge.

**Example:**

A	10°
V	3 m



### Vault 4



The convex vault follows the contour of two tangentially joined arcs. You have to specify the angle of the two tangents and the height difference between the reference lines of the opposite roof planes.

**Example:**

A	45°
B	45
V	2 m

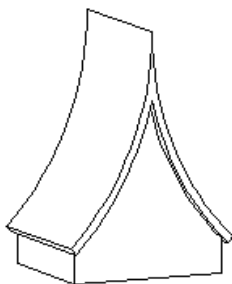


### Vault 5

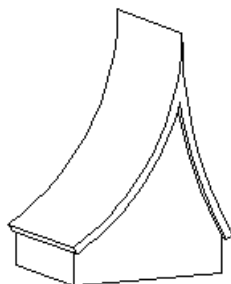
The program builds two vaults following the contour of a rectangle. The concave vaults follow the contour of two joining arcs. You have to define the angle of the two tangents on the bottom and the height difference between the reference lines of the opposite roof planes.

**Example:**

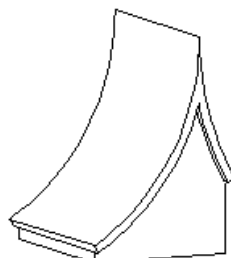
	1.	2.	3.
A	45°	30°	30°
B	45°	60°	60°
V	0 m	0 m	2 m



1.



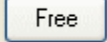
2.

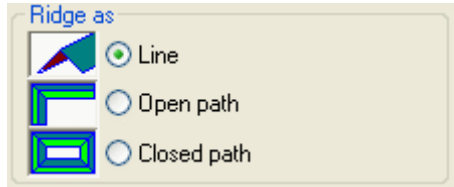


3.

### 10.14.2.7. Projecting extruded roof by free profile

Using this command you can draw a roof with any shape by customizing the profile. This command is similar to the previous one; however, here you have to define the vertical cross-section of the roof. You can also project the roof thus drawn onto an automatic roof, this way creating a so called "bull's eye roof" for instance (see the example bellow).

- Select the  icon.
- Define the angle of the ridge relative to the horizontal plane.
- Select the type of the roof path with one of the following options:



- **Ok** Closes the dialog box.
- Define the profile using the Profile definition tool in the Toolbox, or:

#### Options:

<b>OPENCHAIN</b>	<ul style="list-style-type: none"> <li>• You can select an already existing profile. Click on the endpoint of the open profile. Define the reference point of the selected profile.</li> </ul>
------------------	--

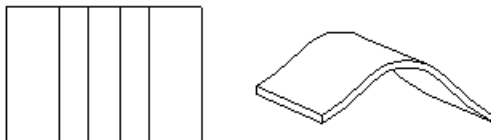



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

Then define the path according to the selected type:

#### Path

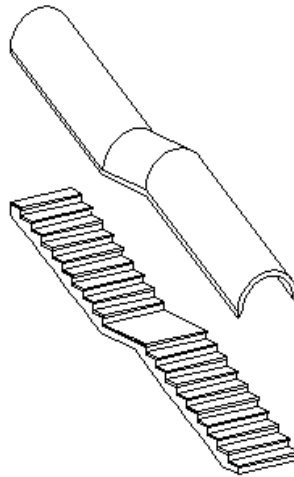
- Define the reference line of the roof by its two points. The reference point previously defined will be placed on the reference line.



You can project the so called "bull's eye roof" onto the automatic roof by clicking on the  Project extruded roof command.

### Open/Close path

- Define the points of the open/close path.  
The reference point of the profile will correspond to the first point.
- **Enter** Completes path definition.
- Define the height of the points indicated by the program.
- In the case of the same height for each point press **Enter** for all the subsequent points after defining the first value.



Using this command you can place a roof above a staircase as well. See the example. You can insert a profile with different predefined height values on an open path or a free profile.

### 10.14.2.8. Automatic roof with profile

This command is different from the *Automatic roof* command in that instead of using simple roof planes it applies a profile. The defined profile can consist of both straight and arc segments.

- Define a cross-sectional profile of the roof to move along the reference line of the roof using the *Profile definition tool in the Toolbox*.




See detailed description in chapter 8.9. *Specifying profile*.

#### Options:

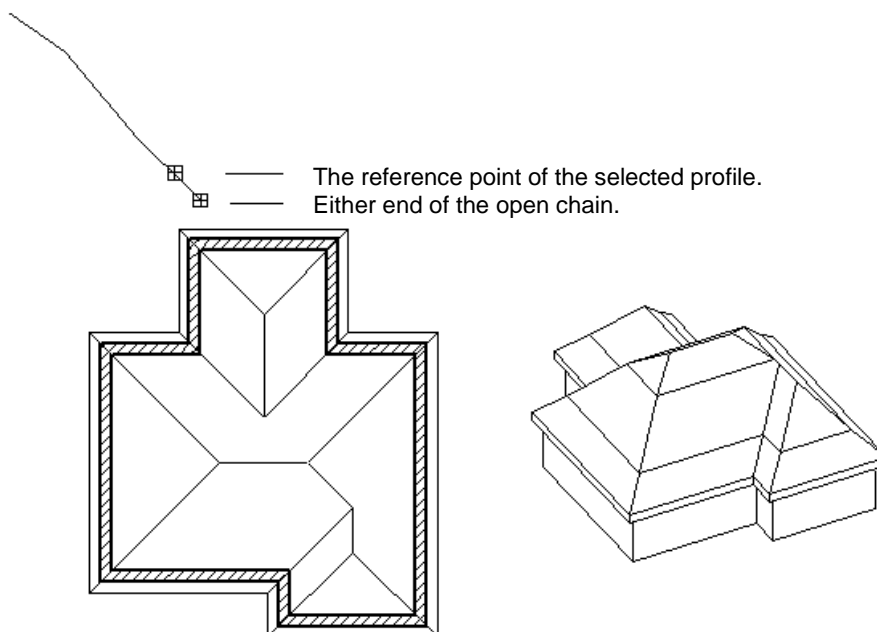
<b>OPENCHAIN</b>	You can select an already existing profile. Click on the endpoint of the open profile.
------------------	--

- Define the reference point of the selected profile.
- Define the reference line of the roof.

For the next steps see the description under the  **Automatic roof** command.

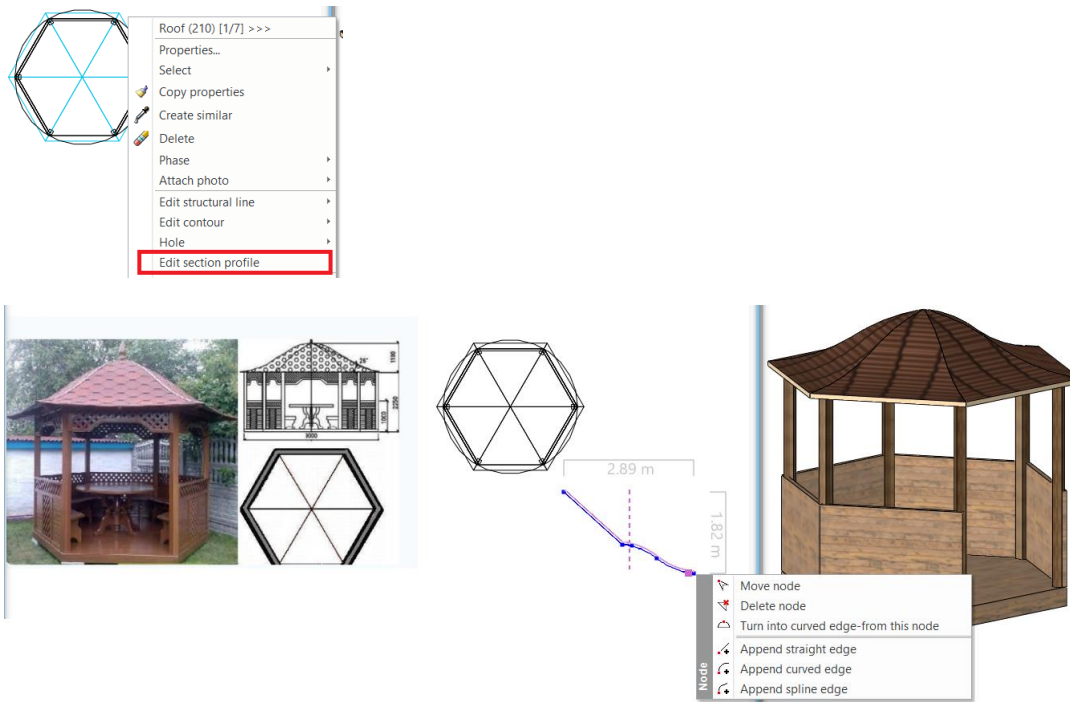


See detailed description in chapter 9.8.2.1. *Automatic roof*.



### 10.14.2.9. Roof with custom shape - cross section profile editable

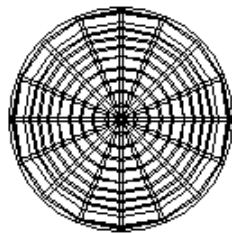
When you create a roof with custom shape you sketch the profile first and then use that shape on the roof you create. This profile is available later to edit with Edit section profile command.



It is recommended to determine the profile from right to left, so that its reference point will be on the right side.

### 10.14.2.10. Dome roof

You can create a dome-like roof by using the *Dome roof* command. Basically, you have to place a circle on the floor plan by applying the keywords appearing in the command line. The diameter entered is actually the internal diameter of the roof and you can set the roof thickness in the Roof properties menu.



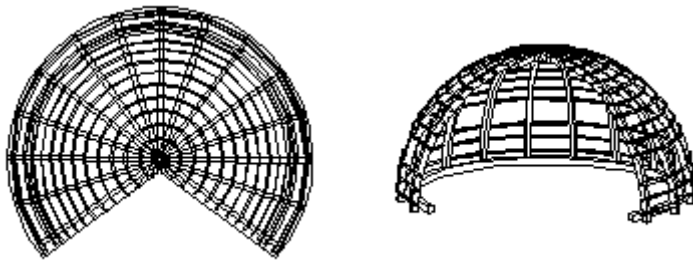
### 10.14.2.11. Open dome

With the *Open dome* command you can use a part of a dome roof cut out along the radius as roof. You can either define the open dome by three points on the floor plan (using the **P3** command) or you can define the starting angle and the end angle in the *Circular arc* dialog box previously.

**Circular arc**


Start angle  ▼

End angle  ▼



### 10.14.3. Modifying roof properties

You can modify the roof properties by selecting the **Properties** command from the Shortcut menu. The dialog box thus appearing contains the current values of the selected roof. If you change any value, the roof will change accordingly. There are four dialog boxes within the **Roof properties** dialog box: *Eaves purlin*, *Rafters*, *Battens*, *Projection and cut*, and *Roof planes*.

A ridge tile can only be modified globally. In other words, to do so right click on the  Roof icon or select the **Properties menu - Roof - Roof properties** dialog box. This is a global command for all existing roofs.

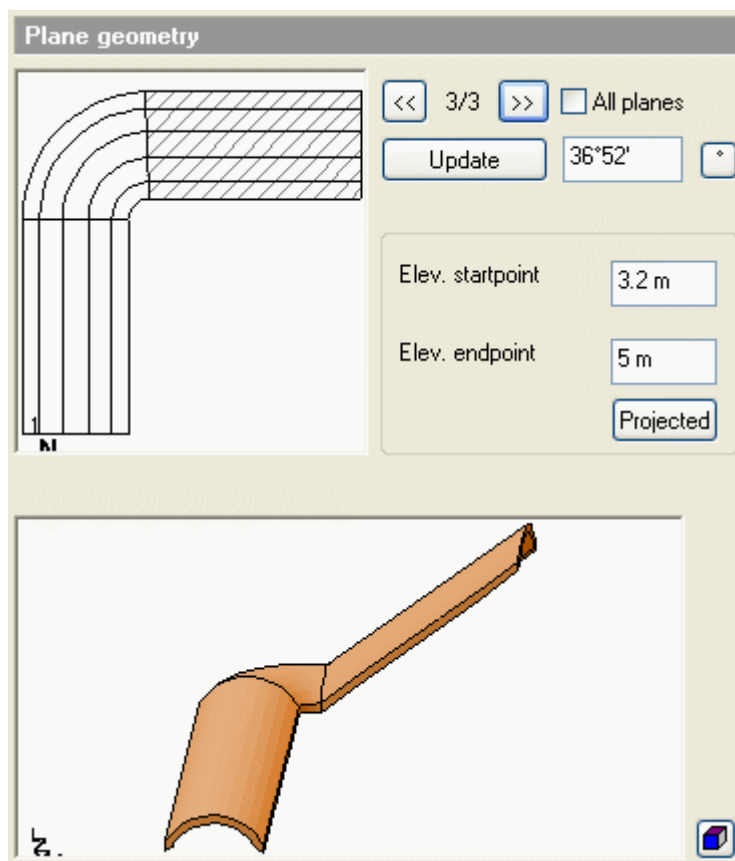


For details see Chapter 9.8.1. *Roof properties* and Chapter 9.8.2.1. *Automatic Roof*.

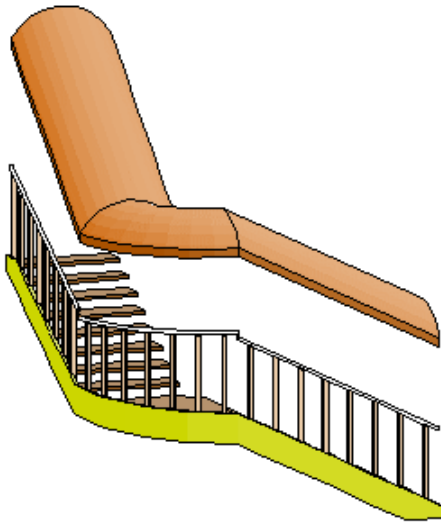
#### **Modifying extruded roof**

In case of an extruded roof the Modify properties dialog box is different from the ones discussed above.

- ❖ An extruded roof has fewer properties than an automatic one; consequently you can modify fewer values in the General properties dialog box.
- ❖ In the *Roof planes* dialog box you can modify both the **Starting height** and the **End height**. If you have placed the extruded roof on an open chain, the starting and the end heights refer to the segment with hatching. You can select the segments by either clicking or by arrows. The dialog box will calculate the slope of the ridge from the starting and the end heights. You can also define the end height with entering the slope.
- ❖ You can modify the profile of the projected room in the *Extruded roof* dialog box appearing when clicking on the *Roof slope - Projected* button.



With this option of modification you can set the roof height at the breakpoints above the stair.



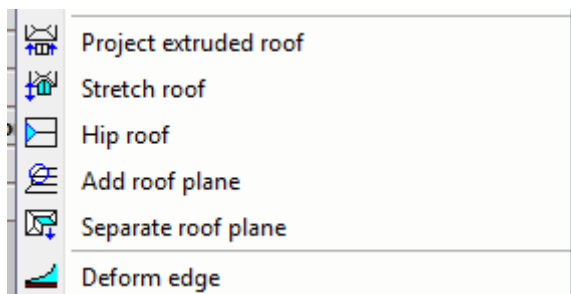
#### 10.14.4. General editing of roof geometry

There are several methods to modify or edit the geometry of an already existing roof. In this part we will discuss the following:

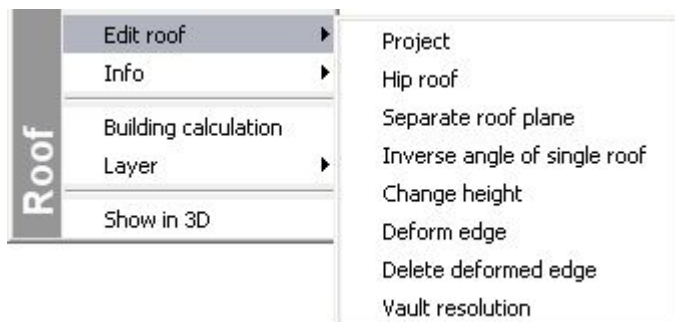
- ❖ Extruded roof
- ❖ Extend roof
- ❖ Hip roof
- ❖ Multiple hip roof
- ❖ Separating roof plane
- ❖ Inverting slope of single roof
- ❖ Modifying height
- ❖ Deforming roof edge
- ❖ Deleting deformed edge
- ❖ Vault resolution
- ❖ Roof window

You can select these commands the following ways:

- ❖ From the  **Roof tool:**



- ❖ From the *Shortcut menu:*

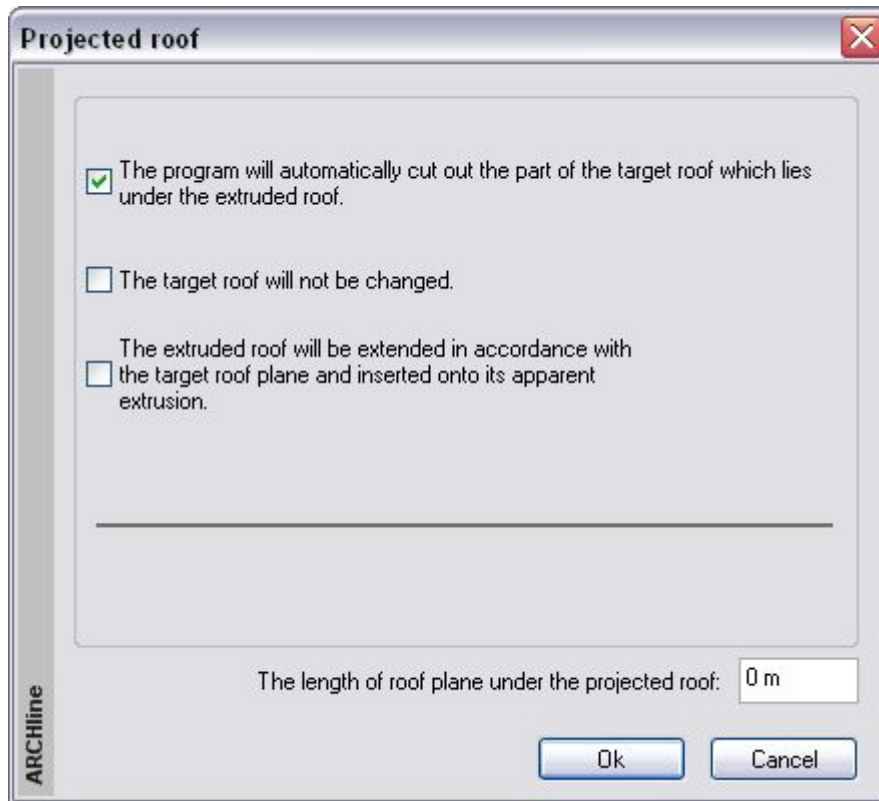


##### 10.14.4.1. Extruded roof

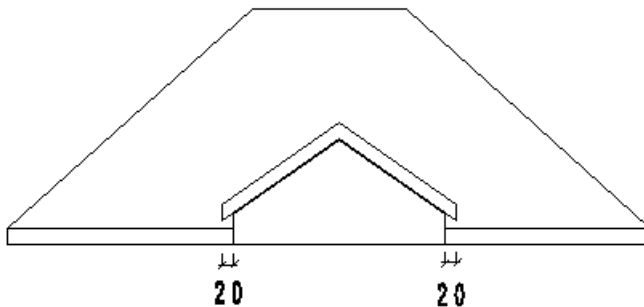
This command identifies the overlapping of the different roof surfaces. It projects the extruded roof first selected onto the target roof by applying different merging methods.

**!** You can only project a roof created by the  **Extruded roof** command. The target roof can be of any type; however, you have to keep in mind that the geometry of the roofs must be adjustable when projecting.

- Select a roof to be projected onto another roof plane.
- Select the method of projection from the dialog box. This command will merge the selected roof and the target roof.

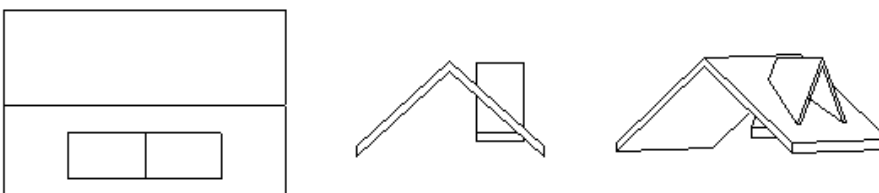


- When the roof is projected, you can define the length of roof plane under the projected roof in the *Projected roof* dialog.

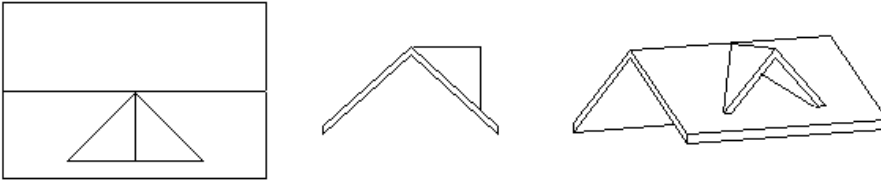


- Select a target roof into which you want to merge the extruded roof.  
When selecting the third option, define a plane of the target roof by one of its internal points to which you can adjust the extruded roof.

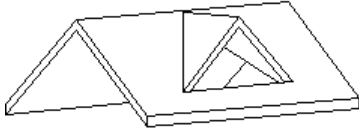
**Before projecting:**



After projecting when using the second option:



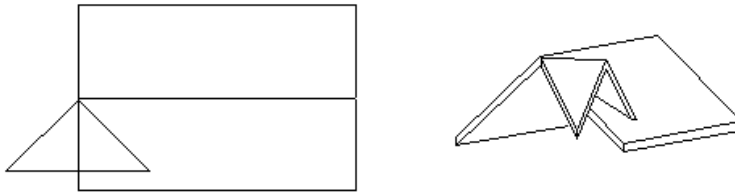
After projecting when using the first option:



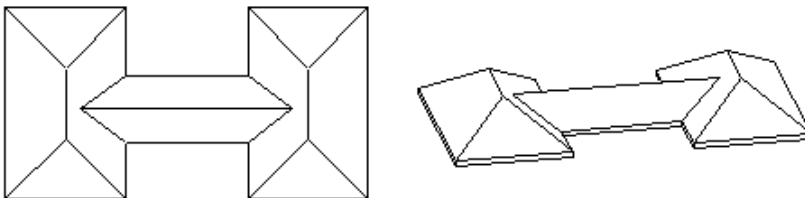
Before projecting:



After projecting when using the third option:



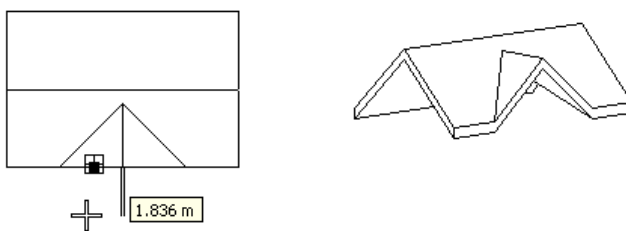
The extruded roof can be projected onto the prepared roof from both sides this way merging them as it is shown in the figure. Both sides of the extruded roof can be projected, so this way you can connect two already constructed roofs. See the following figure.



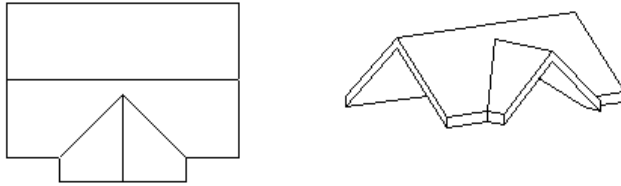
#### 10.14.4.2. Stretching roof

With this command you can modify the length of an extruded roof.

- Select a side edge of the extruded roof to be extended.
- Specify the new position of the edge.







### 10.14.4.3. Hip roof

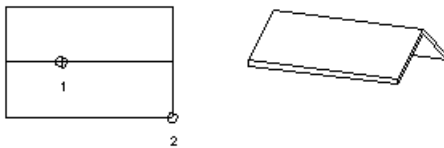
By creating a new roof plane this command will build a hip roof of two front facing roof planes with a common edge. Depending on the type of the selected roof you can use two different methods to insert a new roof plane. You can use the same command for deleting a previously inserted roof plane.

#### **Extruded roof into hip roof**

With this command you can create a new roof plane to fully or partly close the open side of the roof.

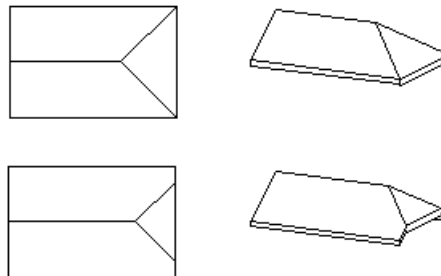
- Select an extruded roof to which you can add a new plane.
- Specify the reference line of the new roof plane by one of its points on the projection of the roof's open side. The point specified will define the height of the reference line. If you place the point on the corner point of the predefined roof, the new plane will fully close the open side of the roof.
- The Roof plane dialog box appears. You can modify the slope and the thickness of the roof as well as the relative and the absolute heights of the reference line.  
**OK**      Completes the command.

#### **Example:**



The height of the reference line (2.70 m) corresponds to that of the already existing roof reference line. The slope is 35°.

The height of the reference line (3 m) extends that of the already existing roof reference line. The slope is 35°.



#### **Automatic roof into hip roof**

Here you can add a new roof plane to an automatic roof. You can place the new plane onto an already existing roof plane or onto an open side.

You can define the height of the new plane's reference line by either related to the reference line of the roof or by selecting a point of the roof.

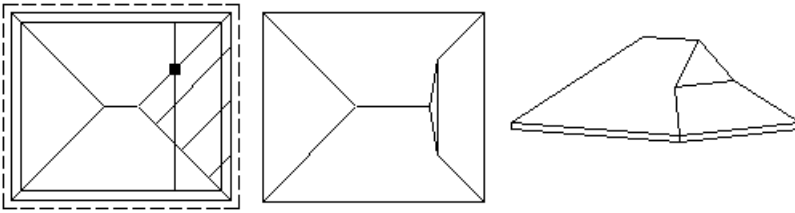
You can delete an added roof plane as well.

#### **Reference line by height:**

- Select a roof.
- Click on one of its roof planes to add another plane.
- Enter the relative height of the new roof plane's reference line related to the reference line of the selected roof plane.
- Enter the slope of the new plane.
- **Enter**      Completes the command.

#### **Reference line by selecting a point**

- Select a roof.
- Click on the **SELECTPOINT** keyword.
- Select a point to define the height of the new plane's reference line.
- Enter the slope of the new plane.
- **Enter**      Completes the command.
-



#### Delete added plane

- Select a roof.
- Click on the **DELETE** keyword.
- Select an added roof plane to delete.
- **Enter**      Completes the command.

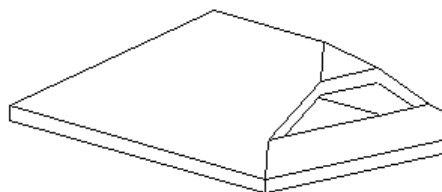
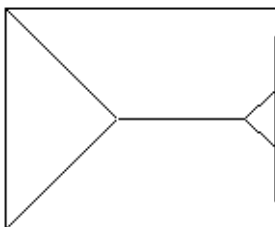
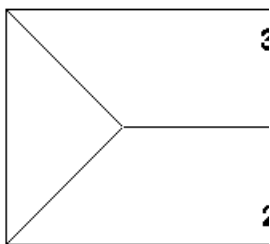
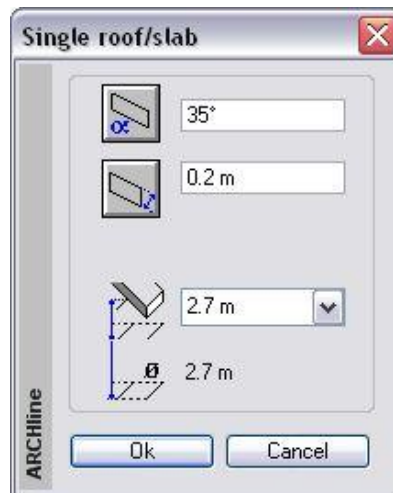


In case of an automatic roof you can add a hip roof by using the *General properties - Roof planes* dialog box.


#### 10.14.4.4. Multiple hip roof

In the case of creating more complex, multiple hip roof structures you may have to add another new plane to the a previously merged roof plane, that is, you may have to create a new hip roof.

- Click on the roof plane (point 1) where you wish to create a new hip roof. (In case of a plane of 90° click on the edge, otherwise inside the plane.)
- Define the reference line of the new plane by specifying two points. (Point 2 and 3.)
- You can set the exact height of the reference line in the appropriate field.
- Enter the slope value of the new plane.



#### 10.14.4.5. Separating roof plane

This command helps you to customize any selected plane of an automatic or a predefined roof. The corner points of the new roof are „free”, that is, they can be freely edited. You can, for example, apply the  **Move node** command.

- Select a roof plane to be customized.
- **Enter**      Accepts the selected plane.
- **NO**        Selects another plane.
- **Enter**      Completes the command.





You cannot separate an automatic roof defined by a profile into roof planes. For such roof structures use the Edit structural node commands.

#### 10.14.4.6. Inverse angle of single roof

This command inverts the slope of a single roof.

- Select a single roof to invert its slope



You can only apply this command for roofs created plane by plane (that is for roofs created by the  *Roof plane by reference line* or, the  *Roof plane by 3 points* commands).

#### 10.14.4.7. Modifying height

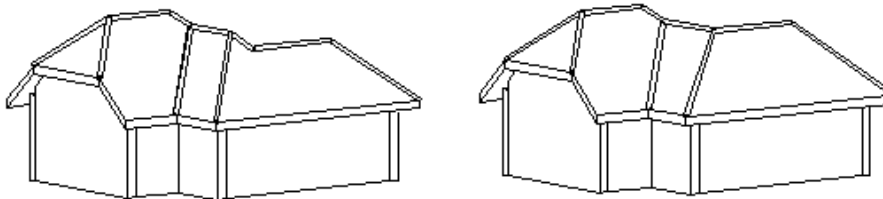
You can also modify the height of any point of the infinite plane belonging to the roof plane. If you modify a point, the program will rotate the roof around the reference line of the roof as axis.

If the selected point is on the roof ridge, it means that the height of all the roof planes connected to the ridge will be changed.

- Select a roof to be modified.
- Select a point to define the height of the roof.
- Enter the height of the roof above the point selected in the previous step, or click on the **LIKE** option of the Command line to use the selected point of the roof edge to give the height and select the point of the desired height.
- Select the roof planes (by clicking on any of their internal point) which will be modified by the new height point.

##### For example:

In the case of an automatic roof the program will draw the planes by the given slope values. In case of more complex floor plans the roof ridges can have different heights. Use the Modify height command to move the selected ridges to the same height. This modification will, of course, change the slopes as well.



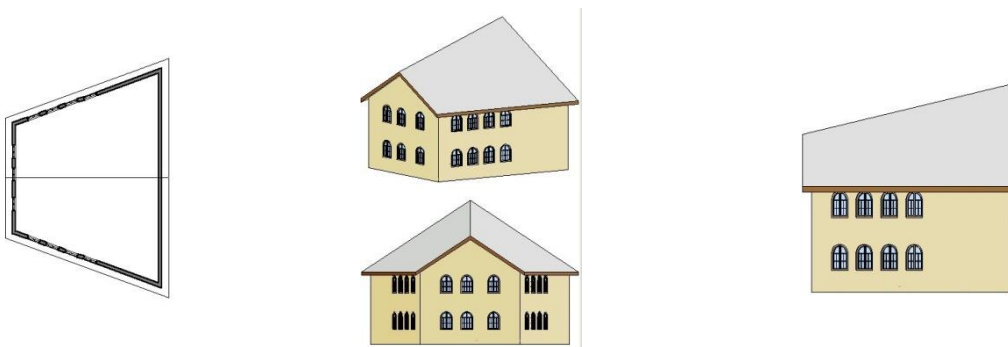
You cannot modify a point of the reference line. If you click on the reference line, the program will show its height, however, you cannot change it.

#### 10.14.4.8. Deforming roof edge

This command in the side menu will deform the roof plane by modifying its selected edge. You can change the roof planes and create arched surfaces by modifying the ridge.

You may need this method when the opposite walls of the building are not parallel. Here the ridge of the automatic roof is not horizontal. If you want to change the ridge horizontal, it means that the roof planes will be deformed and arched surfaces will be created.

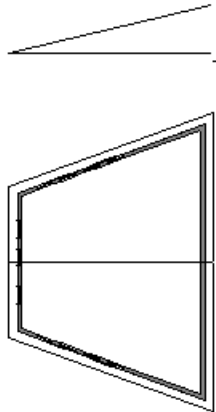
This building has been drawn with an automatic roof and two gables.



Using the command you can make the roof ridge horizontal.

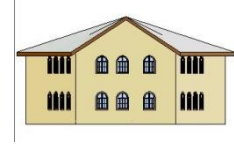
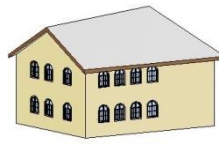
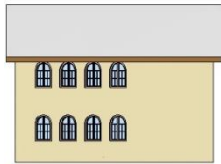
After selecting the ridge use the commands of the *Edit profile* tool to deform the roof plane.

- Select the roof for modifying the height.
- Select the roof edge whose height you would like to modify. In the example the ridge has been selected.
- Place the layout image of the edge on the drawing area.
- Use the *Edit profile* tool to add a node or to convert a side into an arc, etc.  
Now select the *Move node option* to move the higher endpoint of the ridge to the level of the lower endpoint.
- **Enter** Completes defining the profile.
- **Enter** Exist the Edit profile command.

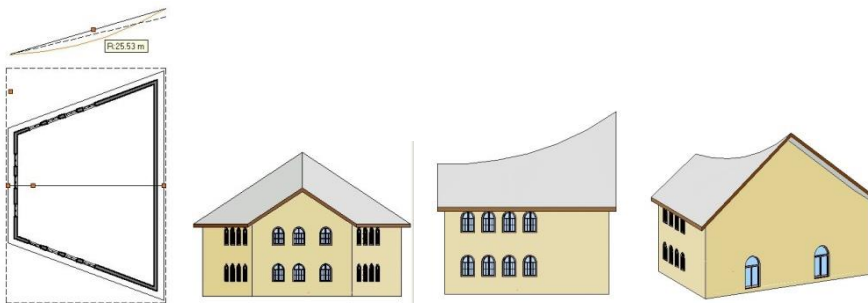


See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

- Enter the value of resolution on the edge. The larger the set value is the higher the resolution becomes. This is important when you want to convert a selected edge into an arc. In the example the value of resolution is 1.
- OK** Closes the dialog box and completes the modification.



You can cover the edge into an arc. In this case select the *Edit profile tool - Line->Arc* command. Define the arc. The resolution is of great importance here. Enter for example 64.



In order to maintain the accuracy of the floor/roof geometry, split lines are often created automatically. The automatically created split lines are deleted when the condition that caused them to be created is no longer valid. For example, when 4 non-planar vertices become planar. In case you want to restore the original form of the modified roof edge, click on the *Shortcut menu - Edit - Delete deformed edge* command.

#### 10.14.4.9. Delete deformed edge

With this command you can delete the edited roof edge and restore the original form.

- Select the roof to be modified.
- Select the pick point to be deleted.

##### Options:

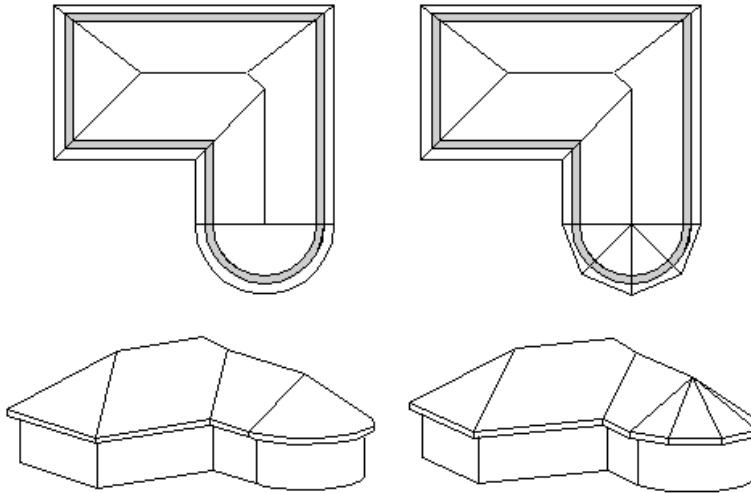
<b>ALL</b>	Use this option when you want to restore each edge of the roof.
<b>EDGE</b>	Use this option when you want to restore the edited roof edges one by one.

### 10.14.4.10. Vault resolution

If the reference line of the roof follows a circle or an arc, the program will automatically create a coned roof. Use this command when you want to convert a coned roof into a plane one due to implementation or projection.

You can transform a coned roof into a polygonal roof by entering the number of the nodes in relation to the arc and the direction of the polygon's basic edge.

- Select the extruded roof or an arched edge of the coned roof to modify the resolution.
- Enter the resolution degree of the arched segment (0 means no resolution).
- Define the direction of the pyramid's basic edge. The program will offer the centre point of the circle for setting the direction.



### 10.14.4.11. Roof window

Use this command to place a roof window on the defined roof plane. The type of the roof window can be selected in the dialog box appearing.



For detailed description see Chapter *Insert door/window – 9.3.2.5. Insert roof window* section.

### 10.14.5. Editing roof nodes


The free nodes of the roof can be moved or deleted and its free edges can be shifted parallel or converted into an arc and back.



The *free nodes* of the roof are the ones not used in the creation of the roof profile, while the ones used in the profile creation are called *structural nodes*.

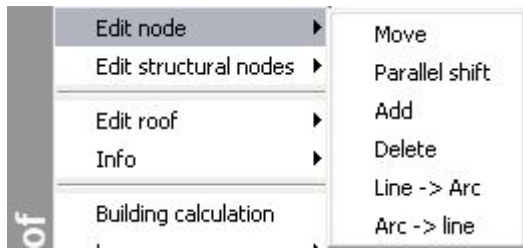
- ❖ Each node and edge of a single roof plane is free.
- ❖ An automatic roof has no free nodes. The arris and ridge are not free while the edges terminating a simple plane are free. The nodes added to the free edge are free as well.
- ❖ An extruded roof has no free nodes. Only the ones added to the only free edges perpendicular to the projection are free.

Consequently, if you want to edit the nodes of a roof plane in case of an automatic or extruded roof first you have to

separate the desired roof plane from the current roof. Use the  **Separate roof plane** command to do so. The nodes and edges of the single roof planes thus created are free.

In case of *automatic roofs by profile and extruded roofs with arched surfaces* you can only apply the commands related to editing *Structural nodes*.

You can find these commands in *Shortcut menu*:



### 10.14.5.1. Moving, adding or deleting nodes

Use this command to move, add or delete free nodes.

#### Move node

Moves free nodes by clicking on any of them.

#### Delete node

Deletes a selected roof node by clicking on it and selecting the **DELETENODE** keyword.

#### Add node

Add new roof nodes by clicking on any free edges of the roof.

- Select a free roof edge where you want to add a new node and specify the position of the node, or select the **SPLOYGON** keyword from the command line to create a closed polyline as part of the roof contour.
- Specify the nodes to be inserted.
- **Enter** Completes the command.

### 10.14.5.2. Parallel shift

Use this command to move a selected side of the roof with a given distance.

- Select the edge to be moved.
- Specify the new position of the roof contour.
- **Enter** Completes the command.

### 10.14.5.3. Line <-> Arc

You can do the following modifications with the help of this command:

#### Arched roof side → Straight roof side

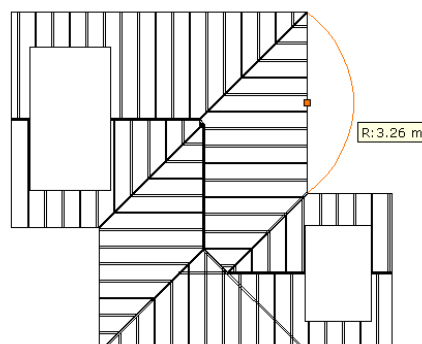
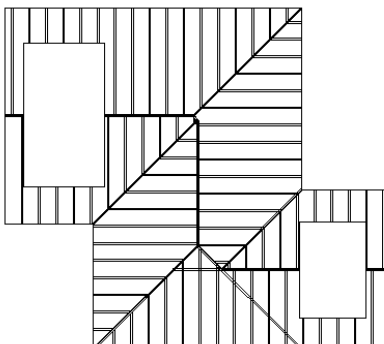
- Select an arched roof side to convert it into a straight one.

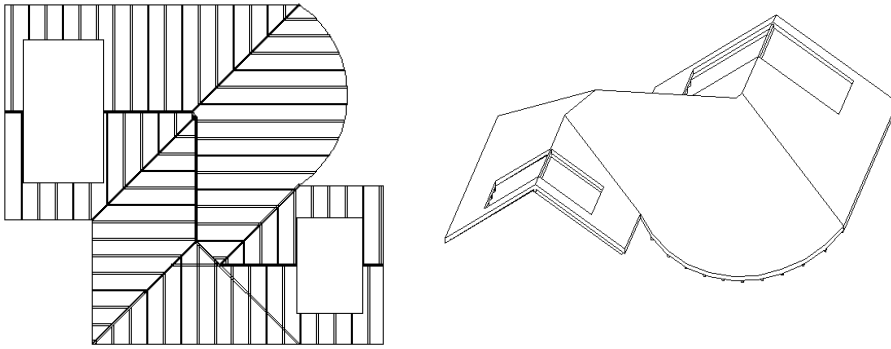
#### Straight roof side → Arched roof side

- Select a straight roof side to be modified.
- Specify a point. The arc will cross this point, or select any of the options of the command line. You can select and arched roof side as well to modify the arc radius.
- **Enter** Completes the command.

#### Options:

<b>DIAMETER</b>	Value of the diameter
<b>RADIUS</b>	Value of the radius
<b>PERIMETER</b>	Value of the perimeter (length of the arc)
<b>ARC</b>	Value of the arc cord

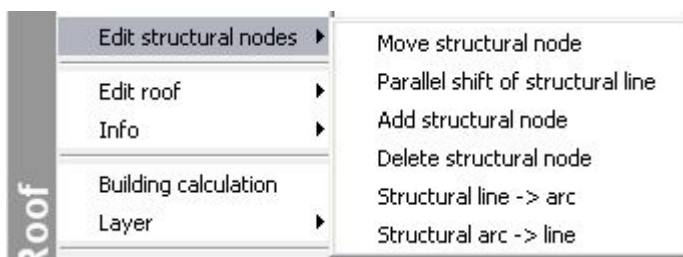




### 10.14.6. Editing structural nodes

The nodes involved in the creation of the cross-sectional profile of the roof are called **Structural nodes**. To edit structural nodes use the commands of *Edit structural nodes* (*Edit nodes* cannot be applied here).

You can find these commands in the *Shortcut menu*:



#### 10.14.6.1. Moving structural nodes

Use this command to move structural nodes.

- Select the roof whose reference line you want to modify.
- Select the node to be moved.
- Specify the new position of the node.
- **Enter**      Completes the command.

#### 10.14.6.2. Parallel shifting of structural line

Use this command to move parallel a structural edge of the roof, that is, the reference line of the roof.

- Select the roof whose reference line you want to modify
- Select the edge to be moved.
- Specify the new position of the edge.
- **Enter**      Completes the command.

#### 10.14.6.3. Adding structural nodes

You can add structural nodes used for the creation of profiles to the reference line of the roof.

- Select a roof to be modified.
- Select the segment of the reference line where you want to add a new node.
- Specify the position of the new node.
- **Enter**      Completes the command.

#### 10.14.6.4. Deleting structural nodes

You can delete structural nodes on the reference line of the roof used for the creation of profiles.

- Select a roof to be modified.
- Select the node to be deleted.
- Select other nodes, or
- **Enter**      Completes the command.

### 10.14.6.5. Structural line - Arc

You can do the following modifications with the help of these two commands:

#### Arched roof side → Straight roof side

- Select an arched roof side to be converted straight.

#### Straight roof side → arched roof side

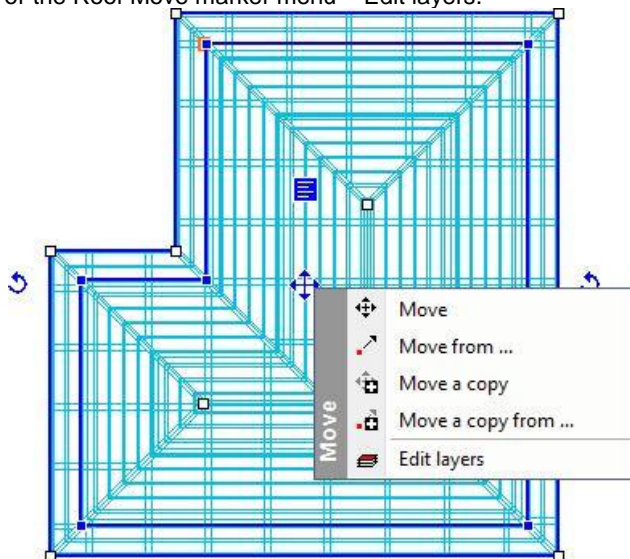
- Select a straight roof side to be converted arched.
- Specify a point. The arc will cross this point, or select any of the options of the command line.
- **Enter**      Completes the command.

#### Options:

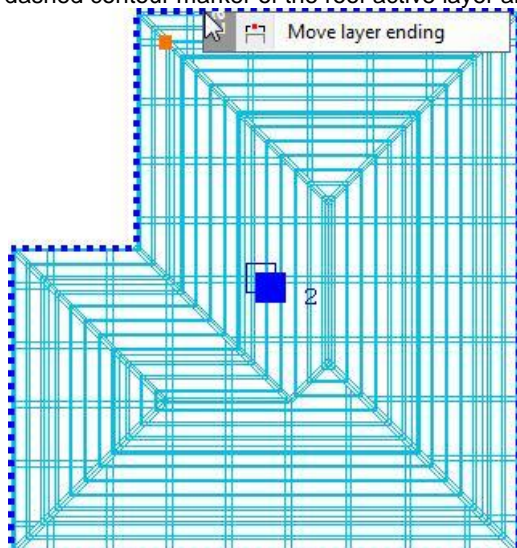
<b>DIAMETER</b>	Value of the diameter
<b>RADIUS</b>	Value of the radius
<b>PERIMETER</b>	Value of the perimeter (length of the arc)
<b>ARC</b>	Value of the arc cord

### 10.14.7. Roof – Edit layers

Roof layers can be edited similarly to editing slab layers. You can access Edit layers tool in Roof pop menu – Edit layers or the Roof Move marker menu – Edit layers.



After selecting the Edit layers tool you can make an offset to all endings of the active layer in one step. Click on the dashed contour marker of the roof active layer and select Move layer ending.





The roof layers setting dialog is extended by new possibilities:

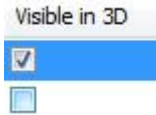
- Roof layer bottom ending distance and type can be set.

You can set the bottom ending distance by selecting from the dropdown list or you can type a value.



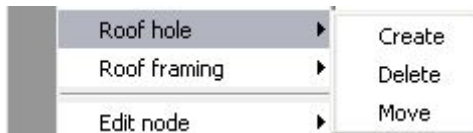
If the roof layer bottom ending distance is not set to “Follows roof ending” then you can select a layer ending type by clicking on the ... button. Select an ending type in the appearing dialog window and click OK to accept it.

- Visibility of the layer can be set for each roof layers one-by-one.



## 10.14.8. Roof hole

You can use this command to create, delete or move a hole on the roof. Use the Hole command when drawing chimneys. You can find these commands in the Shortcut menu:



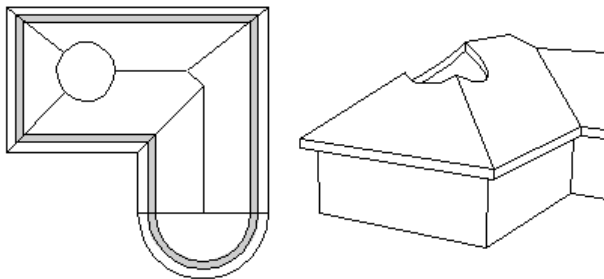
### 10.14.8.1. Creating a roof hole

You may need to create a roof hole when constructing for example a chimney. This function is always related to a roof.

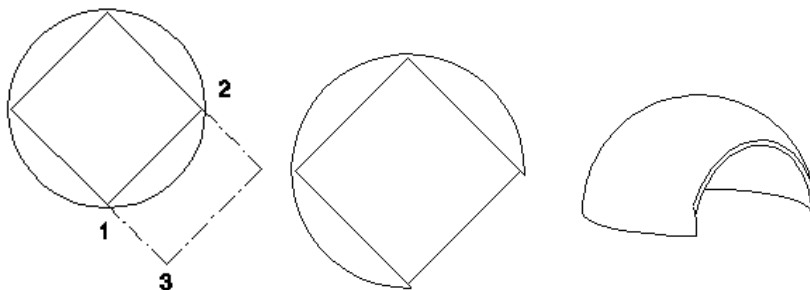
- Select a roof on which you want to create a hole (the plane of this roof will be the reference plane of the hole).
- Define the hole's profile using *Profile definition* tool.
- **Enter** Completes the command.

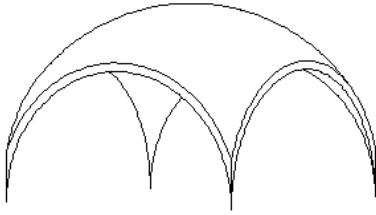


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



Another way to create a roof hole is to cut the roof contour with the defined profile:





### 10.14.8.2. Deleting a roof hole

Use this command to delete an already existing roof hole.

- Select a roof hole to be deleted.
- **Enter**      Completes the command.

### 10.14.8.3. Moving a roof hole

Use this command to move an already existing roof hole.

- Select a roof hole to be moved.
- Select the reference point of the roof hole then define the new position of the hole by moving it by its reference point.
- **Enter**      Completes the command.

### 10.14.8.4. Copy a roof hole

Use this command to copy an already existing roof hole.

- Select a roof hole to be copy.
- Select the reference point of the roof hole then define the new position of the hole by moving it by its reference point.
- **Enter**      Completes the command.

## 10.14.9. Roof framing

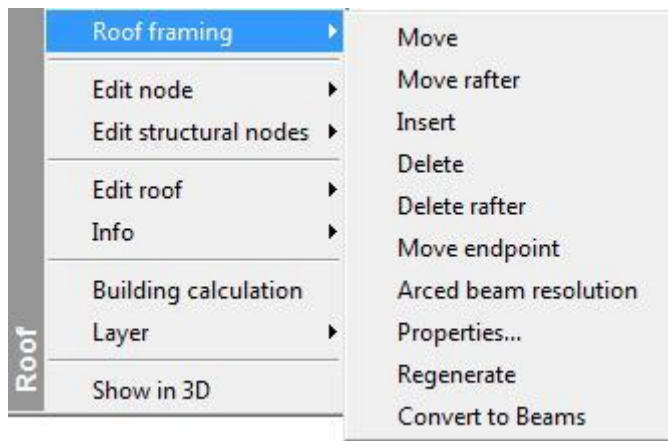
You have to enable the *Enable eaves purlin*, *Create rafters*, *Create battens* options in the *Properties* dialog box and the program will create the framing of the roof.

When drawing use the properties set in the *Eaves Purlins*, *Rafters* and *Batten* dialog box.



The roof framing is displayed on the floor plan as well as on the 3D representation. To satisfy your needs with regard to the geometry of the framing the program enables its editing. You can edit the framing by its objects, one by one, or all on the roof plane at the same time.

Use the following commands for editing in the *Shortcut menu*:

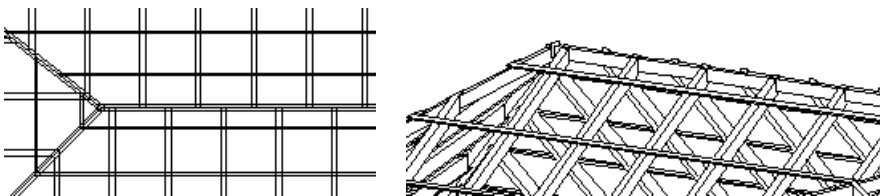


### 10.14.9.1. Moving

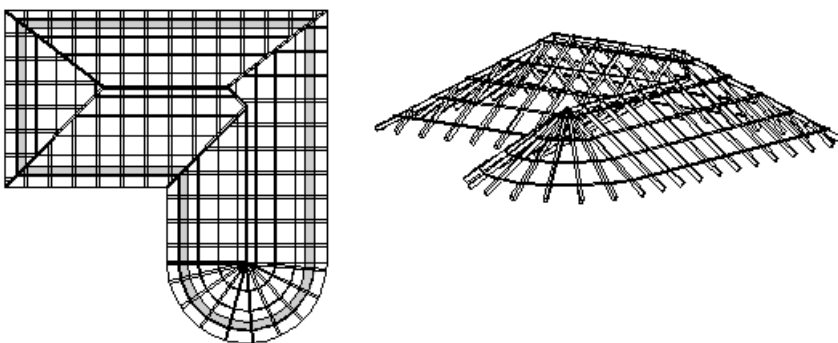
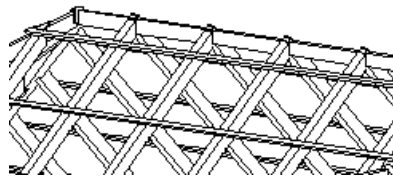
Moves the whole framing of the selected roof plane.

- Select a beam by the point to be its reference point when moving.
- Specify the new position of the beam. The whole framing of the roof plane follows the movement; however the distances between the beams will remain the same.
- **Enter**      Completes the command.

The following figure clearly illustrates that the opposite beams do not join:



After moving:



You can also move the framing so that the outermost beam is adjusted to the roof edge (e.g. in the case of a gable wall).

### 10.14.9.2. Moving one beam

Here you can only move the selected beam.

- Select a beam by the point to be its reference point when moving.
- Specify the new position of the beam.
- **Enter**      Completes the command.

### 10.14.9.3. Inserting

This command inserts a new beam into the desired place.

- Select a beam (the inserted beam will be parallel to this one and be placed on the same roof plane).
- Specify the position of the new beam. The program will automatically insert a new beam into the specified place.

### 10.14.9.4. Deleting

This command deletes the whole framing from the roof plane or the complete roof framing.

- Select a beam on the roof. The program will automatically delete all the beams on the selected roof plane, or
- Select the **ALL** keyword from the command line to delete the complete roof framing. **Enter**.

### 10.14.9.5. Deleting one beam

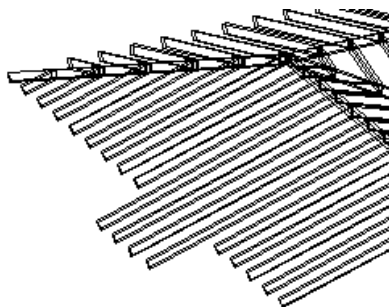
This command deletes the selected beam from the roof.

- Select the beam to be deleted. **Enter**.

### 10.14.9.6. Move endpoint

This command moves the endpoint of the selected beam closer to the point of selection. Beams can be both longer and shorter than the plane of the selected roof.

- Select a beam.
- Specify the new position of the selected beam. **Enter**.



### 10.14.9.7. Arc batten

This command can divide the arched segment of the batten following the curve of the wall into equal parts. This command is similar to the Vault resolution command.

- Specify the value of resolution. This is actually the number of the equal segments of the purlin.
- Specify the new position of the framing. You can define the starting point from where the resolution of the batten's arched part begins.

### 10.14.9.8. Modifying

With this command you can modify each beam property one by one.

- Select the beam/beams to be modified. **Enter**.
- Define the desired properties in the **Beam properties** thus appearing. The defined properties concern the selected beam(s) only.
- **Enter** Completes the command.

#### **Example:**

You have defined the cross-section of the beams in the Roof properties dialog box. This cross-section is of global relevance. However, you have to assign a larger cross-section to the hip-beam due to the extra weight on it. Apply the *Roof framing - Modify* option to the selected hip-beam. Specify the desired cross-section. The newly defined cross-section is relevant to the hip-beam only.



See the detailed description of the properties in Chapter 9.8.1. *Roof properties*.

### 10.14.9.9. Restoring framing

This command restores the original framing of each roof plane one by one.

- Select an option in the Command line:

<b>HORIZONTAL</b>	It restores the battens for roof tiles only.
-------------------	--

<b>PERPENDICULAR</b>	It restores the eaves purlins only.
<b>ENTER</b>	It restores the complete roof framing.

- Select the appropriate roof lane.
- **Enter**      Completes the command.



To restore the complete roof framing use the *Properties - Roof - Delete and rebuild all rafters and eaves purlins / battens options.*

#### 10.14.9.10. Horizontal beams adjusted to roof

You can adjust horizontal beams to roof with the help of command. The selected roof plane defines direction and height of beam.

- Define the parameters of beam through the *Beam* dialog box.



See 9.2.2. *Beam* chapter.

- Select a roof plane to adjust the beam.
- Define the origin of beam.
- Define the end of beam, or
- Or choose an option from the Command line:

<b>INVERSE</b>	The profile of the beam mirroring to the path.
<b>FULL</b>	The roof plane determines the length of the beam.

- 



The beam can't be longer than the roof plane.  
The beam, created like this is not part of the roof, so it is not part of the roof list either.

#### 10.14.9.11. Beams adjusted to rafter direction

You can adjust beams to rafter direction with the help of command. The selected roof plane defines the angle of beam. The beam can't be longer than the roof plane.



See the detailed description in chapter 9.8.9.10. *Horizontal beams adjusted to roof.*

#### 10.14.9.12. Beams adjusted to roof edge

You can adjust beams to roof edge with the help of command. The selected roof edge defines the position of beam. The beam can't be longer than the roof edge.

You can use the command well for example, if you create the roof from roof planes. In this case the hip-rafter and ridge purlin are not part of the built framework.



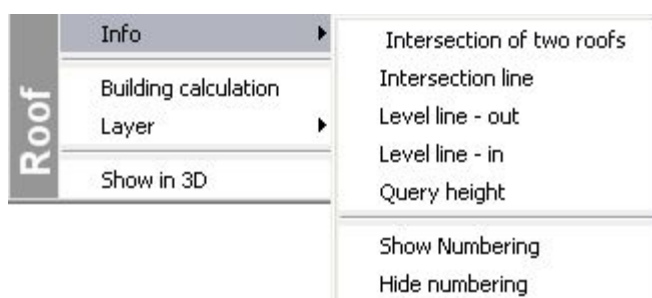
See the detailed description in chapter 9.8.9.11. *Beams adjusted to rafter direction*

#### 10.14.9.13. Roof Framing – Convert to Beams

With the help of this command you can create individual architectural beams as a copy of roof framing. You can activate these commands either in the **Shortcut menu** the *Roof framing / Convert to beams.*

#### 10.14.10. Roof - Information

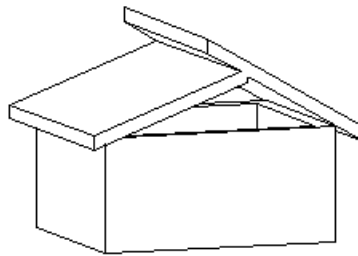
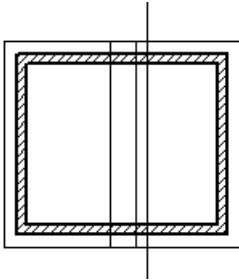
You can ask for different types of information about the selected roof. You can activate these commands in the **Shortcut menu**




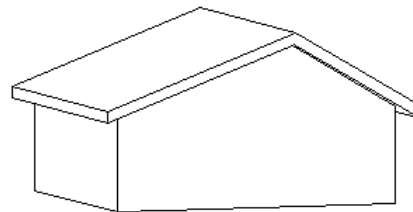
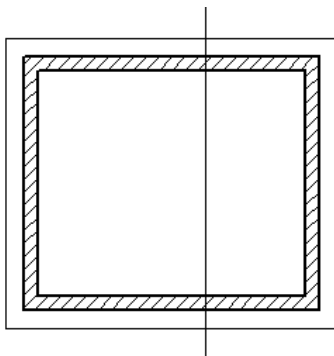
### 10.14.10.1. Intersection line

This command finds the points of intersection of the two selected roof planes and inserts an editing line on their virtual intersection.

- Select two roof planes to create the intersection line. The program will display the intersection line.



To join the planes by the intersection line move the nodes of both planes to the intersection line by using the  **Move, add, delete node** icon.



### 10.14.10.2. Level line - Outer - Inner

This command draws the level line of the roof at the given height respectively on the outer or the inner surface of the roof. This level line can be used for example when inserting a roof window at a given height.

- Select a part of the roof where you want to draw the level line.
- Specify the height of the level line relative to the current floor. The program displays the line at the specified height.

You can insert roof windows at the desired height by using the level line.

### 10.14.10.3. Querying height

The dialog box appearing when activating this command provides information about the height of a selected roof edge at a given point. The information can be embedded into Word or Excel by activating the **Copy to clipboard** command.



You can paste the text from the clipboard into the drawing by activating the *Text tool - Current text - Paste* button.

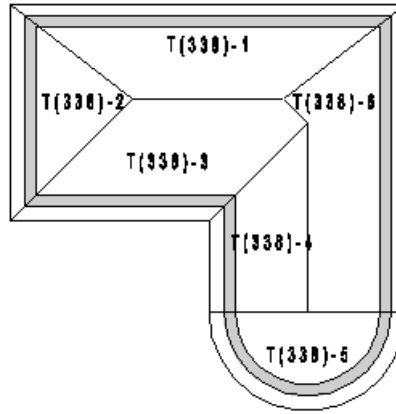
- Mark a roof edge at a desired point to define the height. The program displays the height of the top surface of the roof plane at the desired point, or
- Select the **BOTTOM** keyword to query the bottom surface of the roof plane. The dialog box thus appearing will display the height.

### 10.14.10.4. Show numbering

By activating this command the program automatically numbers each roof planes and displays an identification number by them.

The *Add - On menu – Quantity Take – Off - Building calculation* dialog box displays several types of information about the roof. The ID among them helps you to identify the roof where the framing object belongs.

This is a global command applying to each roof of the drawing.



### 10.14.10.5. Hide numbering

This command deletes the numbering of each roof planes.

### 10.14.10.6. Building calculation

The **Add On menu – Quantity Take Off - Building calculation - Roof+beams** command applied to a roof displays data about the roofs as well as the framing objects.



You can also obtain a building calculation list about a roof in *Word or Excel* from the *Add - On menu*.

The following example shows a table of lists and its corresponding table in Word format.

Roof	Floor	ID	Type	Area	Elev.	Thickness	Edge from c...	Top material	Side
	0	1	2	31.779 ...	1.987 m	0.2 m	0.5 m	Roof brown	Natu
	0	285	3	2.545 m2	2.7 m	0.2 m	0.2 m	Roof brown	Natu
	0	390	3	0 m2	2.7 m	0.2 m	0.2 m	Roof brown	Natu
	0	535	3	0 m2	2.7 m	0.2 m	0.2 m	Roof brown	Natu


  

Beam stru...	Number	Width	Thickness	Area	Length	Material	ID
	1	0.15	0.1	0.015	0.6194	Natural_pine	1
	1	0.15	0.1	0.015	0.6777	Natural_pine	1
	1	0.15	0.1	0.015	3.82	Natural_pine	1
	1	0.15	0.1	0.015	3.878	Natural_pine	1

Total	Length	Width	Thickness	Area	Volume	ID
	32.877	0.15	0.1	0.015	0.4932	1
	3.74	0.16	0.1	0.016	0.0598	1
	4.085	0.15	0.15	0.0225	0.0919	1
	103.628	0.0573	0.0556	0.0015	0.1554	1

<b>ARCHline<sup>XP</sup></b> Visual Object Pascal	<b>ROOF LIST</b>	
c:\program files\archline.xp\2005\draw\manual_pro\to1.pro	Date: 07.10.2004	

	
98	<i>Automatic roof</i>

Surface:	
1	16.15
2	12.11
3	7.74
4	6.73
5	16.48
6	5.38
7	8.07
8	13.46
<b>Total:</b>	<b>86.12</b>

Materials:	
Upper:	Roof_tile9
Below:	Pine2
Body:	Pine2

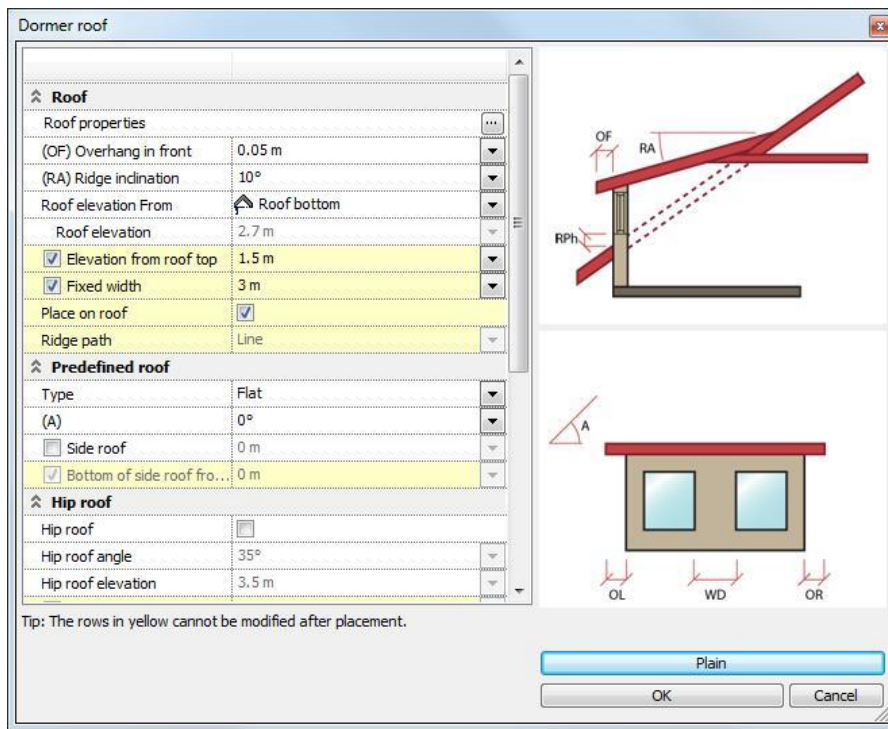
List of beams					
Piece	Material	Length (m)	Width (cm)	Height (cm)	
1	Pine2	0.18	5.00	3.00	
1	Pine2	0.23	5.00	3.00	
2	Pine2	0.28	5.00	3.00	
1	Pine2	0.66	5.00	3.00	
1	Pine2	0.71	5.00	3.00	
2	Pine2	0.78	5.00	3.00	

### 10.14.11. Dormer roof

With the help of Dormer roof tool you can create detailed dormer roof structures; you don't need to design all the details only to set the parameters. After setting up the setting you can position the dormer roof object in one single step into the roof structure.

After starting the Dormer roof tool, you will see the following dialog window.






The backgrounds of some rows will be shown in yellow. The rows in yellow cannot be modified after placement.

#### 10.14.11.1. Roof

In the roof section of the dormer roof setting window you can set the details of the roof structure, used as the roof part of the dormer roof.

Roof	
Roof properties	
(OF) Overhang in front	0.05 m
(RA) Ridge inclination	10°
Roof elevation From	Roof bottom
Roof elevation	2.7 m
<input checked="" type="checkbox"/> Elevation from roof top	1.5 m
<input checked="" type="checkbox"/> Fixed width	3 m
Place on roof	<input checked="" type="checkbox"/>
Ridge path	Line

#### Roof properties

You can set detailed settings for roof structure of dormer roof. You can use previously saved sets. To change settings please press the  button at the end of the row.

#### (OF) Overhang in front

You can set the overhang of the roof at the front plane of dormer roof. Please type a value or choose one from the drop-down list.

#### (RA) Ridge Inclination

You can set the inclination of the ridge (or at some specific cases, the angle of roof plane). Please type a value or choose one from the drop-down list.

#### Roof elevation from:

Please choose one from the drop-down list.

Roof elevation From	Roof bottom
Roof elevation	Roof bottom
<input checked="" type="checkbox"/> Elevation from roof top	Lower roof pane
<input checked="" type="checkbox"/> Fixed width	Roof ridge
Place on roof	<input checked="" type="checkbox"/>

### Roof elevation

You can set the so called base height of the roof; this will specify its position in the 3D space. The value given will be used as defined by the setting previously made at "Roof elevation from" value.

### Elevation from roof top

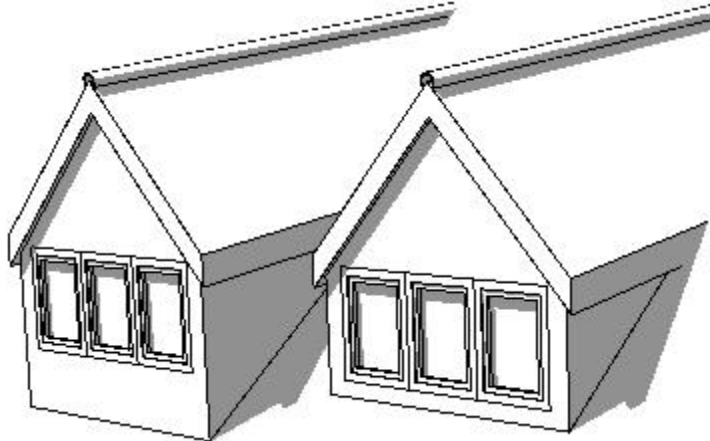
Enable the Elevation from roof top option to make the previously set roof elevation value measure from the top roof surface. When you disable this option the roof elevation value will be measured from the base level of the active floor.

### Fixed width

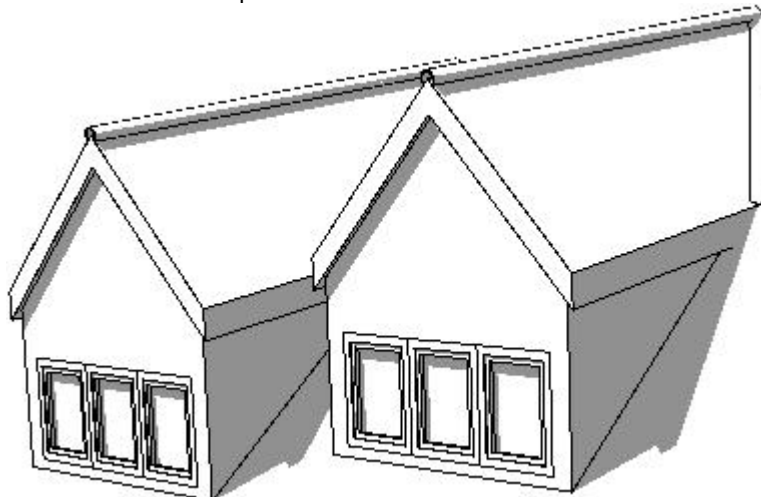
If you enable this option you will be able to give a value for the width of the dormer roof. This option can be used only for new dormer roofs and for predefined types. If you disable this option, you will be prompted to define the width graphically during the placement of dormer roof.

### Place on roof

You can place dormer roof directly onto the surface of a selected roof plane. The option is available only when you enable and set the Fixed width option. The following examples are showing you the differences between enabled and disabled settings. If you enable this option the original roof and the dormer roof will be automatically joined to each other also.



Place on roof option disabled



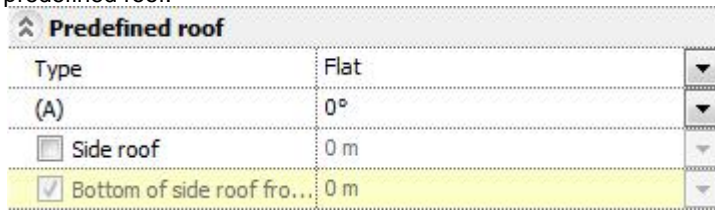
Place on roof option enabled

### Ridge path

You can choose from the drop-down list, and based on the setting you made you can design the path of ridge during placement. This option is available only when you disable the Place on roof option.

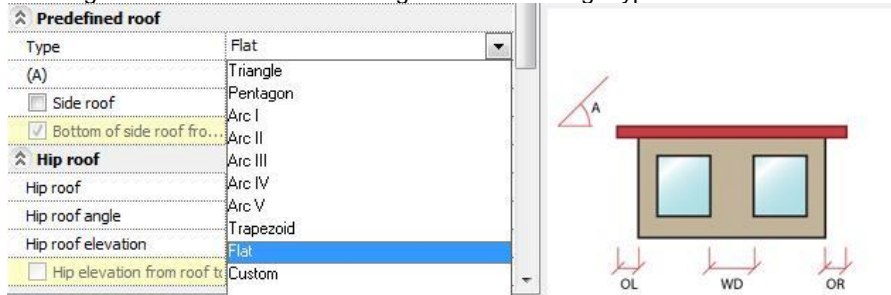
### 10.14.11.2. Predefined roof

In the predefined roof section of dormer roof setting dialog window you can define the rules of how the dormer roof's roof structure will be projected into the original roof. You can see more or less setting if you choose one certain type of the predefined roof.



#### Type

You can set the type of dormer roof shape. Please choose one from the drop-down list or click on the picture you can see at the right bottom corner of the dialog window to change type.

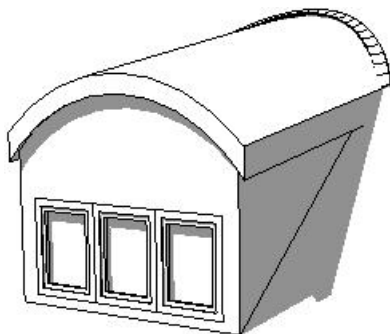


#### (A), (B), (E), (F), (V), (H) values

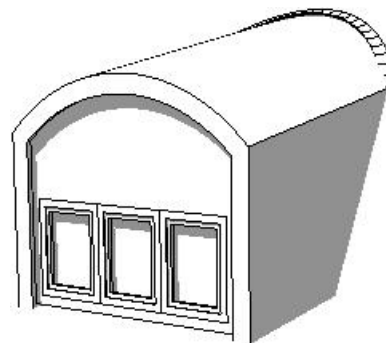
You can set the value, explained on the right side picture.

#### Side roof

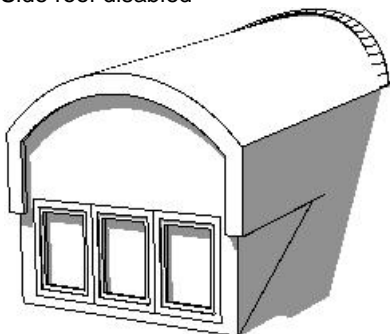
Set this option enabled to design side walls by roof planes. Also you can set the bottom position of the side roof plane.



Side roof disabled



Side roof enabled



Side roof enabled and value is set

#### Bottom of side roof from roof top

You can enable this option if you previously enabled Side roof option. In this case you can define the distance between the original roof's top plane and the bottom of side roof plane. If you disable this option the value given will be measure from the base level of the active floor.

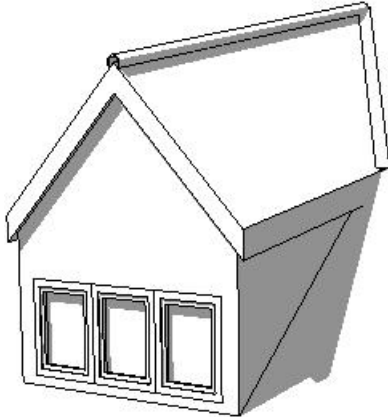
### 10.14.11.3. Hip roof

You can create hip roof in the roof structure of the dormer roof by using the settings of hip roof section in the dormer roof setting dialog window.

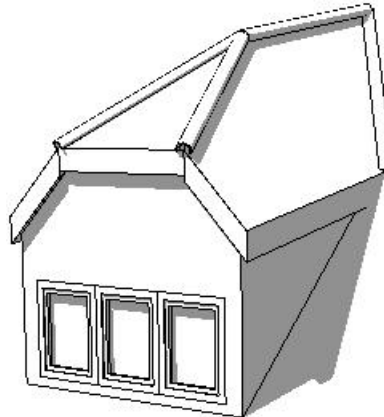
⌄ Hip roof	
Hip roof	<input checked="" type="checkbox"/>
Hip roof angle	35°
Hip roof elevation	3.5 m
<input checked="" type="checkbox"/> Hip elevation from roof b:	0.5 m

#### **Hip roof**

You can enable to create a hip roof, based on the settings of the hip roof section.



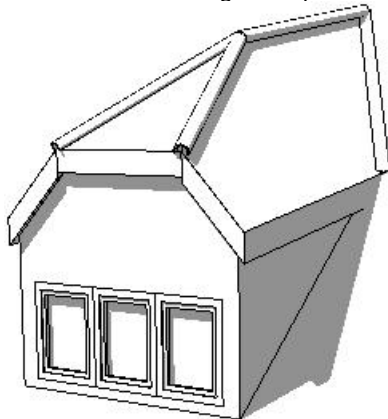
Dormer roof with hip roof



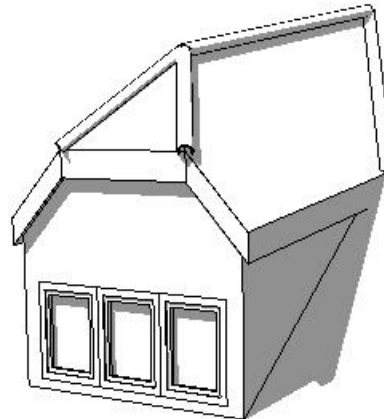
Dormer roof without hip roof

#### **Hip roof angle**

You can define the angle of hip roof.

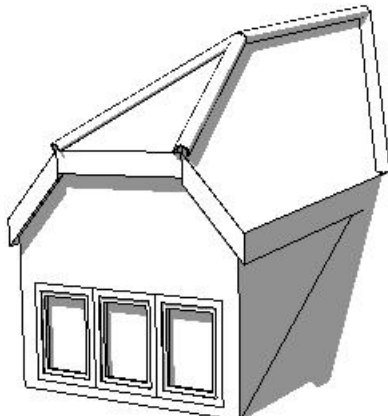


Hip roof with different angle values

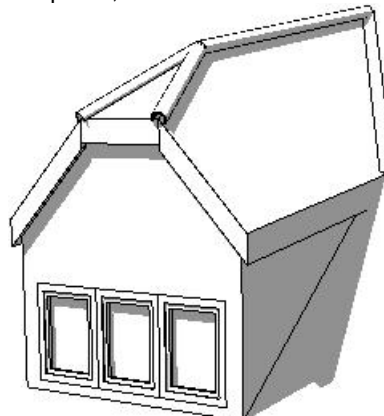


#### **Hip roof elevation**

You can set the elevation of the base height of the hip roof, measured from the base level of the active floor.



Hip roofs with different elevations



### Hip roof elevation from roof top

If you enable this option the value given will be measure from the original roof's top plane. If you disable this option the Hip roof elevation value will be used.

#### 10.14.11.4. Dormer roof settings

In this section of the dormer roof setting dialog window you can set detailed settings for the dormer roof.

^ Dormer roof	
(OL) Overhang in left	0.1 m
(OR) Overhang in right	0.1 m
Wall properties	...
Side walls	<input checked="" type="checkbox"/>
Cut wall bottom	<input checked="" type="checkbox"/>
Hide walls on 2D	<input type="checkbox"/>
Window properties	...
Number of windows	3
(WD) Distance between...	0 m
Place windows centered	<input checked="" type="checkbox"/>
Place windows on inner side	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> (RPh) Parapet elevation.	0.1 m


#### (OL) Overhang in left

You can set the overhang of the roof at the left side of the dormer roof.

#### (OR) Overhang in right

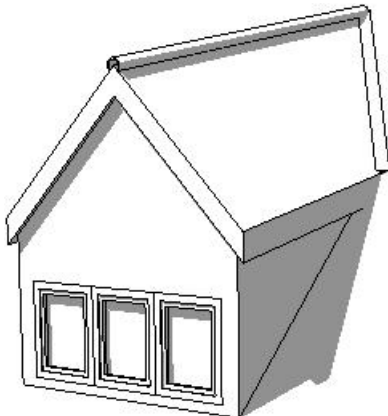
You can set the overhang of the roof at the right side of the dormer roof.

#### 10.14.11.5. Wall properties

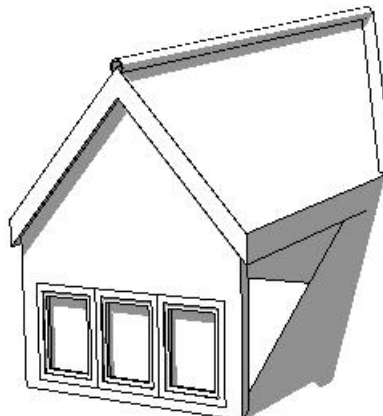
You can set the detailed settings of the side walls of the dormer roof. To change the settings please press  button at the end of the row.

#### Side walls

You can enable or disable side walls on 2D and in 3D.



Dormer roof with side walls



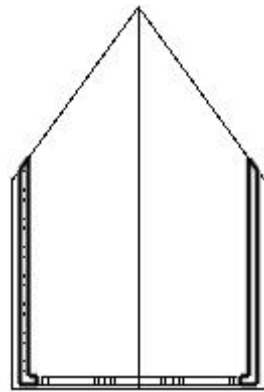
Dormer roof without side walls

#### Cut wall bottom

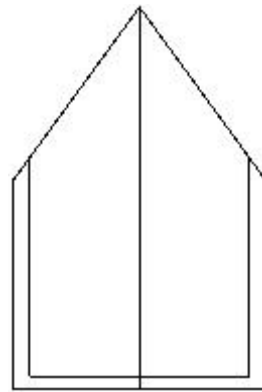
If you enable this option, the bottom of the side walls will be cut by the top plane of the original roof. Otherwise the settings of the wall properties will define the bottom of the wall.

#### Hide walls on 2D

Enable this option to hide wall symbols only on 2D. The 3D model won't change using this option.




Walls on 2D are visible



Walls on 2D are invisible

### 10.14.11.6. Window properties

You can change the setting of the windows of the dormer roof. To change the settings please press  button at the end of the row.

#### **Number of windows**

Here you can set the number of windows you want to place into the front wall of the dormer roof.

#### **(WD) Distance between windows**

You can set the distance between the windows of dormer roof.

#### **Place windows centred**

Enable this option to align windows into the middle of the dormer roof front wall. Otherwise the settings made in window properties dialog window will be used as the first distance of the first window on the left side.

#### **Place windows on inner side**

Enable this option to place the window to the inner or outer part of the dormer roof front wall

#### **(RPh) Parapet elevation from roof top**

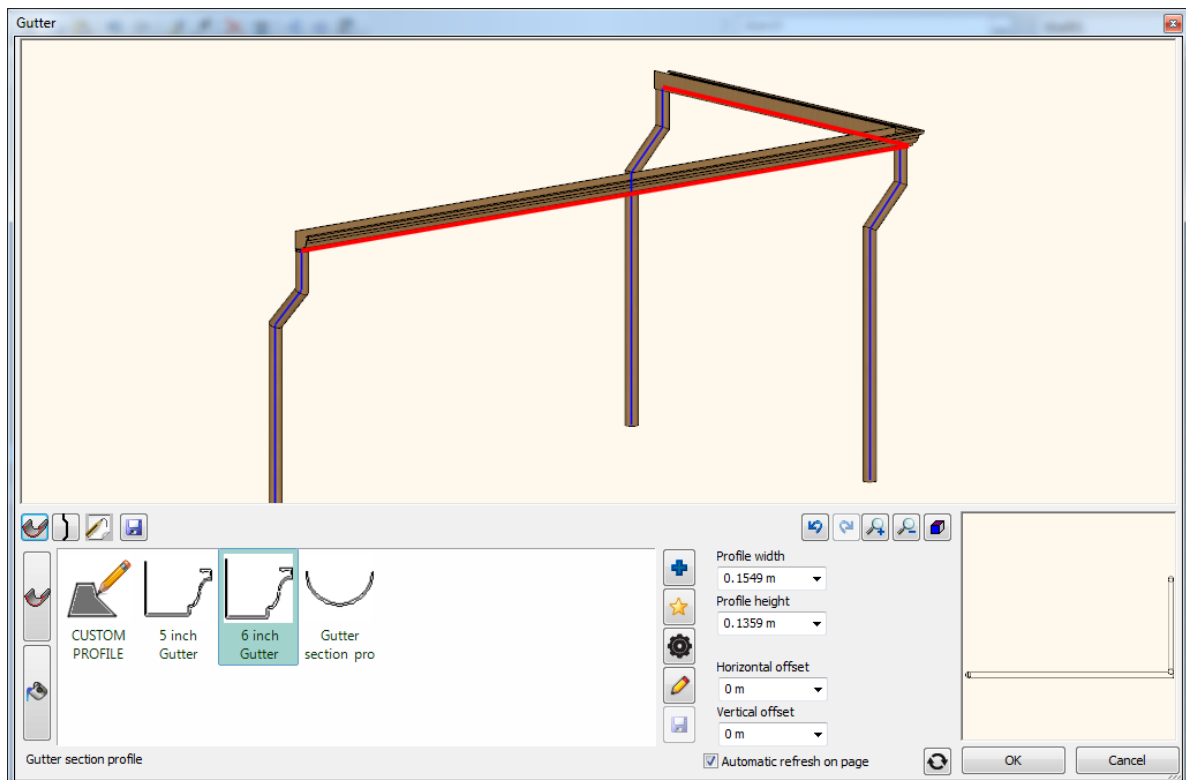
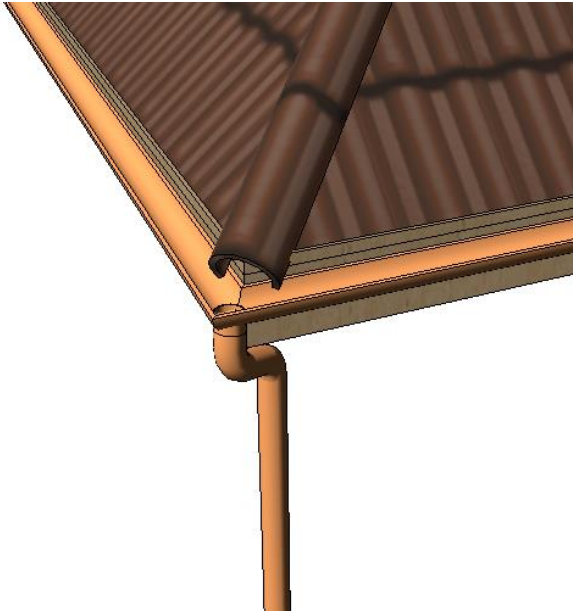
If you enable this option you can set parapet elevation measured from the original roof's top plane. If you disable this option, the parapet elevation will be measured from the base level of the active floor. This option is available only when you create a new dormer roof, and if you previously enabled Place on roof option.

## 10.14.12. Gutter and downspout

ARCHLine.XP supports the gutter and downspout design collecting rainwater from the roof.

Menu: Building > Outdoor Tools > Gutter

Menu: Building > Outdoor Tools > Gutter on Roof Edge

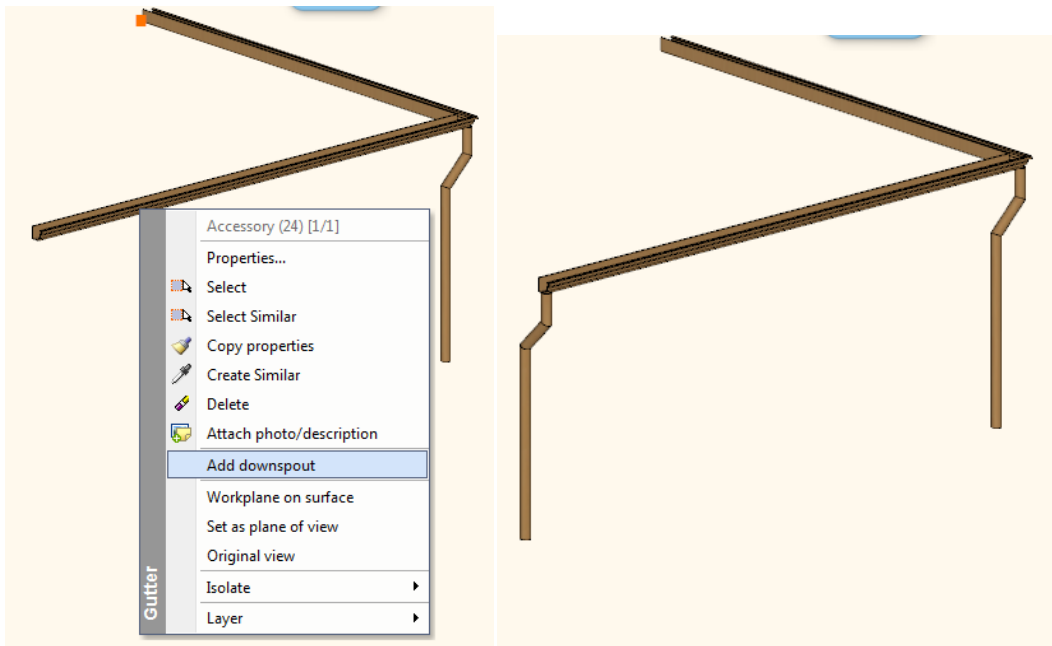


### **Gutter on Roof Edge**

You can select the roof edges directly in 3D where the gutter will be aligned and later assign the points where a downspout will be placed.

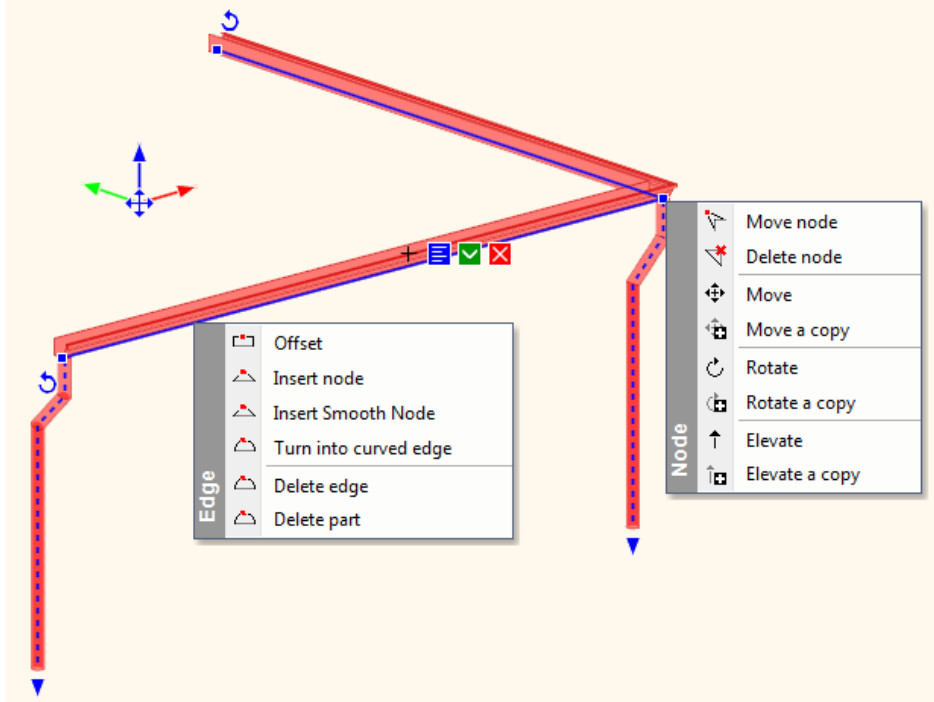
### **Downspouts**

You can add the downspouts in 3D with the Add downspout command.



### 3D editing

You can edit the gutter and downsputs in 3D with the markers related to nodes and edges.



### 10.14.13. Roof Survey

Menu : Building > Roof

Roof Survey is required in the following cases:

1. To replace the roof covering with a heavier tile;
2. Showing calculations for strengthening works for building regulations approval
3. Recommended alterations to truss rafters / other structural supports

From a Structural point of view, if the existing roof tile covering is to be replaced with a new heavier roof tile then a full structural appraisal is required to ensure that the current roof structure is suitable to carry the increased loadings.

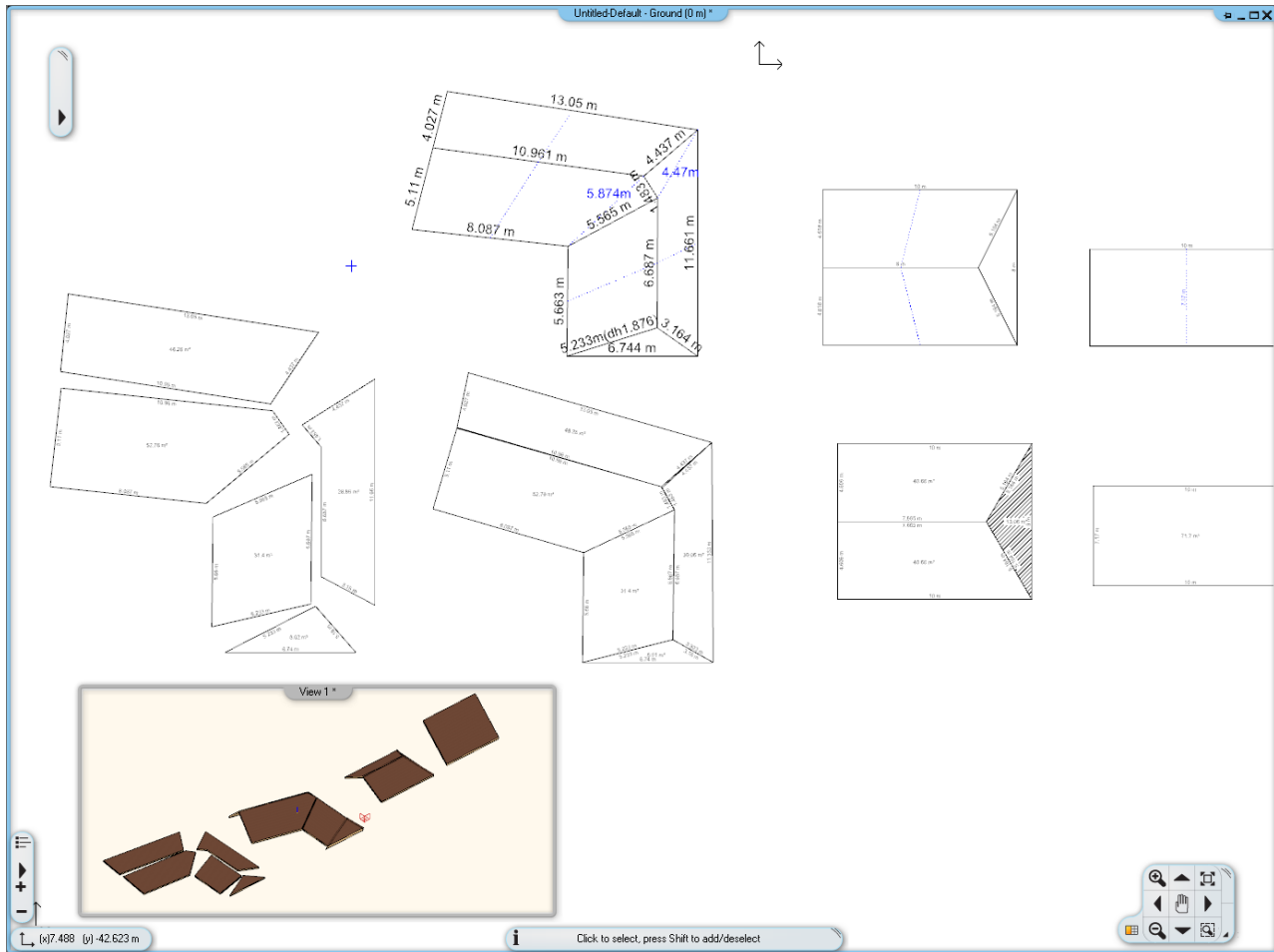




ARCHLine.XP provides a new set of commands to support roof survey. It is based on measured inputs of roof edges, parallel ridge and eave (if exists) and diagonals and for specific cases like single roof plane a height difference between ridge and eave. Roof Survey offers two outputs.

1. Create the model in 3D with the appropriate inclination angle, or
2. Place horizontally the roof planes near to each other

It displays all the measured length and calculates the plane area and exports it into XML output.



### Steps of roof survey:

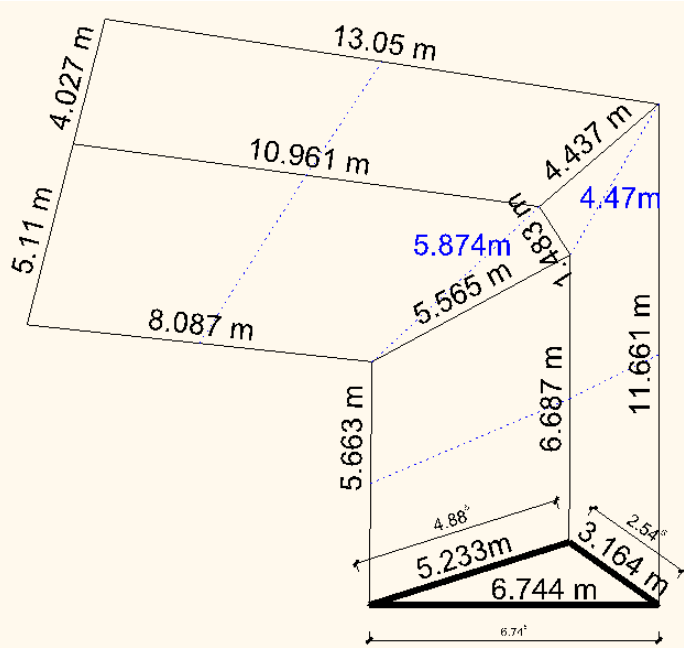
In the first phase you have to draw the roof plane using the measured length of roof edges like the figure below. There is no need to be precise with the roof estimated 2D drawing but it is very important to measure the real length as precise as possible.

The drawing below indicates the result of a surveyed roof with real roof edge annotations.

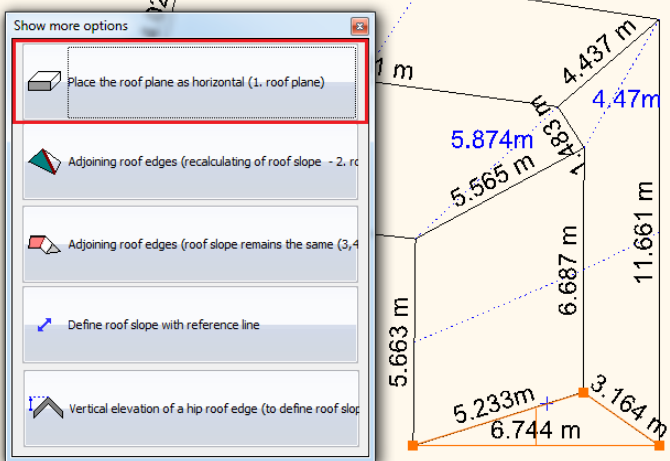
The triangle with bold lines displays the difference between the annotated length and the 2D drawing line.

#### 10.14.13.1. First surveyed roof plane

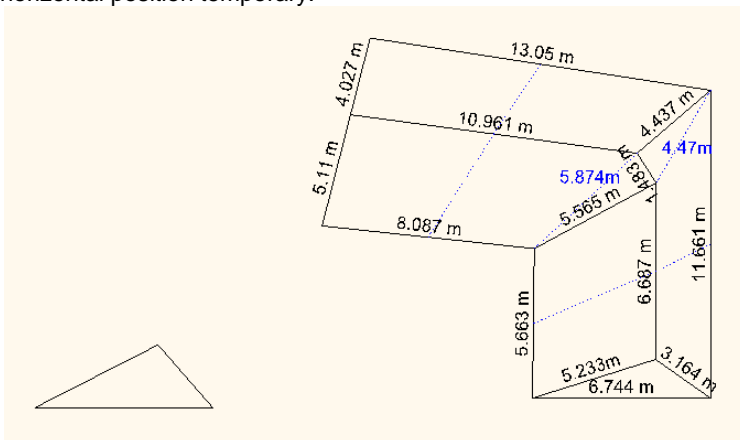
Choose a roof plane that contains a horizontal roof eave:



Click on the horizontal roof eave and define its length. Later click on the next edges one after another and enter their length. When you close the loop the following dialog displays:



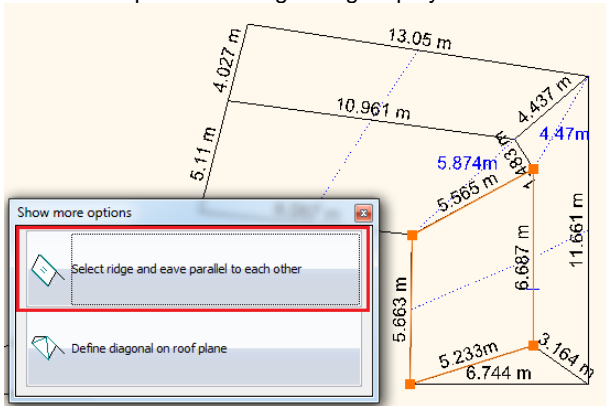
In case of the first roof plane choose the first option. As the roof plane inclination is unknown at this point you will place it in horizontal position temporary.



### 10.14.13.2. Second surveyed roof plane

The next roof plane to be surveyed must have a common edge with the previous one. So in this example the common edge will be the edge indicated with 5.233 m quote.

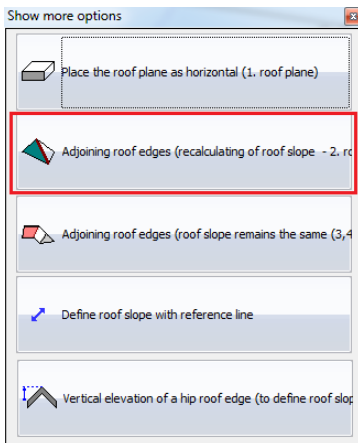
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



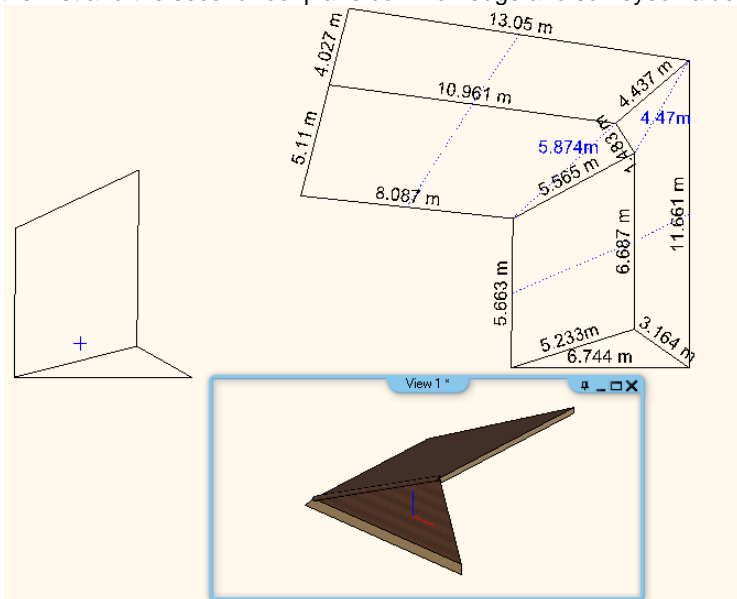
When the roof plane has only four nodes choose the first option. If you survey a roof plane containing more than 4 nodes you have to define additional diagonals on the roof plane to reconstruct the shape precisely. You have to measure the nodes number minus 4 diagonals. IT means if you have 5 nodes you need to add one diagonal, and if you have 6 nodes you have to measure 2 diagonals additionally, etc.

Select the parallel edges indicated with 5.663 m and 6.687 m quotes.

When you close the parallel edges selection the following dialog displays:



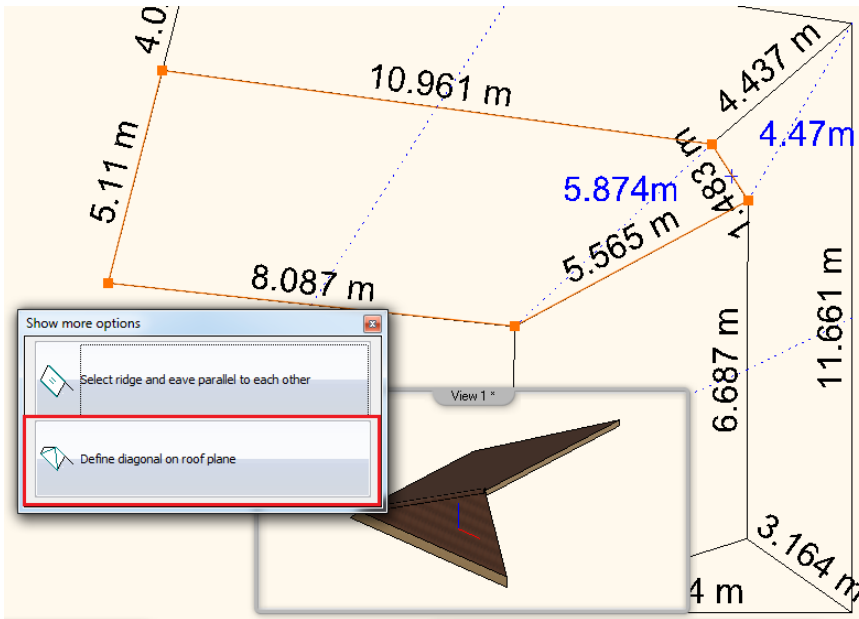
In case of the second roof plane choose the second option. The roof plane inclination is calculated as a result of the geometry of the first and the second roof plane common edge and surveyed values.



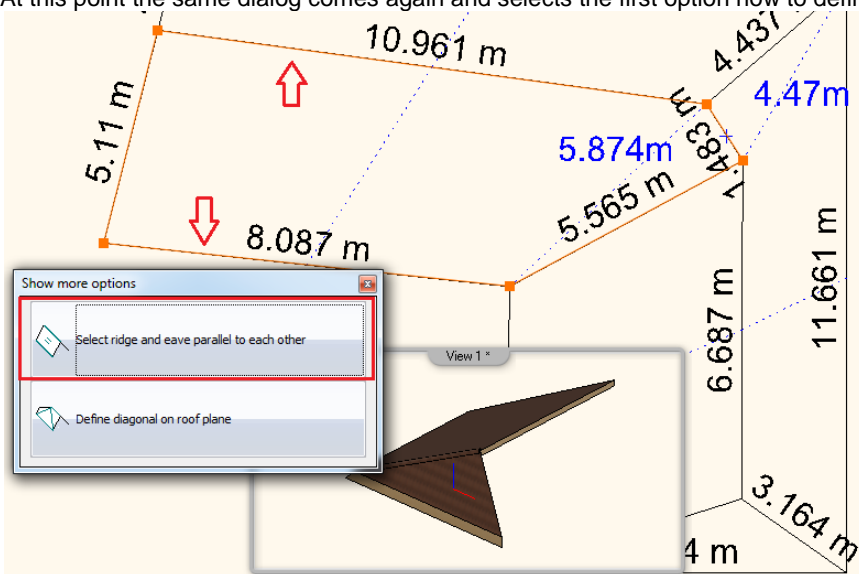
### 10.14.13.3. Next surveyed roof planes

The next roof planes must have a common edge with the previous one as well. So in this example the common edge will be the edge indicated with 5.565 m quote.

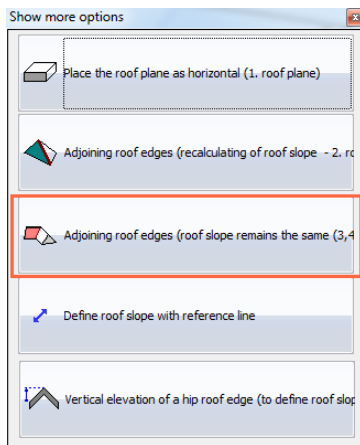
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



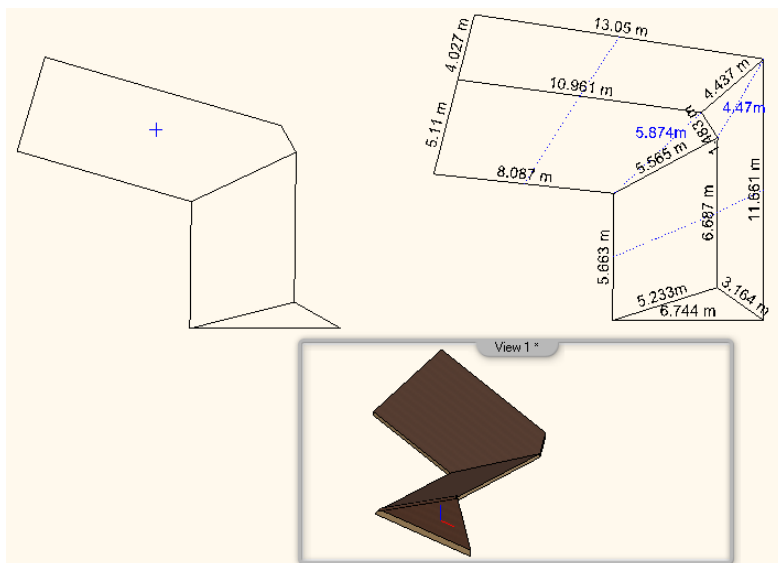
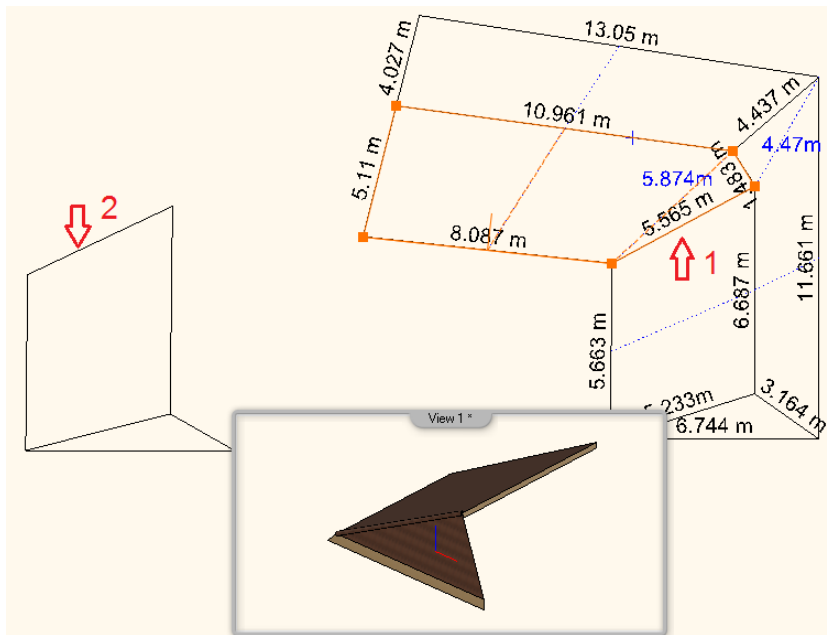
As the roof plane has five nodes you have to define one diagonal to complete the geometry. Choose the second option and click on the endpoints of the diagonal indicated with 5.874 annotation. Type this value and press ENTER. At this point the same dialog comes again and selects the first option now to define the parallel ridge and eave.



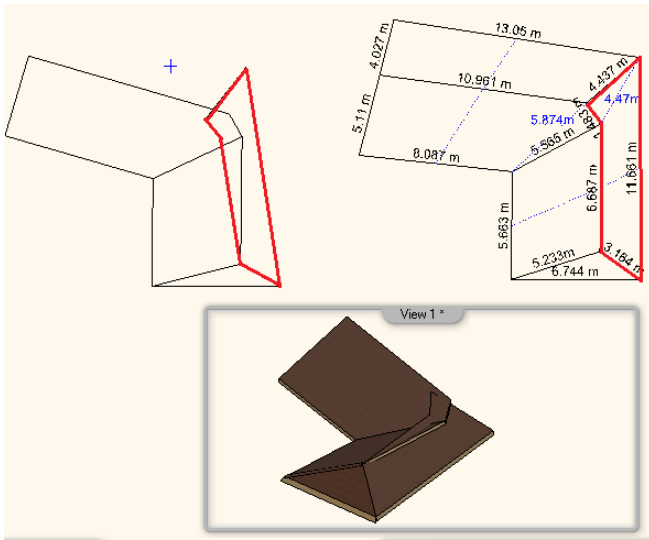
When you close the parallel edges selection the following dialog displays:



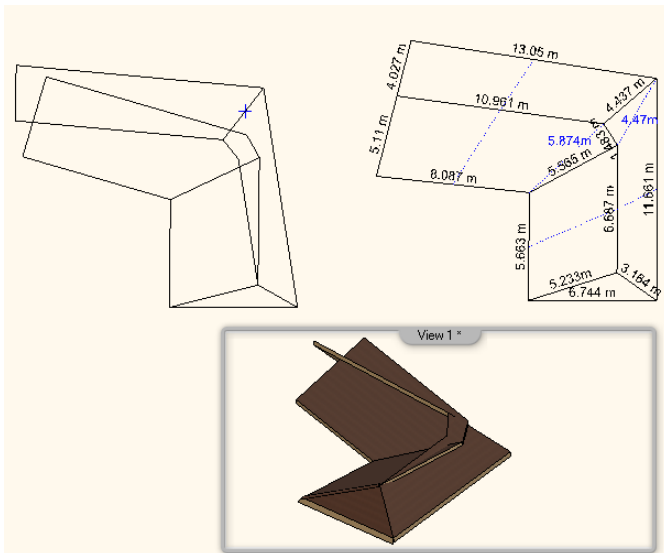
In case of the third or more roof planes choose the third option. The roof plane inclination is already calculated and the third roof plane will be adjoined using the same roof slope.



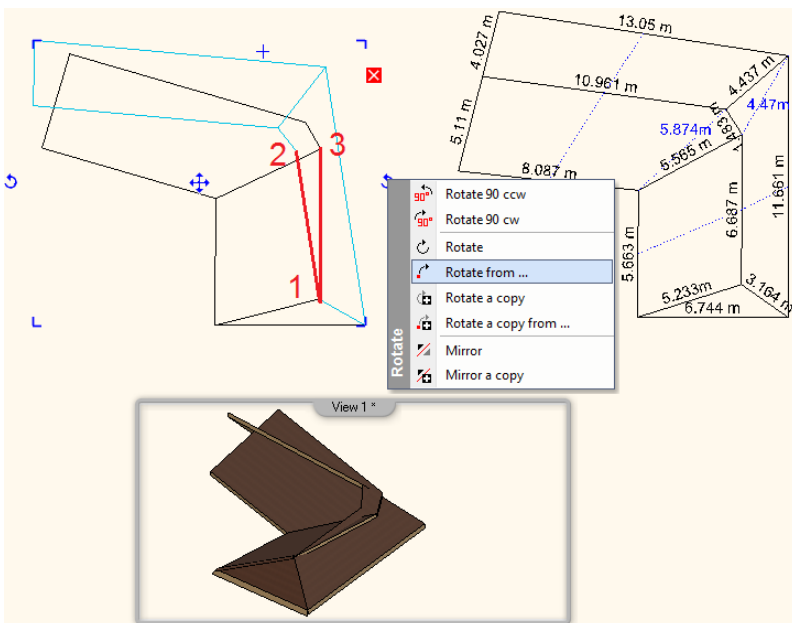
Note: At this point you cannot continue the survey with the next roof plane as the common edge is horizontal. Horizontal common edge means indefinite condition to go further with. The roof survey has to continue in anticlockwise direction returning to the first surveyed roof plane.



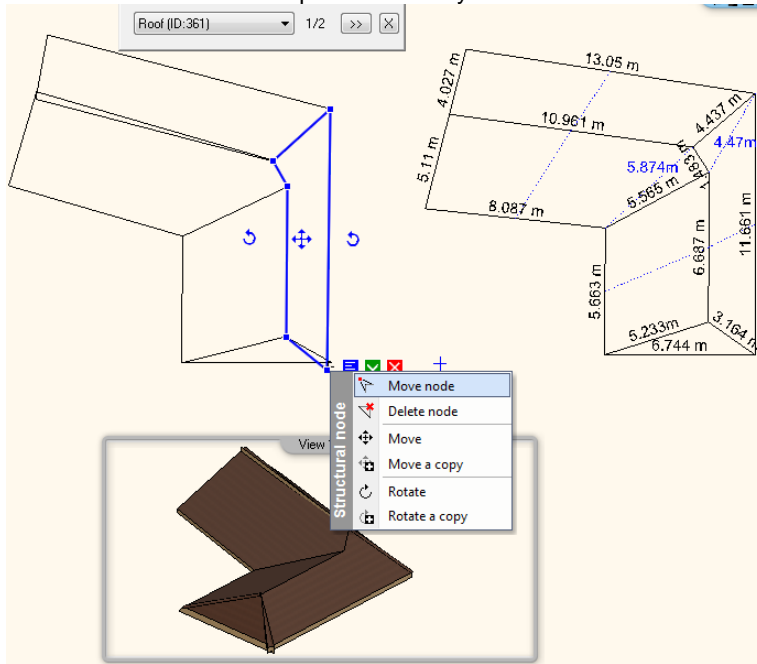
As you see the roof survey requires very precise input that is difficult to provide in most cases. For this reason the final result will contain some error in the geometry that need to be edited and corrected at the end.



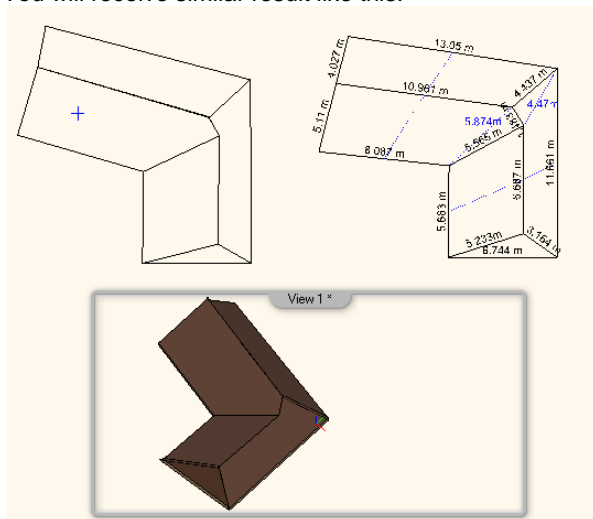
Select the roof planes to be rotated and click on the blue anticlockwise marker and select the Rotate from command and define the rotation graphically as indicated.



Move the roof nodes to complete the survey.

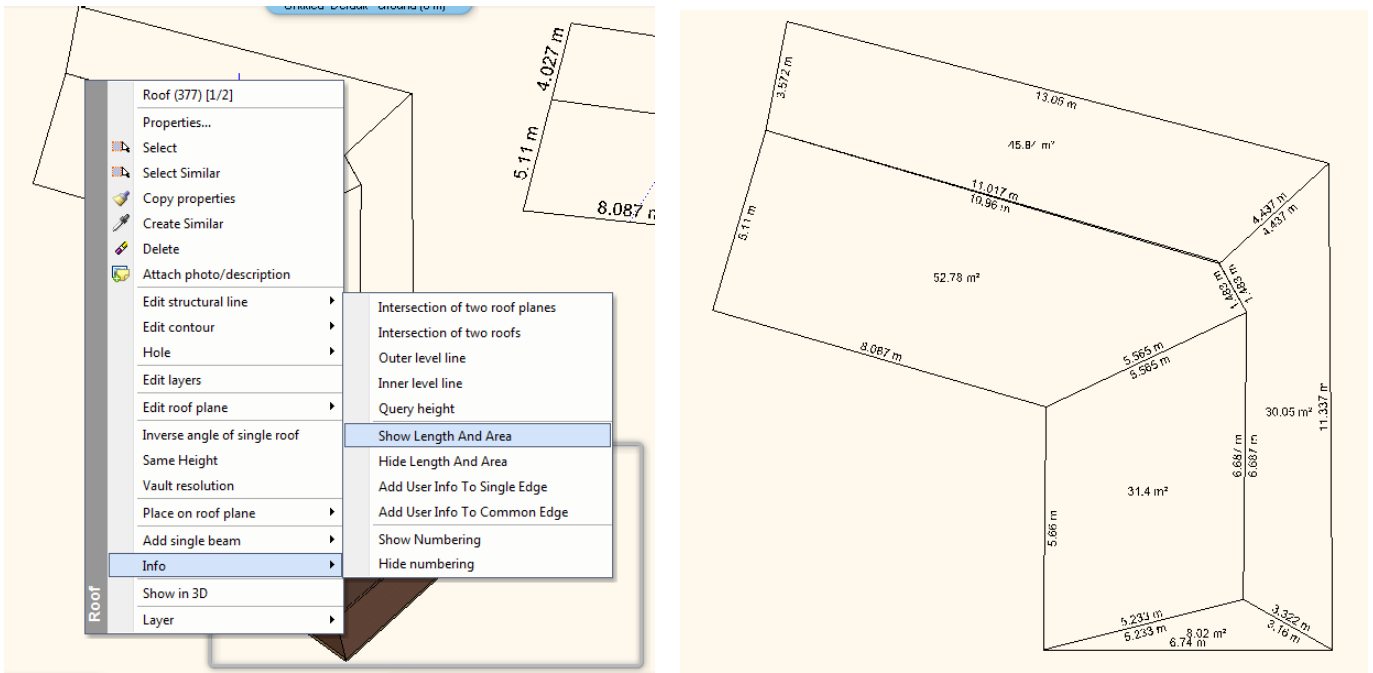


You will receive similar result like this:



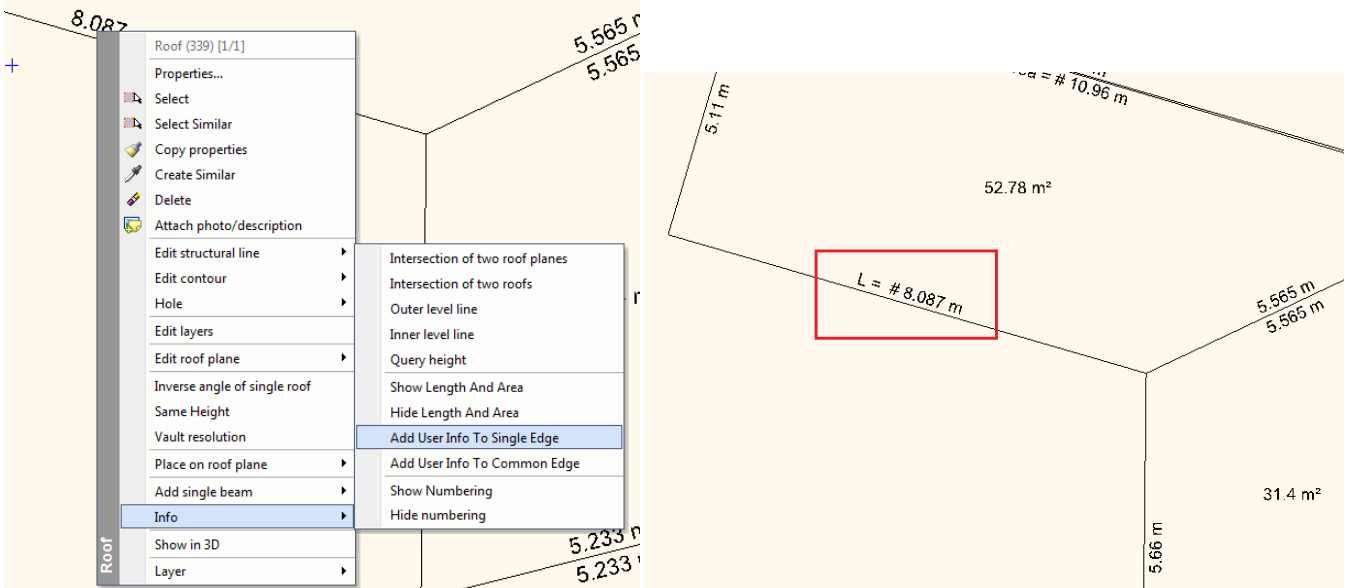
#### 10.14.13.4. Display roof plane length and area

You can get length and area information with Show Length and Area command. Select the command and click on the roof planes consecutively.



### 10.14.13.5. Add custom text to annotations

You can assign your custom text to roof single and common edges with Add User Info to Single Edge and Add User Info to Common Edge command. Select the command and click on the roof planes

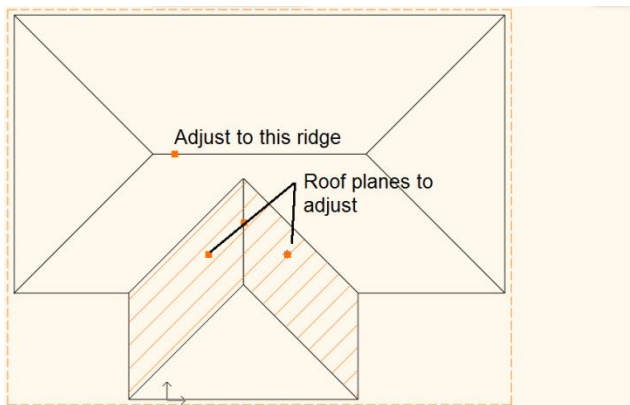
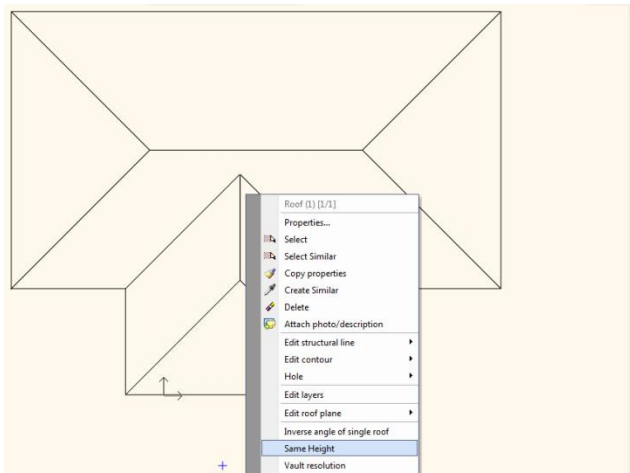


### 10.14.14. Same height

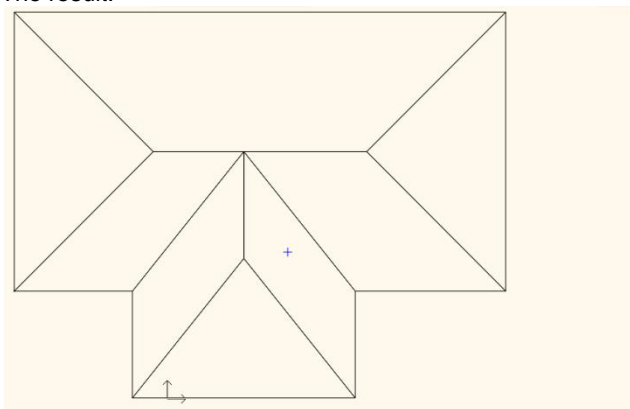
Pop Up Menu: Roof > Same height

The command adjusts the elevation of a ridge to another ridge. You have to select first the ridge to change its elevation and after the second ridge to pick up its elevation. Later click on the roof planes you wish to update.





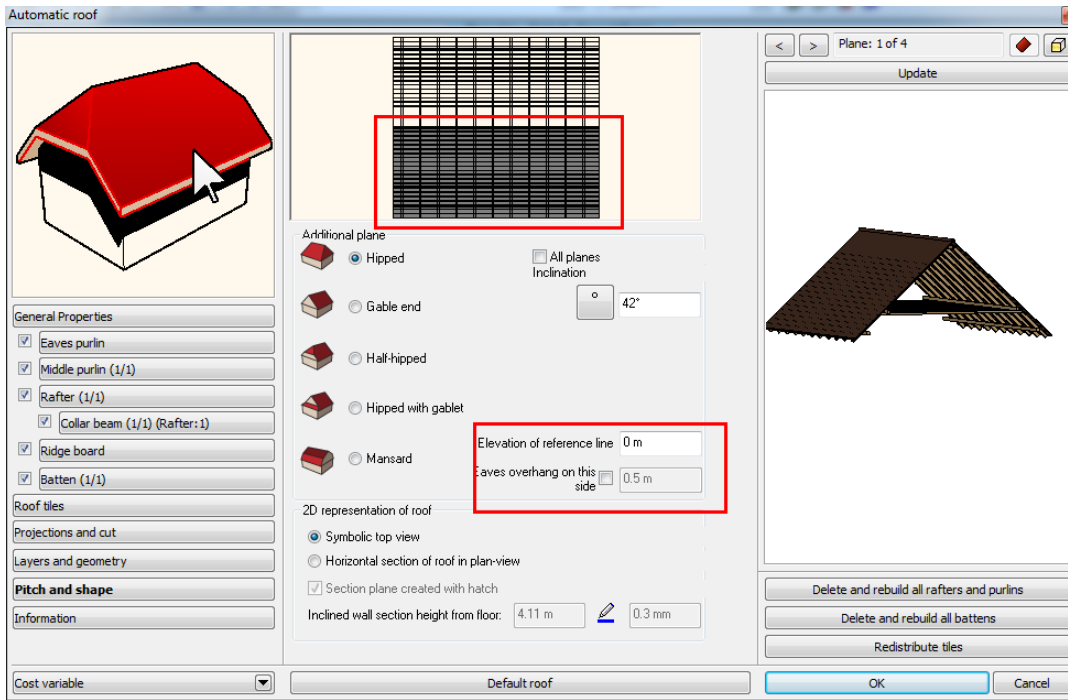
The result:



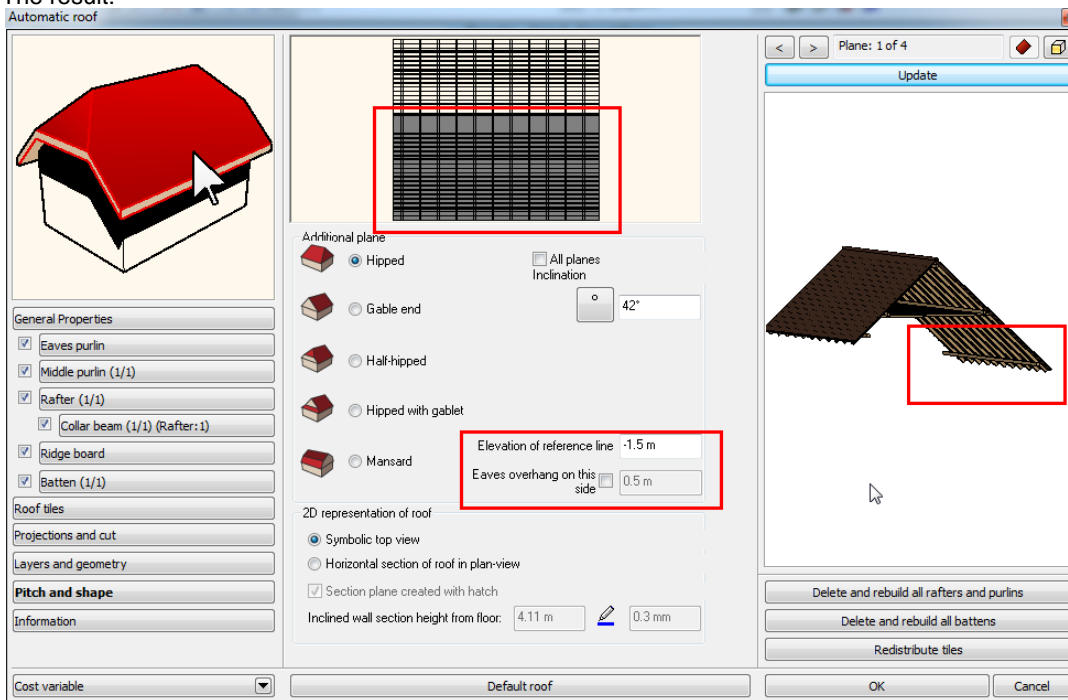
### 10.14.15. Asymmetric Roof: Different elevation

Property dialog: Roof > Pitch and Shape

The command enables to change the roof structural edge elevation separately. The rafter and the purlins are following the changes. The battens keeps its place if you wish to follow the rafter new position you have to press the "Delete and rebuild all battens" button.



The result:



## 10.14.16. Roof Survey

Location of the command: Building > Roof > Surveyed roof

Roof Survey is required in the following cases:

4. To replace the roof covering with a heavier tile;
5. Showing calculations for strengthening works for building regulations approval
6. Recommended alterations to truss rafters / other structural supports

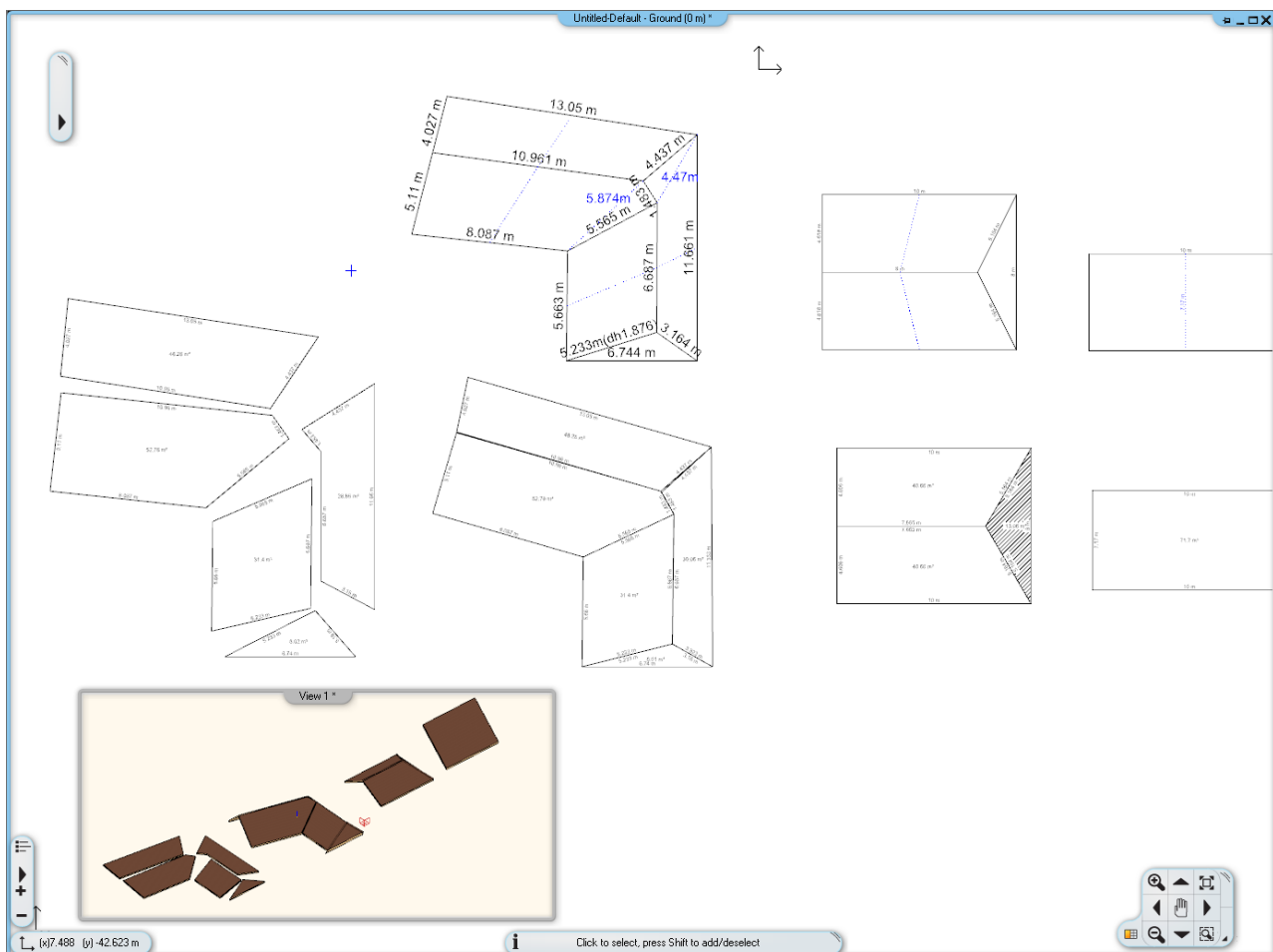
From a Structural point of view, if the existing roof tile covering is to be replaced with a new heavier roof tile then a full structural appraisal is required to ensure that the current roof structure is suitable to carry the increased loadings.



ARCHLine.XP provides a new set of commands to support roof survey. It is based on measured inputs of roof edges, parallel ridge and eave (if exists) and diagonals and for specific cases like single roof plane a height difference between ridge and eave. Roof Survey offers two outputs.

3. Create the model in 3D with the appropriate inclination angle, or
4. Place horizontally the roof planes near to each other

It displays all the measured length and calculates the plane area and exports it into XML output.

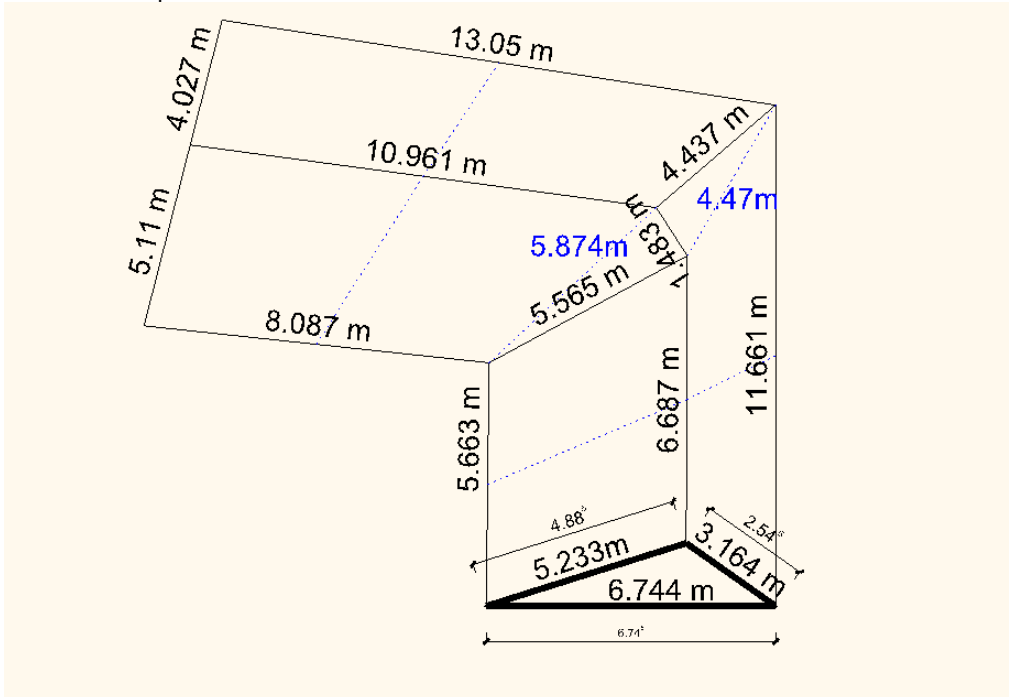


### Steps or roof survey:

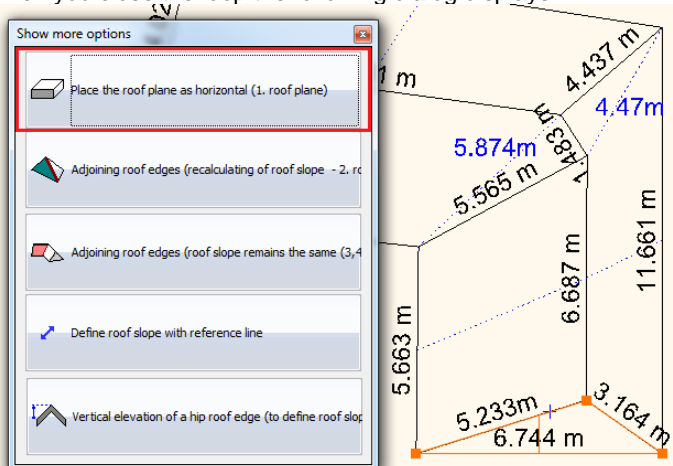
In the first phase you have to draw the roof plane using the measured length of roof edges like the figure below. There is no need to be precise with the roof estimated 2D drawing but it is very important to measure the real length as precise as possible. The drawing below indicates the result of a surveyed roof with real roof edge annotations. The triangle with bold lines displays the difference between the annotated length and the 2D drawing line.

### 10.14.16.1. First surveyed roof plane

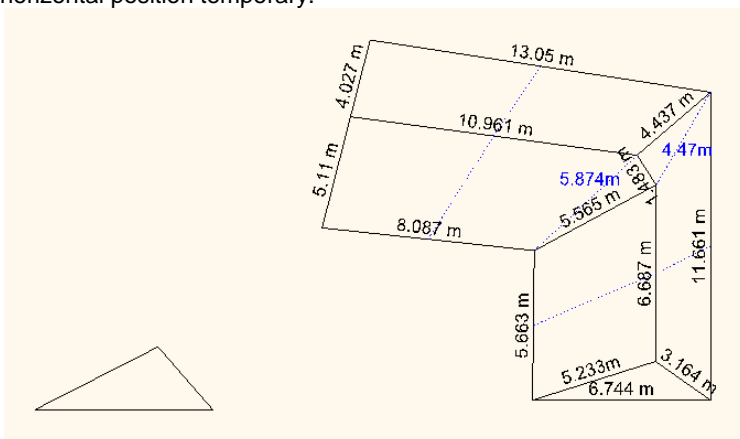
Choose a roof plane that contains a horizontal roof eave:



Click on the horizontal roof eave and define its length. Later click on the next edges one after another and enter their length. When you close the loop the following dialog displays:



In case of the first roof plane choose the first option. As the roof plane inclination is unknown at this point you will place it in horizontal position temporary.

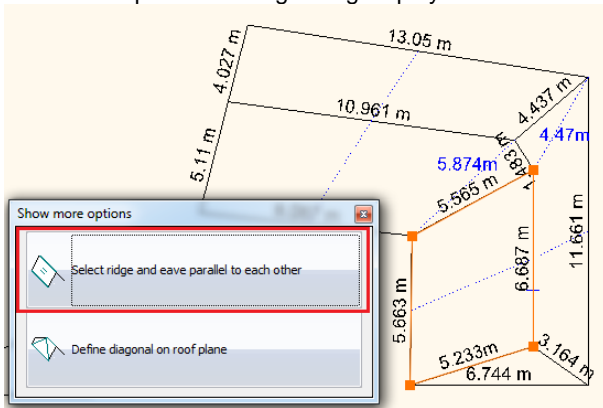


### 10.14.16.2. Second surveyed roof plane

The next roof plane to be surveyed must have a common edge with the previous one.

So in this example the common edge will be the edge indicated with 5.233 m quote.

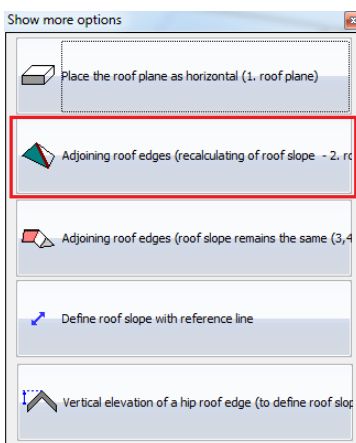
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



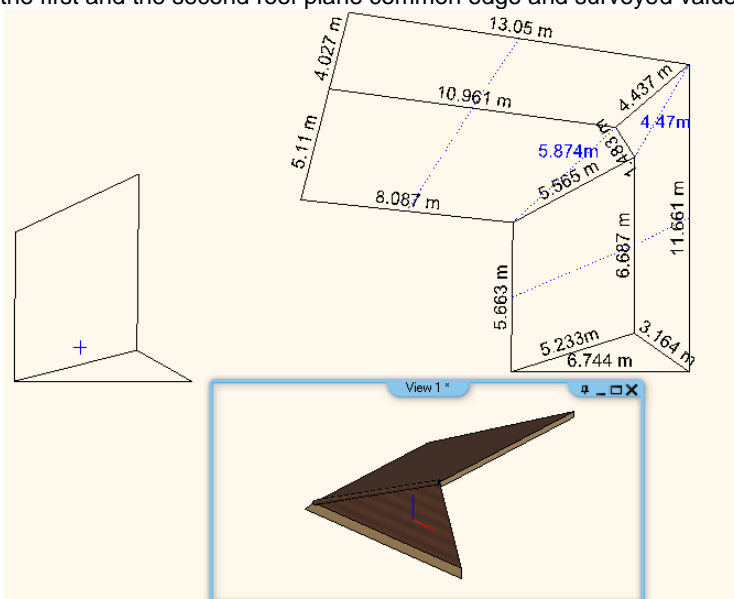
When the roof plane has only four nodes choose the first option. If you survey a roof plane containing more than 4 nodes you have to define additional diagonals on the roof plane to reconstruct the shape precisely. You have to measure the nodes number minus 4 diagonals. IT means if you have 5 nodes you need to add one diagonal, and if you have 6 nodes you have to measure 2 diagonals additionally, etc.

Select the parallel edges indicated with 5.663 m and 6.687 m quotes.

When you close the parallel edges selection the following dialog displays:



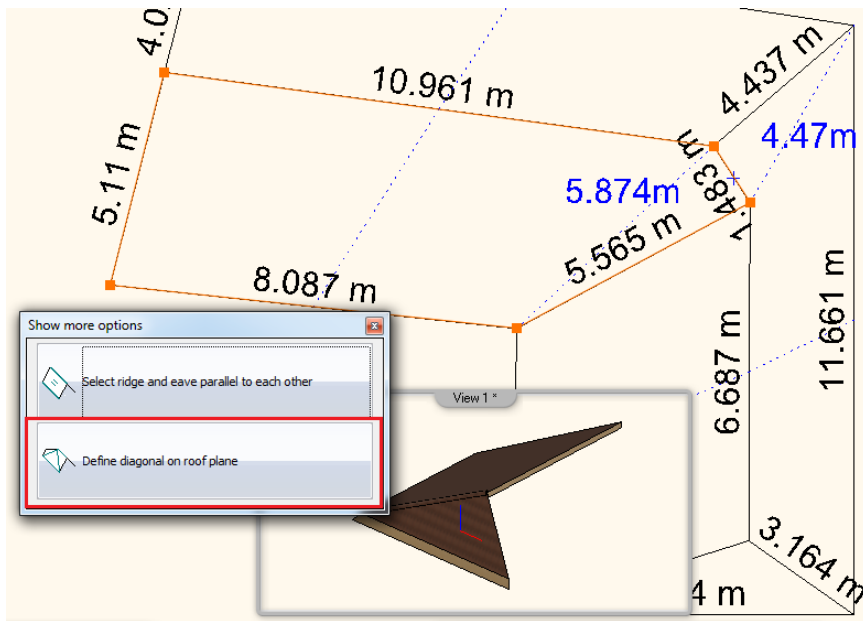
In case of the second roof plane choose the second option. The roof plane inclination is calculated as a result of the geometry of the first and the second roof plane common edge and surveyed values.



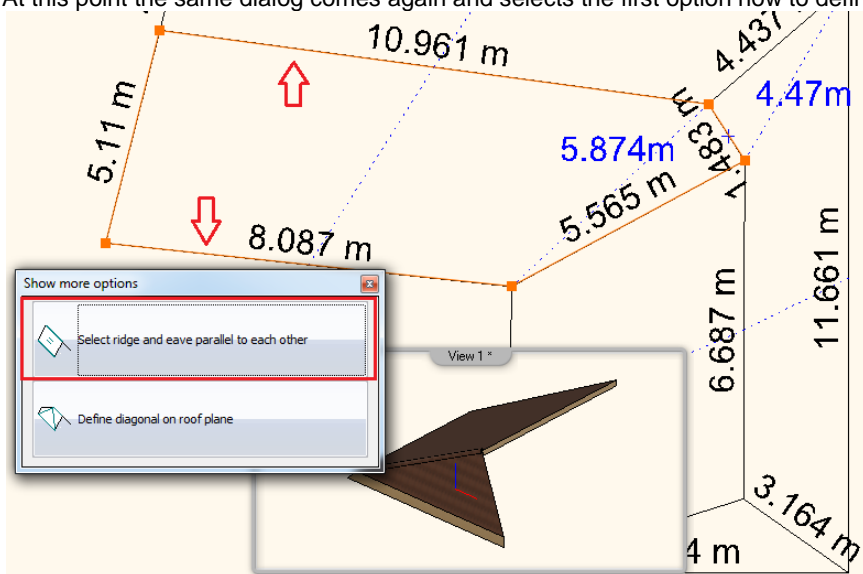
### 10.14.16.3. Next surveyed roof planes

The next roof planes must have a common edge with the previous one as well. So in this example the common edge will be the edge indicated with 5.565 m quote.

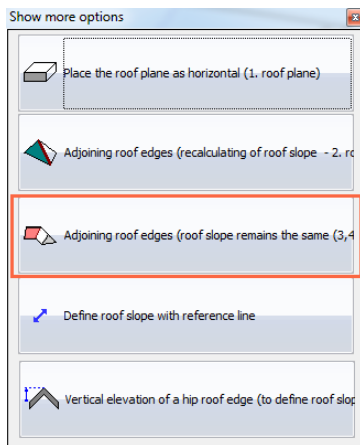
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



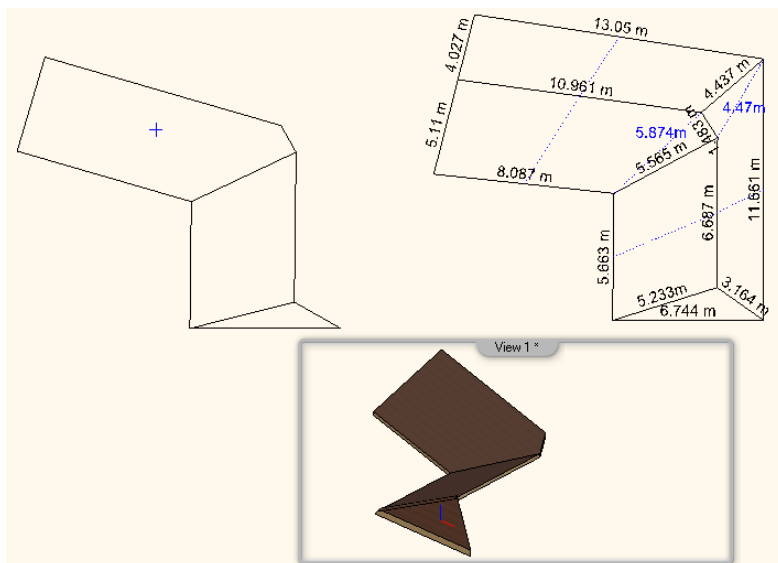
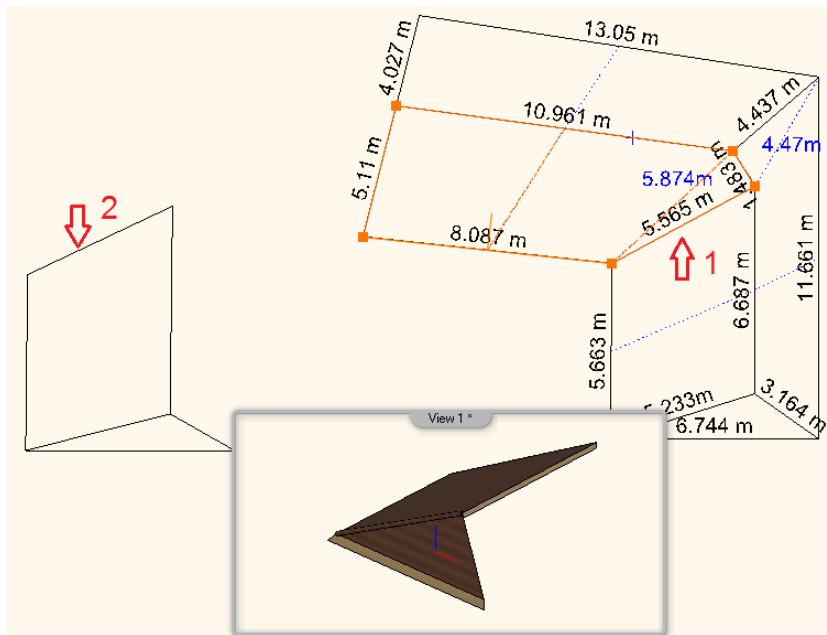
As the roof plane has five nodes you have to define one diagonal to complete the geometry. Choose the second option and click on the endpoints of the diagonal indicated with 5.874 annotation. Type this value and press ENTER. At this point the same dialog comes again and selects the first option now to define the parallel ridge and eave.



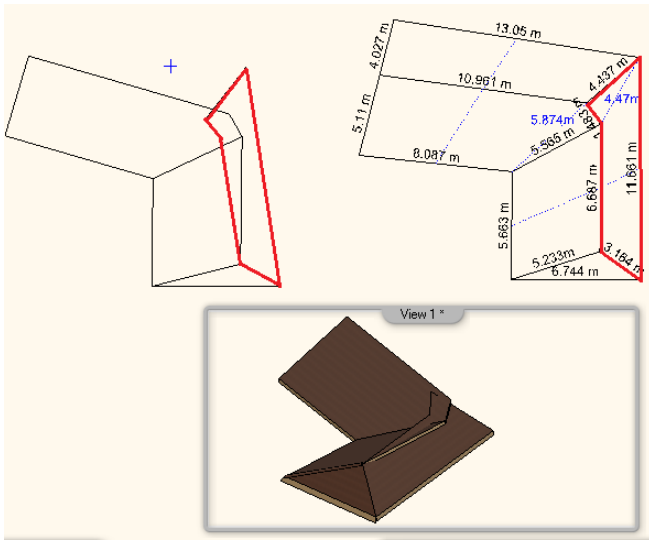
When you close the parallel edges selection the following dialog displays:



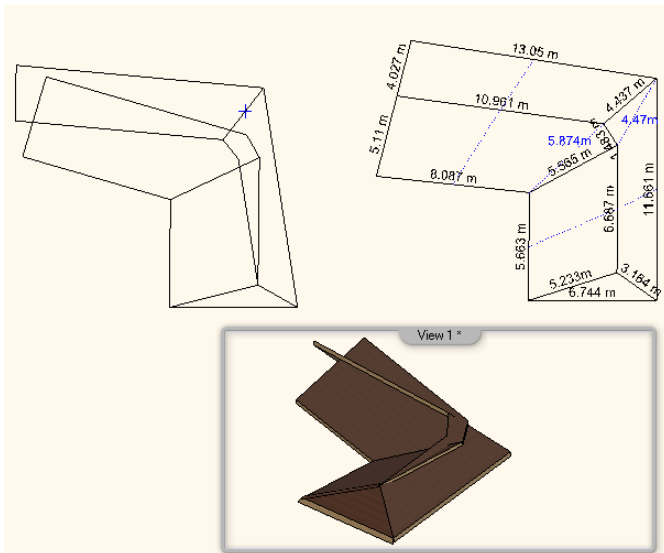
In case of the third or more roof planes choose the third option. The roof plane inclination is already calculated and the third roof plane will be adjoined using the same roof slope.



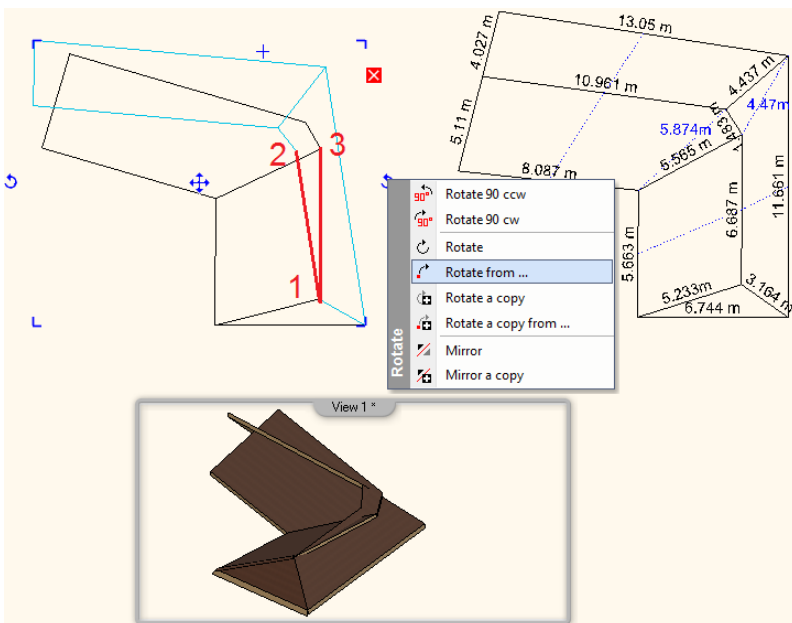
Note: At this point you cannot continue the survey with the next roof plane as the common edge is horizontal. Horizontal common edge means indefinite condition to go further with. The roof survey has to continue in anticlockwise direction returning to the first surveyed roof plane.



As you see the roof survey requires very precise input that is difficult to provide in most cases. For this reason the final result will contain some error in the geometry that need to be edited and corrected at the end.

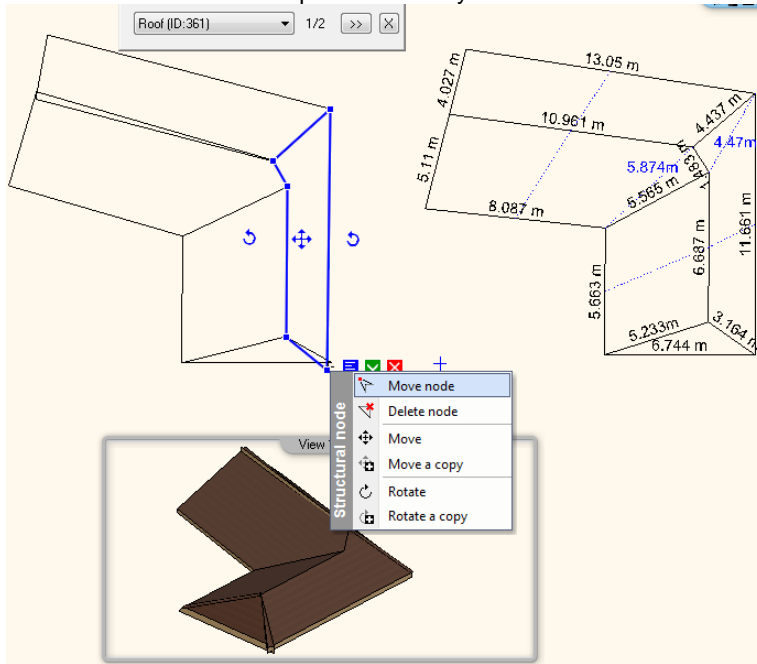


Select the roof planes to be rotated and click on the blue anticlockwise marker and select the Rotate from command and define the rotation graphically as indicated.

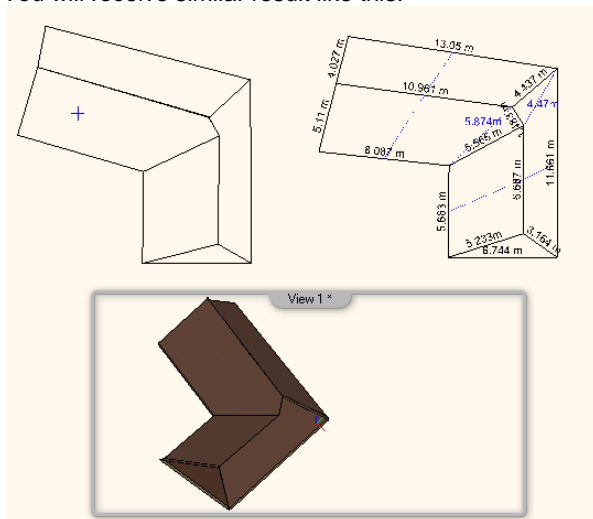




Move the roof nodes to complete the survey.

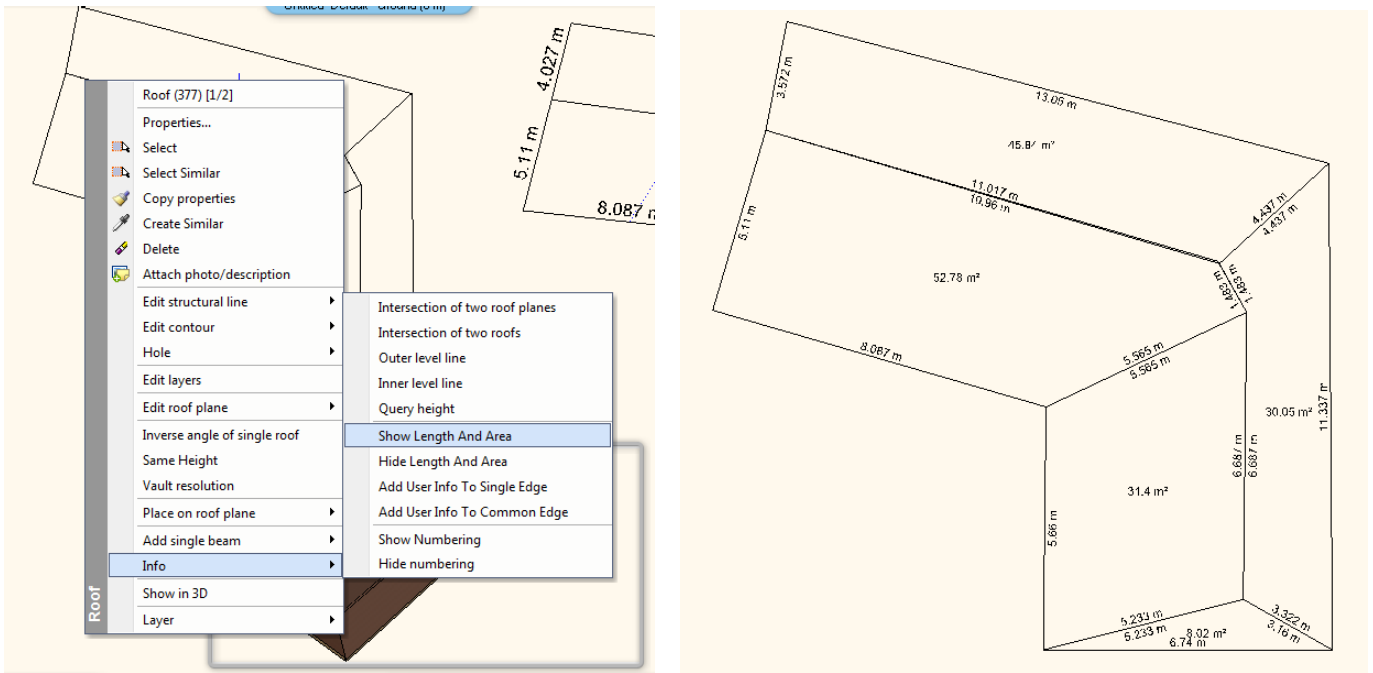


You will receive similar result like this:



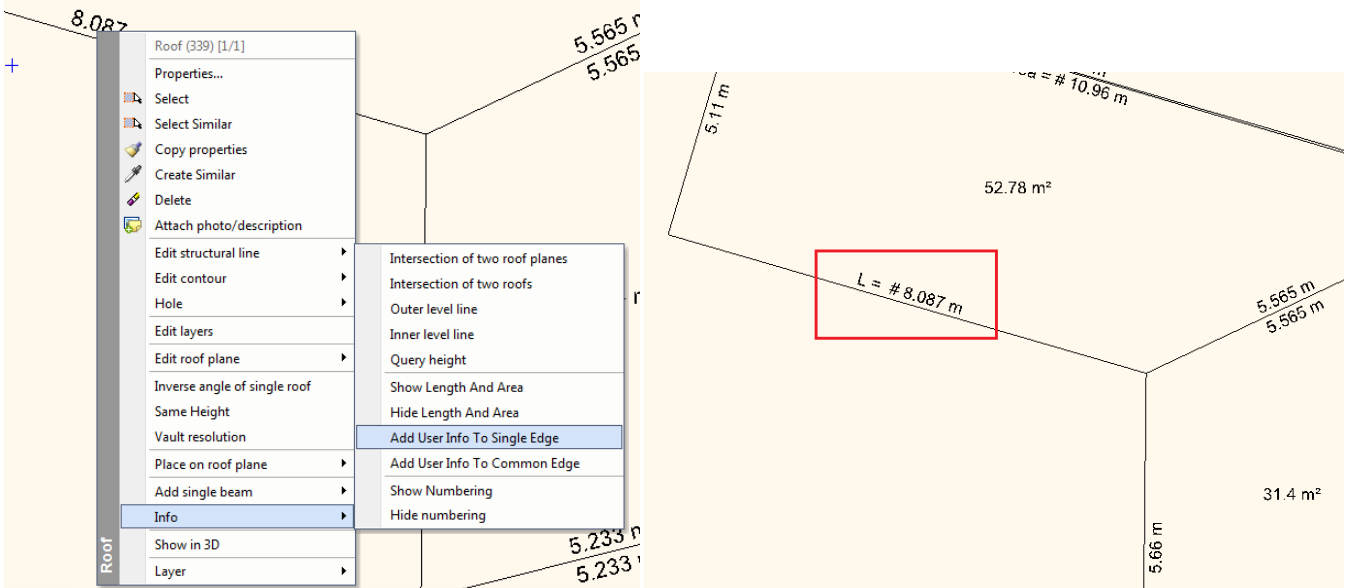
#### 10.14.16.4. Display roof plane length and area

You can get length and area information with Show Length and Area command. Select the command and click on the roof planes consecutively.



**10.14.16.5. Add custom text to annotations**

You can assign your custom text to roof single and common edges with Add User Info to Single Edge and Add User Info to Common Edge command. Select the command and click on the roof planes

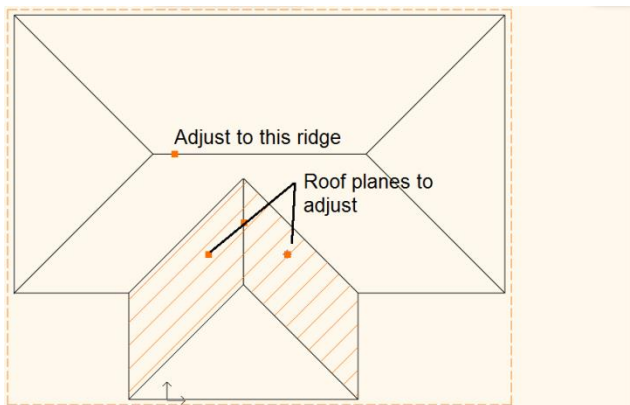
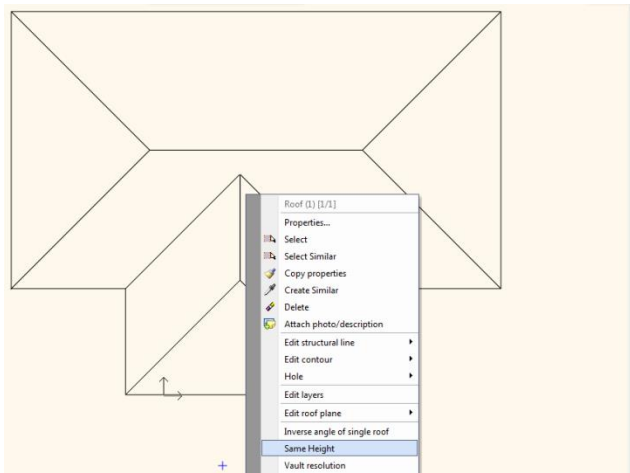


**10.14.17. Roof – Ridge elevation:**

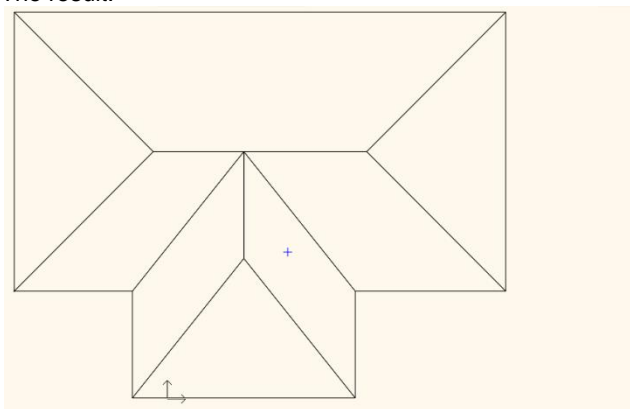
**10.14.18. Same height**

Pop Up Menu: Roof > Same height

The command adjusts the elevation of a ridge to another ridge. You have to select first the ridge to change its elevation and after the second ridge to pick up its elevation. Later click on the roof planes you wish to update.



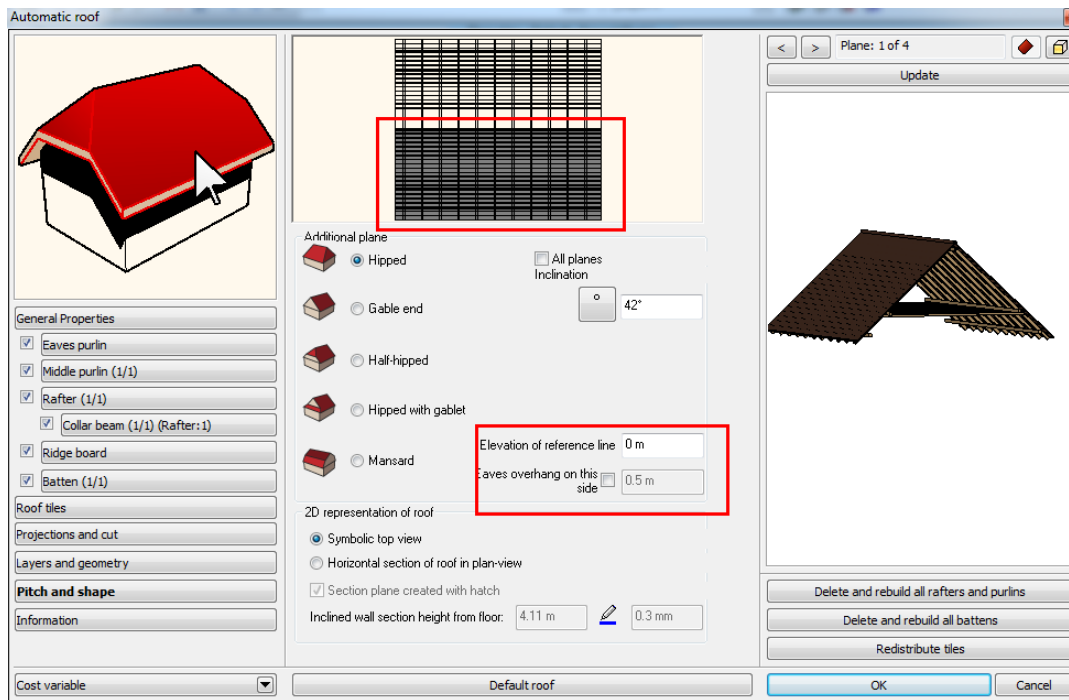
The result:



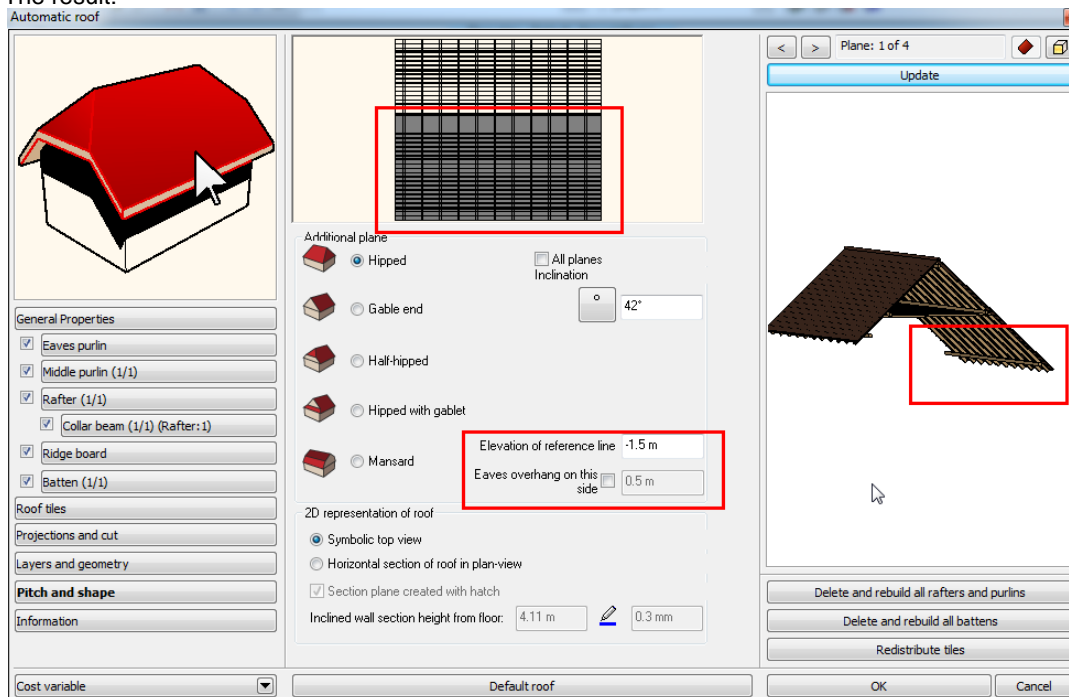
### 10.14.19. Asymmetric Roof: Different elevation

Property dialog: Roof > Pitch and Shape

The command enables to change the roof structural edge elevation separately. The rafter and the purlins are following the changes. The battens keeps its place if you wish to follow the rafter new position you have to press the "Delete and rebuild all battens" button.



The result:



## 10.15. Objects and profiles


### Introduction

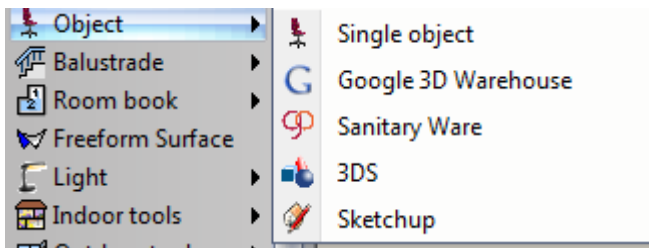
ARCHLine.XP has several *categories* (.oli) within the *Object directory* where you can select the object type.

All types have alterable parameters, the value of which you can modify.

This way, you can insert the same object with various parameters into the drawing, without increasing the size of the directory.

However, there never can be such an objects directory, which for example contains all individual pieces of furniture. Therefore the program provides the possibility of creating individual objects by using the *Solid modeller*.

The icons of the  Object tool allow you to:



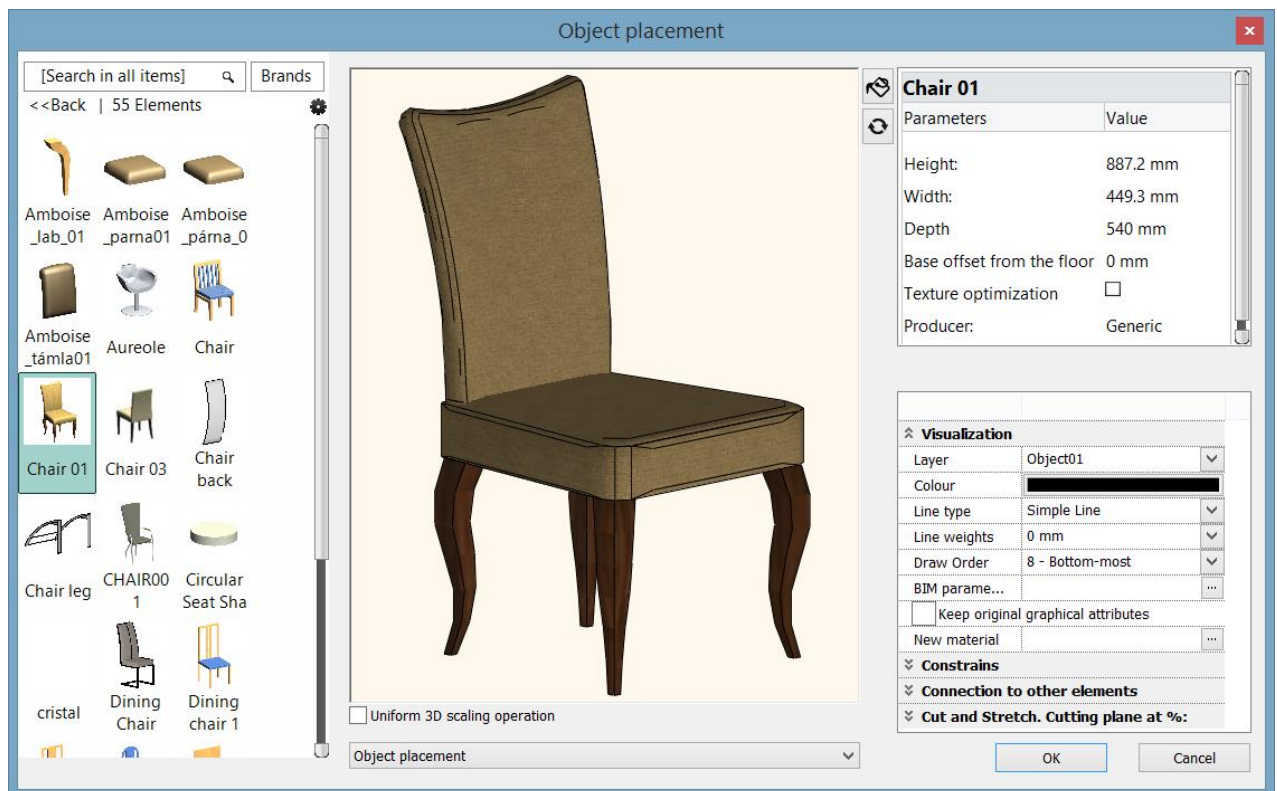
- ❖ To select, insert, and modify objects
- ❖ To save 3D objects to the objects directory
- ❖ To create and insert sprites (objects that have no width)
- ❖ To save profiles to the profiles directory

### 10.15.1. Object properties and placement

You can select, set the properties of and insert objects in various ways in the program:

- ❖ With the *Interior menu – Single Object* command
- ❖ With the *Toolbox - Building– Single Object* command
- ❖ With the *Toolbox - Interior– Single Object* command
- ❖ In the *Design center – Catalogue - Objects*, for the detailed description of which see Chapter 2.16.9.Design center.

Once you have selected an object and set its properties, you can place it in the drawing by using different options. Modifications you make to any object properties in the appearing dialog box will apply to objects you insert afterwards.



We discuss object properties in the following order:

- ❖ Selecting object type
- ❖ Main parameters
- ❖ General properties
- ❖ Attributes of placement
- ❖ Placement

#### 10.15.1.1. Selecting object type

- Choose a category and a sub-category within that from the list in the objects folder. The 3D representation and the parameters of the selected object appear in the dialog box, those you can modify as required.
- If you keep clicking the part bucket icon, you can specify whether you wish to display the objects in the selected category by 3D view or by 3D image.

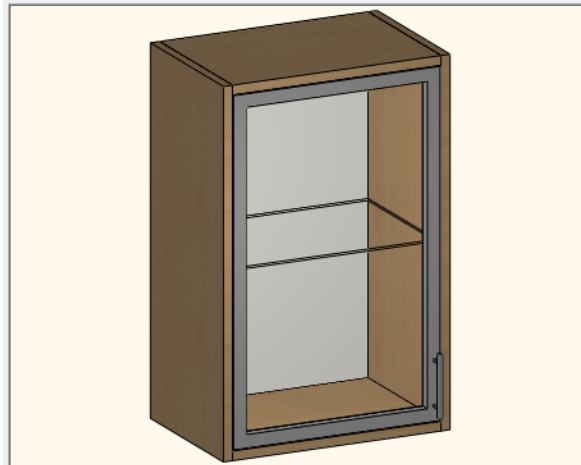
### 10.15.1.2. Main parameters

When you double-click the value, you may modify the parameters of the selected object. In the case of nonparametric objects you may only modify the size of the bounding box of the object (Height, Width and Depth).

#### Chair 01

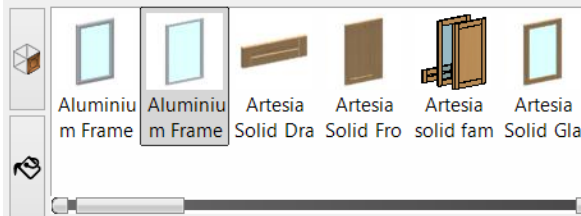
Parameters	Value
Height:	887.2 mm
Width:	449.3 mm
Depth	540 mm
Base offset from the floor	0 mm
Texture optimization	<input type="checkbox"/>
Producer:	Generic

In the case of parametric objects you can modify the components and the size of the bounding box of the object (Height, Width and Depth).



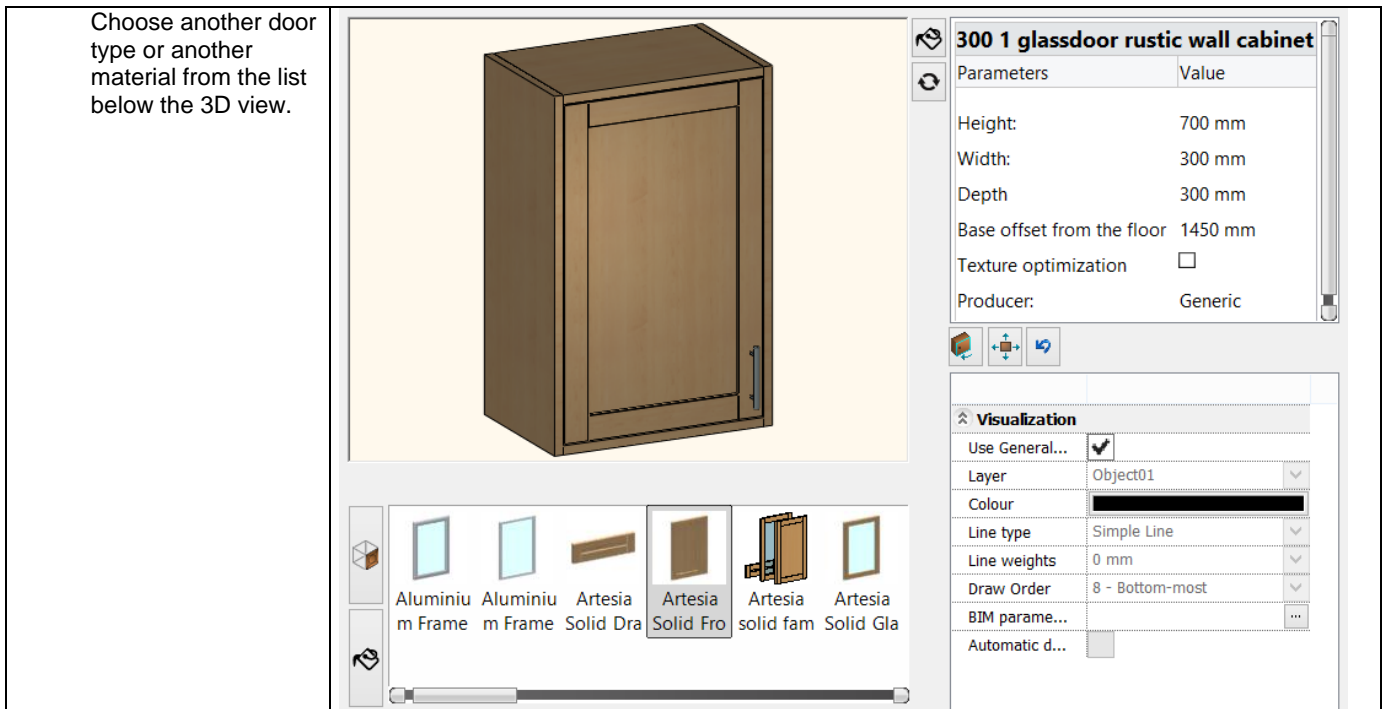
#### 300 1 glassdoor rustic wall cabinet

Parameters	Value
Height:	700 mm
Width:	450 mm
Depth	300 mm
Base offset from the floor	1450 mm
Texture optimization	<input type="checkbox"/>
Producer:	Generic



#### Visualization

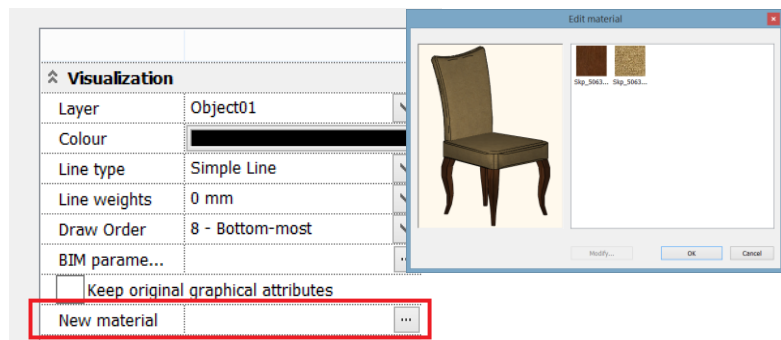
Use General...	<input checked="" type="checkbox"/>
Layer	Object01
Colour	[Color swatch]
Line type	Simple Line
Line weights	0 mm
Draw Order	8 - Bottom-most
BIM parame...	[...]
Automatic d...	[...]



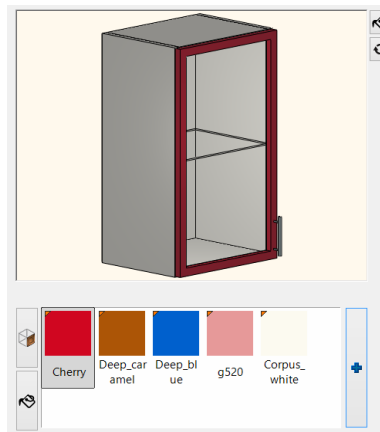
## Materials

For each object you can specify the assigned materials.

In the case of non-parametric *objects*, you can alter the material properties by clicking on the New material button. The **Material** dialog box pops up, where you can select the appropriate material display



In the case of parametric objects (created by the KBB tools), you can specify each material of the object in the Material tab below the 3D view.



Once you have modified the parameters of the selected object type, click the **Redraw** button to see the modified object in the window.



When you set the main parameters, the program verifies the specified values on the basis of various internal criteria. If a value fails to meet the criteria, after clicking the *Redraw* button the program informs you that the values cannot be accepted and restores the original settings.

Therefore we suggest that if you alter more parameters you should click the *Redraw* button after each value definition so that the program can instantly indicate if it accepts the specified value or not.

### 10.15.1.3. General properties

As all other objects in ARCHLine.XP, objects have colour, layer, line type and line width properties, too.



See:

- ❖ the detailed description of general properties in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of sets in Chapter 3.2.3. *Using sets of properties*,
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning variables*.

#### Keep original layers

You can apply this function when you want to display objects whose various parts you placed on different layers. By selecting this option you can insert all parts of the object in the layers you defined for the object.

### 10.15.1.4. Attributes of placement

#### Sprite in fixed direction

This setting concerns sprite position. Sprites are objects that yet have no width practically they are 2D planes. By default, sprites are always displayed in front view, regardless of how you rotate the figure or set the perspective. As a result of this feature, they are like real solids.

When you do not always need to see the selected sprite (people, cars, plants, etc.) in front view, turn on the **Sprite in fixed direction** option. In this case they will be rotated together with other 3D solids, so from a certain angle you will only see a surface that has no width.

#### Relative height

You can set the elevation of the object relative to the active floor.

#### Rotate at position

You can define the angle at which you rotate the object when inserting. This rotation also affects the floor plan. If you do not specify the rotation angle here, you may still do that when you insert the object.

#### Interactive length

This option allows you to define the length of the object graphically when inserting.

- Specify the starting point, then drag the mouse pointer in the appropriate direction and define the endpoint of the object.

Relative height	0 m
Color	(black swatch)
Line type	Simple Line
Line width	0 mm
Priority	8 - Bottom-most
<input type="checkbox"/> Keep original layers	
Layer	Object01
<input type="checkbox"/> Sprite in fixed direction	
Tilting to left	0°
Tilting ahead	0°
<input type="checkbox"/> Rotate at position	0°
<input type="checkbox"/> Interactive length	
<input type="checkbox"/> Place on terrain	
<input type="checkbox"/> 3D Insert	
<input type="checkbox"/> Fix arch. object in 3D	
<input type="checkbox"/> 2D not visible	
<input checked="" type="checkbox"/> Show 3D	
<input type="checkbox"/> Place it as column	

#### Place on terrain

You may place objects not only in architectural drawings and floors, but also on terrains.

- After closing the dialog box select a terrain whose height you query.
- Insert the selected object.

The program places the object on the terrain at the height of the queried point.



### 3D insert

Choose this command if you want to insert the selected object in 3D. In this case, after closing the dialog box the 3D drawing area is automatically activated, where you can fit in the object.

### Fix arch. object in 3D

If you rendered the object to an architectural object with the **Modify menu - Lock object in 3D** command, this option is automatically turned on. By turning it off, you can deactivate the command. You cannot turn on this option in the dialog box.

By locking objects you can assign 3D images to architectural objects which are independent of their 2D drawing. This way you can create detailed 3D views without displaying them in the 2D drawing.

### 2D not visible

In many cases you only need to display objects in 3D, but not in the floor plan. That's what the *2D not visible* button is for. When turning on this option, the object will be indicated on the floor plan by dotted lines, which are hidden in print.

### Show 3D

If you deactivate this command, the object will only be displayed in the floor plan, but not in the 3D model.

### Place it as column

If you choose this option, the program will insert the object as column. This means that it will be created like those

*structural objects* you insert with the  **Column** icon in the **Beam tool**.

The difference is that with the Column icon you can create objects defined by a profile, whereas here you can insert objects.




See Chapter 9.2.1. *Column*

If the Place it as column command is turned on, you may activate the *Slab-roof cutting* and the *Column hatch* options.

### Slab-roof cutting

The command functions the same way as in the case of walls.

Turn on the option:

If the *Wall-slab-roof cutting* option is activated in the  Build 3D model dialog box, the slabs and roofs that you selected for cutting will cut the objects placed as column together with the wall. The result is independent of the object being a part of the wall or not.

### Example

Cutting is unnecessary in the case of chimneys for example, or when the column extends to the top of the slab (where the slab consists of beams) and is connected to another object there, e.g. rafter.

### Column hatch

Turn on this option to indicate the object placed as column with hatches in the floor plan. Click the button to select the required hatch in the dialog box displayed.



See Chapter 11.7.1 *Hatch properties*.

### Insert into wall

This command automatically inserts the object into the wall by cutting out its place in the wall. Thus the program does not display wall hatch and wall contour 'behind' the column in the floor plan. If you deactivate the option the program restores the original status.

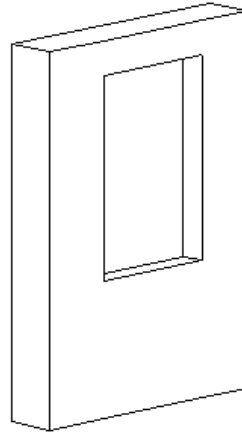
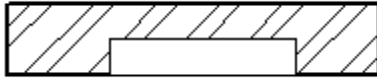
### Make only hole in the wall

The command automatically inserts the object into the wall, but removes the object from the wall in the 3D view, that is it only makes a hole in the wall. This option is only enabled when the *Insert into wall* command is turned on.

With this method you can create air holes, flues, service ducts, or even wall niches.

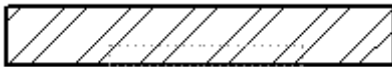
When calculating wall parameters, the program subtracts the thus created 'column places' from the volume of the wall.

**Example:**



To create a wall niche, place the object of the required shape in the wall using the *Make only hole in the wall* option. This object is then cut out of the wall, so any customized wall niche can be created.

If you do not wish to display the wall niche in the floor plan, activate the 2D not visible option, too:



### 10.15.1.5. Tilted objects

Objects can be placed on a sloped surface. It can be useful when there is a need of placing objects on sloped slab, ramp or terrain.

Tilting properties can be set in two ways:

❖ **Numeric:**

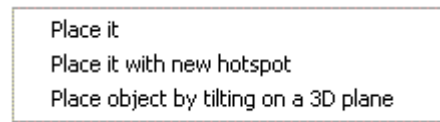
In the object properties dialog. You have to specify the tilting in two directions:

Tilting to left	5°
Tilting ahead	10°

Sometimes it is hard to specify the correct tilting angles, for example in case of a spiral ramp. In this case it is better to use the second way:

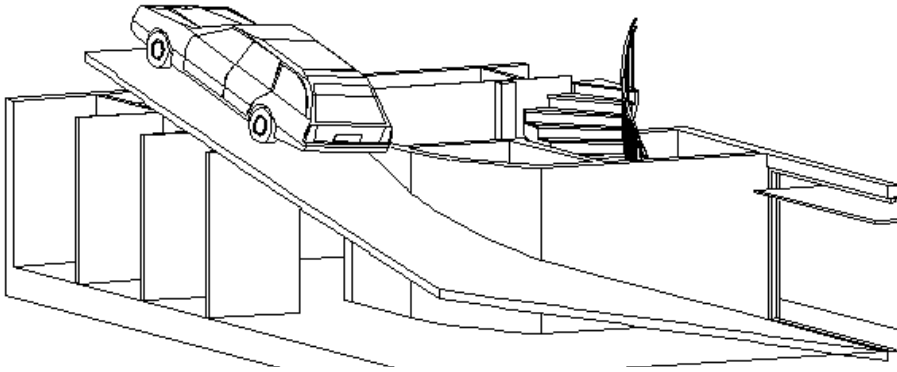
❖ **Graphic**, by selecting a 3D plane:

- Activate the 3D View.
- Select the object from the design center, press and hold down your right mouse button, and drag the object to the 3D View.
- Select the *Place object by tilting on a 3D plane* command from the appearing list.



- Select a plane.
  - Place the object. Rotate it, if necessary.
- In the Object dialog you can check the tilting properties.

Tilting to left	20.460699°
Tilting ahead	11.016762°



### 10.15.1.6. Placement

Once you have selected the appropriate object and set its properties, click **OK** to close the dialog box. You may place the objects both in the floor plan and in the 3D view:

#### Placement in 2D:

- Place the object in the drawing by its hotspot. If you want to rotate the object but have not defined the angle in the dialog box, you may still do it by selecting the keywords in the command line.

#### Options:

<b>XANGLE</b>	Define the rotation angle. <b>Enter</b> . Place the object in the drawing.
<b>GRAPHIC</b>	Define the centre of rotation, and specify the tip of the angle graphically.
<b>NEXT</b>	The next reference point of the object will be active.
<b>PREVIOUS</b>	The previous reference point of the object will be active.
<b>DEFHOTSPOT</b>	You can select from the picture the proper reference point.
<b>LENGTH</b>	You can determine the length interactive.

#### Placement in 3D

If you turned on the *3D position* option in the dialog box, the program will automatically activate the 3D drawing area where you can fit in the object.

- Select a plane where you place the object. The appearing workplane signs the selected plane.
- Insert the object, or choose from the 3D point definition options in the **POPMENU**.

#### Option:

<b>SSOLID</b>	Choose this option if selection of the plane is ambiguous. Click on the solid whose plane you want to specify for placing the object.
---------------	---



If the 3D View was active before selecting the *Place object* command, the object will automatically be placed in the 3D view, even if you do not activate this option.

## 10.15.2. Creating objects

In the objects directory of the program you find several objects grouped in different categories: furniture, roof structures, plants, etc. In many cases you may need to create other objects, for which you have various options in the program. You can

- ❖ create custom objects,
- ❖ create object assemblies, or
- ❖ Define sprites.

The objects created can be saved to the objects directory of the program in the specified category. Later on you may modify three main parameters (width, height, depth) and the material of these objects.

#### Object and group names with special characters

When objects and groups are created, the following special characters can be used:

Space,

& ! @ \$ % + = ( ) [ ] { } ' ; , ~

The following characters cannot be used:


\ ? | > < : / \* “

### 10.15.2.1. Define custom object

Basically, this command is like the *Define custom door/window* command.

In this case you also have to create the 3D solid of the object first. After you have selected the 3D solids, the program automatically creates:

- ❖ the 2D symbol of the door/window based on the top view of the selected object, and
- ❖ the 3D group, to which it assigns the four bottom corner points of the bounding rectangle as reference points.

- Create the 3D model of the object with the solid modeller.
- Select the  *Define custom object* command:
- Select the 3D objects, and then complete the selection with **Enter**.
- In the appearing dialog box select the 2D and 3D group created by the program.
- Specify the name of the object.
- **OK** Closes the dialog box.

The program displays the name of the object and asks if you want to save it. The program saves the new object to the specified category in the *Objects* directory.

### 10.15.2.2. Define custom object from 3D model

Before using this command, you have to create the 3D solid of the object and make other preparations. The complexity of designing 3D models ensures a great deal of freedom in definition.

Preparatory steps:

- ❖ Construct the 3D model of the object.
- ❖ Create a 3D group of the model.
- ❖ Create the 2D symbol of the object if you wish to use a special symbol for its 2D representation.

Use of the  *Define custom object from 3D model* command:

- ❖ Select the 2D and 3D group already created.

#### 1. Creating a 3D model

- Using the solid modeller, create the 3D solid of the object.

#### 2. Creating a 2D symbol of the object

- Draw the 2D symbol of the desired object in the appropriate size using geometric objects (line, arcs, etc.). The program will display this symbol every time you insert the object.

**Group definition:**

- Create the 2D group with the **Tools menu - 2D group - Create** command.
- Select the objects of the 2D symbol and define the reference points. You need four points for this method whose sequence of definition is important. You have to define the lower left, lower right, upper right, upper left points in the same order.
- Assign a name to the group in the appearing dialog box.



You find an example of 2D symbol definition in Chapter 9.3.4. *Define custom door/window*.

#### 3. Creating a 3D group

- Create the 3D group with the *3D menu - Group in 3D- Define object* command:
- Enter the name of the group. The name of the 3D group can be identical with the one you defined for the 2D group.
- Select the solids that form the new object.
- Specify the reference points of the 3D group in the same order as you defined the reference points of the 2D group (lower left, lower right, upper right, upper left).  
If the four bottom corner points of the bounding box enclosing the solid are the reference points, simply select the **ENTER** keyword.

When creating a 3D group the 2D symbol is automatically created, this is the top view of the 3D model. It is not always identical to the symbol of the object, that's why it was necessary to create its own symbol.

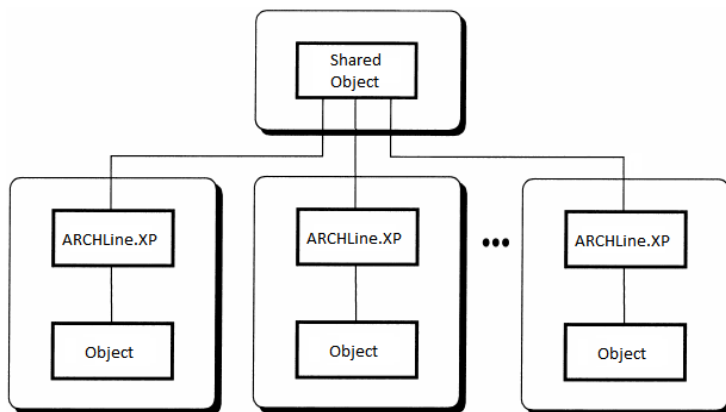
#### 4. Using the Define custom object from 3D model icon

- Select the 2D group in the dialog box that you want to use as the symbol of the object in the floor plan. You may choose the group you created or the one offered by the program.
- Select the appropriate 3D group.
- Enter the name of the object.
- **OK** Closes the dialog box.

The program displays the name of the object, and asks if you want to save it. The program saves the new object to the specified category in the *Objects* directory.

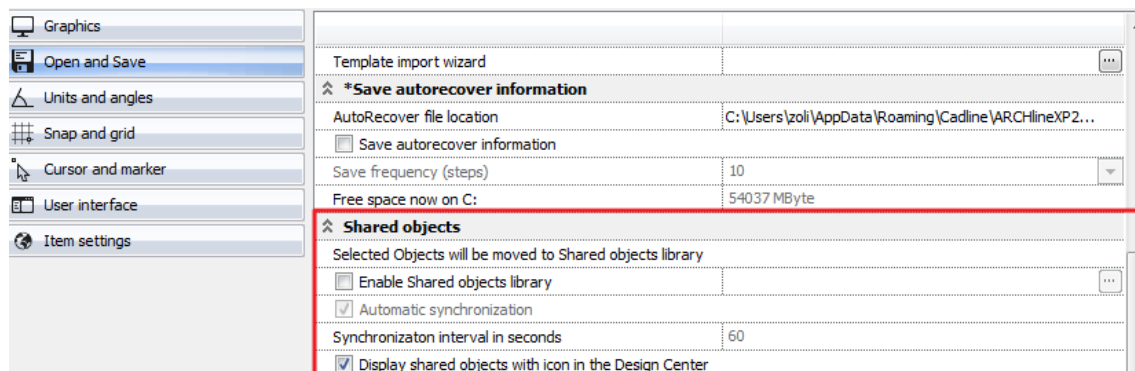
### 10.15.3. Shared objects

Shared objects gives you the possibility to keep the most commonly used objects organized in a central place, usually on local servers or the popular cloud-based file sharing services like One Drive, Google Drive or Dropbox. All users in a local network can access these objects, making unnecessary to download/import them on each computer where ARCHLine placed.



#### 10.15.3.1. Shared object folder and options

First you have to set the path to the shared objects repository in File menu – Options – Open and Save page – Shared objects group.



- Enable the *Enable Shared objects repository* option with its checkbox and then use the ellipsis button to select a folder, preferably on the local network.  
Shared object repository can be:
  - ❖ folders on your local computer,
  - ❖ a mapped network drive and its subfolders,
  - ❖ any cloud-based file sharing services like One Drive, Dropbox, Google Drive,
  - ❖ any other folder via VPN connection.

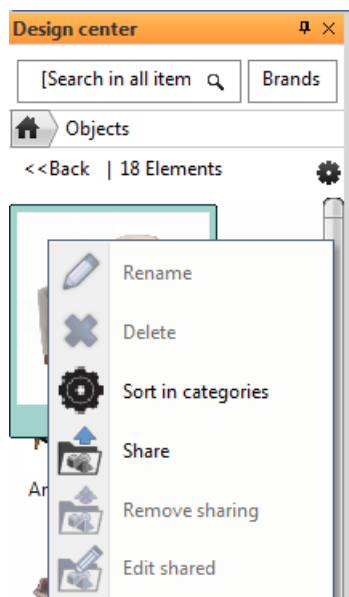
- Switch on the Automatic synchronization option if you like to refresh the content of shared object repository. This synchronization works only with live internet connection and generates data traffic on the internet.
- You can set the *Synchronization interval in seconds*. This value defines the interval between the finishing time of previous synchronization and starting time of the next synchronization.
- Enable the *Display shared objects with icon in the Design Center* option if you want to visualize the difference between shared and local objects in the Design Center. In that case, an arrow appears at the top-left corner of the icon of the object in the Design Center.

### 10.15.3.2. Sharing objects

You can share one or more items of an object category in the Design Center

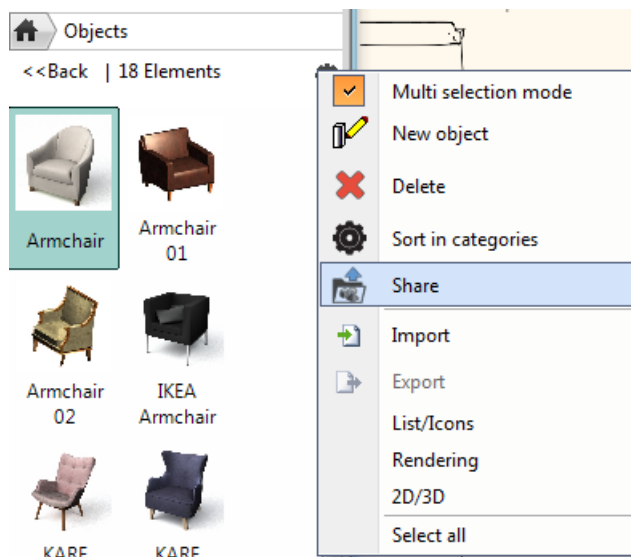
#### Sharing a single object

- Select the object in the Design Center
- Click on *Share* in the local menu



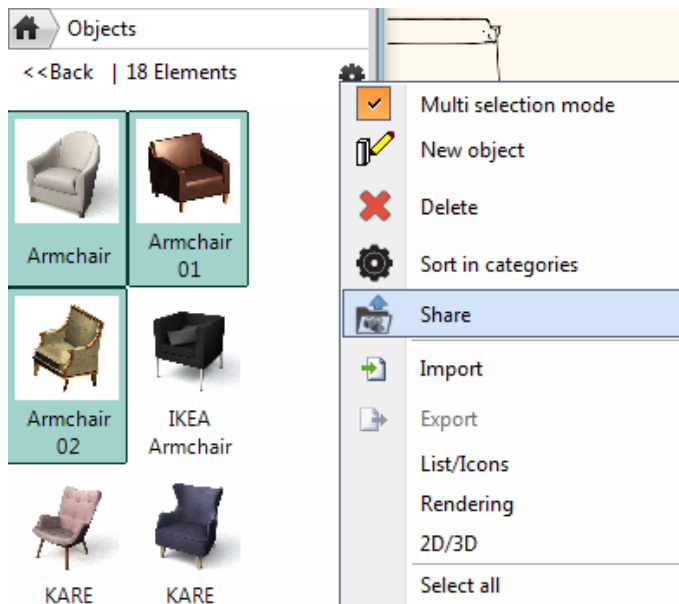
or

- Click on the cogged wheel icon and then click on “Share”



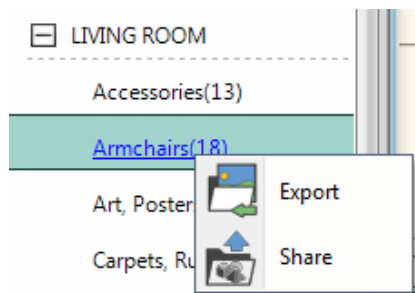
#### Sharing more objects in a category

- Select more objects in a category.
- Click on the cogged wheel icon and then click on “Share”.



or

- Right click on the category name in the Design Center.
- Click on “Share”



### 10.15.3.3. Remove sharing from shared objects

“Remove sharing” command acts the opposite way of “Share”. You can dissolve sharing of one or more objects in a category. You cannot remove the sharing of the entire category.

To remove sharing,

- Select one or more shared objects in a category.
- Click the cogged wheel and then click on “Remove sharing”.

### 10.15.3.4. Object sharing rules

- ❖ If you share objects through a shared objects repository and you lose the connection to the repository, then the previously shared objects will be still visible in the Design Center. In that case, a temporary copy of shared objects created in the background on your local machine and you can continue your work without being afraid of losing objects.
- ❖ Shared objects are not editable.
- ❖ If you remove sharing of an object, the object turns to local object and becomes editable.
- ❖ If you use shared objects in a project and you save this project, all shared objects will be saved into this projects, similarly to local objects that are used in a project.
- ❖ If you use shared objects in a project and change the shared object in the Shared Object folder, the changes will be visible in the project.
- ❖ Countertop and Wardrobe wizard objects are not shareable.

## 10.15.4. Project-specific object management

Project-specific objects are those objects that come with a project. Without the use of project-specific object management, when you save objects into a project and you open that project on another computer, ARCHLine populates the Design Center with objects found in the project. As the time passing by, lot of objects may appear in the Design Center, requiring a huge amount of disk space on your computer and resulting messy object libraries. You can delete unnecessary objects from the Design Center, but those will be there again by opening project which includes the unnecessary object. To avoid the accumulation in object libraries in the Design Center, you have the possibility to remove project-specific objects stored only in the project from the object libraries by exiting from the program. To do this, use the *Project-specific object management* option on File menu – Options – Open and Save page.



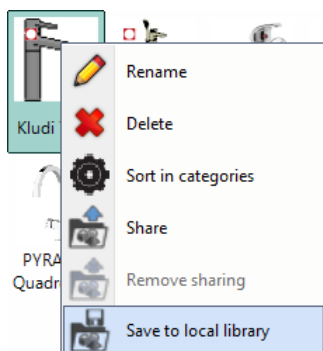
Project-specific object management option setting takes effect at restarting the program.

### 10.15.4.1. Project-specific objects in the Design Center

When you open a project, all objects that come with the project can be found in Design Center – Objects – OTHER – Project - <ProjectName.pro> category, where <ProjectName.pro> stands for the project name. If you use the project-specific object management option, you can see a denotation on the top-left corner of the icon of the project-specific objects in the Design Center:



These are so-called temporary objects, which means that by exiting from the project you lose the project-specific objects for further use when you open another project or start a new project. However, if you feel a project-specific object worth for further use, you can save it into your local object libraries or share it with the **Save local library** and **Share** commands, respectively:



### 10.15.5. Sprites in photorealistic view

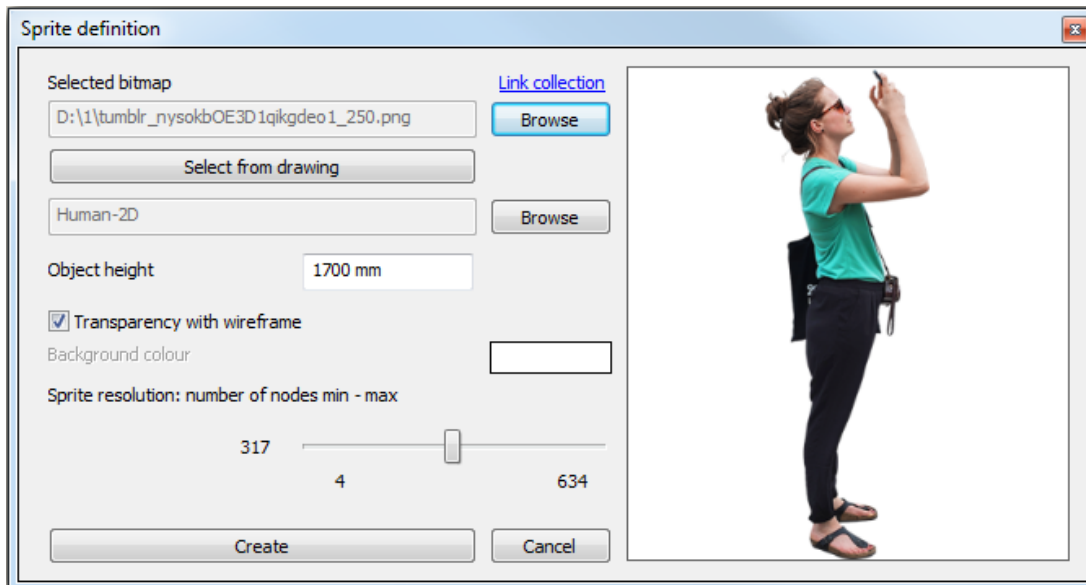
#### About sprite

Sprites make the program suitable for adding plants, people and cars to the 3D representation without slowing down the representation but providing a photorealistic view. For this we need the photo of the objects. From these photos the definition of sprites can be done very quickly, so you can extend your object library. Opposed to the RPC objects, sprites don't have spatial effect; they are only planes with zero thickness. They look the same from all viewpoints. In many cases they can be used very well.

#### 10.15.5.1. Sprite creation

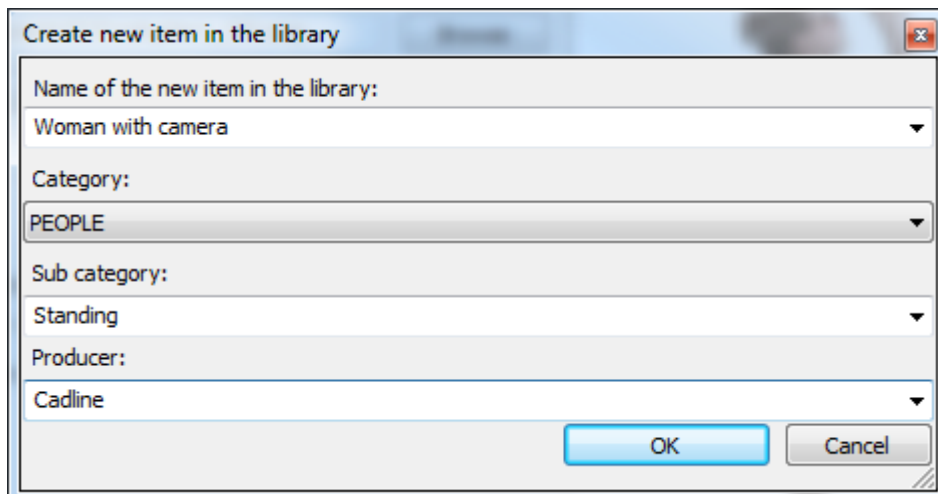
You can find the command here: *Manufacture menu - New object - Sprite definition*





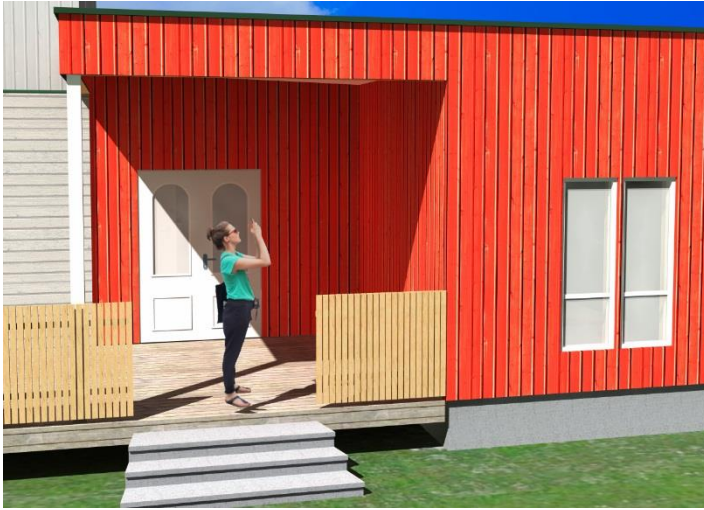
For the definition of a sprite you have to do the following steps in the *Sprite definition* dialog:

- Load a previously saved raster image by **Browse** button. To make the image selection easier, you have access to <http://skalgubbar.se> by clicking **Link collection**, from where you can download a lot of good quality images. Alternatively, you can select a previously imported raster image on your drawing by **Select from drawing**.
- Select the 2D symbol of the defined sprite object by **Browse** button. You can select from the predefined group elements in the design center. By default, you can use the Human-2D symbol.
- Modify the object height if the default value is not convenient.
- **Transparency with wireframe**. With this option you can make transparent those areas of the image which have the selected background colour. Background colour is defined by a mouse click on the image.
- The program automatically cuts out the areas defined by the background colour and makes those parts transparent in 3D. The precision of cutout is defined by **Sprite resolution**. The higher resolution number you defined by the slider, the higher precision of the cutout you get.
- Click **Create** button to save your sprite object with its name, category and producer information into the Design Center.



### Sprite placement

Once you have completed sprite definition, you can place the new object in the drawing using the *Building menu - Single object* command. The rendered photo of the sprite becomes visible if you display the model in the photorealistic view.



### Sprite properties

In the *Object placement* dialog box the parameters of the selected sprite appear: its width and height.

These are static values that only provide information on the main parameters.

If you turn off the *Sprite in fixed direction* option in the *Constrains* group, the sprite will not rotate with the other 3D solids, but will always face the viewer, so it cannot be seen that it has no depth.

## 10.15.6. Modifying objects

You can modify

- ❖ the properties and
- ❖ the position and display of the objects created.

### Modifying properties

You can modify the properties of the object if you

- ❖ click on the object and use the Properties tool, or
- ❖ select the **Properties...** command in the Shortcut menu, or
- ❖ use the *Copy properties* command.

The *Insert objects* dialog box appears, displaying the current values of the selected object. The selected object will acquire the new values according to the changes you make in this dialog box.



For a description see Chapter 9.11.1. *Object properties and placement*.

### Modifying position and display

Users have several options to modify objects.

- ❖ You can use the hidden mode when inserting objects into the wall,
- ❖ You can move objects in 3D.

Let's see the detailed description of the commands:

#### 10.15.6.1. Hide wall outline

When you insert an object into the wall to handle it together with the wall, the part of the wall within the display of the object is hidden. If you want to make this part visible, but still have the object as part of the wall, you may use the **Hide** or **Show** options. Using these commands you can hide or show the part of the wall that falls within the display of the object.

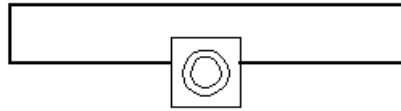
- Select in the command line what you wish to do with the contour of the object:

Options:

<b>HIDE</b>	Hides the selected part of the wall falling within the display of the object.
<b>SHOW</b>	Shows the hidden part of the wall contour.

**HIDE:**

- Select an object that will hide the given wall from the point of clicking.
- Select the other endpoint of the hidden part.

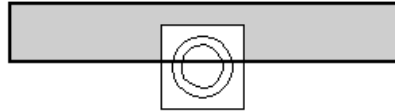


- Repeat the command to hide another part, or  
**Enter** Ends the command.

In this figure you see a chimney which is not part of the wall, but hides the relevant part of the wall as the **HIDE** option is activated.

**SHOW:**

- Select an endpoint of the hidden part of the contour to make it visible.
- Repeat the command to show other parts, or
- **Enter** Ends the command.



In the above figure you see a chimney inserted into the wall (the chimney is part of the wall), which overlays the wall, but the wall contour is displayed as the **SHOW** option is activated.

**10.15.6.2. Move object in 3D vertically**

You can set the elevation of architectural objects in the Properties dialog box of the object concerned. In many cases however, it is easier to set height in the 3D view by moving the inserted object to the desired elevation point.

For example, it is easier to adjust the height of a projected roof to an automatic roof in the appropriate 3D view than in the floor plan.

With this command:

- ❖ You can move a **window**, **door** or **roof window** in the 3D view. The 2D symbol of the object will automatically be updated according to the modification.
- ❖ You can move roofs, slabs, and objects vertically in the 3D view, or
- ❖ You can alter the **height of the wall's top** while leaving its base line intact.



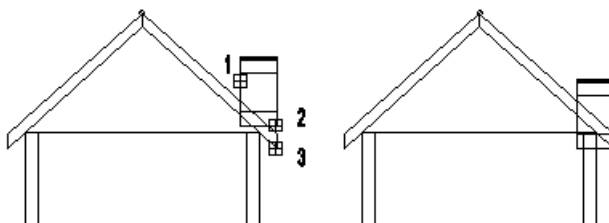
In order to make these modifications as easy as possible, use the front view.

- Select a 3D object whose elevation, or, in the case of wall, the height of the wall's top, you wish to modify.
- To move, select a reference point on the object.
- Define the new location of the reference point.
- Repeat the commands to move further objects, or
- **Enter** Exits the command.

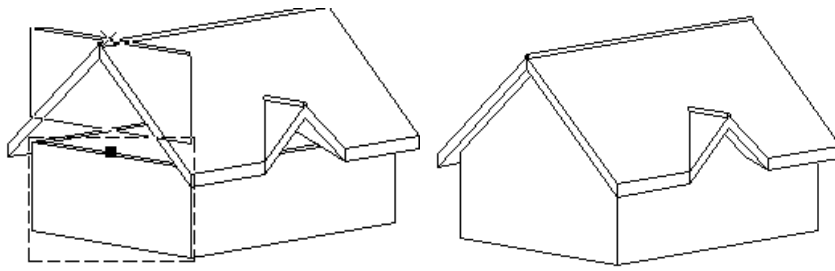
**Option:**

<b>STEP</b>	Defines the elevation step.
<b>POPMENU</b>	Use the <b>3D point definition</b> pop menu options

Graphical definition of the elevation of the projected roof:




After roof projection and modification of wall elevation:



### 10.15.6.3. Copy object properties

With this command you can ascribe the properties of an object to another object. Using this method, there is no need to modify each property of each object one by one, you only have to select the appropriate object then ascribe its properties to the other objects.

You may also activate this command:

- ❖ By right-clicking the object and choosing the *Copy properties* option in the appearing *Shortcut menu*, or
- ❖ With the **Edit toolbar** -  *Copy properties* icon.



For a description, see Chapter 8.5.2. *Properties of object groups - Copy properties*.

### 10.15.7. Creating profiles

The use of profiles is manifold in ARCHLine.XP. You can apply them in:

- ❖ creating wall or slab profiles,
- ❖ defining columns or beams by profile,
- ❖ defining the section profile of roofs,
- ❖ defining the section or ending of roof beams,
- ❖ defining the profile of decoration objects, defining the balusters and the rail of Railings, etc.

In addition to profiles offered by the program you may also create new profiles. You can save these to the specified category in the profiles directory and use them any time afterwards.

According to their application, there are two profile types:

- ❖ Closed profiles and
- ❖ Open profiles

#### 10.15.7.1. Closed profile

Users can create and save closed profiles. When the program asks you to define a closed profile while performing a task, you may select the created profile in the profiles directory.

- Enter the name of the new profile.
- Create the profile using the *Profile definition* tool in the *Toolbox*.  
For example, if you have already drawn the profile, you can select it with the *Point of profile* command.
- Define the reference point of the created profile.
- The program displays the dimensions of the profile and offers to save the profile created.
- **Yes** Saves the new profile to the specified category in the Profiles directory.

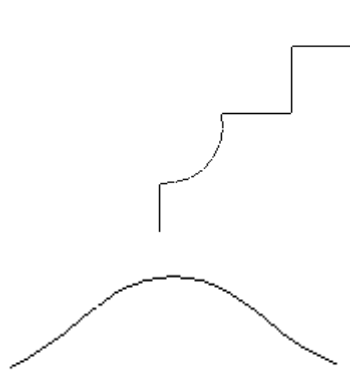


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

#### 10.15.7.2. Open profile

Users may create and save open profiles. When the program asks you to define an open profile while performing a task, you may select the created profile in the profiles directory.

- Enter the name of the new profile.
- Define the contour of the profile using the *Profile definition* tool in the Toolbox.
- For example, if you have already drawn the profile, you can select it with the *Select an open chain* command.
- Define the reference point of the created profile.
- The program displays the dimensions of the profile and offers to save the created profile.
- Yes Saves the new profile to the specified category in the Profiles directory.



When using the profile, for example in the case of the projected roof by free profile command:

- In the appearing *Profile definition* tool select the *Select from list* option. The Insert profile dialog box pops up.

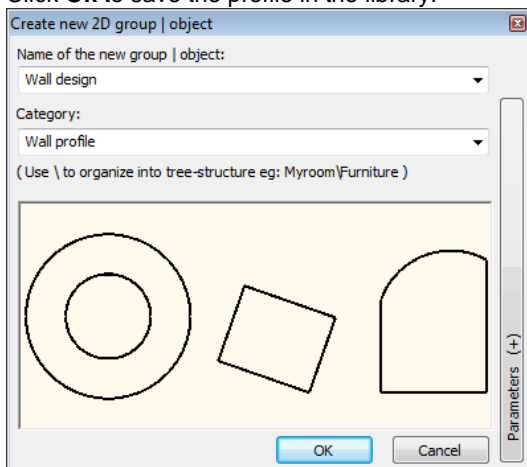


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

### 10.15.7.3. Multiple profile

Users can create and save multiple profiles. When the program asks you to define a profile while performing a task, you may select the created profile in the profiles directory.

- Define closed profiles with the *Profile definitions* commands.
- Close the definitions by pressing **Enter**.
- In the *Create new 2D group/object* dialog enter the name of the new profile and select/create a profile category.
- Click **Ok** to save the profile in the library.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

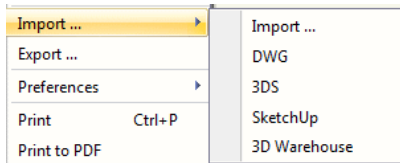
### 10.15.8. 3D Warehouse

3D Warehouse™ is a free Google service by which anyone can download and use 3D models for free. 3D Warehouse is a continuously growing database of models which can be represented in the projects with different textures and sizes. With the help of 3D Warehouse models it is easy to furnish a flat in your design project because you can download a lot of furniture models and place them in a room.

ARCHLine.XP is integrated with Google 3D Warehouse™ web portal. This integration means that the selected model can be inserted directly into an ARCHLine.XP project and ARCHLine.XP object library.

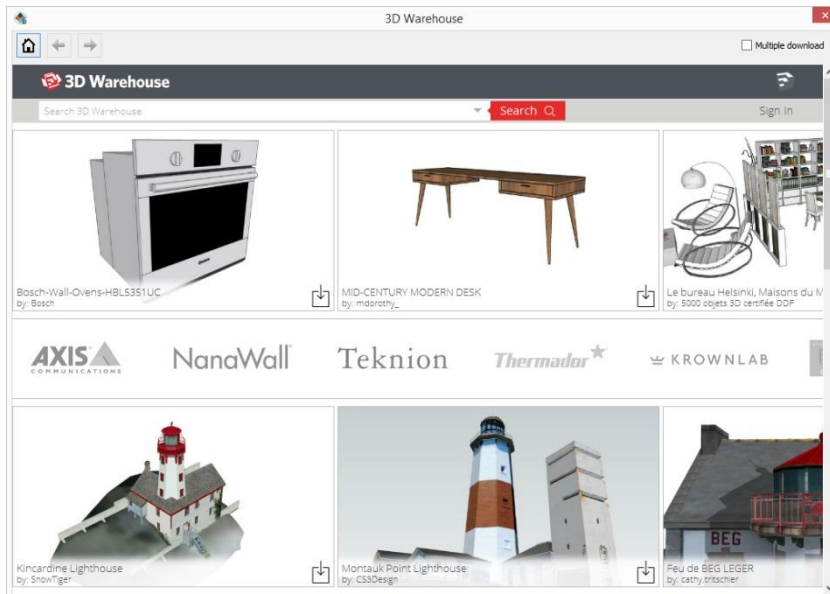
#### How to use

The command, which can be used in a 2D and 3D View, too, is available in the *File menu - Import* submenu:

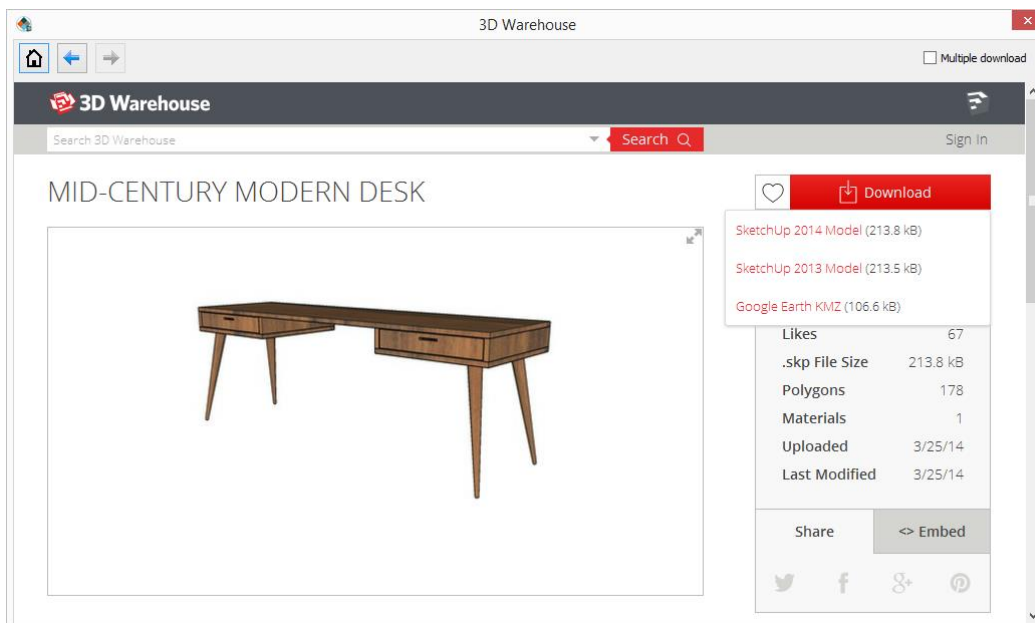


! Please note that you need a live *internet connection* to use this command!

- Click on the Import - 3D Warehouse command to access the 3D Warehouse from within ARCHLine.XP. On the web portal you can search for models or collections.



- Enter the name of model you're looking for in the "search" field.
- Click on the Search button. Thumbnail icon representations of models are displayed.
- Click on the thumbnail image of the model that you like to view the model.
- Click on the Download button to download the model directly into ARCHLine.XP.
- A list of SketchUp and Google Earth KMZ versions and formats appear. You can select any of these formats to start the download



The program converts the selected model into ARCHLine.XP object and then asks you to place it. The model is stored in the object library of ARCHLine.XP called "3D Warehouse" and can be used anytime. Textures used on the surfaces can be freely modified.

! Please be aware that in some cases the models are published with wrong scaling factors in the 3D Warehouse database, for example with the ratio of 1:10 or 10:1 compared to their real dimensions. Such scaling problems can be solved by the 'rescaling' command that is available in the shortcut menu if you click on the object with right mouse button.

### What types of files can be downloaded from the 3D Warehouse?

- ❖ SketchUp 2014, 2015 (\*.skp)
- ❖ SketchUp 2013 (\*.skp)
- ❖ SketchUp 8 (\*.skp)
- ❖ SketchUp 7 (\*.skp)
- ❖ SketchUp 6 (\*.skp)

These formats can be used with SketchUp on Windows or Mac and any application that can read version SketchUp [n] files.

- ❖ Google Earth 4 (\*.kmz)

This format can be used with Google Earth 4+. A KMZ file is only available for download if the model is geo-referenced, that is, it has Longitude and Latitude data.

### 10.15.9. Furniture by photo

Using the Furniture by photo tool you will be able to use parts of photos in your design as surfaces of real 3D objects.

#### Create an object in 4 steps

The idea of making a furniture by photo consist 4 steps.

Load photo

Define orthogonal surface

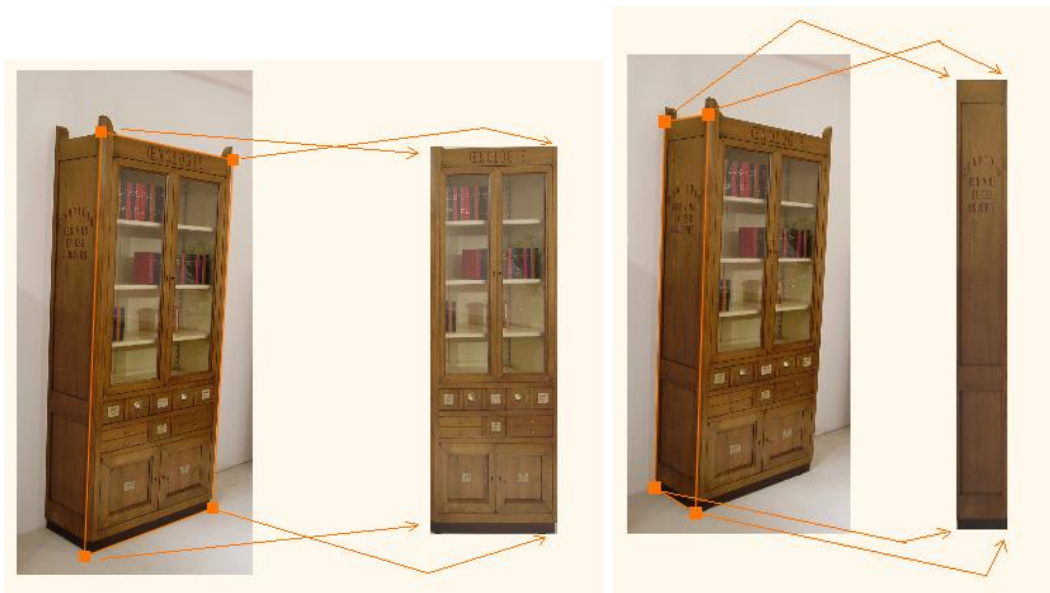
Save orthogonal image as material

Define an object with the material on its surface

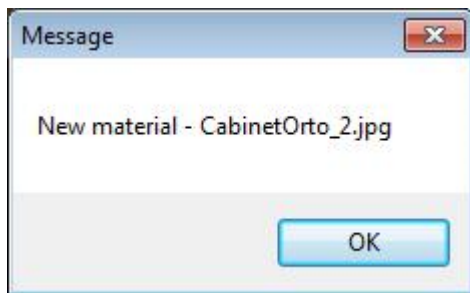


How to snap a surface:

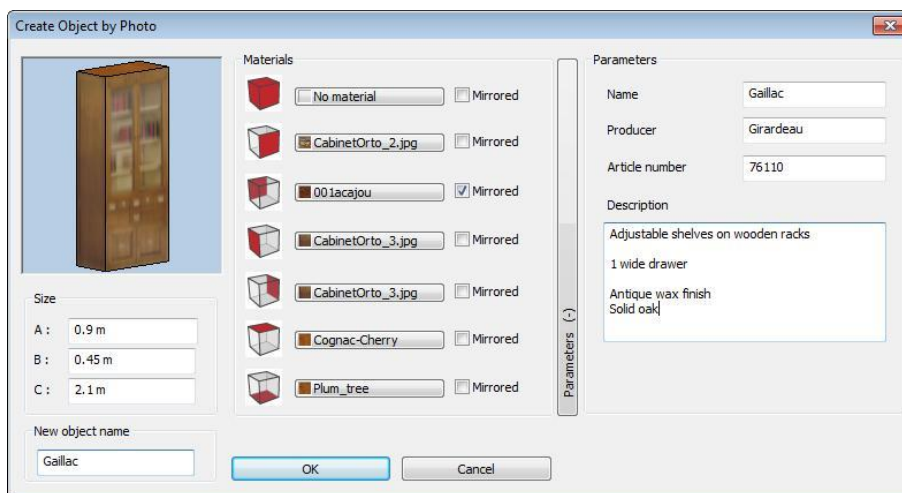
- Load the photo of the furniture
- Set 4 corners of one orthogonal surface on the photo. Accept definition and the surface will appear as an orthogonal image.



- Repeat previous steps to snap more surfaces.
- Save orthogonal images as materials using Save as material command in the image pop menu.



- Create a new furniture using Object by photo tool.



### Preview

Here you can see the preview of the actual settings. The preview makes it easy to control the changes you make during the design process.

### Size

Set the A, B, C size for the object. Type the size into the field, and when you click into another field you will see the change in the preview window.

### New object name

Type the name of the object. This name will be applied when you save the finished object into a library.



**Materials**

You can set materials to each sides of the object here. Click on the material button and select one in the appearing material browser.

**Mirrored**

Use this option to flip the selected material horizontally.

**Parameters**

Click on Parameters button to expand the parameters panel. Here you can type additional data of the object you design.

**Name**

Enter the name of the object here.

**Producer**

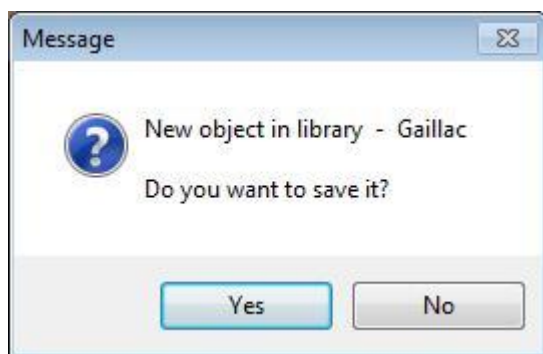
Enter the name of the manufacturer of the object here.

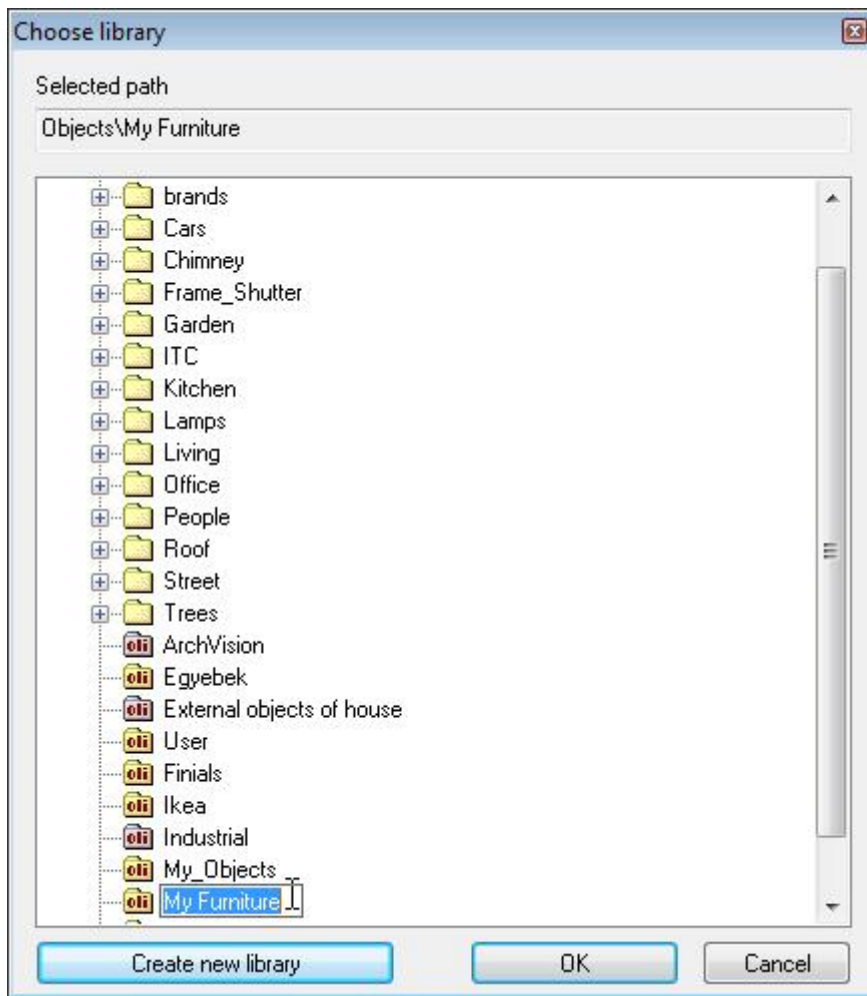
**Article number**

Enter the article number here.

**Description**

Enter a description of the object. The description can be a longer multiline text

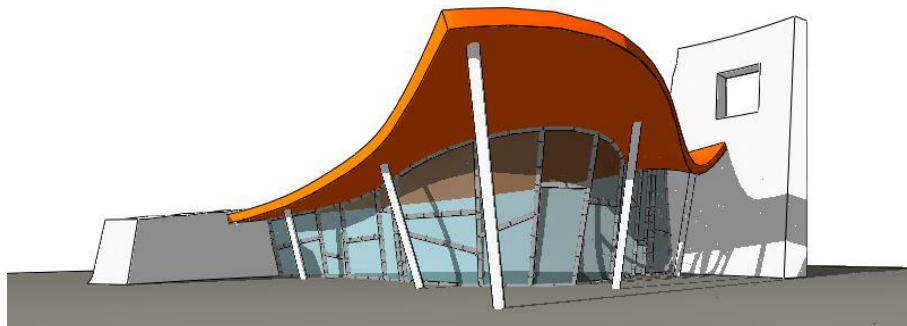




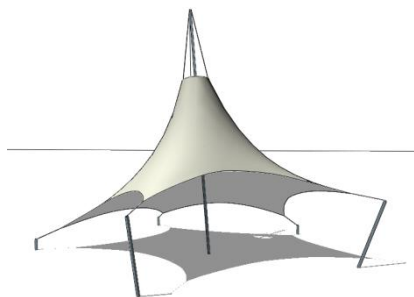
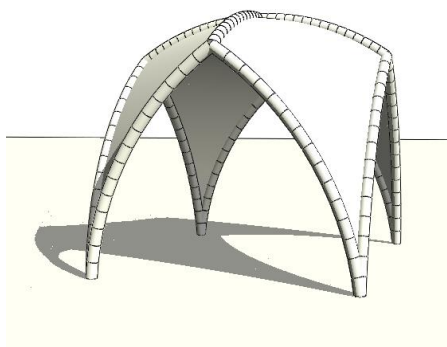
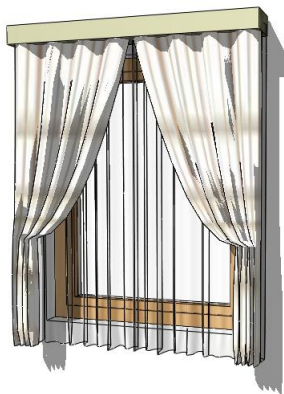
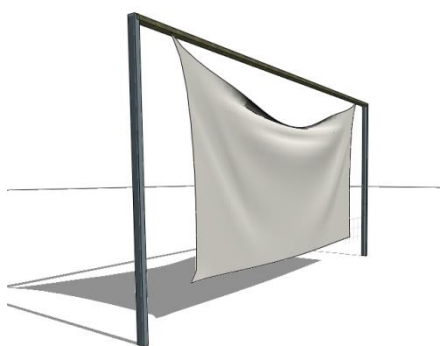
You can enhance the realism of the final render of one simple object when you use the Bump mapping properties of the materials applied on its surfaces.



## 10.16. Freeform surfaces



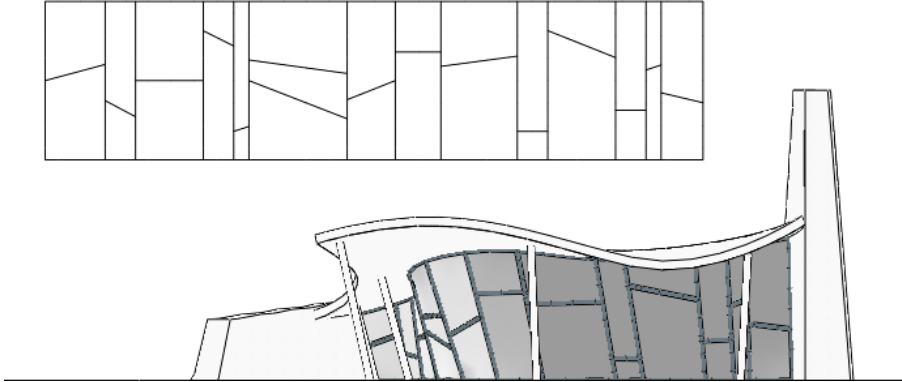
This tool can be used to create architectural structures like curved roofs and curtain walls, custom vaults or tent structures as well as textiles for interior design: draperies, curtains or table cloths.



### 10.16.1. Working with Freeform Surfaces

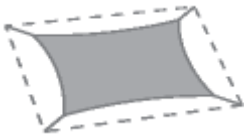
#### 10.16.2. Layout and 3D model

The shape of a freeform surface is based on its layout. To create a freeform surface you have to define a layout first. Later, to make topological changes (inserting or deleting a node, cutting out a hole, etc.) you have to edit the layout of the surface. By default the layout appears as a flat surface in the 3D space. You can distort it in many ways: by fixing or moving nodes or edges, by adding control lines, or by letting the gravity take effect.



#### 10.16.3. Physics

Freeform Surfaces can have two different physical models: Membrane and Textile. Membranes always tense between fixed points, textiles can crease. Typically, set the physical mode to Membrane for a tent structure and Textile for a table cloth.

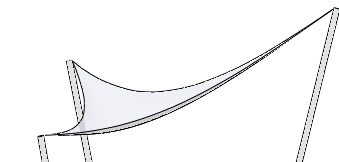


Membrane

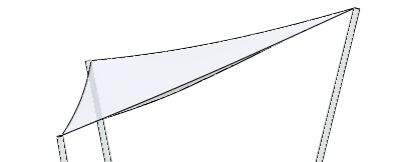


Textile

You can tense the cables, outline edges and control lines separately; this will affect the shape of the freeform surface.



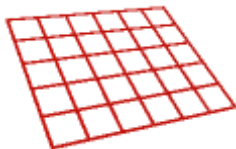
Lower outline stretch



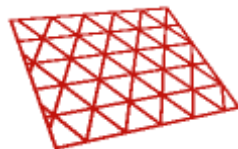
Higher outline stretch

#### 10.16.4. Grid patterns

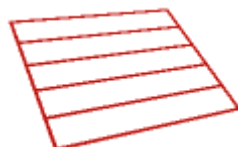
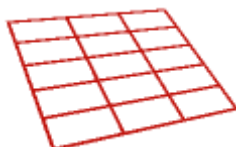
Grid patterns determine the look and physics of freeform surfaces. Four patterns are available: Square, Triangle, Rectangle and Monodirectional.



Square



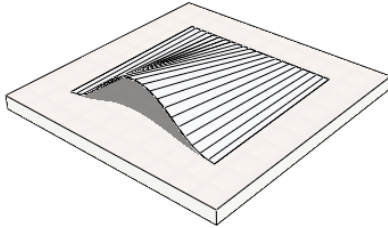
Triangle



Rectangle

Monodirectional

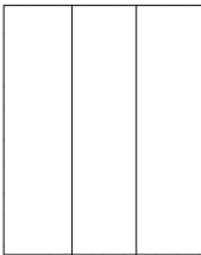
For textiles with realistic crease use the triangle pattern. Use the square or the rectangle pattern for architectural structures like curtain walls. You can define surfaces with straight rulings like a conoid using the monodirectional pattern.



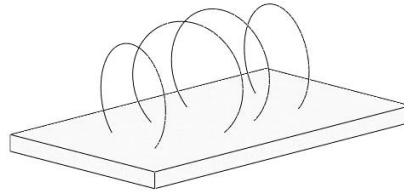
Conoid with monodirectional pattern

### 10.16.5. Control lines

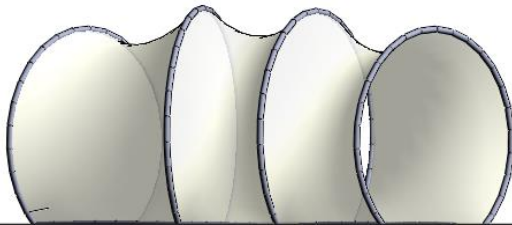
On the layout of the surface you can define so called control lines. Once you have control lines on the layout, you can fix them in the 3D space to any existing curve or simply turn them into straight or curved line.



Layout with the outline and two control lines

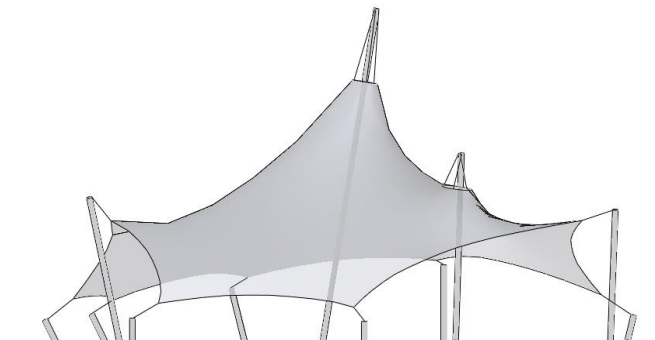


3D curves to which the outline edges and control lines can be fixed



### 10.16.6. Cables

You can add cables to the surface, in this way you can create models of tent structures.



### 10.16.7. Representation

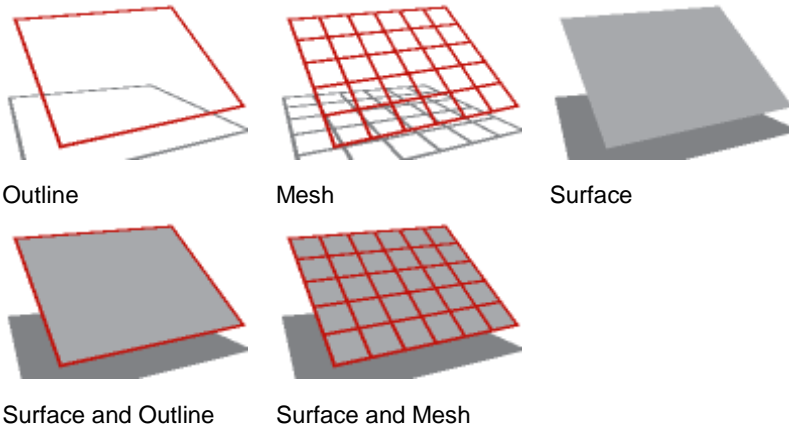
You can visualize a freeform surface in many ways. In the 2D window, you can select between outline and mesh representation. The outlines are drawn according to the general properties (colour, line type, line width) of the object, in case of using the mesh representation; you can specify separate properties for the gridlines.



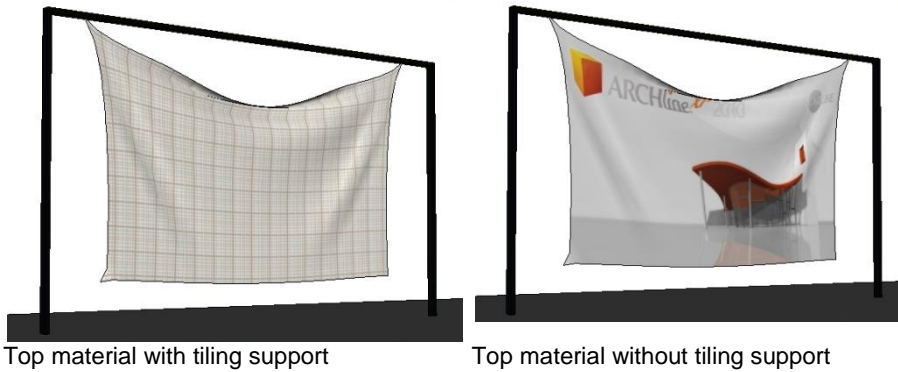
Outline

Mesh

In the 3D View the freeform surface can be visualized as a mesh or a surface, in addition you can combine these representations. The edges of the mesh can be represented as a simple line or you can define profiles for them.



You can assign different materials to the top and bottom side of the surface. By switching off the *tiling support* for a material, you can extend a picture to the whole surface. In the object has a positive thickness, you can define side material (material of the edges of the surface) and solid material (material of the cross section) as well.



### 10.16.8. Thickness

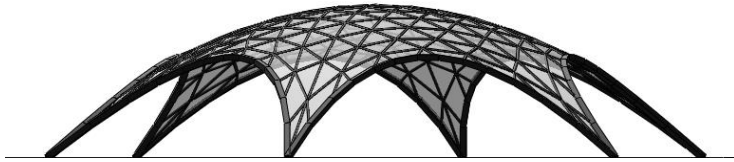
By default the mesh is represented as a thin surface. You can turn it into a solid by changing its thickness value. You can use positive or negative values; in case of using negative thickness value the second surface of the solid will appear under the first one.

	Perpendicular	Vertical	Box extension
Positive thickness			
Negative thickness			

To create the solid the program extrudes the surface by the given thickness perpendicular to itself or vertical. In addition you can select "Box extension", in this case the solid will be bounded by the freeform surface and a horizontal plane, the thickness is measured from the highest or lowest point of the surface, depending on the sign of the thickness value.

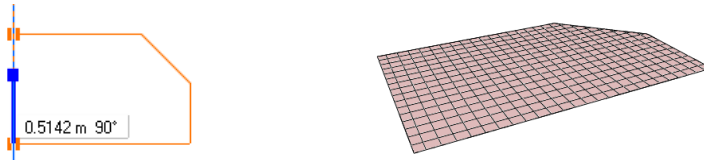
### 10.16.9. Structure

You can represent a freeform surface as an architectural structure by assigning profiles to different types of edges. Different profiles can be assigned to outline edges, control lines, gridlines and cables.

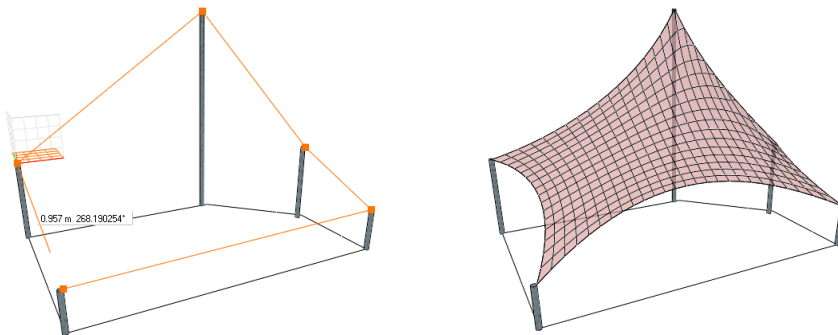


### 10.16.10. Creating a Freeform Surface

Generally, the creation of a freeform surface begins in a floor plan window by defining the layout of the surface. The *Profile definitions* tools appear in the Toolbox; you can draw the profile or select the **Point of profile** or **Point of profile with islands** option to use an existing contour. Once you have the layout profile, the 2D drawing and the 3D model of the freeform surface will be created according to the default settings. Initially the 3D model is a horizontal flat surface at the default level, with fixed corners



In addition you can start to create a freeform surface in the 3D View. Here you can define points one after the other, finally click the first point again or press ENTER. Now the layout of the surface has been generated automatically as a polygon based on the 3D points projected to a horizontal plane at the default level.



The layout is generated by projecting the points to a horizontal plane; therefore start creating the freeform surface in the 3D View only if the structure has a horizontal character like a tent structure. If the surface to be created is not of this kind, like a mainly horizontal hanging textile, first create the layout in the 2D window and then fix its nodes and edges to the appropriate 3D positions.

### 10.16.11. Modifying the 3D model

There is no further command in the Toolbox or in the main menu related to the freeform surfaces; you can work with them using the Popup menu and the markers

### 10.16.12. Popup menu commands

#### **Edit layout**

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Edit profile* tools appear in the Toolbox and you can edit the current profile of the layout: move or nodes or edges, add holes, etc. You can finish by pressing ENTER key. The surface will be regenerated based on the new layout, the fixed edges and nodes will be kept if necessary.

#### **Place layout**

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. The layout of the surface will be drawn based on its current 2D representation settings.

#### **Add control lines**

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Profile definitions* tools appear in the Toolbox and you can draw one or more control lines on the layout. Control lines cannot exceed the outline. If you have been finished, the new control lines appear on the 2D drawing and the 3D model of the surface and you can fix them in the 3D space to any existing curve or simply turn them into straight or curved line by selecting the appropriate command from the marker menu. You can modify the control line on the layout or delete it by selecting **Modify Control Line On Layout** or **Remove Control Line** in the marker menu.

**Reposition grid**

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, you can define the direction of the grid pattern graphically by drawing the direction vector.

**Fix nodes**

You can select points on the surface. If you have been finished, press ENTER. The fixed points can be moved, elevated; you can attach cables to them by selecting a command from their marker menu. To delete such a fixed point, from the marker menu select **Release node**.

**Define gravity vector**

By default the gravity vector is vertical. You can specify a different direction graphically by drawing the direction vector.

**Recompute shape**

Normally, the shape of the surface is recomputed after all relevant modification. You can clear the **Automatic Recomputation** checkbox in the Property Manager; in this case the shape of the surface is recomputed only if you select this command from the Popup menu.

**10.16.13. Marker menu commands****Move Node**

Moves the current node. If it was a free node, it turns into a fixed one.

**Elevate Node**

Elevates the current node. If it was a free node, it turns into a fixed one.

**Fix Node**

Turns a free node into a fixed one.

**Fix All Nodes**

Turns all of the free nodes into fixed ones.

**Release Node**

Turns a fixed node into a free one.

**Release All Nodes**

Turns all of the fixed nodes into free ones.

**Add Cable**

Attaches a cable to the current node by placing the other endpoint of the cable.

**Change Cable Length**

You can modify the nominal length by giving a different value in the dialog box. Note that the real length may differ from this value depending on the current physical settings and geometry.

**Delete Cable**

Deletes the current cable.

**Delete All Cables**

Deletes all the cables.

**Fix Edge**

Turns a free outline edge or control line into a fixed one.

**Fix All Edges**

Turns all of the free outline edges and control lines into fixed ones.

**Release Edge**

Turns a fixed outline edge or control line into a free one.

**Release All Edges**

Turns all of the fixed outline edges and control lines into free ones.

**Turn Into Straight Edge**

Turns an outline edge or control line into a straight fixed edge.



### Turn Into Curved Edge

Turns an outline edge or control line into a curved fixed edge by placing a third point of the arc. If you use this command in the 3D View, the curve becomes a real circular arc. By starting this command on the floor plan, the curve becomes a spiral if the heights of its endpoints are different.

### Turn Into Custom Edge

Fixes an outline edge or control line to an existing curve (like arc, ellipse or spline) or to an edge of an existing solid by selecting the appropriate curve or edge.

### Turn All Into Straight Edge

Turns all the outline edges and control lines into straight fixed edges.

### Modify Control Line On Layout

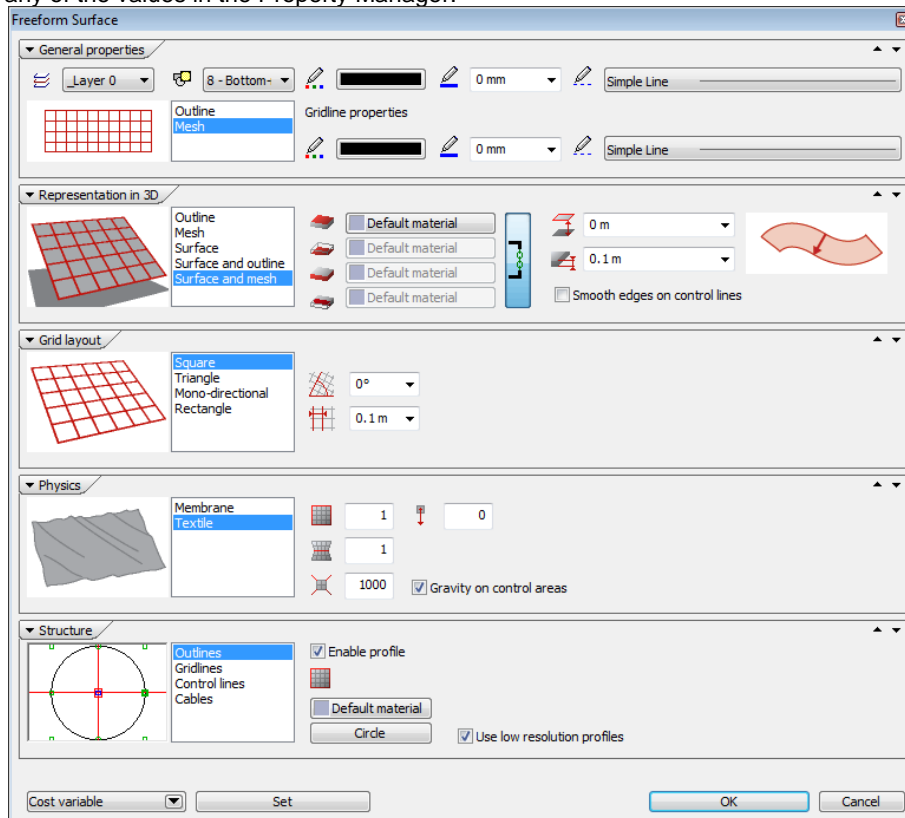
First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Edit profile* tools appear in the Toolbox and you can edit the current control line. You can finish by pressing ENTER key.

### Remove Control Line

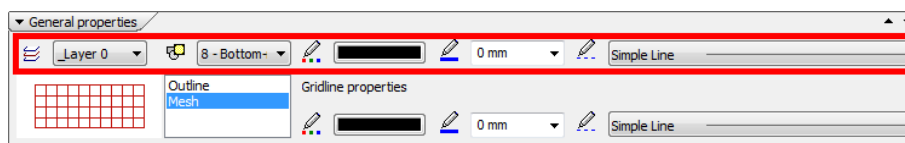
Removes the current control line from the layout.

## 10.16.14. Settings

You can change these settings by selecting a freeform surface clicking Properties from the Popup menu or by modifying any of the values in the Property Manager.

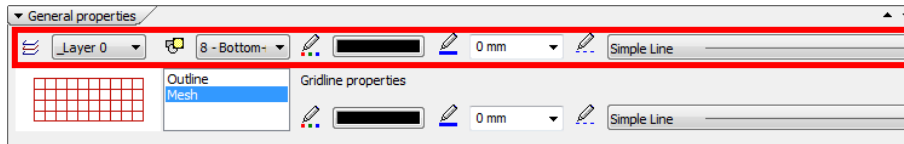


## 10.16.15. General settings



Layer and Drawing order relates to the whole object. The general colour, line width and style are applied to the outline edges only, the gridlines are represented according to the Gridline properties.

### 10.16.16. Representation in 2D



#### **Representation in 2D**

On the floor plan you can represent the whole grid or the outlines only.

#### **Gridline Colour**

Colour of the gridlines. The outline is represented according to the general settings.

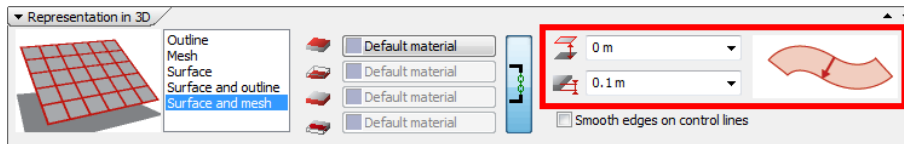
#### **Gridline Type**

Line type of the gridlines. The outline is represented according to the general settings.

#### **Gridline Width**

Width of the gridlines. The outline is represented according to the general settings.

### 10.16.17. Geometry



#### **Relative height**

Elevation from the floor level. The profile of the layout will be placed on that level. By changing this value you can elevate the whole structure.

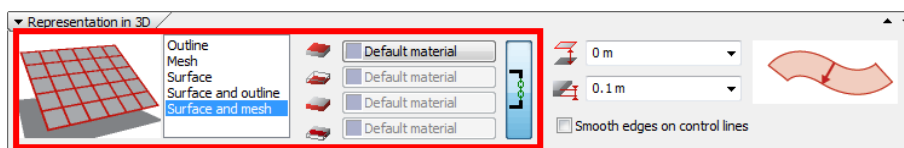
#### **Thickness**

By setting the thickness to zero the mesh is represented as a surface, otherwise as a solid. In case of using negative thickness value the second surface of the solid will appear under the first one.

#### **Solid Extrusion Mode**

You can extrude the freeform surface by the given thickness perpendicular to itself or vertical. In the third case (Cut by Plane) the solid will be bounded by the freeform surface and a horizontal plane, the thickness is measured from the highest or lowest point of the surface.

### 10.16.18. Representation in 3D



#### **Representation in 3D**

In the 3D View you can represent the outline, the gridlines, the surface or their combinations.

#### **Top Material**

Material on the top of the surface. Available only if the surface is represented in 3D.

#### **Bottom Material**

Material on the bottom of the surface. Available only if the surface is represented in 3D.

#### **Side Material**

Material of the sides of the solid. Available only if the surface is represented in 3D and the thickness is not zero.

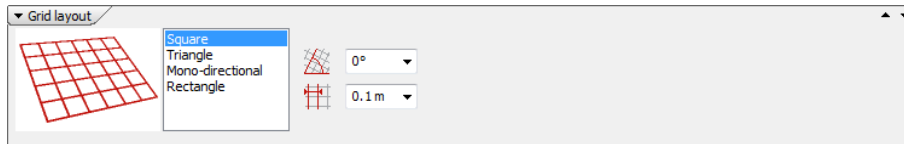
#### **Solid Material**

Material of cross section of the solid. Available only if the surface is represented in 3D and the thickness is not zero.

#### **Smooth Edges On Control Lines**

If control lines have been added to the layout, they will be represented as a smooth or hard edge according to this setting.

### 10.16.19. Grid Layout



#### Pattern

The shape of a grid cell: Square, Triangle, Monodirectional or Rectangle. It has an effect on the computed shape of the mesh as well. To have a surface creasing realistically use the Triangle pattern. Use the Monodirectional grid to have Conoid surfaces.

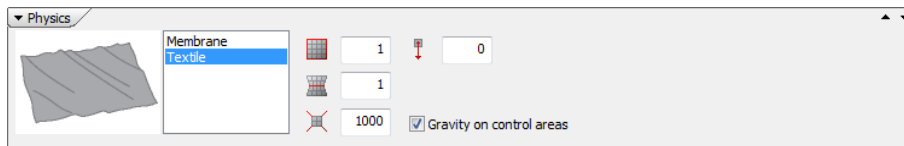
#### Direction

Direction of the main gridlines on the layout. You can also define the direction of the grid layout by selecting the Reposition Grid command from the Popup menu.

#### Spacing

Distance between two parallel gridlines on the layout

### 10.16.20. Physics



#### Gravity

Strength of the gravity force. You can set zero and negative values as well. In addition you can set a custom gravity direction by selecting the Define Gravity Vector command from the Popup menu.

#### Physical Model

Membrane always tenses between fixed points, Textile can crease.

#### Cable Stretch

You can tense the cables by increasing this value. Cables can be added to the surface by selecting the Add Cable command from the marker menu of a node.

#### Outline Stretch

You can tense the edges on the outline by increasing this value.

#### Control Line Stretch

You can tense the edges on the control lines by increasing this value. Control lines can be added to the surface by selecting the Add Control Lines command from the Popup menu.

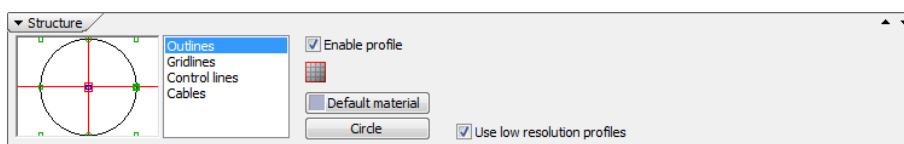
#### Automatic Recomputation (in the Property Manager only)

If disabled, the shape won't follow the changes until you select the Recompute Shape command from the Popup menu or enable this setting again.

#### Enable Gravity For Control Line Areas

Enables the gravity for the closed areas bounded by custom control lines.

### 10.16.21. Structure



#### Profile of Outline

Profile of the edges on the outline. Available only if the outline is represented in 3D. If the profile is disabled, outlines are represented as simple lines and will not appear on rendered images.

#### Material of Outline

Surface material of the profile of the edges on the outline.

**Profile of Control Lines**

Profile of the edges on control lines. Available only if the outline is represented in 3D. If the profile is disabled, control lines are represented as simple lines and will not appear on rendered images.

**Material of Control Lines**

Surface material of the profile of the edges on control lines.

**Profile of Gridlines**

Profile of the edges on gridlines. Available only if the mesh is represented in 3D. If the profile is disabled, gridlines are represented as simple lines and will not appear on rendered images.

**Material of Gridlines**

Surface material of the profile of the edges on gridlines.

**Profile of Cables**

Profile of the edges on cables. If the profile is disabled, cables are represented as simple lines and will not appear on rendered images.

**Material of Cables**

Surface material of the profile of the edges on cables.

**Use Low Resolution Profiles**

Use Low Resolution Profiles for cables, gridlines, outline edges and control lines. If disabled, the default resolution will be used while generating the 3D model.

## 10.17. Surveyed room

### Introduction

You can use the survey function of ARCHLine.XP to draw up the reconstruction drawings of old buildings.

In ARCHLine.XP a surveyed room refers to an architectural unit and the walls are actually the areas between the different rooms.

This group of commands can be very useful if you want to make an exact plot of an "irregular" area with many corners and distorted angles.

You can start the planning with a traditional on-the-spot survey. It is difficult to measure the angle of the walls so you have to measure the length of the sides and diagonals in the room to be reconstructed instead. You can calculate the accurate geometry of the rooms using these parameters.

You can also use the surveyed room command for the conversion of old hand made plans. You do not have to do the on-the-spot survey in an already existing building if you have a handmade plan with recesses and walls of special structure or different width available as a raster image.

After the calibration (true-to-scale conversion) of the drawing you can redraw each room. In this case you do not need to use diagonal measuring, the true-to-scale plan is sufficient for the editing. You have to define the rooms as well as the outer wall, as the rooms and the areas between the rooms create the walls of the building.

### 10.17.1. Specifying room properties

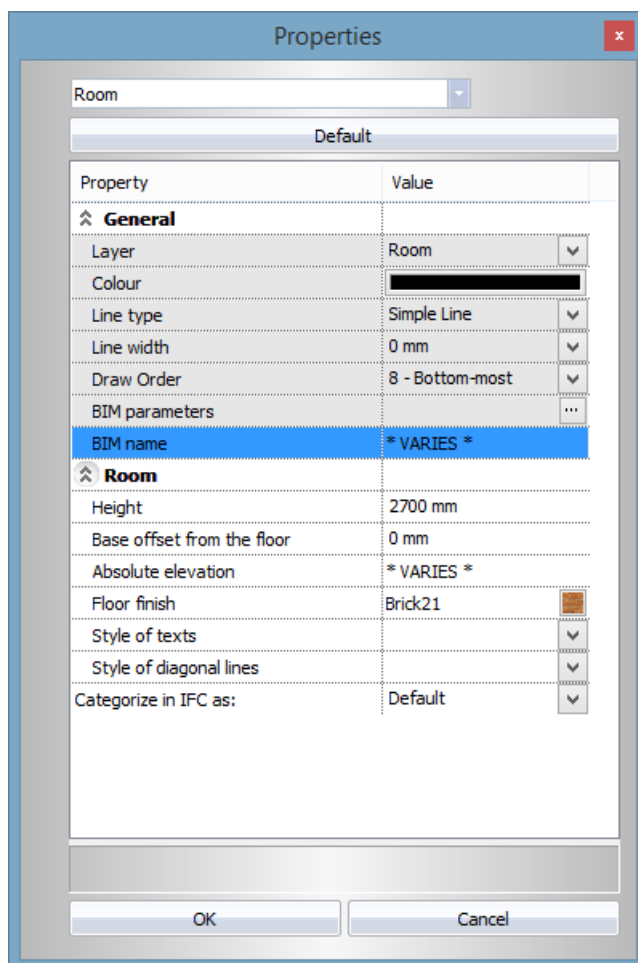
The wall structure of the room surveyed is different from that of the real walls.

You cannot create a layered structure or cannot set the reference line of the wall. The *Room properties* dialog box contains significantly less number of properties than the *Wall properties* dialog box.

Besides, you cannot apply special wall editing functions such as the creation of front view or section profiles.

That is why you are recommended to change the surveyed walls into real walls after finishing the survey.

You can set the general properties of the room with *Building menu – Properties – Surveyed room* command. The following dialog box appears:



Rooms - like any other objects of ARCHLine.XP - have general properties such as colour, layer, and line type and line width.

Further room properties:

- ❖ Height

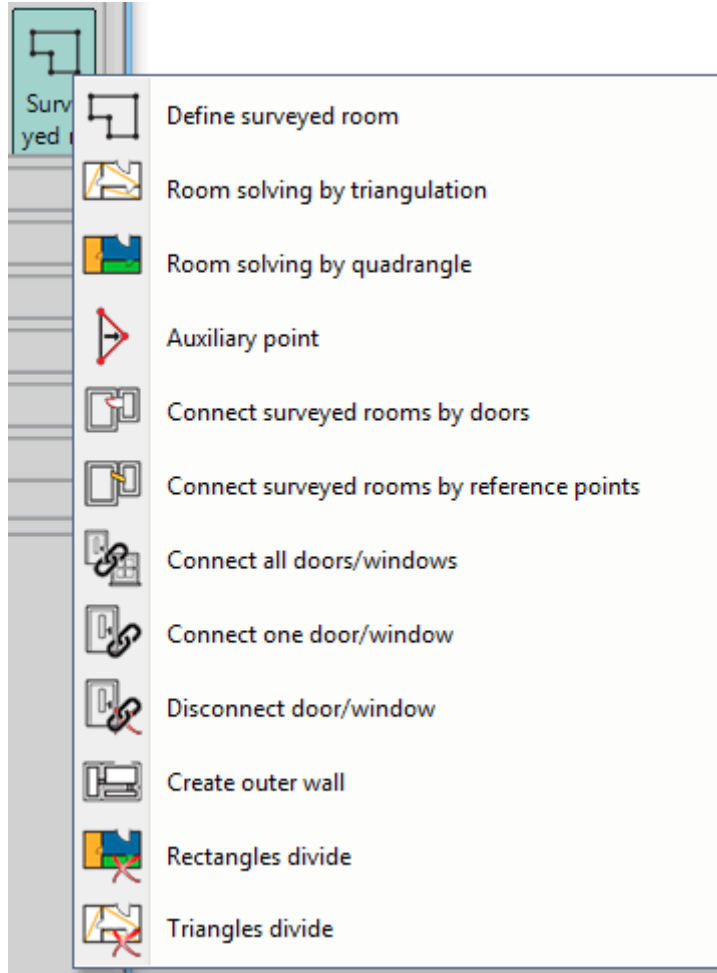
- ❖ Base offset from the floor
- ❖ Wall finish



See 3.2.1 *Specifying general properties.*

### 10.17.2. Surveyed room

The *Building menu – Surveyed room* command group contains the methods used for the on-the-sport survey. The commands follow each other in the usual order of the real surveys.



- ❖ First you can create a new room and draw up its sketch.
- ❖ After drawing up the sketch you can increase the accuracy of the room structure with using diagonal measuring. Drawing the rooms is based on the triangle method. The three sides of the triangle clearly define its real angles and its geometrical shape.
- ❖ You can further modify your sketch by editing the nodes.
- ❖ You can connect the rooms with windows or reference points.
- ❖ You can create outer walls that can be further edited based on the survey data.
- ❖ The walls surveyed can be transformed to real walls after finishing the survey.

Both 2D drawing and 3D modelling are completely integrated in the program.  
When drawing, the program will automatically generate the 3D model of the building.



Room walls are not the same as real Walls.  
Room is a logical unit and room walls exclusively exist in the room itself.  
A real wall is an independent object not related to any room.

#### 10.17.2.1. Creating or selecting a room

This dialog box helps you to create a new room or select one from the already existing rooms.

You can choose between two methods when creating a room:

- ❖ you can select an already existing contour, or
- ❖ you can draw the contour of the room yourself.

### Creating a room with the selection of an already existing contour

- **Click on** the *Select contour* option in the dialog box.
- Specify the name of the room and close the dialog box by clicking on the *OK* button.
- Select the objects of the contour made previously to create a room. When choosing the **CLOSE** option the program will select the polygon closest to the location of where you have clicked on and will use it as a contour.
- You can finish selecting the room wall by pressing the *Enter* button.


**!** If the contour you have specified is not closed or its objects do not intersect each other, the program sends you an error message and will not generate the transformation.

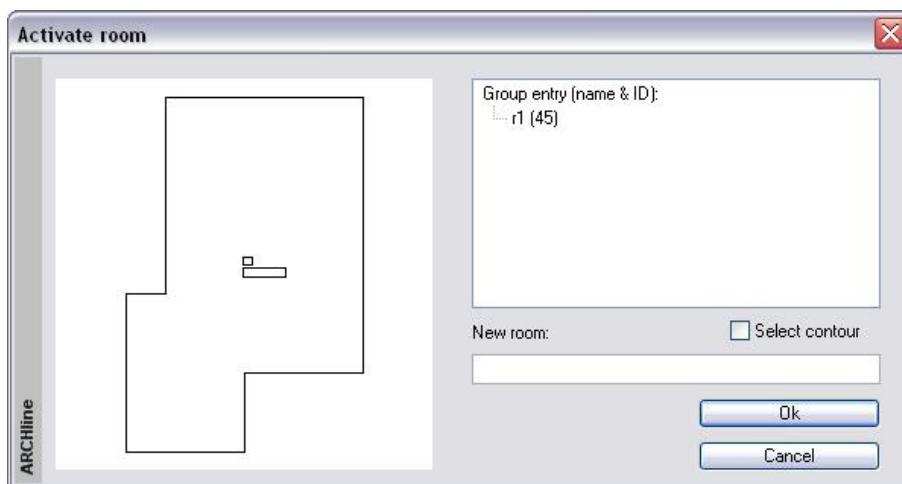
### Specifying a room by editing the contour

- **Turn off** the *Select contour* option.
- Enter the name of the room and close the dialog box by clicking on the *OK* button.
- Draw the contour defining the walls of the new room. The contour can consist of lines and arcs.




For more details see: 8.9. Specifying profile *-polyline* chapter.

- When pressing the *Enter* button the program will automatically close the line chain of the walls, however, the walls cannot intersect each other.
- After created the room, click on the  *Select/deselect room* icon. The dialog box list the rooms:



### Room name and area

After the specification of the contour the program will automatically indicate the name of the room and its area in the geometrical centre of the room.

If you do not need the indication of the name of the room and its area, click on the  *Undo* button in the *Reference* toolbar.

The area measuring is associative; consequently, if you change the contour of the room the number indicating the area will be automatically changed.

You can modify the room name by the *Shortcut menu - Edit - Rename* command.

### Selecting or activating a room

If you want to modify the text (name, area) indicated in the existing room you have to activate the room. Select the room name from the list in the dialog box. The *New room* field remains empty. When closing the dialog box by clicking on the **OK** button the selected room is activated. Now you can modify the text and its position.

 You can use the combination of **Ctrl+T** buttons for the same purpose. Press the buttons to select a new active room.

### Deactivating a room

If you have an active room you cannot access the other rooms. After you have completed modifying the text of the room, you have to return to the level of the other rooms:

- Use the combination of the **Ctrl+T** buttons.

- Select the **TOP** option

**Options:**

<b>TOP</b>	Closes the activated group and returns to the top level.
<b>BACK</b>	Closes the activated group and moves one level back.



You can also use *Tools - Deactivate* command to deactivate a room.

**10.17.2.2. Diagonal measuring**

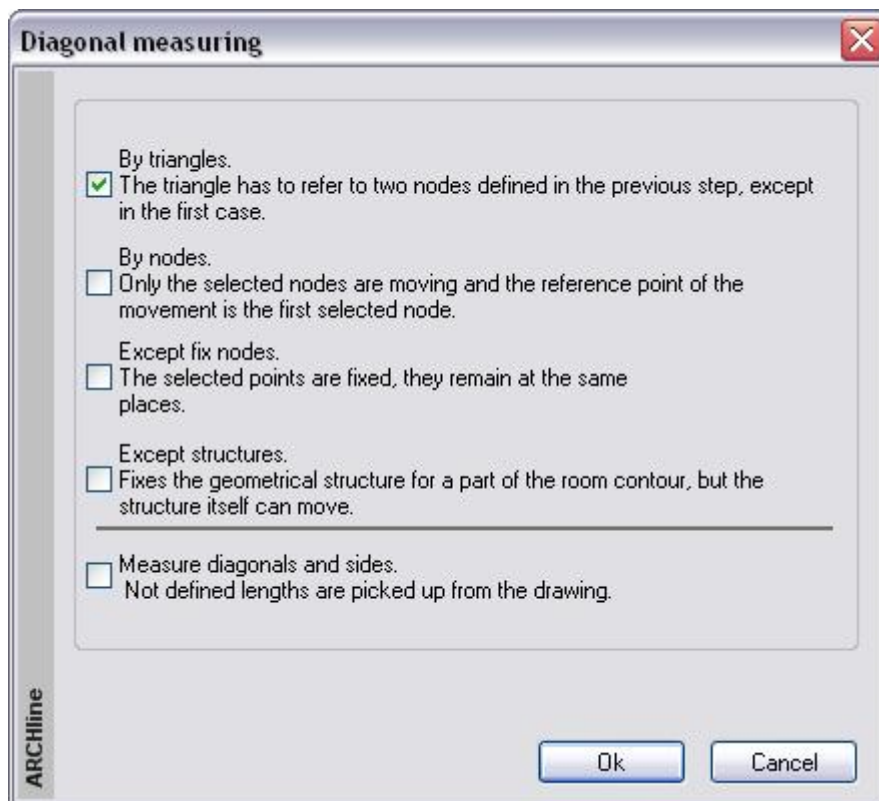
After drawing the sketch of the room you can measure the room diagonals to finalize the shape of the room.

You have several methods available in ARCHLine.XP to define the appropriate angles of the room. You can apply more than one method in the same room.

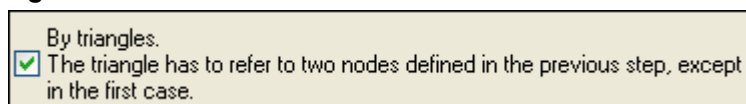


You have to specify the basic shape of the room and the minimum number of diagonals - usually  $n-3$ ,  $n$  referring to the number of the sides of the room - to draw a room. If the number of diagonals exceeds  $n-3$ , the room will be „over defined“.

When you select the command, the following dialog box appears:



- Select the most suitable method.  
You can select from the following methods:

**By triangles**

If you want to specify the length of the sides and the diagonals in succession, you have to divide the room into triangles. This single method will enable you to modify the shape of the room step by step.

In other words, this method will use triangles for the measuring, so you have to fix two vertices of the triangle previously. (The level of freedom of the succeeding triangle can be only one.) In the case of the first triangle, however, you do not need to fix the vertices in advance.

- Define the contour of the room to be modified.

*Fixing the first side or diagonal:*



- Define a wall node to be the basis point. The basis point keeps its position and the next point is measured from it. (*point 1*)

**Options:**

<b>MOVENODE</b>	Replaces the wall node defined by clicking on it to the preferred position. The basis point and the newly defined wall node create a wall section. This is the only way to define the position of the second wall node.
<b>ENTER</b>	<ul style="list-style-type: none"> <li>You can select another basis point instead of the previous one.</li> </ul>

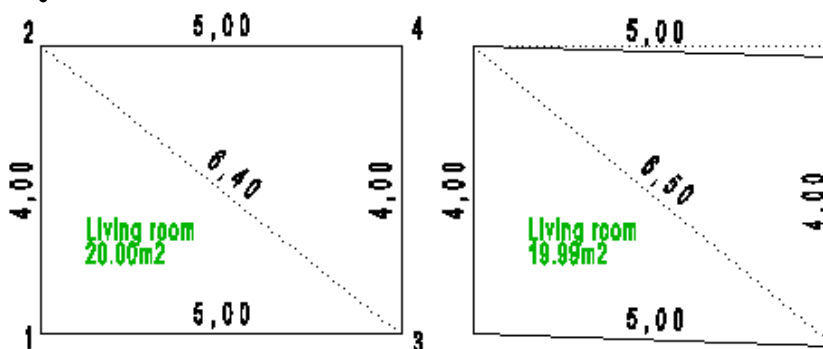
- Define the opposite point of the diagonal, which can be the wall node next to the basis point as well (*point 2*). This point can change its position. The program displays the diagonal between the two wall nodes. The dialog box displays the actual length of the diagonal:
- Select either of the following two options:

<b>Absolute</b>	The new length refers to the full length.
<b>Relative</b>	<ul style="list-style-type: none"> <li>The new length refers to the relative value related to the original length.</li> </ul>

- Enter the new length of the diagonal. Click **OK**  
If you have modified the actual length it means that the point defined for the second time can change its position. You have fixed the basis of the first triangle (by *points 1 and 2*). The program displays the new shape of the room.

## Fixing the first triangle:

- Specify an undefined point to fix the first vertex of the triangle. This vertex can change its position (*point 3*).
- Define the second vertex of the triangle (select either of the already defined vertices, *point 1*).
- The dialog box appears and displays the actual length of the diagonal. Enter the new length. Click **OK**. This way you have defined the first side of the triangle (by *points 3 and 1*).
- Define the third vertex of the triangle by selecting one of the already defined points (*point 2*).
- The dialog box appears and displays the actual length of the diagonal. Enter the new length. This way you have defined the second side of the triangle (by *points 3 and 2*).

**Option:**

<b>ANGLE</b>	You can modify the shape of the triangle by defining the angle. Select the third vertex of the triangle. The program hatches the defined triangle. Select one of the vertices of the triangle and enter its angle.
--------------	--

The program displays the new shape of the room.

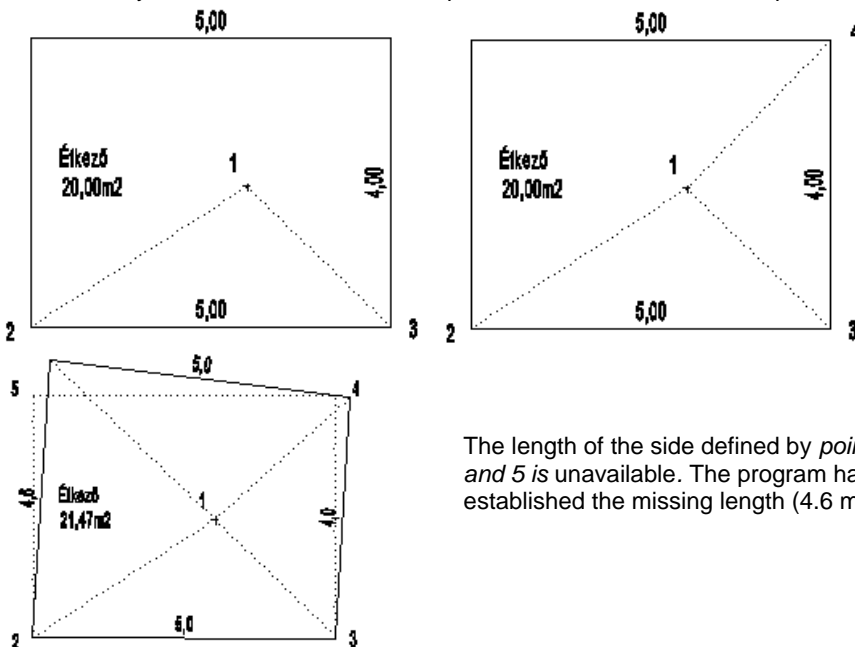
- Define further undefined points to create other triangles:  
The basis of the triangle given in the example is the diagonal defined by *points 2 and 3*. The next (and last) undefined point is point 4. The first side of the second triangle is defined by *points 4 and 3* and its second side is defined by *points 4 and 2*.

**Options:**

<b>BACKWARD</b>	You can undo your previous modifications by the <i>BACWARD</i> option during the algorithm.
<b>FORWARD</b>	<ul style="list-style-type: none"> <li>You can move forward again by the <i>FORWARD</i> option.</li> </ul>

- Press **Enter** to complete the command.  
The *Diagonal measuring* dialog box reappears.

- You can select another method for the reconstruction of the geometry of another room, or Click **Cancel** to exit the command.
- Defining the centre - Using the CPOINT option  
You can use this option when you cannot survey any of the room walls (e.g. because of a furniture object objecting it). Here you have to define a reference point in the real room from where you can measure each corner of the room. From then on you will measure the distance of the corner points in relation to this reference point. You have to measure the length of the other (measurable) sides as well. You will generate triangles again without defining the unknown side. When finishing the algorithm the program will establish the length of the missing side.  
The method is the following:
  - Define the contour of the room to be modified.
  - Click on the **CPOINT** option and define a point to be a reference point. (*point 1*)
  - Select one of the corner points of the room (*point 2*) and enter its distance from the reference point. This way you have defined the basis of the triangle (by *points 1 and 2*).
  - Define another (undefined) corner point (*point 3*) next to point 2 and the previous corner point (*point 2*) as well and enter their distance. This way you have defined the first side of the triangle (by *points 2 and 3*).
  - Select the reference point and enter its distance from the previous corner point. This way you have defined the second side of the triangle (by *points 3 and 1*).
  - The basis of the next triangle is the second side of the first triangle (defined by *points 3 and 1*). Continue the same way and select the next undefined point (*point 4*, then *point 5*) and generate other triangles.
  - When you have no more undefined points, use Enter to finish the specification of the points.



The length of the side defined by *points 2 and 5* is unavailable. The program has established the missing length (4.6 m).

### By nodes

By nodes.
<input checked="" type="checkbox"/> Only the selected nodes are moving and the reference point of the movement is the first selected node.

Disable the *By triangles* option in the dialog box and enable the *By nodes* option.

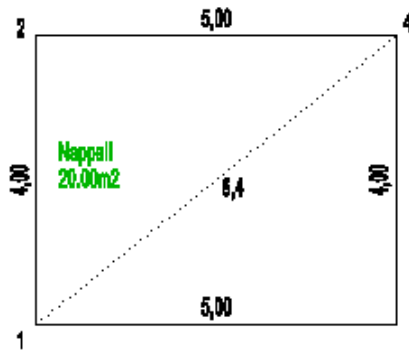
With this method you can move only the previously defined nodes. The first defined node is the reference point of the moving. You do not generate the triangles based on each other. You can have several open triangles at the same time but will have to close them once.

- Define the contour of the room to be modified.
- Select a wall node to be the basis point. The basis point does not change its position. You can measure the sides next to it as well as the diagonals starting from it. (*point 1*)

### Options:

<b>MOVENODE</b>	Replaces the wall node defined by clicking on it to the preferred position. The basis point and the newly defined wall node create a wall section. This is the only way to define the position of the second wall node.
<b>ENTER</b>	<ul style="list-style-type: none"> <li>You can select another basis point instead of the previous one.</li> </ul>

- Define the opposite point of the side or diagonal (*point 2*). This point can change its position. The program displays the side or diagonal between the two wall nodes (*points 1 and 2*). The dialog box displays the actual length of the side or diagonal:
- Select either of the following two options:

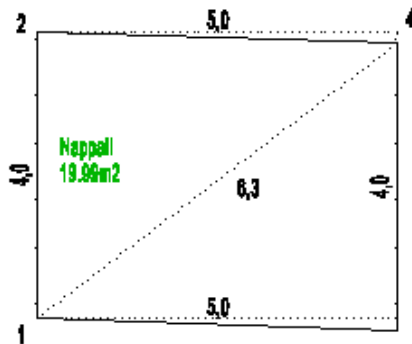


<b>Absolute</b>	The new length refers to the full length.
<b>Relative</b>	<ul style="list-style-type: none"> <li>• The new length refers to the relative value related to the original length.</li> </ul>

- Enter the new length of the diagonal. **OK**
- If you have modified the actual length it means that the point defined for the second time can change its position. The program displays the new shape of the room.
- Specify all the sides that can be measured from the first basis point or the diagonal and specify the lengths (points 3 and 4).  
Press **Enter** to complete the specification of lengths in relation to the first basis point.

Define another basis point from where you can measure the length of sides and the diagonal.

In the example *point 4* becomes the new basis point from where you can measure the length of the sides defined by points 4 and 2 and by points 4 and 3 respectively.



By selecting a new basis point (3rd point) you can establish the length of the diagonal defined by points 3 and 2. This way you will over define the room. In the case of measuring inaccuracy the program offers to start an iteration process for the elimination of the error.



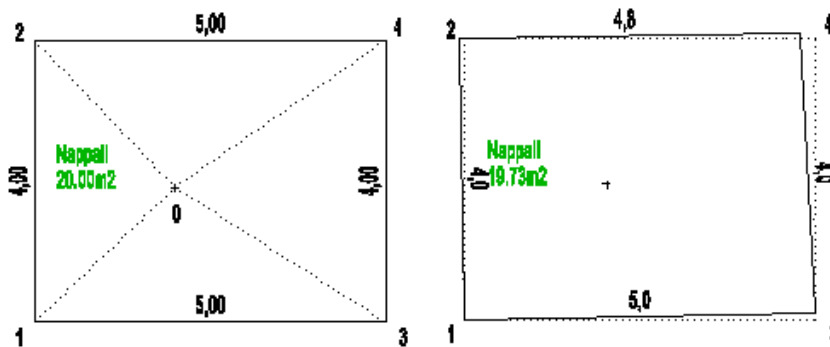
See *Eliminating measuring inaccuracy when using the By nodes method* at the end of the chapter.

The program displays the new shape of the room.

- **Enter** Completes the modification of the room.  
The **Diagonal Measuring** dialog box reappears.
- You can select another method for the reconstruction of the geometry of another room and then click on the **OK** option, or **Cancel** Exits the command.
- Defining the centre - Using the CPOINT option  
You can use the **CPOINT** option here as well, just like in the case of the *triangle* method. Here you have to define a reference point in the real room from where you can measure each corner of the room. From then on you will measure the distance of the corner points in relation to this reference point. You have to measure the length of the other (measurable) sides as well.  
First you enter the distance measured between the reference point and the corner then the lengths of the walls with the exception of the unknown side. When finishing the algorithm the program will establish the length of the missing side.  
The method changes in the following way:
  - Define the contour of the room to be modified.
  - Click on the **CPOINT** option and define a point to be a reference point. (*point 0*)
  - Select one of the corner points of the room (*point 1*) and enter its distance from the reference point. (*Points 0 and 1*).
  - Select all the corner points in succession and enter their distances from the reference point, (*point 2, points 0 and 2, point 3, points 0 and 3, point 4, points 0 and 4*).
  - Use Enter to finish the specification of the distances from the reference point.

- Define a new basis point to establish the length of the sides as well. (*point 1*)  
Define the vertices next to it and their distances from the basis point.  
In the example given the length of the side defined by points 1 and 2, and that of the side defined by points 1 and 3 are established.
- Continue the selection of new basis points until you have defined all the measurable sides. The new basis point is *point 3* and establishes the length of the side defined by the points 3 and 4.
- Use Enter to finish the specification of the points
- Use Enter to finish the specification of the basis points

In the example given the length of the side defined by point 2 and 4 are established.



### Method of Fixed nodes and method of Fix structures

The application of the following two methods are recommended when

- ❖ a certain part of the room has the required size and shape and you do not wish to modify them or
- ❖ the shape of the room is too complex with too many nodes to use diagonal measuring in one step.
- ❖ Use the following algorithm in these cases:
  - ❖ Perform diagonal measuring by nodes for the given part of the room.
  - ❖ Select the **Fixed nodes** or **Fixed structures** option in the dialog box and turn on **By triangles** or **By nodes** option at the same time.
  - ❖ Fix the already accurate nodes or structures.
  - ❖ Perform the diagonal measuring using the triangle or the nodes method for the unfixed nodes of the room.

#### Fixed nodes

<input type="checkbox"/> Except fix nodes. <input checked="" type="checkbox"/> The selected points are fixed, they remain at the same places.
--

You can fix points selected from among the corners of the room. These points will keep their coordinates.

- Besides enabling the Fixed nodes option enable either the **By triangles** or the **By nodes** option as well.
- Select the contour of the room to be modified.
- Select the nodes to be fixed.  
Press **Enter** to complete the selection of the nodes.
- Perform the diagonal measuring with the help of the chosen method for the unfixed nodes of the room as well.

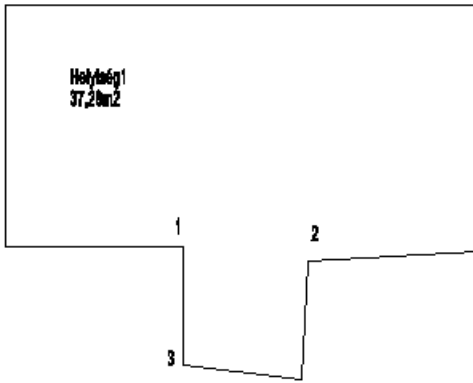
#### Fixed structures

<input type="checkbox"/> Except structures. <input checked="" type="checkbox"/> Fixes the geometrical structure for a part of the room contour, but the structure itself can move.
---

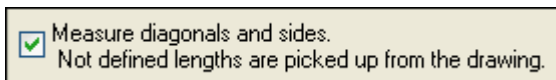
You can fix a previously selected part of the room contour so that the internal nodes of the fixed structure keep their relative position but the structure itself can be moved.

- Enable the *Fixed structures* and either the **By triangles** or the **By nodes** option.
- Select the contour of the room to be modified.  
*Define the structure to be fixed:*
- Select either of the endpoints of the fixed part (point 1).
- Select the other endpoint of the part to be fixed (point 2).
- Select an internal point of the fixed part (point 3.).
- Repeat the commands to fix further structures, or  
Press **Enter** to complete the selection of fixed structures.

- Perform the diagonal measuring for the unfixed nodes of the room using the chosen method (By triangles or By nodes).



### Measuring diagonals and sides

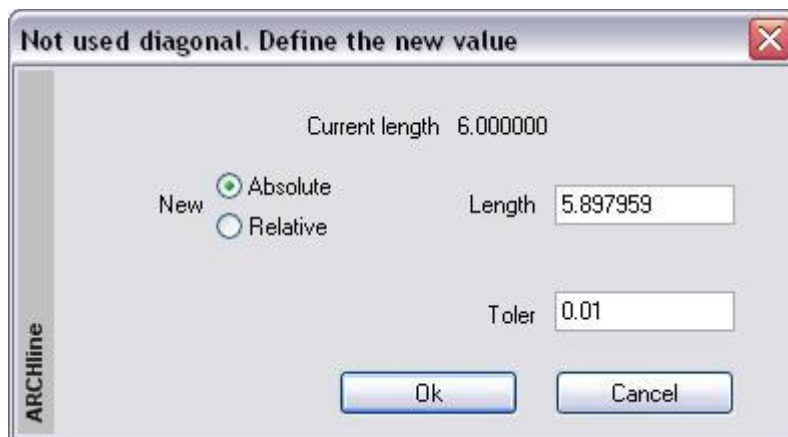


Only the reference point remains fixed. The undefined lengths are picked up from the drawing. You can measure the defined sides by the application of the **By nodes** method.

### Eliminating measuring inaccuracy when using the By nodes method

On-the-spot surveys often lead to inaccuracy. The program offers an iteration method to eliminate this problem. This method is based on the over definition of the room survey. You need to specify at least a number of  $n-3$  diagonals ( $n$  referring to the number of the sides of the room) to define the accurate geometry of a room. If the number of diagonals surveyed exceeds  $n-3$ , the room is over defined.

When applying the survey method the program will indicate the measuring inaccuracy following the specification of the diagonals.



The dialog box offers a tolerance value for acceptance. You can either accept the suggested value or continue the application of the operation for another diagonal.

If you are sure that the specified wall or diagonal length is accurate, you do not need to change it, however, for other walls or diagonals you can set the allowable tolerance value yourself. This method of approach allows for the elimination of inaccuracy with regard to the triangles. The tolerance value of measuring inaccuracy is 1 cm for the survey, so you can create the geometry of the room within the accuracy of 1 cm. In case the tolerance value of 1 cm is not sufficient and the measuring inaccuracy exceeds it, it is recommended to perform the survey of the room in question again. If you do not repeat the survey, you can increase the tolerance value, this way allowing the acceptance of less accurate survey values.

### 10.17.2.3. Move, add, or delete corner point

You can move, add, or delete any selected room node with the help of this icon.

#### Moving a corner point

You can change the position of any corner point in the active room.

#### Adding a corner point

You can add new corner points to the sides of the selected room.

**Option:**

<b>POLYLINE</b>	You can add a polyline as a new part of the room. This is a quick way to insert new wall nodes. You can either use the option or the TAB button for this end.
-----------------	--

**Delete a corner point**

Select the **DELETENODE** option to delete a corner point.

**10.17.2.4. Straight wall - Arc wall**

Using this command you can do the following modifications:

**Arc wall → Straight wall**

- Specify a straight wall to transform it into an arc wall.

**Straight wall → Arc wall**

- Specify a straight wall to be transformed.
- Specify a point. The arc wall will cross this point. You can also select one of the options.
- Press **Enter** to complete the command.

**Options:**

<b>DIAMETER</b>	Value of the diameter
<b>RADIUS</b>	Value of the radius
<b>PERIMETER</b>	Value of the perimeter (arc length)
<b>ARC</b>	Value of the cord height of the arc

**10.17.2.5. Placement of doors**

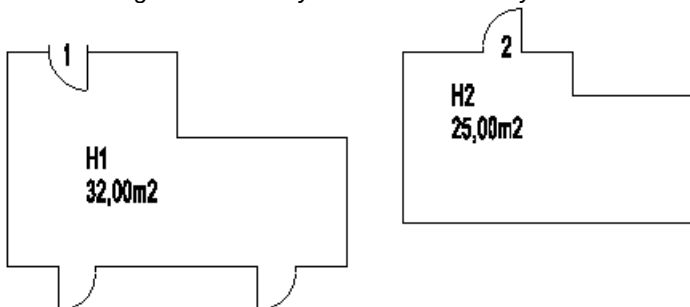
You can use this command to place openings on a point in a distance specified from the wall endpoint. To use this command first you have to specify the type of the opening and its properties.

- Specify a room wall where you wish to place a door.
- Enter the distance between the reference point of the door and the closest node. **OK**.
- Click on the door to specify the opening direction.
- Press **Enter** to complete the modification of the opening direction.
- Press **Enter** to complete the command.

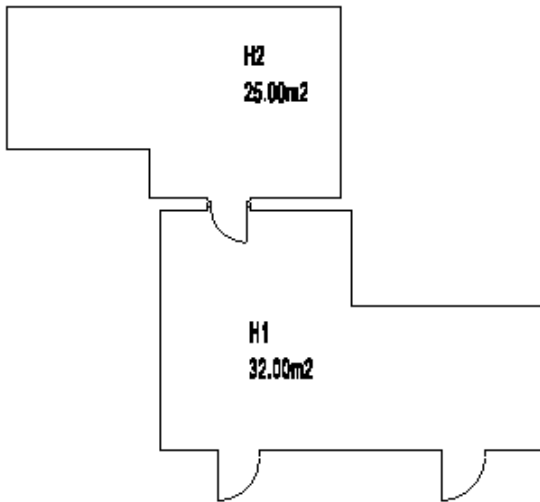
**10.17.2.6. Connecting rooms by doors**


You can connect two rooms by specifying a door in case the wall separating the two rooms has a constant thickness. First you have to place the door in both rooms the same way as they are in reality. You also have to specify the wall thickness. The program will connect the two rooms by the door.

You can also modify the walls separating the rooms subsequently. You can create walls of not constant thickness by moving or adding nodes. The properties of the door connecting the two rooms do not change so you can simply connect the two rooms after the modification of the wall structure. Use the *Room shortcut menu - Connect door/window* command or the *Building menu - Survey – Connect rooms by doors* command.



- Specify a door to connect the two rooms. (*door 1*)
  - Specify the identical door in the other room. (*door 2*)
- Specify wall thickness.  
Press **Enter** to complete the command.

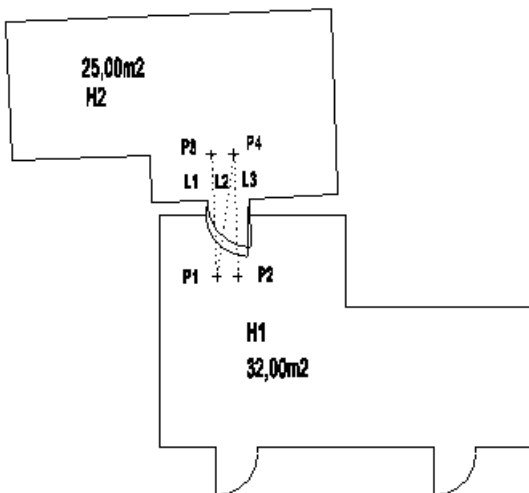


Use  the *Connect rooms by reference points* command if the thickness of the wall separating the rooms is not constant

### 10.17.2.7. Connecting rooms - By reference points

You can use this method of connecting rooms when the thickness of the wall separating the rooms is not constant. To apply this method you need two reference points in both rooms and the distances of the corresponding reference points. You can specify the reference points in the rooms by the *Shortcut menu - Define reference points* command. You also need a door connecting the two rooms through which you can measure the distances of the corresponding reference points.

- Specify a reference point in the room not moving. (P1)
- Specify a reference point in the room moving. (P3)
- Enter the distance of P1 and P3. (L1)
- Specify another reference point in the room moving. (P4)
- Enter the distance of P1 and P3. (L2)
- Specify another reference point in the room not moving. (P2)
- Specify another reference point in the room moving. (P4)  
Enter the distance of P4 and P3 (L3).



The program connects the two rooms.

If you are not satisfied with the result, activate the same command again and you can restart the process of connecting the two rooms.

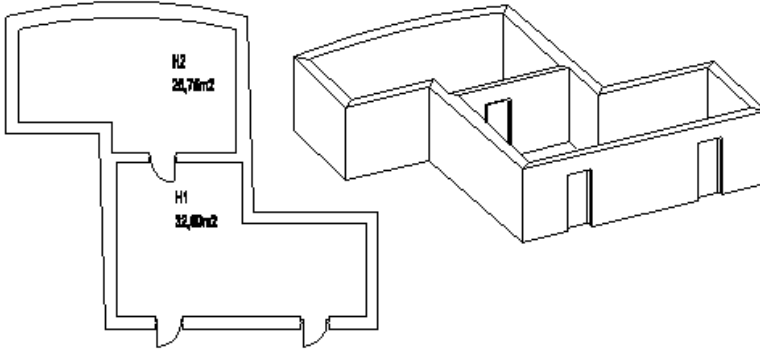
### 10.17.2.8. Creating an outer wall

The program creates an outer contour parallel with the walls, using the value of wall thickness. The result is a special new room called "an outer wall".

If the wall thickness between the different rooms exceeds the double of the distance between the outer contour and the wall the program draws two or more separate outer contours around the rooms. This is when actually the building is created which already has a 3D model.

- Enter wall thickness.

- Specify the room around which an outer wall is to be constructed, or Press **Enter** to specify each wall.

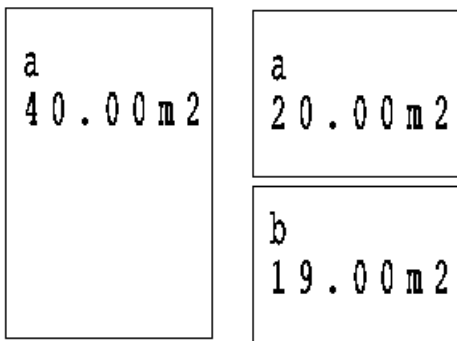


### 10.17.2.9. Dividing a room

You can use this command to divide an active room into two new rooms with a wall of defined thickness. You can also specify the name of the new rooms.

- Enter wall thickness.
- Specify a room.
- Specify the first point of the dividing wall.
- Specify the second point of the dividing wall.
- Enter the name of the new room. Press **Enter**.
- Specify the direction of the text or press the **Enter** button and place the text on the drawing.

**Enter** to complete the command.

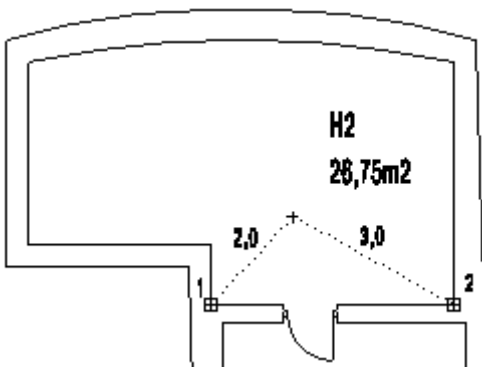


### 10.17.2.10. Defining reference point

When drawing a room you may need some fixed points to serve as general reference points. You can use these reference points when you connect rooms or when you transfer a straight wall into an arc wall. You need special measuring to fix these reference points.

In the case of an existing building with a fixed reference point, survey the distances of the reference point from the two corner points of the wall.

These distances and the distance between the two corner points create a triangle, which helps to clearly establish the reference point on the drawing.



- Select the command from the Shortcut menu.
- Specify the room where you wish to fix a reference point.



- Specify a wall node in the room. (*point 1*)
- Specify another wall node in the room. (*point 2*)  
You can define the reference point as the third vertex of the triangle with the basis line defined by the two wall nodes previously specified. (*by points 1-2*)
- Enter the length of the first side of the triangle. (*2.0 m*)
- Enter the length of the second side of the triangle. (*3.0 m*)

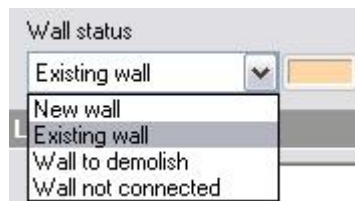
### 10.17.2.11. Transforming into a wall

After asking for the confirmation of the transformation the program transforms each surveyed room into individual walls.

This command is especially important in cases where you would like to continue drawing after the completion of the survey, e.g. you want to connect a new part to the surveyed building. Although the walls of the surveyed building have a few general properties, to individual walls you can apply all the wall editing functions. (You can create a layered wall structure, you can specify both longitude and cross-sections of wall profiles, you can place individual doors or windows on the drawing, or create sills and chamfers, etc.)

You can set the status of the walls of the surveyed building that have been transformed into real walls in the *Wall properties* dialog box:

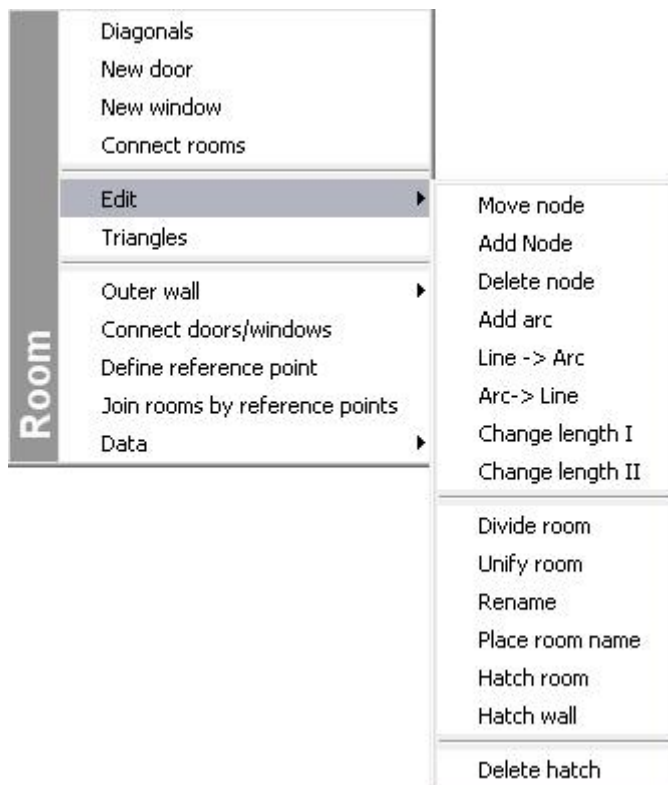
- ❖ **Existing wall**
- ❖ Wall to be demolish



When you renew or expand a building, this option allows you to distinguish between existing walls and walls to be demolished in the plan by applying different colours. Walls to be demolished are not displayed in the 3D view.

### 10.17.3. Edit and modify rooms

You can activate further editing, modifying and other survey-related commands from **Shortcut menu**:



#### 10.17.3.1. Editing - Adding arcs

Using the given radius this command rounds off the selected room corner.

- Specify the room node to be rounded off or select one of the following options:

#### Options:

<b>RADIUS</b>	Modifies the value of the given radius.
---------------	---

<b>DIAMETER</b>	Modifies the value of the given diameter.
-----------------	---

- Enter the new value, and then specify the room corner to be rounded off.

**Enter** Completes the command.

### 10.17.3.2. Editing - Changing length I

You often need to modify the wall length according to the survey results. The program has several methods to accurately establish for example the length of the outer wall in case of an external survey. The first type of *Change length* modifies the length of the specified wall based on the triangle method. In this case the next wall only changes its direction but not its length.

- Click on the side to be modified. The dialog box appears and indicates the original length of the wall.
- Enter the absolute or the relative value of the new length.

**Enter** Completes the command.

### 10.17.3.3. Editing - Changing length II

This command changes the length of the specified wall without changing its direction. The wall next to the specified one follows the moving node and both its length and its direction change.

- Specify the side to be modified. The node closest to the place where you have clicked on will move while the other node will not change its position.

The dialog box shows the original length of the wall.

- Enter the absolute or the relative value of the new length.

**Enter** Completes the command.

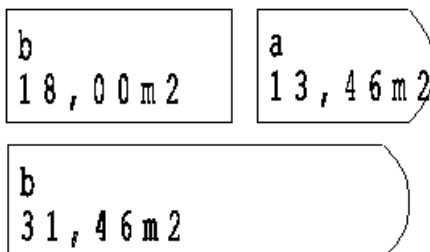
### 10.17.3.4. Editing - Joining

This command joins two rooms by specifying the mutual wall between them. The length of the mutual wall must be the same on both sides.

The command joins the two rooms together to be one. The names and areas of the rooms as well as the doors or windows - if there are any - are transformed accordingly. The name of the new room keeps the name of the first room.

- Specify the side of the first room to be joined to the adjoining room.
- Specify the appropriate side of the second room.

The command unites the two walls.



### 10.17.3.5. Editing - Renaming

This command renames the specified room.

- Select the name of the room from the list in the dialog box.
- Enter the new name in the name field. **OK**.

### 10.17.3.6. Editing- Placement of the name

This command places the indication of the name of the room to the required position.

- Specify a room to replace its name. Select the **AREA** option if you want to move the indication of the room name together with the indication of its area.
- Specify the direction of the text and press the **Enter** button. Place the text onto the drawing. You can also select any of the options.

#### Options:

<b>Tab</b>	Press Tab to pick up an object angle.
<b>POPMENU</b>	Select one of the options in the <b>Text specification pop menu</b> to define the direction of the text.

**Enter** Does not change the position of the text on the drawing.  
**Enter** Completes the command.

### 10.17.3.7. Editing - Room hatching

This command applies a special hatch pattern to the specified room by applying the given hatching properties. The walls are automatically considered to be the boundary of the new hatch area.

- Specify a room.  
**Enter** Quits the command.

### 10.17.3.8. Editing - Wall hatching

This command automatically applies a hatch pattern to each wall by applying the given hatching properties.



You can activate the specified room by the *Ctrl+T* button combination. You can modify the properties of the active room (wall) by clicking twice on its hatch pattern. After the modifications use the *Tools - Deactivate* command.

### 10.17.3.9. Editing - Delete hatching

This command deletes the hatch pattern of a specified room/wall.

- Specify a room/wall to delete its hatch pattern.  
**Enter** Completes the command.

### 10.17.3.10. Creating an outer wall by selection

You can transform an existing profile into the outer contour of a room.

First you have to draw a closed profile around the room using any of the *Line*, *Polyline*, or *Arc* 2D drawing objects. The *Create outer wall by selection* command can transform this shape into an outer wall. An error message is displayed if the contour line is not closed or its sections intersect and the transformation is not performed.

- Select each object of an already existing profile or select the **CHAIN** option to specify an already existing chain. Press **Enter** to finish the specification,  
or
- Press the **Enter** button and draw the outer contour directly, using lines and arcs. Press **Enter** to close the contour.

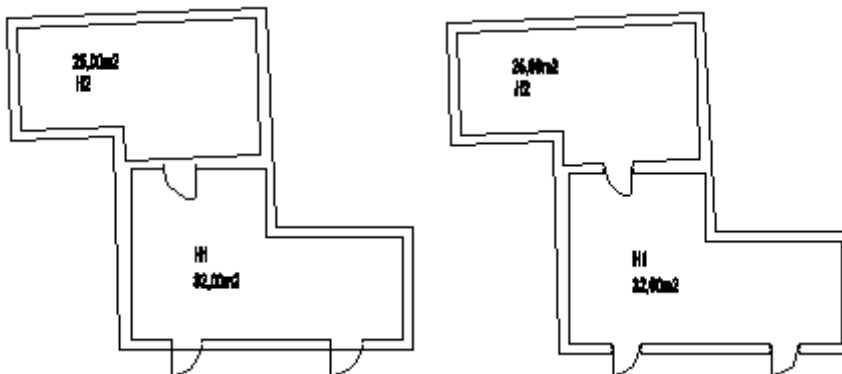
### 10.17.3.11. Connecting doors or/and windows

With the following commands you can connect doors or windows to the room or disconnect them from the specified walls. You can also use these commands if you have unconnected doors or windows in the room, however, you wish to create an outer wall.



### 10.17.3.12. Connecting doors or/and windows - Connecting all the doors or/and windows

After connecting the rooms and drawing the outer contour of the building you can connect the doors and the windows to the outer side of the wall. This command automatically connects each door and window to the wall.



### 10.17.3.13. Connecting doors or/and windows - Connecting one door or window

This command connects the selected door or window to the wall.

### 10.17.3.14. Specify a door or a window to be connected to the wall.

**Enter** Completes the command.

### 10.17.3.15. Connecting doors or/and windows - Disconnecting one door or window

This command disconnects the specified door or window from the dividing wall or from the outer wall.

- Specify a door or a window to be disconnected from the other wall.  
**Enter** Completes the command.

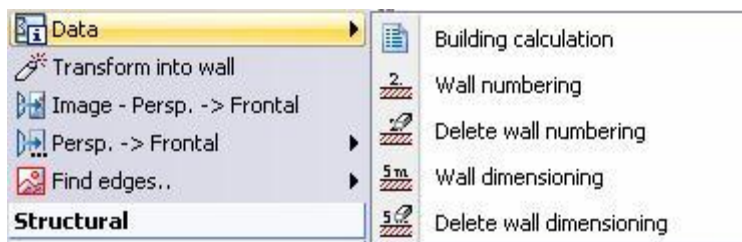
### 10.17.3.16. New window

You can place a new window in the surveyed building in a distance specified from the corner point of the wall. First you have to select the appropriate window type in the **Window properties** dialog box. You can move the selected window to the required position with the command in the **Shortcut menu**.

### 10.17.3.17. Data

It is very important to be able to query the survey data when drawing the survey plan.

- Both *Toolbox – Reconstruction tool – Data - Building calculation* command and *Add-On menu - Quantity Take-Off - Building calculation* command displays the same dialog box.
- The **Wall numbering** command facilitates the use of the list by making it possible to clearly identify the values of the list.
- The **Wall dimensioning** command is a quick way to see the length of the walls.
- After application you can also delete wall dimensioning.



### 10.17.3.18. Data - Building calculation

The program creates two types of lists.

The first list contains the values of the rooms in the drawing, that is: room name, floor name, room area, room capacity, and room perimeter, the size of the surface to be illuminated and its proportion to the total wall surface, and the total area of the rooms.

Szintek	ID	Név	Terület	Magasság	Térfogat	Kerület	Bevilágított terület	Arány
0	1	sz1	36.36	2.7	98.173	27.669	1.53	0.0421
0	10	sz2	27.251	2.7	73.577	21.065	0	0
0	79	Külös fal	79.488	2.7	214.618	39.764	0	0
Summa			83.611		171.75	48.734	1.53	

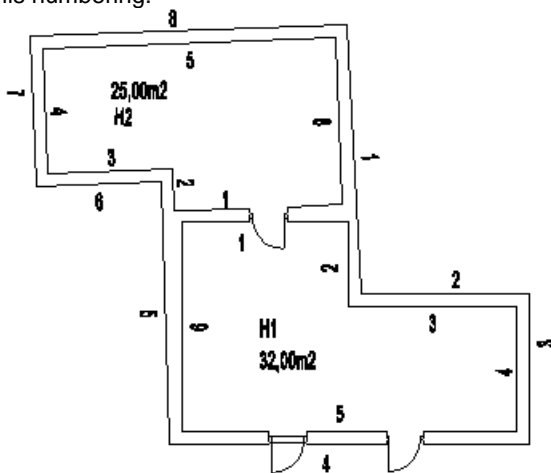
The detailed list displays the values related to each wall in each room, that is: wall numbering, wall height, wall length, and gross and net wall surface. The gross wall surface consists of the net wall surface and the area of the openings.

Külös fal	ID	Magasság	Hosszúság	Brut. terület	Net. terület
	Fa1	2.7	5.289	14.307	14.307
	Fa2	2.7	6.387	17.246	17.246
	Fa3	2.7	12.328	33.281	31.619
	Fa4	2.7	4.493	12.132	12.132
	Fa5	2.7	3.469	9.34	9.34
	Fa6	2.7	2.935	7.926	7.926
	Fa7	2.7	3.62	9.776	9.776
	Fa8	2.7	1.243	3.357	3.357
	Összeg:		38.764	107.384	105.801
sz2	ID	Magasság	Hosszúság	Brut. terület	Net. terület
	Fa1	2.7	5.924	15.996	13.788
	Fa2	2.7	5.225	14.107	14.107
	Fa3	2.7	5.645	15.242	15.242
	Fa4	2.7	4.271	11.532	11.532
	Összeg:		21.065	56.877	54.679

These lists can be displayed in the drawing area, as well as printed, or exported into Word or Excel.

### 10.17.3.19. Data - Wall numbering

This command numbers the outer and inner walls. The objects are displayed in the lists of building calculation according to this numbering.

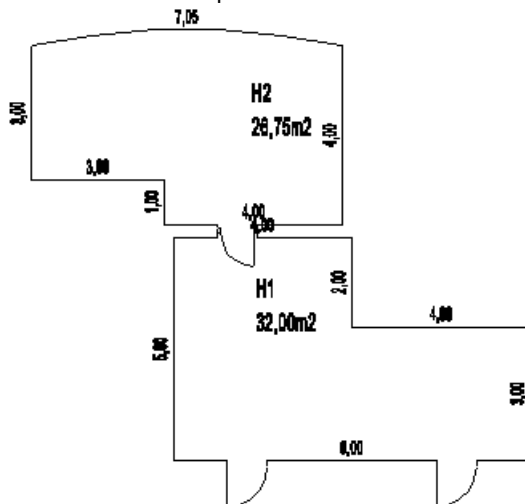


### 10.17.3.20. Data - Deleting wall numbering

This command deletes the numbering of the wall in the drawing.

### 10.17.3.21. Data - Wall dimensioning

This command automatically measures the length of each wall in each surveyed room to facilitate dimensioning. The values are indicated parallel to the walls.



### 10.17.3.22. Data - Delete wall dimensioning

This command deletes all the indicated values in the surveyed room.

## 10.18. Point clouds

Point clouds are made with laser scanners to capture building and environment dimensions.

ARCHLine.XP imports widely known point cloud formats to support building survey and in the long-term place any particular objects.

The Point cloud can be displayed in its real size on the 3D model and at the same time it creates its top view on the 2D layout.

Location of the command: Building – Point cloud – Import

#### Attach Point cloud to a project

Point clouds can be attached to a project like other external references (xref).

During import the factors of the scale can be modified so the Point cloud is modified automatically according to the modified scale factor.

#### Point cloud editing

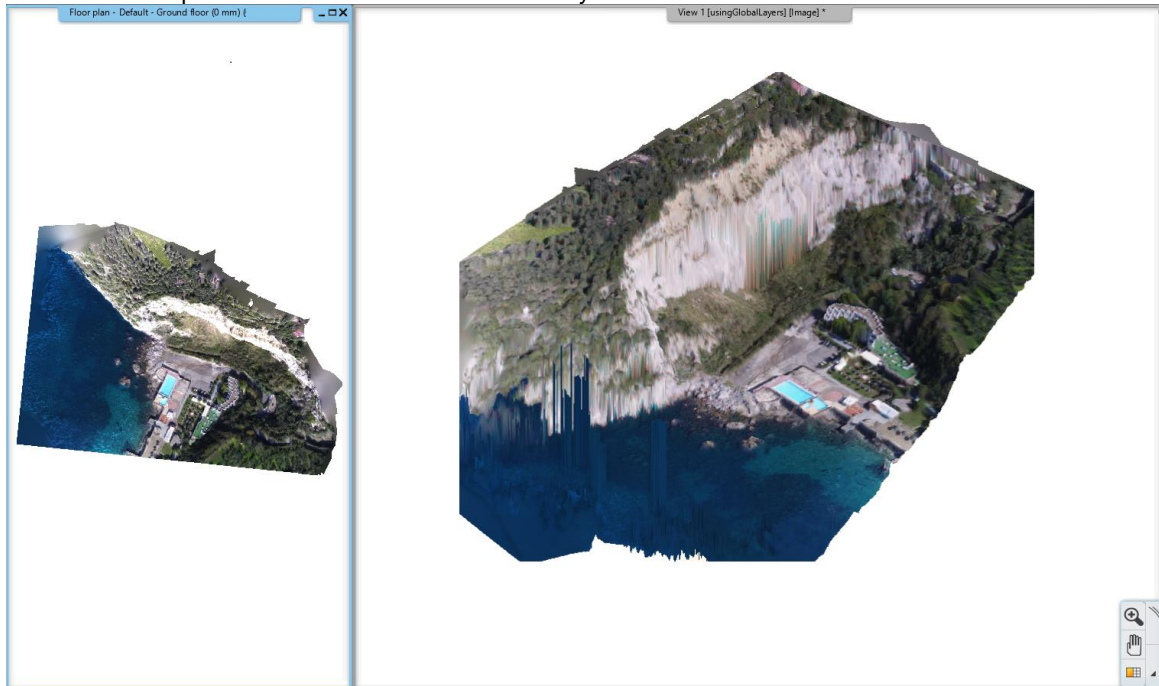
By wiping out the parts of the Point cloud that are unnecessary for the design the 3D display can be narrowed to important parts.

### Modelling in 3D

Using the 3D section box command a surface of the Point cloud can be set as new work plane.

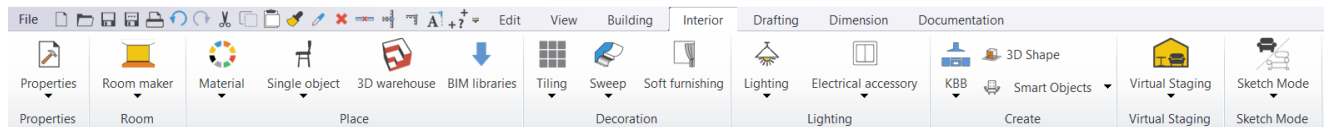
After that new walls can be added directly in the 3D View.

With the 3D Shape tool 3D forms can be drawn directly on the 3D surface which can be edited in 3D.



## 11. Interior Tools

*ARCHLine.XP* gathers all interior tools on Interior tab.

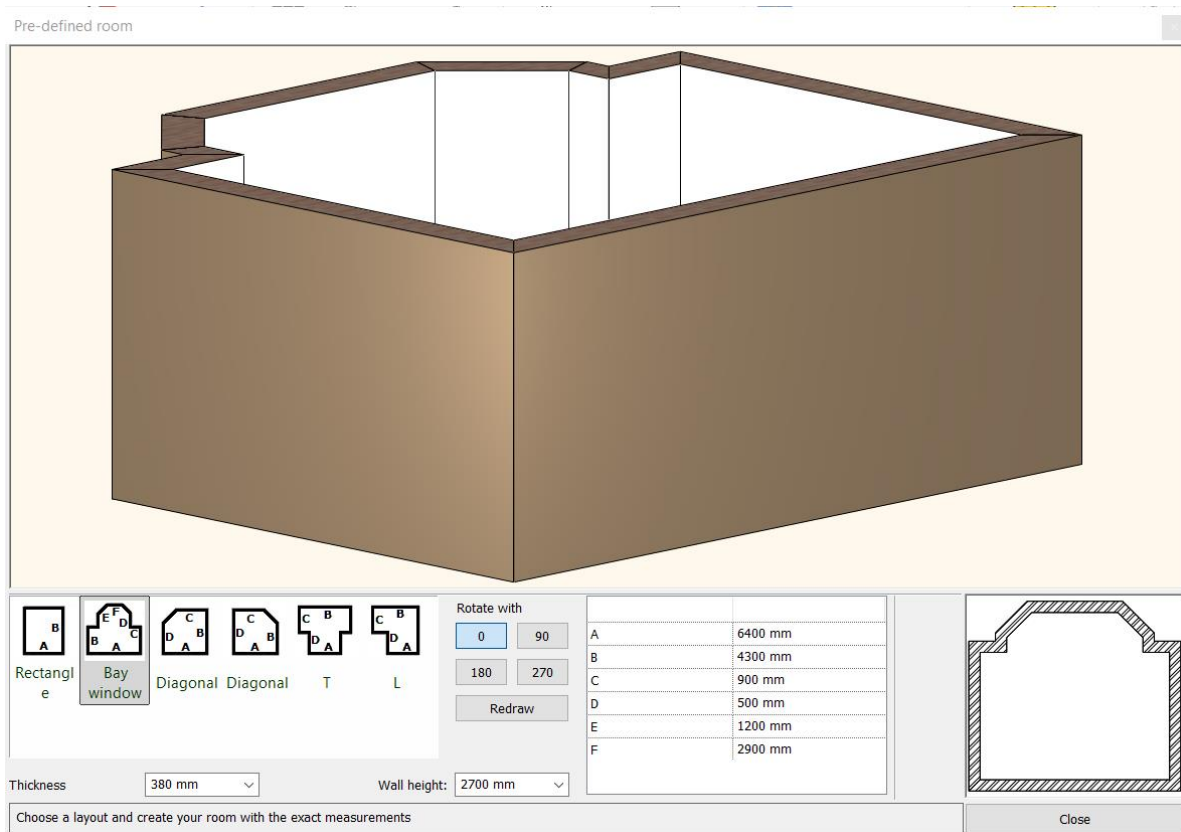


Indoor module contains the following tools:

- ❖ Pre-defined rooms
- ❖ Room Maker
- ❖ Material
- ❖ Objects
- ❖ Tiling
- ❖ Sweep
- ❖ Soft furnishing
- ❖ Lighting
- ❖ Electrical accessories
- ❖ KBB, Moulding
- ❖ Virtual Staging
- ❖ Sketch Mode

### 11.1. Pre-defined room

The Pre-defined room tool helps to choose among pre-defined room shapes with exact measurements. It makes easier to place a room on the drawing simply by giving the side lengths numerically.



You can select one of the following room shapes:

- ❖ Rectangle room
- ❖ Bay window room
- ❖ Diagonal room
- ❖ T-shaped room
- ❖ L-shaped room

#### **How to use the Pre-defined room tool?**

- ❖ Choose the appropriate shape and type the side length values.
- ❖ Set the room orientation (0, 90, 180, 270 degree).
- ❖ Change the wall Thickness and Wall height if you want.
- ❖ Press Redraw to see the changes on the 2D and 3D previews.
- ❖ Press the Close button.
- ❖ When the dialog is closed place the room shape on your drawing with the mouse.

The Pre-defined room dialog has a few controls that you can use to customize a selected room shape.

#### **Pre-defined Room shapes**

The room shapes list contains the list of room shapes that you can create with the tool.

The tiny thumbnails also contain letters to help you to understand the values that can be changed in the Room sizes list.

#### **Rotation**

You can rotate the chosen room shape by setting up the rotation.

#### **Redraw button**

Most of the changes in the dialog won't be reflected on the preview contents automatically. Please press Redraw any time you want to see the changes you made in the dialog.

#### **Thickness**

The wall thickness can be defined for all walls of the current room.

#### **Wall height**

The wall height can be defined for all walls of the current room.

## Room sizes

The Room sizes list shows a list of lengths that can be changed in the current room. Each length has a letter which helps to understand their relation to the sides of the room. Check the selected thumbnail to locate the value that you would like to change.

## 3D preview

The 3D preview is an active 3D content. It shows the current model of the room based on the changes you make. If you cannot see the changes, please press the Redraw button to update the model.

You can also rotate the 3D preview content to check the model from any directions. To rotate the 3D preview content just click and drag the 3D model and move your mouse. When finished release the mouse button.

## 2D preview

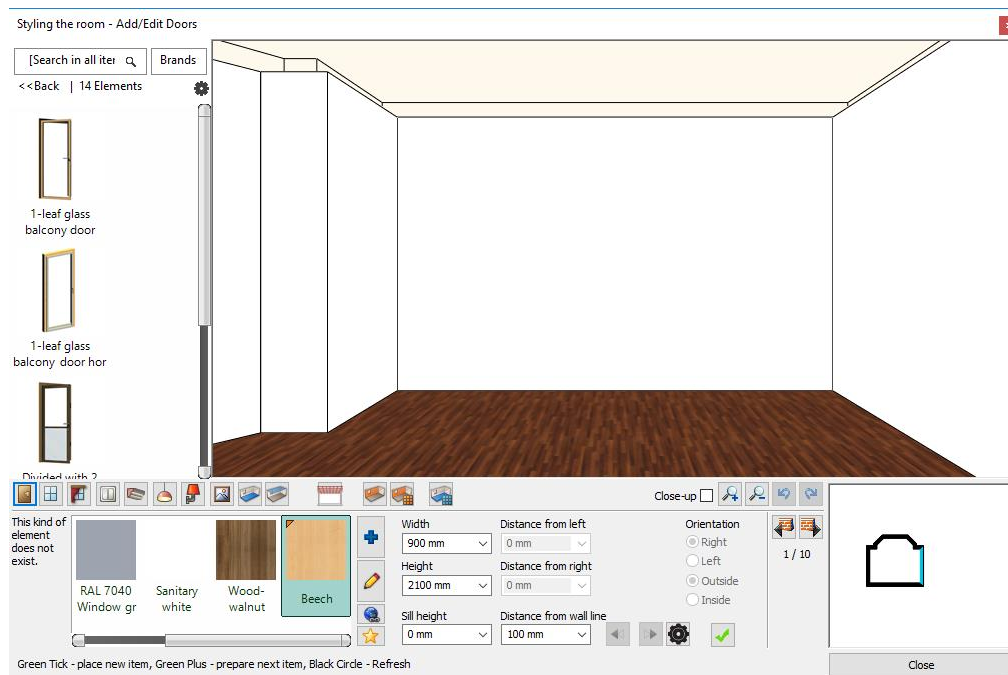
The 2D preview shows the current 2D representation of the selected room. Use the Redraw button to update the preview if necessary.

## 11.2. Room Maker

Room Maker is an all-in-one design tool that highly speeds up the interior design starting from an empty room. Starting from walls that form the room, Room Maker allows you to create your room details as you want it - every step of the way. Place doors and windows then add your choice of objects and decorate the room to your satisfaction

You can use Room Maker to detail an existing room whether it was created by using the Pre-designed Room Shapes tool or you designed a free-style room on your own.

When you start the Room Maker, the software will ask you to click into a closed room. When you do so, the software will open the Room Maker dialog.



The Room Maker dialog window is built up of 3 main parts. These are the 3D view content, the controllers and the properties.

### How to use the Room Maker?

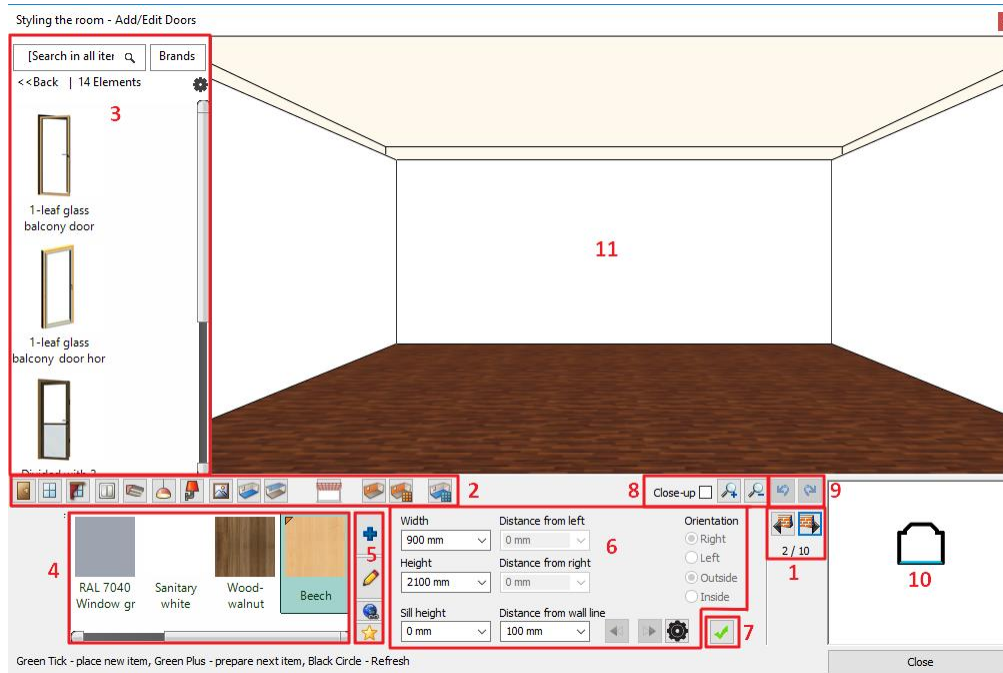
Room Maker provides many opportunities to work inside the room. It is designed to be self-explanatory and easy to learn. However you might find the following method useful.

- ❖ Start the Room Maker tool.
- ❖ Click into a closed room shape on your drawing.
- ❖ Select a Tool from the toolbar.
- ❖ Prepare an object – set the type, material and settings of it.
- ❖ Create the object by pressing the Insert new button.

You can add as many details and new objects using the Room Maker as you wish. Click Close to close Room Maker. You can start Room Maker at any time later to continue editing the room again.



## The Room Maker Interface



The interface of ARCHLine.XP Room Maker is built up of the following main parts and controllers.

1. Wall finder
2. Toolbar
3. Library
4. Texture finder
5. Other types, Edit type, Internet browser, Create new
6. Properties
7. Add new object
8. Zooming
9. Undo / redo
10. Floor plan
11. 3D view

### 11.2.1.1. Main controllers

#### Wall finder

The room will turn to the left or right wall and display it in frontal view. You can work on this wall or some cases on floor or ceiling.



#### Toolbar

The toolbar is the container of Room Maker's interior design tools. One of them is always active and Room Maker works with the selected one.



For example when you would like to add or edit a door, simply just click on the Door object button.

#### Library

It enables to select a type from the library. It is only seen when the Door, Window, Electrical accessories or False Ceiling panel is active. Otherwise you will see the Type finder (discussed below)

#### Type finder

It enables to see the *last used types* in the Favourites box.



The type finder shows different icons based on the actual context. For example when you are working with the Picture on wall, the type finder will button will show a door icon.

### Texture finder

It enables to see the *last used textures* in the Favourites box.



There are some cases when you can modify multiple materials of an object. In that case you will see multiple Texture finder buttons.

### Favourites

You see here the last used types or textures. The following example shows the Picture on wall favourites list.



### Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.



### Edit current

The current selected material can be edited by using this button.



### Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.






### Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.



### Properties

These values are used when you insert a new object or modify it. The following example shows the door properties dialog with the Insert new button.

Width 0.9 m	Distance from left 0 m	Orientation <input checked="" type="radio"/> Right
Height 2.1 m	Distance from right 0 m	<input type="radio"/> Left
Sill height: 0 m	Manual move  	<input checked="" type="radio"/> Outside
		<input type="radio"/> Inside
		

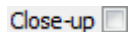
### Insert new

You can insert a new object with a click on the Green Tick.



### Zoom

Zoom in or zoom out the 3D view. In order to centre the view of the selected object enable the Close-up checkbox.



### Undo / redo

The Undo button deletes the last change done by reverting it to the older state. The Redo button reverts the effects of the undo. You can undo and redo up to 16 actions.



### Floor plan

The floor plan that focuses on the selected object (highlighted)

### 3D view

The 3D view is the three dimensional view facing to the selected wall / floor.

## 11.2.1.2. Additional controllers

### Prepare new

The “Prepare new” button appears in cases when an object of the current type already exists on the wall and there is the possibility to add more. This button appears on the left side of a panel.



### Remove actual

The “Remove actual” button appears in cases when an object of the current type already exists on the wall and there is the possibility to remove it. This button appears on the left side of a panel.



### Object index










The object index list appears at the left side of an object panel on top of the Prepare new / Remove actual buttons. It consists of two numbers separated by a “/” mark. The first number is the sequence number of the current object. The second number is the total amount of the available objects on the current wall.

### Edit

In cases when you have the possibility to edit the current object in the Favourites list you can use the Edit button to do so.

## 11.2.1.3. Door Panel

The Door panel allows you to place or modify a door in the room. Click on the Door panel button to see the properties.

This kind of element does not exist.						Width 900 mm	Distance from left 0 mm	Orientation <input checked="" type="radio"/> Right
						Height 2100 mm	Distance from right 0 mm	<input type="radio"/> Left
						Sill height 0 mm	Distance from wall line 100 mm	<input checked="" type="radio"/> Outside
								<input type="radio"/> Inside
								   

## Door properties

### Width

You can type the width of the selected door. You can also use the small arrow to select from template sizes.

### Height

You can type the height of the selected door. You can also use the small arrow to select from template sizes.

### Sill height

You can type the sill height of the selected door. You can also use the small arrow to select from template sizes.

### Distance from left or right

Use the Distance from left or the Distance from right option to set the door position in a wall measured from the closest left or right wall corner. When you change a value the corresponding other will be updated.

### Distance from wall line

Use the distance from wall line option to determine the distance measured from the reference line of the wall.

### Manual move buttons

Use the manual move buttons to move the door in the wall by little steps to the left or to the right.

### Orientation

The Orientation options help you to set the orientation of the opening on the 2D and in the 3D content.

### How to add a door?

- Select a wall with Wall finder.
- Select a door type from the library and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the door in the wall centre point

### How to add more doors to one wall?

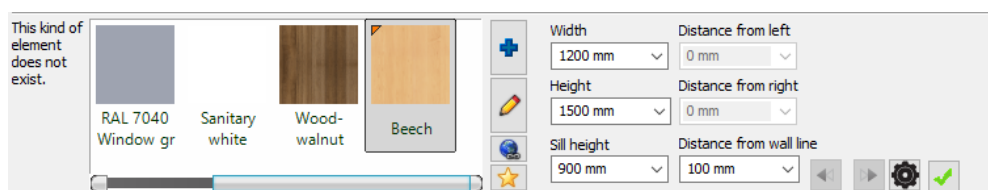
- Press the Green Plus first to prepare the next door on the same wall.
- Select a door type from the library and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the door in the wall.

### How to modify an existing door?

- Navigate to the wall which contains the door that you would like to modify
- Click on the door in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

## 11.2.1.4. Window Panel

The Window Panel allows you to add windows into walls.



### Window properties

#### Width

You can type the width of the selected window. You can also use the small arrow to select from template sizes.

#### Height

You can type the height of the selected window. You can also use the small arrow to select from template sizes.

#### Sill height

You can type the sill height of the selected window. You can also use the small arrow to select from template sizes.

#### Distance from left or right

Use the Distance from left or the Distance from right option to set the window position in a wall measured from the closest left or right wall corner. When you change a value the corresponding other will be updated.

### Manual

**Distance from wall line**

Use the distance from wall line option to determine the distance measured from the reference line of the wall.

**Manual move buttons**

Use the manual move buttons to move the window in the wall by little steps to the left or to the right.

**How to add a window?**

- Select a wall with Wall finder.
- Select a window type from the library and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the window in the wall centre point

**How to add more windows to one wall?**

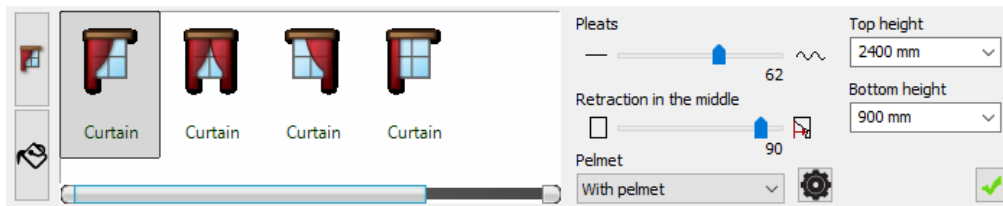
- Press the Green Plus first to prepare the next window on the same wall.
- Select a window type from the library and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the window in the wall.

**How to modify an existing window?**

- Navigate to the wall which contains the window that you would like to modify.
- Click on the window in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

**11.2.1.5. Soft Furnishing Panel**

The Soft Furnishing Panel contains a set of different soft furnishing objects and their customizable settings.

**Soft Furnishing Properties****Pleats**

When using curtains you can set the waves of the surface to be smooth or wavy. Use the slider to set the desired shape.

**Retraction in the middle**

Retraction in the middle opens or closes a curtain. Use the slider to open or close the curtain.

**Pelmet**

The Pelmet option allows you to turn on or off a pelmet for the current sun shade or curtain.

**Top height**

Top height allows you to change the top height of some of the soft furnishing objects.

**Bottom height**

Bottom height can be changed for selected types of soft furnishing objects.

**Number of splitters**

In case of using special objects such as Venetian or roman blinds, you can set the number of their splitters.

**Strip rotation**

When using sun shades with horizontal or vertical strips you can change the rotation of them.

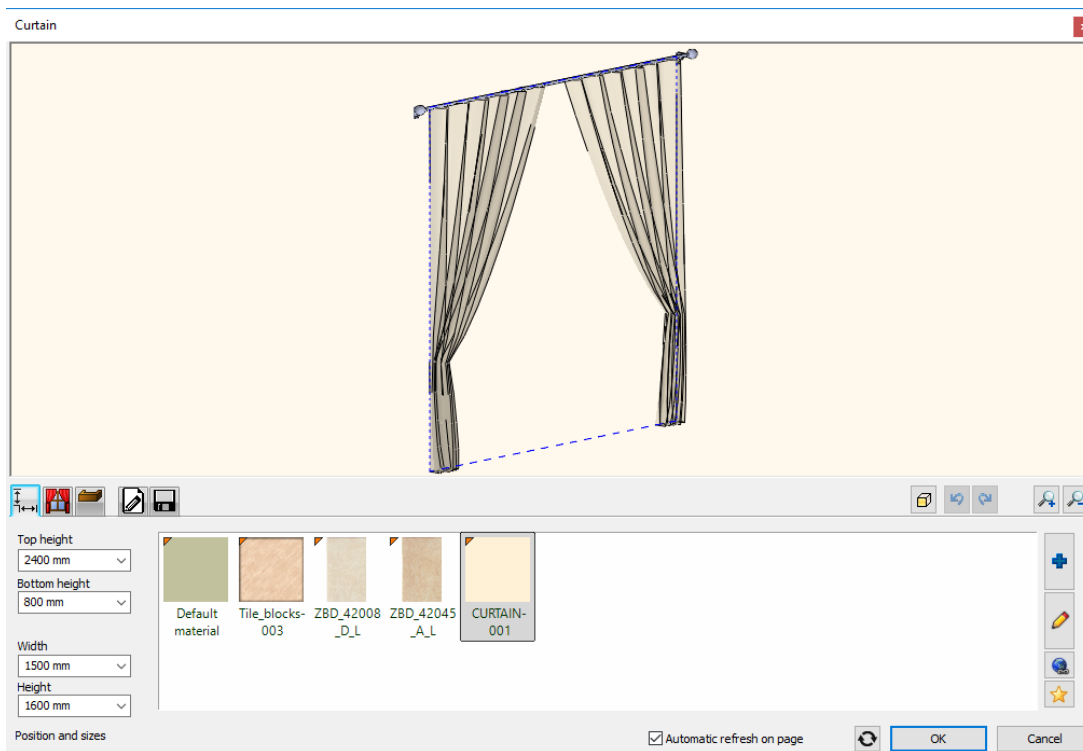
**Retraction**

In cases when you can change the Retraction option, you can actually open or close the object.

**Details:**

You are able to set further properties of the curtains, for example

- Position and Sizes
- Curtain
- Pelmet
- General settings
- Save



### **How to add a curtain?**

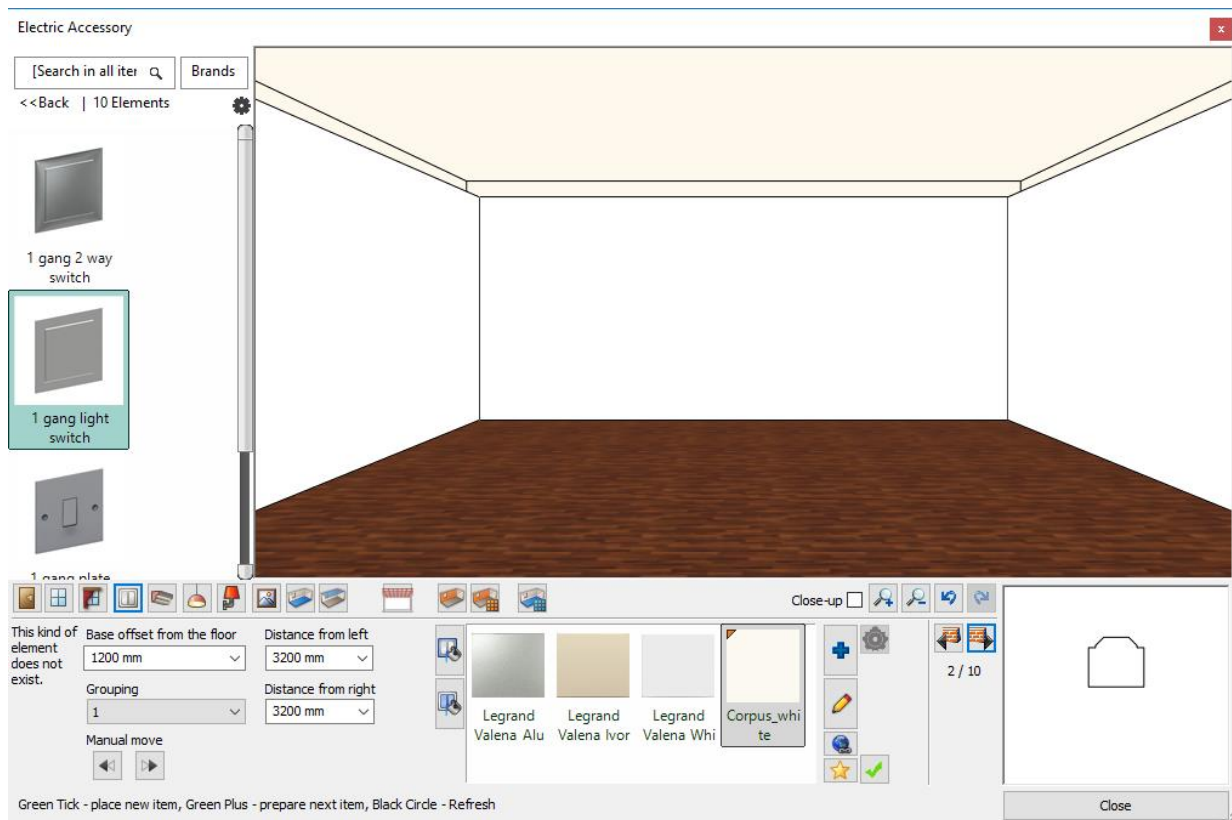
- Select a wall with Wall finder.
- Click on the window that you wish to add the curtain to.
- Select a curtain from the soft furnishing list and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the curtain in front of the window.

### **How to modify an existing curtain?**

- Navigate to the wall which contains the curtain that you would like to modify.
- Click on the curtain in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

### **11.2.1.6. Electrical Accessories Panel**

The Electrical Accessories Panel allows you to add switches and sockets to a wall surface.



## Electrical Accessory Properties

### Elevation from floor

You can set the distance between the floor level and the middle point of the selected electrical accessory.

### Distance from left

You can set the distance of the object from the left side corner of the current wall.

### Distance from right

You can set the distance of the object from the right side corner of the current wall.

### Grouping



Electrical accessories can be grouped. You can group a selected number of electrical accessory by changing the *Grouping* value. Horizontal and vertical grouping options are available.

### Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

### How to add an electrical accessory?

- Select a wall with Wall finder.
- Browse for the required electrical accessory and set the properties.

- To modify the frame or inner materials, click frame (  ) or inner material (  ) tab and then click on the Texture finder buttons and select the required materials. This material setting possibility is not available for electrical accessories that have only one material.
- Click on Green tick – it will place the object.

### How to add more electrical accessory to one wall?

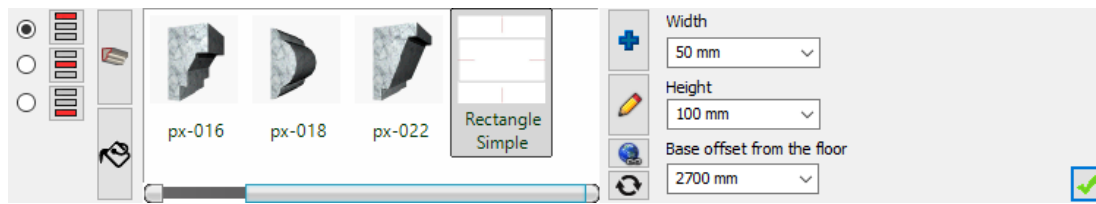
- Press the Green Plus first to prepare the next electrical accessory on the same wall.
- Browse for the required electrical accessory and set the properties.
- Click on Green tick – it will place the electrical accessory on the wall.

### How to modify an existing electrical accessory?

- Navigate to the wall that contains the object that you would like to modify.
- Click on the electrical accessory in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

### 11.2.1.7. Profiles Panel

Using the settings of the Profiles Panel you can add decoration profiles, cornices and plinths to a room contour.



#### Profile Properties

##### Profile mode

You can change the profile mode to the following options:

- Cornice
- Décor
- Skirting board

##### Width

You can change the width of the selected profile cross section.

##### Height

You can change the height of the selected profile cross section.

##### Elevation from floor

You can set the distance between the floor level and the bottom of the selected profile.

#### How to add a cornice, a décor or a skirting board?

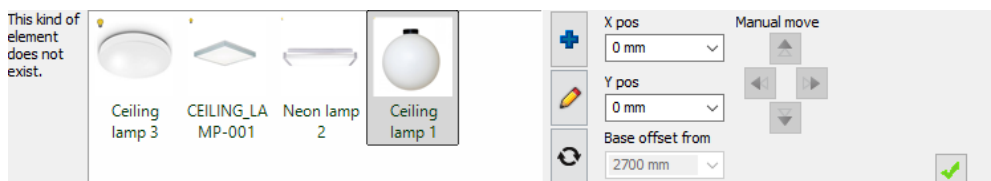
- Select the cornice, décor or skirting board option on the profile properties panel.
- Select a profile from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object according to the settings.

#### How modify a cornice, a décor or a skirting board?

- Select the cornice, décor or skirting board option on the profile properties panel.
- Change properties and texture.
- Click on the Update button to refresh changes.

### 11.2.1.8. Ceiling Lamps Panel

The Ceiling Lamps Panel allows you to add lamps to the ceiling surface. If the page is unavailable that means there is no ceiling that can be used.



##### X position

X position of the ceiling lamp can be changed. Zero means the origin (the middle) of the ceiling surface on top of the room shape. You can use positive and negative values.

##### Y position

Y position of the ceiling lamp can be changed. Zero means the origin (the middle) of the ceiling surface on top of the room shape. You can use positive and negative values.

##### Elevation from floor

You can set the distance between the floor level and the bottom of the selected lamp.

##### Manual move buttons

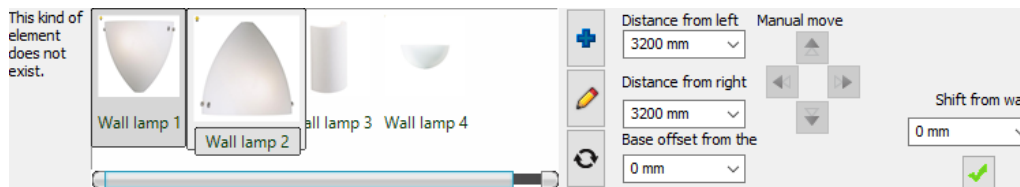
You can manually move the current object on the ceiling surface by using the Manual move buttons.

### 11.2.1.9. Wall Lamps Panel

The Wall Lamps Panel allows you to add lamps on wall surfaces.

#### Manual





### Wall Lamp Properties

#### Distance from left

You can set the distance of the object from the left side corner of the current wall.

#### Distance from right

You can set the distance of the object from the right side corner of the current wall.

#### Elevation from floor

You can set the distance between the floor level and the bottom of the selected lamp.

#### Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

#### Distance from wall line

You can set the distance between the wall surface and the back surface of the lamp.

### How to add a lamp to a wall?

- Select a wall with Wall finder.
- Select a lamp from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object on the wall.

### How to add more lamps to one wall?

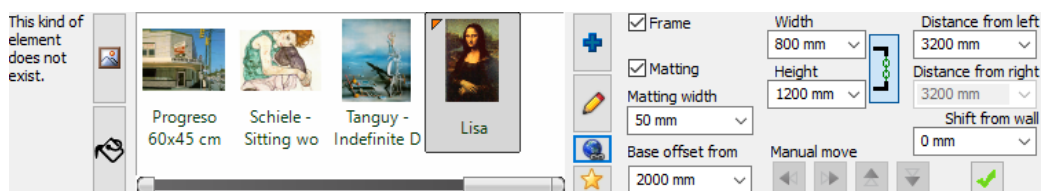
- Press the Green Plus first to prepare the next lamp on the same wall.
- Select a lamp from the favourites and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the lamp on the wall.

### How to modify an existing lamp?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

## 11.2.1.10. Wall Pictures Panel

The Wall Pictures Panel allows you to add pictures on wall surfaces.



### Wall Picture Properties

#### Frame option

You can enable or disable the picture framing to be displayed.

#### Matting option

You can enable or disable the picture matting to be displayed.

#### Matting width

If you enabled Matting you can change the width of it.

#### Elevation from floor

You can set the distance between the floor level and the bottom of the selected picture.

**Width**

You can set the width of the current picture.

**Height**

You can set the height of the current picture.

**Keep aspect ratio**

When the Keep aspect ratio button is ON that means the changes either on the width or the height will reflect on the other value as the software will recalculate the other keeping the aspect ratio between the two.

If the Keep aspect ratio button is OFF the two values can be changed individually and it will have no effect on each other.

**Manual move buttons**

You can manually move the current object on the wall surface by using the Manual move buttons.

**Distance from left**

You can set the distance of the object from the left side corner of the current wall.

**Distance from right**

You can set the distance of the object from the right side corner of the current wall.

**Distance from wall line**

You can set the distance between the wall surface and the back surface of the selected picture.

**How to add a picture to a wall?**

- Select a wall with Wall finder.
- Select a picture from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object on the wall.

**How to add more pictures to one wall?**

- Press the Green Plus first to prepare the next picture on the same wall.
- Select a picture from the favourites and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the picture on the wall.

**How to modify an existing picture?**

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

**11.2.1.11. Floor Material Panel**

Using the Floor Material Panel you can change the material on the current floor surface.

**Floor Material Properties****Browse another**

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

**Edit current**

The current selected material can be edited by using this button.

**Go to web**

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please note that any other webpages can be used to download images for materials not just the ones that can be found on the appearing page.

#### Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

#### Angle

If the material is made out of a texture, you can set its rotation by changing the Angle.

#### How to modify the floor material?

- Navigate to the floor – Choose the floor Material Panel.
- Choose the desired pattern from the favourites list.

### 11.2.1.12. Ceiling Material Panel

Using the Ceiling Material Panel you can change the material on the current ceiling surface.



#### Ceiling Material Properties

##### Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

##### Edit current

The current selected material can be edited by using this button.

##### Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.

##### Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

##### Angle

If the material is made out of a texture, you can set its rotation by changing the Angle.

#### How to modify the ceiling material?

- Navigate to the ceiling – Choose the ceiling Material Panel.
- Choose the desired pattern from the favourites list.

### 11.2.1.13. False Ceiling Panel

Using the False Ceiling Panel you can add a false ceiling to the room.



## False Ceiling Properties

### Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

### Edit current

The current selected material can be edited by using this button.

### Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.

### Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

### Base offset from the floor

With this option you can set the relative height of the False Ceiling.

### How to add a false ceiling?

- Select a false ceiling type from the library.
- Select a material for the false ceiling.
- Set the base offset from the floor.
- Click on Green tick – it will place the ceiling.

## 11.2.1.14. Wall Material Panel

Using the Wall Material Panel you can change the material on the current wall surface.



## Wall Material Properties

### Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

### Edit current

The current selected material can be edited by using this button.

### Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.

### Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

### All walls option

All walls option allows you to handle all the walls of a room in one step when defining the material on their surfaces. When this option is on you can handle all walls together. When this option is off you can handle the current wall only.

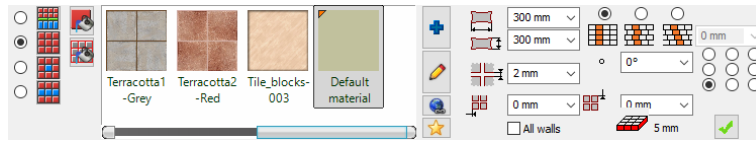
### How to modify the wall material?

- Select a wall with Wall finder.

- Choose the desired pattern from the favourites list.

### 11.2.1.15. Wall Tiling Panel

The Wall Tiling Panel allows you to add realistic 3D tiles on wall surfaces which can be also listed later on.



#### Wall Tiling Properties

##### Tile width

You can set the width of a tile.

##### Tile height

You can set the height of a tile.

##### Grout thickness

You can set the thickness of the grout.

##### Offset from left

You can set the offset of the distribution starting point from the left side of the area.

##### Offset from bottom

You can set the offset of the distribution starting point from the left bottom of the area.

##### All walls

All walls option allows you to handle all the walls of a room in one step when defining the tiling on their surfaces. When this option is on you can handle all walls together. When this option is off you can handle the current wall only.

##### Angle

You can change the angle of the tiling distribution. The default value is Zero when a regular horizontal/vertical distribution is applied.

##### Alignment grid

The alignment grid represents the starting point of the distribution on the current surface. Each option means an origin that can be used as the starting point on the current surface.

##### Row shift

Select from the following three options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the Row shift / Column shift fields.

##### Row shift value

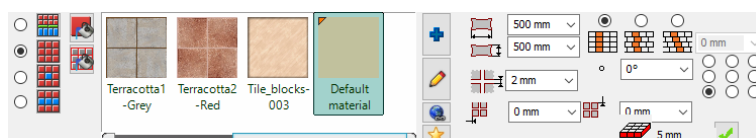
You can set the value of the row shift if one shift option was selected.

##### Tile thickness

The tile thickness information shows the tile thickness that will be used when creating the 3D tiling.

### 11.2.1.16. Floor Tiling Panel

The Floor Tiling Panel allows you to add realistic 3D tiles on wall surfaces which can be also listed later on.



## Floor Tiling Properties

### Tile width

You can set the width of a tile.

### Tile height

You can set the height of a tile.

### Grout thickness

You can set the thickness of the grout.

### Offset from left

You can set the offset of the distribution starting point from the left side of the area.

### Offset from bottom

You can set the offset of the distribution starting point from the left bottom of the area.

### Angle

You can change the angle of the tiling distribution. The default value is Zero when a regular horizontal/vertical distribution is applied.

### Alignment grid

The alignment grid represents the starting point of the distribution on the current surface. Each option means an origin that can be used as the starting point on the current surface.

### Row shift

Select from the following three options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the Row shift / Column shift fields

### Row shift value

You can set the value of the row shift if one shift option was selected.

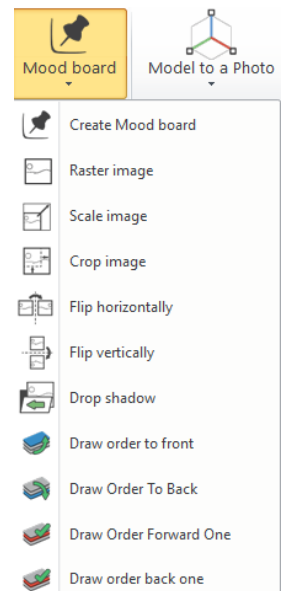
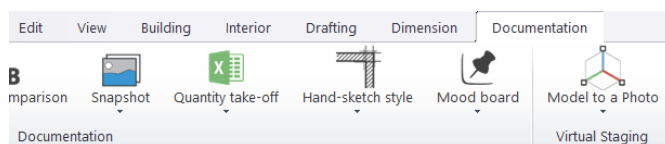
### Tile thickness

The tile thickness information shows the tile thickness that will be used when creating the 3D tiling.

## 11.3. Mood board

With this command you are able to illustrate the atmosphere of the project and its visual direction. You can use hand sketches, photos and materials.

Location of the commands: Documentation > Mood Board



### 11.3.1.1. Creating mood board

First of all set the paper size what you would like to use for the mood board. Then click OK and a new window will appear where you can create your mood board.

For further functions open Ribbon Bar – Documentation – Mood Board. These are:

- **Raster Image:**  
You can select pictures from your computer with the help of this command.
- **Scale image:**  
We can change the size of the placed image.
- **Crop image:**  
If there is a part of the picture what you don't need, you can cut it.

- Flip horizontally / vertically:  
We can flip the placed image on the board.
- Drop shadow:  
Shadow can be used for the placed pictures.
- Draw order:  
You can specify which images and materials are in the front or in the back of the mood board and their position to one another.

## 11.4. Picture on wall

### Introduction

With the *Picture on wall* function of ARCHLine.XP it is easy to put pictures on different surfaces of interior spaces.

The *Picture on wall* is a dynamic object that can be configured with its parameters in a few steps. The *Picture on wall* is always based on an image which is supplemented with matting as rag mats, or collage mats and frame. Once the image is framed and displayed matting helps separate the photograph from its surroundings. It gives it its own unique space and presence.

Location of the command: *Ribbon Bar – Interior– Single Object – Picture on wall*.

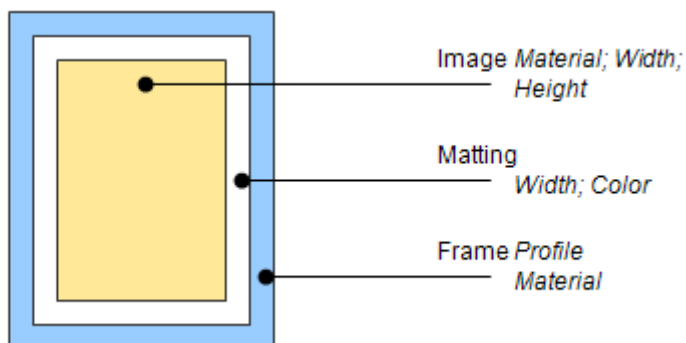


### 11.4.1.1. Properties

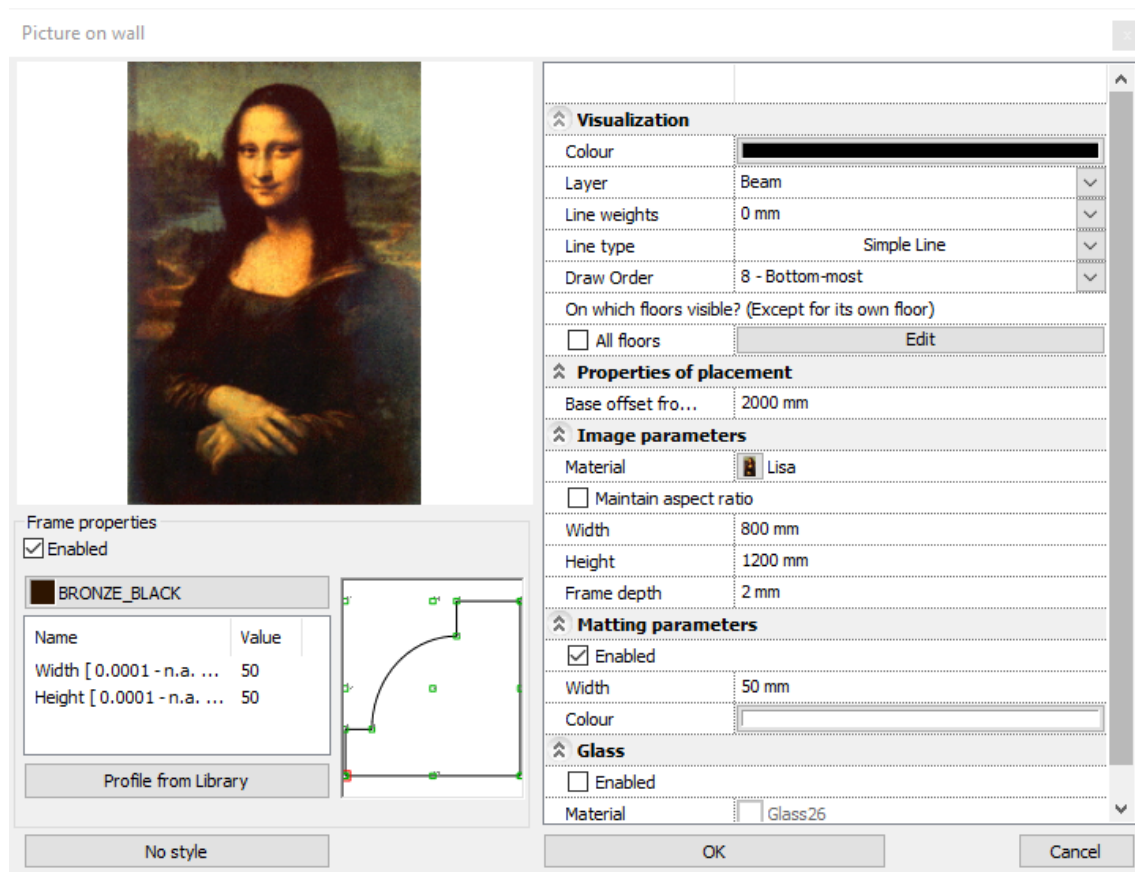
In the *Picture on wall* property settings dialog you can specify the how the object should look on the floor-plan and in 3D views.

Location of the command: *Ribbon Bar – Interior– Properties – Picture on wall*.

A *Picture on wall* consists of three parts, as it is shown on the figure below (with the main properties):



The total width and height depend on the dimensions of the above mentioned parts.



### **Visualization**

In this property group you can set the line representation. The following properties can be set: Colour, Layer, Line width, Line type, Draw order

### **Properties of placement**

#### **Elevation from floor**

The height of the bottom left point of the picture object relative to the zero level of the active floor.

#### **Image parameters**

##### **Material**

You can select a material from the material manager dialog. This material will be the image. The program recognizes the width and height parameters of the selected material texture automatically, and their values appear in the Width and Height input fields.

##### **Maintain aspect ratio**

With this option the original width/height ratio of the image can be kept.

##### **Width**

You can modify the width of the image. This width parameter belongs to the image and not to the whole picture object.

##### **Height**

You can modify the height of the image. This height parameter belongs to the image and not to the whole picture object.

##### **Frame depth**

You can modify the depth of the frame.

#### **Frame parameters**

You can specify the profile of the frame around the picture along with its material.

##### **Enabled**

With this option you can switch on the frame.

#### **Matting parameters**

You can specify the properties of the stripe between the picture frame and the border of the image.



**Enabled**

With this option you can switch on the matting.

**Width**

The value specified here is the width of the stripe between the picture frame and the border of the image.

**Colour**

The matting is represented with this colour.

**Glass**

You can specify the properties of the glass in front of the picture.

**Enabled**

With this option you can switch on the glass.

**Material**

You can select a material from the material manager dialog.

**11.4.1.2. Placing picture on wall****In 2D**

Select Ribbon Bar – Interior tab – Single Object - Picture on wall.  
Place the picture object on the floor-plan.  
Select it and set the appropriate properties and then press Ok.



Use the Graphic keyword if you want to rotate the object during the placement.

**In 3D**

Select Ribbon Bar – Interior tab – Single object – Picture on.  
Move your mouse to the appropriate surface and then select it.  
Move the picture object to the appropriate position and then placed it.  
Select it and set the appropriate properties and then press Ok.

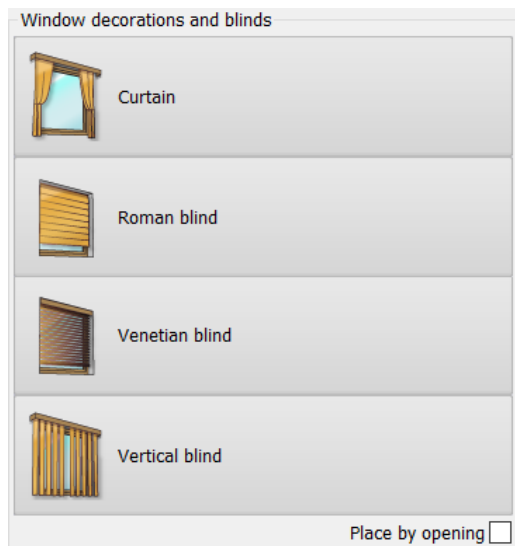
**11.5. Soft furnishing – Window decoration and blinds**

Four types of indoor blinds are available: curtain, roman blind, venetian blind and vertical blind.

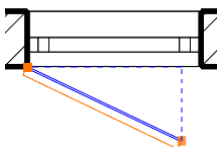
**11.5.1. Creating indoor blinds**

You can create an indoor blind by selecting an opening (door or window) to place the blind in it or by drawing it directly on the floor plan.

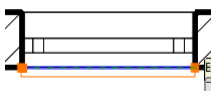
Location of the command: Ribbon Bar > Interior tab > Soft Furnishing



To create a blind in an existing opening click on the appropriate side of a door or window.



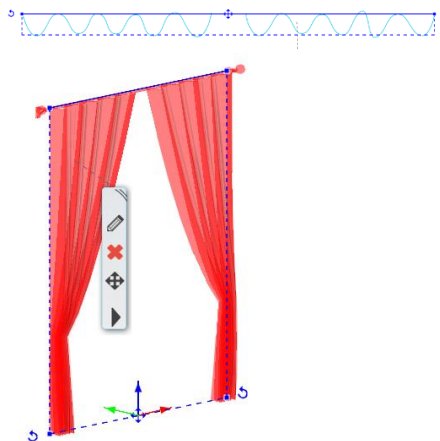
To draw the blind on the floor plan draw the bounding rectangle of the blind. You can mirror the rectangle to the blue line by pressing the F5 key.



Once the indoor blind is placed a dialog appears and you can set the appropriate values. Finally the blind appears on the floor plan and in the 3D View.

### 11.5.2. Editing blinds

Once the object is selected, you can edit it by means of the markers: by using the node markers you can change its length or move an endpoint. By using the Offset command of the line marker you can move the object perpendicular to itself. In the 3D View you can adjust the top and bottom height of the blind, too.



### 11.5.3. Converting blinds

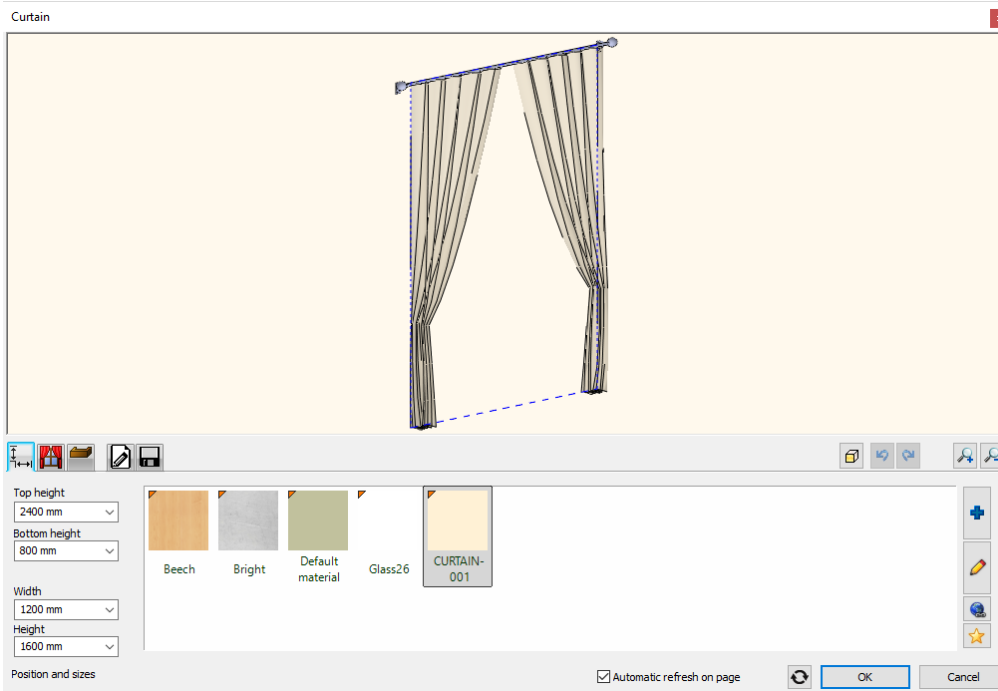
Each indoor blind can be converted to another by clicking on it with right mouse button and selecting **Convert to...** command.

### 11.5.4. Indoor blind types

Each blind type has its own setting dialog. Once you have placed the blind on the floor plan, the dialog appears and the blind will be created based on the values set in it.

To modify an indoor blind right click on an object and select **Properties**.

### 11.5.5. Position and sizes



This page is available for all blind types.

#### **Top height**

The height of the top of the blind from the story level.

#### **Bottom height**

The height of the bottom of the blind from the story level.

#### **Width**

The width of the blind.

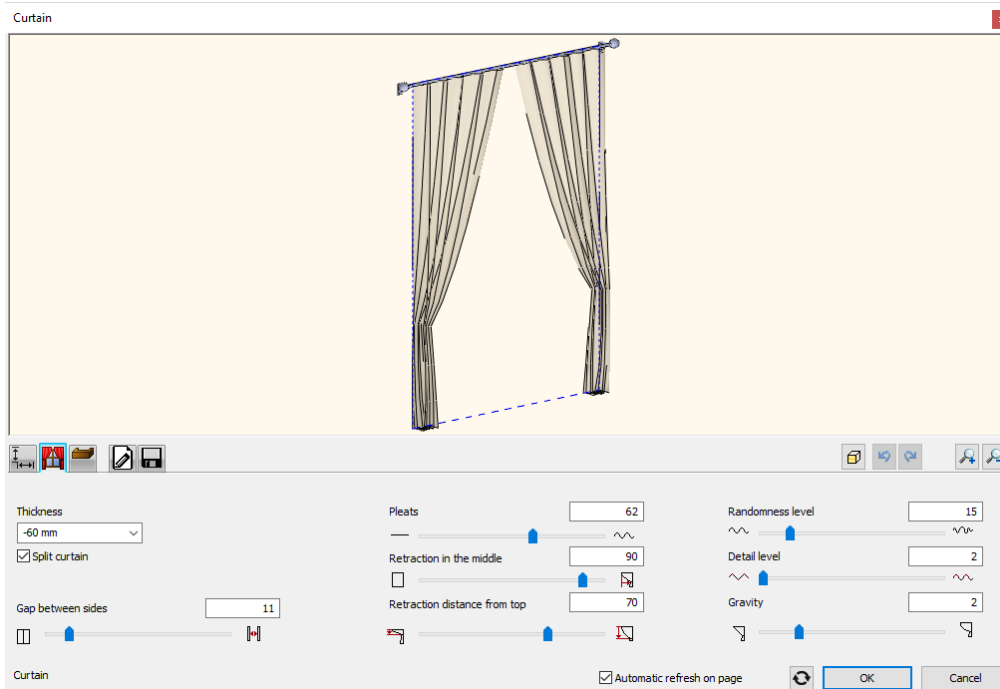
#### **Height**

The height of the blind.

#### **Material**

The material of the blind. Pelnets and curtain rods have their own material settings.

## 11.5.6. Curtain



This page is available only for curtains.

### **Thickness**

The width of the bounding rectangle of the curtain. If the blind is mirrored to its reference line, this value can be negative.

### **Split Curtain**

If enabled, curtain is split into two parts.



Split curtain enabled



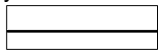
Split curtain disabled

### **Gap between sides**

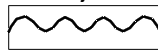
You can define the distance between the two parts of a split curtain.

### **Pleats**

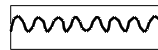
By means of this slider you can adjust the wave-form of the curtain. The lowest value results in a straight line.



Pleats: 0%



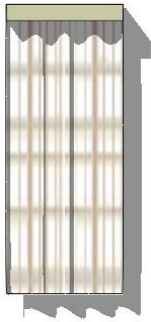
Pleats: 50%



Pleats: 100%

### **Retraction in the middle**

By setting this slider to the lowest value you can define a straight curtain without retraction, otherwise the middle of the curtain will be retracted towards the second point of the bounding rectangle.



Retraction in the middle: 0%



Retraction in the middle: 50%



Retraction in the middle: 100%

### **Retraction distance from top**

If the “Retraction in the middle” value is positive, here you can set the vertical position of the retraction. By setting it to 0% or 100%, the upper or lower edge will be retracted instead of the middle of the curtain.



Retraction distance from top: 0%



Retraction distance from top: 50%



Retraction distance from top: 100%

### **Randomness level**

You can choose between regular and random wave-forms.



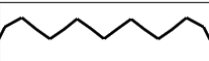
Randomness level: 0%



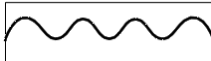
Randomness level: 100%

### **Detail level**

The resolution of the freeform surface.



Detail level: 1



Detail level: 5

### **Gravity**

The textile can “fall down” realistically by increasing the gravity value.



Gravity: 0

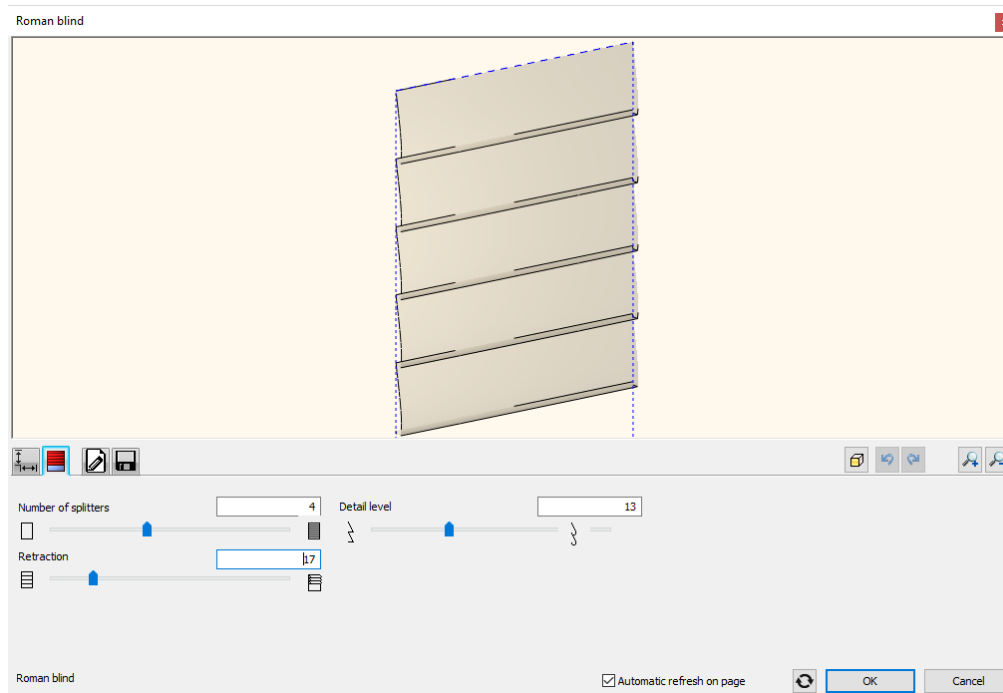


Gravity: 2



Gravity: 4

## 11.5.7. Roman blind properties



This page is available only for roman blinds.

### **Number of splitters**

The number of horizontal divisions can be set here.

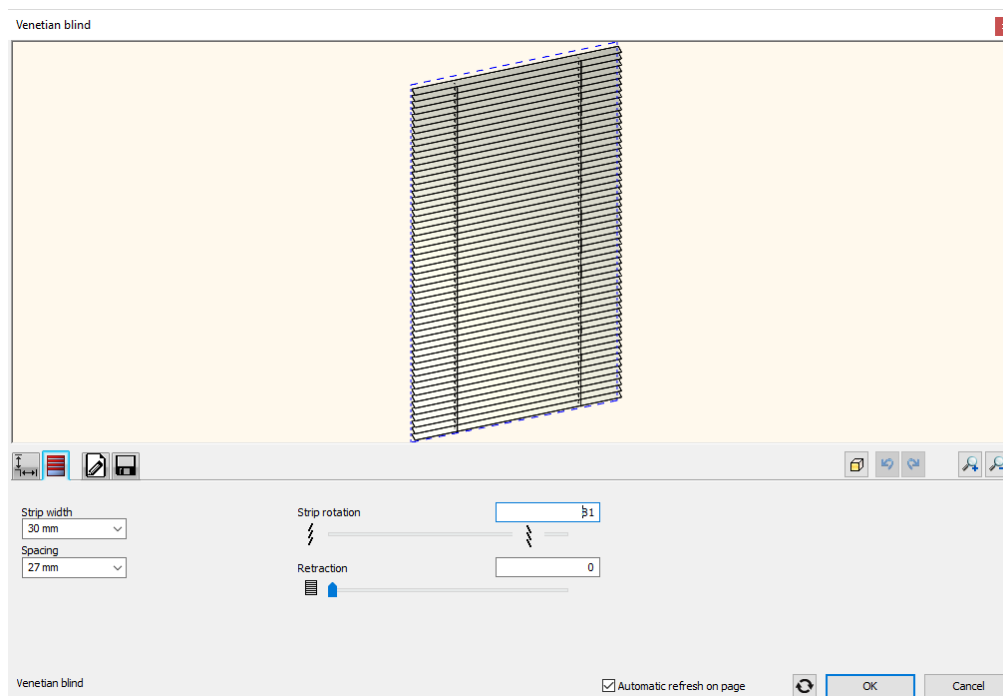
### **Retraction**

The lowest value means a fully shut roman blind, and the top value means a fully open roman blind.

### **Detail level**

You can set the detail level of the surface of the generated roman blind. Higher value makes the final result more realistic while lower will make it rough.

## 11.5.8. Venetian blind



This page is available only for venetian blinds.

**Strip width**

The width of a strip.

**Strip spacing**

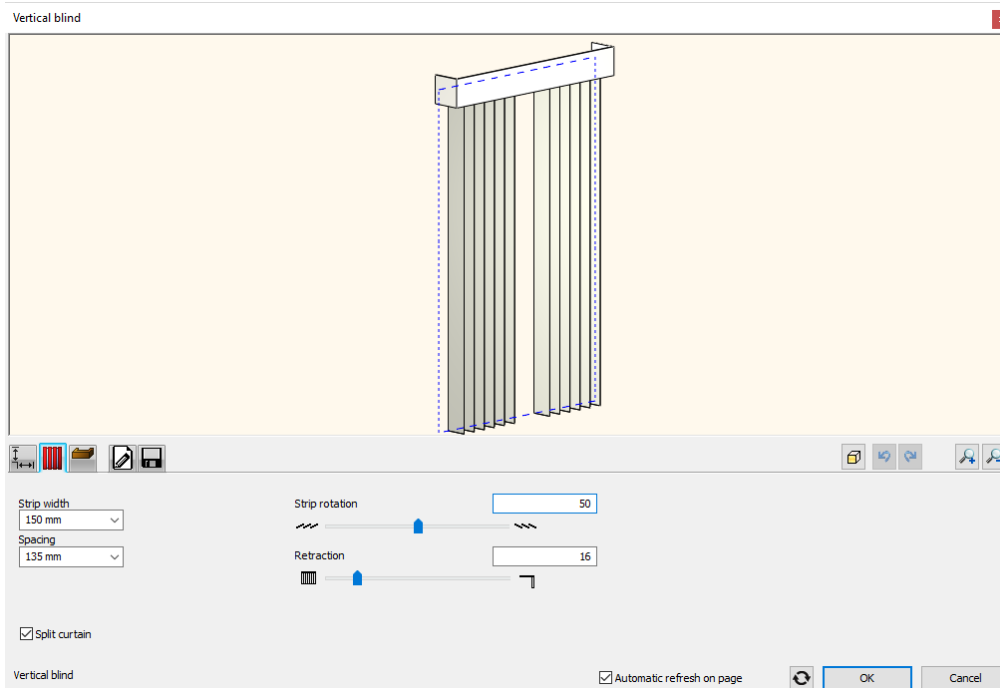
The distance between strips.

**Strip rotation**

The rotation of the strips. The 50% value results in horizontal strips. The maximum rotation angle is 80° in both directions

**Retraction**

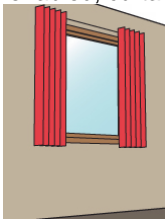
The lowest value means a fully shut blind, and the top value means a fully open one.

**11.5.9. Vertical blind**

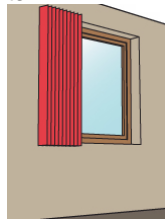
This page is available only for vertical blinds.

**Split curtain**

If enabled, curtain is split into two parts.



Split curtain enabled



Split curtain disabled

**Strip width**

The width of a strip.

**Strip spacing**

The distance between strips.

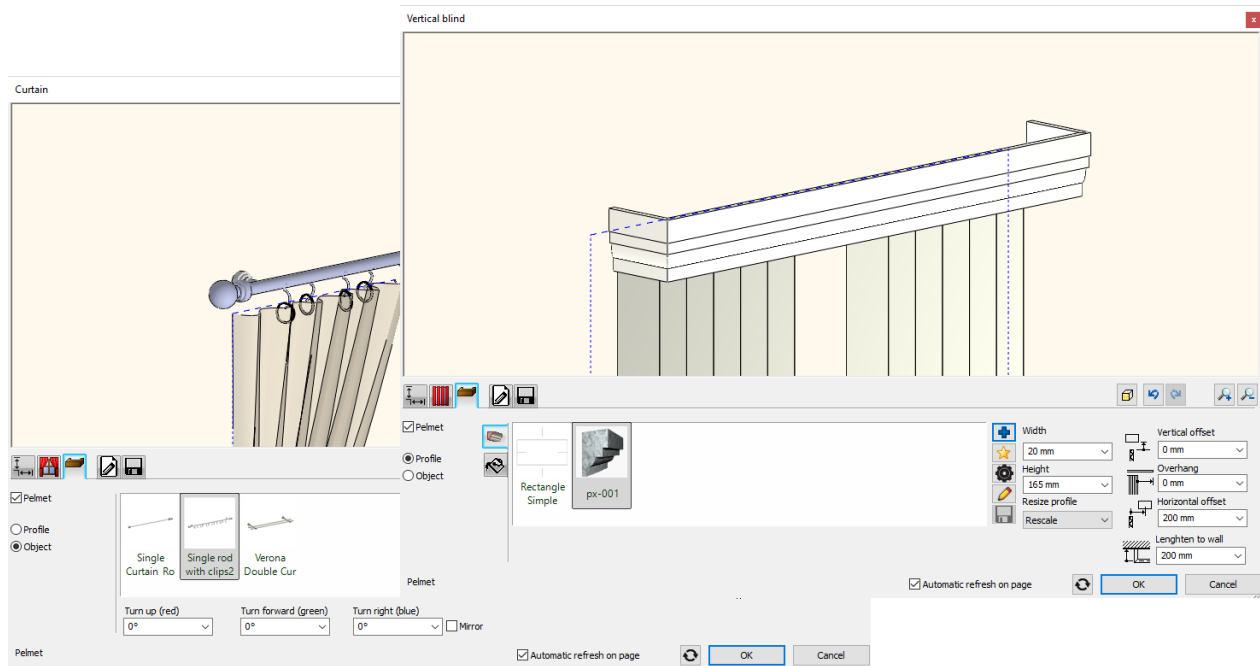
**Strip rotation**

The rotation of the strips. The 50% value effects strips perpendicular to the plane of the opening. The maximum rotation angle is 80° in both directions.

**Retraction**

The lowest value means a fully shut blind, and the top value means a fully open one.

## 11.5.10. Pelmet properties



This page is available only for curtains and vertical blinds.

You can use an extruded profile or an object as pelmet.

### Profile pelmet

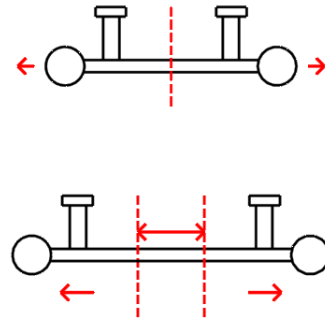
The pelmet profile will be extruded along the top center line of the blind. (The selected hotspot of the profile will be aligned to this line.)



Use the **horizontal/vertical offset**, **overhang** and **lengthen to wall** values to customize the pelmet path.

### Object pelmet

The pelmet object will be aligned to the top center line of the blind. If the blind is longer than the pelmet object, the pelmet object will be cut in the middle and stretched so that the ends of the pelmet object remain proportional.



Use the **horizontal/vertical offset** and **overhang** values to customize the pelmet.



**Pelmet**

You can enable or disable the pelmet.

**Profile or Object**

You can extrude a profile or use an object.

**Pelmet Object**

The object used as pelmet or curtain rod. This setting is available for object pelmets only.

**Turn up/forward/right**

You can rotate the pelmet object. This setting is available for object pelmets only.

**Pelmet profile**

The section profile of the pelmet. The hotspot of the profile will be aligned to the top of the curtain. This setting is available for profile pelmets only.

**Profile width/height**

You can resize the section profile. This setting is available for profile pelmets only..

**Material**

The material of the pelmet. This setting is available for profile pelmets only.

**Vertical offset**

You can elevate the pelmet by changing this value.

**Horizontal offset**

You can shift the pelmet perpendicular to the curtain.

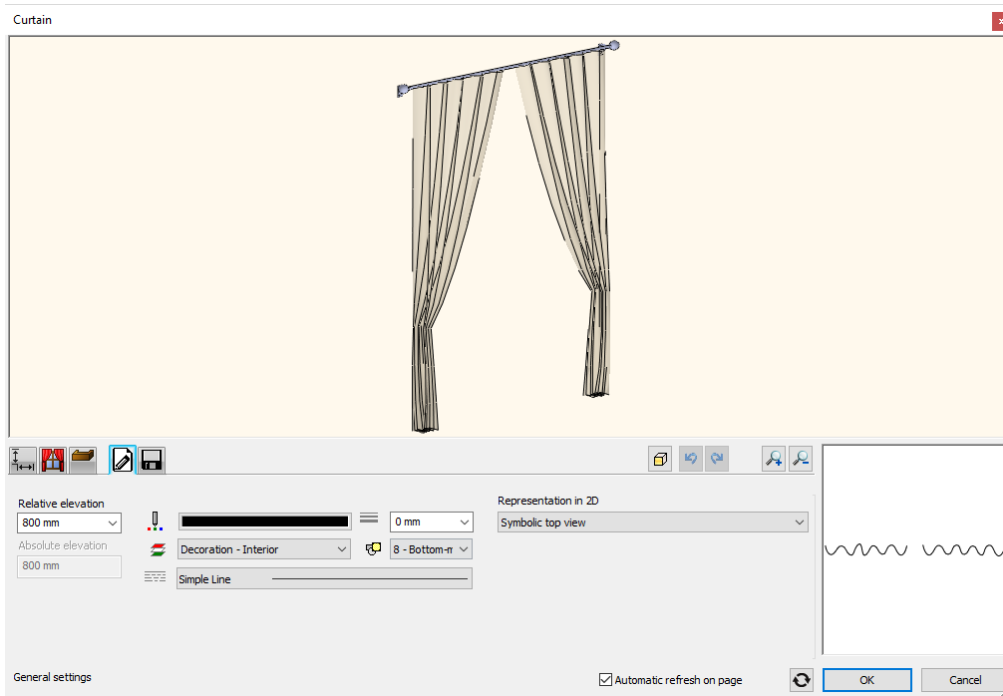
**Overhang**

You can lengthen / shorten the pelmet..

**Lengthen to wall**

You can lengthen the pelmet perpendicular to the blind. This setting is available for profile pelmets only.

**11.5.11. General properties**



This page is available for all blind types.

You can define the relative height, colour, line width, layer, priority and line type of the blind. You can also choose the 2D representation here.

### Simplified



### Symbolic top view



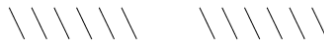
Curtain



Roman blind

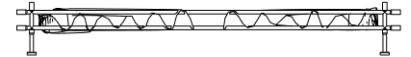


Venetian blind

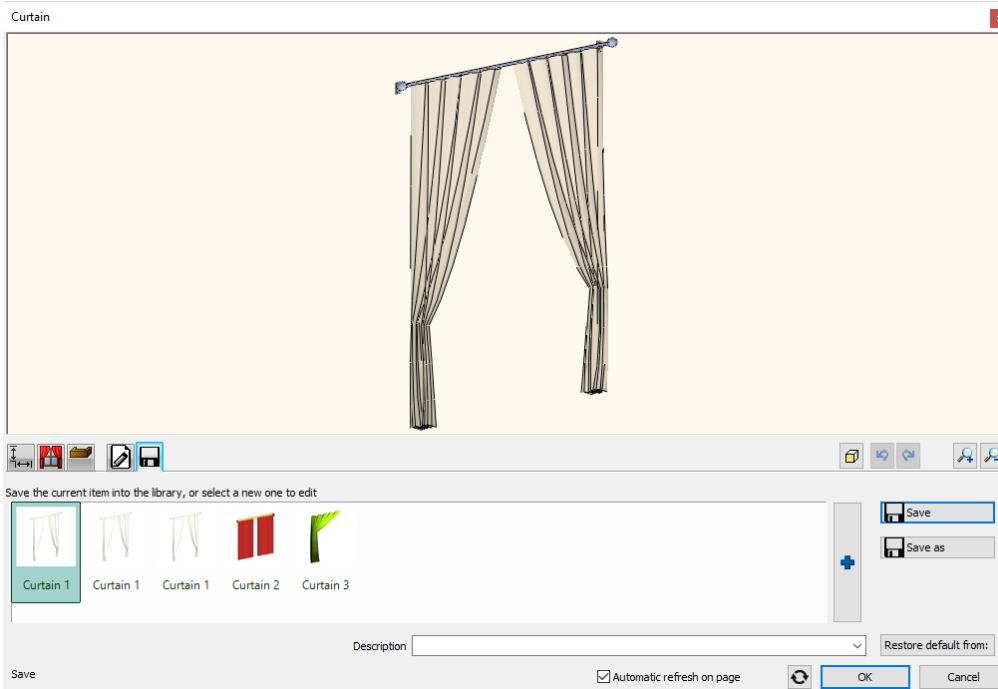


Vertical blind

### Top view



## 11.5.12. Load and Save



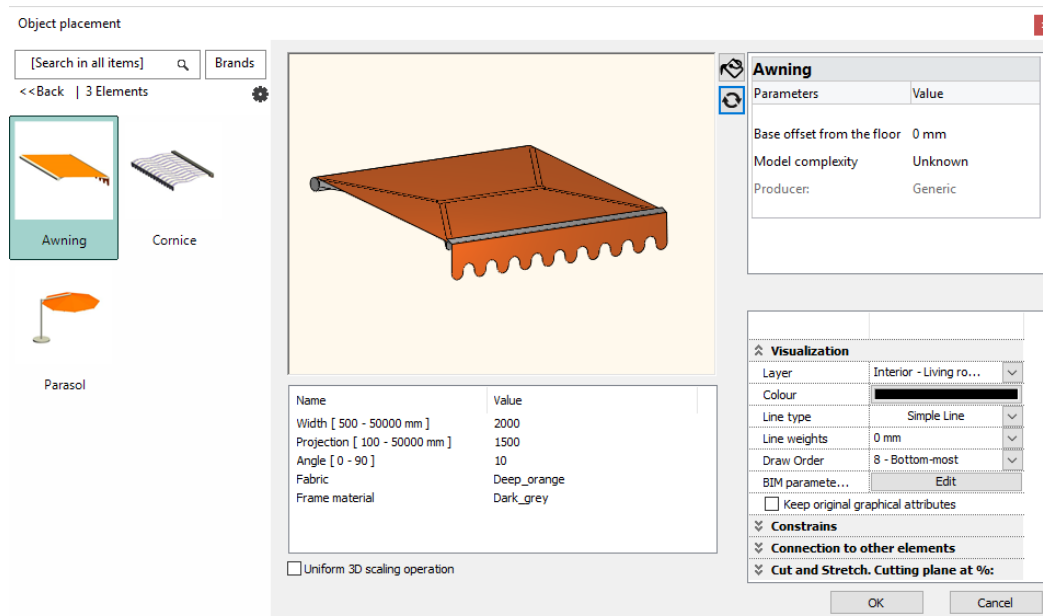
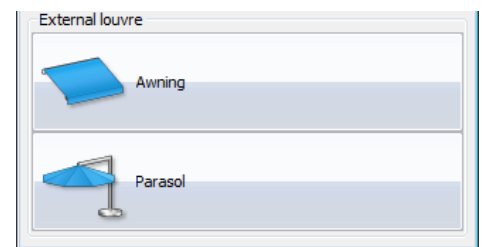
This page is available for all blind types. You can save the blind in the Design Center or load an existing one.

## 11.5.13. Awning

Location of the command: Ribbon bar > Interior tab > Soft Furnishing

ARCHLine.XP comes with a tool that makes easy to design awning as a secondary covering attached to the exterior wall of a building. It is composed of canvas fabric that is stretched tightly over a structure of aluminium, or steel.

You can parameterize its size, angle and its elevation from the floor.

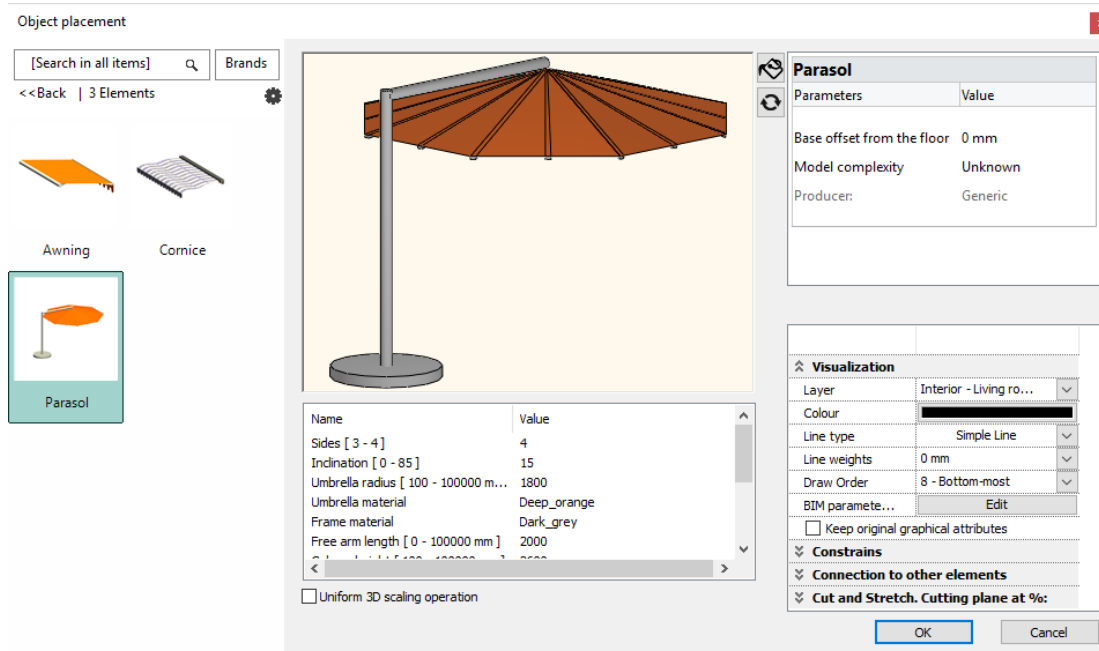


## 11.5.14. Parasol

Location of the command: Ribbon Bar > Interior tab > Soft Furnishing

ARCHLine.XP enables to design parasol to protect against rain or sunlight. It is composed of canvas fabric that is stretched over a structure of aluminium or steel.

You can parameterize its main components as sides, structure and umbrella measurement and elevation from the floor.



## 11.6. Electrical accessories

With Electrical accessories tool you can create and place different switches and sockets.



### 11.6.1. Electrical Accessory properties dialog

In the *Ribbon Bar - Interior tab - Properties - Electrical Accessory* dialog you can create, modify and save new or existing electrical accessories. In addition, here you set the default Electrical Accessory element that appears in the dialog when you use the *Interior tab - Electrical Accessory - Customized items* command. When creating an electrical accessory you can choose from two options.

#### Complete solution

To get the simplest 3D model, you can represent the electrical accessory by a flat shape and a texture on it. In that case use the **Complete solution** option.

#### Dressable mounting: Plate + Gang unit(s)

To have a more detailed representation, just select **Dressable mounting: Plate + Gang unit(s)** option. This way you can determine the shape and material of the external (frame) and inner parts of the electrical accessory separately.



Flat shape with texture





Model with 3D switches or sockets



## Function

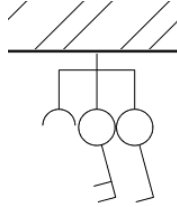
On the function tab you can define the complexity of the electrical accessory modelling. The selected 2D symbol represents the function of the electrical accessory.

You can select 2D symbol (function) from the favorites or from the group libraries ().

The dimensions of the selected group can be modified ().

## Grouping

In case of **3D switches and sockets** selection, switches and sockets can be grouped in one frame horizontally or vertically. Each switch or socket in a frame can have a unique function.



## 1-5 Gang sockets and switches

In case of **3D switches and sockets** selection, you can group more switches and sockets in one external frame. The number of elements in the frame can be selected from the **1-5 Gang sockets and switches** drop-down list.

## Direction

If you select at least two elements, you can define the direction of placement (horizontal or vertical).

## Same Functions

Switch this option on if you want to define the same function to each electrical accessories in the group. Switch this option off if you want to define different functions to one or more electrical accessories in the group. In that case you can assign 2D symbol, material and shape to each member of the group on the **3D switches and sockets** tab.



## Shape



On the *Shape* tab you can define a profile and material on two different sub tabs.



## Material

The texture you specify here appears on each side of the defined shape. You can select materials from the favorites or

from the existing material libraries (). You can also download materials from the web () or create a new material



() or edit () the currently selected material.





## Profile

If you selected the **Simple flat shape with texture** option on the first tab, the profile defined here defines the frontal shape of the electrical accessory.

If you selected the **3D switches and sockets** option on the first tab, the profile defined here defines the frame of the electrical accessory.

You can select profiles from the favorites or from the existing profile libraries (). You can create () custom profile

or edit () the currently used profile. Custom profiles can be saved () into the profile libraries. The orientation of a

pre-defined profile can be modified ().

You can resize the profile with its Width and Height values. The Thickness value defines the thickness of electrical accessory or the frame part.





### 3D model of switches and sockets

If you selected the **3D model of switches and sockets** option on the first tab, you can define the 2D symbol, the shape and material of the inner part of the electric accessory on the side tabs. If you selected the **Simple flat shape with texture** option on the first tab, you can set only the 2D symbol of the electrical accessory.

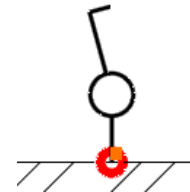


### 2D symbol

On this tab you can define the 2D symbol of the electric accessory. You can select a symbol from the favorites or from the existing group libraries () or you can edit () the currently selected symbol. If you selected the **Same function** option on the first tab, you can specify only one symbol here, otherwise you can select symbols for each function on different pages. You can switch between pages by the forward/backward arrow buttons on the left side. You can also switch between pages by clicking the inner profile assigned to a function.





### Custom 2D Symbols

On the floor plan you can represent an electrical accessory with its upper view or as a 2D symbol. You can use any 2D symbol as an electrical accessory representation; even you can create your own symbols. To have the appropriate placement, the symbol must have at least one hotspot and the symbol (and the front face of the 3D model) must be oriented upward.



### Material


The texture you specify here appears on the inner profile. You can select materials from the favorites or from the existing





material libraries (). You can also download materials from the web () or create a new material () or edit () the currently selected material. Use the **Same material** option if you want to apply the selected material to every functions.



### Inner frontal profile

The inner frontal profile will be cut out from the frame profile with a specified *Border Gap*.

If you selected the **Same function** option on the first tab, you can specify only one profile here, otherwise you can select profiles for each function on different tabs. You can select profiles from the favorites or from the existing profile libraries ()

. You can create () custom profile or edit () the currently used profile. Custom profiles can be saved () into the profile libraries. The orientation of a pre-defined profile can be modified ()

You can resize the profile with its Width and Height values. The Thickness value defines the thickness of the inner part of electrical accessory. The Border gap value defines the gap between the frame and the inner part.



### General settings

On this tab you can set general properties like line type, line thickness, color, priority, relative height.

For the 2D representation you can choose from two options:

- ❖ *Symbol*: the representation on the floor plan is defined by the settings on the **3D model of switches and sockets** tab.
- ❖ *Top view*: the floor plan representation is defined by the top view of the 3D model.

### Symbol scale

You can scale the 2D symbol representation on the floor plan to avoid overlapping the elements.



### Save

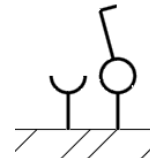
On this tab you can save the currently edited electric accessory by the **Save as** button or you can select one from the favorites or from the object library for further modifications.

### Shifting symbols

To make your 2D plans easier to understand; you can move and rotate the 2D symbol of the electrical accessory independent from the 3D model if necessary.

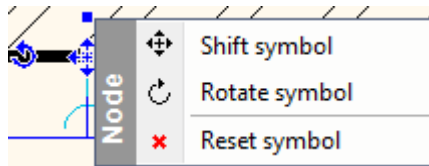


Switch above a socket in 3D



Symbols next to each other on the floor plan

- Click the electrical accessory on the floor plan.
- Click the marker and select the desired operation.



### 11.6.2. Place Electrical Accessory

You can place electrical accessories two ways. The first function is available from the **Ribbon bar - Interior tab - Electrical Accessory - Place from Library**. This allows you to select the electrical accessory from the object library.

- Select the desired electric accessory from the object library.
- Click **Ok** to close the dialog.
- Place the selected element. You can place as many instances as you want, one by one. You can close the command by pressing the ENTER or ESC key.

The second function is **Ribbon bar - Interior tab - Electrical Accessory - Place from Groups**. This way you will only place the symbol of the electrical accessory but not the 3D content.

### 11.6.3. Customized items

With this command you can select and place electrical accessories from the existing object library or you can create and save electric accessories in the object library. The function is available from the **Ribbon Bar - Interior menu - Electrical Accessory - Customized items**.

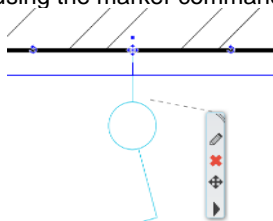
The appearing dialog works the same as the Electrical Accessory properties dialog, with the following differences:

- ❖ The last selected element and its properties have no effect on the default electrical accessories properties.
- ❖ When you close the dialog by clicking the **Ok** button, you can place the element you selected or created in the dialog.

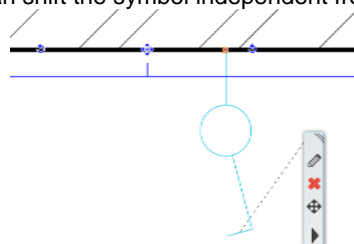
### 11.6.4. Modifying the placed electrical accessory by marker commands

#### Marker menu commands

In case of using a symbol for the 2D representation, a small node marker appears on a selected electrical accessory. By using the marker commands, you can shift the symbol independent from the 3D model.



Symbol in default position



Shifted symbol

#### Shift Symbol

You can move the symbol independent from the 3D model.

**Rotate Symbol**

You can rotate the symbol independent from the 3D model.

**Reset Symbol**

You can reset the symbol to its original position.

**11.6.5. Electrical accessory settings on the properties tab**

When you select an electrical accessory on the floor plan or in 3D, you can set its properties on the properties tab.

**Base elevation**

Elevation from the floor level.

**Absolute height**

Elevation including the floor level.

**On which floors visible? (Except for its own floor)****All floors**

Use this option if you would like to see the electrical accessory at all levels of the building. Furthermore, you can select floors where the electrical accessory should appear.

**Position****Function****Design****Material**

The material of the electrical accessory. If 3D **Switches and Sockets** option is enabled, this material is applied to the border.

**Thickness**

The thickness of the electrical accessory. If **3D Switches and Sockets** option is enabled, it is applied to the border.

**General settings****Symbol Scale**

You can rescale the 2D symbol by this value, independently from the 3D model

**Grouping****1-5 gang sockets and switches**

Number of switches or sockets in a single frame.

**Same functions (available only when the value of 1-5 gang sockets and switches is bigger than 1)**

The function of the grouped elements in a single frame. If it was switched off previously, the function of all grouped elements will change to the first element.

**Direction (available only when the value of 1-5 gang sockets and switches is bigger than 1)**

You can set the direction of the grouped elements in the single frame to horizontal or vertical.

**Symbol offset in 2D (available only when the value of 1-5 gang sockets and switches is bigger than 1)**

The distance between two grouped elements in a single frame takes this value. This way you can avoid the overlapping of the grouped elements on the floor plan.

**3D model of Switches and Sockets****Enabled**

If enabled, 3D switches or sockets appear in the frame and further settings available. Otherwise, the whole electrical accessory will be represented as a single shape with a stretched image on it.

**Material**

Material of the grouped inner parts. As many instances occur as the number of grouped elements in the single frame.

**Width**

The width of the grouped elements in a single frame (the same value applied to all elements).

**Height**

The height of the grouped elements in a single frame (the same value applied to all elements).

**Manual**



**Thickness**

The thickness of the grouped elements in a single frame (the same value applied to all elements).

**Border Gap**

Space between the border and the grouped elements in a single frame (the same value applied to all elements).

**Structure**

Click the ellipsis button you can modify the electrical accessory in the appearing dialog.

**11.6.6. Manage elevations**

With this function you can assign and represent the relative height information of each Electrical Accessory on the floor plan.

The function is available from the **Ribbon Bar – Interior tab - Electrical Accessory - Manage Elevations**. If you start the command, four options appear:

- ❖ **All elevations:** the program automatically places the relative height information to each electrical accessory on the floor plan. Right after executing the command, you have the possibility to modify the position of the appearing relative height information by clicking the electrical accessory and then moving the mouse cursor to the desired position. The text properties are taken from the actual text properties settings.
- ❖ **All elevations with ID's:** the program automatically places the relative height information plus the element ID to each electrical accessory on the floor plan. Right after executing the command, you have the possibility to modify the position of the appearing relative height information by clicking the electrical accessory and then moving the mouse cursor to the desired position. The text properties are taken from the actual text properties settings.
- ❖ **Delete all elevations:** the program deletes all the relative height and element ID information that have been placed previously.
- ❖ **One by one elevations:** by clicking the electrical accessory, you can place or modify individually the position of the relative height information of the electrical accessory element on the floor plan.

**11.6.7. Switches or sockets location relative to the wall**

With this command you can place dimensions that show the distances between electrical accessories and main wall/door/window connection points. The function is available from the **Ribbon Bar - Interior tab - Electrical Accessory - Switches or sockets location relative to the wall**.

- To execute the command, you have to click the wall side that has connection with electrical accessories and then place the dimension chain graphically with your mouse.

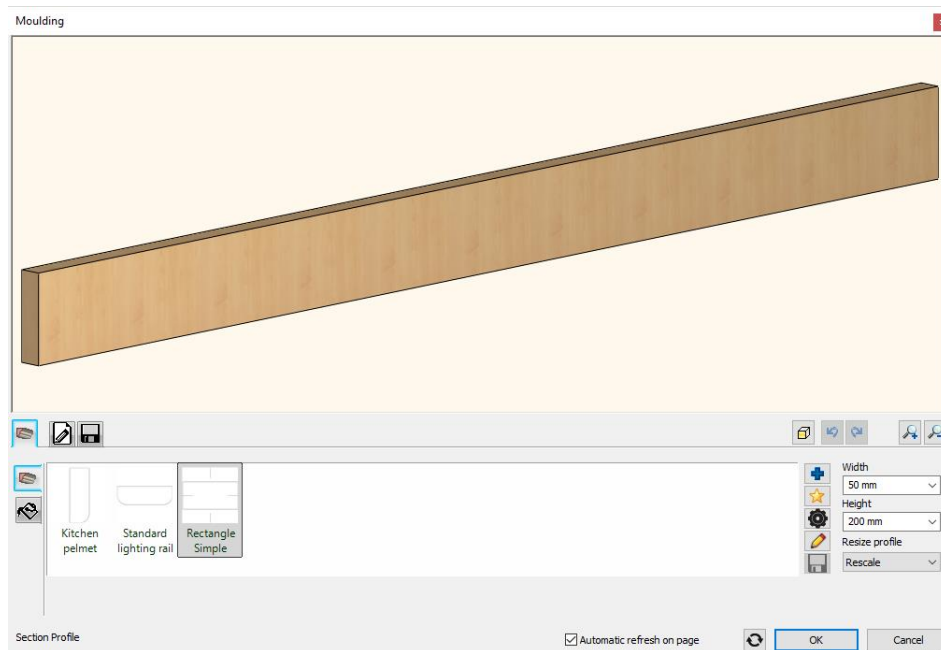
**11.6.8. Switches or sockets report list in Excel**

Using the **Ribbon Bar – Documentation tab – Quantity take-off – Excel list – Interior Calculation** command you can select Electrical accessories and save switches and socket data in Excel (.xls or .xlsx) file.

**11.7. Moulding**

Moulding is a particular shape to decorate the top or bottom of a wall, or a door, window, or piece of furniture. Moulding is available through Room maker too. You can vary in profile, size and finish.

Location of the command: Ribbon bar > Interior > Sweep

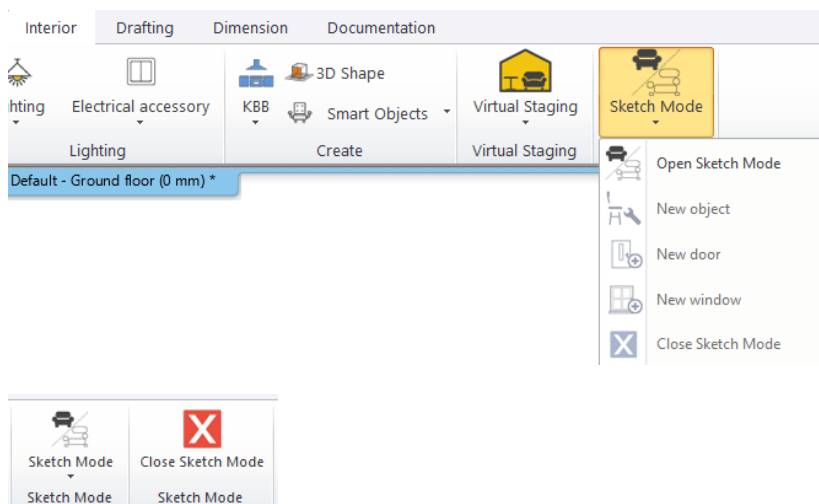


## 11.8. ARCHLine Sketch Mode

The Sketch Mode allows to edit a selected object in a blank project. After starting this command the selected element is broken into its components which can be modified, deleted or a new material can be assigned to them individually. After the modifications the components should be saved as a new or replacement object, door or window. After this the Sketch Mode should be closed.

The main function of the Sketch Mode is to repair the errors of the objects downloaded from the internet but the objects already saved in the Design Center can also be modified in it easily. When activating the Sketch Mode the program automatically saves the actual project and puts it into the background. In the Sketch Mode only the selected object is visible and editable. To return to the saved project close the Sketch Mode.

1. Location of the command: **Ribbon Bar - Interior tab – Sketch Mode – Open Sketch Mode**



After downloading from the BIMObject, Cadenas, Synchronia object libraries the program automatically activates the Sketch Mode. The imported elements can be converted into object, door or window keeping the original BIM parameters. Use the Interior – Single Object – New object command to save the ARCHLine object and the Interior – Single Object – New door or New window command to save new door/window.

## 11.9. Tiling

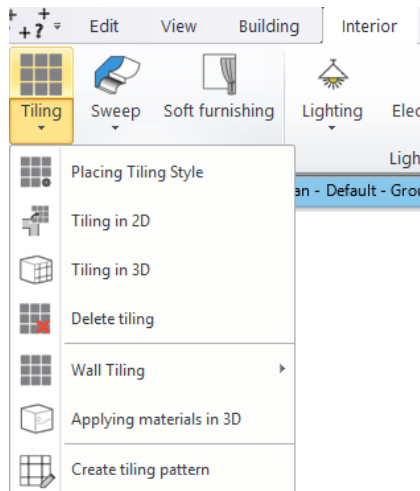
The *Tiling* function can be used on any surface designing the real arrangement of tiles and paving.

Tiling layout definition means that the distance between the tiles and the direction of them have to be defined. The pattern given out by them can also be defined. Inside an area covered by tiles it is possible to define another background area with arbitrary shape and different pattern.

You can insert individual tiles too.

The quantity take-off reports the number of tiles grouped according to the whole and cut size.

To define new tiling use commands of the *Interior tab -- Tiling*

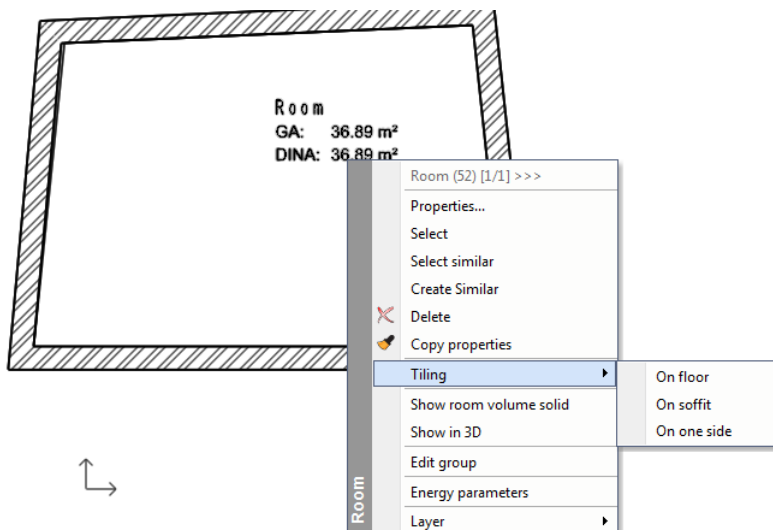


### Room

Tiling layout can be added to the floor, to the soffit or to any sidewall of a room through its Room.



Note that you can add tiling to these surfaces only if a room border surface template is attached to the Room. About Room border surface templates see the chapter 9.5.1.5. Border surfaces.



The difference between the tiling added to the sidewall of a room and the sidewall decoration added through a Room is that in the first case the decoration will be defined along the full wall length, whereas in the second case only a part of the wall defined by the wainscot of the sidewall will be decorated.

Apart from this the tiling layout definition works like for any other objects.

### Creating a new tiling

Decoration definition consists of two phases:

- ❖ Background area definition
- ❖ Tiling

To decorate a surface of a wall/slab/room/terrain, click on the object by right mouse button. Select one of the Tiling... commands in the shortcut menu. If you have selected the Tiling In 3D, Slab/Tiling on Floor or Slab/Tiling on Ceiling command, you can start the decoration immediately, otherwise the program first creates the layout of the selected area and you have to place it on the drawing.

Once the surface to decorate is selected, a number of decoration commands appear in the floating menu. You can start the decoration by selecting one of them.

You can close the decoration process by selecting the “Close” command in the floating menu or pressing the ESC or ENTER key. Use the “Close and remove layout” command instead of “Close” if you do not want to keep the decoration layout on the drawing.

### 11.9.1. Background area

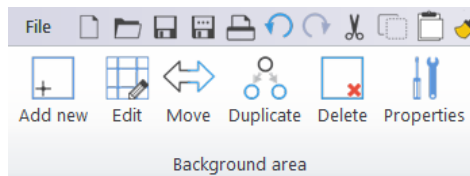
You can assign new material to the selected face of a wall or slab with the help of a contour. In this way it is simple to create for example a plinth or other decoration that can be well presented on the photorealistic image. If your decoration includes only homogeneous materials then your decoration is complete with the background area definition.

You can also use the created background area for the grounding of tiling. The material of the background area is important, because it defines the material representation of the gap between tiles. Additionally, the shape of the background area defines the surface geometrically where the distribution of tiles will apply (See later: Tiling).



Tiles can be placed only on those areas where the background has already been defined.

With the help of the available options background area can be added, edited or modified:



For the last command see the details in chapter 15.1.22. *Modify Material*

#### 11.9.1.1. Add New Background Area

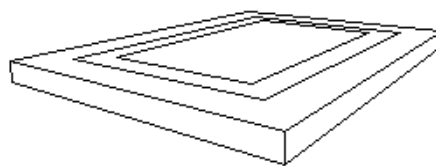
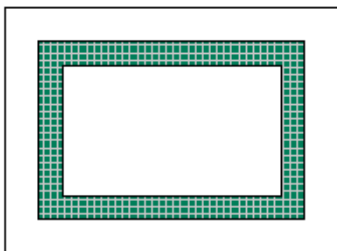
- Select the Add New command from the Ribbon Bar.
- Define the profile of the decoration using any option in the *Profile definition*.
- From the appearing *Material* dialog select the material that will belong to the closed contour.



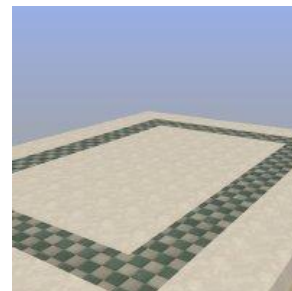
See the details of *Profile definition* in chapter 8.9. *Specifying profile*.

In case of decorating a floor or ceiling select the **ROOM** option instead of defining the profile, if you want to assign new material to the entire floor (top face of a slab) surrounded by the walls.

Decorations appear both on the wall layout, 3D view and on the photorealistic image.



Don't be confused! The pattern you see on this drawing is only a background area used as decoration. Define a background area according to the glue line material used for tiling if you want to place tiles on this background area.



#### 11.9.1.2. Edit background area

- Select the Edit command from the Ribbon Bar.
- Click the background area you want to edit.
- **Enter** to close the selection.
- Select from the appearing Edit profile commands (move node, rounding, etc.) and modify the selected contour.



See the details of Profile editing in chapter 8.9.9. *Editable profile*.

### 11.9.1.3. Move background area

- Select the Move command from the Ribbon Bar.
- Select the areas to be moved.
- **Enter** to close the selection.
- Give the reference point of the selected area(s) and move it to another place.

### 11.9.1.4. Move a copy

- Select the Duplicate command from the Ribbon Bar.
- Select the areas to be copied.
- **Enter** to close the selection.

Give the reference point of the selected area(s) and copy it to another place.

### 11.9.1.5. Delete

- Select the Delete command from the Ribbon Bar.
- Select the areas to be deleted.
- **Enter** to close the selection.

When one background area overlaps another background area, you can use this command to subtract one background area from another.

### 11.9.1.6. Subtract tiles

If individual tiles are defined on an existing background area you can subtract the area of them from the surrounding background area.

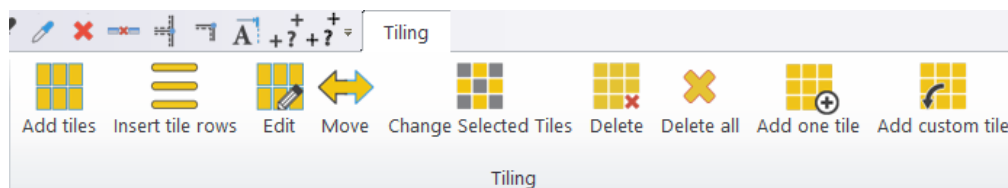
- Select the Subtract tiles command in the floating menu.
- Select a background area.
- Select tiles.
- **Enter** to close the selection.

You can leave “gaps” between the area and the tiles by selecting the **Offset** option while selecting the tiles and entering an offset value. This way the program shifts the profile of the tiles with the given value and subtracts these increased areas from the background area.

## 11.9.2. Tiling

You can create the arrangement of tiles on the previously defined background area - on the surfaces of architectural objects. The material, type, size of tiles and gaps between them can be defined precisely here.

Select from the following options:

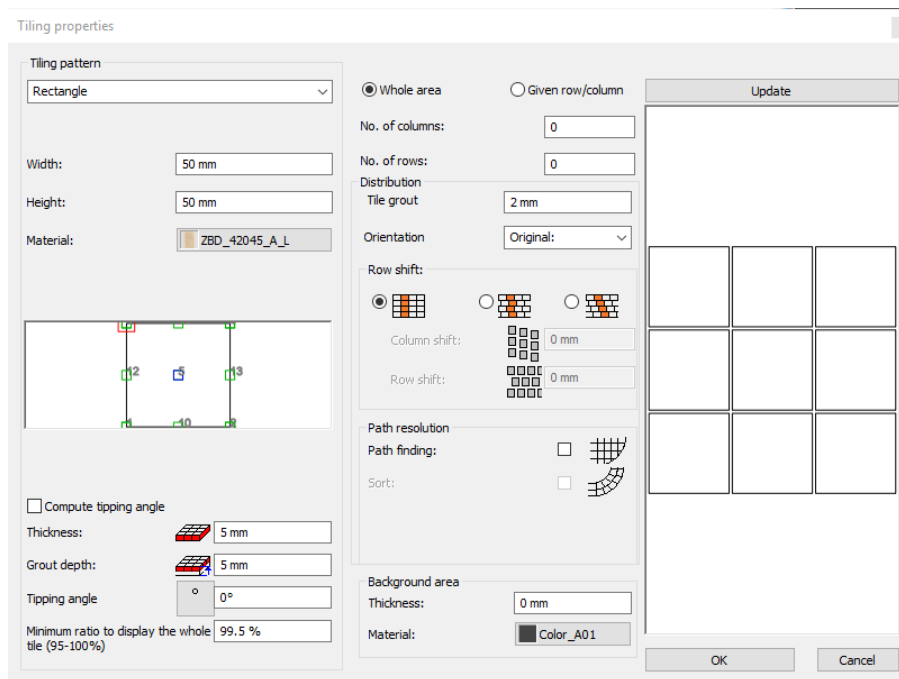


### 11.9.2.1. Add tiles

With the help of this command you can define the regular arrangement of tiles on the selected background areas.

- Select **Add tiles** command from the Ribbon Bar.
- Select a background area to tile.

To define the tiling, the following dialog appears:



### Tiling pattern

Specify the pattern of tiling on the selected background area.

### Width / Height

These values define the size of the tiles: type the width and height values. You can resize tiles with custom profile or complex tiling patterns by changing these values, too.

### Material

Define the material of the tiles by clicking on the button, select from the material library of the program.

### Given row/column

If you wish to cover only a part of selected area with tiles, type the number of rows and columns. If you want to cover the entire area, click on *Whole area*.

### Whole area

If you wish to cover the entire area, activate this button.

### Orientation

By default, the material properties of the tile defines the texture orientation through the direction setting. You can use this direction setting or you can apply a rotation to the left or right compared to the original material direction setting.

### Row shift

Select from the following three options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the Row shift / Column shift fields.

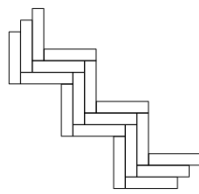
### Row shift value

You can set the value of the row shift if one shift option was selected.

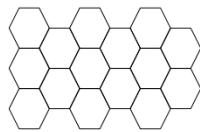
Define the type of the profile of the tile:

- ❖ Rectangle profile – If you select Rectangle profile, define the reference point of placement of the rectangle tile.
- ❖ Use profile – Click on the *Profile selection* button and select the adequate profile from the Profile library if the profile is not rectangle.
- ❖ Tiling pattern – Click on the *Tiling pattern* button and select a complex pattern from the library.
- ❖ Select Object – Click on the *Select Object* button and select an object from the library for tiling.
- ❖ Mosaic tiling – Click on the *Mosaic tiling* to select at least two, at most four materials to create a mosaic from them.
- ❖ Built-in pattern – The most popular regular tiling patterns are available:
  - herringbone,

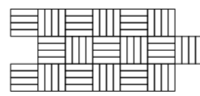
- hexagon,
- four square finger parquet,
- five square finger parquet
- 2 squares + 1 rectangle
- Chevron + Hexagon option 1
- Hexagon + Chevron left + Chevron right
- Chevron left
- Chevron left + Chevron right Option 1
- Chevron left + Chevron right Option 2
- Chevron left + Chevron right Option 3
- Alhambra
- Fan Option 1
- Fan Option 2
- Triangle Option 1
- Triangle Option 2
- Benzene
- 3 parts hexagon



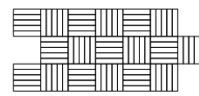
Herringbone



Hexagon



Four square finger parquet



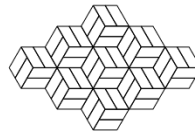
Five square finger parquet



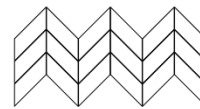
2 squares + 1 rectangle



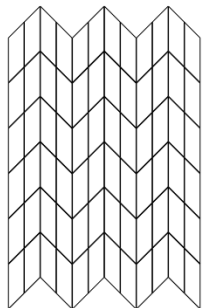
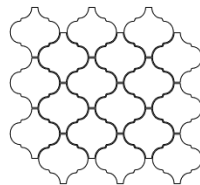
Hexagon + Chevron left + Chevron right



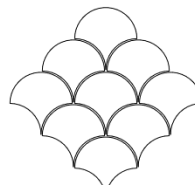
Chevron left

Chevron left + Chevron right  
Option 1Chevron left + Chevron right  
Option 2

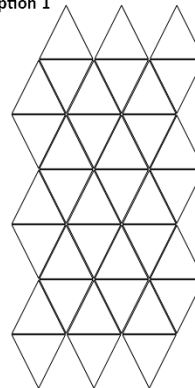
Chevron + Hexagon option 1

Chevron left + Chevron right  
Option 3

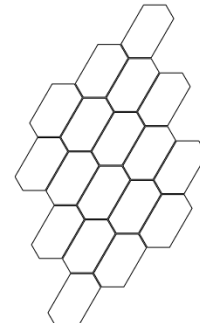
Alhambra



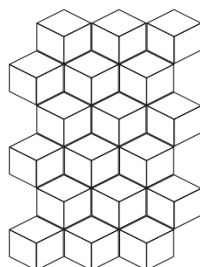
Fan Option 1



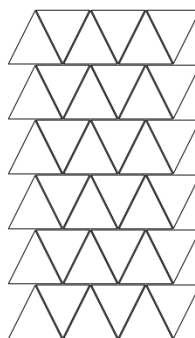
Triangle Option 1



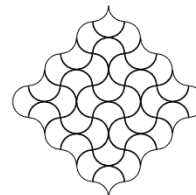
Benzene



3 parts hexagon



Triangle Option 2



Fan Option 2

### Thickness

Define the thickness of tiles.

**Grout depth**

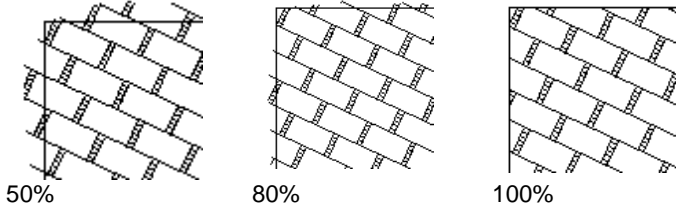
Define the raising value of tiles measured from the background area. If 0 is defined, the tiles will be placed exactly on the surface.

**Tipping angle**

By default, the flat surface of the tiles are parallel with the surface you tile. Optionally you can define an angle for the tiles so those won't be parallel to the surface you tile.

**Minimum ratio to display the whole tile**

If the size of the cut tile is above a certain % of the original tile size, the program counts it as an entire one. The aim of this option is the practical approach when we represent nearly whole tiles as a whole one in the list of tile calculation. In these examples we intentionally used extreme values for better illustration.

**Horizontal / Vertical tile grout**

Define the distance between the tiles in horizontal and vertical directions. The gap will be presented with the material of the background area.

**Row shift**

Select from the three graphical options:



There is no shifting between rows or columns; the tiles are matched to each other by their corners precisely.



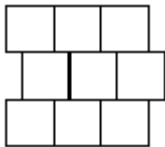
If the button is switched on you can define the value of horizontal *row shift*. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the *Row shift / Column shift* fields.

**Row/column shift**

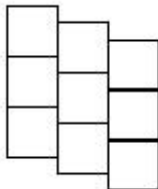
Define the horizontal and vertical shift values of the tiles. The fields become active if the relevant options had been selected first.



Example 1: (tiles: 0,3x0,3)



, Row shift: 0,1



Example 2: (tiles: 0,3x0,3)

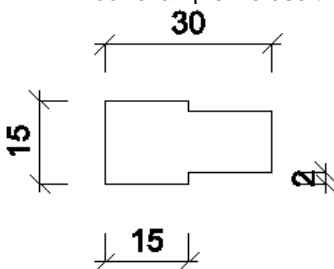


, Column shift: 0,1

**Row and column shifting Example**

There is a possibility to shift the tiles in X and Y direction. You can use well this command at for example: placing Viacolor cover.

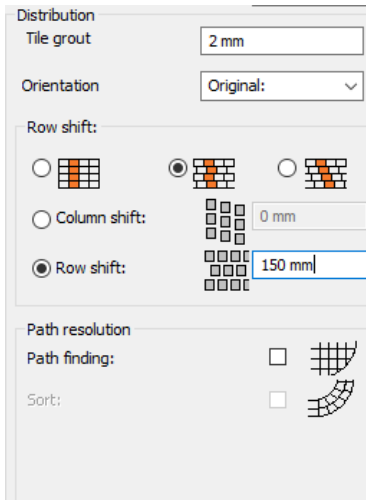
In our example we use the following profile:



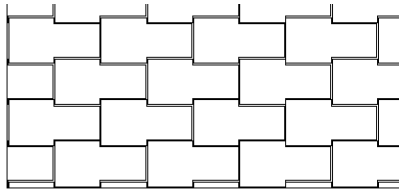
- Choose the proper profile in Edit profile dialog box.
- From the Row shift options select the second one.



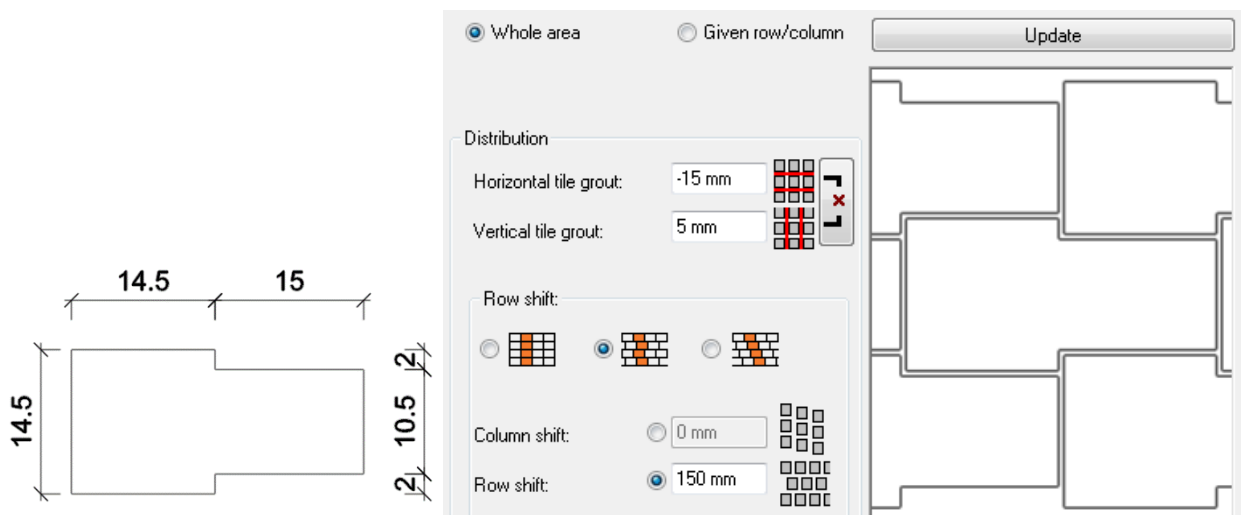
- Enter -0.02 in the Horizontal tile grout field, and 0.15 in the Row shift according to the profile.



The program will move exactly the tiling with zero horizontal/vertical tile grout.



When you would like to have 0.5 cm tile grout, you have to use other profile and tiling parameters, for example:



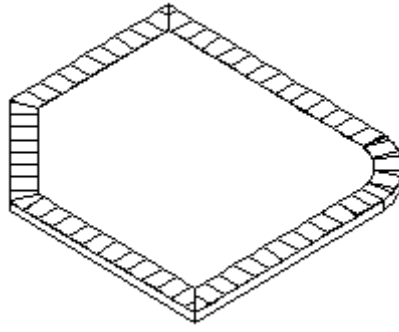
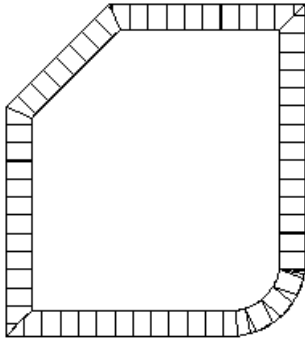
### Path finding

If this option is switched off, the program will not take the contour of the area into consideration so the tiles will be arranged in a homogeneous pattern along the path.

With this option it is possible to place tiles along a path. This function is important because by this you are not restricted to align subsequent tiles only to the vertical edges of the tiles but even to a curved path.

At placing you have to define the start point and the end point of the path to which the path finding is applied. In case of closed path like on the figure below the start point and the end point can be the same so the path finding will be applied along the whole contour. In case of path finding the number of rows has to be defined. Opposed to the default case when zero row and column numbers mean full coverage, row number of zero means one row here. The number of columns depends on the path.

For example:

No. of columns: No. of rows: Path finding:  Sort: 

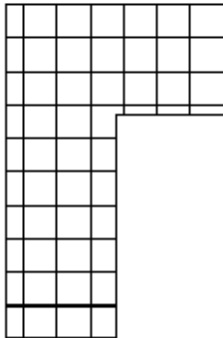
### Cutting the tiles in corners

It is also possible to cut the tiles in corner according to the figure above. If the Path finding option is switched on the Minimum angle in corner to cut tiles with the half angle option will appear. You have to specify an angle here. If the angles of connected edges at path breakpoints exceed the specified angle the program will cut the tiles in half angle.

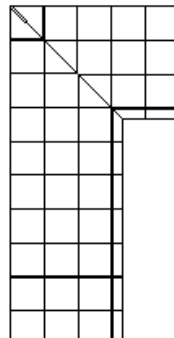
Let's see an example:

The edges meet in the corner in right angle and the specified minimum angle is  $90^\circ$ . In this case half angle cutting rule won't be applied therefore the tiles in the corner go to the edge without cutting.

If the edges meet in the corner in right angle and the specified minimum angle is less than  $90^\circ$  (for example  $45^\circ$ ), the program will cut the tile in half angle of the corner.



Minimum angle in corner to cut tiles with the halfangle

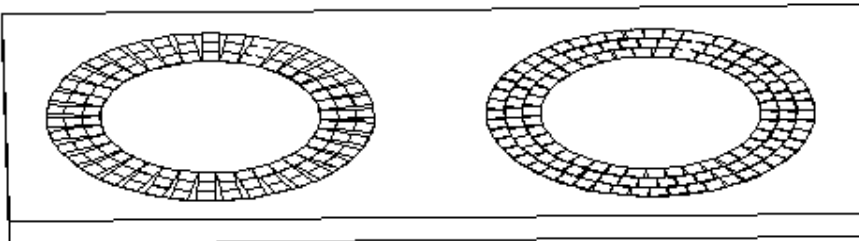


Minimum angle in corner to cut tiles with the halfangle

### Sort

If the Path finding option is active, by switching on the Sort option you can precisely adjust the tiles to each other within the path.

In the figure below on the left side the decoration tiles are sorted so they are adjusted to each other. On the left side the tiles are not sorted along the path.



- To place the decoration, please define the start and end point of the path if the Path finding option is activated.
- Place the pavement on the background area with its reference point.
- Define the direction of it by the cursor, or select from the options :

Rotation angle...

<b>Interactive rotation</b>	Define the angle by the endpoints of the sides of angle.
-----------------------------	--

### 11.9.2.2. Add One Tile

This command is the simplified version of *Add Tiles* command. With the help of this one piece of tile can be placed. It doesn't need any background area.

- Select the Add One Tile command from the Ribbon Bar.
- Select a background area.
- The Tiling properties dialog appears.

### 11.9.2.3. Add Custom Tile

With the help of this command you can place custom tiles on the selected background areas.

- Select the Add Custom Tile command from the Ribbon Bar.
- Define the profile of the tile using any option from the *Profile definition*.

The following dialog appears:

- Similarly to the *Add tiles* function, you can give the names of tiles in this dialog; you can assign material to them from the program material library.
- Besides you can define the thickness of tiles and their raising from the background.
- Finally you have to define the *Clipping* border. Choose from the following options:

<b>No</b>	The whole selected area is going to be used.
<b>User profile</b>	The new pavement can be defined by an individual profile. By this you can cut the tiles by the defined profile.
<b>Total clip</b>	With the help of Toolbox Profile options you can design a profile on the background area to place the tiles on. The tiles can also be cut in this case.

### 11.9.2.4. Move Tiles

- Select the Move Tiles command from the Tiling menu after clicking on the tiles in 3D with right mouse button.
- Give the reference point of the contour and move it to its right place.

### 11.9.2.5. Copy Tiles

- Select the Copy and paste tiling to another surface command from the Tiling menu after clicking on the tiles in 3D with right mouse button.
- Select the tiles to be copied.
- Give the reference point of the contour and move it to its new place.

### 11.9.2.6. Delete Tiles

- Select the Delete tiling command from the Tiling menu after clicking on the tiles in 3D with right mouse button.
- Select the tiles to be deleted.
- **Enter** to close the selection.

### 11.9.2.7. Delete Tiles of Same Type

You can delete in one step all of the tiles which have a same name.

- Select the Delete Tiles command in the Toolbox
- Select the tiles to be deleted.
- **Enter** to close the selection.

## 11.9.3. Modify material of background areas and tiles

By means of these commands you can modify the material of a background area or tile.

### 11.9.3.1. Modify Material

You can change the material of a background area.

- Select the Background area properties command from the Tiling menu after clicking on the tiles in 3D with right mouse button.
- Select the Change material option from the appearing list.
- Select the contour whose material has to be changed.
- **Enter** closes selection.
- Select a different material from the appearing *Material* dialog. **OK**.

### 11.9.3.2. Resize material

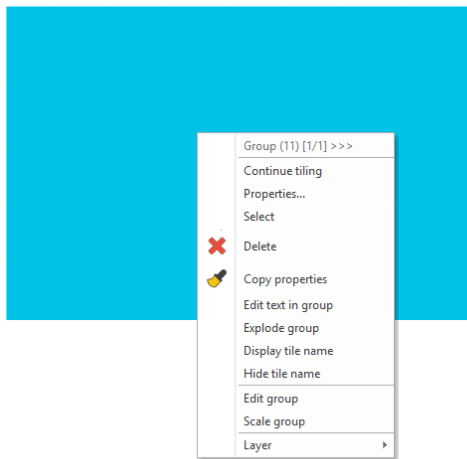
By means of this command you can modify the sizes of the texture of the selected background area or tile.

- Select the Background area properties command from the Tiling menu after clicking on the tiles in 3D with right mouse button.
- Select the Resize material option from the appearing list.
- Select the decoration to modify its size.
- **Enter** to close the selection.
- Define the new width of the texture, or
- **Enter** accepts the original value.
- Define the height of the texture, or
- **Enter** keeps the original ratio of height and width.

## 11.9.4. Tiling - Show tile name on tiles

To make the tile identification easier, it is possible to show the tile names on the decoration layout on the floor plan. For this you only have to do the followings:

- Create a tiling layout. Either click on the wall in 3D and select Tiling on the layout command from the appearing Tiling menu or right click on the wall in 2D and select Tiling – Tiling on wall side.
- Place the layout and select the *Finish* command from the Ribbon Bar.
- Click on the tiled decoration layout with your right mouse button. It has been converted into a group.
- Select the *Display tile name* command from the appearing menu.



- The program will place the tile name on each tile, using the actual text properties:

Brown tiles	Green tiles
Brown tiles	Green tiles

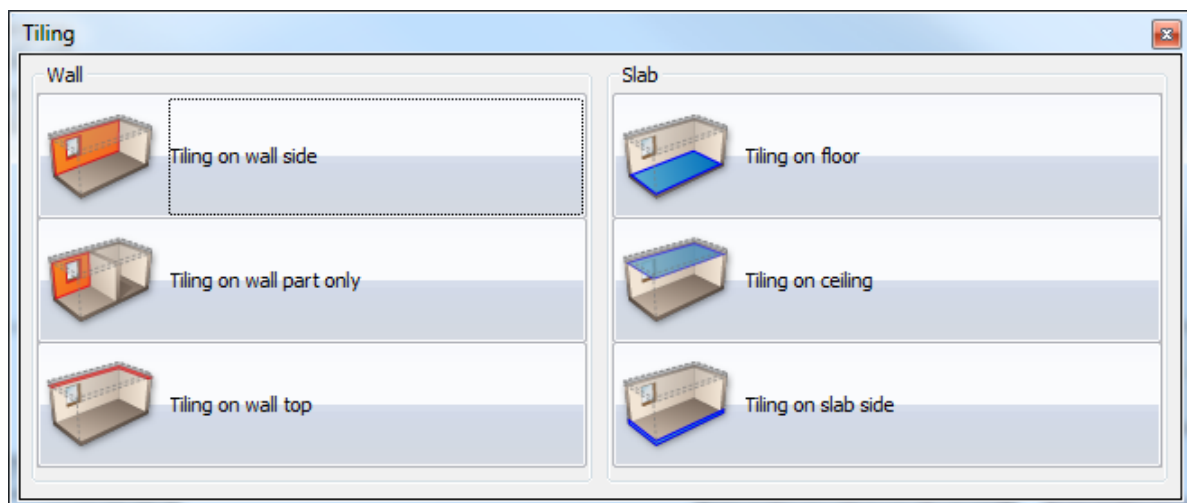
**!** The program lists the name of the tile, not the name of the material!  
Pay attention, when you use long tile name!

### 11.9.5. Place tiling style

With the Interior tab – Tiling - Place tiling style command you can place the active tiling style (see Interior mtab – Properties – Tiling) to a surface, typically on a wall. In a 3D View you have to select a surface and then specify the reference point and the direction. In case of walls you do not have to specify the reference point and direction. On a floor plan you can use this command for tiling walls by clicking on a wall contour.

### 11.9.6. Tiling in 2D

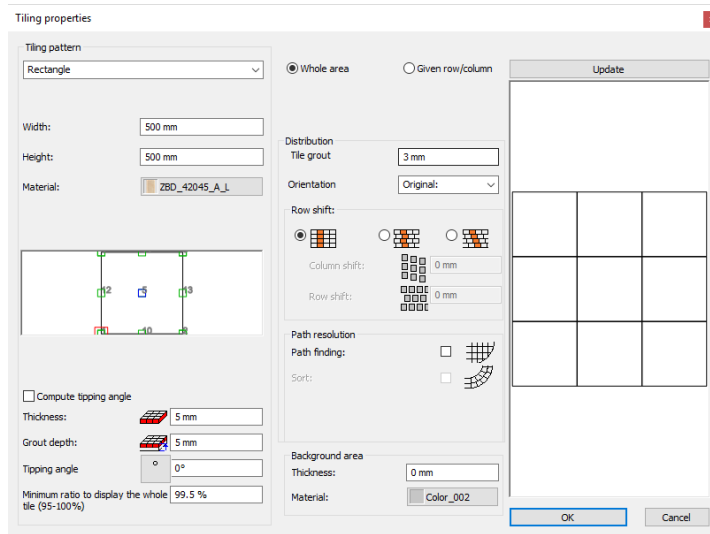
With the Interior tab – Tiling – Tiling in 2D command you can place tiling on wall side, wall part only, wall top, floor, ceiling and slab side.



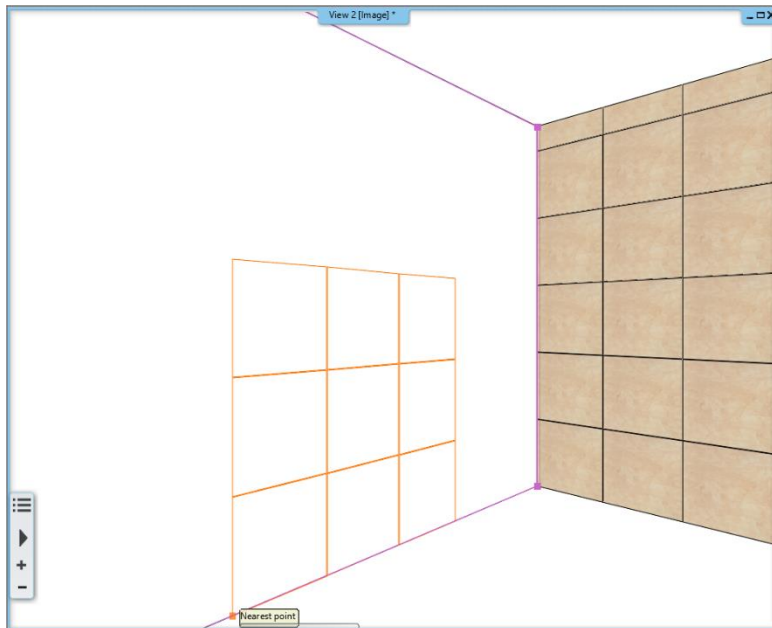
- Select a function.
- Select the appropriate part of wall/slab.
- Use the appearing options on the Ribbon Bar for tiling the selected part.

### 11.9.7. Tiling on any 3D surfaces

- Start the Tiling in 3D command from the **Ribbon Bar – Interior tab – Tiling**.
- Select the 3D surface.
- The Tiling properties dialog appears where select the material of the tiles.



- Place the cursor reference point to the required tiling reference point on the selected surface.
- Now you can define the tiling rotation angle graphically or press ENTER to place it horizontally.

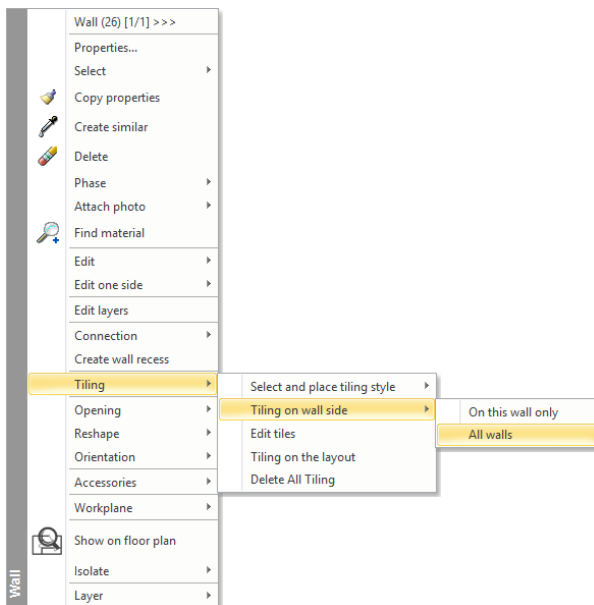


You will receive the full tiling similar like that:



Another method is to place the tiling directly from the 3D View.

- Activate the 3D View and click on a surface with right mouse button. The selected surface is displayed with red colour. Choose for the command list the Tiling – Tiling on wall side – All walls.



- The tiling parameters dialog appears. Choose here a texture for the tile and select the Whole area button.
- After closing the dialog the tiling appears.

### 11.9.8. Delete tiling

With the Interior mtab – Tiling – Delete tiling command you can delete tiling on the selected surface in the 3D View.

### 11.9.9. Applying materials in 3D

With the Interior tab – Tiling – Applying materials in 3D command you can place tiling on the selected surface in the 3D View.

- Select a tiling material from the material library.
- Select a surface in 3D.

### 11.9.10. Copy tiling between surfaces

You can copy an existing tiling to another surface with the Copy tiling commands. It makes quicker to make the tiling layout in a room, e.g. bathroom, where the tiles are frequently the same on more walls.

- Activate the 3D View and click on a tiled surface with right mouse button. The selected surface is displayed with red colour.
- Click on the *Copy and paste tiling to another surface* option in the appearing Tiling menu.
- Now select the surface to copy the tiling on it.

### 11.9.11. Listing tiles

The tiling quantity take-off results an Excel list and displays the quantity of tile needed for the project.

- Select the **Ribbon Bar – Documentation tab - Quantity Take-Off – Excel list** command and from the appearing list *Tiling*.
- Switch on the Walls, Slabs, Rooms and Other checkboxes.

Dimension, consignment

Options

Walls

Slabs

Rooms

Roofs

Other

Element type

OK Cancel

	A	B	C	D	E	F	G	H
1	<b>Tiling consignment</b>							
2	<b>metallic crema_25x40</b>							
3		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
4		250	400	19.37	262	(150/23/89)	0	
5								
6								
7								
8								
9	<b>metallic crema_33x33</b>							
10		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
11		333	333	2.86	35	(15/9/11)	0	
12								
13								
14								
15								
16	<b>metallic flower_25x40</b>							
17		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
18		250	400	2.4	30	(18/3/9)	0	
19								
20								

### 11.9.12. Tile Patterns

You can cover a surface of an architectural object not only with a rectangular or custom profiled tile but with a complex pattern as well. A tile pattern consists of separate tiles.



Once you have a tile pattern, you can distribute it on a background area like distributing a single tile.

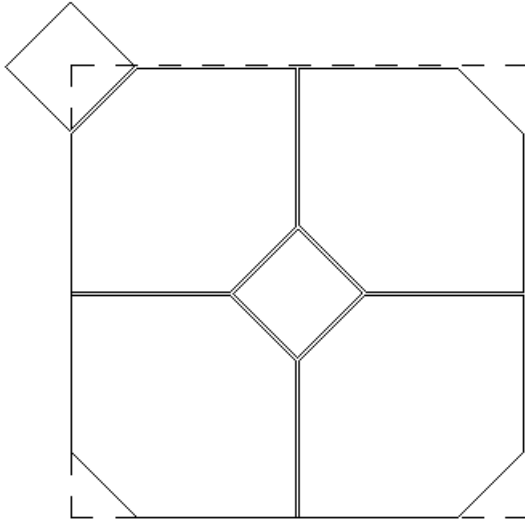


Tile patterns are stored in an object library as a special group. You can find some predefined patterns in the *Groups/Tiling patterns* folder of the Design Center.

### Creating tile pattern

This command is used to create a new tile pattern.

In case of complex patterns, first draw the pattern precisely by means of drafting tools like lines or arcs.



- Select *Interior tab – Tiling - Create tiling pattern* from the Ribbon Bar.
- Define the profile of the tile pattern unit using any option in the *Ribbon bar – Profile definition tool*. (On the figure above, the profile of the tile pattern unit is the square drawn by dashed line)



Define a simple rectangle here: the program will use the height and width of the profile as a shift distance to multiply the tiles of the pattern, the exact shape of the profile won't be taken into consideration.

- Select the *Add One Tile* or *Add Custom Tile* command from the Ribbon Bar and create tiles on the pattern area.

The tiles can overhang the profile of the tile pattern unit. Pay attention to define a pattern that can be distributed continuously on a surface.



You cannot change the gaps between two tiles of the same tile pattern unit in the dialog later; you should draw here the exact pattern including gaps.

- Select the *Finish* or *Close and Remove Layout* command from the Ribbon Bar.
- As the last step you have to name the tiling pattern and save it in a user defined object library.

### Modifying a tile pattern

This command is used to modify a tile pattern previously created.

- Select *Tiling - Create tile pattern - Create tile pattern – continue* from the *Ribbon Bar – Interior tab* and select a tile pattern layout on the drawing. You can also click on the tile pattern layout with right mouse button and select *Continue tiling* from the local menu.



If you would like to modify a pattern in the object library which is not present in any drawing window, first place it on a drawing.

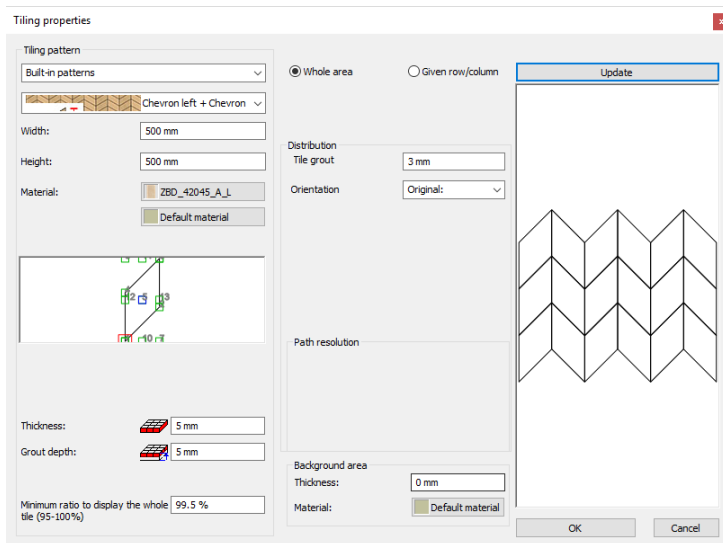
- Select a command from the Ribbon Bar. You can add, edit and remove tiles here.
- As the last step you give a different name to the tile pattern and save it in a user defined object library.

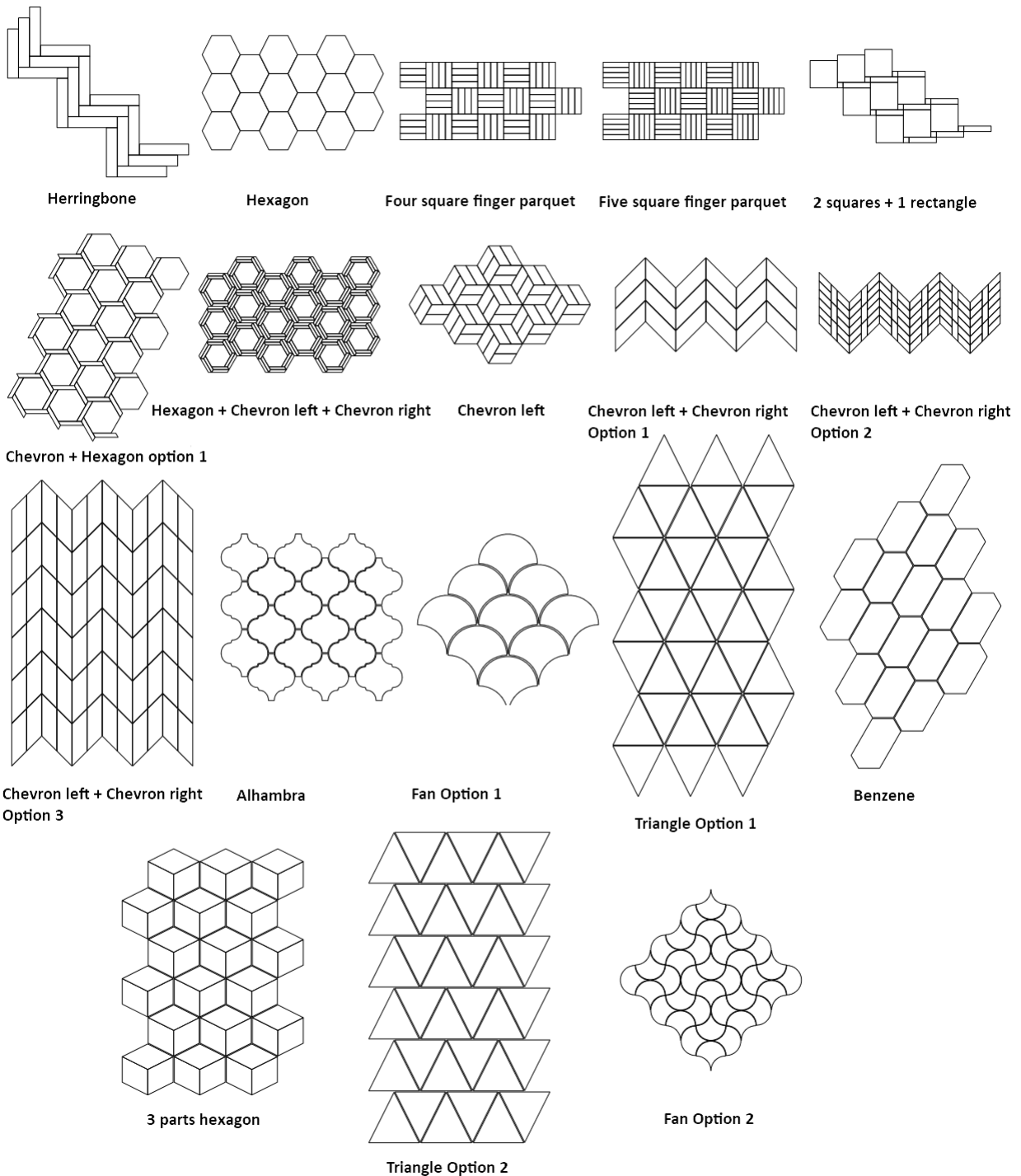
### 11.9.13. Tiling with predefined patterns

Available tiles are extended with 18 popular patterns:

**Types:**

- ❖ Herringbone
- ❖ Hexagon
- ❖ Four square finger parquet
- ❖ Five square finger parquet
- ❖ 2 squares + 1 rectangle
- ❖ Chevron + Hexagon option 1
- ❖ Hexagon + Chevron left + Chevron right
- ❖ Chevron left
- ❖ Chevron left + Chevron right Option 1
- ❖ Chevron left + Chevron right Option 2
- ❖ Chevron left + Chevron right Option 3
- ❖ Alhambra
- ❖ Fan Option 1
- ❖ Fan Option 2
- ❖ Triangle Option 1
- ❖ Triangle Option 2
- ❖ Benzene
- ❖ 3 parts hexagon





### 11.9.14. Mosaic tiling

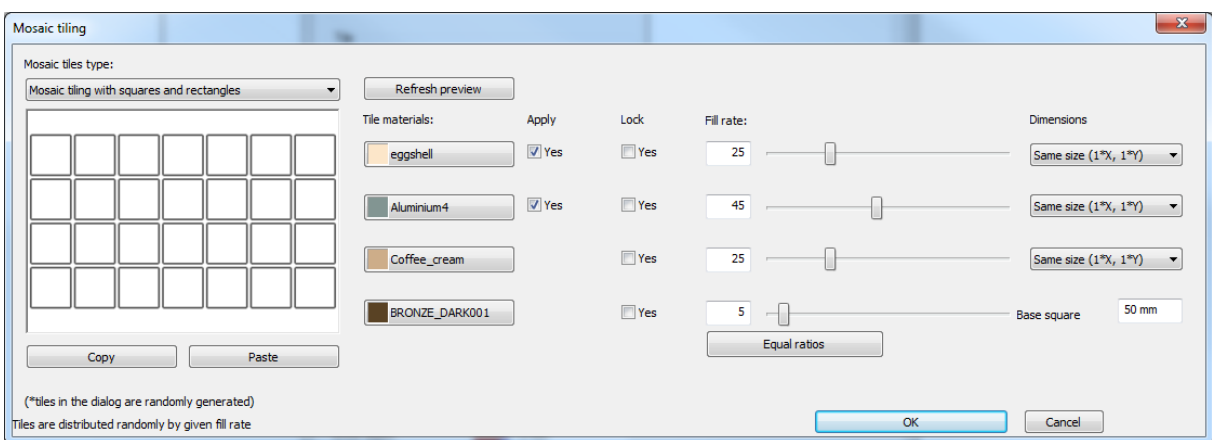
This new tiling method help us to create detailed and diverse tiling styles with no repetition.

Mosaic tiling is perfect use in bathroom or kitchen backsplash providing a unique look. Create a mosaic of randomly generated patterns of the same size tiles using maximum four types of material or using four different sized tiles.

- Randomly generated tiling with four different materials or four different sized mosaic tiles.
- Square, hexagon or circle shapes for tiles.
- The frequency of the tiles can be adjusted.
- The exclusive tools for designing a unique bathroom, with this tool it is possible to cover any different surfaces with randomly generated pattern.



In “Tiling properties” dialogue window select “Mosaic tiling” from the list. Now a new dialog window will appear for “Mosaic tiling”, here you can set the parameters of this tiling method.



### Mosaic tiles type

In the drop down menu you can choose: “Mosaic tiling with squares and rectangles”, “Mosaic tiling with circles” and “Mosaic tiling with hexagons”. This setting are to define the shape of tiles.

### Tile Materials

For mosaic tiling you can use up to four materials. Clicking on the material will bring up the “Material” dialog window and there you can refine the material. On the buttons, you can see the preview of the currently selected materials.

### Apply

As you can see in the “Mosaic tiling” dialog window, beside two tile materials you can find check boxes under “Apply” column. When these are disabled, that the linked tiles will not be used in the mosaic tiling.

### Fill rate

The selected tiles will be displayed by a random fill rate. Also you can define manually this rate by typing the percentage in the input fields or moving sliders instead. With the **Equal ratios** button you can set equal fill rate for each material.

### Lock

You have an option to lock the fill rate or position of the slider. The locked values will not be changed in case you want to modify the others’ fill rate.

### Dimension

In this column, you can specify the dimensions of each tile involved in mosaic tiling. The bottom material defines the base square tile. In the *Base square* input field, you can specify the size of the smallest square tile in mm. For the other materials you can apply multipliers in X and Y directions by selecting the desired multiplier from the belonging list.

### Refresh preview

### Manual

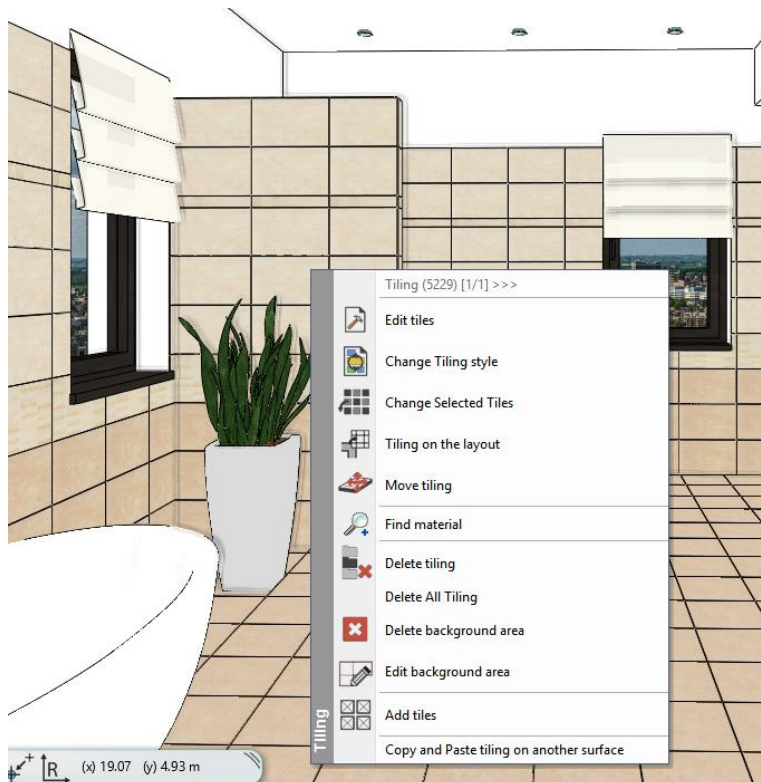
The left side of the “Mosaic tiling” dialog window shows the preliminary view of the random tiling style. When you refined the settings of the mosaic tiling you can check the result by clicking on the “Refresh preview” button.

### Copy/Paste

The “Copy” function saves the actual settings. At any time you open the “Mosaic tiling” dialog window then you can always upload these saved settings by pressing “Paste” button.

### 11.9.15. Advanced tiling – Quick tiling in 3D

- Tiling design commands directly can be reached in 3D View by right clicking on tiles.
- You can move the tiles in one step by rotating left, centre, right reference point of the tile.
- The replacement of tiles is now possible.
- Modification of tiling style in one step.
- Simplified removal option.

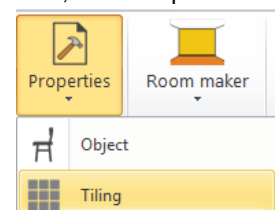


### 11.9.16. Tiling with real catalogue sets

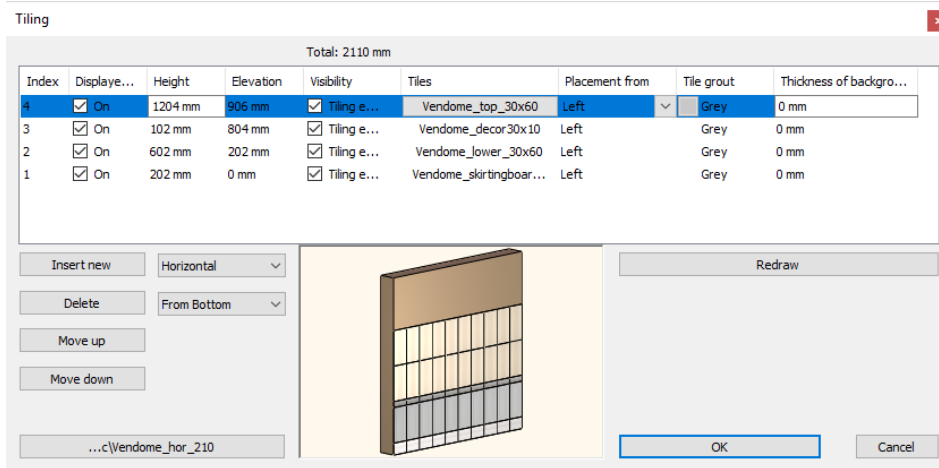
#### 11.9.16.1. Create tiling style

First you should create the tiling styles using existing materials what you would like to use in the model, then it is possible to apply them.

We can specify the orientation of the tile and other special properties while creating tiling style. You can activate the dialog box in the following ways: *Ribbon Bar – Interior tab - Properties - Tiling*



There is a Factory tiling style in the Tiling dialog box what you can use to create a new pattern or delete the rows to start a new one.



The tiling style can be created horizontally (with rows) or vertically (with columns) what you can check in 3D drawing in the middle of the dialog box. It is also possible to define where to start the tiling (From Bottom or From Top).

### Specify horizontal pattern

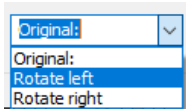
Let's start by creating a horizontal pattern. The chosen tiles and the pattern stripes will form horizontal lines. You can specify the start of the tiling from top or from bottom.

To define a pattern stripe you should specify the whole height of the stripe, the type of the tile and the color of the grout. The first line starts from 0, this is the relative height. The From Bottom / From Top option will take the exact location of it. With the placement options you can set the position (left, right or center) of the stripe's first tile.

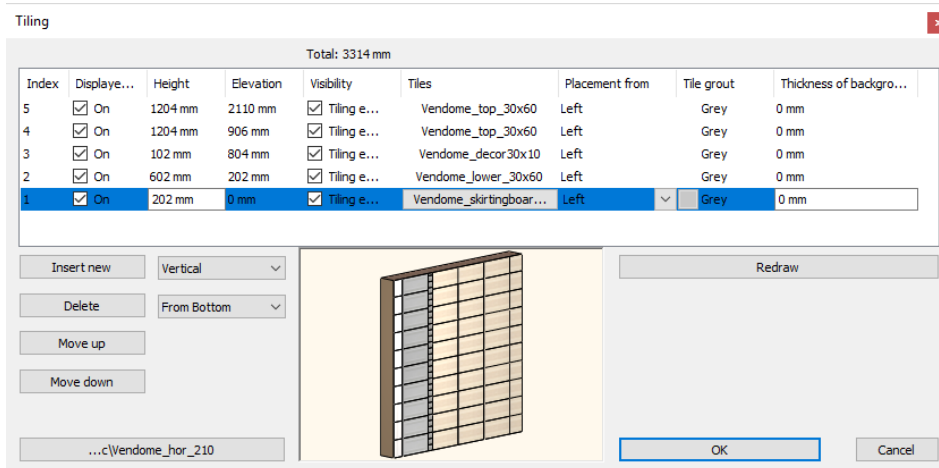
The created stripes are movable afterwards and their position is changeable too. In the preview window (right lower corner of the dialog box) you can check your work.

### Specify vertical pattern

The method is the same as mentioned previously. There is one difference, we rotate the stripes by 90 degrees.



That is why it should be corrected on the *Tiling parameters* window. If you would like to keep the original position of the tile, you should choose Rotate left / Rotate right from the *Orientation*.



## 11.9.16.2. Navigation buttons

### Insert new:

Creates a new stripe

### Delete:

Deletes the selected stripe

**Move up / Move down**

Moves the selected stripe up / down

**Redraw:**

Updates the 3D model in the right lower corner

**11.9.16.3. The properties of the stripes**

Please find below the modifiable or informative properties of the tile stripes.

Index	Displayed layer	Height	Elevation	Visibility	Tiles	Placement options	Tile grout
7	<input checked="" type="checkbox"/> On	504 mm	4224 mm	<input checked="" type="checkbox"/> Tiling enabled	ZBM6713	Left	Cream_0
6	<input checked="" type="checkbox"/> On	804 mm	3420 mm	<input checked="" type="checkbox"/> Tiling enabled	ZBK673	Left	Cream_01
5	<input checked="" type="checkbox"/> On	252 mm	3168 mm	<input checked="" type="checkbox"/> Tiling enabled	ZBM6713	Left	Cream_01
4	<input checked="" type="checkbox"/> On	1608 mm	1560 mm	<input checked="" type="checkbox"/> Tiling enabled	ZBK671	Left	Cream_01

**Index**

It shows the number of the exact tile stripe in the row. Using one index for the same tiles in one or more lines is recommended. If you would like to have more lines under an index number, please modify the height of the stripe. Please create a new stripe (with the next index number) by clicking on Insert new button if you would like to use another type of tile.

**Displayed layer**

We can adjust the visibility of the stripe. Use this solution for example in case of kitchen wall tiling between the lower and upper cabinets. The first line starts from 0 m, so we create a 0.9 m high stripe with No. 1 and switch off the visibility of it at the Displayed layer option. You will not see this tiling and the designed tiling starts with 0.9 m.

**Height**

Here you can specify the height of the tile (including grout). If you would like to place for example three rows with the same tile, you should add the height of the tile three times and calculate the grout thickness as well (between the mentioned three tiles).

The calculation of the height is  $n \cdot (t+g) = h$ , where  
 $n$  = number of the rows (with the same type of tiles)  
 $t$  = height of the tile  
 $g$  = thickness of the grout  
 $h$  = total height (with the same type of tiles)


**Elevation**

Shows the relative height (from 0 m) of the stripe.

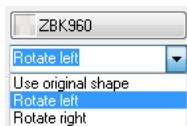
**Visibility**

You can control the display of tiles (by switching on or off). If you switch off the visibility (the tiles are invisible), you will only see the material of the grout behind the tiles.

**Tiles**

You can set the properties of the tiles in the selected stripe: 

**Orientation:** rotates tile.



Orientation plays important role when you create vertical patterns.

Choose Rotate left / right option if you would like to keep the original position of the tile.

**Placement options**

You can set the starting place of the tiling (from the left side of the wall, from center or from the right side).

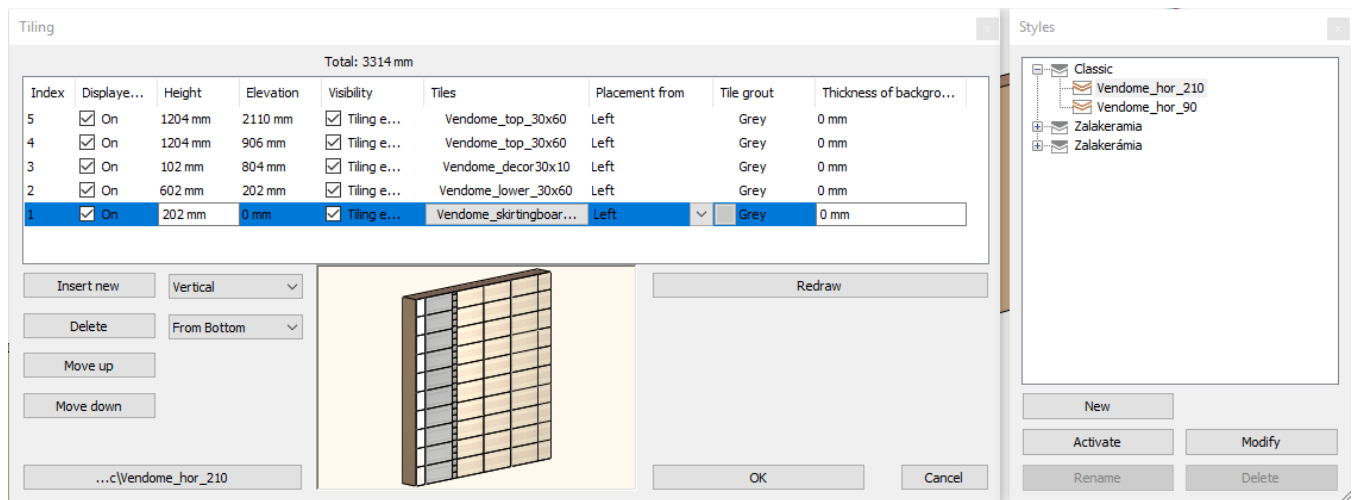
**Grout**

Choose a grout-material from the Materials library.

## 11.9.17. Save tiling style

**Style button:**

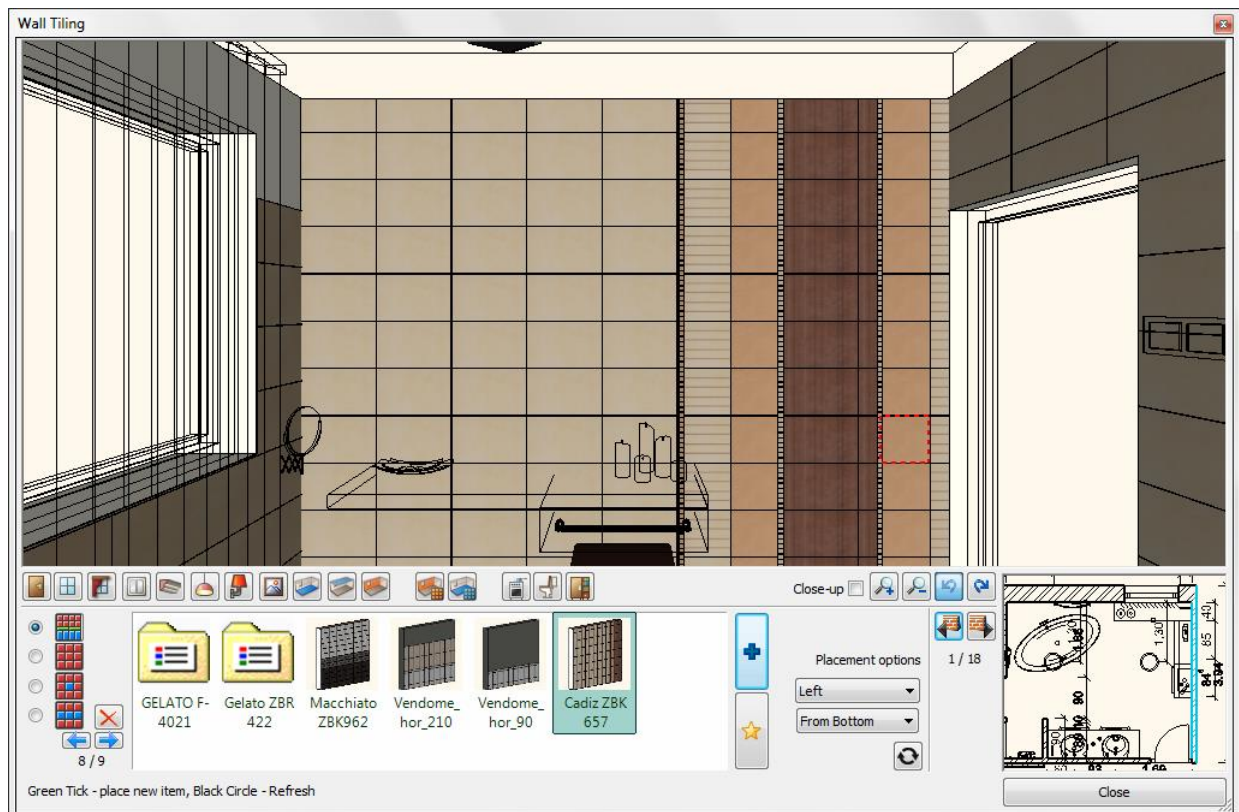
Displays the window where you can save the adjusted tiling style as a new style or activate, modify, rename, delete an existing one.



The following operations are can be done with styles:

- Save the created style as a new one
- Activation of style
- Modify, rename, delete a style
- Activate a style and create a new style with this active one

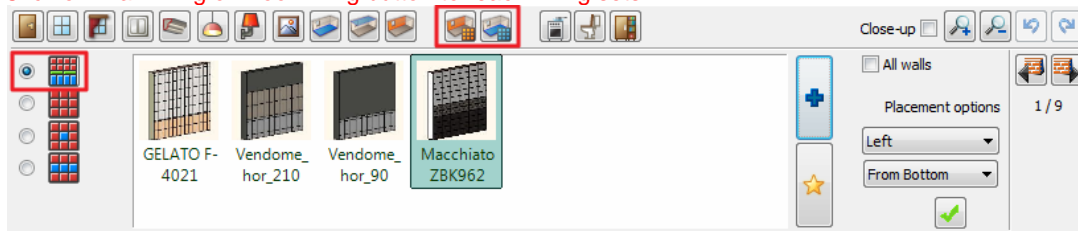
## 11.9.18. Place tiling style from the Room Maker



The previously created sets are applicable in the Room Maker, and some details can be simply modified (for example change a tile or a row / column). How to use the Tiling styles in the Room Maker?



- Start Room Maker. (Click on Toolbox – Start – Room Maker, then point inside an area bounded by single walls. The dialog box of Room Maker shows up.)
- Click on Wall Tiling or Floor Tiling button to reach Tiling sets.

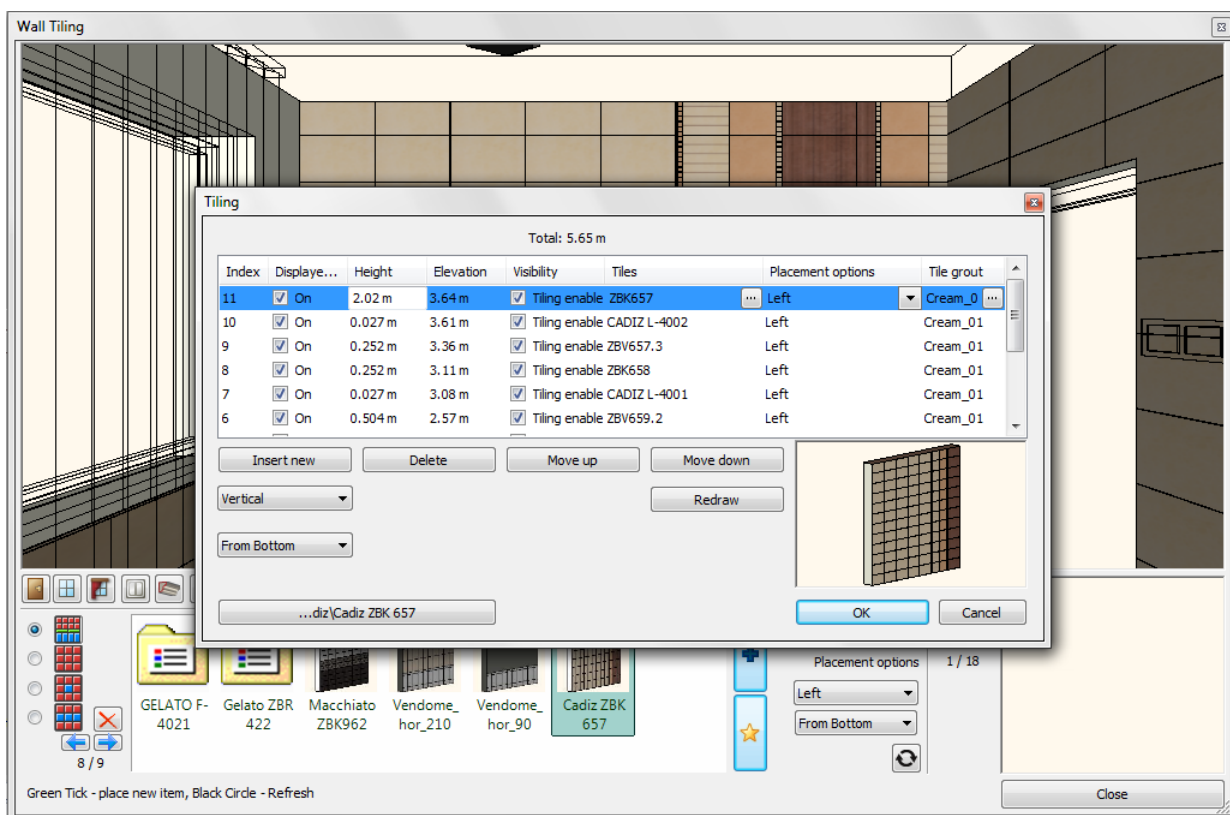


- On the left side of the dialog box there are the tiling modes and the first one is the Sets or Tiling styles. Several tiling styles show up in the Favourites by clicking on it and you can open existing ones by clicking on the Select new item from the library (blue plus). Select the set what you would like to use, press green thick and the tiling takes place on the wall.
- The applied set can be modified or customized if it is necessary.



For description of the Tiling settings in Room Maker see Chapter 9.13.2.14. Wall Tiling Panel and 9.13.2.15. Floor Tiling Panel.

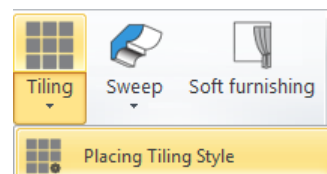
You can create a new set as well by clicking on the Tiling styles button (yellow star).



## 11.9.19. Place tiling style by command

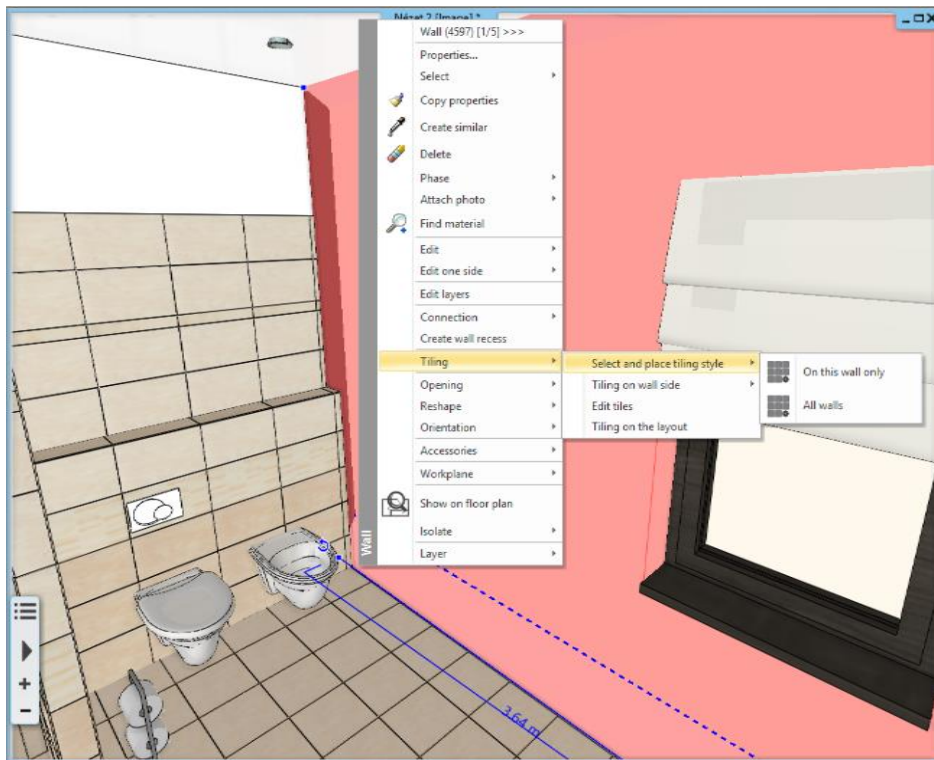
### From Ribbon Bar

Place tiling from the Ribbon Bar on the following path:  
Ribbon Bar – Interior tab - Tiling - Place tiling style



### From Local menu

Click on the wall with the right button of the mouse, the Local menu of the wall shows up, where you can find Tiling / Select and place tiling. You can place tiling on this wall or on all the walls of the room. This command is only accessible in 3D-window.



## 11.10. Brise soleil

The modern building structures require the brise soleil objects.

3 new methods are available:

-Horizontal

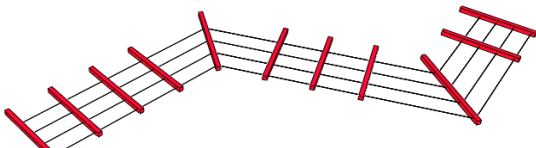
Vertical

-Custom

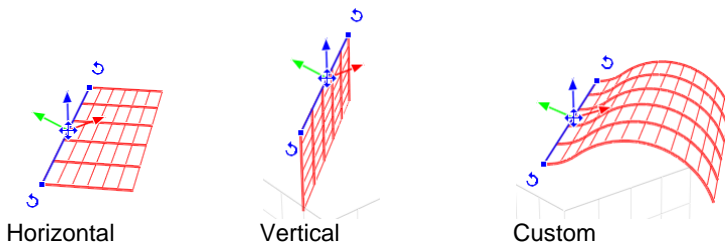


### 11.10.1. Working with brise soleil

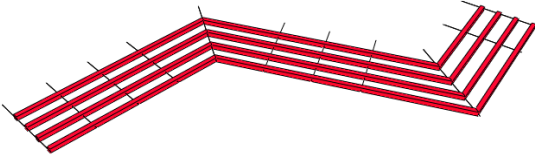
#### Frames



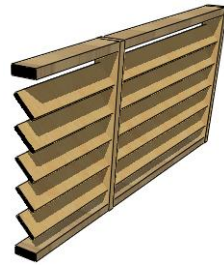
A brise soleil is based on a profile drawn on a floor plan. Frames are structures perpendicular to the floor plan path. They can be horizontal, vertical or you can define a custom frame.



## Lamellas

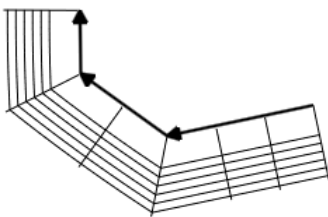


Lamellas are structures parallel to the floor plan path. You can rotate them around their axis and use a different lamella type for the first and last position.

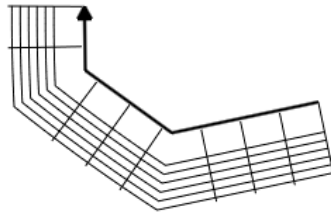


## Distribution of frames and lamellas

By setting the frame distribution you can enable or disable frames on path nodes:



Frames on path nodes enabled

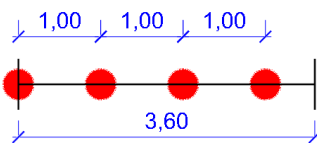


Frames on path nodes disabled

The main rules of frame and lamella distribution are the same. On a given distance you can distribute frames or lamellas in three different ways:

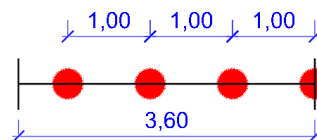
### Align to start point

The exact spacing value (1.00) is used



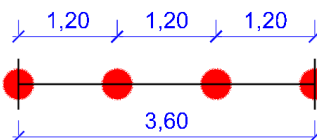
### Align to end point

The exact spacing value (1.00) is used



### Evenly distributed

The spacing value (1.00) is modified

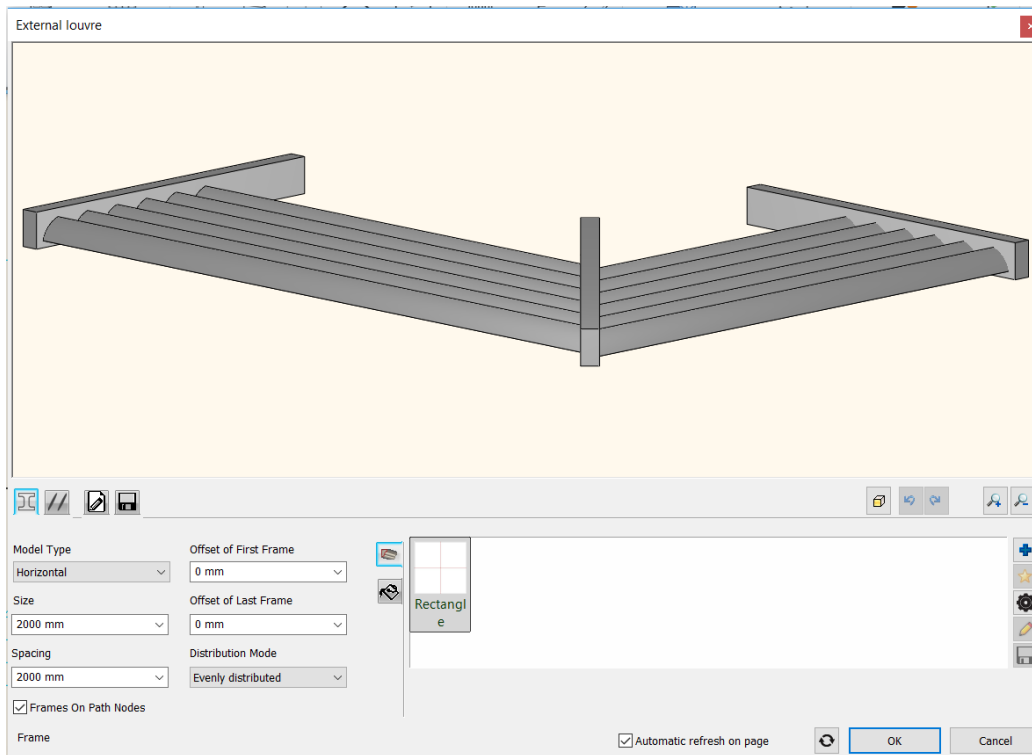


## 11.10.2. Creating a Brise soleil

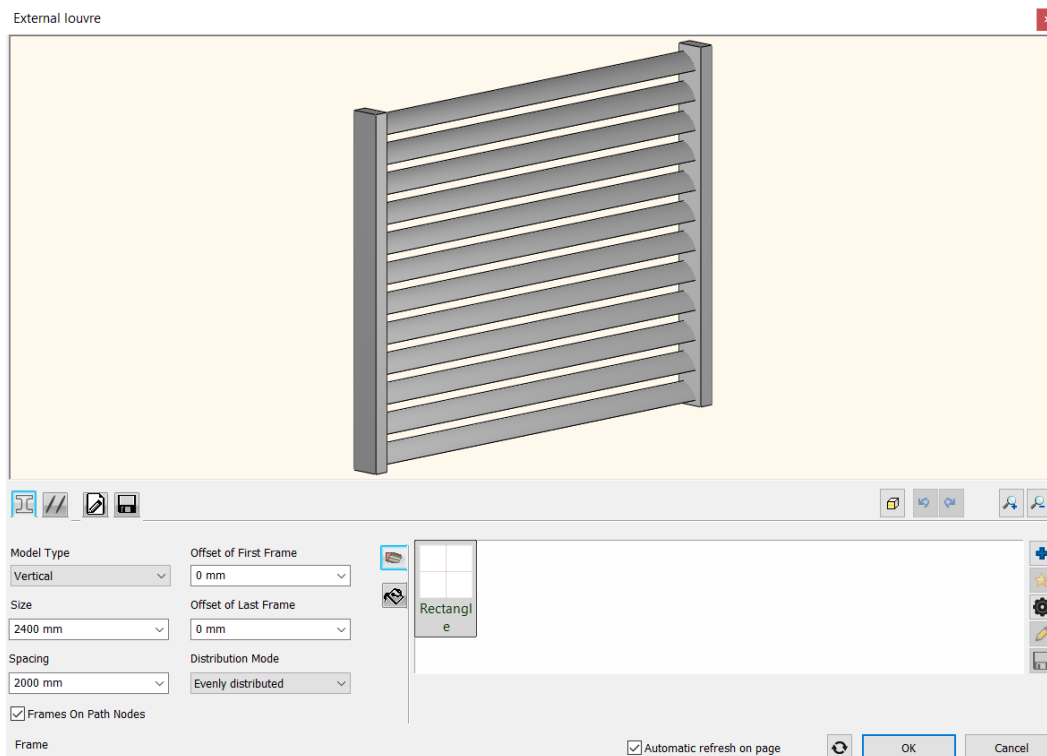
First set the default properties of the Brise soleil by selecting **Ribbon Bar - Building - Properties - Brise soleil horizontal**.

You can place Brise soleil by selecting **Building / Roof / Outdoor Tools / Brise soleil horizontal**. Draw an open profile by means of the *Profile definition* tools. While drawing the profile, you can mirror the structure to the path by pressing the F5 button on your keyboard.

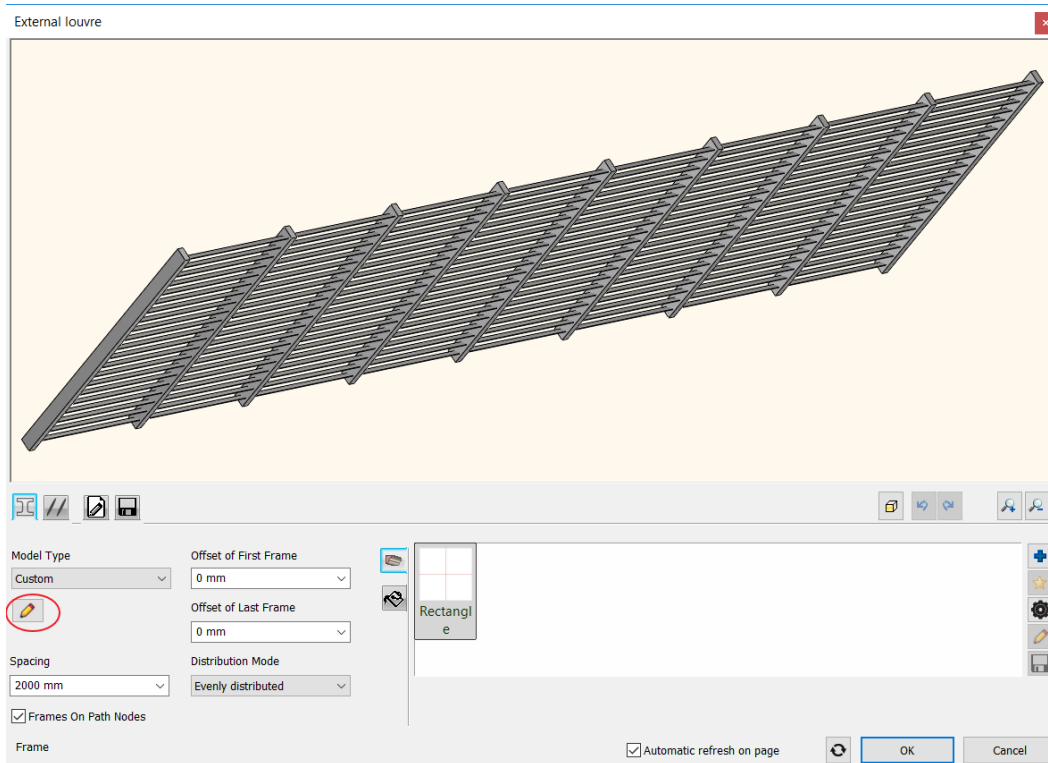
### Brise Soleil – Horizontal



### Brise Soleil – Vertical



## Brise Soleil – Custom – Free form profile



### Modifying the 3D model

There is no further command in the Toolbox or in the main menu related to the Brise soleil; you can work with them using the Pop-up menu, the properties dialog and the markers.

### 11.10.3. Settings

#### Position

##### Base elevation

Elevation from the floor level.

##### Absolute Height

Elevation including the floor level.

#### Frame

##### Model Type

Horizontal, vertical or custom. You can define a custom frame path by selecting the 'Define custom frame' command.

##### Frame Size

Length or height of the frame.

##### Section Profile

Section Profile of the frame.

##### Material

Material of the frame.

#### Frame Distribution

##### Spacing

Distance between frames.

##### Frames on Path Nodes

If enabled, frames will be placed on each nodes of the floor plan path, and other frames will be distributed among them.

##### Offset of First Frame

Distance between the beginning of the floor plan path and the first frame.

**Offset of Last Frame**

Distance between the end of the floor plan path and the last frame.

**Distribution Mode**

You can align the sequence of frames to the first point or to the endpoint of the floor plan path, or distribute the frames evenly from the first point to the endpoint by changing the spacing value.

**Lamellas****Section Profile**

Section profile of the lamellas.

**Rotation**

Rotation of the lamellas.

**Material**

Material of the lamellas.

**Different First and Last Lamella**

If enabled, first and last lamellas can have a different profile and material.

**Distribution of Lamellas****Spacing**

Distance between lamellas.

**Offset of First Lamellas**

Distance between the beginning of the frame and the first lamellas.

**Offset of Last Lamellas**

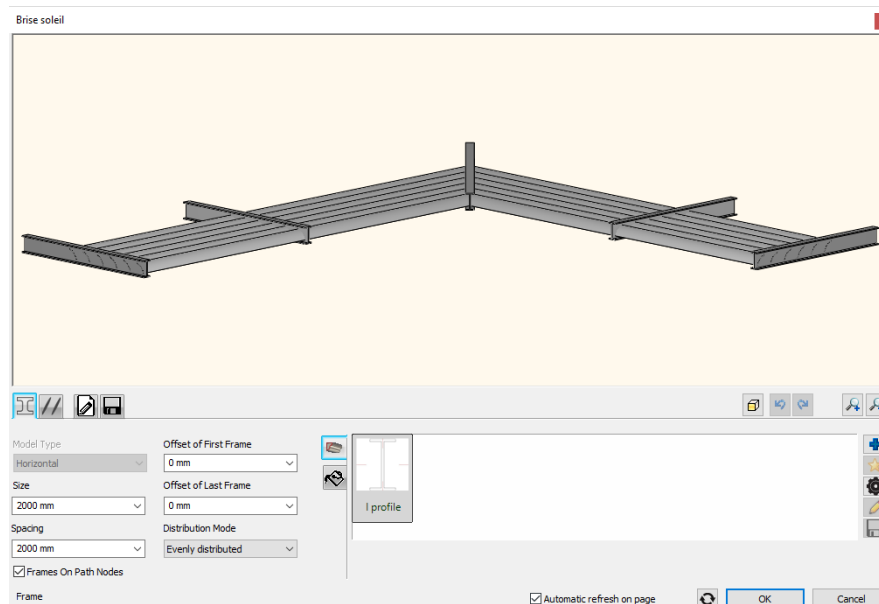
Distance between the end of the frame and the last lamellas.

**Distribution Mode**

You can align the sequence of lamellas to the first point or to the endpoint of the frame, or distribute the lamellas evenly from the first point to the endpoint by changing the spacing value.

**11.10.4. Brise soleil properties dialog**

The Brise soleil can also be edited from its property window. Click on the Brise soleil after placement and from the floating menuselect the pencil icon to enter its properties.



In this dialog you can also set the above mentioned settings of the frame and the lamellas and even save it to the library.

**11.11. Light Sources**

ARCHLine.XP facilitates the creation and use of the light sources. You can attach a light source to any object. You can edit the properties of light sources and modify their positions in the 3D space. Light manager provides an easy way to manage light sources.

### 11.11.1. Light Source Types

You can choose between four different light source types.



Different light sources are based on different characteristics and have different properties. The type of the light source determines its look on the rendered images.

#### ❖ Point

Point lights do not have any direction; they emit rays from their position in all directions uniformly. You can model for example light bulbs by means of this light source type.

#### ❖ Spot

Spotlights have a well-defined direction. Its typical light cone is based on the light limit and fall-off limit. In the cone defined by the light limit angle the light effects with full intensity. From the border of the light limit cone the intensity of decreases and reaches zero at the border of the cone defined by the fall-off angle. You can use it typically to model spot lamps and reflectors.

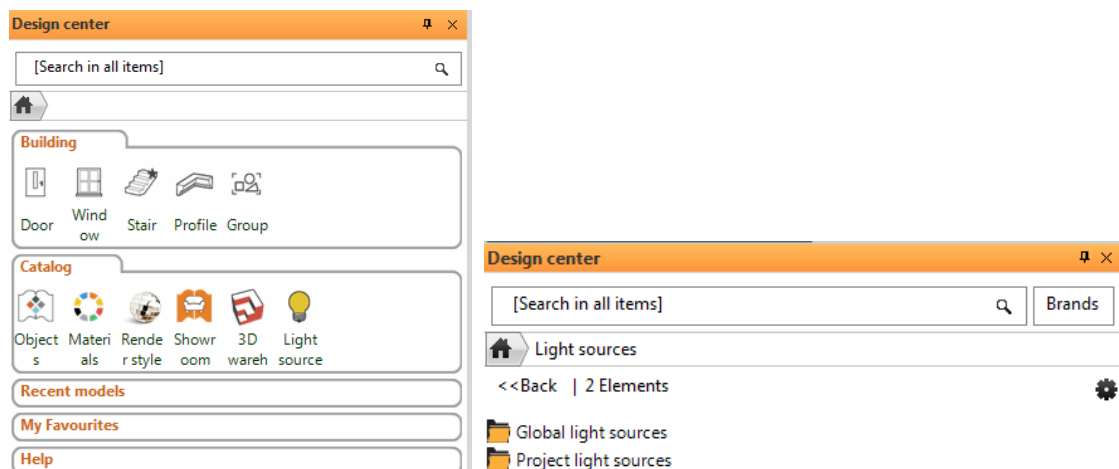
#### ❖ Line

Line light sources emit light from a straight line in the 3D space. You can model for example fluorescent lamps by means of this light source type.

#### ❖ Area

Area lights emit light from a surface in the space uniformly. You can model for example office lamps with more fluorescent tubes or surfaces lit with a colour by means of this light source type.

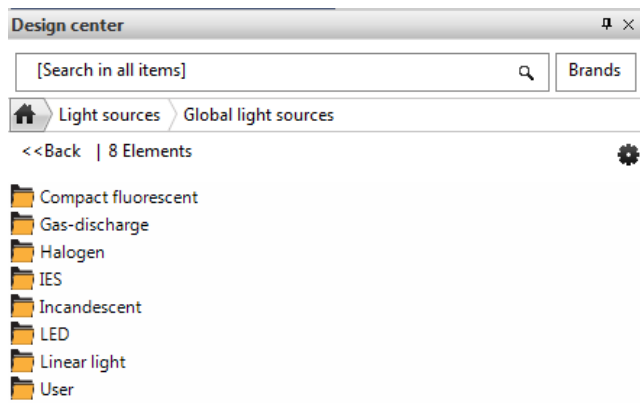
### 11.11.2. Light source browser



You can browse and edit light sources in the Design Center. By means of this tool you can manage Global light sources and Project light sources.

#### **Global light sources**

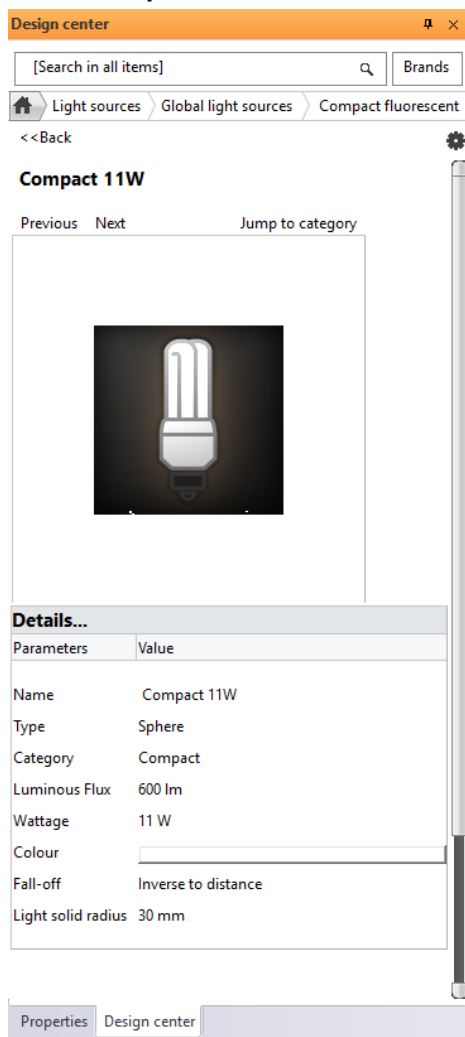
Global light source category include light sources which are available right after the program has been installed. You cannot add new subcategories to that category.



### Project light sources

You can find all of the light sources used in the project in the Project light sources category. By clicking on the Project light sources category, the used light sources appear.

### Light Source Properties



By clicking on a light source in the Design center you can view and edit the properties of the selected light source.



You can edit only the light sources in the Project light sources and Global light sources – User category.

### Name

You can add a unique name to the light source. The names of the factory default light sources represent their types and power consumptions

### Manual



**Type**

The type is related to the geometry of the light source. You can select between Sphere, Spotlight, Line and Area

**Category**

Defining the category of the light source has no effect to the appearance of the light; you can use this setting for classification purposes only. You can choose between incandescent bulb, compact, LED spotlight, Halogen and Neon.



incandescent bulb



compact



LED spotlight



Halogen



Neon

**Luminous Flux**

You can set the intensity of the light source in lumen.

**Wattage**

You can set the power consumption of the light source in watt.

**Colour**

You can set the colour of the light source.

**Fall-off**

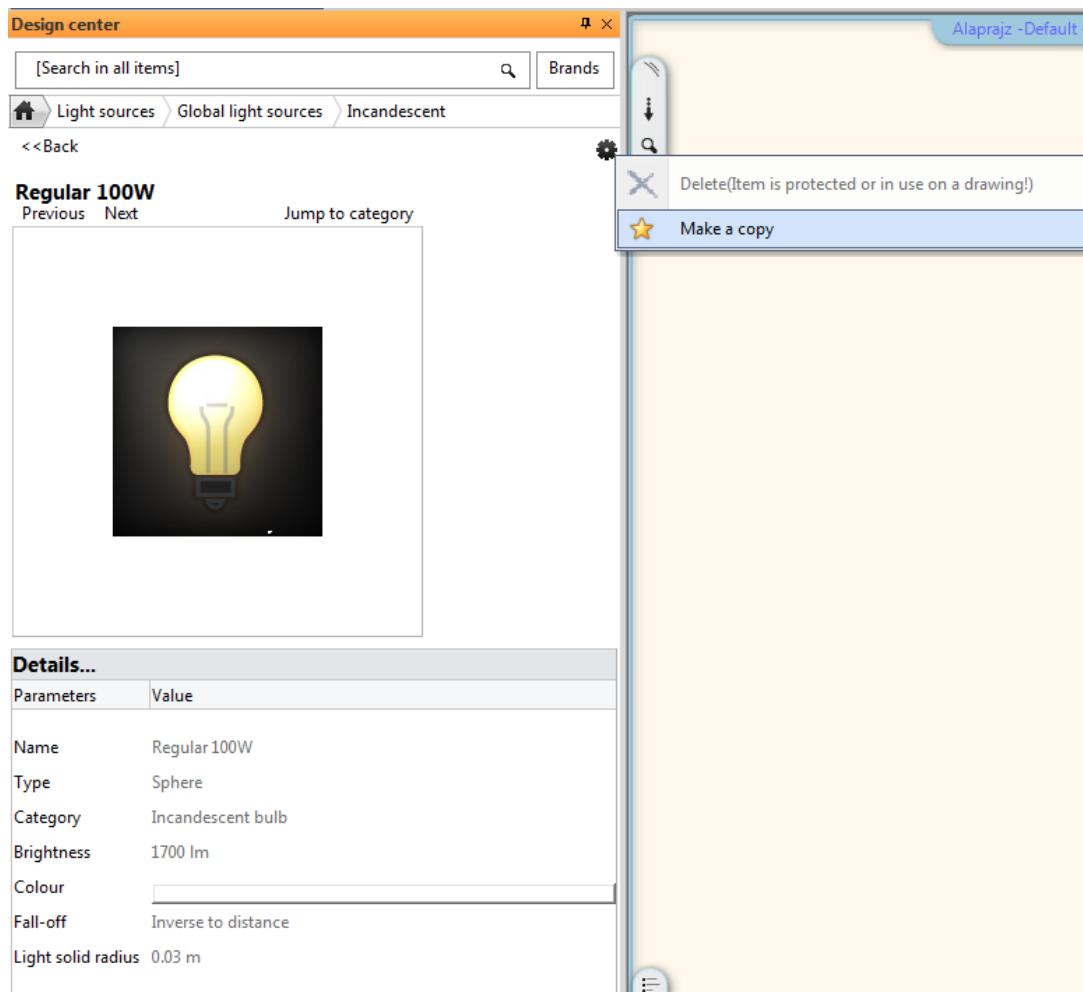
The intensity falloff option can be:

- ❖ Constant
- ❖ Inverse to distance
- ❖ ISI

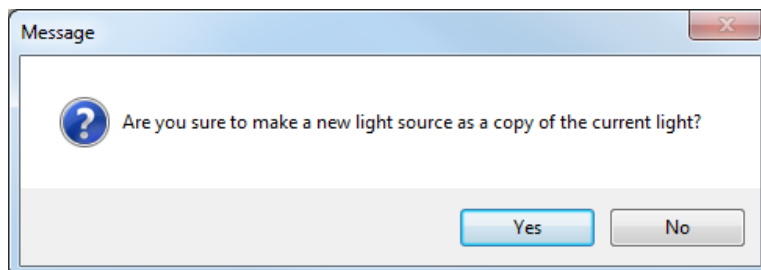
Default setting for the falloff is the Inverse to distance. This will result in the most realistic final render.

**11.11.3. Creating a light source**

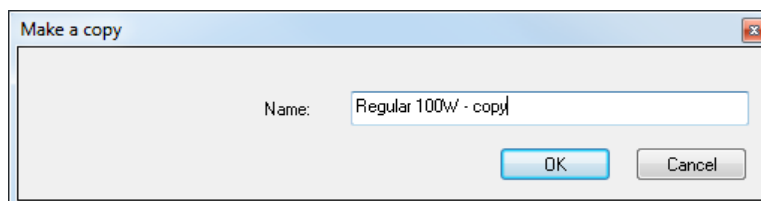
You can create a new light source by creating a copy of an existing light source. First, click the appropriate light source to see its details. Click settings icon and select Make a copy.



A message window appears with a question. Click Yes to confirm.



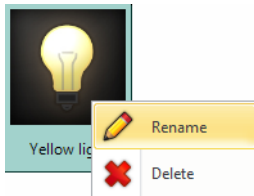
Specify the name of the copy:



Once the new light source is created, you can find it in the Global light sources – User category and you can change its properties.

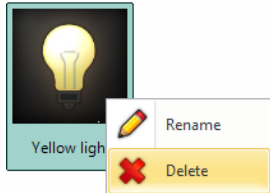
### ***Renaming a light source***

You can rename a user defined light source. Click the name of the light source with your right mouse button and select Rename.



### Deleting a light source

You can delete a user defined light source. Click the name of the light source with your right mouse button and select Delete.



### 11.11.4. Creating a lamp

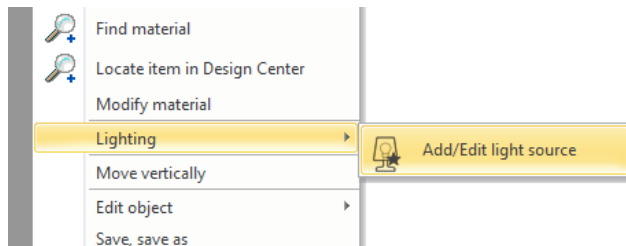
A so-called lamp is composed of a library object and one or more light sources attached to it. You can attach a light source only to a library object.

#### ❖ By Ribbon Bar Command

First select the *Ribbon Bar – Interior tab - Lighting – Add/Edit light source* command, and then select a library object. Once an object is selected, the Light manager appears.

#### ❖ From the Popup menu

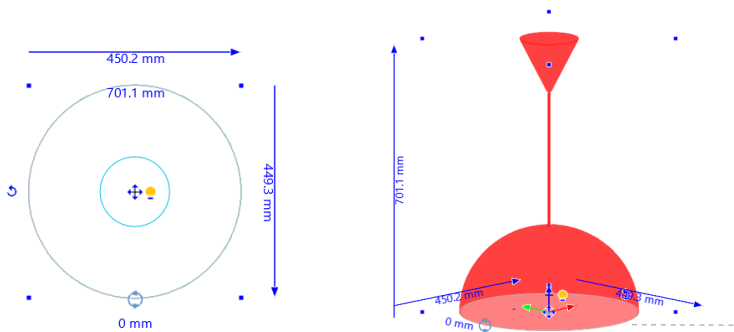
You can attach a light source to a library object by selecting the *Lighting – Add/Edit light source* command in its Popup menu as well. If you select this command, the Light manager appears.



### 11.11.5. Managing light sources of a lamp

#### Selecting a light source of a lamp

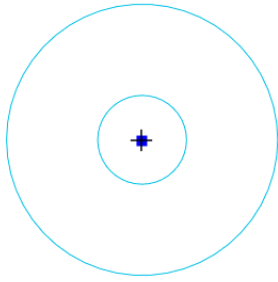
If you work in a 2D or 3D View and select a lamp with one or more light source attached to it, in addition to the default markers the light source markers appear.



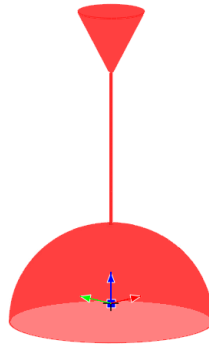
Lamp selected on a 2D drawing

Lamp selected in the 3D model.

By clicking a light source marker, some other markers related to the selected light source appear instead of the default library object markers.



Light source selected on a 2D drawing

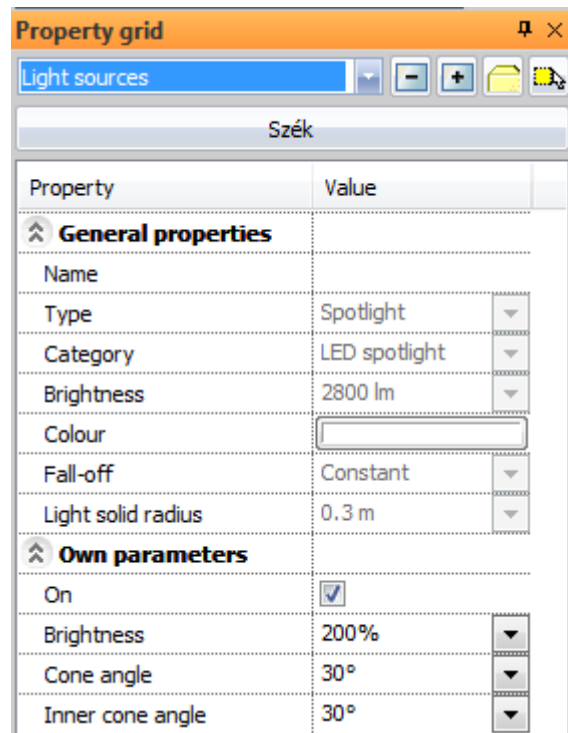


Lamp selected in the 3D model.

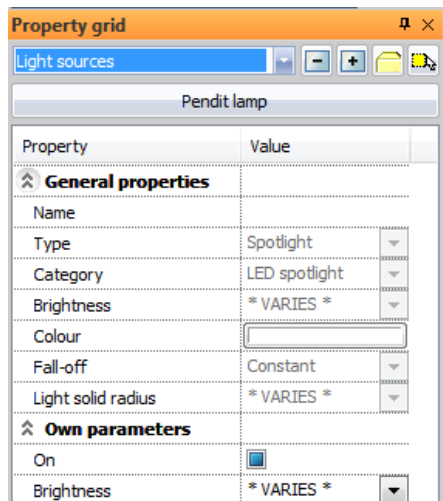
If an object has light sources attached to it, you can view and edit their properties by means of the Property grid as well. To do this, select the lamp and choose the Light sources option from the drop-down list in the Property grid.



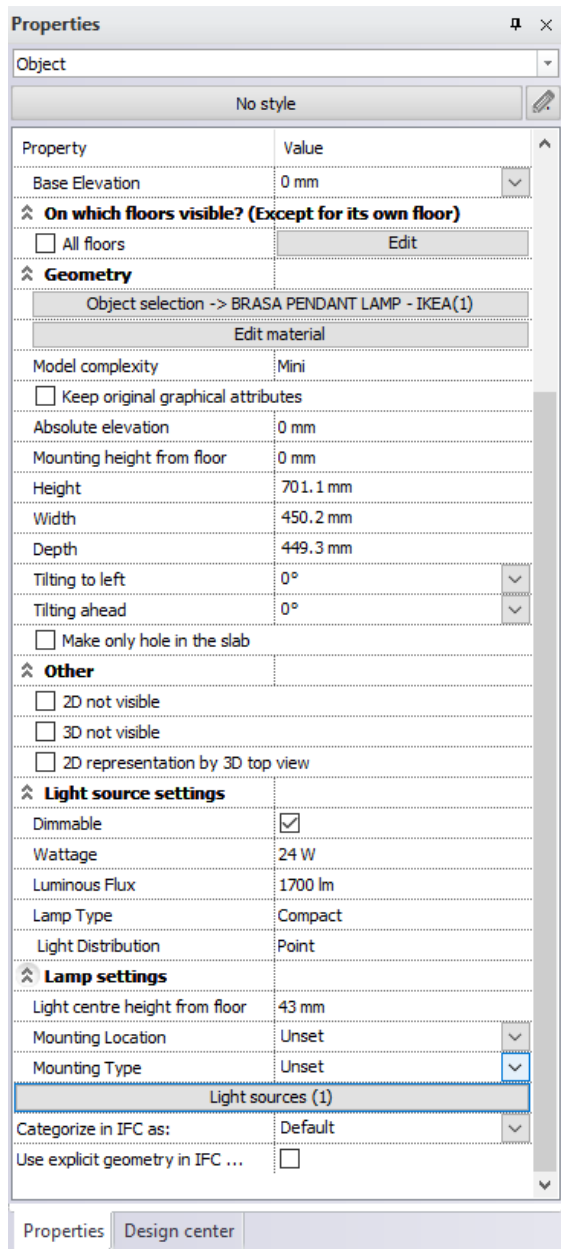
You can view and edit the properties of the selected light sources in the Property manager.



If there are more light sources attached to an object or you select more objects with light sources, you can edit only the common properties, in most cases the on/off state and brightness:

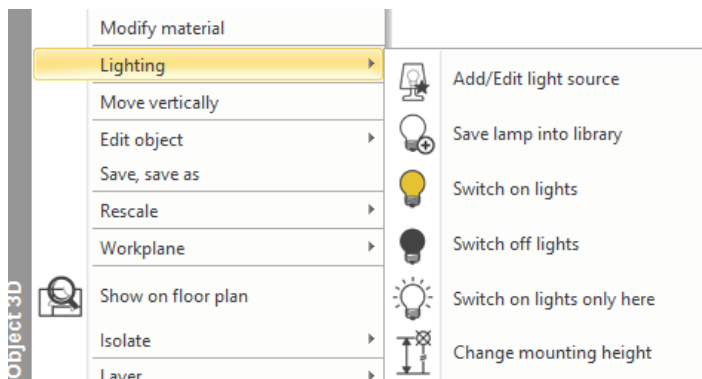


You can manage the light sources of a lamp individually in the Light manager. To do this, select the object and click the Light sources button in the Property grid:



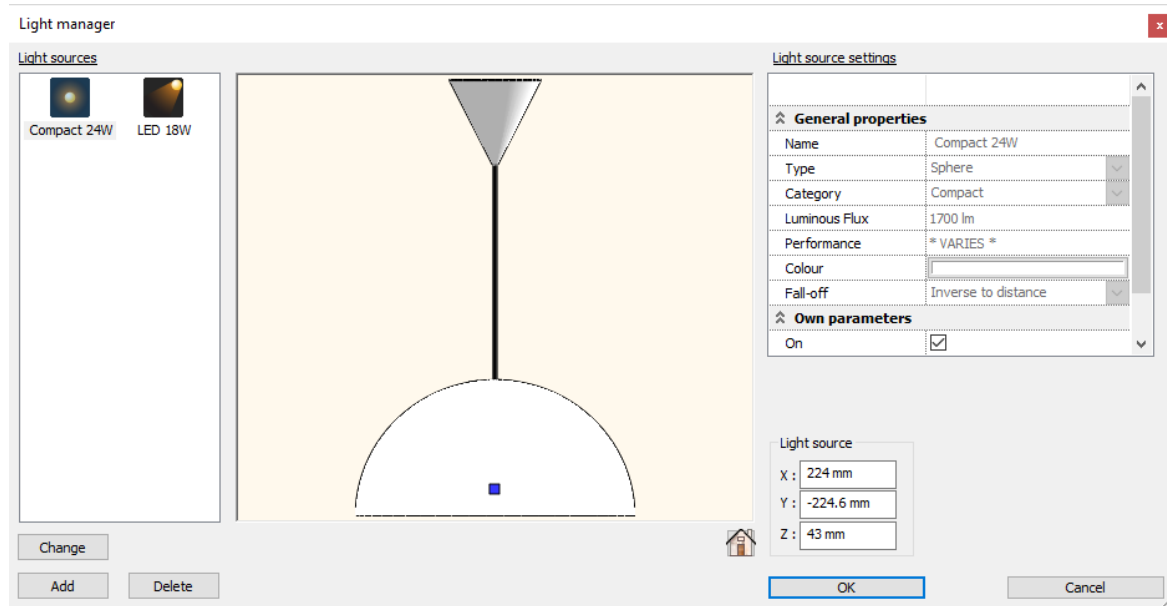
### 11.11.6. Editing lamps

If a lamp (an object with one or more light sources attached to it) is selected, you can edit it by selecting one of the light source editing commands from the popup menu.

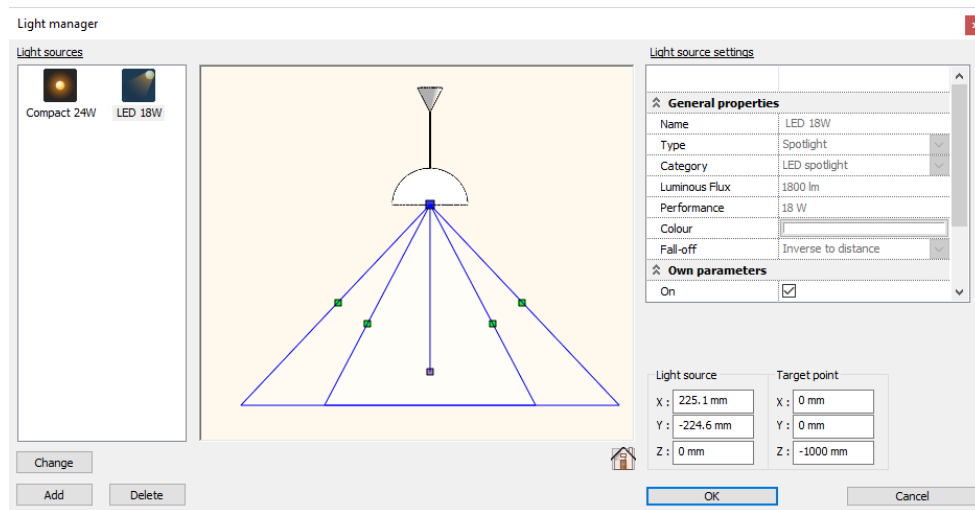


## Add/Edit light source

You can attach a light source to a library object by selecting the Lighting – Add/Edit light source command in its Popup menu. If you select this command, the Light manager appears.



On the left side of the dialogue you can see the attached light sources. Click a light source to view and edit it. In the middle of the dialogue you can see the position and direction of the selected light source. You can modify the position of the light source, the cone angles and the target point of the light source by clicking on the appropriate marker. You can select top/bottom/left/right/back/front view with the view button. For more precision, it is possible to specify the light source and target point coordinates manually, too.



On the right side of the dialog you can set the own parameters of the light source: the on/off state and brightness.

### Add light source

To add a new light source to an object, click Add. In the Light sources dialog you can browse and select the appropriate light source.

### Change light source

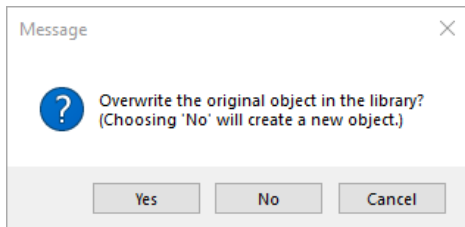
To replace the selected light source to another one, click Change. In the Light sources dialog you can browse and select the appropriate light source.

### Delete light source

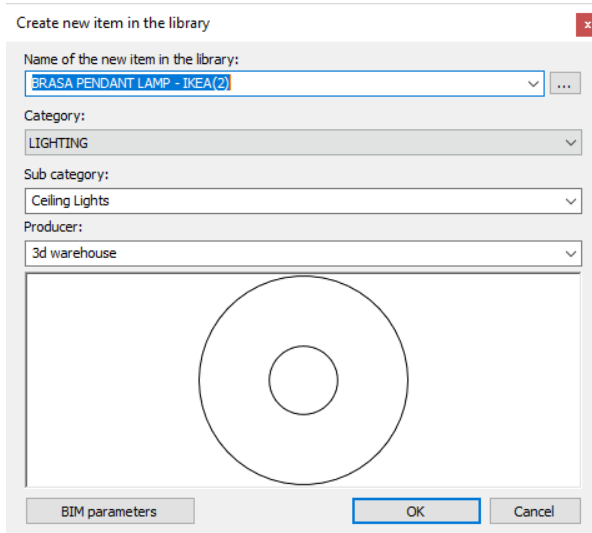
To delete the selected light source, click Delete.

### Saving lamp into library

You can save the selected lamp into an object library. You have to decide whether to overwrite the original library object or to create a copy of it.

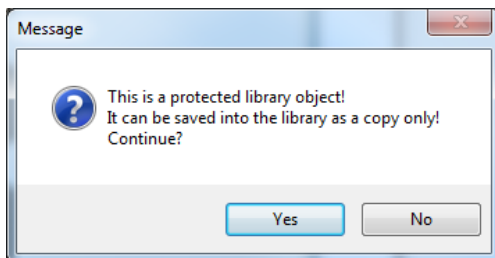


If you confirm the question, the original object will be overwritten, otherwise a new object will be created and you have to name it.



By pressing cancel at this point, no object will be saved into the library.

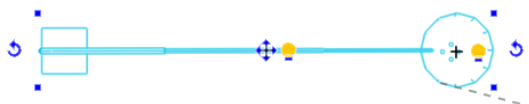
If you try to save an object in a write-only library like factory default objects in the Design Center, the following dialog appears:



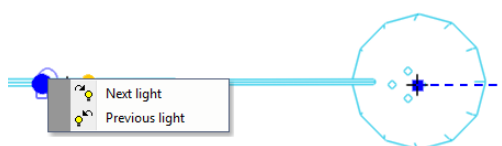
### 11.11.7. Editing light sources

Commands related to editing light sources can be found in the light source marker menus.

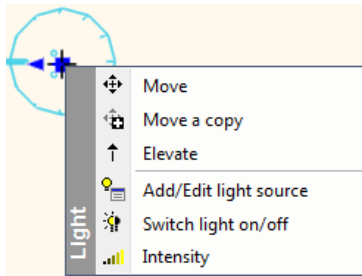
Select a lamp and then click one of the attached light sources. Light sources are represented by yellow bulb icons.



Click a bulb. The light source marker and the light source selection marker appear. With the light source selection marker you can select the next/previous light source.



The light source marker menu gives the following possibilities:



### **Move**

You can move the light source relative to the object.

### **Move a copy**

By selecting this command, you can copy the current light source to a new position. The original light source remains unchanged.

### **Elevate**

You can elevate the light source relative to the object.

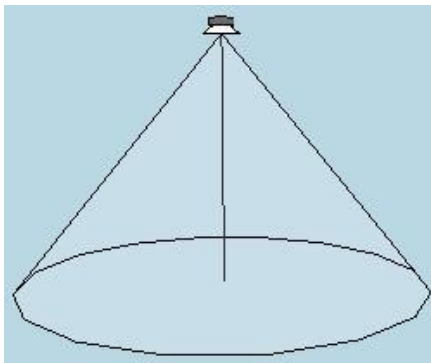
### **Add/Edit light source**

By selecting this command, you can modify the properties of the current light source in the Light manager.

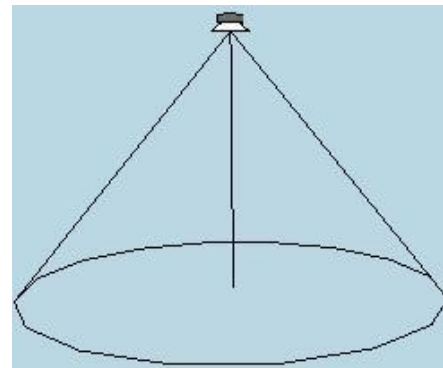
### **Switch light on/off**

You can switch on or off any light source. You can control the result in the 3D View: the light source that is switched on has a semi-transparent light solid; the one which is switched off has a wireframe only.

To visualize the light sources this way you have to modify the representation of the light sources as described below.



Light source switched on



Light source switched off

### **Edit light source intensity**

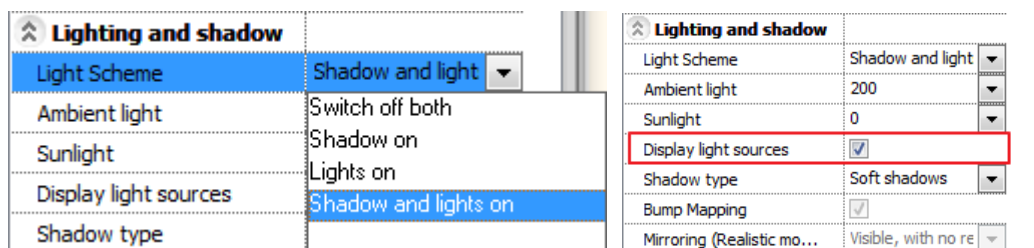
You can modify the intensity of the light source, relatively to the original lumen value, in per cents. You can modify the intensity of the current instance of the given light source without affecting the other instances of this light source in the project.

## **11.11.8. Representation of light sources**

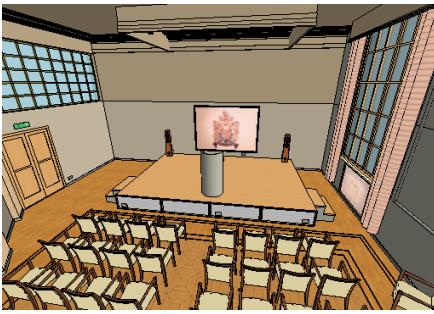
ARCHLine.XP provides more light representations to support the design process in the early phase, even before rendering any photorealistic images.

### **Light source representation menu**

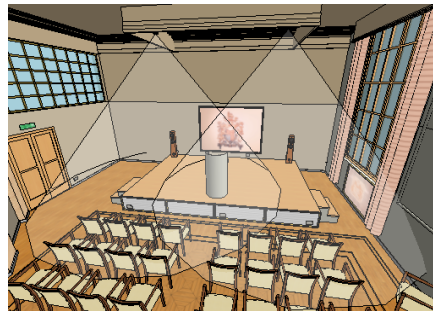
Activate the 3D View and select the appropriate graphics settings in the property grid. The selected Light Scheme and Display light sources options define the light source representation.







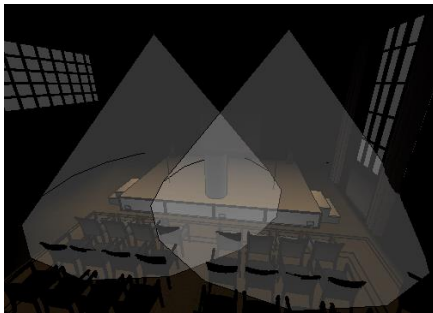
Display light sources off, lights off



Display light sources on, lights off



Display light sources off, lights on



Display light sources on, lights on

**Lights off – Display light sources off**

If the Display light sources option is off and the lights are off in the Light Scheme setting, the program does not display any lighting effects or light solids except the sunlight.

**Lights off – Display light sources on**

If the Display light source option is on and the lights are off in the Light Scheme setting, some shapes representing the lights appear in the model. The program does not display any lighting effects except the sunlight.

**Lights on – Display light sources off**

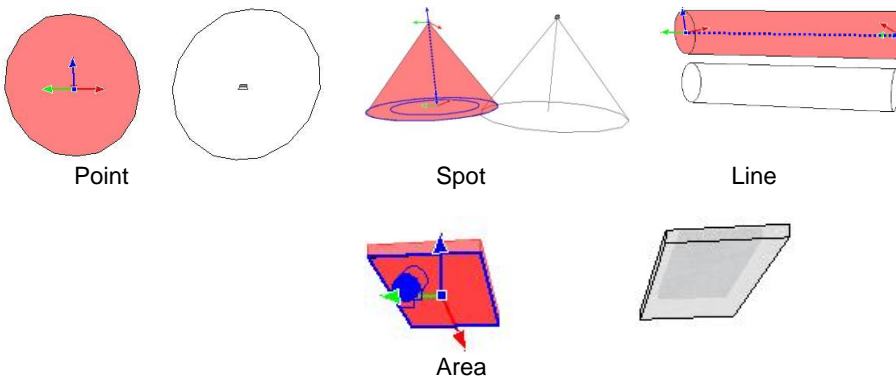
If the Display light source option is off and the lights are on in the Light Scheme setting, the program does not display any light solids, the sun is switched off and only the effects of lights that are switched on are visible.

**Lights on – Display light sources on**

If the Display light source option is on and the lights are on in the Light Scheme setting, the program displays both the light effects and the light solids of light sources that are switched on.

**11.11.9. Representation of light sources**

The different types of light sources are represented differently in the 3D model. The following table helps you to recognise the different types.

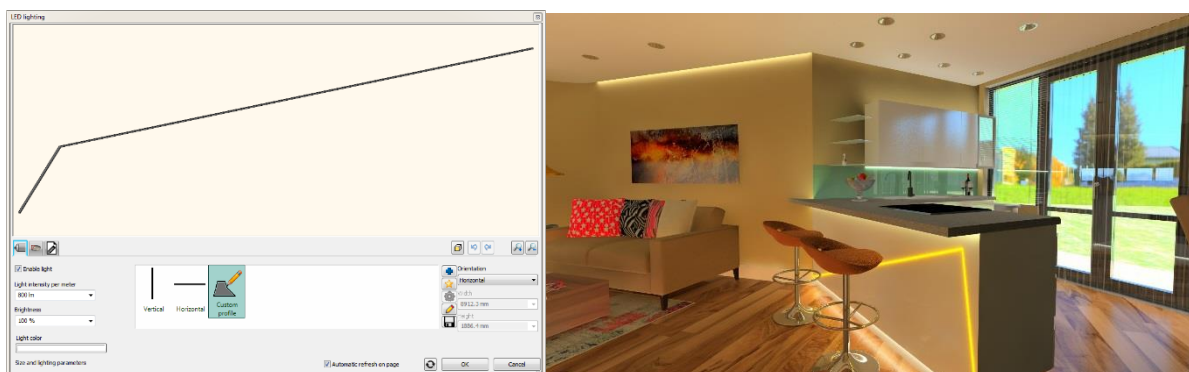
**11.11.10. Lights on the rendered images**

The real effect of lamps and light sources appears on the rendered images. You will get different results depending on the used settings. With ARCHLine.XP you can design the lighting of models and spaces in more versions, and you can show the result as photorealistic images.



## 11.12. LED light strip

The LED strip tool is used to edit individual LED tapes in 2D or even directly in 3D. It can be used to create a flexible LED light strip for concealed or visible illumination, which like other lamps, can change the brightness, light color, and turn on or off.



### 11.12.1. Draw LED strip

To draw the LED strip in 2D or 3D a so-called route along which the LED strip runs has to be defined. You can change this path later.

- ❖ Start the **Ribbon Bar – Interior tab - Lighting - LED light strip** command.
- ❖ Click on the positions of 2D drawing or 3D model, where you would like to lay the LED string.
- ❖ Finish editing the LED strip's route, and press the Enter.
- ❖ Finishing the drawing the LED strip properties window will be displayed and you can set the properties of LED lighting.

### 11.12.2. Modify the route of the LED strip

The LED light strip path can be changed in 2D and 3D, and in the properties window. In various cases, there are different possibilities for their specificity.

To change the route, do the following:

- ❖ Select the existing LED light strip in the 2D window or the 3D model.
- ❖ Click one of the markers on the LED light strip path and select the desired command from the appearing menu.
- ❖ Modify the route.

The changes are immediately displayed.

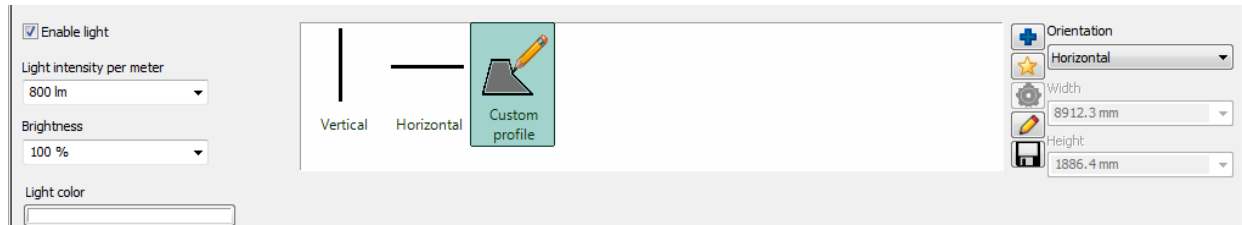


If the path of the LED strip is not plane (for example, by raising one of its nodes), the 2D path edit option will be canceled.

### 11.12.3. The properties of LED strip

#### 11.12.3.1. Size and light parameters

In the "Size and lighting" tab you can specify the LED strip's route, brightness, colour and you can switch it on/off .



#### **Route List**

You can choose from pre-defined routes (such as "Vertical", "Horizontal" or other selectable profiles). Using the commands at the end of the Route List, you can choose another route, draw a new route, and edit existing routes.

#### **Light on**

Enable the "Lights On" option to activate for the LED light strip.

#### **Brightness per meter**

Select one of the predetermined values or type any value to adjust the brightness of LED strips.

#### **Brightness**

You can specify a value for changing the brightness. Entering 100% sets same as the original brightness, while you can increase or decrease the brightness by entering different value.

Choose the preset values, or type to be an arbitrary value to adjust the brightness of LED strip.

#### **Colour of light**

You can choose any colour of the LED light strip.

Click on the button and choose a colour from the colour table.

#### **Directivity**

You can use direction to specify whether the selected planar path should be horizontal or vertical. For non-planar routes (for example, if you have edited a node in the space by elevating it from the plane), you can not change the orientation.

### 11.12.3.2. Cross-section profile and materials

You may specify any cross-section profile and material strip. This will be applied after the LED strip is turned on.



#### **The cross-section profile of LED strip**

You can choose a cross-section profile or by clicking on the "Blue plus" button you can search the right one in Profile Library. You have several option: you can draw a new profile, also you can edit the selected profile properties or the current cross-sectional contour.

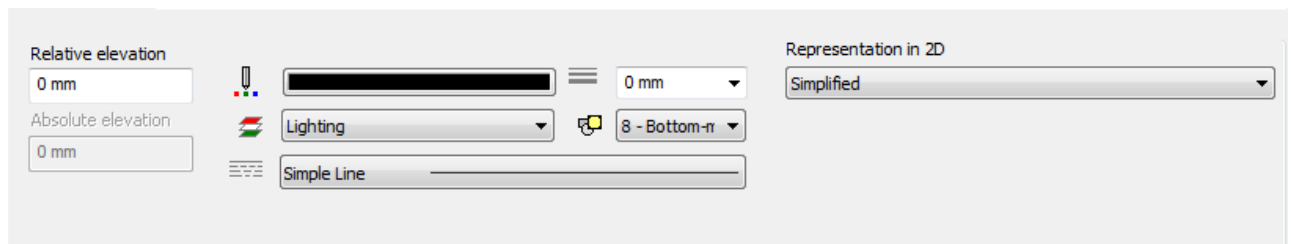
Modifying the Width and Height values of the original you may use different sizes of cross-section.

#### **The material of LED strip**

You can choose to edit or create a material that displays a program from the LED strip to off general settings.

#### **General settings**

You can check and change the relative and absolute elevation and the representation of the LED strip settings.



## 11.13. Luminous Text

Luminous text is often used for decorative lighting.

Editing the luminous text is fast and flexible. The luminous text is also appear in 2D and 3D.

The location of command: **Ribbon Bar - Interior tab – Lighting – Luminous text**

- ❖ With this command we can quickly and easily place lighting 3D text with any flat surface.
- ❖ Applies to external or indoor lighting, backlight with any colour and brightness.
- ❖ The text can be easily edited.



### 11.13.1. Drawing luminous text

- Start the *Interior tab – Lighting – Luminous text* command.
- Enter the text in the appearing dialog window.

- Click on the surface where you place the luminous text on the 2D drawing or the 3D model.
- Enter the starting point and the direction of the text.
- Enter the thickness of the luminous text.
- After drawing, the luminous text property window appears and you can set the properties of luminous text.

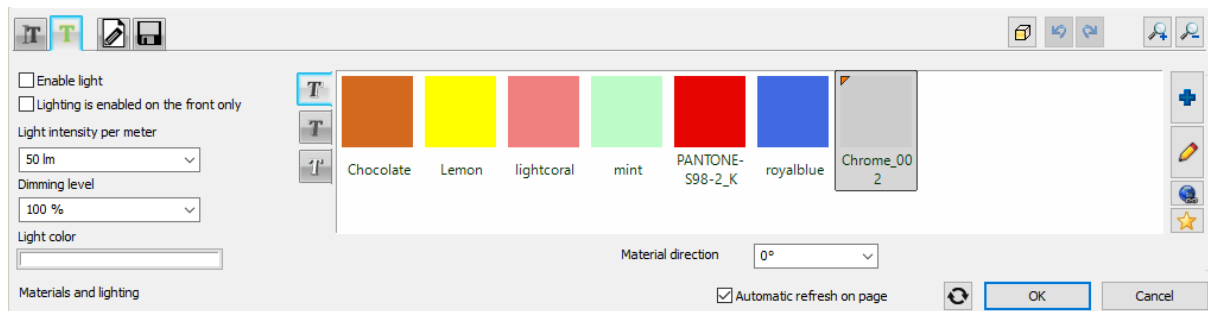
### 11.13.2. Fast editing luminous text

Click on the luminous text. The text appears with blue marker. You can change this blue text by clicking and typing the new content and then press Enter.

### 11.13.3. Properties of luminous text

#### 11.13.3.1. Materials and lighting parameters

On the "Materials and Lighting" tab, you can specify the brightness and colour of luminous text and turn it on / off them.



#### **Enable light**

Activate the "Enable light" option to turn the luminous text on.

#### **Lighting is enabled on the front only**

The light of the luminous text is only applied onto the front surface, the body part of the text does not emit light.

#### **Light intensity per meter**

Select from the predefined values or type any value to set dimming of level.

#### **Dimming level**

You can specify the value for modifying the dimming level. 100% means that it adjusts the same dimming level as the original dimming level, while providing a different value to reduce or increase the original dimming level. Select from the predefined values or type any value to set dimming level of luminous text.

#### **Light colour**

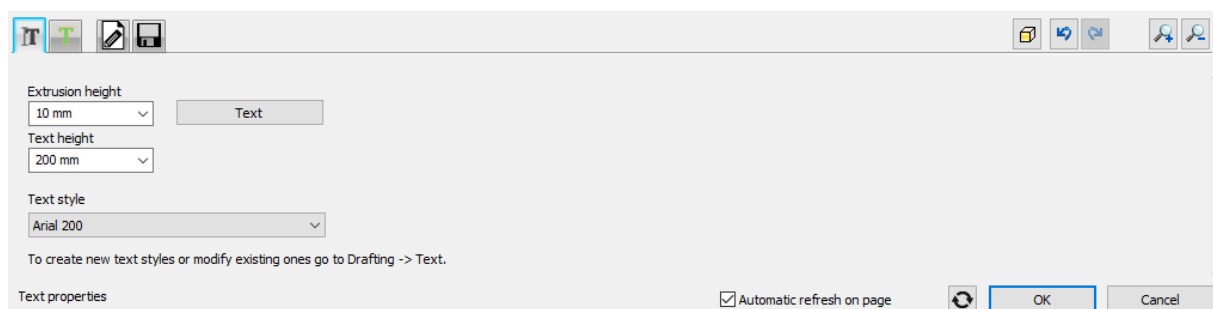
You can choose any colours for the luminous text. Click the button and choose a colour from the displayed colour palette.

#### **Material of light**

Three materials can be assigned to the text, the material of the body and the material of the front and back surface. These are visible when the luminous text is turned off.

### 11.13.3.2. Text parameters

You can edit the text of the luminous text and the text properties on this panel. The latter is visible when the LED strip is off.



### Extrusion height

You can set the thickness of the luminous text here.

### Text height

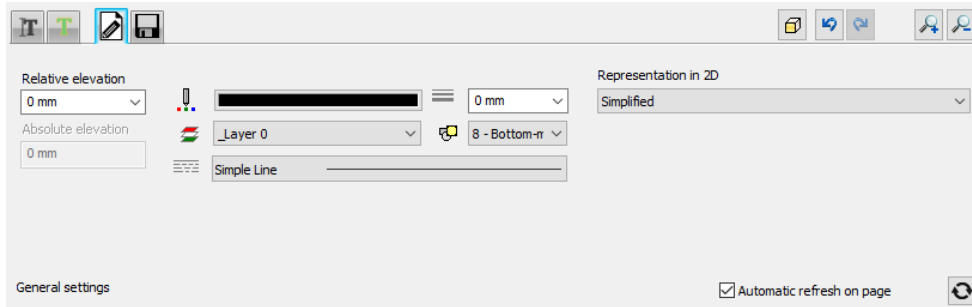
You can set the text size of the luminous text.

### Text style

You can set the text style of the luminous text here.

### 11.13.3.3. General settings

You can check and modify the relative height and the representation in 2D of the luminous text.

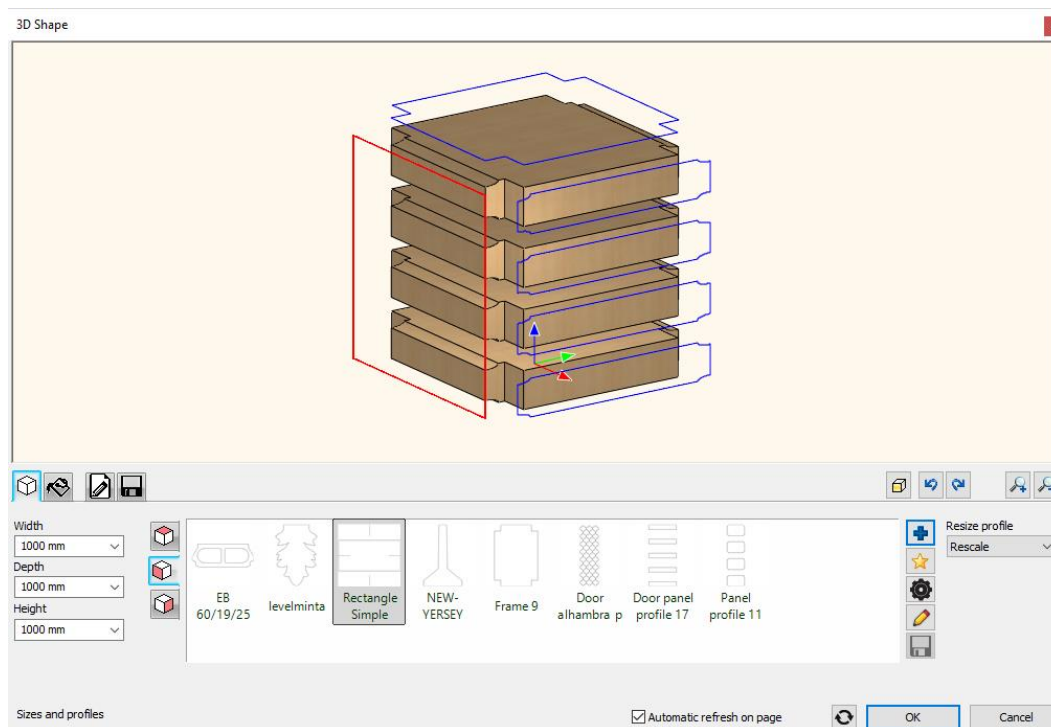


## 11.14. Modelling tools

ARCHLine.XP introduces various modelling tools to design complex objects or soft furniture.

### 11.14.1. 3D shape

The **3D shape** command is in the **Ribbon Bar** under the **Interior tab**.  
With the **3D shape** tool you can create 3D shape elements by three profiles.



#### How does it work?

- Define three profiles: floor plan profile, frontal profile and side profile. The program extrudes each profile along Z axis (floor plan profile), Y axis (frontal profile) and X axis (side profile) and then creates the intersection of these three solids.
- Define the material of the 3D shape.
- Define the general settings of the 3D shape

- Place the 3D shape element or save it into an object category.

### 11.14.1.1. 3D shape dialog

When you create a new 3D shape or edit the properties of an existing 3D shape element, use the *3D shape* dialog. The dialog includes four main tabs.



#### Sizes and profiles

On this tab you can define three profiles on the three side tabs. The program extrudes each profile along Z axis (floor plan profile), Y axis (frontal profile) and X axis (side profile) and then creates the intersection of these three solids.



#### Floor plan profile

The profile defined here is extruded along the Z axis.








#### Frontal profile

The profile defined here is extruded along the Y axis.



#### Side profile

The profile defined here is extruded along the X axis.





You can select profiles from the favorites or from the existing profile libraries (). You can create () custom profile or edit () the current used profile. Custom profiles can be saved () into the profile libraries. The orientation of a pre-defined profile can be modified (.

Use the *Width*, *Depth* and *Height* input fields to check or modify the dimensions of the 3D shape.



#### Material

On this tab you can define the material of the 3D shape. You can select materials from the favorites or from the existing



material libraries (). You can also download materials from the web () or create a new material () or edit () the currently selected material.



#### General settings

On this tab you can set general properties like line type, line thickness, color, priority, relative height.

For the 2D representation you can choose from three options:

- ❖ *Simplified*: the 3D shape element is represented on the floor plan by its floor plan profile.
- ❖ *Symbol*: the 3D shape element is represented on the floor plan by a selected group. Groups can be selected from the favorites or from the group libraries (). The selected group can be scaled (.
- ❖ *Top view*: the 3D shape element is represented on the floor plan by the top view of its 3D model.



#### Save

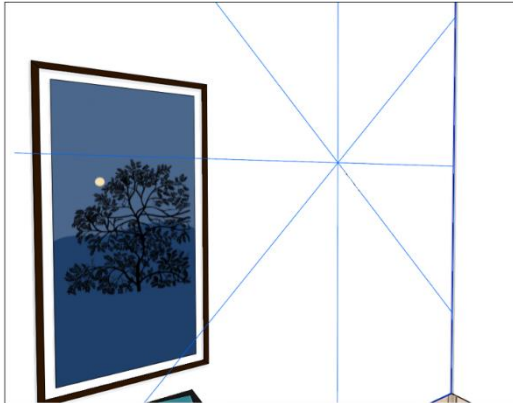
On this tab you can save the currently edited 3D shape element by the **Save as** button or you can select one from the favorites or from the object library for further modifications. Use the **Reset** button if you want to reset your 3D shape object to a default 3D shape element from the available template files.

### 11.14.1.2. Designing 3D shapes

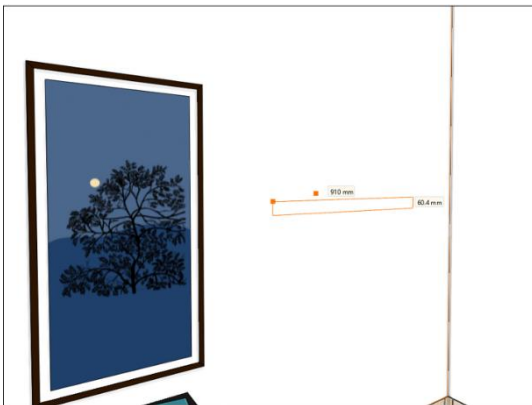
The 3D shape tool helps to expand a drawing into a 3D object in 3D View, which later can be edited right inside the 3D model in a very flexible way.

### 11.14.1.3. Create a 3D shape in 3D View

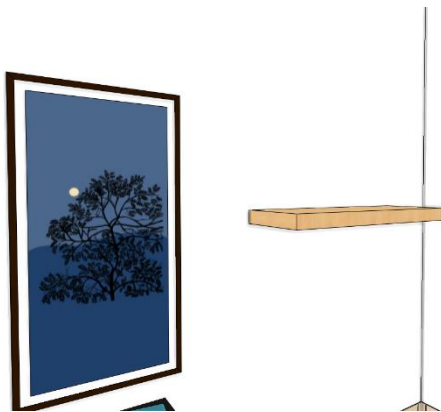
- Make sure that 3D View is activated, then start the 3D shape tool.
- Move the cursor to the surface you want to place the 3D shape on. When the software recognizes the 3D surface it marks it with crossed blue lines.



- Create a plane figure directly with the mouse on the selected surface.



- Moving the mouse you can give the direction of pulling out or type the value and hit "Enter" to create the 3D shape.



This way the created model can be edited freely.

### 11.14.1.4. Modifying 3D shapes in 3D view

By selecting the ready 3D shape, you can modify the profiles of the 3D shape and change its sizes. Each profile defines the 3D shape and overall dimensions become visible and editable by selecting the 3D shape in the 3D View.

#### **Modifying profiles**

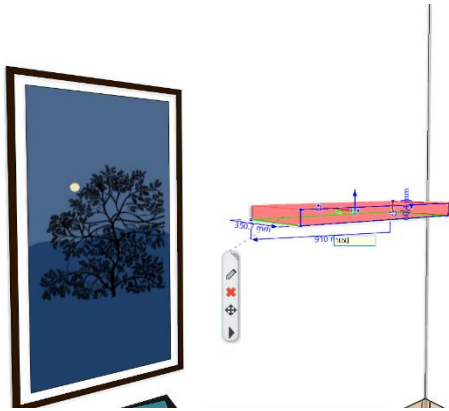
- Select the 3D shape you want to modify.
- Click on the edge or node of any created profiles then choose one from the appearing menu.



These modifications will be visible straight afterward.

### Modifying the overall sizes

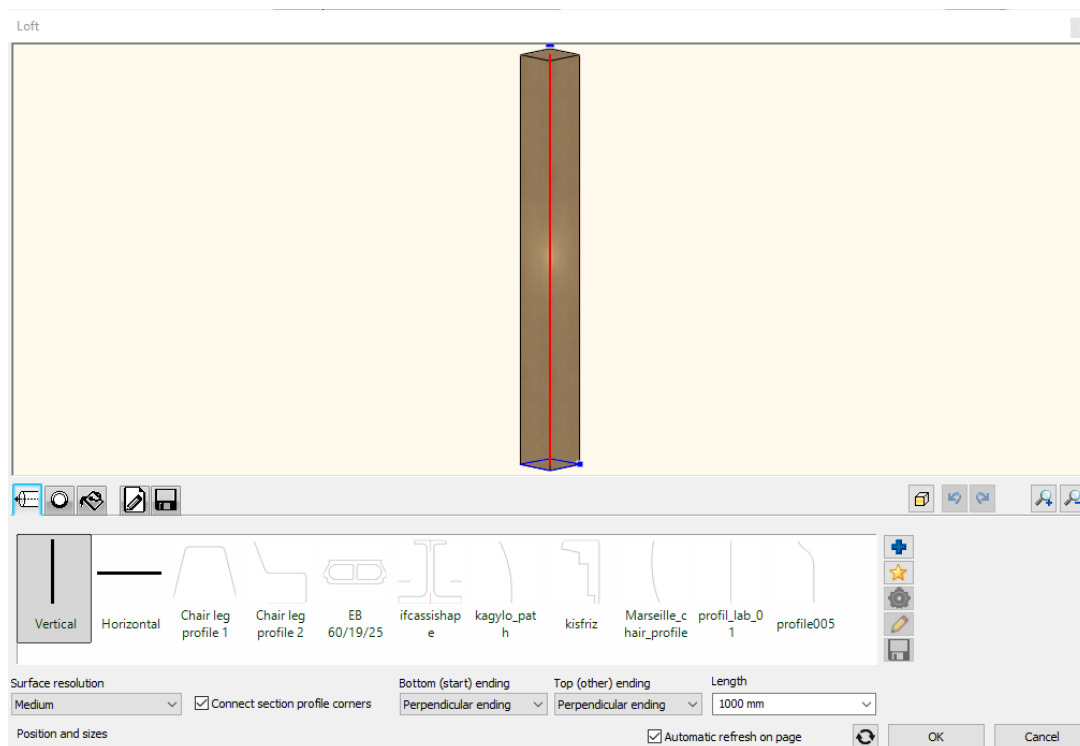
- Select the 3D shape you want to modify.
- Click on any values appearing around the 3D shape and modify it then press “Enter”.



These modifications will be visible straight afterward.

### 11.14.2. Loft

Loft is a 3D solid with various cross sections and extruded along a path. The path can be straight or curved. The command can be found on the **Ribbon Bar – Interior tab – Sweep – Loft**.

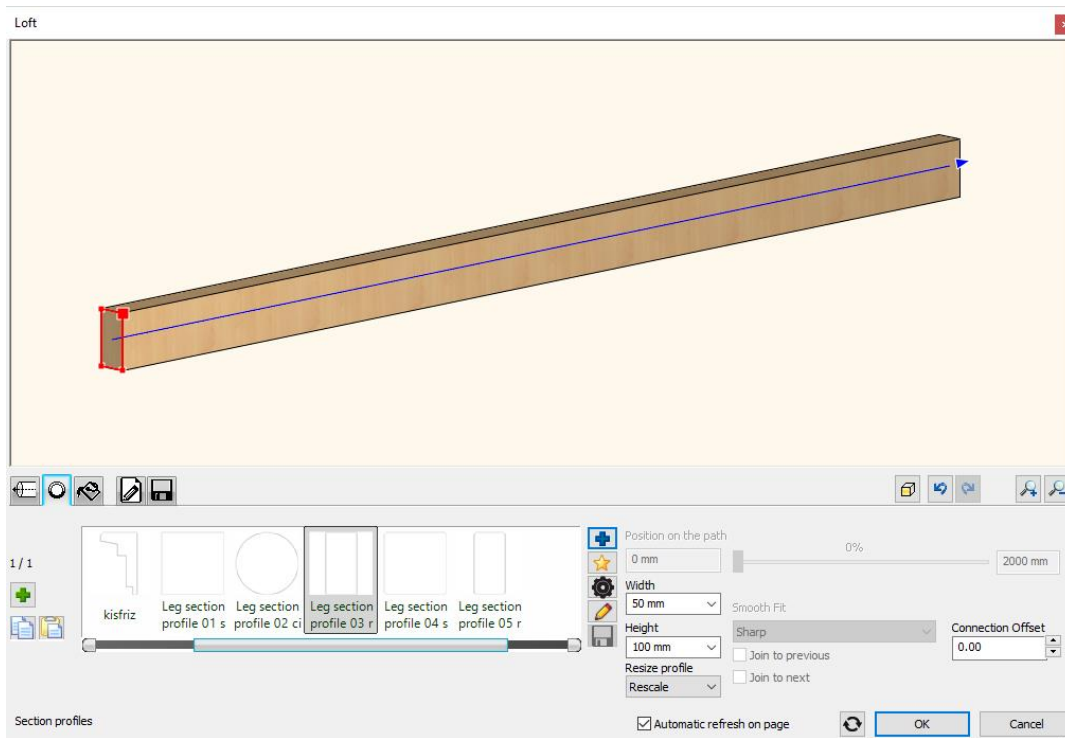


#### Cross-Section Profile

Cross-sections can be defined by two methods:

##### Selecting a profile from the library

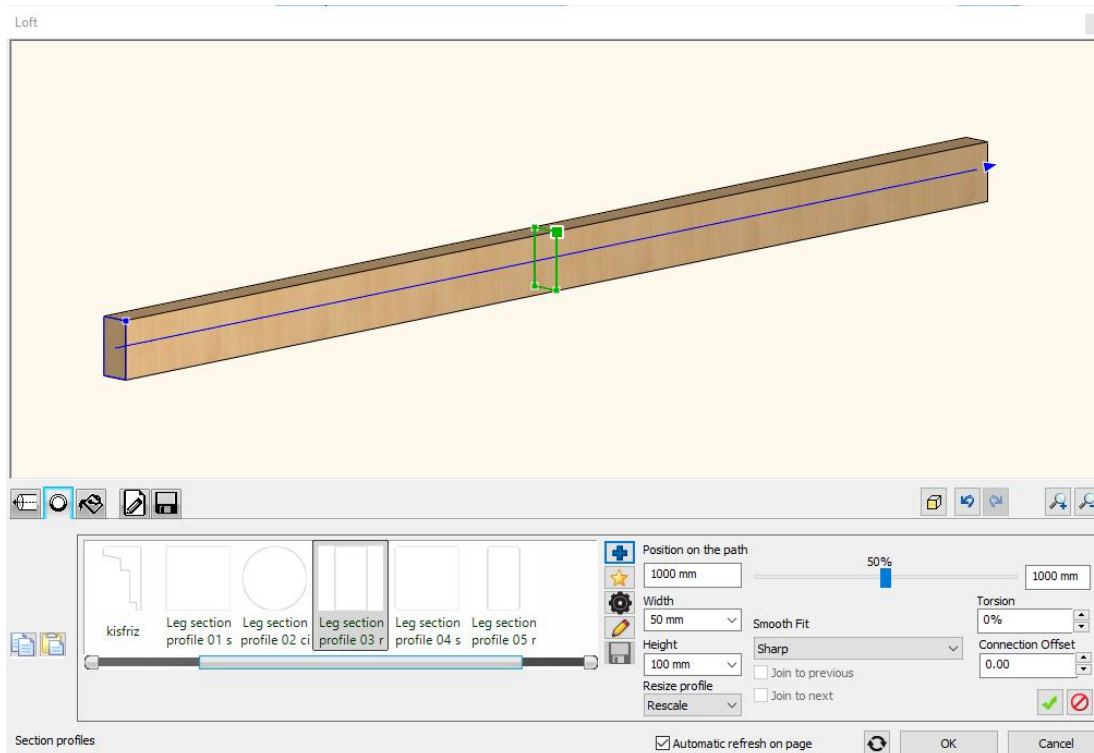
- Selecting existing profile from profile library.
- Click first on the second tab and then click on the blue plus icon in the middle of the panel.
- Select the new cross-section profile. Press Ok to return to Loft dialog.
- The selected profile will be inserted into the Favourites List.



### Drawing the geometry as a profile

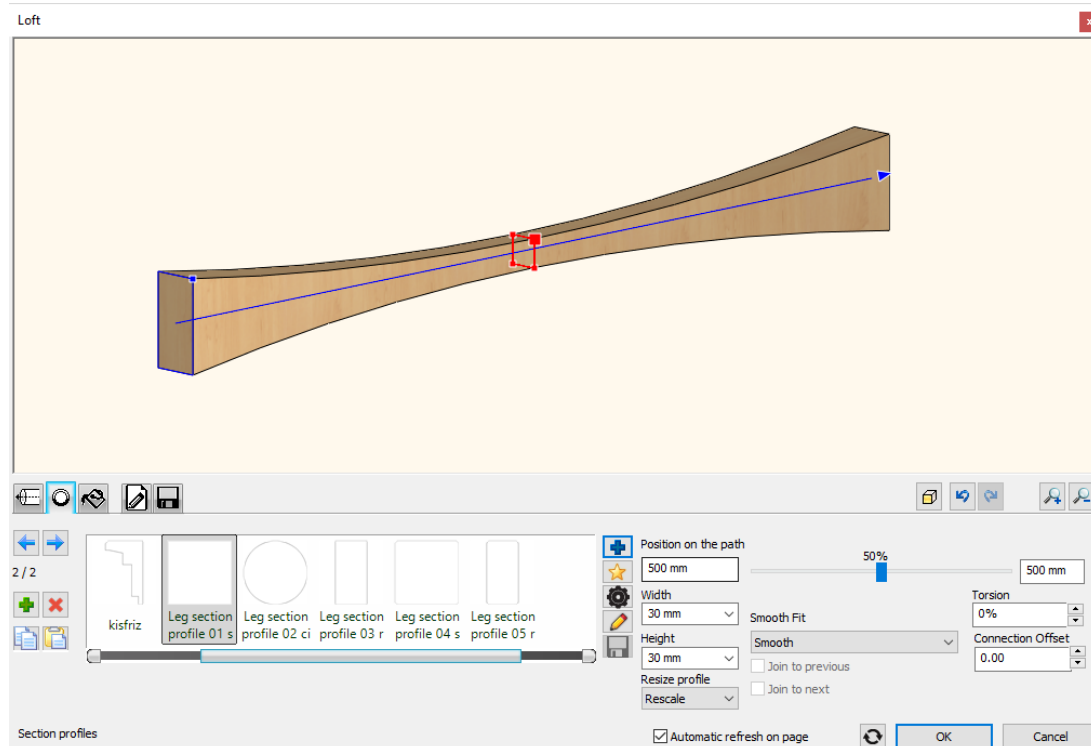
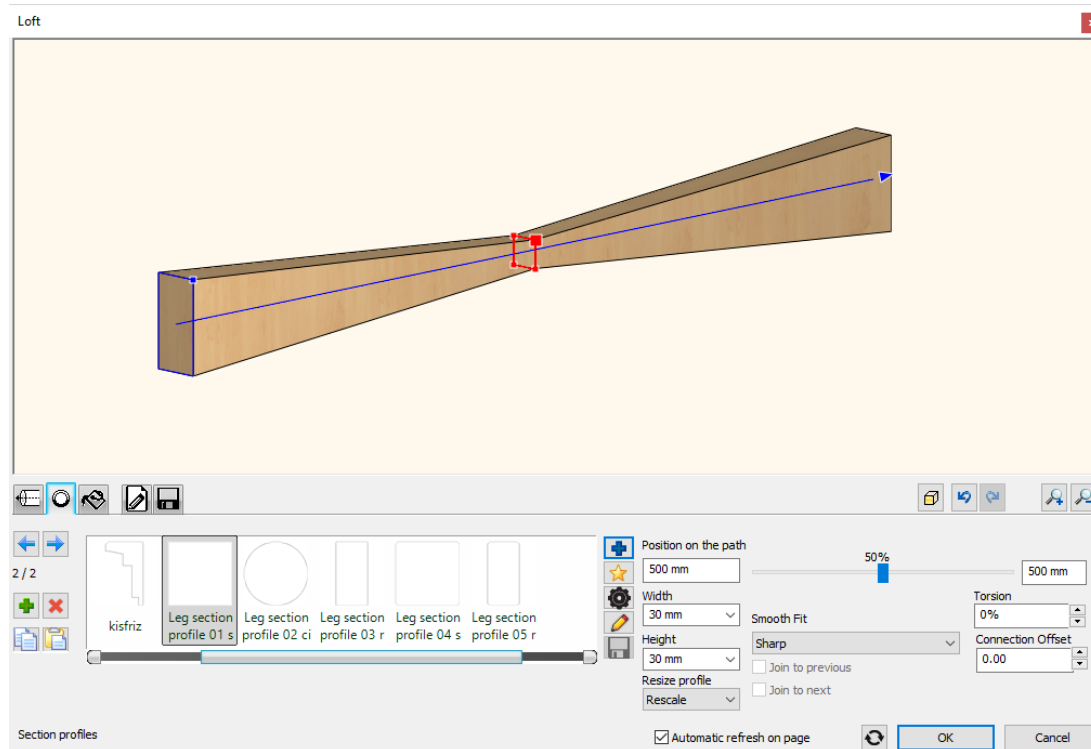
When you draw the cross-section profile you must also define its reference point.

- Click first on the second tab and then click on the yellow star icon. The dialog disappears temporarily and you can draw the cross-section in the 2D or 3D workspace.
- When you finished the profile definition press ENTER and the dialog comes back again.
- Add the next cross-section.
- Use the green plus button on the left side of a panel to add a second profile to the loft.
- You can define the place of the new cross-section along the path with the path slider or type its distance from the path starting or ending point. You can resize the new cross-section width and height or change its profile with clicking on another profile from Favourites.
- The new cross-section is displayed with green shape.
- You can add the new cross-section to the loft by clicking on the green tick button on the right side of the panel.



### Smooth fit / Sharp fit

Specifies that a smooth surface or sharp edge is drawn between the cross sections. See the the pictures.



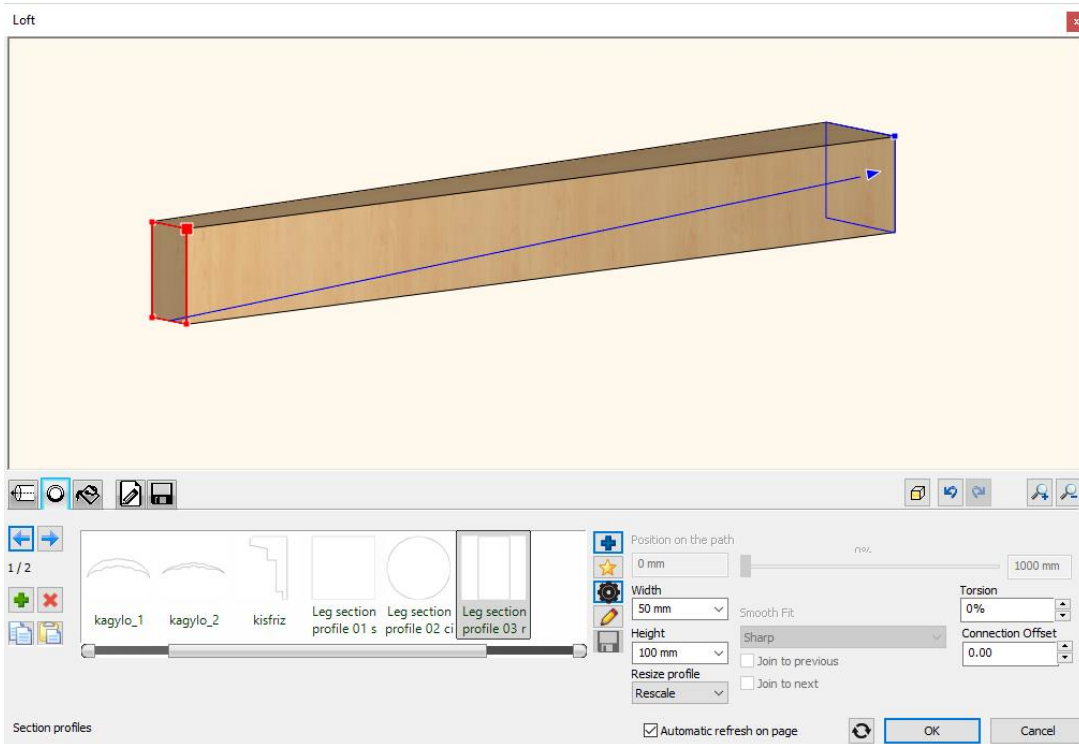
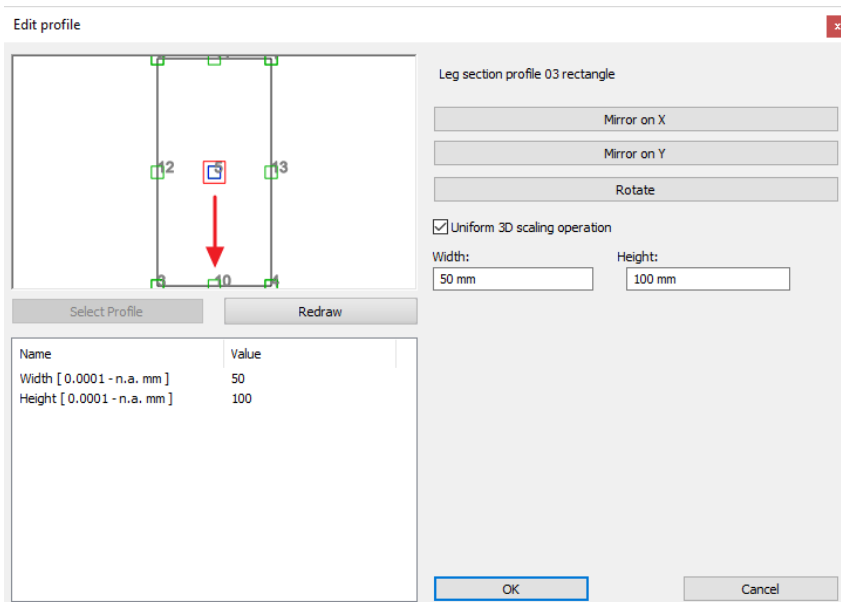
### Delete cross-section

The actually selected cross-section is highlighted with red colour. You can select the previous or the next cross-section with the blue arrows.

Click on the red X button to delete the selected cross-section.

### Hotspot control

The path intersects the cross sections on the cross section hotspot. Click on the black gear like icon to change the hotspot position.

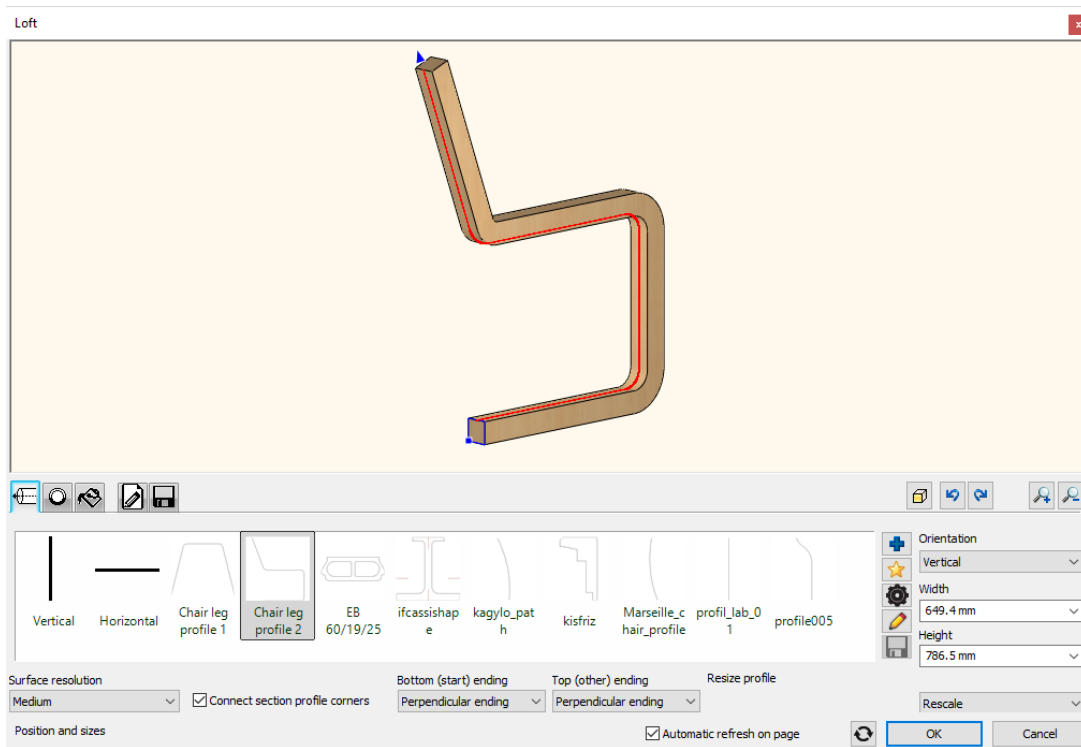


### Path definition

Path can be defined by two methods:

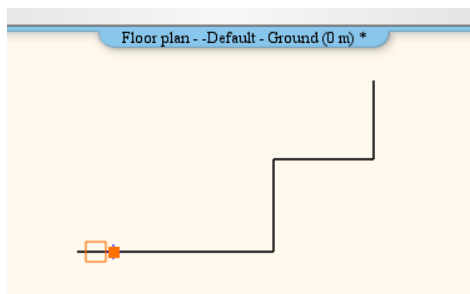
#### Selecting existing profile from profile library

- Click on the first tab and then click on the blue plus icon.
- Select the new profile in the upcoming dialog. Press Ok to return to Loft dialog.
- The selected profile will be inserted into the Favourites List.

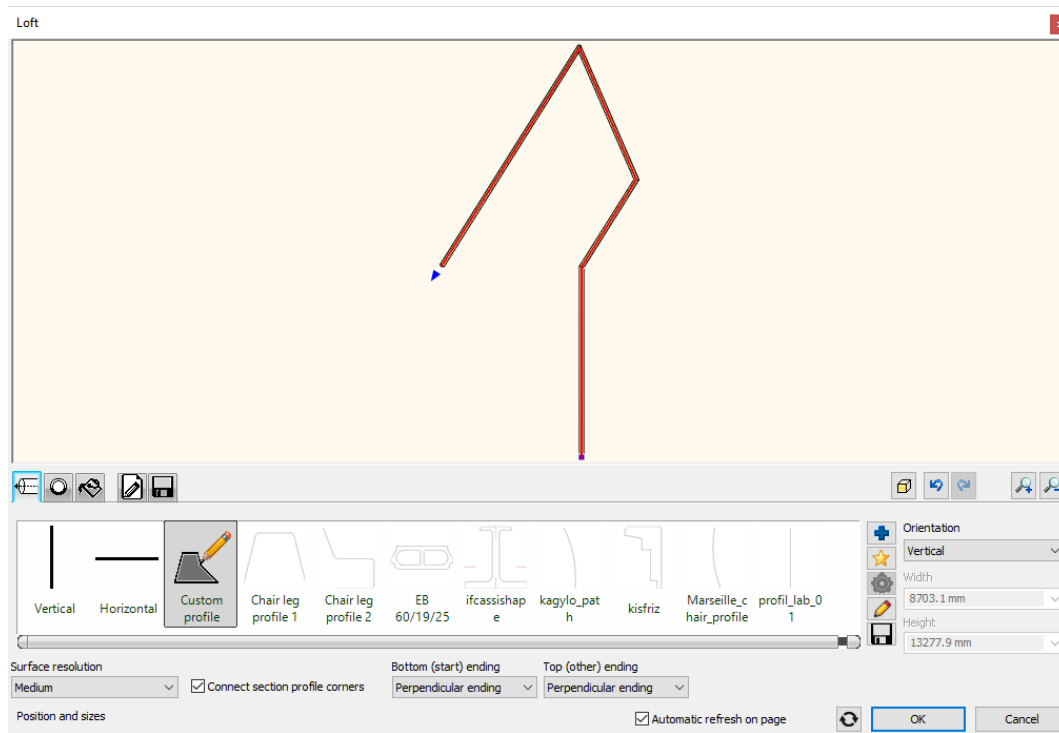


### Drawing the geometry as a path

- Draw the path as a polyline before you start the Loft command.

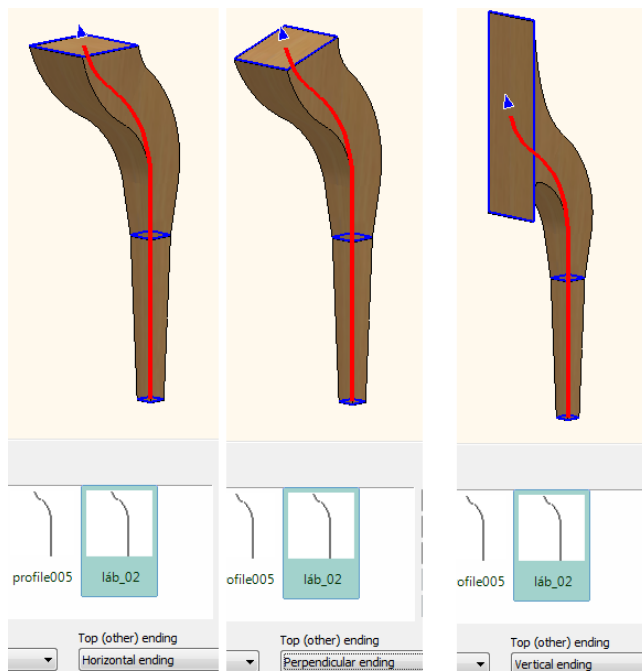


- Click on the yellow star icon in the Loft dialog. Select *Custom profile* option from the list.
- The dialog disappears temporarily and you can select the objects drawn previously in the 2D or 3D workspace. Use the *Select an item* command from the Profile Editor that appears on the Ribbon Bar.
- Click on the previously drawn path and the dialog comes back again. The new path is inserted into the Favourites List as CUSTOM PROFILE.



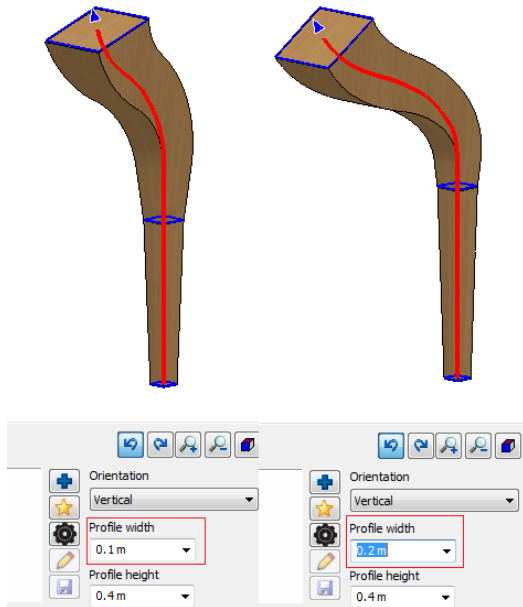
### Ending options

You can edit the beginning and end section of a loft upon your design request as horizontal, perpendicular or vertical separately. See this example:



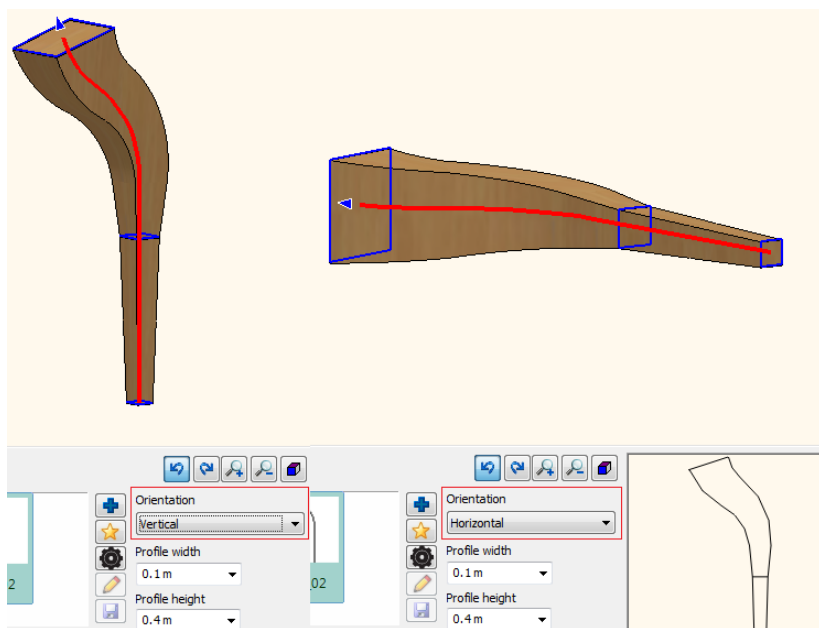
### Enclosing box control

The dialog displays the size of the actual path. Changing these values you can stretch the loft in both direction. See this example:



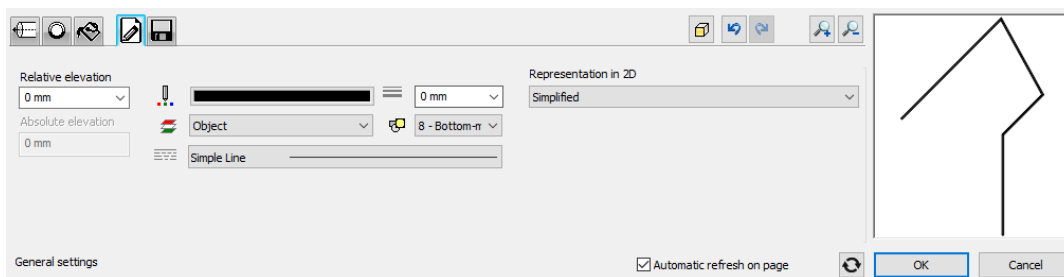
### Orientation

The loft can have a vertical or horizontal orientation. You can switch between horizontal and vertical in the dialog box Orientation list. See this example:



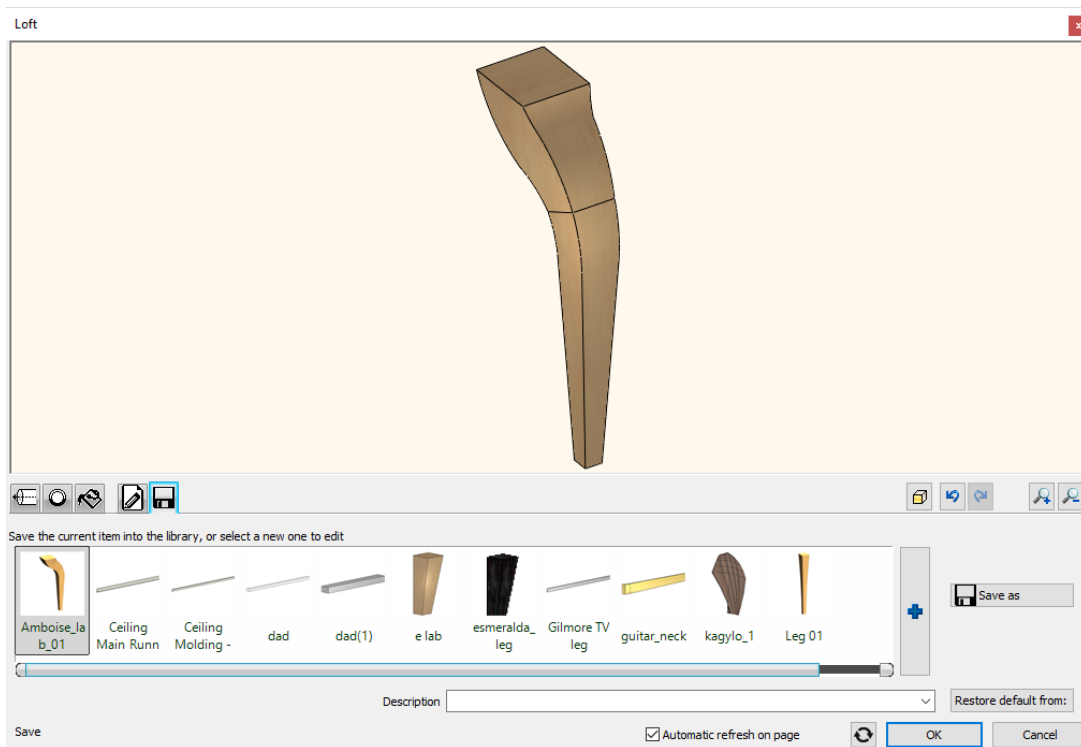
### 2D general properties

The 2D general properties contain the loft 2D representation properties as Layer, colour, etc. In addition you can choose the loft 2D representation as simplified, symbol or top view.



### Save loft into the Object library

The Save panel allows you to save the 3D model into Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.

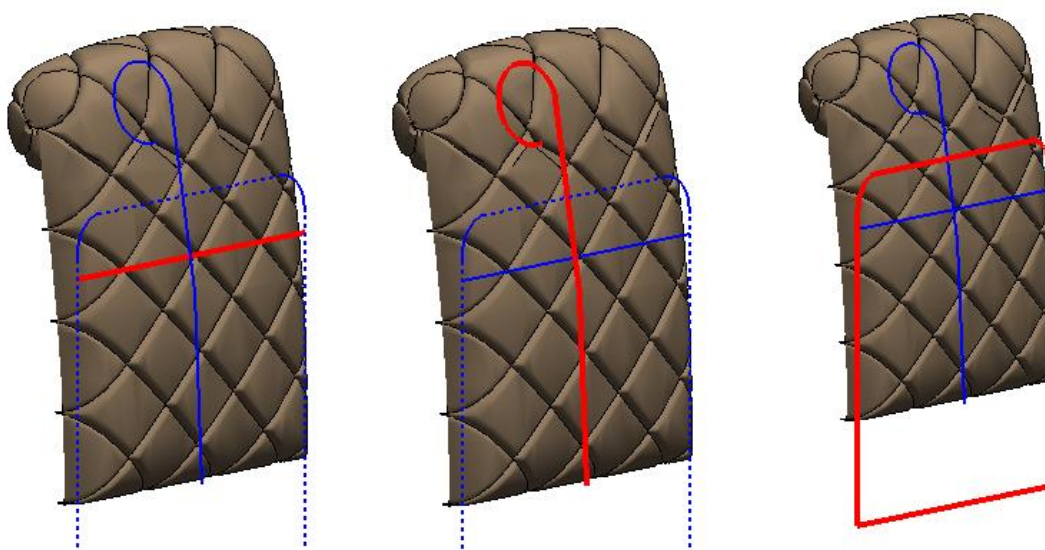


### 11.14.3. Smart Object Parts

Smart object parts is a revolutionary 3D solid creator tool that enables to design as an example upholstery furniture parts as seat, armrest or backrest cushion with textured surface.

The command can be found on the **Ribbon Bar – Interior tab – Smart Objects – Smart Object parts**.

Smart object part consists of two guides, a horizontal and a vertical guide and a frontal profile. Guide curves and cross section profile control the shape of the 3D solid.



This picture displays the 3D model of a backrest cushion.

#### **Horizontal guide curves**

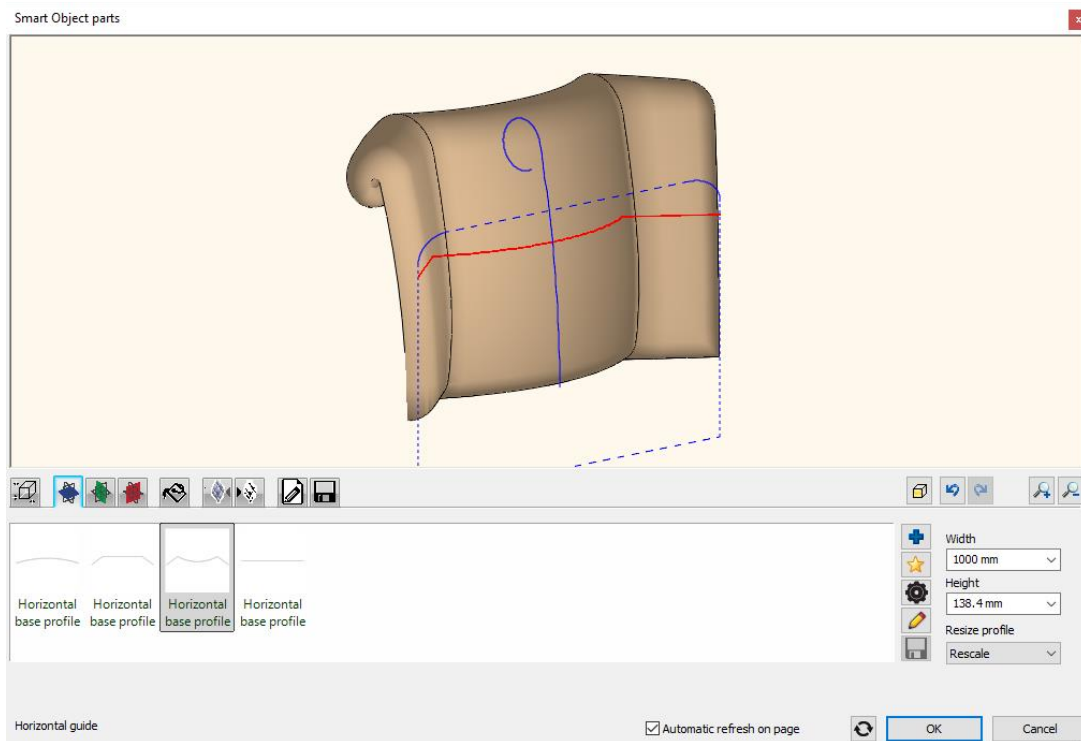
Guide curves are series of lines or curves that define the form of the solid.



Guide-curves can be defined by two methods:

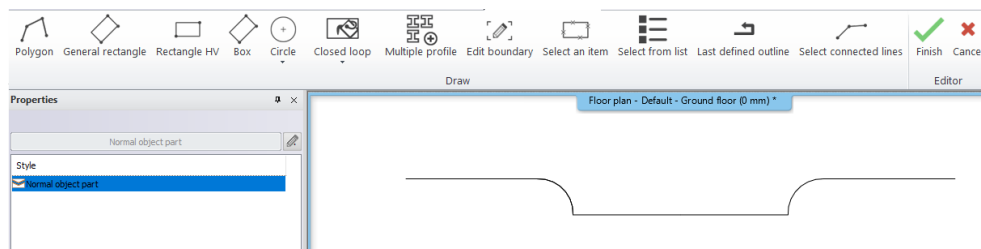
### Selecting existing open profile from profile library

- Click on the blue plus icon in the middle of the panel.
- Select the new open profile in the upcoming Profile dialog. Press Ok to return to Smart object parts dialog.
- The selected profile will be inserted into the Favourites List.

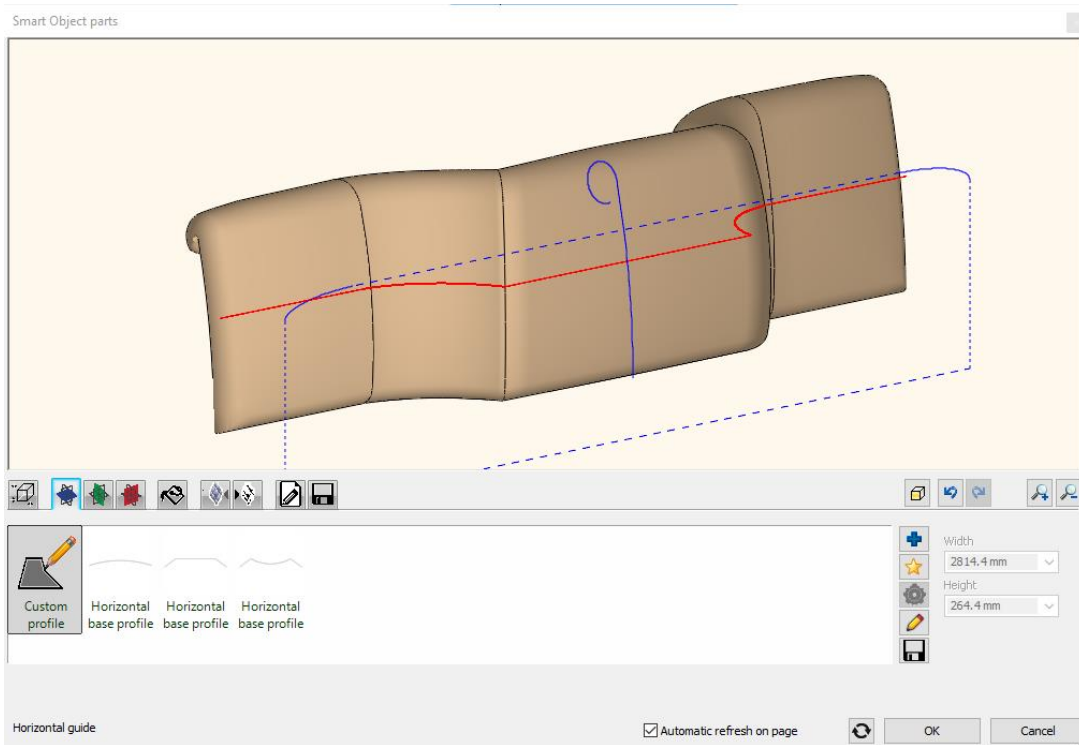


### Drawing the guide curves

- Click on the yellow star icon. The dialog disappears temporarily and you can draw the guide curves in the 2D or 3D workspace.



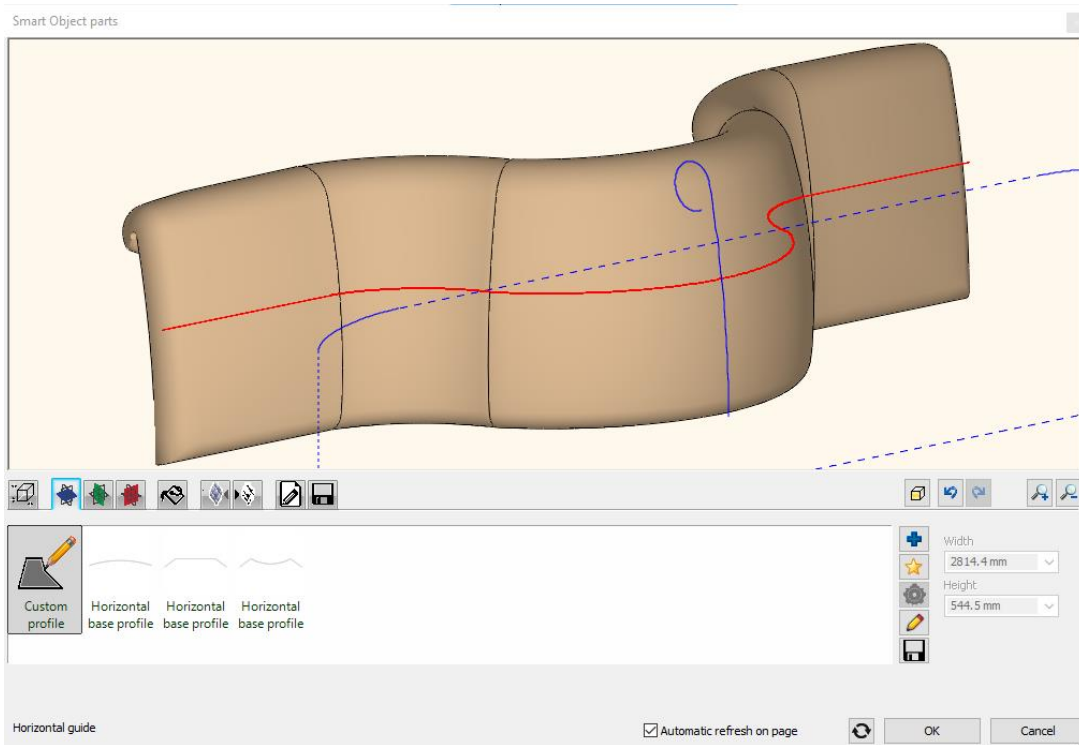
- When you finish the guide curves definitions press ENTER and the dialog comes back again displaying the smart object part with the new guide curves. The new guide is inserted into the Favourites List as CUSTOM PROFILE.



### Modify the guide curves

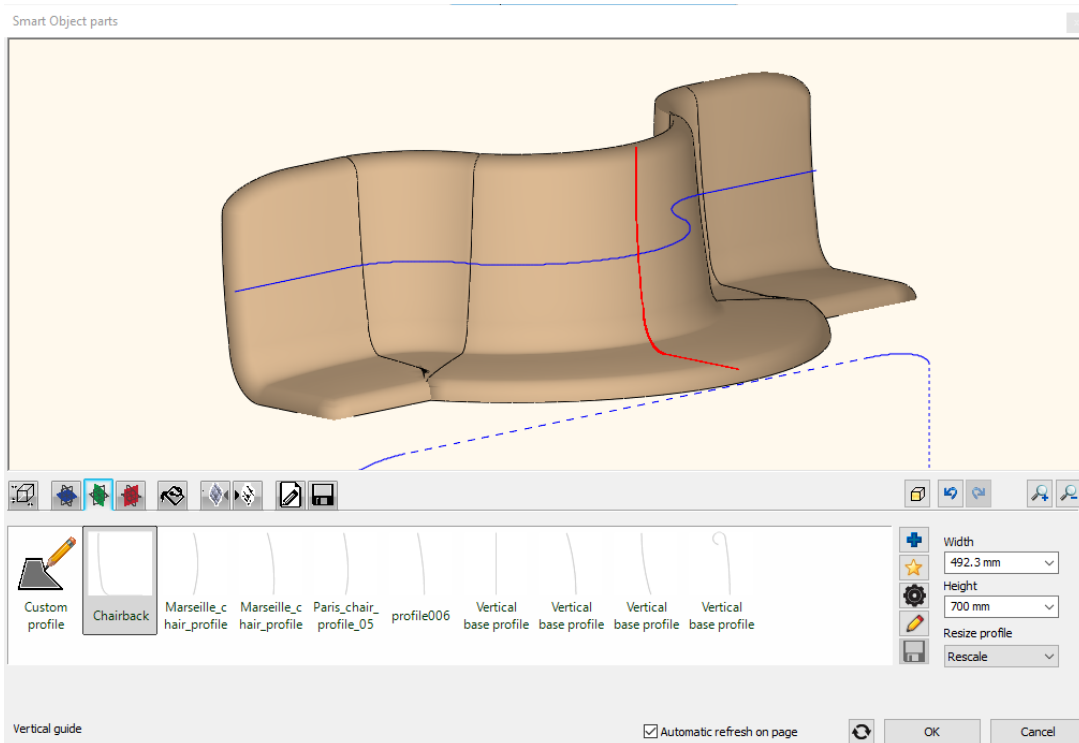
- Use the “Modify profile” button on the left side of a panel. This button appears as pencil icon.
- You have to place the guide curves on the drawing and edit it with clicking on the curves or corner points. When you finish the guide curves definition press ENTER and the dialog comes back again displaying the smart object part with the new guide curves. See on the picture below. .





### Vertical guide curves

Vertical guide curves can be defined in the same way as horizontal guide curves.

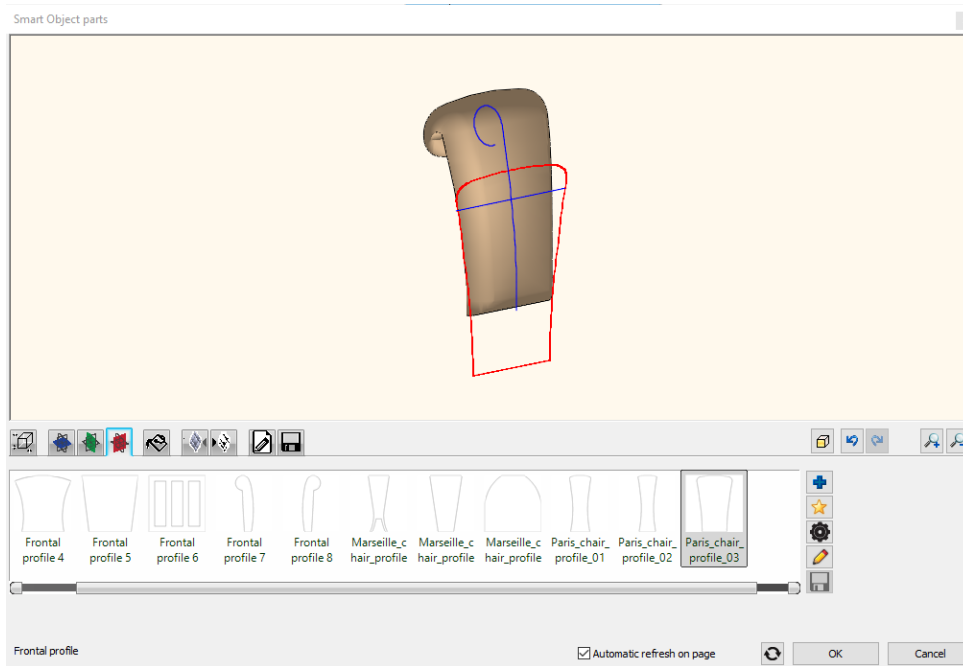


### Frontal profile

Frontal profiles can be defined by two methods:

#### Selecting existing profile from profile library

- Click on the fourth tab and then click on the blue plus icon in the middle of the panel.
- Select the new frontal profile. Press Ok to return to Smart Object parts dialog.
- The selected profile will be inserted into the Favourites List.

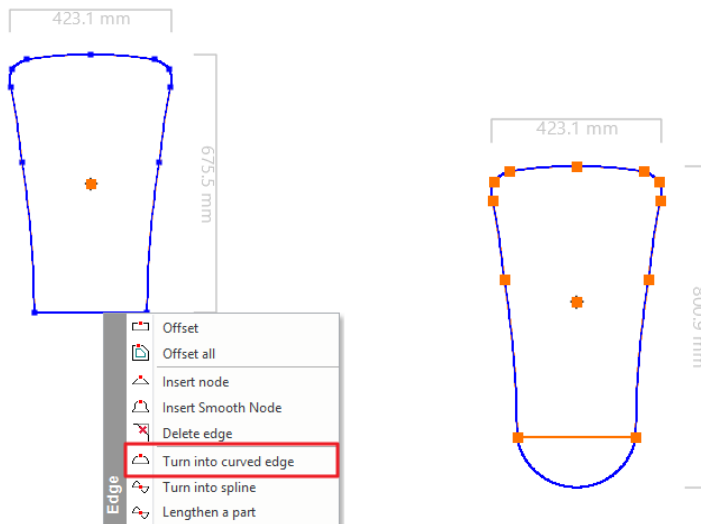


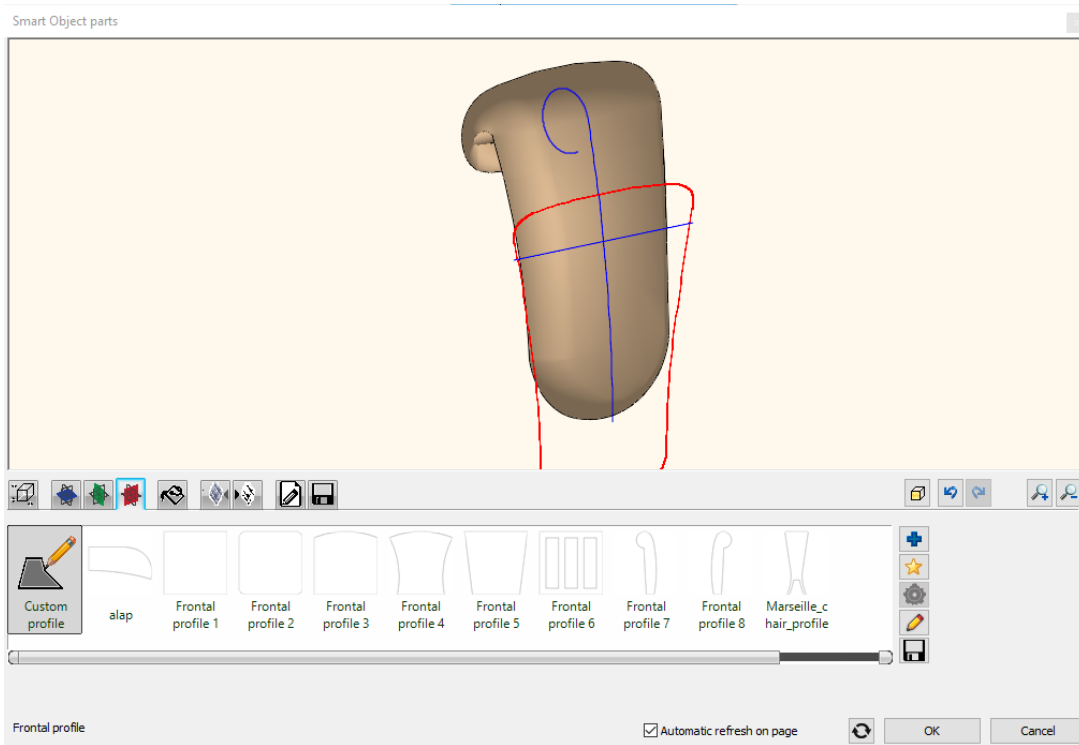
### Drawing the geometry as a profile

- When you draw the frontal profile you must also define its reference point.
- Click on the fourth tab and then click on the yellow star icon. The dialog disappears temporarily and you can draw the profile in the 2D or 3D workspace.
- When you finished the profile definition press ENTER and the dialog comes back again.

### Modify the frontal profile

- Use the “Modify profile” button on the left side of a panel. This button appears as pencil icon.
- You have to place the frontal profile on the drawing and edit it with clicking on the curves or corner points. When you finish the profile definition press ENTER and the dialog comes back again displaying the smart object part with the new frontal profile.



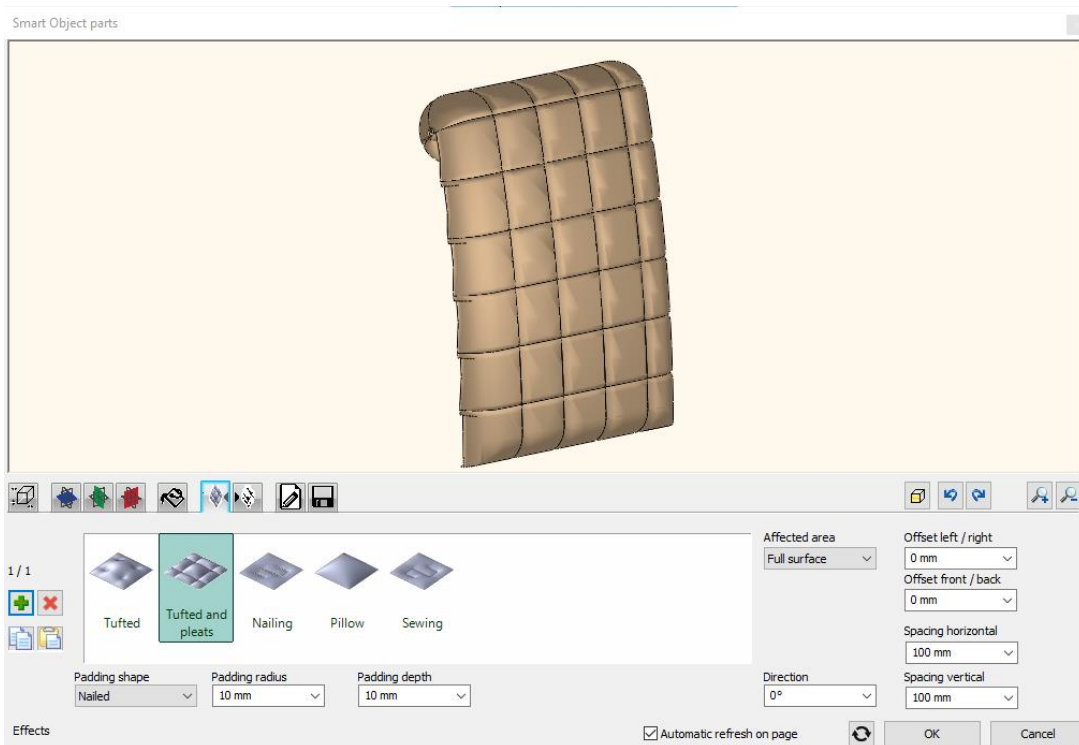


### Textured surface effects

You can assign textured various surface effects to the front and backside separately:

#### Add the first effect

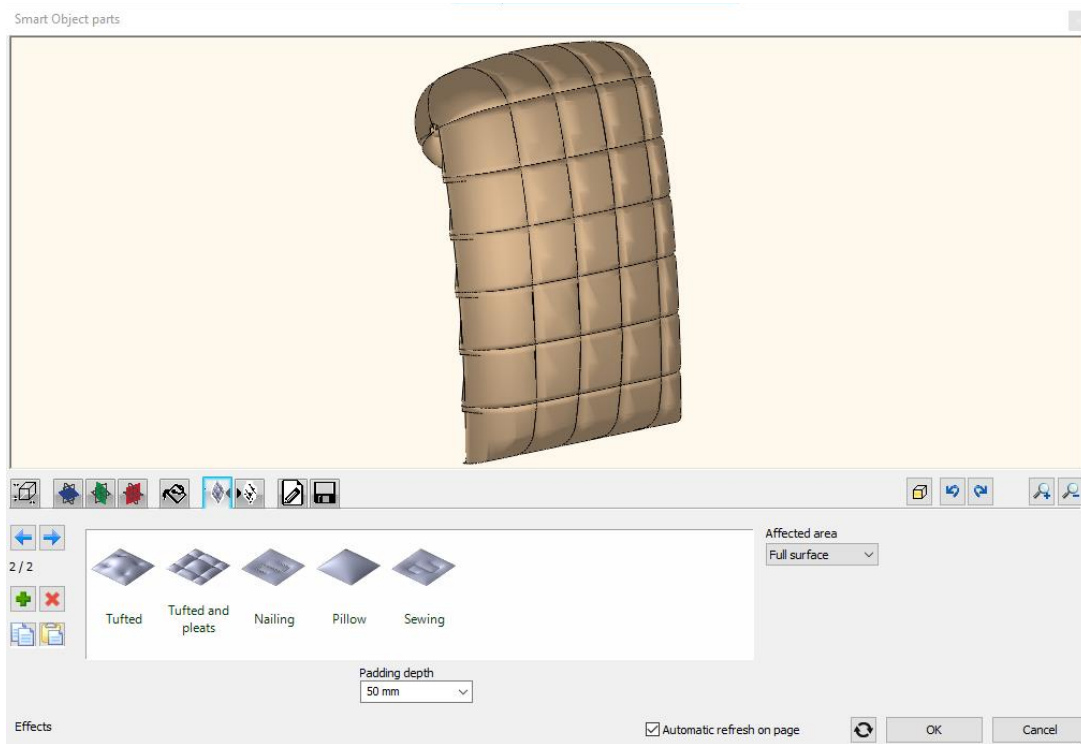
- Chose an effect from the predefined list on Effects tab.
- When you click on an effect the dialog will display the appropriate parameters of the effect. You can set the affected area and the effect geometry.
- You can add the effect to the smart object part by clicking on the green tick button on the right side of the panel.



#### Add next effect

- Use the "Prepare new" button on the left side of a panel. This button appears as green plus icon.

- Choose another effect from the predefined list. When you click on an effect the dialog will display the appropriate parameters of the effect. You can set always the affected area and the effect geometry.
- You can add the effect to the smart object part by clicking on the green tick button on the right side of the panel.

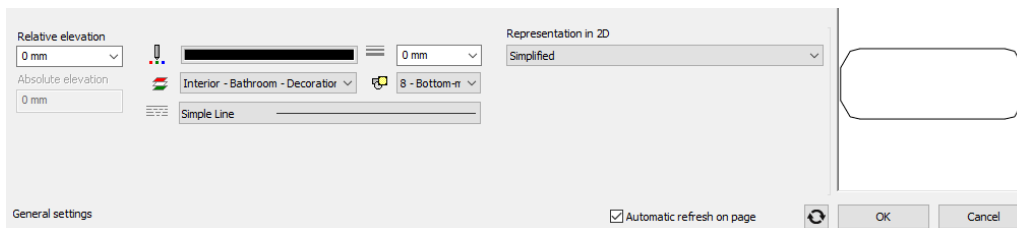


### Delete an effect

- The actually selected Effect is highlighted in the Favourites list. You can select the previous or the next Effect with the blue arrows.
- Click on the red X button to delete the selected Effect.

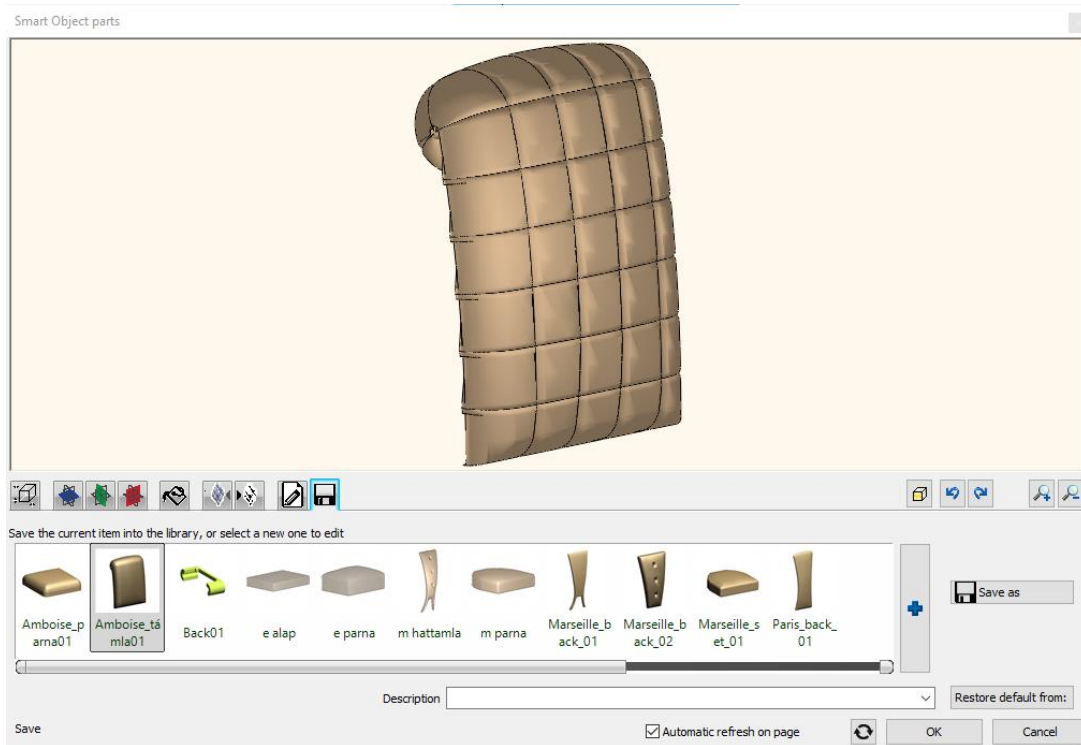
### 2D general properties

The 2D general properties contain the loft 2D representation properties as Layer, colour, etc. In addition you can choose the loft 2D representation as simplified, symbol or top view.



### Save smart object part into the object library

The Save panel allows you to save the 3D model into the Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.



#### 11.14.4. Furniture Assembly

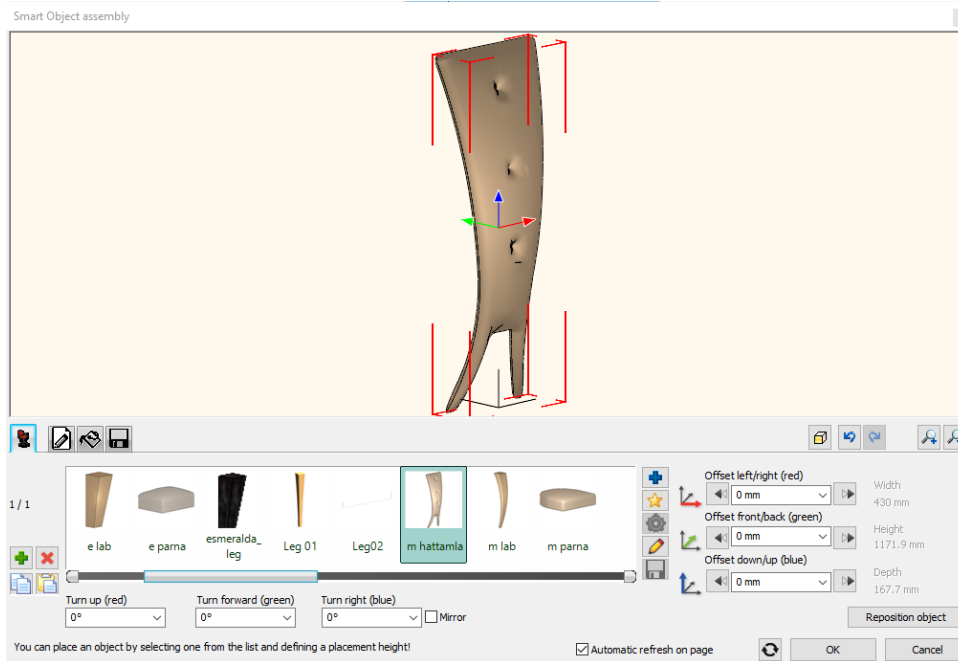
Furniture Assembly is a platform that integrates flexible tools to compose complex furniture that consists of multiple pieces and requires assembly.



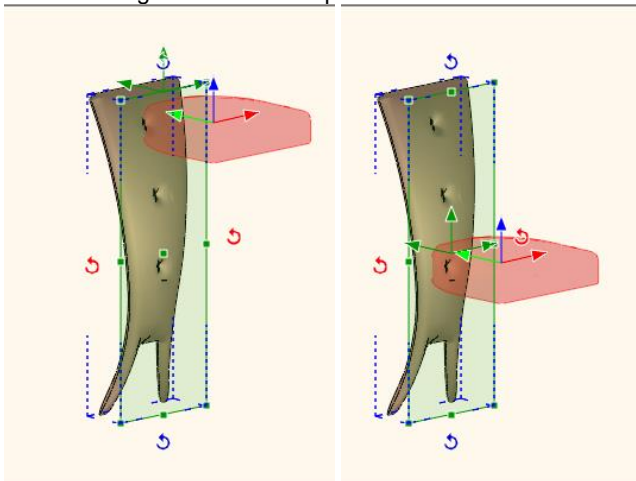
#### **Smart object parts:**

Smart object parts can be placed by this method:

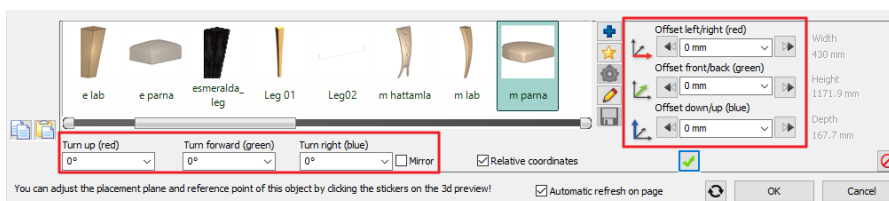
- Click on the blue plus icon to select a saved smart object part from the library.
- Click on the green tick icon to place the object. Its red color will disappear.



- To place a second smart object part click on the green plus icon on the left.
- Select one from the Favorites list or click on the blue plus to select from the library.
- You can adjust the placement plane and reference point of this object by clicking on the green or red stickers on the 3D preview.
- Click on the green tick icon to place it.

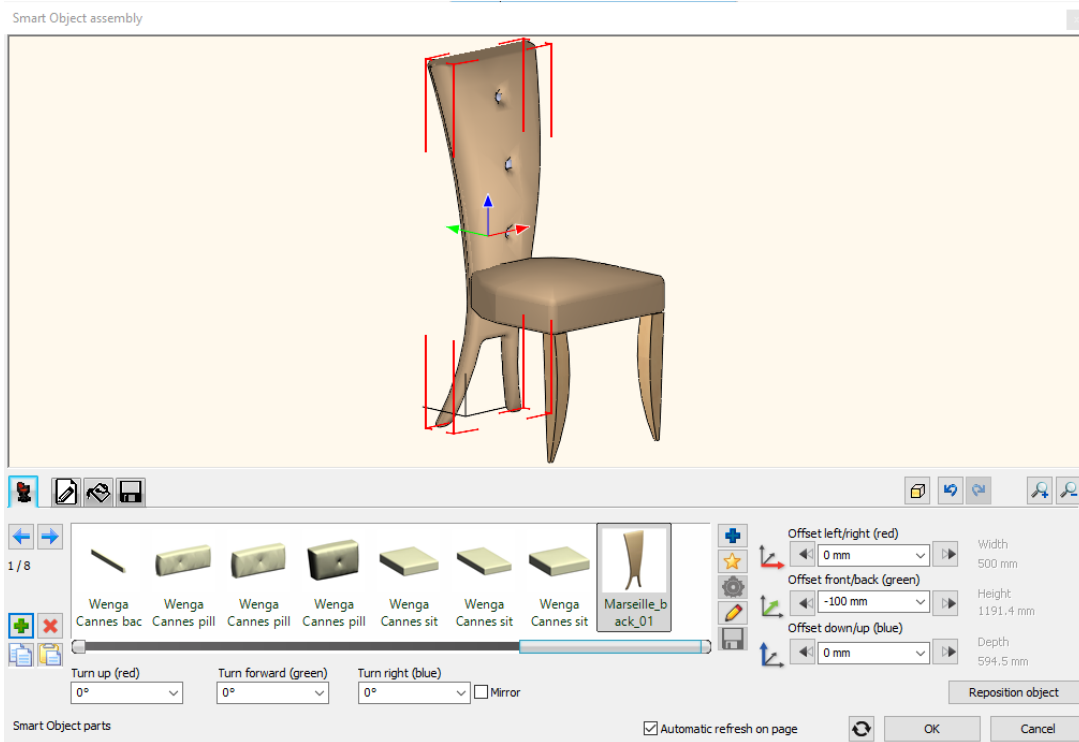


- You can change the position and the orientation of the new object before fixing it with the green tick icon.



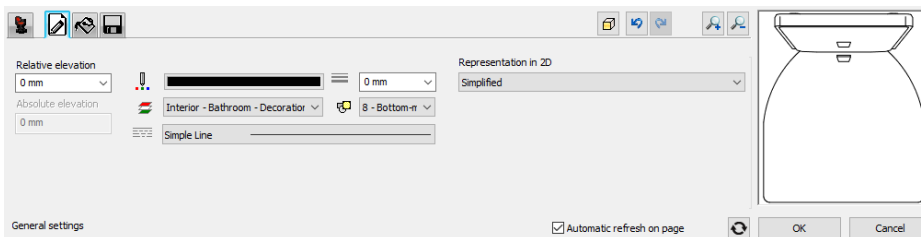
- Add all the parts of the object with the above mentioned method.
- The new object is integrated now into the assembly.
- There is no need to be very precise in this phase as you can change the position later as well.





## 2D general properties

The 2D general properties contain the loft 2D representation properties as Layer, colour, etc. In addition you can choose the loft 2D representation as simplified, symbol or top view.

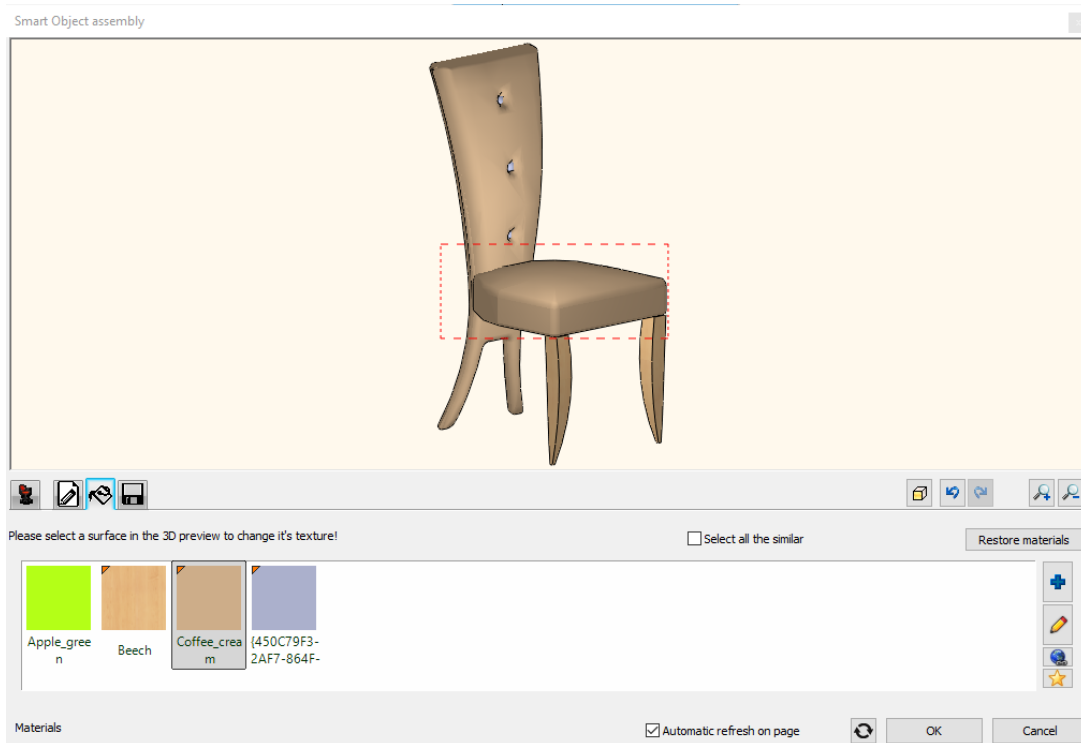


## Materials

The furniture itself is composed of different materials. Using the Material Panel you can change the material on the selected surface.

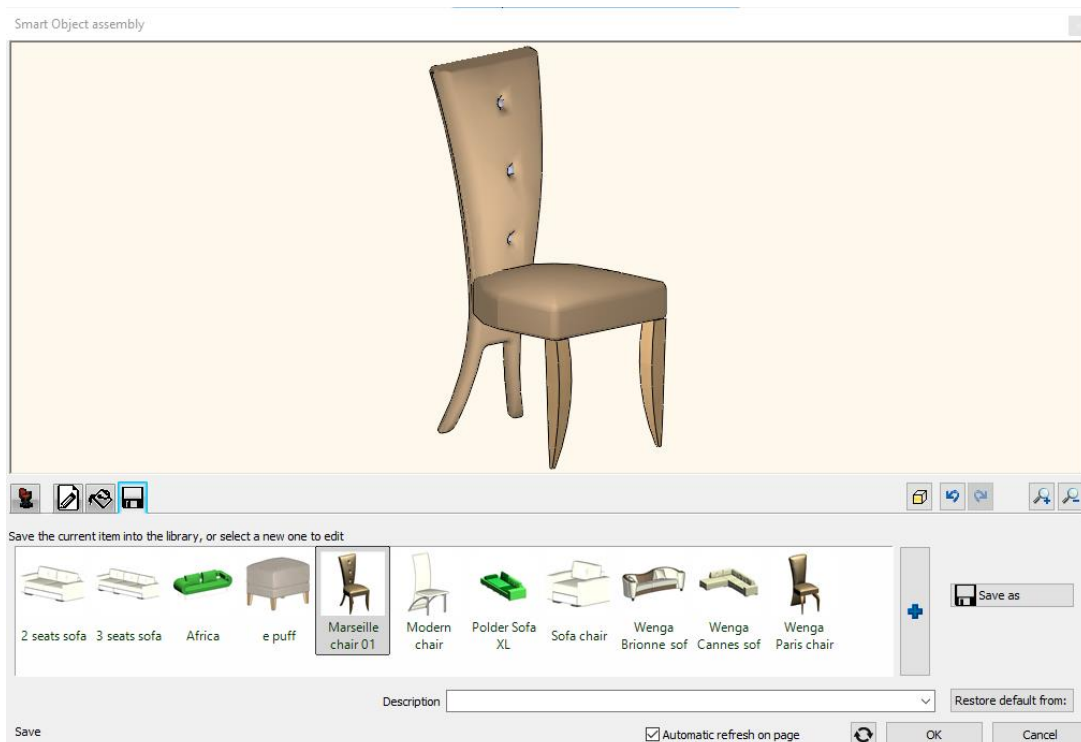
### Select all the similar option:

All the same option allows you to handle all the surfaces in one step when defining the material on their surfaces. When this option is on you can handle all similar surfaces together. When this option is off you can handle the selected surface only.



### Save into the Object library

The Save panel allows you to save the assembled 3D model into the Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.



## 11.15. KBB

With the KBB tools, you can create furniture that fit in in shape and size. With the Cabinet door, Cabinet and Countertop tools you can create a complete cabinet family with base cabinets and high cabinets, countertops and kitchen accessories.

### 11.15.1. Cabinet door

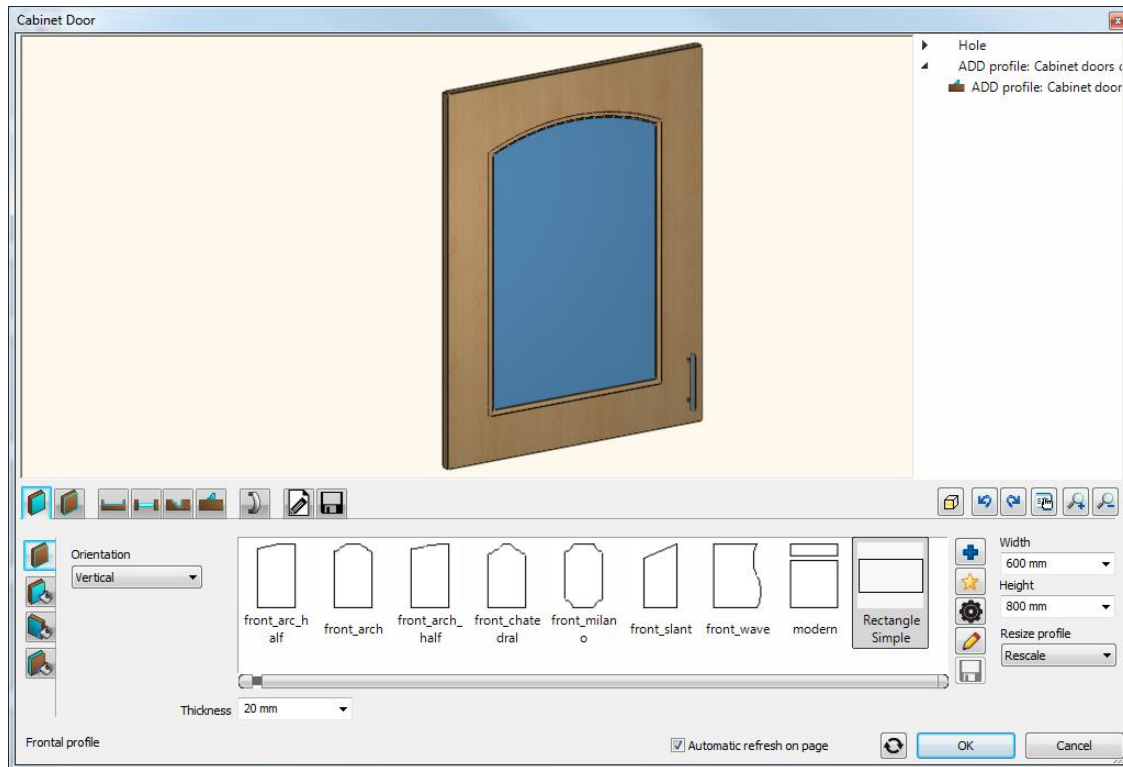
With the *Cabinet door* function, you can create the detailed model of cabinet fronts.

The function is available in *Ribbon Bar - Interior – KBB – Cabinet door*.

### 11.15.1.1. Dialog structure

The structure of the *Cabinet door* dialog is the following:

- ❖ On the top of the dialog, you can see the preview of the model.
- ❖ On the bottom of the dialog, you can edit the model and define the preview.



#### Preview buttons



Click this button to select from Realistic / Hidden line / Wireframe / X-ray previews.



Undo button to undo the last operation.



Redo button to reverse the last undo operation.



Structure button to browse among the added/edited elements/editorial pages.



Zoom in button to enlarge the preview of the model.



Zoom out button to zoom out the preview of the model.



Update button to update the preview manually.

**Automatic refresh on page.** With this option, you can automatically update the preview of the model as soon as you change something on it.

#### Tabs of pages for editing and saving

Depending on the modifications you want to make, different pages are available:



**Frontal profile** to set the profile and materials of the cabinet front.



**Outer edges** to set the rounding of edges and the angle of edges.



**Inset** to set the profile and materials of inset.



**Hole** to define the profile and materials of holes.



**Subtract profile** to remove a swept profile as ornament from the cabinet front.



**Add profile** to add a swept profile as ornament to the cabinet front.



**Handle** to add handle to the cabinet front.



**General settings** of the representation on the floor plan.



**Save** to save the prepared cabinet door in the object library.

On each tab, you can find subsequent tab(s) for further editorial functions.

You can leave the dialog with clicking the **Ok**, **Cancel**, or **Close** buttons. When you click **Cancel** or **Close**, the program asks for a confirmation.


### 11.15.1.2. Frontal profile

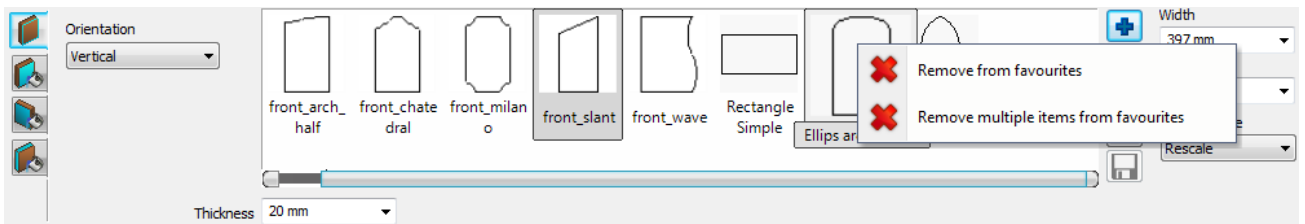
On the **Frontal profile** tab, there are four subsequent tabs on the left side. The functions of the tabs are as follows.




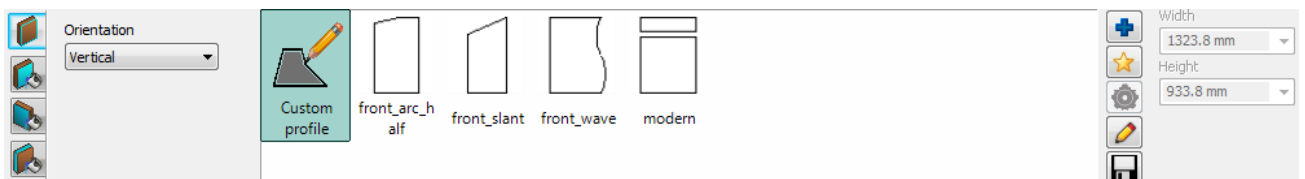
#### Frontal profile


Here you can define the frontal profile of the cabinet door. There are more ways to define the profile:


- ❖ **Selection from the library.** Click the  button to open the *Profiles* dialog, where you can select from the existing library elements. The selected profile appears in the favourites.
- ❖ **Selection from favourites.** When you select a new element from the library, it appears in the favourites. The frequently used and factory default elements can be found here. To select, click one of them with the left mouse button. To remove, click one of them with the right mouse button. Apply the **Remove from favourites** or the **Remove multiple items from favourites** command from the local menu. The **Remove from favourites** command removes one item. The **Remove multiple items from favourites** command pops up a subsequent dialog, where all the favourites are listed. In that dialog you can select multiple items from the favourites and you can remove them by clicking **OK**.



- ❖ **Define profile.** Click the  icon, with which you can create a new profile on the floor plan. As soon as you finished the definition of the profile, it appears among the favourites with a unique symbol.



Click the  save button on the right side if you want to save that custom profile into the library for using it later. The unused and unsaved profiles are deleted automatically from the favourites when you exit from the dialog.

- ❖ **Modify profile.** By clicking the  modify profile icon you can modify both custom and other profiles from the favourites. If there is a custom profile and then you modify another profile from the favourites, the latest modified profile becomes the custom profile and the previous custom profile will be lost.

**!** Important to know that only one **custom profile** can exist among the favourites. Any new custom profile definition overwrites the previous one. Also, you cannot delete a custom profile from favourites. Unused custom profiles are deleted automatically when you exit from the dialog.

#### Modifying the properties of a not customized profile

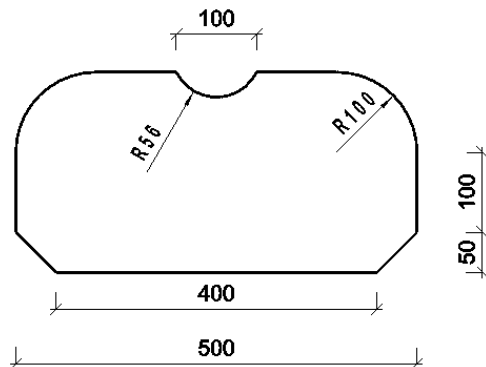
The properties of not customized profiles among the favourites can be modified as follows:

**Width.** You can select a value from the drop-down list on the right side or you can enter another value in the input field.

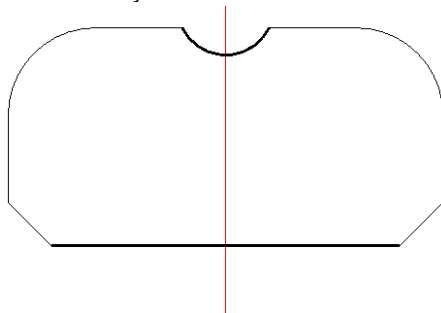
**Height.** You can select a value from the drop-down list on the right side or you can enter another value in the input field.

**Resize profile.** The effect of changing the width/height of the profile depends on this choice. From the drop-down list, you can select between **Rescale** and **Cut and stretch**. The **Rescale** option stretches the width and the height of the profile. The **Cut and stretch** option works different: the program takes the contour parts of the profile that intersect the symmetrical axis of the profile and then stretches these contour parts according to the specified width and height values. The rest of the profile remains unchanged.

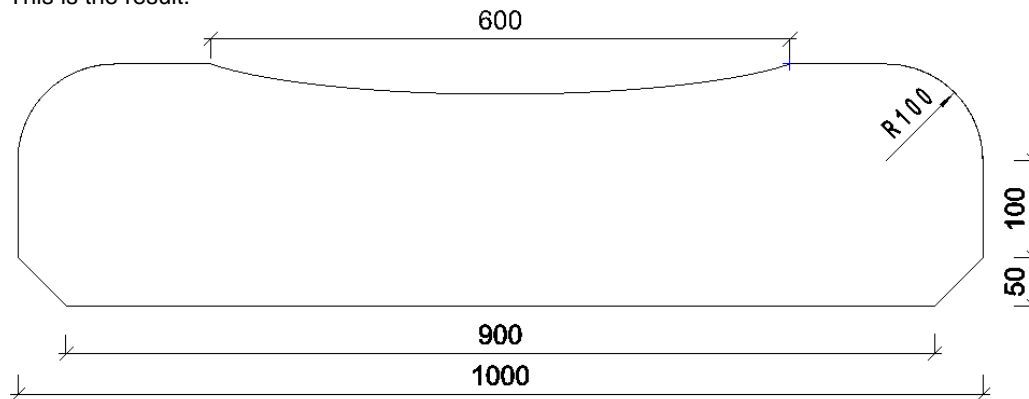
For example, when you want to make the width of the profile below double, the following happens:




This is the symmetrical axis and the contour parts incorporated:




This is the result:



### Modify profile

Use the  modify profile button to modify the selected profile. Clicking this button, you can place the profile on the floor plan and edit it by the edit profile commands. You can finish the editing by pressing Enter. If it was not a custom profile previously, it becomes a custom profile after the modification.

To modify a non-custom profile, you can use the  profile modification button, too. Clicking that button, the *Insert profile* dialog appears, where you can select the reference point of the profile, rotate or mirror it. The width and height parameters in the *Insert profile* dialog may differ from the actual width and height data of the profile. When you modify these values here, the actual width and height values will be overwritten. Click **OK** to finish the modification.

### Thickness

The thickness of the cabinet door can be specified on the bottom of the dialog. You can select a value from the drop-down list or enter another value.

### Orientation


On the left side of the dialog, there is a drop-down list to specify the orientation of the cabinet door. You can select between **Vertical** and **Horizontal** options.





## Front material

Here you can specify the front material of the cabinet door. There are more ways to specify the material:



- ❖ **Selection from the library.** Click the  button to open the *Materials* dialog, where you can select a material from the material library. The selected material appears among the favourites.
- ❖ **Selection from the favourites.** The most commonly used materials are here. For the selection, click one of them with the left mouse button. To remove, click one of them with the right mouse button. Apply the **Remove from favourites** or the **Remove multiple items from favourites** command from the local menu. The **Remove from favourites** command removes one item. The **Remove multiple items from favourites** command pops up a subsequent dialog, where all the favourites are listed. In that dialog you can select multiple items from the favourites and you can remove them by clicking **OK**.



- ❖ **Create new material.** Click the  button to create a new material. The *Material properties* dialog pops up, where you can create a new material. The newly created material gets into the favourites automatically.
- ❖ **Importing an image.** Click the  button. You can select whether you want to download an image from our webpage in the *Showroom* or from the internet, by which you can define a material.

## Edit material



Click the  button to modify the selected material in the *Material properties* dialog.

## Material direction

On the bottom of the dialog, you can specify a rotation angle relative to the material direction specified in the *Material properties*. You can select a value from the drop-down list or enter another one in the input field.



## Back material

Here you can define the back material of the cabinet door. By default, the back material inherits its material properties from the front. When you want to specify a different back material then check the **Use custom material** option and follow the same process described for the front material settings.



## Side material

Here you can define the side material of the cabinet door. By default, the side material inherits its material properties from the front. When you want to specify a different side material then check the **Use custom material** option and follow the same process described for the front material settings.

### 11.15.1.3. Outer edges

On the **Outer edges** page you can define the rounding of edges and the angle between the front and side planes of the cabinet door.

#### Rounding the edges

You can round either all edges or certain edges.

- Check the **Round all edges** option when you want to round all edges.
- Specify the side rounding value. Select a value from the drop-down list or enter another value in the input field.
- Switch off the **Round all edges** option if you want to round only certain edges.
- To round the side/front/back edges, select the appropriate values from the drop-down lists or enter the values manually in the input field.

#### Angle between the front and side planes

You can define the angle between the side and front planes.

- Check the **Same angles** option if you want to set the same angle between the front plane and all side planes.
- Specify the edge angle. Select a value from the drop-down list or enter a different value in the input field.
- Switch off the **Same angles** option if you want to specify different angles between the front and side planes.
- Specify the top edge angle/right edge angle/bottom edge angle/left edge angle. Select a value from the drop-down list or enter a value in the input field.

### 11.15.1.4. Inset

On the **Inset** page, you can define different insets. There are three subsequent tabs on the left side to define the profile, the front material and the side material of the insets.



#### Frontal profile



There are more ways to define the frontal profile of an inset. The process is the same as you can define the frontal profile of the cabinet door.


#### Automatic profile

You can always find this profile with its unique symbol among the favourites. The automatic profile means that the profile follows the frontal profile of the cabinet door with a shift. In that case, you cannot resize the profile.

The modification of an inset profile works the same way as for the frontal profile of the cabinet door.

#### Aligning the inset profile to the frontal profile

The selected inset profile can be aligned to the frontal profile of the cabinet door. For this, you can use the **Same offsets** option and the lock buttons (, ).

- Switch on the **Same offsets** option and the locked status of the lock button () if you want to use the same offsets relative to the front profile of the cabinet door on all sides. In this status the **X offset** and **Y offset** values are not editable.
- Switch off the **Same offsets** option and use the appearing lock buttons if you want to apply different offsets relative to the front profile of the cabinet door on the sides.
- To define the width/height and X/Y offset values of the inset profile, use the values in the drop-down list or enter other values in the input fields.

Depending on the shape of the used inset profile and the status of the lock buttons, the width/height and X/Y offset values may not be modifiable.








#### Inset depth

On the bottom of the dialog, you can specify whether the inset should sink into the cabinet door or stand out. **Negative**, **Positive** and **No depth** options are available in the drop-down list.

- Use the **Negative** option if you want the inset sinking into the front of the cabinet door.
- Use the **Positive** option if you want the inset standing out from the front of the cabinet door.
- Use the **No depth** option if you want the inset to be on the plane of the front of the cabinet door.
- In case of selecting the **Negative** or **Positive** option, you also have to select a depth value from the drop-down list or enter a value in the input field. In case of **Negative** option, the depth value must be smaller than the thickness of the cabinet door.

#### Adding/deleting insets and switching between insets

For a cabinet door, you can define more insets.

- After specifying the properties of an inset, click the  button to add the inset to the cabinet door.
- If you want to add more insets, click the  button and set the properties. To add the inset, click the  button. To cancel the new inset definition, click the  button.
- Repeat the steps above until you reach the required number of insets. When you add more insets, you can use the appearing arrow buttons (, ) to step forward to the next inset or step backward to the previous inset you defined previously. You can modify the properties of the actual inset.
- To delete an inset definition, click the  button.
- The new inset that hasn't been added yet is represented by green color in the preview. The previously added and selected inset is represented by red color in the preview. The previously added and not selected insets are represented by blue color in the preview.



#### Front material of inset

On this page, you can define the front material of the defined insets. The process is similar to the material setting of the back material of the cabinet door.



#### Side material of inset



On this page, you can define the side material of the defined insets. The process is similar to the material setting of the back material of the cabinet door.



### Copy and paste function



On the *Inset*, *Hole*, *Subtract profile* and *Add profile* pages it is possible to copy certain properties from one element to another. The function works only inside the same pages between the elements. All the properties will be copied that do not concern the shape and position of a frontal profile.

- After specifying the properties of an actual (an existing or new) element, click the  button.
- To modify the properties of an existing element, or when you create a new element, click the  paste button.

#### 11.15.1.5. Hole

On the **Hole** page you can define different hole profiles. Optionally, you can fill the holes with materials. It is usually used to create glass insets.



##### Hole frontal profile

Similarly to the process described for the insets, it is possible to add different profiles. The defined profiles will be cut out from the cabinet door and then filled with material with a specified thickness.

- In the **Thickness** field you can define the thickness of the filling material.
- In the **Offset** field you can specify position of the filling relative to the middle of the section of the cabinet door.



##### Filling material

On this page, you can define the filling material of the hole, similarly to the back material definition process for the cabinet door.

- Switching on the **Empty hole** option you can vanish the filling material, so there will be a hole in the cabinet door.



##### Side material of the hole

On this page, you can define the side material of each hole, similarly to the process described for the cabinet door side material.

#### 11.15.1.6. Subtract profile

On the **Subtract profile** page, you can create different cuttings along a path. You have to define the path, the section profile used for the cutting and the material of the cutted surface.




##### Frontal profile

Similarly to the process described for the inset, you can add different profiles. The program creates cutouts in the cabinet door along the path defined by the profile.



##### Section profile

On that page, you can define the section profile of the cutout that goes along the path defined by the frontal profile. The definition of the section profile goes the same way as the definition of the frontal profile.

- Select the desired profile. The position of the profile appears on a point of the cutting path in the preview window. The reference point of the profile matches to this point.
- By specifying the **X offset** and **Y offset** values you can modify the position of the reference point. X and Y directions are represented by green and red marker arrows.
- With the  button you can modify the properties of the profile, mirror on X or Y axis, for example. For example if you want to create the same cutting on the front and the back of the cabinet door, then first you have to mirror the profile on the X axis and then you have to offset it along the Y axis by a negative value, with the thickness of the cabinet door.



##### Material

On that page, you can define the material of the cutted surface if you check the **Use custom material** option.

#### 11.15.1.7. Add profile

On the **Add profile** page, you can add different section profiles along a path to the surface. Usually you can use it to add mouldings to the frontal surface of the cabinet door. You have to define the path, the section profile and the material of the moulding.





### Frontal profile

Similarly to the inset profiles, you can add different profiles. The program adds a swept section profile to the cabinet door along the path defined by the frontal profile.



### Section profile

It works similar to the section profile described for the subtract profile with the difference that it adds material to the cabinet door instead of cutting out.



### Material

On that page you can define the material of moulding. Check the **Use custom material** option if you want to apply a material different from the material of the cabinet door.

## 11.15.1.8. Handle





On that page, you can add one handle by specifying its properties on two subsequent tabs.



### Door handle

Here you can select the handle and its position.

The ways of selecting a handle:

- ❖ Selection from the favourites.
- ❖ Selection from the object library with the  button. The selected object appears among the favourites.
- ❖ Creating a new object with the  button. The created object appears among the favourites as a custom object that can be modified by the  button or save with the  button.

The properties of a non-custom object can be modified with the  button. The selected handle appears in the preview. Once you have a selected handle, you can make it disappear only with the **Hide object** option.

In the preview window a dotted blue line appears. This is the bounding box of the placement area of the handle.

With the **Stretched** option you can stretch the handle to the borders of the bounding box.

On the left side of the page you can find a 3x3 radio button matrix, with which you can position the handle inside the bounding box.

In addition, you can mirror the handle with the **Mirror** option, and rotate around the main axis by specifying the **Rotate X / Rotate Y / Rotate Z** angle values. Also, you can offset the handle along the main axis by specifying the **Offset left/right**, **Offset front/back**, **Offset down/up** values. By using the offset, rotate and mirror options the handle can get outside of the bounding box, of course.



Only one handle can be added to a cabinet door.





### Border for handle placement

Here you can specify a profile that is represented by a dotted line. The handle is placed inside the border defined by this profile (not taking the shifting, rotating and mirroring into consideration).

## 11.15.1.9. General settings

On that page you can specify the general settings of the cabinet door like line type, line thickness, color, priority, relative height. For the floor plan representation setting, use the **Representation in 2D** drop-down menu.

- ❖ *Simplified* – the cabinet door is represented by a rectangle on the floor plan.
- ❖ *Top view* – the cabinet door is represented on the floor plan by the top view of its 3D model.
- ❖ *Symbol* – you can select a group from the favourites or from the existing library elements () or you can modify the properties of the selected element ()

## 11.15.1.10. Save

On that page you can save the actual element in the object library or you can select from the favourites or from the existing cabinet door elements to modify those. The saved element will be listed among the favourites so you can select it or modify it later.

With the **Save** button you can resave the element with the same name.

With the **Save as** button you can save the actual element with another name.

The text you type in the **Description** field will be saved along with the element.

With the **Restore default from** button you can select from the available default styles. Default styles may belong to each loaded template.

## 11.15.2. Cabinet

With the *Cabinet* tool, you can create detailed models of cabinets.

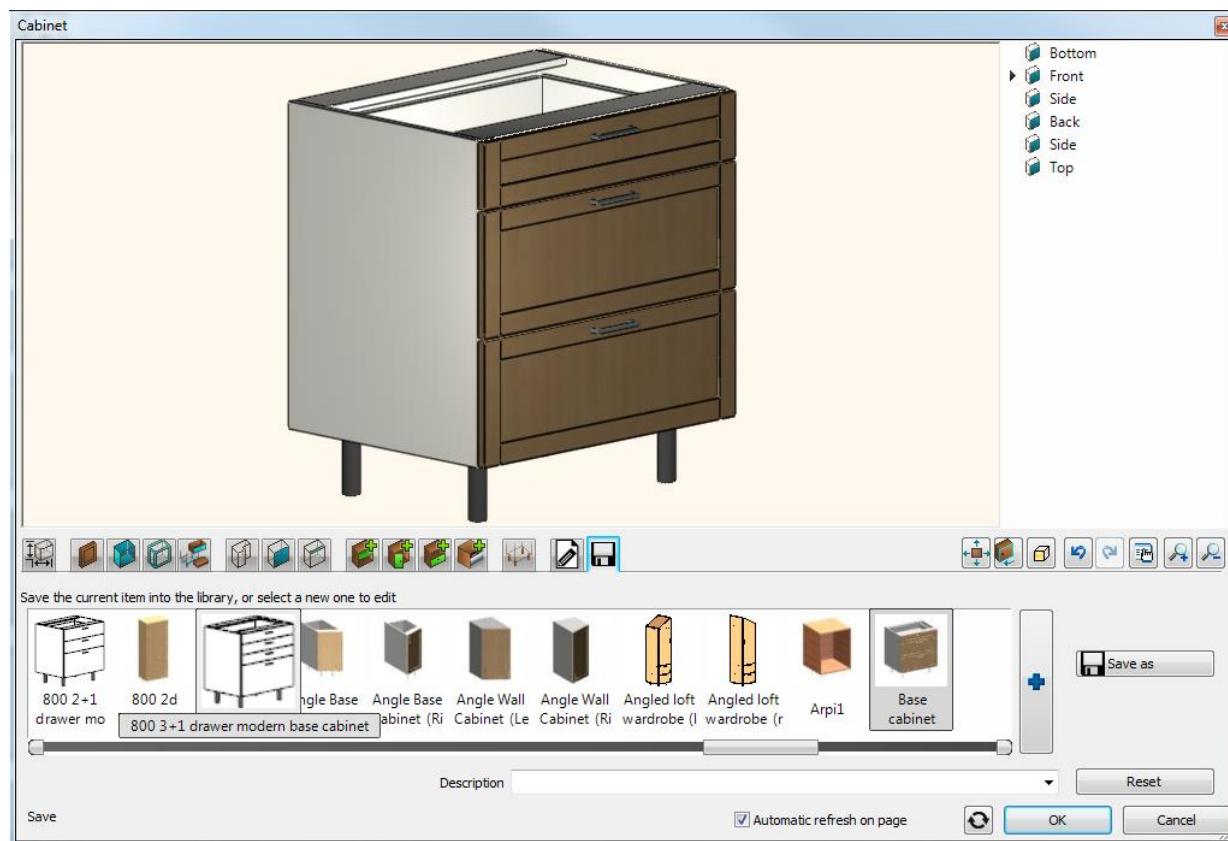
The availability of the function:

Ribbon Bar - Interior – KBB – Cabinet

### 11.15.2.1. Dialog structure

The structure of the *Cabinet* dialog is the following:

- ❖ On the top part of the dialog you can see the preview of the model.
- ❖ On bottom part of the dialog you can edit the model and define the preview.



#### Preview buttons



Exploded 3D model view. You can select from *Not exploded*, *Slightly exploded* and *Totally exploded* options.



Cabinet representation mode. You can select from *Closed*, *Slightly open*, *Totally open* and *Without fronts* options.



Click this button to select from Realistic / Hidden line / Wireframe / X-ray previews.



Undo button to undo the last operation.



Redo button to reverse the last undo operation.



Structure button to review and select cabinet side panels.



Zoom in button to enlarge the preview of the model.



Zoom out button to zoom out the preview of the model.



Update button to update the preview manually.

**Automatic refresh on page.** With this option, the preview of the model is automatically updated as soon as you change something on it.

### Tabs for the editing and saving operations

Depending on the type of modification, different tabs are available:



**Sizes** to define the general dimensions.



**General cabinet door properties** to define the default door and handle settings.



**Default side panels** to define the default side panel settings.



**Default edge properties** to define the default edge connection rules.



**Default drawer, shelf and leg properties** to define the default drawer, shelf and leg settings.



**Shape** to define conventional or custom shape of the cabinet.



**Custom panel properties** to define the custom properties of the sides of the cabinet.



**Custom edge properties** to set the edge connection rules of the sides.



**Dividers** to divide the cabinet to create shelves or invisible sections.



**Doors** to place the fronts of the whole or the divided cabinet.



**Drawers** to define the drawers with or without fronts.



**Appliances** to place built-in household appliances.



**Legs** to define custom legs.



**General settings** to define floor-plan representation settings.



**Save** to save the cabinet into the library.

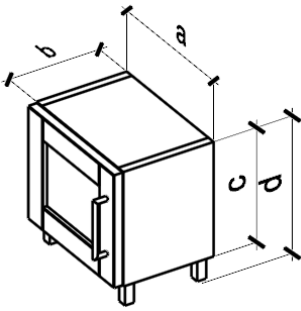
On each tab you may find subsequent tabs for further editing.

You can leave the dialog with clicking the **Ok**, **Cancel**, or **Close** buttons. When you click **Cancel** or **Close**, the program asks for a confirmation.




### 11.15.2.2. Sizes

On that page you can specify the main dimensions of the cabinet and the cabinet type for the case you want to place it with the auto layout function.

Width 600 mm	Total height 900 mm	Unit type Base unit	3D representation 
Depth 600 mm	Carcass height 750 mm		
	Space for legs 150 mm		



The **Width** (a), **Depth** (b) and **Cabinet height** (c) parameters define the outer dimensions of the cabinets. The leg dimensions are not included in that shape. The **Total height** (d) includes the leg dimensions, too. Also, the fully overlaid doors and the handles are excluded from the main dimensions.

With the lock   buttons you can define whether the *Cabinet height* or the *Space for legs* parameter should follow the change when you modify the *Total height* parameter. The locked  parameter value stays unchanged.

### **Width**

Total width of the cabinet, excluding the cabinet door.

### **Depth**

Total depth of the cabinet, excluding the cabinet door.

### **Total height**

Total height of the cabinet, including the legs and excluding the cabinet door.

### **Cabinet height**

Height of the cabinet, excluding the legs and the cabinet door.

### **Space for legs**

The height of legs.

### **Cabinet type**

The function of the cabinet in the case when it is placed with the auto layout tool.

### **3D representation**

You can select the 3D representation of the cabinet.

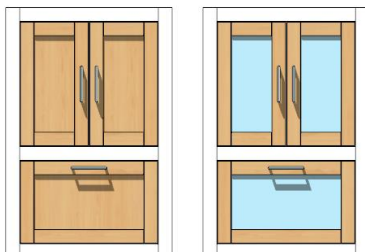
## 11.15.2.3. Default door front and handle



### **Default door front**

For default door front, you can choose a **Cabinet door**, a **Cabinet family** or any other object. On each door, drawer or built-in appliance this front will appear, except when you define a custom one.

- ❖ **Door type.** This option is available only when you select a **Cabinet family** as default door front. In that case, you can specify which member of the family (glass-front cabinet door or panel cabinet door) should be the default.



### **Default handle**

You can select any object for default handle. Unless you define custom handle, this appears on each door, drawer and built-in appliance.

#### 11.15.2.4. Default side panel properties

For default side panels you can select a **Cabinet door** element or any other object. Except with the front, the selected panel appears on each side, except when you specify a custom object at the specific side.



##### **Side panel**

The side panels of the cabinet. If there is no other definition for the **Top**, **Back** and **Bottom** panels, the side panels settings are applied.



##### **Top panel**

If the **Apply side panel properties for top panels** option is switched off, a different default top panel can be defined. Unless a custom top panel is defined, the default top panel will be applied in each case.



##### **Back panel**

If the **Apply side panel properties for back panels** option is switched off, a different default back panel can be defined. Unless a custom back panel is defined, the default back panel will be applied in each case.



##### **Bottom panel**

If the **Apply side panel properties for bottom panels** option is switched off, a different default bottom panel can be defined. Unless a custom bottom panel is defined, the default bottom panel will be applied in each case.

#### 11.15.2.5. Default edge connection



On that page you can define the default edge connection rules.

#### 11.15.2.6. Default drawer, shelf and leg



The default drawer, shelf and leg settings are applied to all identical element types. On the element specific pages you can define different drawer, shelf and leg, too.



##### **Drawers**

Any object can be chosen as default drawer. At the custom drawer page, you can modify the settings defined here. Choose the drawer that you use generally for the cabinet.



##### **Shelves (dividers)**

For default shelf, you can choose a **Cabinet door** element or any other object.

If the **Apply side panel properties for dividers** option is switched off, you can define a default shelf that is different from the side panel.



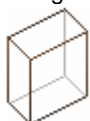
##### **Legs**

You can choose any object for default leg. With the **Hide legs** option you can switch off all legs.

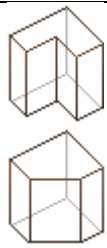
#### 11.15.2.7. Cabinet shapes



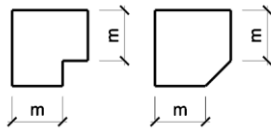
To define the shape of a cabinet, you can choose from predefined shapes (cuboid, L shaped corner cabinet, pentagonal shaped corner cabinet), or you can define a custom shape, too.





Default cuboid shape



Corner cabinet shape.  
The depth of the corner cabinet (m) can be defined by the **Block depth** value.



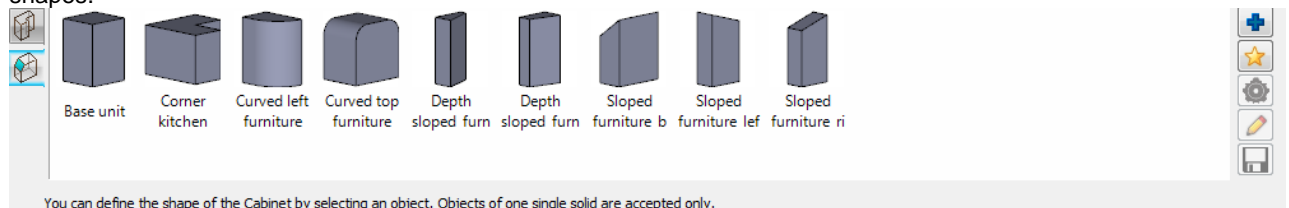
Custom shape. For a custom shape, you can choose any object that is made of a single 3D solid.

Choose a custom shape on the  **Custom shape** tab. (Again, if you want to choose from the default cabinet shapes, you can do it on the **Cabinet shape**  tab.)

If you change the shape of a cabinet with existing dividers, a question appears, with which you can decide to keep the current structure of dividers or you want to start again with a new cabinet without dividers.

### Custom cabinet shape

When you select Custom from the Cabinet shape list, the Custom shape tab appears with the list of available custom shapes.





You can add your own custom shapes to the available default custom shapes by selecting them from the object library.

### 11.15.2.8. Custom panel properties



On that page you can set the properties of each cabinet side panel. The cabinet side panels can be selected by

either clicking them in the  structure window or using the next/previous arrows . The following settings can be made on the selected panel.



#### Role of side

The role of each side of the cabinet can be set here. The role of a side can be

- front panel (where dividers, drawers, shelves etc. can be created)
- side panel
- top panel
- back panel
- bottom panel (where you can add legs).

The role of a cabinet side determines which default side panel properties should be applied on the side.

In the preview window the selected side panel is marked by red lines. The actual role of the selected side panel appears in the list of roles. If you want to change the role, click another role in the list of roles.



#### Custom side panel

Here you can set different properties of the selected cabinet side than the default side panel settings.

##### • Apply the default

When the *Apply the default* option is on, the custom side panel settings are not available. In that case, the panel properties are based on the default settings. When the *Apply the default* option is off, you can choose a panel from the available list.

##### • Hide object

You can switch off the custom panel by the *Hide object* option. When the *Hide object* option is off, the selected panel appears on the selected side.

##### • Use original item side

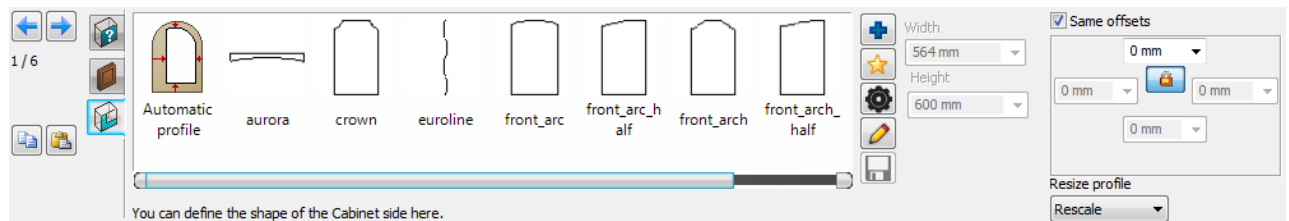
Using this option, the selected element does not fit to the size of the cabinet but it keeps its original size.

- **Rotate X**  
The selected element slants forth or back, depending on the specified angle.
- **Rotate Y**  
The selected element slants right of left, depending on the specified angle.
- **Rotate Z**  
The selected element turns around its vertical axis to the left or right, depending on the specified angle.
- **Mirror**  
Use this option to mirror the selected element.





### Frontal profile

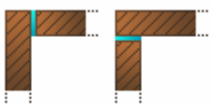
Here you can modify the shape (frontal profile) of the selected side panel.



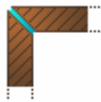
### 11.15.2.9. Custom edge properties



On that page you can set each edge of the corpus shape. The edges can be selected in the preview window by mouse click or by the pager buttons  . The following settings can be applied to the selected edge.



**Full overlay or traditional** – At joining, the surface of the ending of one panel fits to the other panel's inner surface.



**Bevelled edge** – At joining the endings of the panels are cut along the bisector of the angle.



**Custom** – Use this joining mode when the joining surfaces of the joining edges are prepared for the correct joining. In that case, both joining panels are represented without any change.

### 11.15.2.10. Dividers



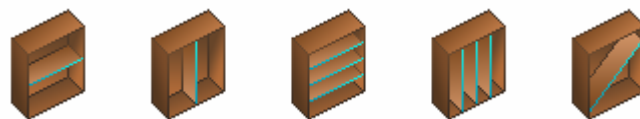
Here you can create, modify or delete dividers at the front side of the cabinet.



#### Position of dividers

On that page you can specify the position of dividers inside the cabinet.

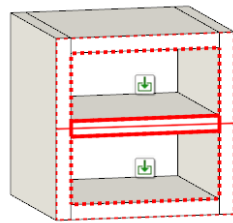
- **Type of dividers** – you can select from **single horizontal**, **single vertical**, **multiple horizontal**, **multiple vertical**



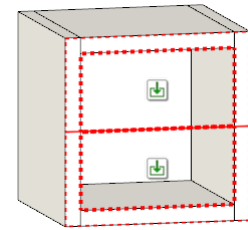
and **single custom** division types.

When you apply **multiple horizontal** or **multiple vertical** division types, the created shelves will be identical and you can change them as a whole unit.

- **Shelf / Only division** – it is possible to create real shelves (with thickness and material) or logic (without solid) divisions.

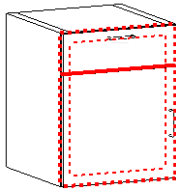




Shelf

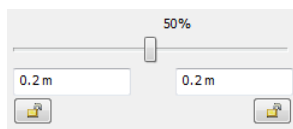


Only division

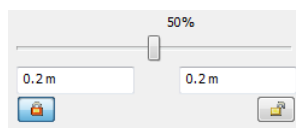
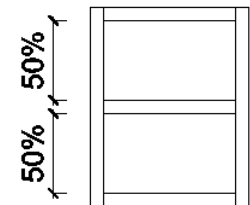
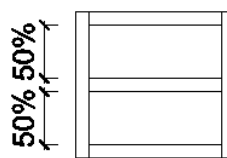
For this latter you need in case of a base cabinet, for example, where you want to place a shelf above a cabinet door – in that case you must divide the front with a single horizontal divider and then you can place the shelf to the top part and a door to the bottom part.



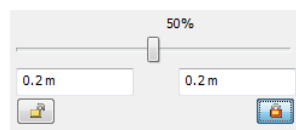
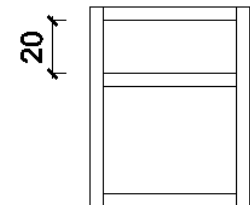
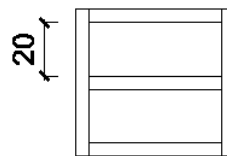
- Position** – In case of single division, you can specify the position of the divider here. With the lock   buttons you can control the behavior of the divider in case of changing the dimensions of the cabinet: the locked value remains unchanged when you change the dimension of the cabinet. If none of the locks is closed, the ratio of the division values remain unchanged.



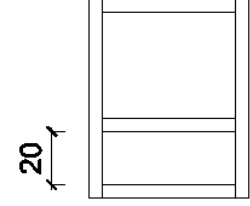
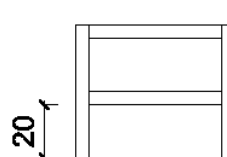
Divider in the middle



Divider position is 20 cm from top



Divider position is 20 cm from bottom



- Distribution** – when you choose multiple division, you can specify the distribution of dividers.
- Divide on front** – here you can specify whether the position of the shelves should be defined by the distance between shelves or the dimension of the cabinet front.



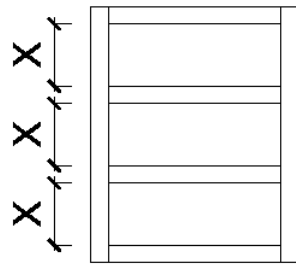
**Distribution is based on the distance between shelves:** when specifying the **position** or **distribution**, the values mean the distance between shelves. In case



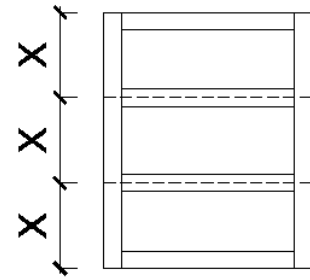
**Divide on front:** when specifying the **position** or **distribution**, the values mean the dimensions of the fronts in front of the shelves. In case of even distribution, the distances between shelves are not the same.



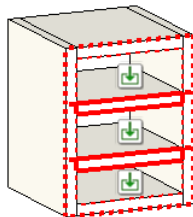
of even distribution, the distances between shelves are



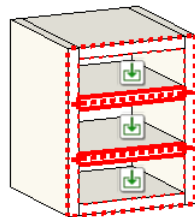
the same.



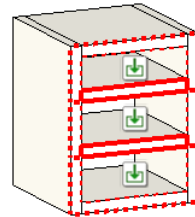
- **Align front door edges** – fronts in front of the shelves can be aligned to the top, middle or bottom of the shelves. It is also possible to use **Custom offset**.



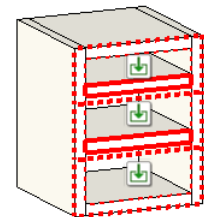
Top shelf edge



Middle of the shelf



Bottom shelf edge



Bottom shelf edge with positive custom offset



#### **Custom shelf**

Here you can set the custom properties of the selected shelf if it is different from the default.



#### **Profile of the shelf**

Here you can modify the top view profile of the selected shelf.

### 11.15.2.11. Doors



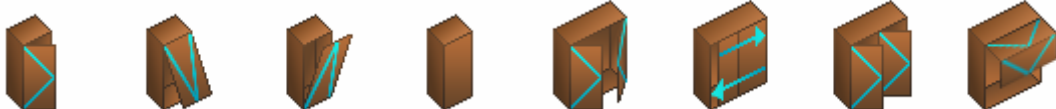
Here you can place, modify or delete doors on the cabinet front.



#### **Opening**

On that page, you can define the type of opening.

- **Opening** – you can set doors with opening directions to the **left or right, flip up, flip down, fix, 2, 3 or 4 sided, sliding, multiple side** and **bifold** doors.



When you create a door with more wings, the created wings will have the same size, you can change them only as a whole.

- **Opening right / left** – in case of doors with **left or right** type, you can specify the opening direction.
- **Full overlay / traditional**
- **Opening** – the extent of opening can be set here in percentage.



#### **Custom door**

Here you can set the custom properties of the selected cabinet door if it is different from the default.



#### **Custom handle**

Here you can choose a handle for the selected door if it is different from the default.



### Door frontal profile

Here you can specify the frontal profile of the selected door.

## 11.15.2.12. Drawers



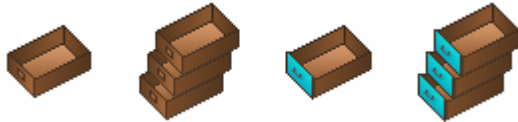
Here you can place, modify or delete drawers on the cabinet front.



### Drawer

On that page, you can specify the distribution of drawers.

- **Type of drawer** – you can define drawers with or without fronts, single or multiple drawers.



When you create multiple drawers, the drawers will be the same; you can handle them as a whole.

- **Distribution** – when you choose multiple drawer type, you can specify the allocation of the drawers.
- **Full overlay / traditional drawer front**
- **Opening** – the extent of opening can be set here in percentage.

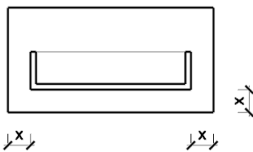


### Custom drawer

If you don't use custom drawer settings, the default drawer will be applied, where the width and depth values follows the dimensions of the corpus.

On that page you can define custom drawer settings if the default drawer is not applied.

- **Gap** – the distance between the drawer body and corpus sides, and the distance between the bottom of the drawer



body and the divider lines.



### Custom drawer front

When you have drawers with fronts, here you can specify the custom settings of the fronts if you do not apply the default front settings.



### Handle

When you have drawers with fronts, here you can specify the custom settings of the handle for the selected front if you do not apply the default handle settings.



### Frontal profile of the drawer front

When you have drawers with fronts, here you can specify the frontal profile of the selected drawer. Appliances



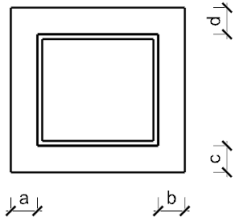
Here you can create, modify or delete kitchen appliances on the cabinet front.



### Selecting a kitchen appliance

On that page, you can choose the required kitchen appliance. If you do not apply custom settings, the selected object automatically fills the room available inside the corpus (its depth, length and height fit the inner dimensions of the cabinet).

- **Gap** – you can specify the distances between the kitchen appliance and each side of the cabinet (top, bottom, left side, right side).



### Kitchen appliance front

Here you can add a front in front of a built-in kitchen appliance, if necessary.

- **Front type** – you can set built-in kitchen appliance with front with left or right opening directions or with flip down front.



- **Full overlay / Traditional**
- **Left / Right** – for the **Left or Right** type fronts you can select between left and right opening directions.
- **Opening** – the maximum limit of opening angle can be specified here in percentage. 100% stands for 90°.



### Custom front

If you apply a kitchen appliance front, here you can set its custom settings if not the default settings are applied.



### Handle

If you apply a kitchen appliance front, here you can add handle to it.



### Frontal profile of the front

If you apply a kitchen appliance front, here you can modify the frontal profile of the selected front.

## 11.15.2.13. Legs



Here you can specify custom legs for a cabinet. You can add any object as a leg and you can define the distribution of legs.



### Cabinet legs

Here you can apply custom settings for the legs defined on the **Default drawer, shelf and leg** properties page.

- ❖ When *Apply the default* setting option is on, the settings specified on the **Default drawer, shelf and leg** page remain. When this option is off, you can specify custom leg by selecting an object that can be mirrored, rotated and shifted relative to the default leg allocation.
- ❖ When *Use original item size* option is on, the object appears with its original dimensions, instead of the specified leg height.
- ❖ When *Hide object* option is on, you can hide the legs individually.
- ❖ With the left and right arrow buttons you can switch between legs.



### Distribution of legs

On that page, you can specify a profile that defines the allocation of legs by its vertices.

- ❖ In case of *Automatic profile*, the shape of the bottom side of the cabinet defines the profile.
- ❖ In case of custom profile, you can define or modify a custom profile.
- ❖ You can also select profile from the existing profile library.
- ❖ You can resize the defined profiles.

## 11.15.2.14. General settings



The **General settings** tab serves the settings like line type, line thickness, color, priority, relative height. For specifying the 2D representation, select from the **Representation in 2D** drop-down menu.

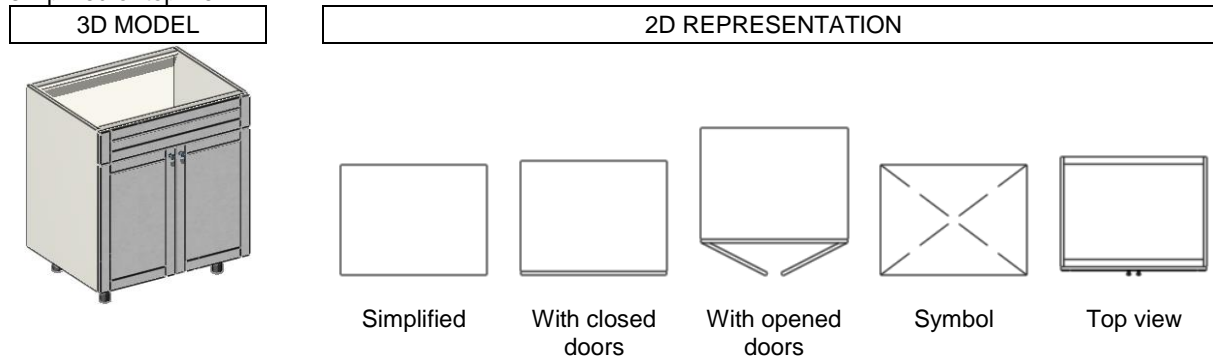
- ❖ In case of *Simplified* selection, the cabinet will be represented by contour lines on the floor plan.

- ❖ In case of *With closed doors* selection, the cabinet will be represented similarly to the simplified representation, including a closed door representation.
- ❖ In case of *With opened doors* selection, the cabinet will be represented similarly to the simplified representation, including a slightly opened door representation.
- ❖ In case of *Top view* selection the cabinet will be represented on the floor plan by the top view of its 3D model.
- ❖ In case of *Symbol* selection you can select a group from the favorites, from the existing library group elements

() or you can modify the properties of the selected group ()

### Representation in 2D

You can choose from different 2D representation modes, with which you can represent the cabinet elements even in simplified or top view.



### Layer

You can specify the layer of the cabinet on the floor plan.

### Colour

You can specify the color representation of the cabinet on the floor plan.

### Line type

You can specify the line type for the cabinet representation on the floor plan.

### Line width

You can specify the line width for the cabinet representation on the floor plan.

### Automatic dimensioning

If you enable the *Automatic dimensioning* option, you can represent the cabinet together with its dimensions on the floor plan. The properties of dimensions depend on the actual dimension properties. You can specify the distance of the dimension line from the cabinet by the *Distance of the automatic dimensioning* parameter.

#### 11.15.2.15. Wall cabinet

##### Custom settings for wall cabinets

If you switch off the *Custom settings for wall cabinets* option, you can take the representation settings of wall cabinets from the *Base cabinet* settings.

If you switch on this option, you can enable the custom floor plan representation settings like representation mode, layer, color, line type, line width and automatic dimensioning.

#### 11.15.2.16. High cabinet

##### Custom settings for high cabinets

If you switch off the *Custom settings for high cabinets* option, you can take the representation settings of wall cabinets from the *Base cabinet* settings.

If you switch on this option, you can enable the custom floor plan representation settings like representation mode, layer, color, line type, line width and automatic dimensioning.

#### 11.15.2.17. Save

On that page, you can save the actual element in the object library or you can select from the favourites or from the existing cabinet elements to modify those. The saved element will be listed among the favourites so you can select it or modify it later.

With the **Save** button you can resave the element with the same name.

With the **Save as** button you can save the actual element with another name.

The text you type in the **Description** field will be saved along with the element.

With the **Restore default from** button you can select from the available default styles. Default styles may belong to each loaded template.

### 11.15.2.18. Creating custom cabinet shapes

You can define cabinet shapes by different objects from the existing object library or by individually created objects. Objects can be created by different methods and this way various shapes can be defined.

For custom cabinet shapes, you can only use objects that consist of one piece of solid. You can easily create such a custom shape object from wall, slab or 3D modelling tools. The *Manufacture menu – Shape* command is a dedicated tool for this purpose.

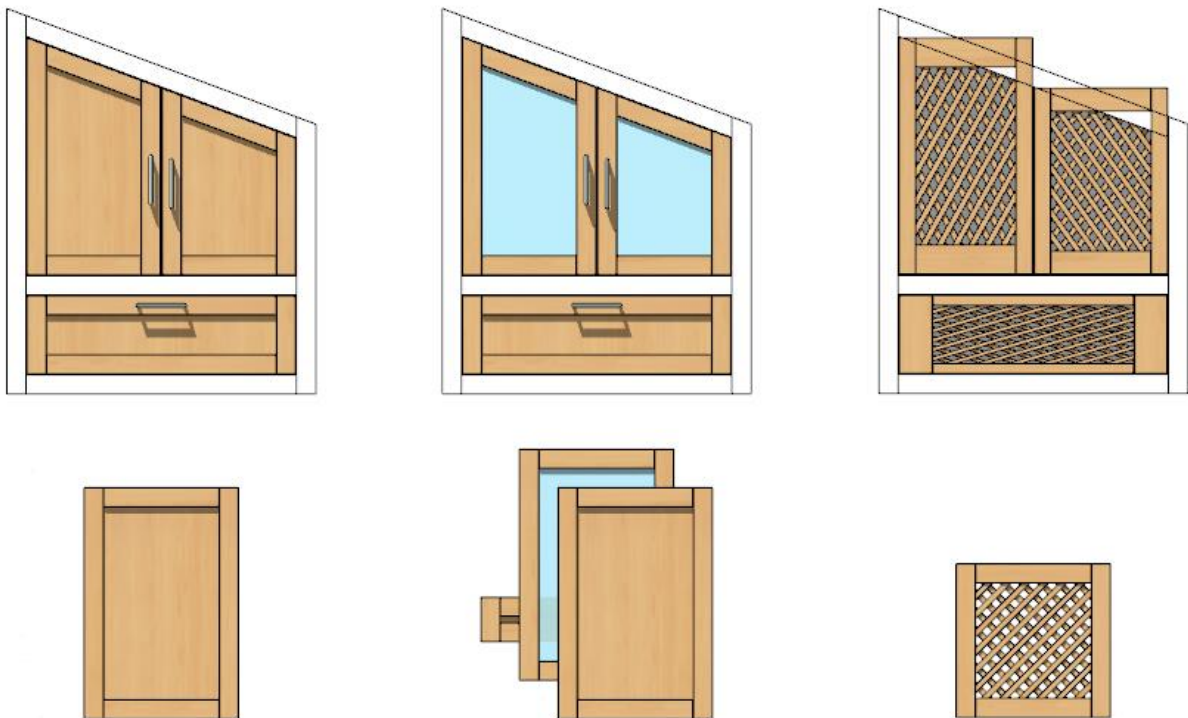
#### **Example: Built-in cabinet under a stair**

- ❖ Create the stair with the stair commands of ARCHLine.XP.
- ❖ In the stair properties dialog on the *Support* page, use the *Cut the walls* option to cut the wall above the stair.
- ❖ Draw a wall under the stair. If necessary, update the 3D model to cut the wall above the stair.
- ❖ Create an object from the wall by the *Manufacture menu – New object – New object* tool.

The object defined this way consists of one piece so it can be used as custom cabinet shape.

### 11.15.2.19. Using cabinet doors and cabinet door families for cabinets

You can use any object for the sides or for the shelf of a cabinet.



When you apply a **Cabinet door** element, the element follows the shape of the door or shelf. The handle on the cabinet front appears with the settings made in the handle properties of the cabinet.



When you apply a **Cabinet door family** element, the appropriate member of the family is represented. On the custom cabinet door page the **Custom door type** option appears. With this option, you can define if the door should be a *Panel cabinet door* or a *Glass-front cabinet door*. The handle on the cabinet front appear with the settings made in the handle properties of the cabinet.

When you apply an **Object** element for the cabinet sides or for shelf, the dimensions of the object follows the dimensions of the cabinet but its shape does not change. The required handle must be included in the selected object because the handle setting made in the handle properties of the cabinet are not applicable in that case.

### 11.15.2.20. Using default and custom settings

At start, all parts of the cabinet (cabinet front, cabinet side panels, shelf, leg etc.) appear with the default settings. However, it is possible to change the default settings of each part:

- **Apply the default** – by switching off this option you can specify a shape or object that is different from the default.
- **Hide object** – with this option you can switch off (hide) the cabinet element.

- **Use original item size** – by default, the cabinet tool resize the selected object to make them fit to the current shape of the cabinet. Using this option, the object appears with its original dimensions. In that case the dimensions of the cabinet element can be set individually by the *Modify object*  or *Object properties*  buttons, depending on the type of element.

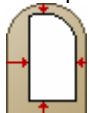
### 11.15.2.21. Modifying the shape of fronts, cabinet side panels and shelves

You can modify the shape of fronts, side panels and shelves of the cabinet by offsets and profile editing commands. This way you can create even a detailed model of a complex cabinet.


### 11.15.2.22. Handling and editing profiles

#### **Automatic profile**

You can define the shape of fronts, side panels and shelves by different profiles. Among the available profiles, the so-called automatic profile has a major importance because with this you can define a profile that follows the shape of the current cabinet, instead a fix profile. The automatic profile appears in the list of available profiles with the following icon:



#### **Profile editing**

You can freely edit a profile with the  button. This freely defined custom profile appears in the list with the following icon:



### 11.15.2.23. Defining offsets for predefined profiles

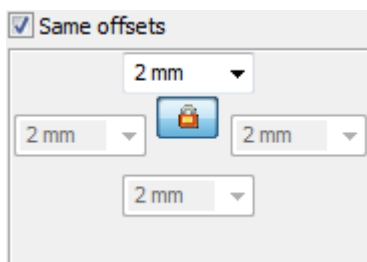
In case of predefined profile (profile from the library), the shape of the profile is the selected fix profile. You can influence the dimensions of this fix profile by different offsets and stretchings.

#### **Resizing of profile**

You can modify the dimensions of a predefined profile (profile from the library) with two options:

- ❖ Resizing
- ❖ Cutting and stretching

#### **Same offsets**



With the *Same offsets* option you can specify the same offsets in the main four directions. Switch off the option if you want to apply different offsets in each direction. For example, if you want to reduce the size of a shelf only in the cabinet front direction, you can achieve it by switching off the *Same offsets* option and then applying a positive offset value in the cabinet front direction.

#### **Locking the offset values**

You can lock the offset values by the lock buttons. The locked values remain unchanged even when you change the dimensions of the cabinet afterwards. Unlocking the offset values, the size of the profile changes back to its original dimensions. In that case, the position of the profile depends on the state of the lock in the opposite directions. If none of the locks is locked in the opposite directions, the profile appears with its original size in that direction and the position of the profile will get into the middle.

#### **X offset**

When the position of the selected profile is not locked along the X-axis (when none of the locks are locked in X direction), you can specify an X offset. The size of the profile in the X direction is defined by its original X dimension, the position of the profile is defined by the X offset value.

### Y offset

When the position of the selected profile is not locked along the Y-axis (when none of the locks are locked in Y direction), you can specify a Y offset. The size of the profile in the Y direction is defined by its original Y dimension, the position of the profile is defined by the X offset value.

#### 11.15.24. Defining offsets for automatic profile

When you use the automatic profile, the profile is defined by the shape of the host element (for example the shape of the cabinet or the shape of the cabinet door).



### Same offsets

With the *Same offsets* option you can define identical offsets in the main four directions. If you want to specify different offsets in each direction, switch off this option. For example, if you want to reduce the size of a shelf only in the cabinet front direction, you can achieve it by switching off the *Same offsets* option and then applying a positive offset value in the cabinet front direction.


### Locking the offset values and X/Y offsets

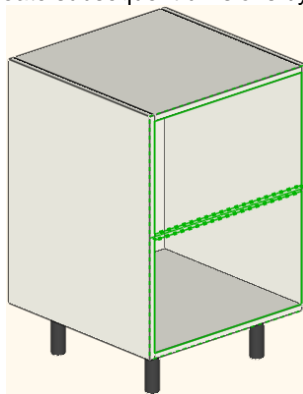
It makes no sense to lock the offset values and using the X/Y offsets because the shape and position of the profile is defined by the host element (for example the shape of the cabinet or the shape of the cabinet door).

#### 11.15.25. Creating divisions and fronts

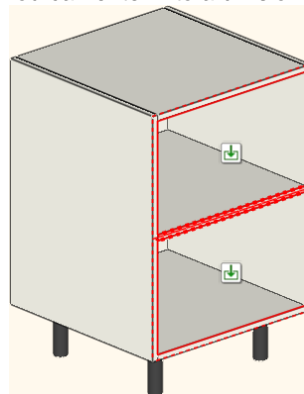
According to different rules, you can divide cabinets symmetrically or asymmetrically, even embedding one division into another. Each division of the cabinet creates the base of defining other divisions or fronts.

### Creating divisions

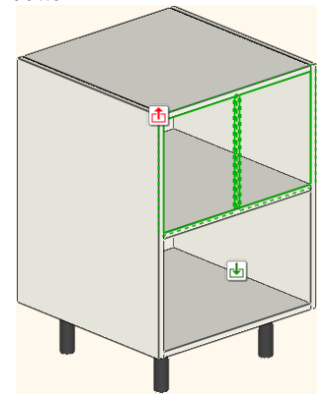
You can divide a corpus by shelves, panels and virtual (without physically appearing) dividers. When you create a division, you can create subsequent divisions by selecting it. You can enter into a division with the  button.



Before dividing



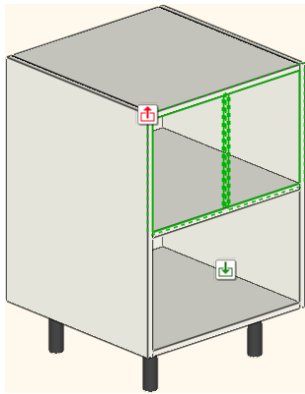
After dividing



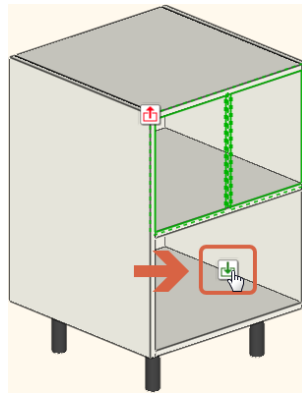
Entering into the top division

### Switching between divisions

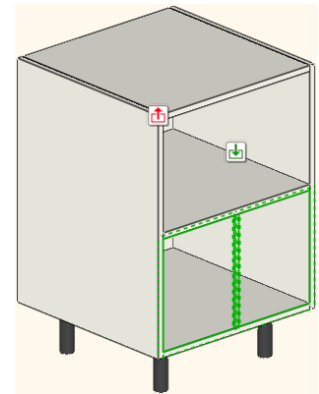
You can switch between divisions by the „Enter into a division“  button. The selected division appears with markers.



The top division is active




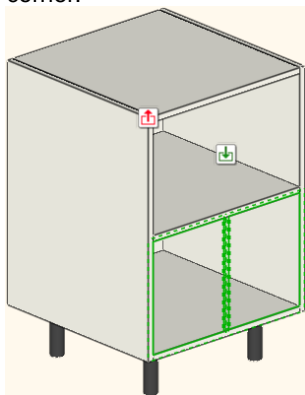
Switching to the bottom division



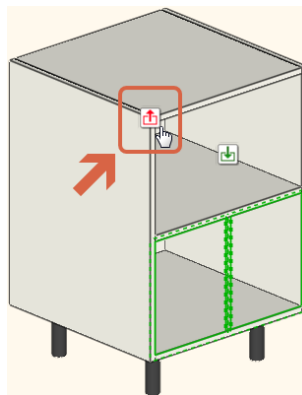
The bottom division is active

### Close one level up

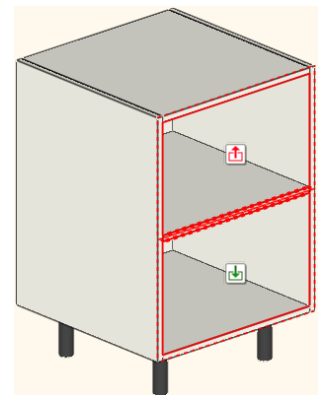
When you want to step up from an embedded division to an upper level of division, use the „Close one level up”  button in the top left corner.



The bottom division is active




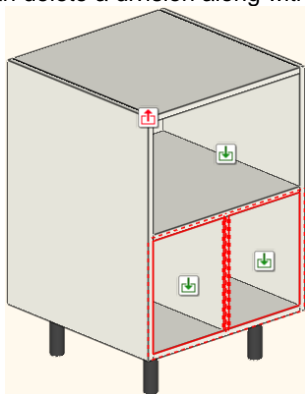
Clicking the “Close one level up” button



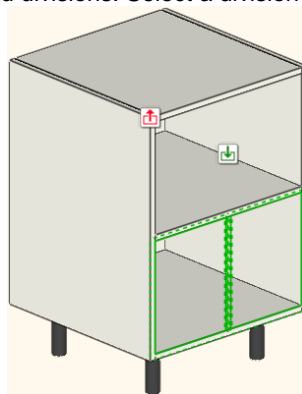
The division with one level up is active

### Deleting divisions

You can delete a division along with the embedded divisions. Select a division and then use the delete  button.



The bottom division is selected







After deletion the division will be cancelled

### 11.15.2.26. Distribution of elements

You can also define regular distribution of elements. You can exactly specify some parameters of the distribution and the rest of the parameters are calculated automatically. Using the lock button, you can lock or unlock the specified or automatically calculated parameters individually.



Number of items	3	
Distance	165 mm	
First distance	165 mm	
Last distance	165 mm	
Way of	By number of elements	

### **Number of elements**

You can specify the number of elements to be distributed.

### **Distance**

You can specify the distance between the distributed elements.

### **First distance**

You can specify the position of the starting point of the distribution.

### **Last distance**

You can specify the position of the ending point of the distribution.

### **Way of distribution**

You can specify the way of distribution by selecting one of the available options. Also, the program can recognize the appropriate distribution mode by changing the distribution parameters. The following distribution rules are available:

- **By number of elements** – The program creates the specified number of elements.
- **By minimum distance** – The distance between the distributed elements must be at least the specified *Distance* parameter.
- **By maximum distance** – The distance between the distributed elements must be maximum the specified *Distance* value.
- **From start** – The distribution starts and continues exactly with the specified *First distance* and *Distance* parameters; the rest defines the last distance.
- **From end** – The distribution goes and ends exactly with the specified *Distance* and *Last distance* parameters; the rest defines the first distance.
- **Centered** – Starting from the middle point of the distribution you can create a symmetrical distribution with the specified *Distance* parameter.
- **Interval centered** – You can create a symmetrical distribution by starting an element in the center and then continuing the distribution in both directions with the specified *Distance* parameter.

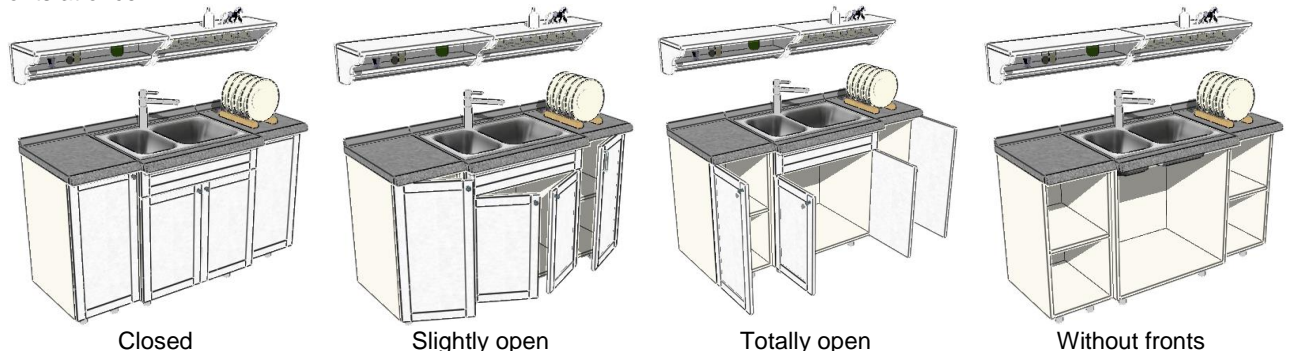
## **11.15.2.27. Cabinet doors in 3D View**

With the *Cabinet 3D representation* function, you can specify the general properties for the floor plan and 3D representation of cabinets.

The function is available:

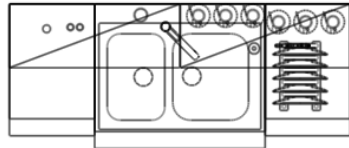
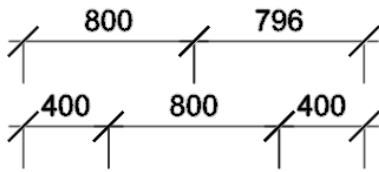
Ribbon Bar - Interior – KBB – 3D representation of cabinets

You can define the representation mode of cabinet doors and drawers in 3D modeling. You can hide all doors and drawer fronts at once.

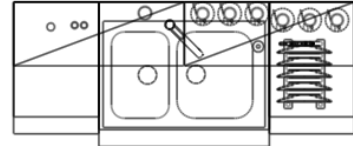
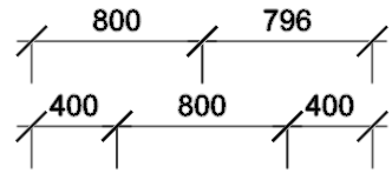


## **11.15.2.28. Distance of the automatic dimensioning**

If you switch the *Automatic dimensioning* option on, this parameter defines the distance of the first dimension line from the cabinet.



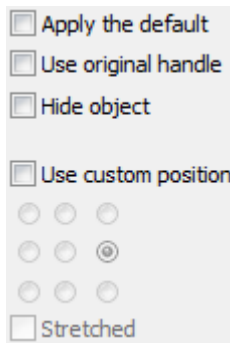
Distance of the dimension line: 600 mm



Distance of the dimension line: 1000 mm

### 11.15.3. Handles

On a cabinet or a cabinet door, you can place a handle. You can place either the default or a custom handle.



#### **Apply the default**

With the *Apply the default* option the handle specified as default will be used. When you switch off this option, you can use a different object as handle.

#### **Use original handle**

When a handle was defined originally to a used cabinet front or drawer front then you can force the use of original handles with the *Use original handle* option.

#### **Hide option**

With the use of *Hide object* option, you can cancel the handle in the representation.

#### **Use custom position**

With the use of *Use custom position* option, you can specify handle position that is different from the default. Enabling this option, you can quickly define the position with the appearing 3x3 grid. Relative to this position you can offset the handle with the offset values.

#### **Stretched**

With the *Stretched* option the size of the selected handle object depends on the path defined for the placement of handle.

#### **Rotate X**

You can rotate the handle around the X-axis by selecting or entering an angle value.

#### **Rotate Y**

You can rotate the handle around the Y-axis by selecting or entering an angle value.

#### **Rotate Z**

You can rotate the handle around the Z-axis by selecting or entering an angle value.

**Mirror**

With the *Mirror* option, you can mirror the selected handle object. Switching off the option, you can switch back to the original state.

**Offset left/right**

You can offset the handle to the right or left with the specified positive or negative distance value.

**Offset front/back**

You can offset the handle forth or back with the specified positive or negative distance value.

**Offset down/up**

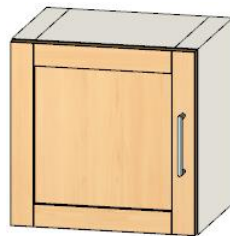
You can offset the handle down or up with the specified positive or negative distance value.

**Opening**

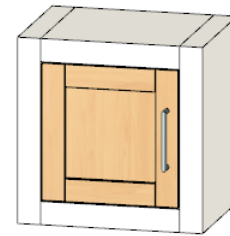
Cabinets with doors or drawers can be represented different ways in opened or closed state both on the floor plan and in 3D modeling. Here you can define the maximum of opening that is represented in totally opened state. The value of opening goes from 0% to 100%. 0% stands for the totally closed state, 100% stands for the totally opened state.

For example if you use a value of 75%, then even in the totally open representation you cannot open the cabinet door perpendicular to the cabinet.

This way you can modeling the real situation if there is not enough room to open the door of a cabinet totally.

**11.15.4. Full overlay and traditional fronts**

Full overlay door



Traditional door

The backside of full overlay cabinet doors fits to the front side of the cabinet shape. The front side of traditional cabinet doors fits to the front side of the cabinet shape. Full overlay cabinet doors are not included in the cabinet dimensions.

## 11.15.5. Countertop

Using the **Countertop** tool, you can quickly design a countertop object on the top of one or multiple cabinets. The **Countertop** tool will let you customize detailed settings and to add or remove sinks, hobs and other objects using the same easy-to-understand dialog.

The tool is accessible from the *Ribbon Bar - Interior – KBB – Countertop*.

### How to use it?

To use the **Countertop** tool, follow these steps:

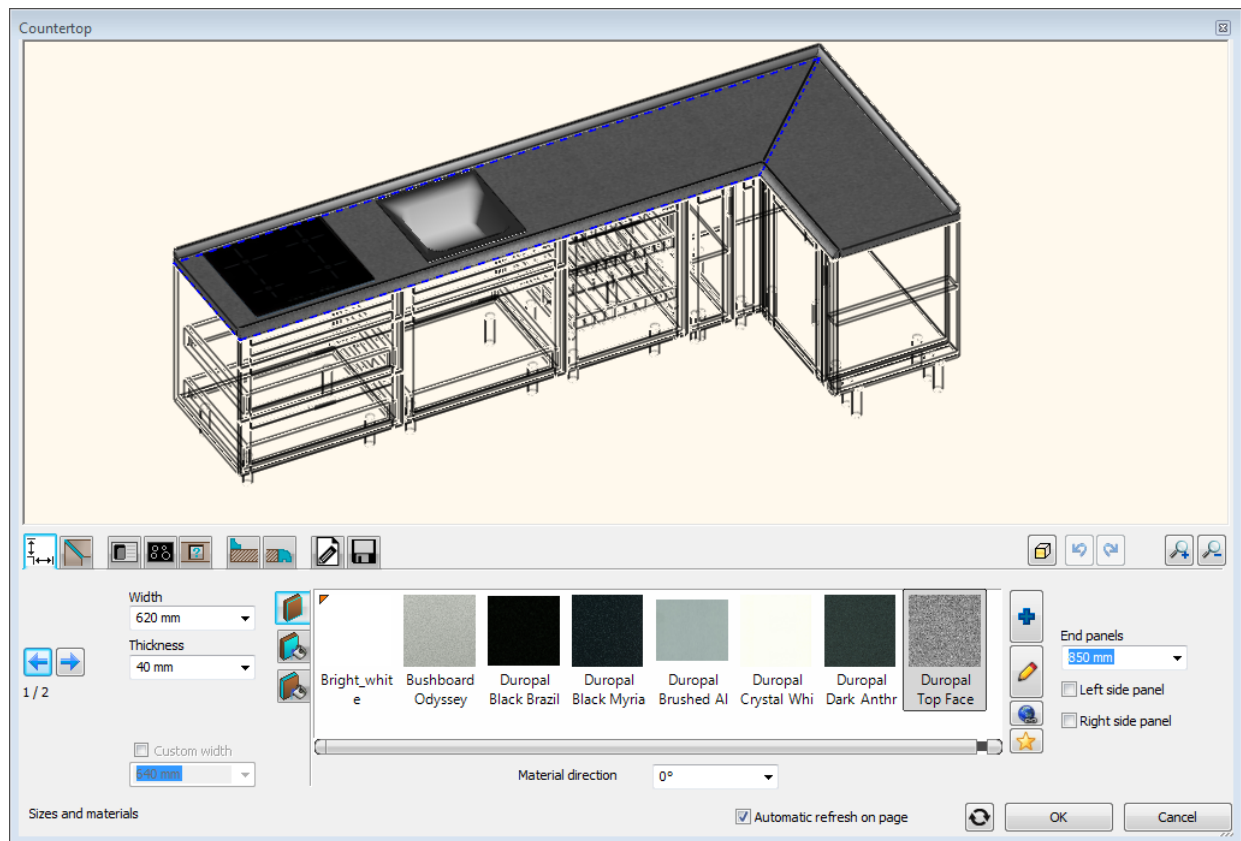
- Click on the **Countertop by cabinets** tool.
- Select corpuses to create a countertop above them, or
- Click on the **Countertop by profile** tool and draw the path of the countertop. Use the options that appear on the Ribbon Bar for the path definition, if necessary. Hit Enter when you are done.
- The *Countertop* dialog will appear. Set the settings you wish, and click OK to accept the changes and close the dialog.
- Save the new countertop using a unique name and set the category you wish to save it into.

#### Countertop properties

When you create a new countertop or change an existing one, you can use the *Countertop* properties dialog.

The structure of the dialog is the same as the *Cabinet Door* dialog. For more details about the dialog structure, please check the description of *Cabinet Door*.

- ❖ On the top of the dialog you can see the preview of the model.
- ❖ On the bottom of the dialog you can edit the model and control the preview.



### Tabs for editing and saving

Depending on the type of modification you want to achieve on the countertop, there are different tabs:



**Sizes and materials** is to define the size and materials for each path segment of the countertop.



**Joints** is to define the joining mode between countertop segments.



**Sink cabinet** is to insert sink and tap into the countertop.



**Hob cabinet** is to insert hob into the countertop.



**Other** is to insert other objects into the countertop.



**Wall strip** is to define the countertop wall strip profile and material.



**Countertop edge** is to define the profile and material of countertop edge.



**General settings** is to define the floor plan representation settings.



**Save** is to save the countertop into the object library.

On each tab you may find subsequent tab(s) on the left side with further editing functions.

### 11.15.5.1. Sizes and materials

The **Sizes and materials** tab includes three subsequent tabs on the left side to define the top material, bottom material and side material of each countertop segment. By default, bottom and side materials are the same as top material. Use the *Use custom material* option if you want to define a different material for the bottom or side. For the details of setting materials, see the material settings for *Cabinet Door*.

Further options:

- ❖ **Width:** default width of countertop. To change the width of the selected countertop segment, use the *Custom width* option and specify another width. To switch to another segment, use the back or forth arrow buttons on the left or click on the appropriate segment in the preview.
- ❖ **Thickness:** thickness of countertop.
- ❖ **End panels:** with the *Left side panel* and *Right side panel* options you can define vertical panels to the start and the end of the countertop. In the drop down menu you can specify the height of panels.

### 11.15.5.2. Joints

The **Joints** tab allows you to define the joining mode between two neighboring segments. Use the back and forth arrow buttons on the left to select the desired joining. There are four joining options you can select from:

- ❖ Joint 1: the first segment has precedence.
- ❖ Joint 2: the second segment has precedence.
- ❖ Joint 3: mitre-joint.
- ❖ No joint: there is no joining.

### 11.15.5.3. Sink cabinet

On the **Sink cabinet** tab you can insert sink into the countertop. There are three tabs to define the inserted object, the cut-out profile and the tap.



#### Object

On the **Object** tab you can insert one or more sink objects into the selected countertop segment. The available tools for inserting a sink similar to the ones you can use for the cabinet doors.

- Select the appropriate countertop segment by clicking on it in the preview.
- Select a sink object to insert it into the countertop.
- You can define the distance from the left or right side of the selected countertop segment. For this you can use the input fields located between the tabs and the favorites. In the input field on the left you can specify the distance of the object from the left side of the countertop. In the input field on the right you can specify the distance of the object from the right side of the countertop. You can also change the position with small movements by clicking on the left or right arrows below the input fields. Below the arrow buttons you can read the distance of the center of the hole from the left and right side of the countertop segment.



#### With hole

On the **With hole** tab you can specify a cut-out in the countertop segment for the selected sink object.

- Click on the sink for which you want to edit the cut-out. The selection is visible in the preview window because the origin indicator appears at the center point of the hole.
- With switching on the **With hole** option you can make the cut-out visible in the preview.
- Define the cut-out profile of the sink. See the detailed description of the available tools at *Cabinet Door*.

**Note** Factory sink objects provided with the installation of the program have special settings. By default their custom cut-out profile follows the contour of the sink object with an offset and their position goes a little bit above the top plane of the countertop. If you insert an external sink object, you must define the position of the object and the shape of the cut-out hole for the correct representation.




#### Tap


On this tab you can assign one tap for the selected sink.

- Select the tap by clicking on it. It appears in the preview window immediately at the selected sink.
- Use the *Hide tap* option if you do not want to assign tap to the sink.


#### 11.15.5.4. Hob unit



On the  **Hob unit** tab you can insert one or more hobs into the selected countertop segment on the same way as sink. You can define the hob object and the cut-out on two different tabs.

#### 11.15.5.5. Other


On the  **Other unit** tab you can insert one or more objects into the selected countertop segment on the same way as sink. You can define the object and the cut-out on two different tabs.



#### 11.15.5.6. Wall strip

On the  **Wall strip** tab you can add wall strips to the whole countertop.


- Use the *Front, Left, Right, Back* checkboxes on the left side of the page to add strips to different parts of the countertop.
- Specify the cross section of wall strip on the  **Profile** tab.
- Specify the material of wall strip on the  **Material** tab.

#### 11.15.5.7. Countertop edge



On the  **Countertop edge** tab you can add countertop edge profile to countertop.

- Use the *Front, Left, Right, Back* checkboxes on the left side of the page to add edge profile to different parts of the countertop.
- Specify the cross section of edge on the  **Profile** tab. Use the *Stretch profile to countertop thickness* if you want the program to trim the height of the edge profile to the thickness of the countertop automatically.
- Specify the material edge on the  **Material** tab. Use the *Custom material* option if you want to use a material different from the countertop material.


#### 11.15.5.8. General settings

The  **General settings** tab serves the settings like line type, line thickness, color, priority, relative height. For specifying the 2D representation, select from the **Representation in 2D** drop-down menu.

- ❖ In case of *Simplified* selection the countertop segments will be represented by their contour lines on the floor plan.
- ❖ In case of *Top view* selection the countertop will be represented on the floor plan by the top view of its 3D model.
- ❖ In case of *Symbol* selection you can select a group from the favorites, from the existing library group elements

() or you can modify the properties of the selected group (.

#### 11.15.5.9. Save

On the  **Save** tab you can either save the currently edited element by the **Save as** button or you can select from the existing countertop library elements for further modifications.

## 11.16. Virtual Home Staging

Virtual staging is a fast, easy and economical way to illustrate the complete potential of a vacant property. ARCHLine.XP Virtual Staging transforms the 2D room photo into a 3D virtual showroom.

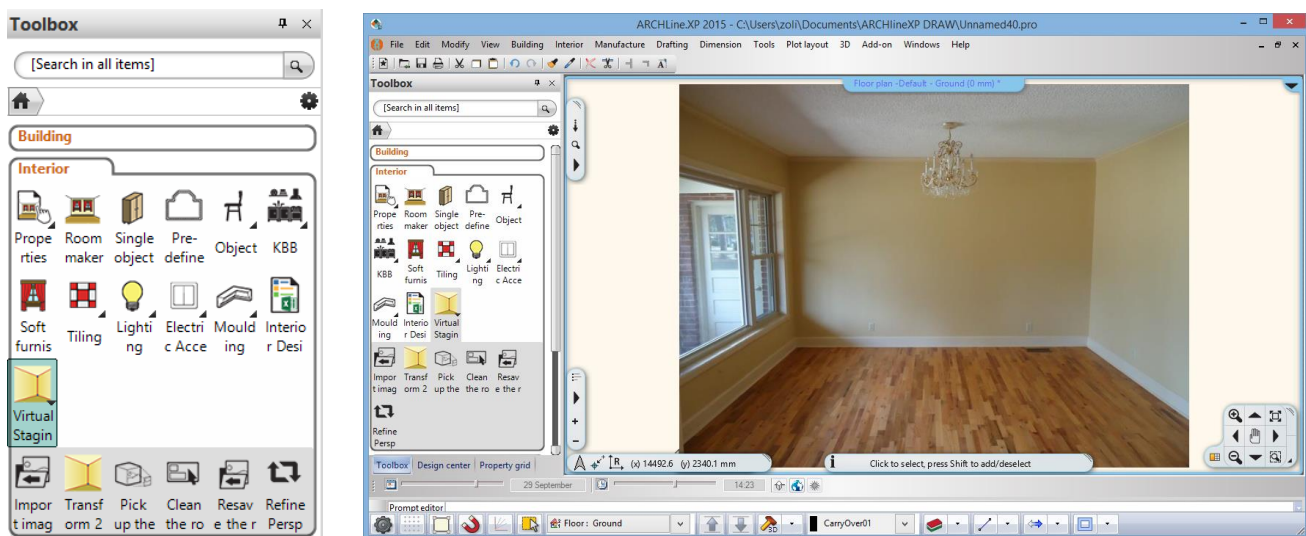


**Virtual Home Staging means the following 4 step creation process**

- ❖ Import and transform the room photo into a 3D virtual room
- ❖ Clean the room of any disorder
- ❖ Add furniture and other decorative elements.
- ❖ Create the photorealistic image

### 11.16.1. Importing room photo

Select **Interior / Virtual Staging / Import raster image** command and load the image file (the picture of the room). The program automatically places it in the 2D floor plan.

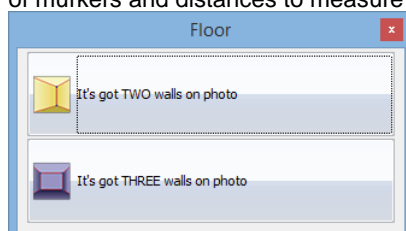


### 11.16.2. Transform 2D image into a 3D virtual room

The next step is to transform the photo into 3D virtual room.

Select **Interior / Virtual Staging / Transform 2D image into a 3D virtual room** command and click on the photo.

- ❖ Select the method according to the photo: 2 or 3 visible walls you see on it. The working method is the same, the number of markers and distances to measure are different only.



Examples:



Typical photo with 2 walls



Typical photo with 3 walls

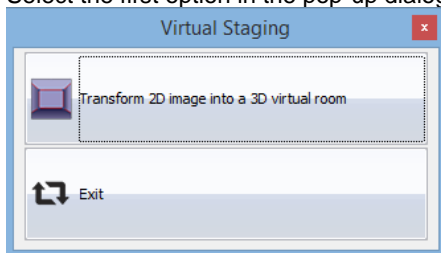
- ❖ Click on the blue dots and move them to the corner points along the vertical and horizontal edges on the room photo.



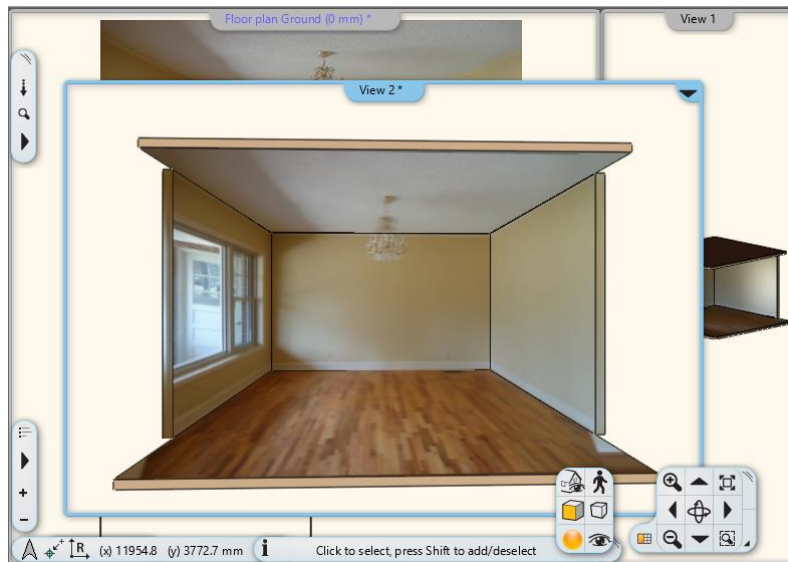
- ❖ Assign all the required measurements and press Enter.



- ❖ Select the first option in the pop-up dialog and let the software convert it into real 3D room.







In some photos it is difficult to find the parallel edges. In this case it might be useful to prepare it with construction lines, with the following method.

1. Draw two lines along two clear visible edges on the same surface.
2. Trim both to find the focal point.
3. Draw the third line starting from the focal point and passes through the required point on the photo.



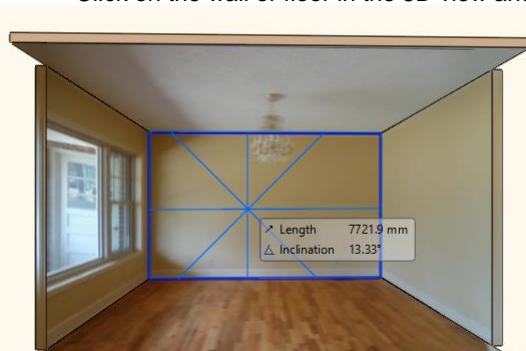
### 11.16.3. Clean the room surface images

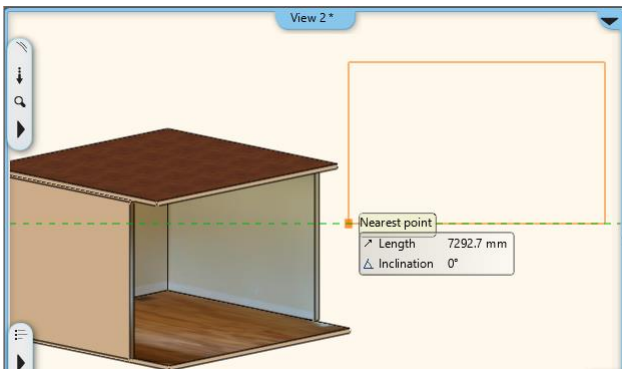
The room photo is very rarely perfect to place new furniture. You have to “clean” it frequently to remove unwanted details. You can improve the quality using the following three commands:

- ❖ Pick up the room photo
- ❖ Clean the room photo.
- ❖ Resave the room photo.

#### Step 1.

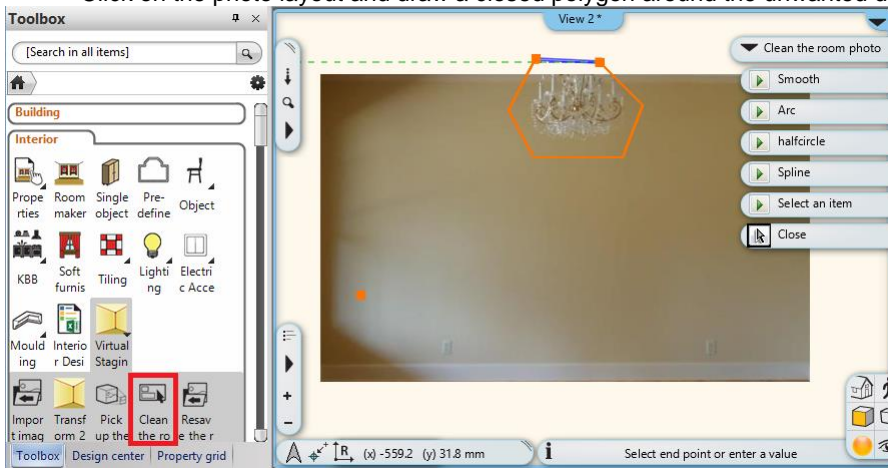
- Select Interior / Virtual Staging / Pick up the room photo command.
- Click on the wall or floor in the 3D view and place the texture layout on the view anywhere.



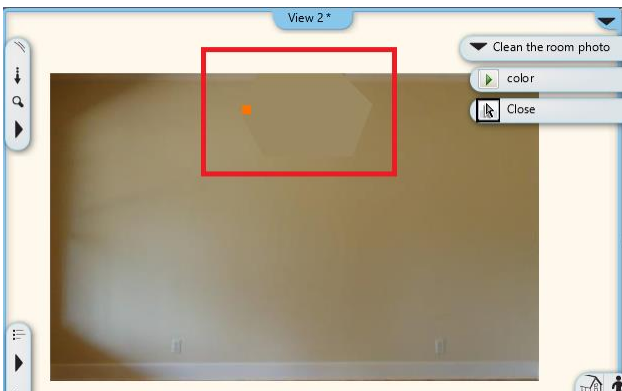


### Step 2.

- Select **Interior / Virtual Staging / Clean the room photo** command.
- Click on the photo layout and draw a closed polygon around the unwanted detail.



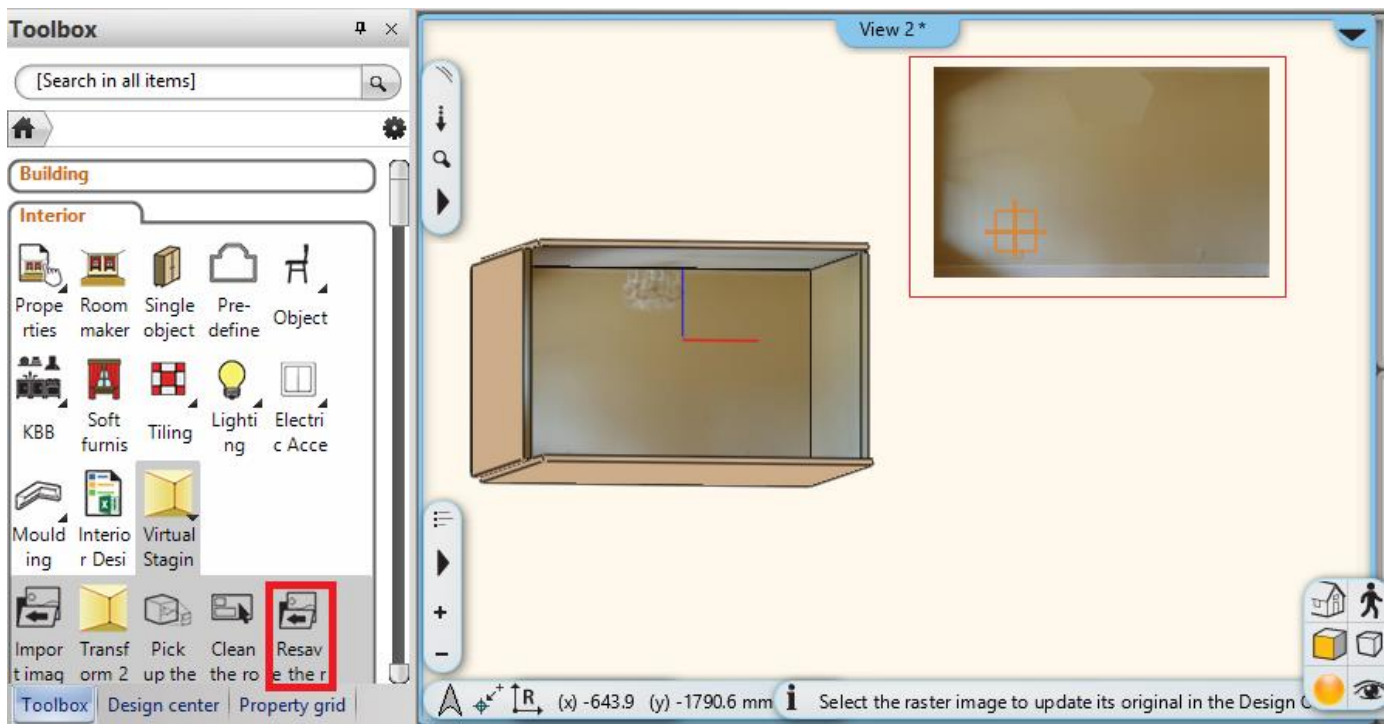
- Click on a similar color pixel on the photo you wish to fill the polygon. The program fills the polygon with the selected color. If you are not satisfied with the result you can repeat the color pick with a new click in a loop.



- Alternatively click on the color keyword on the floating menu and choose a color using the Color dialog.

### Step 3.

- Select **Interior / Virtual Staging / Resave the room photo** command.
- Click on the photo layout again. The program updates the texture with the modified one and replace the original automatically on the wall or the floor.



#### Step 4.

- Drag it and drop the new furniture, fabrics, light, and other decorative elements in the floor plan or directly in the 3D View.
- Change wall colors, floor or try to add a rug.
- Create a rendering image.
- Publish it for you clients.



#### 11.16.4. Refining perspective

You can improve the room definition points or distances any time by selecting **Interior / Virtual Staging / Refine perspective** command. You can work with the same tools like described in the previous section.

#### 11.16.5. Rendering

Use the rendering command to prepare the final image for your client.



## 12. Dimension

### Introduction

This chapter describes the dimension properties and commands available for dimensioning drawings and how to use them. The dimension tools are essential part of creating clear and precisely measured drawings.

### Dimension

Certain dimensioning types – called **associative dimensioning** – are related to objects or to special points of objects. When applying associative dimensioning the program automatically modifies the dimensioning if you modify any object. Example: if you delete a wall, the program deletes the relevant dimensioning as well. You can remove **associative property of dimensioning**.

Any object of dimensioning (dimension line, text, marker, extension line, etc.) can be freely edited.

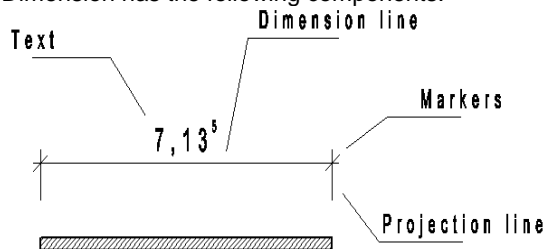
The **Quick dimensioning** command automatically collects the most often used types of line, distance, radius, diameter, angle and parallel dimensioning.

The **Wall dimensioning** command places the next dimensions in one step parallel to the wall:

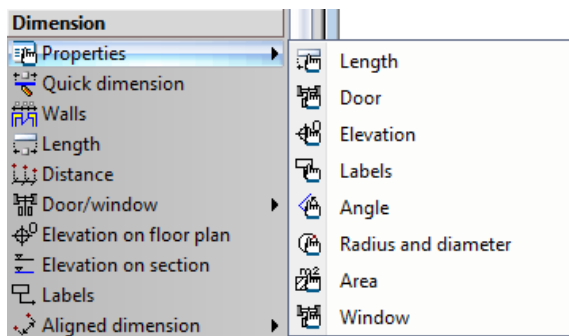
- ❖ wall endpoints and door and window axes,
- ❖ wall endpoints and door and window endpoints,
- ❖ wall connection points and wall endpoints,
- ❖ wall endpoints only,

### 12.1. Dimension properties

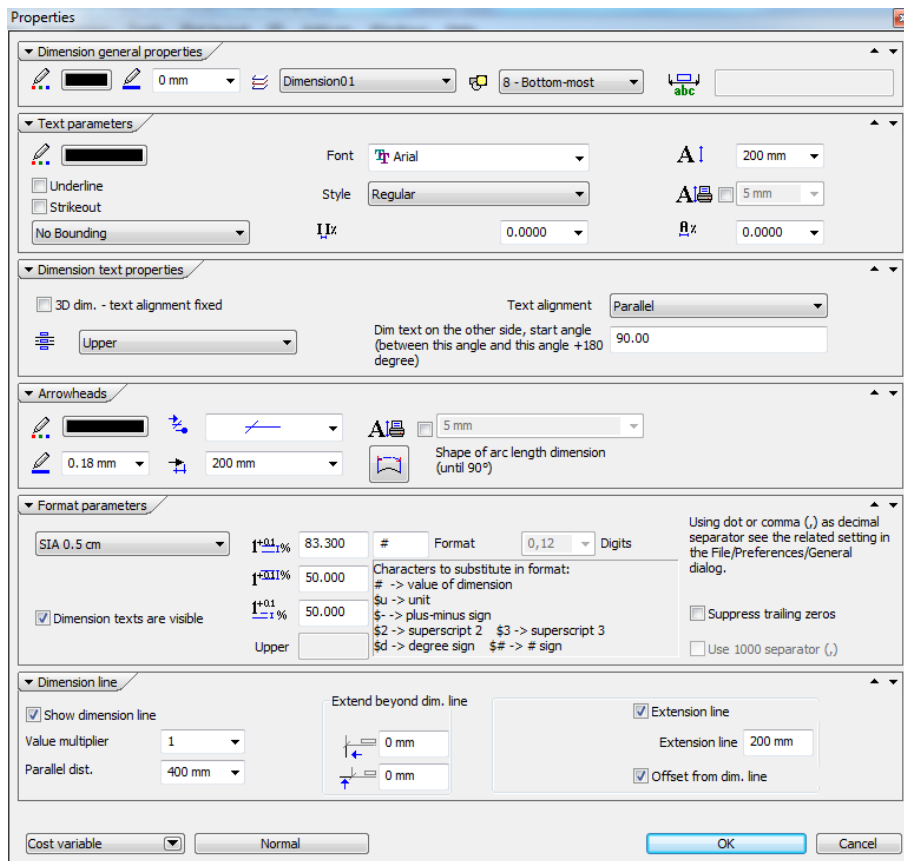
Dimension has the following components:



Before dimensioning the objects, set the appropriate dimension properties. Click on the *Dimension Toolbox - Properties* icon or select the *Dimension menu – Properties* command.



The following *Dimension properties* dialog box appears:



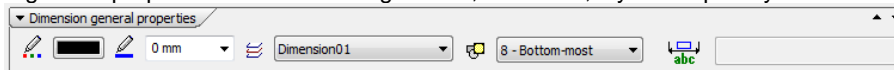
You can set the following properties:

- ❖ *General properties, text, arrowhead*
- ❖ *Text parameters*
- ❖ *Format parameters*

### 12.1.1. General dimensioning properties, text, arrowhead

#### **General dimensioning properties**

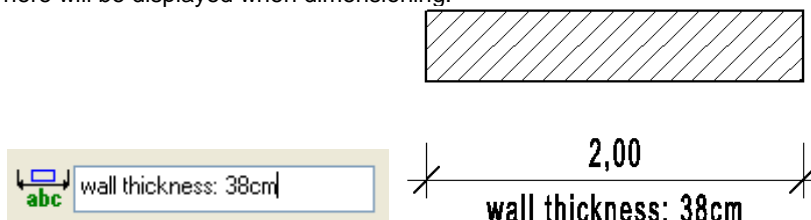
Specify the general properties of dimensioning: colour, line width, layer and priority.



See the detailed description of:

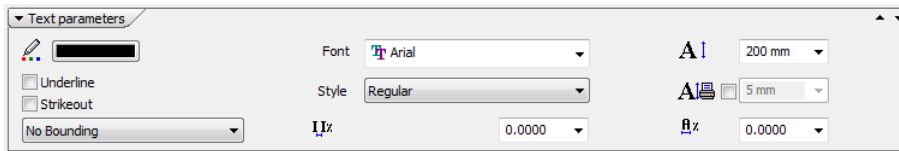
- ❖ *General properties* in Chapter 3.2.1. *Specifying general properties.*
- ❖ *Sets* in Chapter 3.2.3. *Using sets of properties.*
- ❖ *Cost variables* in Chapter 3.2.4. *Assigning cost variables.*

The **Extra text** field is activated when you modify any property of an already existing dimensioning. The text you enter here will be displayed when dimensioning.



#### **Text**

You can set the text properties of dimensioning here.

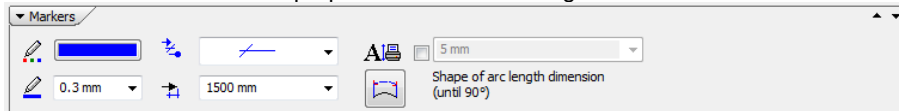


You can specify:

- ❖ the colour,
- ❖ the line width (selecting an object of the list or entering the desired value directly),
- ❖ the font type (selecting a Windows True Type font),
- ❖ the style (regular, italic, bold, bold italic),
- ❖ the character height (defining the height of the text character cells of dimensioning) of the text.

### Arrowhead

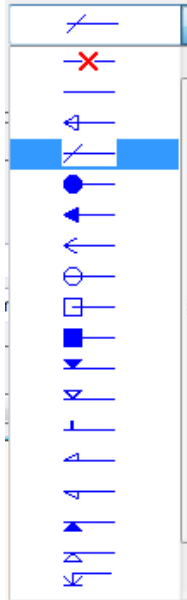
You can set the arrowhead properties of dimensioning here.



You can specify:

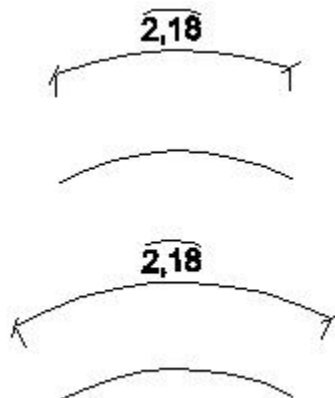
- ❖ the colour,
- ❖ the line width (selecting an object of the list or entering the desired value directly),
- ❖ the type,
- ❖ the size (at both ends of the dimension line) of the arrowhead.

- ❖ Select a type from the list. You can see the available maker types on the right:



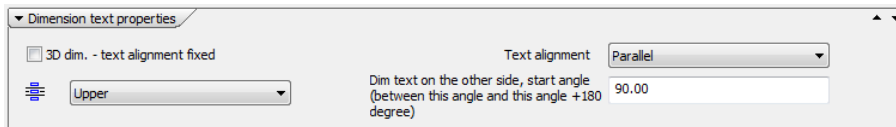
### Shape of arch length dimension

You can set the arc's extension line to be radial or extension-directed in case of central angles under 90 degrees.



### 12.1.2. Text parameters

You can set other parameters related to the text of dimensioning by selecting the Text parameters option.



### Placing

You can set the actual position of the text.

- Upper**      The text is placed above the dimension line.
  - On**         The text is placed on the dimension line.
  - Below**     The text is placed below the dimension line.
  - Outside**    The text is placed on the side of the dimension line farthest away from the defining points.
- These options useful at DXF/DWG import/export operations.

### Text direction

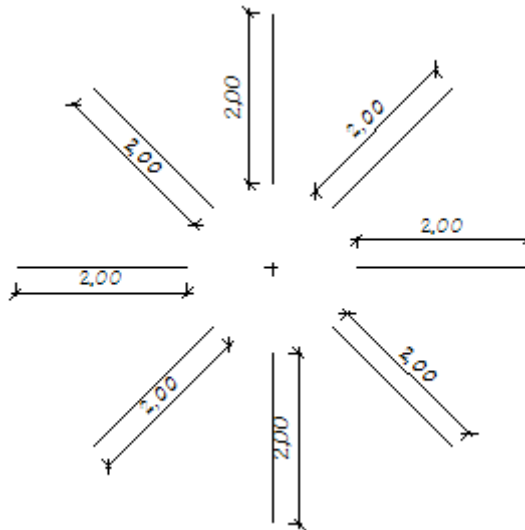
This option sets the current direction of the text.

- Off**             Default text direction (in compliance with ISO standards. If the text is placed between 75 and 105 or 255 and 285 degrees it is placed perpendicular to the dimension line.
- In**             The angle is marked horizontally, inside the arc.
- Out**            The angle is marked horizontally, outside the arc.
- Perpendicular** The values of length and distance are marked perpendicular to the dimension line.
- Parallel**       The text direction is always parallel with the dimension line.
- Fix 0, 90, 180, 270:** The text of dimensioning is rotated from the horizontal line with the selected angle and fixed.

### Dimension text to other side, starting angle

You can specify the starting angle from which the dimension text can be moved to the other side by rotating it with less than 180°. The default setting of the starting angle is 90°.

This figure shows that – at 90° – the dimension text will be placed on the other side, if the angle of the line is more than 90° and less than or equals to 270°.



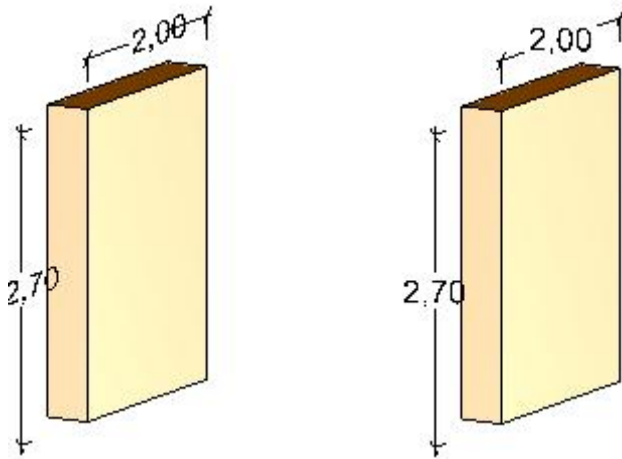
### Text direction of 3D dimensions

You can fix the text direction of 3D dimensions on the projection with the help of switch according to the graphic:

Off

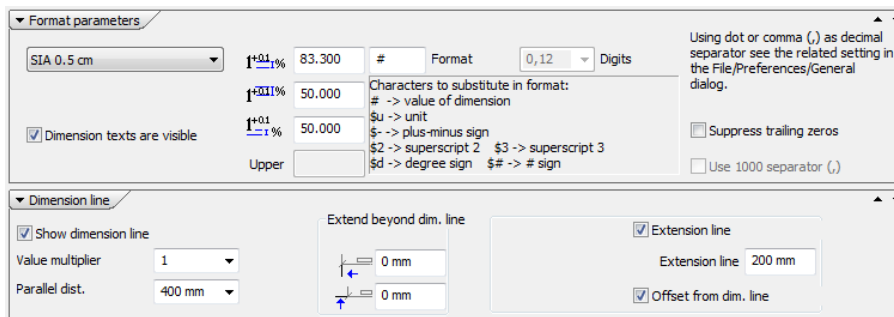
On





### 12.1.3. Format parameters

Click on the Format parameters or Dimension line option. You can set further properties of format, extension line, or other display characteristics of dimensioning.



#### Parallel distance

Set the distance between the texts in case of parallel dimensioning.

#### Scale factor

Set the current scale of the dimension figures. The dimension figures are multiplied by the set scale factor and are displayed in the dimension text.

#### Show dimension line

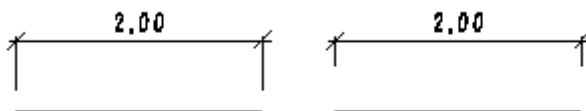
Shows or hides the dimension line.

#### Extension line

This checkbox allows showing or hiding the extension line.

You can set the extension line length relative to the arrowhead or dimension base line.

Activate the *Distance from object* or *Distance from dimension line* option and enter the desired value.

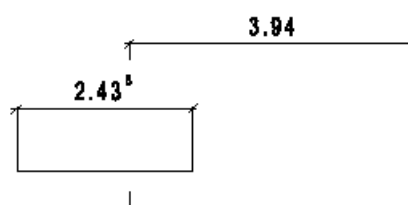


Distance from object or object:  
200 mm

Distance from dimension line:  
200 mm

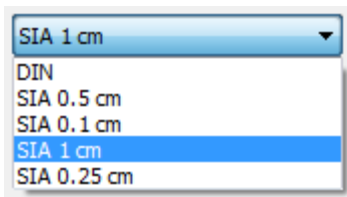


You can cut out a part of the extension line by selecting the **Dimensioning shortcut menu – Delete from extension line** command.



## Options

You can select the standard of dimensioning for both length and angle dimensioning:



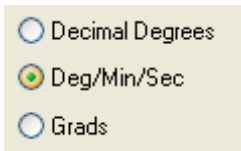
In compliance with the technical standard.  
 In compliance with the architectural standard, with an accuracy of 0.5 cm.  
 In compliance with the architectural standard, with an accuracy of 1 mm.  
 In compliance with the architectural standard, with an accuracy of 1 cm.  
 In compliance with the architectural standard, with an accuracy of 25 mm.

In the following table the DIN standard is set to an accuracy of four decimals, the SIA set for 1 cm rounds the value up to the second decimal while in the other two cases the accuracy of 1 mm or 0.5 cm is indicated by a superscript respectively.

	DIN
	SIA 0.5 cm
	SIA 0.1 cm
	SIA 1 cm



To use the SIA standard, set the current unit of measurement to meter in *File menu – Options – General – Unit* dialog box.



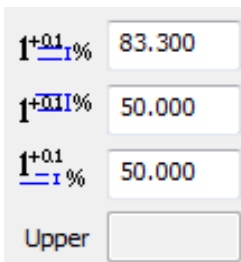
You can select any of the following options of angle dimensioning here:  
 It displays the angle in decimal units (e.g.: 30.5°).

Degrees, Minutes, and Seconds (e.g.: 30°30'00")

Grads (unit of measurement in engineering) 400 degrees

### Tolerance options

It specifies the tolerance of length dimensioning in case of *SIA 0.1* and *SIA 0.5* standards. The program displays the upper values of dimensioning according to the selected standard.



The distance between the lower corner of tolerance and the bottom of the dimension text as the percentage of the height of the dimension text.

The level of tolerance as the percentage of the height of the dimension text.

The distance between the bottom of the dimension text and the dimension line as the percentage of the height of the dimension text. It is relevant to all dimensioning standards.

## Length and Angle

### Suppress trailing zeros

If this option is on the non-significant zero decimals at the end of the index number for length or angle are hidden.

### Length decimals

This option sets the current number of the decimals to be displayed when dimensioning. The program rounds off the figure appearing on the dimension line to the given number of decimals.

When the Din norm is used, the maximal number of decimals is 6. If you work in meters, it means micron accuracy.



The number of decimals can only be set for the DIN standard. This property cannot be interpreted for the SIA standard.

### Length format

This option specifies the format of the dimension text. The „#“ character stands for the measured value and can be replaced or supplemented with other characters.



For detailed description see Chapter 10.3.12. *Format text*.

### Angle decimals

This option sets the number of decimals in the angle index to be displayed. Specify a negative value to display only decimals different from zero.

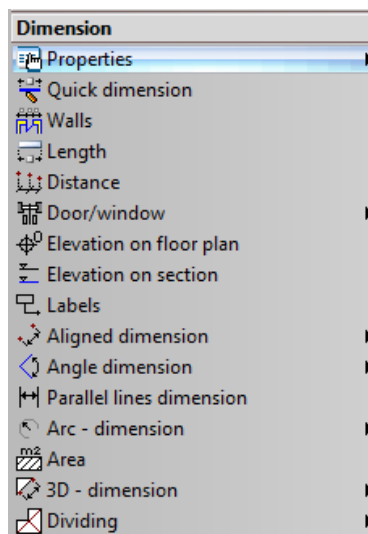
### Angle format

With this option you can set the text format of the angle index number displayed.

## 12.2. Creating dimensions

You can activate the dimension commands from the *Dimension menu* or the *Dimension toolbox*.

You can find different type of dimensioning: length, distance, parallel, angle dimension and so on.



### 12.2.1. Quick dimensioning



The **Quick dimensioning** command automatically collects the most often used types of length, distance, radius, diameter, angle and parallel dimensioning.

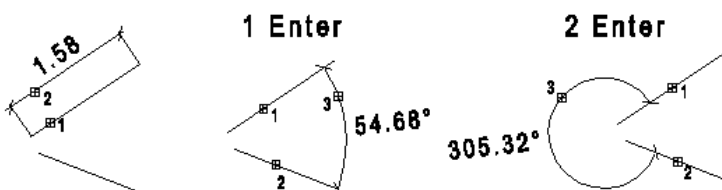
Click on the *Dimension Toolbox – Quick dimensioning* icon.

Quick dimensioning can identify the different drawing objects and can apply the following types of dimensioning within one command: distance, radius, diameter, and angle dimensioning as well as dimensioning of parallel lines.

- ❖ You can activate any dimensioning function by clicking on the corresponding object. Use the cursor to display the format of the current dimensioning. You can move between the dimensioning commands by pushing Enter.

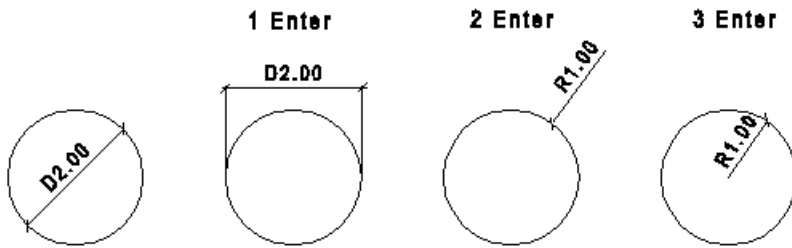
#### ***If the selected object is a Line or a Polygon:***

- Select an object for dimensioning.
- The program performs the **Length dimensioning** command, or
- **Enter** Moves on to the **Angle dimensioning** command.
- (If the second object is parallel to the first one, the program performs the **Parallel lines dimensioning** command), or
- **Enter** Moves on to the Auxiliary angle dimensioning command.
- Select the second object.
- Specify the position of dimensioning.



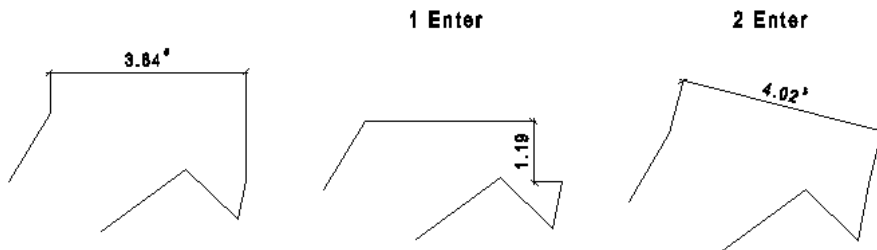
**If the object selected first is a Circle or an Arc:**

- Select an object for dimensioning.
- The program performs the **Diameter dimensioning** command, or
- Enter Moves on to the Radius dimensioning through centre command, or
- Enter Moves on to the General radius dimensioning command.
- Specify the position of dimensioning.



**If the point selected first is close to an endpoint of an object:**

- Select an object for dimensioning.
- The program automatically snaps to a special point. Then the program waits for the specification of another point to perform the dimensioning for the distance between the two points.
- Specify the other point (the change of the cursor will sign the identification of a special point). The program performs the **Distance dimensioning (X offset)** command, or
- Enter Completes the Distance dimensioning (Y offset) command, or
- Enter Performs another Distance dimensioning command.
- Specify the position of dimensioning.



The process is not as complicated as it might look on the basis of the description. See it for yourself!

## 12.2.2. Wall dimensioning

The program places a dimension string parallel to the wall or group of walls selected by automatically snapping to the following special points:

- ❖ wall connection points and wall endpoints,
- ❖ wall endpoints and door and window endpoints,
- ❖ wall endpoints and door and window axes,
- ❖ wall endpoints only,
- ❖ farthest end points of the walls
- ❖ Wall connection points and wall endpoints with wall layer thickness.

You can specify the sequence of the parallel dimensioning. After activating the command the dialog box will appear.

- Specify the desired option in the dialog box.
- Press the **Add** button. The selected option is added to the bottom list. Specify the next option. The program places the dimension strings in a sequence outwards from within, according to the specified order of options. In case you wish to delete any option, click on the bottom list and press the **Delete** button.

### Door / Window dimensions.

In the appearing dialog window you can set, that which parts of the openings will be on the dimension line in case of *Door/Window frame and wall endpoints*.



See the detailed description in chapter 9.3.1.5. *Visualization group*.

### Dimensioning refer to middle of walls

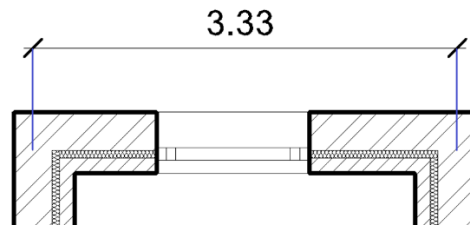
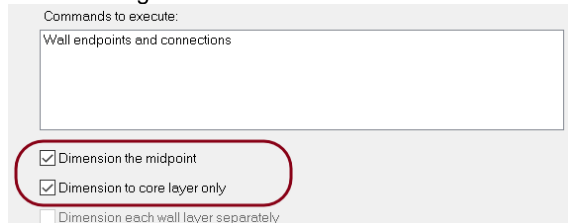
The program will dimension the wall middles, if you switch on the option.

- **OK** Closes the dialog box.

### Wall Dimension to Core Layer axis

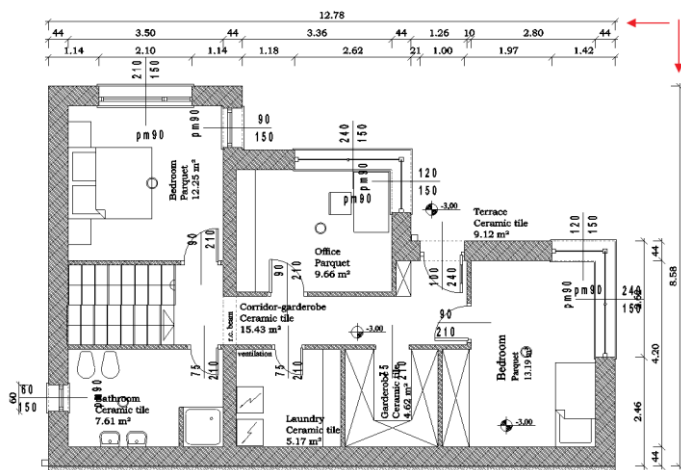
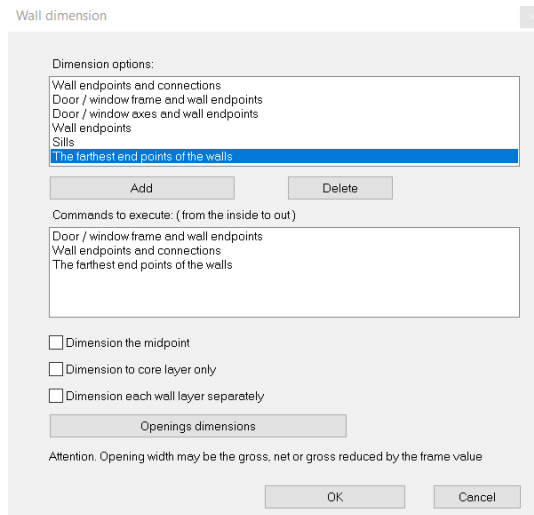
You can dimension the axis of the core layer in the wall.

Select the wall dimension command and switch on the Dimension to core layer only and the Dimension the midpoint checkbox together.



### Wall Dimension to farthest end points

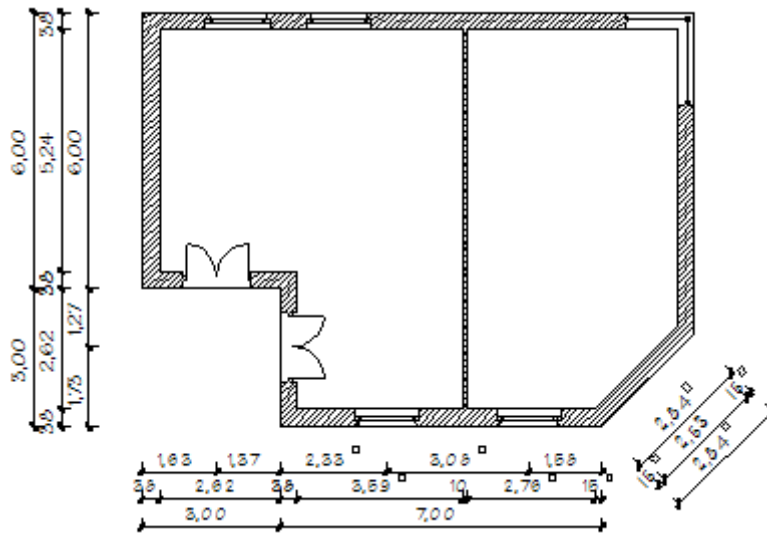
The farthest end points of the walls measures longest distance of a wall chain.



### Dimensioning wall by wall

The most often used way of dimensioning is done by dimensioning the building by its outer walls.

- Specify the outer side of the first wall for dimensioning.
- By moving the cursor you can display a rubber line indicating the position of the innermost dimension lines. Specify the position of the dimension line.
- Specify the next wall on the same front. The program displays the dimensioning in a distance from the wall similar to the previously specified one. This way the dimensioning on the same front.  
**Enter** Closes the dimensioning on the same front.
- Continue dimensioning on the next front. **Enter**.  
**Enter** Completes the command.

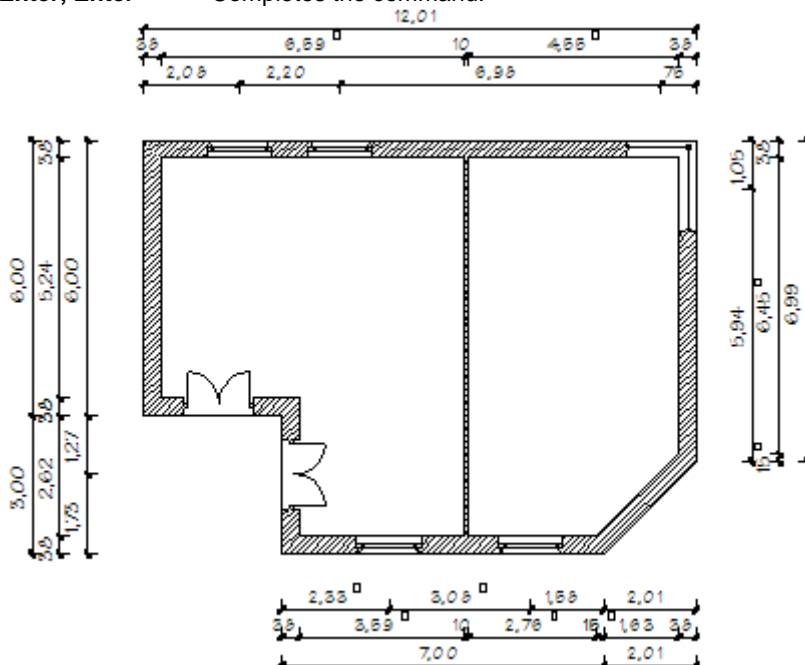


In case the distances within the same front are different, after pressing **Enter** you can continue dimensioning by specifying the next distance.

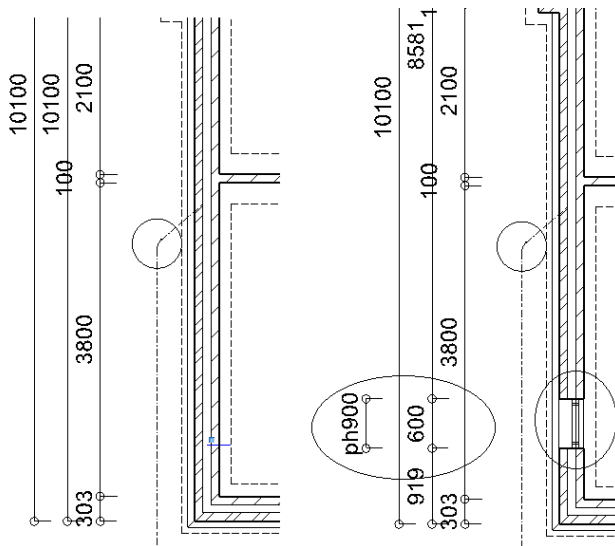
### Dimensioning the complete building

You can do the dimensioning of the complete building in one step. In case the program skips a wall segment from the process of dimensioning (see the example below), follow the above described method.

- Click somewhere out of the corner points of the selected walls enclosing box.  
**Enter** Completes the command.
- By moving the cursor you can display a rectangle indicating the position of the innermost dimension lines. Specify the position of the dimension line, or if the front of the building is not parallel with either main axis (X, Y), select the **ANGLE** option. Now you can use either the **LIKE** option or the options of the **Define angle menu** to place the dimensioning parallel to the walls. Select the object on the drawing whose angle you refer to.
- **Enter, Enter** Completes the command.



The inserted door, window, joined new wall or deleted wall connection updates automatically the related dimensions..



To change the position of an already existing dimension string in one step, use the *Shortcut menu – Edit group of dimensioning - Move dimension string* command.  
Use the *Dimensioning properties – Format parameters – Parallel distance* option to specify the distance between parallel dimension strings.

### 12.2.3. Distance dimensioning

This dialog box allows you to select from seven types of distance dimensioning in three directions:


#### **Direction of dimensioning**

Specify the direction of dimensioning. Between two points you can define:

- ❖ a horizontal dimension line,
- ❖ a vertical dimension line, or
- ❖ a dimension line at a given angle.

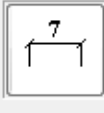
**Dimension** ✖

Dimension line

Horizontal 

Vertical

Slanted

Single 

Elevation

Serial

Cumulative

Progressive

Halfdiameter

Parallel

Parallel dist.

400 mm

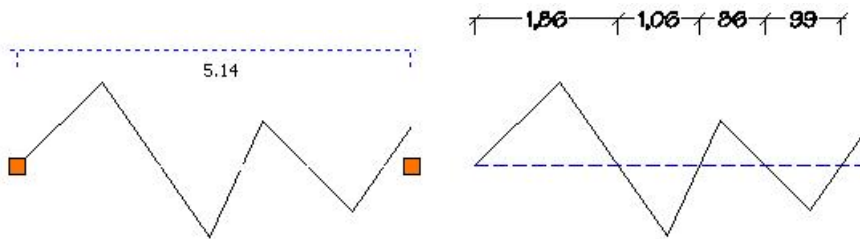
### Type of dimensioning

Select a type of dimensioning from the following:

<b>SINGLE</b>	Distance dimensioning between two points.
<b>ELEVATION</b>	For creating architectural elevation dimensioning.
<b>SERIAL</b>	Dimensioning of distances between points is placed in a sequence.
<b>CUMULATIVE</b>	It creates the dimensioning of the distance of points from an origin. There is no arrow added at the end of the dimension lines closer to the basis.
<b>PROGRESSIVE</b>	It creates the dimensioning of the distance of points from an origin. The dimension lines appear at the drawing of the arrow.
<b>HALFDIAMETER</b>	diameter dimensioning with radius determine
<b>PARALLEL</b>	It creates the dimensioning of the distance of points from an origin. The new dimension lines are moved to a certain distance.

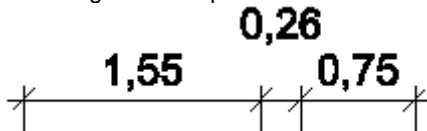
### All cutting points

The program dimensions automatically the virtual section points between the first and second point of dimensioning according to the graphic:



### Automatic text alignment

With this option, at serial dimensioning, the dimension text will be lifted up or dropped down automatically when there is not enough room to place the text between two consecutive points we use for the serial dimensioning.



- Specify the origin of the dimensioning (point 1).
- Specify the second point.
- Specify a point of the dimension line.
- Specify the third point.
- Define point n°.

**Enter** Completes the procedure.

**Enter** Completes the command.

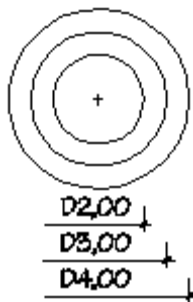
### HALF DIAMETER:

This option can be used for the dimensioning of symmetrical objects. First define a point of the symmetry axis then the extreme points of the desired objects. The program displays the double value of the measured distance on the dimension line and marks it as diameter.

- Specify a point of the symmetry axis.
- Specify the point of the object to be dimensioned.
- Specify a point of dimensioning.

**Enter** Completes the command.

The picture on the left illustrates the dimensioning of the horizontal half diameter.

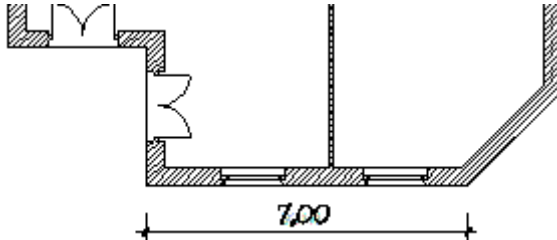




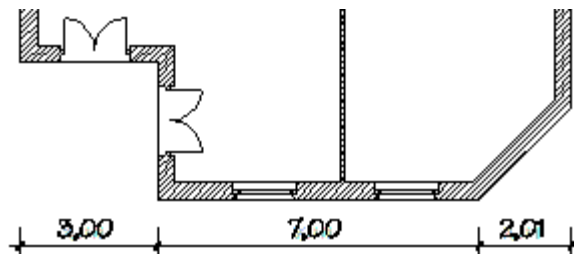
### Characteristics of dimensioning:

- ❖ If a special point (endpoint, centre point or half point) is selected, the dimensioning is related to that point and is associative.
- ❖ In case of serial, cumulative or progressive dimensioning you can move the text if it overwrites the arrow or another dimension text. Press Enter to move the text to its original position.
- ❖ In case of parallel dimensioning you can specify the distance between the dimension lines. See the description of dimensioning properties.
- ❖ To insert or delete a dimension line in the series, use the *Dimensioning shortcut menu – Edit group of dimension - Insert dimension, Delete dimension* commands.

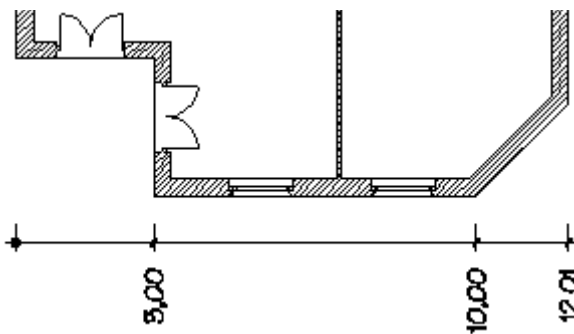
### Examples of horizontal dimensioning:



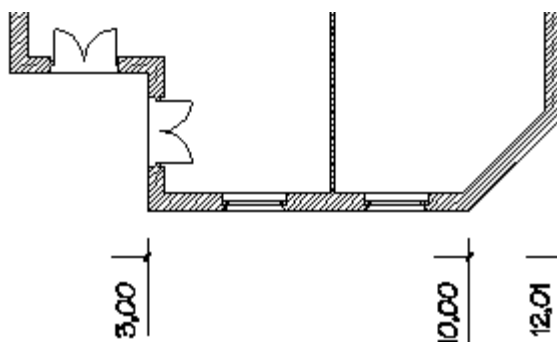
#### Single

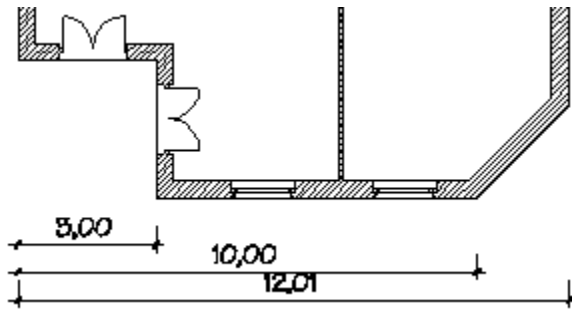


#### Serial



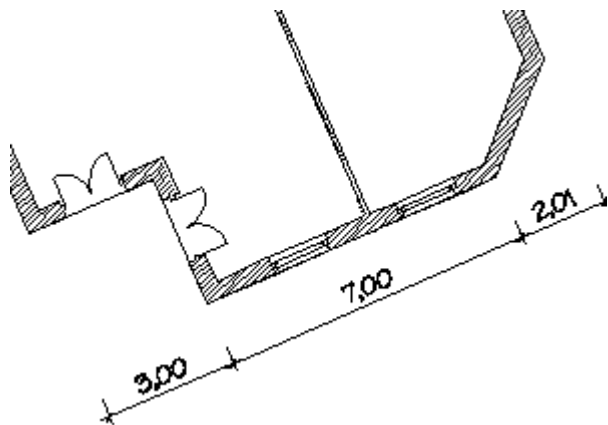
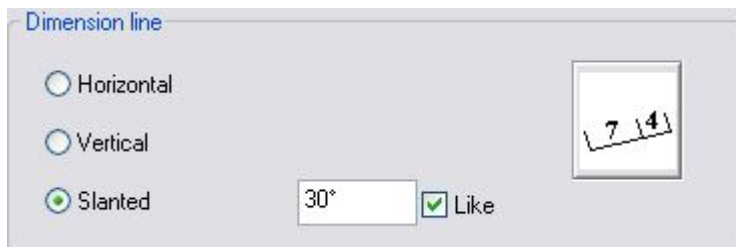
#### Cumulative



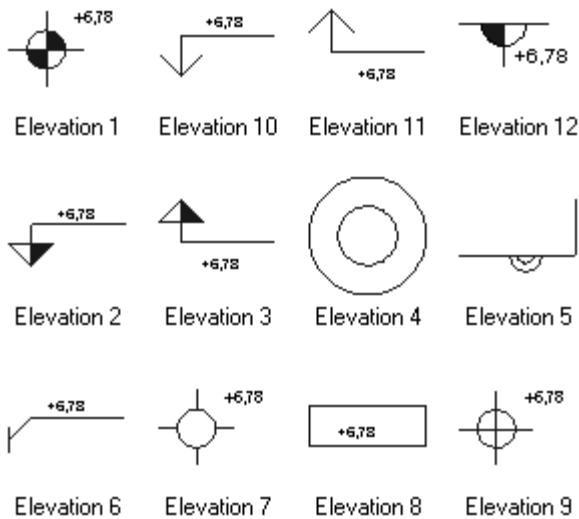
**Progressive****Parallel****Example of slanted dimensioning:**

In case of slanted dimensioning enter the angle of the dimension line or select the *Like* option, and then specify the object in the drawing whose angle you refer to.

Use slanted dimensioning when the objects to be dimensioned are not parallel with either of the main axes (X, Y).

**Serial****12.2.4. Elevation on floor plan**

You can indicate the elevation of walls, slabs, roofs or objects in the floor plan using predefined or user-defined symbols. In the *Elevation* category under the *Groups* directory in the Design centre you find various predefined symbols:



Symbols have two types:


- ❖ In the case of **Symbol with text**, when inserting the symbol the program automatically displays the elevation value in the specified unit.
- ❖ In the case of **Symbol without text**, the elevation value is not displayed.

### Define customized symbols

You can create customized symbols with or without text in the following way:

- Draw the symbol in the floor plan.
- Insert a text next to the symbol if you want the elevation value to be displayed. The elevation value will be inserted in the place of the text.
- Create a new 2D group including the symbol and the text. Adding the text to the 2D group is again optional, of course.
- Save the 2D group under a name that begins with ElevationXP2 (e.g., ElevationXP2\_gaspipe). It is on the basis of the group name that the program recognizes that it is a particular group used to indicate elevation.

### Place elevation symbol

- Choose the Dimension tool-  Elevation on floor plan command
- Choose an object to measure it.
- Choose the point of the selected object the elevation of which you wish to display.
- Define whether the point of your selection is the lower or upper point of the object.
- Then in the dialog box the elevation value of the selected point is displayed. You can modify this number as you like.
- From the displayed group dialog choose an elevation symbol.
- Insert the elevation symbol into the floor plan.

### Place elevation symbol from Design centre

- Find the predefined or customized symbol in the Design centre you wish to use to indicate elevation.
- Click the symbol with the left mouse button and holding it down drag the symbol over the floor plan. Having released the left mouse button, select the wall, slab, roof or object the elevation of whose point you want to display.
- Choose the point of the selected object the elevation of which you wish to display.
- Define whether the point of your selection is the lower or upper point of the object.
- Then a dialog box will appear where in the entry field the elevation value of the selected point is automatically displayed. You can modify this number as you like.
- Insert the elevation symbol into the floor plan.

The program will handle the inserted elevation as a group.



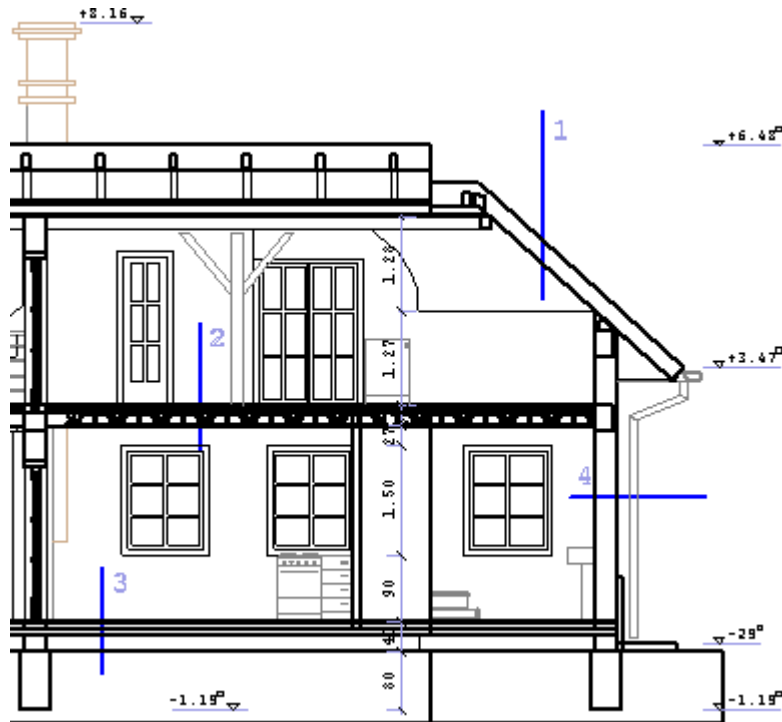
This parameter is not associative; the modification of the object will not affect this value.  
Elevation can be assigned to such objects only, what have existing 3D model.

## 12.2.5. Elevation on section

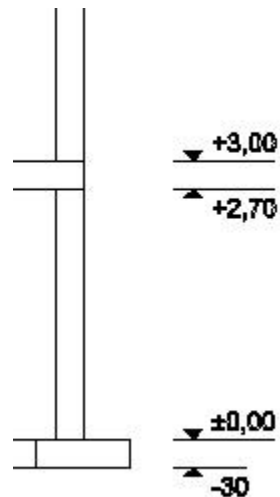
Use this command to create the elevation dimensioning of the drawing by specifying the elevations points one by one.

- Specify the first point of dimensioning to serve as a reference point for the program from which to measure all the other values.
- Specify the next point to be measured.
- Specify the location of the dimension line.
- Repeat the process until you have measured the elevation of all the desired points.

Each dimensioning is placed on the dimension line specified for the first point.



The placing of the text depends on that what kind of arrow ending we set. That means, that if we place the arrow down, then it sets the text down and, if to the top, the text will be on the top too.



### 12.2.6. Door/Window

- This command
- ❖ creates the dimensioning of the selected door/window according to the values given in the **Door/Window properties – Dimensioning** dialog box, or
- ❖ Modifies the dimensioning direction of the placed door/window.

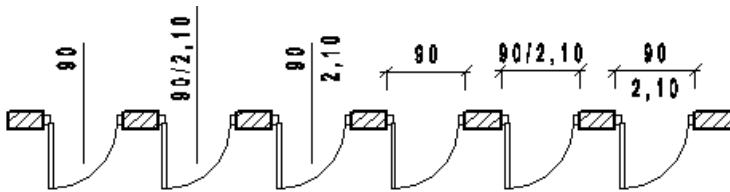
The type of door/window dimensioning depends on the values specified in the *Door/Window properties – Dimensioning* dialog box.

#### Dimensioning

- Select the doors/windows to be dimensioned. In case of window the value of the parapet height is placed on the clicked side.  
or
- Select the **ALL** option to create the dimensioning of all the doors/windows in one step. The value of the parapet height is placed automatic on the inner side of the window.

#### Example:

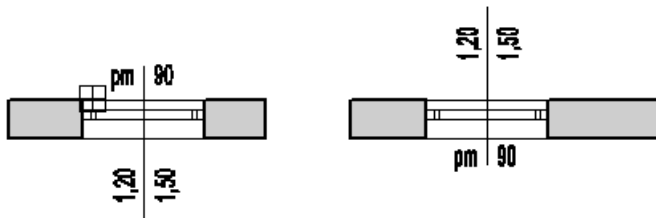
Door width: 0.9 m,  
door height: 2.1 m, with different types of dimensioning:



### Modifying the direction of dimensioning

This command places the dimensioning of the selected door/window on the desired side.

- Select the door/window to which the door/window dimensioning belongs. Place the door/window dimensioning by clicking on the desired side.



Use the *Modify menu – Copy properties* command to copy the properties of the door/window dimensioning.

### Modifying the values of dimensioning

By changing the door/window dimensioning values you can quickly modify the main parameters of a door/window. This means that the width, height and parapet height parameters can be modified through the dimensioning values.

- Click on the door/window dimensioning value.
- Specify a new value in the input field. The door/window will follow the change.



You can dimension the door/window from the shortcut menu of door/window.

## 12.2.7. Deleting door/window dimension

Use this command to delete the dimensioning of selected doors/windows.

- Click on the dimensioning to be deleted, or
- Select the **ALL** option to delete each door/window dimensioning.

## 12.2.8. Labels

Use this command to place the given text labelled with an arrow pointing to a given direction.

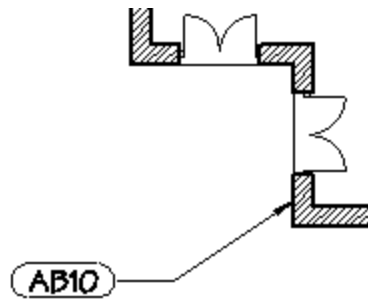
The pointer consists of a poly line (with a maximum number of two segments) with an arrow at the end.

You can specify the object to which the labelled text with the arrow refers. From then on the pointer is assigned to the specified object, so for example if you delete the object, the pointer will be automatically deleted as well. However, if you delete the pointer, it does not mean the automatic deletion of the object.

If you do not specify any object, the pointer is not assigned to anything.

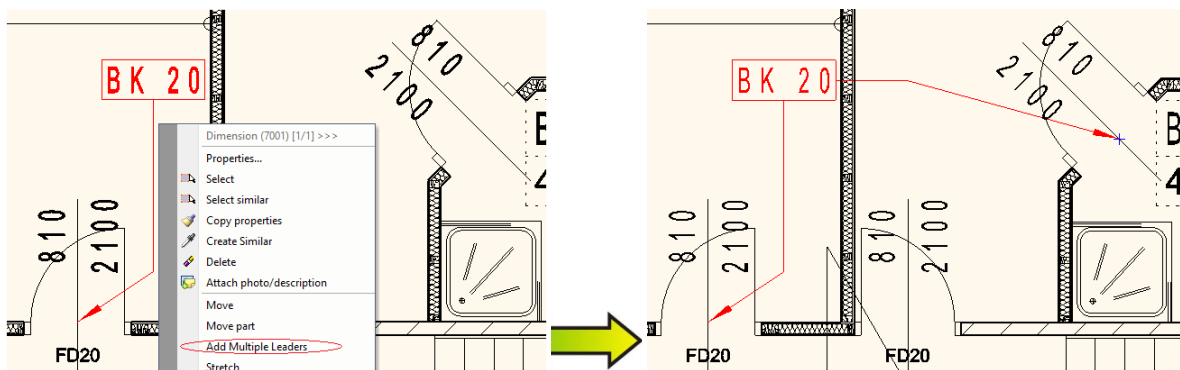
- Enter the desired text in the dialog box.
- Specify the object to which you want to assign a dimensioning pointer or press **Enter** to have a pointer not assigned to anything.
- Place the text on the drawing by its centre point.

- Specify the first segment of the pointer by its endpoint (the starting point is the centre point of the text). The first segment can only be either horizontal or vertical.
- Specify the second segment of the pointer by its endpoint (the starting point is the endpoint of the first segment), or
- **Enter** The pointer consists of one segment only.  
The program draws the pointer.  
**Enter** Completes the command.



### Multiple leaders

Multiple leaders is a feature that helps you create leaders with more control and flexibility. A multiple leader consists of multiple arrowheads, leader lines or curves, and one text label. You can add any number of multiple leaders into a single leader Label dimension.



Command:

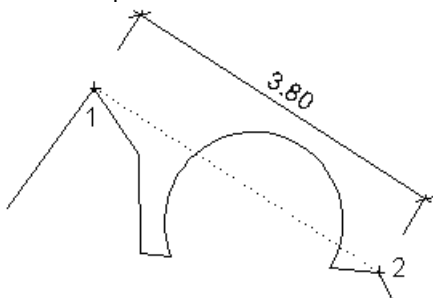
Right-click on the appropriate dimension to see the Add Multiple Leaders placement option in dimension context sensitive menu. In order to make the command visible you should click on the leader part of the dimension.

Draw the additional leaders heading from the text label to leader landing location in a loop. Press Enter to close the command.

### 12.2.9. Aligned

You can measure the distance between two points as well as create their dimensioning. The direction of the dimension line can be similar to that of the line crossing the two points as well as horizontal or vertical.

- Specify the first point.
- Specify the second point.
- The default setting of the program draws a dimension line of a direction similar to that of the line crossing both points, or
- **ENTER** if you want to have a horizontal dimension line, or
- **ENTER** if you want to have a vertical dimension line, then
- Place the dimensioning.
- **Enter** Completes the command.



### 12.2.10. Length (horizontal, vertical)

This command creates the dimensioning of an object so that the dimension line crosses a selected point and is parallel with the object or either horizontal or vertical.

- Select the object to be dimensioned.
- The default setting of the program draws a dimension line of a direction similar to that of the line crossing both points, or
- **ENTER** if you want to have a horizontal dimension line, or
- **ENTER** if you want to have a vertical dimension line, then
- Place the dimensioning.
- **Enter** Completes the command.

### 12.2.11. Length aligned

The command projects the dimensioning of a selected object through a specified point in a given direction.

- Specify the direction of the extension.

Options:

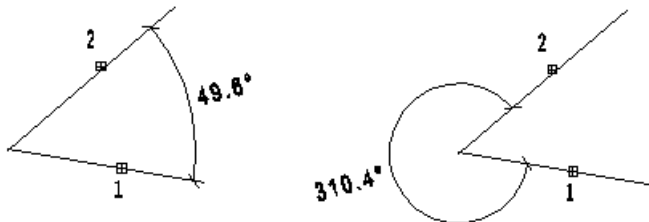
<b>PICK UP</b>	Applies an angle similar to that of the drawing object.
<b>Type the value...</b>	Numerically defined angle
<b>ENTER</b>	Applies the current angle.

- Select the object to be dimensioned.
- Specify the place of dimensioning.
- **Enter** Completes the command.

### 12.2.12. Angle

This command creates the angle dimensioning of two specified object through a selected point.

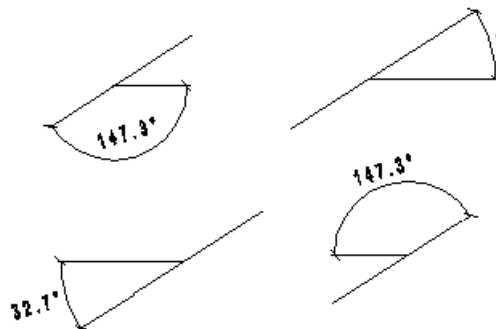
- Select the first object.
- Select the second object.
- Place the dimensioning, or
- **Enter** Measures an auxiliary angle.
- **Enter** Completes the command.



### 12.2.13. Angle (Horizontal)

The program creates the angle dimensioning of the selected object (or tangent) and the positive X axis through a given point.

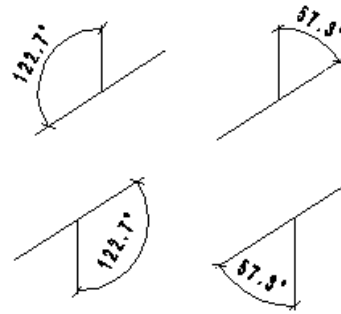
- Select the object.
- Specify the position of the dimensioning, or **Enter** Measures the auxiliary angle.
- **Enter** Completes the command.



### 12.2.14. Angle (Vertical)

The program creates the angle dimensioning of the selected object (or tangent) and the positive Y axis through a given point.

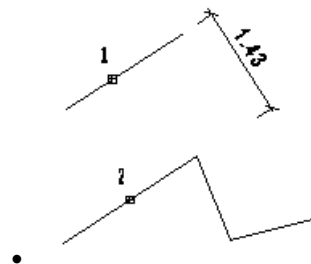
- Select the object.
- Specify the position of the dimensioning,  
or  
  **Enter** Measures the auxiliary angle.
- **Enter**      Completes the command.



### 12.2.15. Parallel lines

The program creates the distance dimensioning of two parallel objects through a given point.

- Select the first object.
- Select the second object.
- Place the dimension.
- **Enter**      Completes the command.

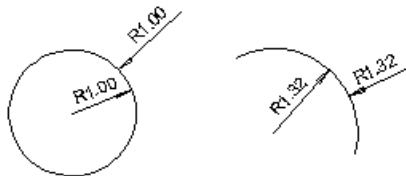


### 12.2.16. Arc - Dimension

This command creates the radius dimensioning of a circle or an arc of a circle.

The dimension line can be placed either outside or inside the circle. If it is inside the circle its starting point is the centre of the circle and the text is placed at the middle of the radius. If the dimension line is placed outside the circle, the text is put where you click on.

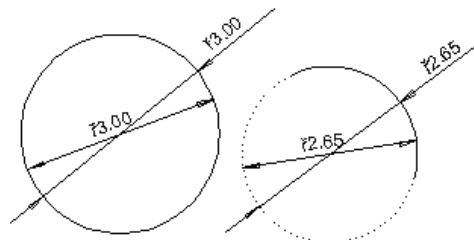
- Select the circle or arc of circle to be dimensioned.
- Specify the place of the dimensioning.



### 12.2.17. Diameter

The command creates the diameter dimensioning of a circle. The dimension line crosses the centre point of the circle and the specified point. The text can be placed either outside or inside the circle. If the dimension line is outside the circle, the text is placed where you click on; otherwise it is placed at the middle of the diameter.

- Select the circle or arc of circle to be dimensioned.
- Specify the place of the dimensioning.



### 12.2.18. Diameter at given angle

The command creates the diameter dimensioning of a circle as well. Here you have to specify the angle of the dimension line (and the positive X axis). The dimensioning can be placed both outside and inside the circle.

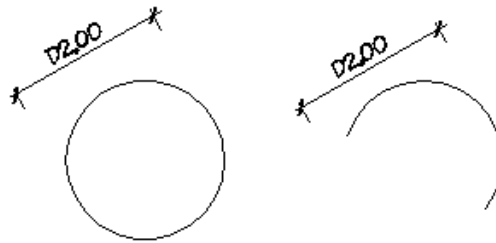
- Specify the direction of the dimensioning.



**Options:**

<b>PICK UP</b>	Uses an angle similar to that of the drawing object.
<b>FIXDIRECTION</b>	Specifies the angle graphically.
<b>ENTER</b>	Uses the current angle.

- Select the circle to be dimensioned.
- Specify the place of the dimensioning.

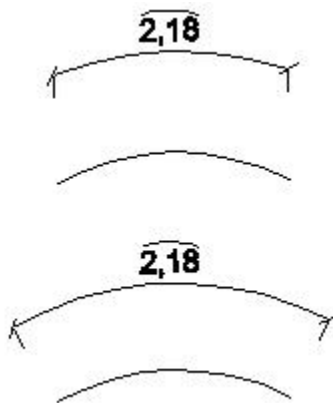
**12.2.19. Arc length**

The command creates the arc length dimensioning of a circle or arc as well.

- Select the circle or arc to be dimensioned.
- Specify the place of the dimensioning.

In the *Dimension* properties dialog you can set the Shape of arch length dimension:

The arc's extension line to be radial or extension-directed in case of central angles under 90 degrees.

**12.2.20. Area**

With this command you can create the area dimensioning of the following objects:

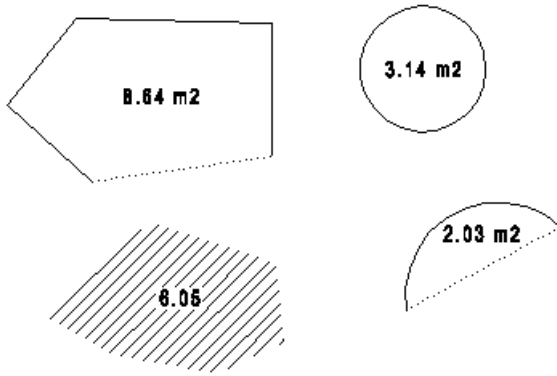
<b>polyline, polygon</b>	Calculates the area of a polygon.
<b>open polyline (spline)</b>	Calculates the area of an imaginary closed polyline.
<b>circle, arc</b>	Calculates the area of a circle or a segment of a circle.
<b>ellipse, arc of ellipse</b>	Calculates the area of an ellipse or a segment of an ellipse.
<b>hatching</b>	Calculates the area of the hatching.

- Select the object to which you want to assign the area dimensioning.

**Options:**

<b>SPOLYGON</b>	Creates the dimensioning of a closed polygon. Use the objects in the Profile definition menu to create the contour.
-----------------	---

- Specify the position of the dimensioning.  
**Enter** Completes the command.



### **Polygon diagonal measuring**

By this command area of free polygons can be divided into triangles using the diagonal measuring method. The program divides the polygon into triangles and creates a list, including the area of each triangle and sum of the triangle areas. This method is used as a verifying procedure for area dimensioning.

This method can be used even for arched walls. In this case we have to define the resolution of the arc.



See the chapter 9.5.6. *Diagonal measuring*



### **Polygon partitioning and dimensioning**

With the help of the command a free polygon can be divided into rectangles. The program assigns numbers to the partitioning and shows the main dimensions in the selected rooms, and it is possible to place expressions verifying the results.



See the chapter 9.5.7. *Room partitioning and dimensioning.*

## **12.2.21. Aligned 3D**

You can measure the distance between two points in any 3D view, i.e. in axonometric view or in perspective view. The direction of the dimension lines are defined by the work plane automatically.



Before 3D dimensioning it is recommended to define the appropriate work plane.

- Specify the first point.
  - Specify the second point.
  - Place the dimensioning.
- Enter**            Completes the command.

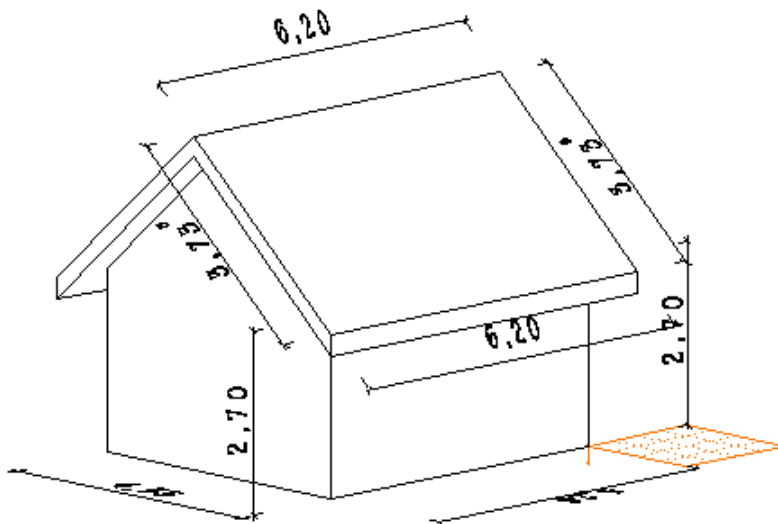
## **12.2.22. Length 3D**

This command creates the dimensioning of an object in any 3D view, i.e. in axonometric view or in perspective view. The direction of the dimension lines are defined by the work plane automatically.



Before dimensioning the edges of object surfaces it is recommended to define the appropriate work plane.

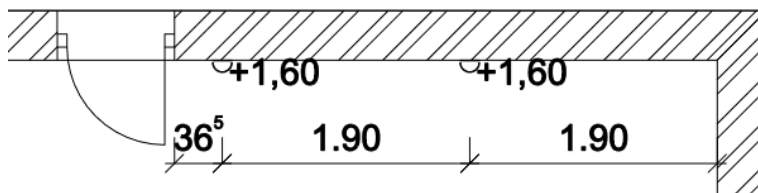
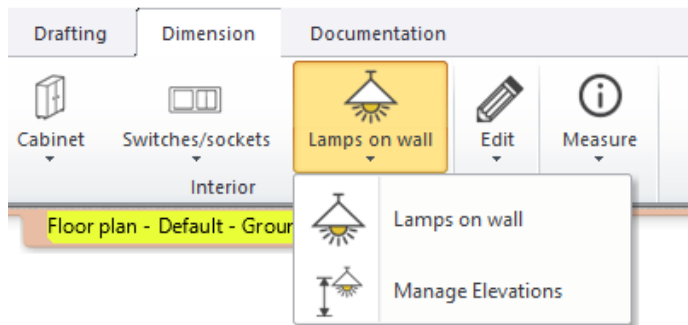
- Select the edge of an object to be dimensioned.
  - Place the dimension.
- Enter**            Completes the command.



You can fix the text direction in 3D dimension on the extension in the *Dimension Properties – Text parameters* dialog window.

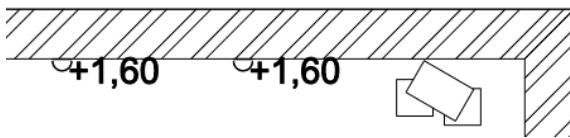
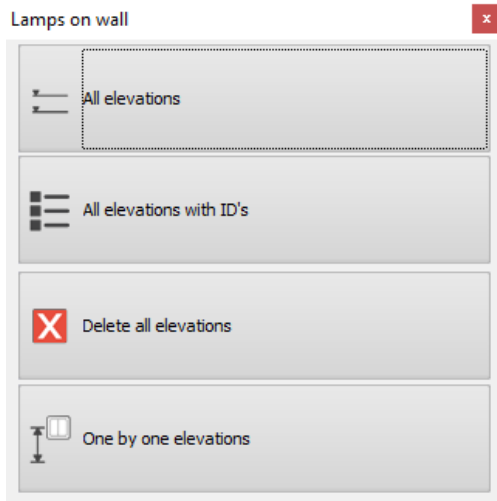
### 12.2.23. Lighting plan – Manage lamp elevations

The axis sizes of wall lamps can be dimensioned compared to walls and openings.  
Location of the command: **Dimension – Lamps on wall**



Managing lamp elevations.

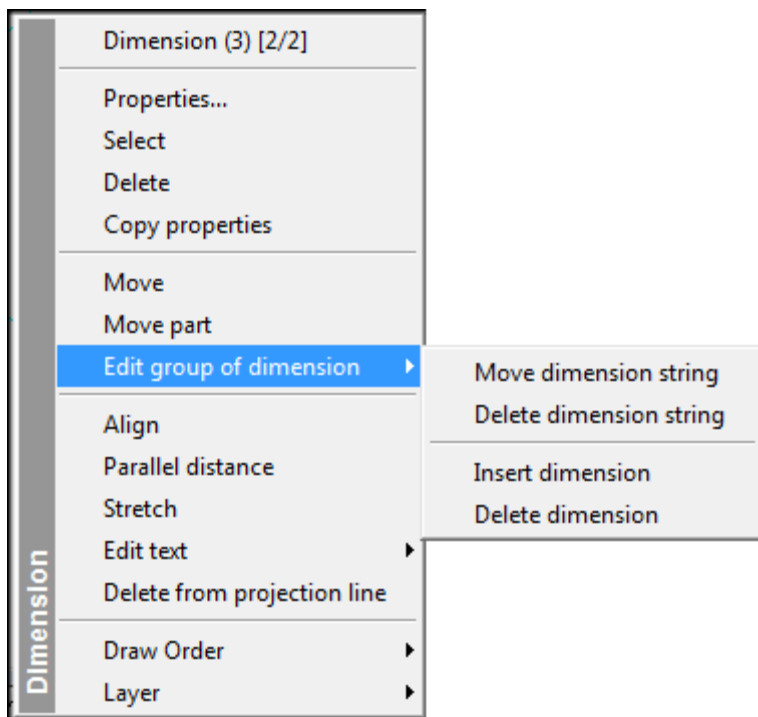
Location of the command: **Dimension – Lamps on wall – Manage elevations**



### 12.3. Modify dimensions

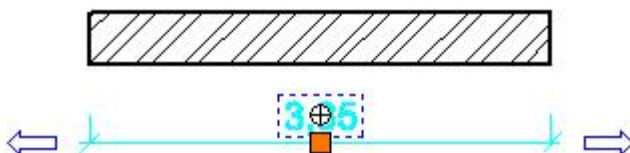
You can reach the modifying commands in different ways:

- ❖ From the **Shortcut menu**: you can activate the shortcut menu by right-clicking on the object.



- ❖ **Graphical editing:**

Using of grips and controls.



### 12.3.1. Moving

You can change the position of the whole dimensioning by using the „rubber line” cursor.

- Specify the new position of the selected dimension line.

### 12.3.2. Moving dimension string

You can change the position of the whole dimension string by using the „rubber line” cursor.

- Specify the new position of the selected dimension string.

### 12.3.3. Deleting dimension string

Use this command to delete the whole dimension string in one step.

### 12.3.4. Moving a part

This command moves only a segment of the dimensioning.

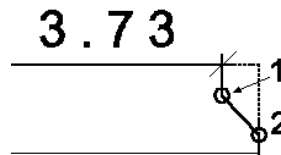
- Select a dimension line. Mark the part you want to modify:

If the selected part of the dimensioning is actually the **extension line**,  
You can move the endpoint of the extension line closer to the point with dimensioning.

#### Options:

<b>NODES</b>	Breaks the extension line of the dimensioning with a node.
<b>DELETE</b>	Reconstructs the original extension line.

- Select the dimension line where you want to insert a node.
- Select the **NODE** option.
- Specify an inner point on the extension line.
- Specify the position of the next node.



If the selected part of the dimensioning is actually the **dimension line**,  
you can move the endpoint of the extension line closer to the point where you have clicked on dimensioning.

If the selected part of the dimensioning is the **text**,  
you can move it to a new place along the dimension line.

If the selected part of the dimensioning is the **arrow**,  
you can move it to a new place (inside or outside).

- Specify the new position of the part of the dimension line. Use the „rubber line” to assist the moving of the selected part.

### 12.3.5. Moving text

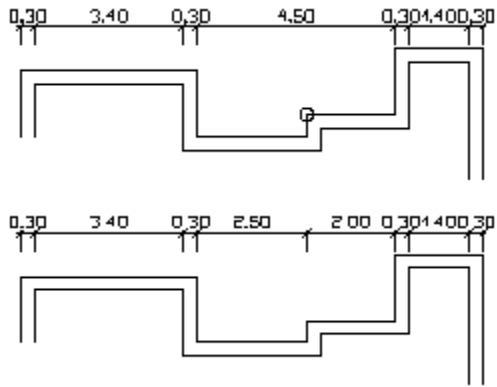
This command freely moves the dimension text anywhere.

- Specify the new position of the text.

### 12.3.6. Inserting dimension

This command inserts a new point into the dimension string.

- Specify a new point within the dimension string.
- The command deletes the specified object of the dimension string and inserts two new objects into it, according to the adjacent points and the new point.



### 12.3.7. Deleting dimension

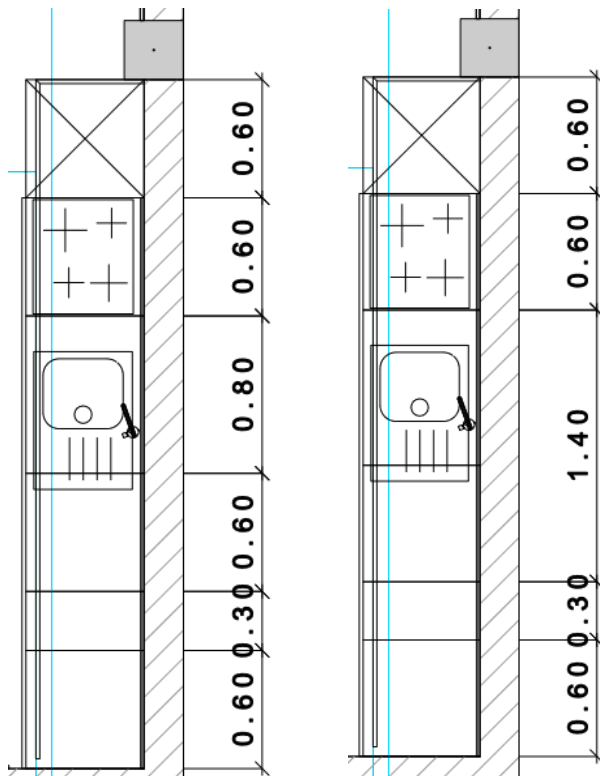
This command deletes the selected object of the dimension string and extends the closest object to the first adjacent point.

### 12.3.8. Delete a dimension from the chain of dimensions

The click point determines what will happen when you delete a dimension.

A dimension from the chain of dimensions is deleted by clicking on the first third or last third of a scaling. By clicking on the middle third, the dimensioning location remains blank.

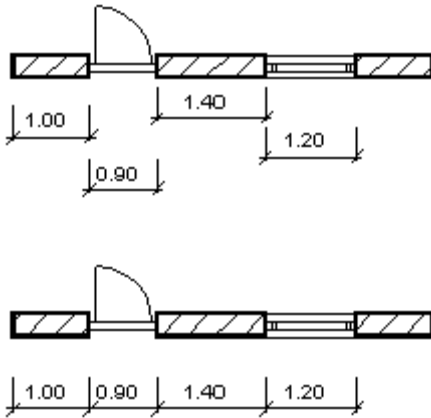
A small triangular marker will indicate the join beyond the dimension witness line in the direction of the combined dimension.



### 12.3.9. Aligning

This command aligns the parallel dimensioning.

- Select the dimensioning to be aligned.
- Give the reference point of the parallel dimensioning.



### 12.3.10. Parallel distance

This command modifies the distance of the parallel dimension lines.

- Enter the distance of the parallel dimension lines next to one another.
- Select the two parallel dimensioning to modify the distance between them.
- **Enter** Completes the selection.
- Specify the reference point of the parallel dimensioning.

### 12.3.11. Stretching

This command stretches the extension line of a dimensioning, this way changing its angle with the extension lines. The dimension text remains the same.

- Specify the new position of the selected dimensioning. Use the „rubber line” cursor to assist the stretching.

#### Option:

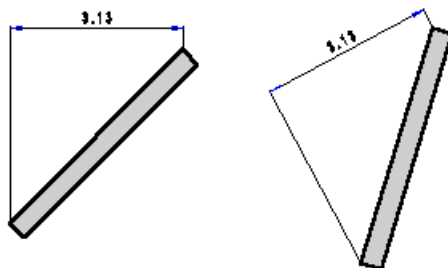
<b>ANGLE</b>	Enter the angle of the dimension line and the extension line.
--------------	---



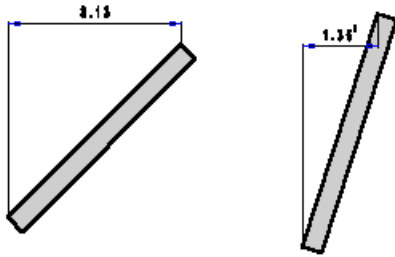
You can only use this command when length dimensioning.

### 12.3.12. Transforming with object

Use the options to switch on or switch off the transformation with object function (when rotating or mirroring). You can only use this command in case of dimensioning related to special points or objects. It is enabled by default, so the dimensioning moves together with the object. If it is off, only the direction of the dimensioning is fixed. It is a global option.



**On** – the dimensioning moves together with the object.



**Off** – the direction of the dimensioning is fixed.

### 12.3.13. Format text

Use the **Format text** command to modify the measured value of the dimensioning. You can modify the dimension text marked by a double cross in the *Current text* dialog box.



If you replace the character „#” by a value, the program will display this value on the dimension line instead of the measured one. Keep in mind, that the program will always keep the given value, even if you modify the object itself. If you replace the entered value by the character „#”, the program will automatically calculate and display the actual values of the dimensioning again.

- 

*Special characters:*

#	->	value of dimension
\$u	->	unit
\$-	->	plus-minus sign
\$2	->	superscript 2
\$3	->	superscript 3
\$d	->	degree sign
\$#	->	# sign

You can use any other character as usual.

**Example:**

If the measured size is 45.87, and you would like to have it displayed in the following format: "L=45.87 m", enter the next sequence of characters in the format field: "L=# \$u".

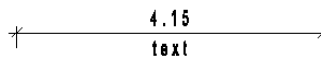


The diameter and the radius automatically signed by „D” or „R” before the value respectively. The maximum length of the character string is 255.

### 12.3.14. Second text

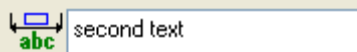
You can place another text under the original text of dimensioning.

- Enter the text to be added.
- Select the dimensioning whose properties you want to modify.
- **Enter** Completes the selection.



You can activate this command and also modify the second text added by it, if you select the **Dimensioning Shortcut**

**menu – Modify** command. The **Second text** field



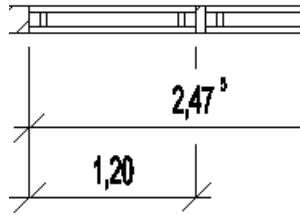
in the *Properties* dialog box is activated, and you can enter or change the second text here.

### 12.3.15. Delete from extension line

This command deletes a segment of the extension line between two given points. Use this command to eliminate a breakage of the extension line.



- Select the first point of the breakage in the extension line.
- Select the second point of the breakage in the extension line.  
The program will break the extension line between the two points.

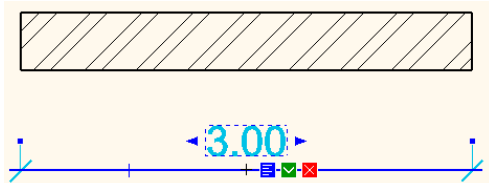


#### Option:

<b>JOIN</b>	Eliminates the breakage of the extension line.
-------------	--

### 12.3.16. Quick graphical editing of dimensioning

It is possible to modify dimensioning quickly as follows:



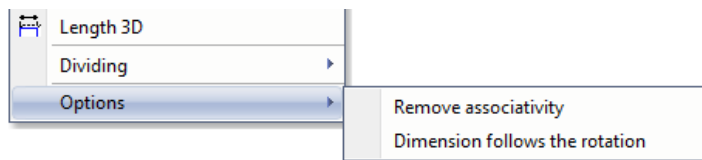
- ❖ By clicking on the text of the selected dimensioning, an input field will appear where you can enter the required text after the #character. (Analogous to the *Format* setting you find in the *Shortcut menu- Edit text* command).
- ❖ The dimension line can be moved with the group found in the middle of the dimension line.
- ❖ With the control found at the ends of the dimensioning line, the extension of the dimension line can be modified graphically.

### 12.3.17. Dimension - Remove associativity

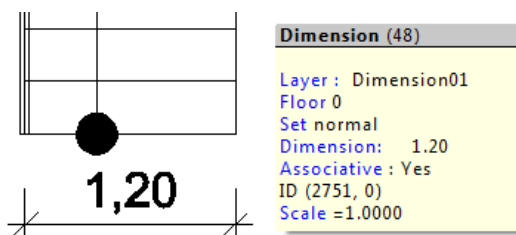
With the help of this command the length and distance dimensioning can be converted to non-associative dimensioning. The command does not change the non-convertible dimensioning like radius, diameter etc.

The command is available in the *Dimension menu - Options submenu*.

With this command it is possible to copy wall dimensioning (created and converted to non-associative on a floor) to another floor if the walls are identical on both floors. So it is not necessary to create the same dimensioning again.

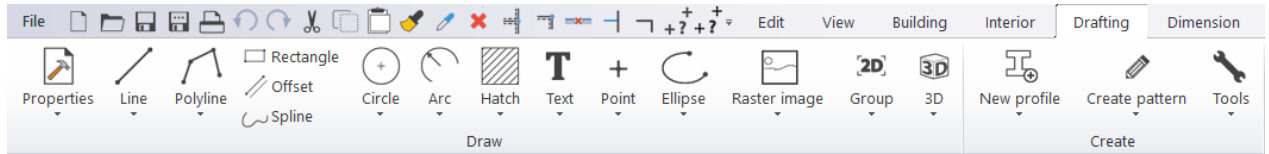


The tooltip includes the associativity information.



## 13. Drafting

This chapter describes the 2D drawing objects properties and commands and how to use them. The tools are available from the *Drafting tab* of the *Ribbon Bar*.



### 13.1. Line

The commands of line tool define:

- ❖ Lines
- ❖ Chain of lines
- ❖ Construction lines

#### Lines

Line is defined by coordinates of its endpoints.

#### Chain of lines

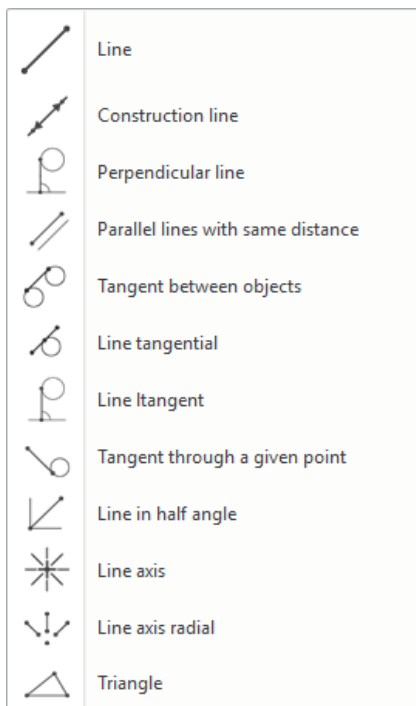
Chain of lines is a series of connected lines. The starting point of a line always coincides with the endpoint of the previous line.

#### Construction line

Construction line is a special kind of line, which will be extended at the definition time from one border of the current window to its other border.

**!** Do not confuse Chain of lines with polylines! A polyline is a single object, while a continuous line is a series of single objects.

The following line commands are available:

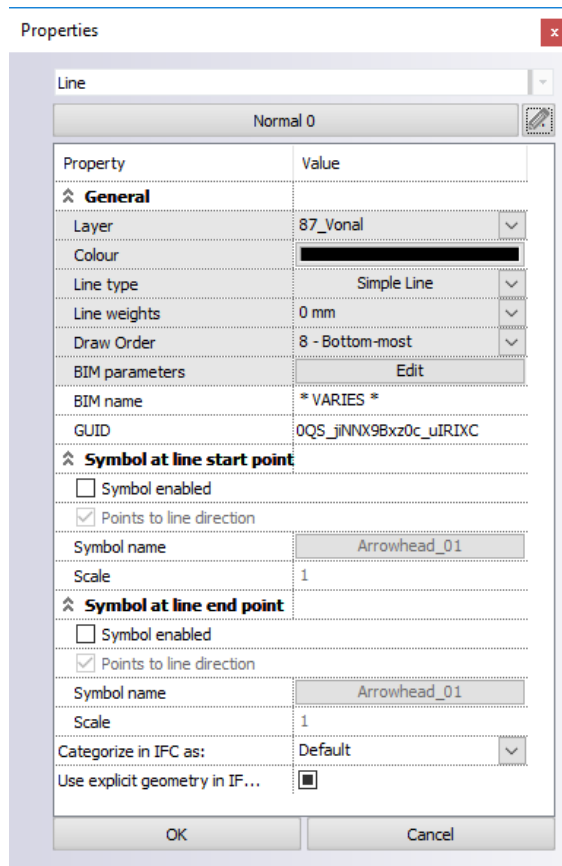


#### 13.1.1. Line properties

Before drawing a line set the global properties.

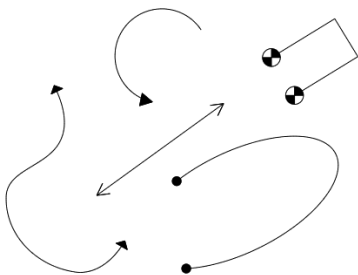
Right click on the **Line tool**, or select the command **Ribbon Bar - Properties- Line**.

The **Line properties** dialog appears where the general properties of the line can be set: the colour, line width, layer, line type and the priority.



### 13.1.1.1. Symbol at line endpoints

#### Introduction



With ARCHLine.XP it is possible to place symbols at endpoints of certain types of objects. Symbols can be placed at endpoints of the following object types:

- ❖ **Line**
- ❖ Polyline
- ❖ Arc
- ❖ Elliptic arc
- ❖ Spline

Symbols can be placed at endpoints of objects in the 2D window. Placing symbols at endpoints in the 3D View is available only for those objects that were created with switched off work plane status.

### 13.1.1.2. Settings of line endings

The properties of the above mentioned object types are extended with **Symbol at line start point** and **Symbol at line end point** groups.

### Symbol enabled

Here you can enable the representation of symbol at each line ending.

### Symbol name

Here you can select the symbol to be represented.

By default, you can select a symbol from the *Groups – Signs - Line endings* in the Design center. The reference points (hot spots) of the arrowheads found here are defined to the top and the base.

### Points to line direction

With this option it is possible to adjust the symbol to the line direction. This means that the direction of the line defined by the two reference points of the symbol is adjusted to the direction of the line. If you switch off this option, the symbol will be placed with its default direction. The end of the line is adjusted to the selected hot spot of the symbol in both cases.



### Scale

The scale of the symbol can be specified here.

#### 13.1.1.3. Customized arrowhead symbols

If you do not find the appropriate ending in the Design center, you can define your own arrowhead as follows:

- Draw the symbol with lines and hatches.



- Create a group (*Ribbon Bar / Drafting / Group / Create group in library*). Define the top of the arrowhead symbol as the first reference point, and then define the middle point of the base of the arrowhead symbol as the second reference point.



For these groups you have to define exactly two reference points.

- Select a line and enable the symbol in the **Symbol at line start point** settings through the property manager. Specify the symbol name: search and select the group you created previously.
- Modify the size of the symbol by the *Scale* property, if necessary.

### 13.1.2. Creating lines

Select one of the commands available from the line group.

#### 13.1.2.1. Line

This command defines series of connecting lines by their endpoints. The endpoint of a line coincides with the starting point of the next line.

The individual segments of a continuous line remain separate objects.

- Define the starting point of the first line.
- Define the endpoint of the first line.
- Define the endpoint of the next line.
- Define the other points of the chain and then
- Press **Enter** to terminate the chain.
- Press **Enter** to terminate the command



#### 13.1.2.2. Construction line

Construction line is a special line that passes the whole screen and whose endpoints are on the frame of the actual graphical window. The construction line can be created by defining its endpoints.

- Define a point of the construction line.

- Define another point of the construction line
- Repeat the command to draw more construction lines, or
- Press **Enter** to terminate the command.

### 13.1.2.3. Perpendicular line

This command defines a line that starts at the pick point and is perpendicular to the selected object.

- Select the object to draw a perpendicular line at the pick point.
- Define the endpoint of the line, or move the mouse to the needed direction and type the precise length value.

#### Options:

<b>OBJECT</b>	You can define the object that or whose extension will be touched by the perpendicular line.
---------------	--

- Repeat the command or
- Press **Enter** to terminate the command.



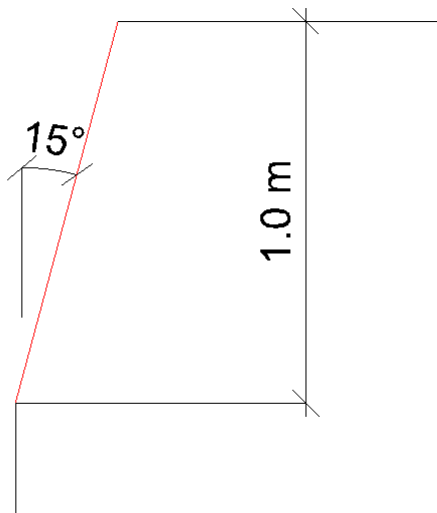
You can define a perpendicular line for every object type, including arcs.

### 13.1.2.4. Chamfer

Bevels the edges of two elements.

- Specify the angle and the chamfer line length.  
(Angle is measured from the first element, Distance is measured on the first element)
- Select the first and the second elements.)

On the image below the angle is 15, and the distance is 1 m.



**!** If the distance between the pick point and intersection point is not bigger than the chamfer length, the program keeps the intersection; in the other case the intersection will be deleted.

### 13.1.2.5. Offset

You can draw a parallel line with the same length with this command.

- Select the element what you would like to use to draw the parallel line.
- Enter the point at which the parallel line passes.
- Repeat the command if you need more parallel lines with the selected element, or
- **Enter** To complete drawing parallel lines with the selected item.
- You can select further elements and draw parallel lines with them, or
- **Enter** Terminates the command.

### 13.1.2.6. Parallel line with the same distance

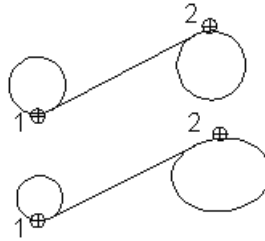
The program draws lines parallel to the selected object that has the same length and is at a defined distance from the selected line.

- Select the object to draw parallel line to. The positive direction is on that side of the object where the chosen point has fallen
- Define the distance from the object. (In the case of positive distance the parallel line will be on the positive side of the original object, in the opposite case it will be on the negative side.)
- Selecting other objects the program draws parallel lines to them at the same distance.
- Press **Enter** to terminate the command.

### 13.1.2.7. Tangent between two objects

This command defines a line that is tangential to both objects near the specified points. The endpoints of the line are on the selected objects. The objects can belong to these types: circle, circular arc, ellipse, elliptic arc and spline.

- Select the first object; take note that the program draws that tangent which is closer to the pick point.
- Select the second object.
- Repeat the command or
- Press **Enter** to terminate the command.



### 13.1.2.8. Line tangential

Defines a construction line that is tangential to the given object:

- ❖ Close to the specified point, or
- ❖ In a closed point where the tangential passes at a defined angle.  
Define the point on the arch, where the tangential is going to pass.
- Repeat command, or
- Press **Enter** to terminate the command.

#### Options:

<b>FIXDIRECTION</b>	Define the angle. The program draws tangential close to the pick point at a defined angle
---------------------	--

### 13.1.2.9. Line tangent

This command defines a line that is perpendicular to the first object and tangential to the second object close to the specified point.

- Define the point of the first object the line will be perpendicular to.
- Define the arc the line will be tangential to.
- Repeat the command, or
- Press **Enter** to terminate the command.

### 13.1.2.10. Tangent through a given point

This command draws a line from a defined point that is tangential to the selected arc.

- Define the starting point of the line.
- Click on the arc. The program draws a tangent from the defined point to the arc.
- Define the starting point of the new line, or
- Press **Enter** to terminate the command.

### 13.1.2.11. Line in half angle

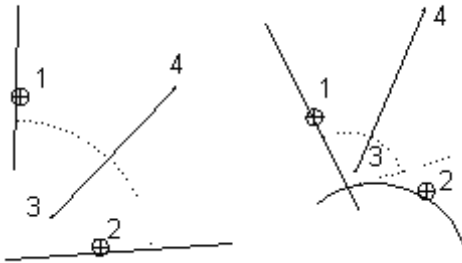
This command defines a line running in the half angle of the two selected objects from the intersection point.



You can define a half angle line for all object types including arcs.

The command is valid for parallel objects as well. In that case the starting point of the half angle line is the middle point between the two objects.

- Select the first object.
- Select the second object.
- Define the starting point of the line.
- Define the endpoint of the line.
- Repeat the command, or
- Press **Enter** to terminate the command.



### 13.1.2.12. Line axis

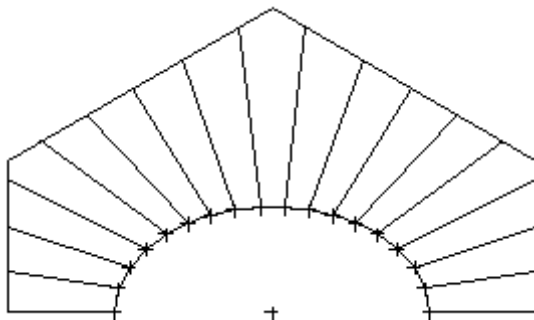
This command draws lines starting from the centre and can be horizontal, vertical or in arbitrary direction. The command helps drawing axes.



To draw axis lines in horizontal or vertical direction use **HV** option then follow the command according to the guide.

### 13.1.2.13. Line axis radial

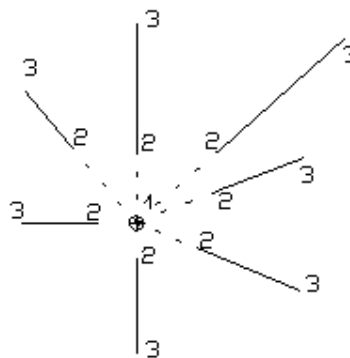
This command generates lines radiating from the centre; they can be horizontal, vertical or in arbitrary direction and the starting and endpoint of lines can be defined. Planning stairs this command helps drawing the steps precisely.



To draw axis lines in horizontal or vertical direction use **HV** option then follow the command according to the guide.

### **Axis lines in arbitrary direction:**

- Define the centre.
- Define the start point of the line.
- Define the endpoint of the line.
- Define more radial lines or
- Define another centre or
- Press **Enter** to terminate the command.



### 13.1.2.14. Triangle

The command creates a triangle of lines or points by different methods:

- ❖ Three sides

- ❖ Base line and the opposite node
- ❖ Three nodes
- ❖ Vertex opposite the base line
- ❖ Base line and the right side

#### Three sides:

- Select the base line of the triangle.
- Define the length of one side.
- Define the length of the other side.

#### Base line and the opposite node:

- Select the option **POINT ???**
- Select the base line of the triangle.
- Define the length of one side.
- Define the length of the other side.

#### Three nodes:

- Select the option **Plane by 3 point** from the menu appearing in the upper right corner.
- Define the first point of the base line.
- Define the endpoint of the base line.
- Define the length of one side.
- Define the length of the other side.

#### Vertex opposite the base line:

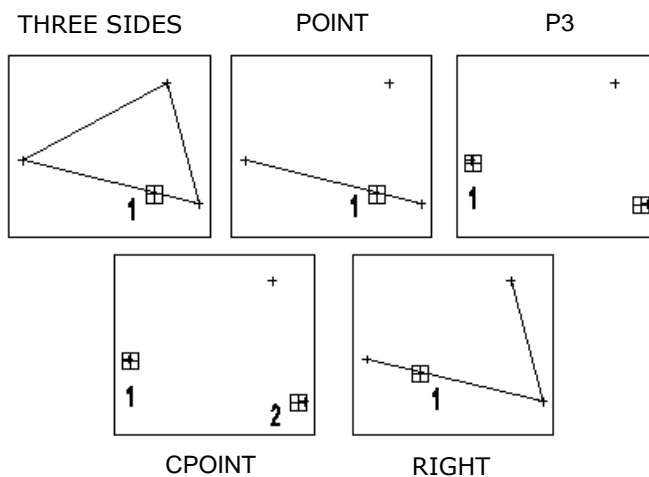
- Select the option **CPOINT ???**
- Define the first point of the base line.
- Define the endpoint of the base line.
- Define the length of one side.
- Define the length of the other side.

#### Define the length of the other side:

- Select the option **Right side** from the menu appearing in the upper right corner.
- Select the base line of the triangle.
- Define the length of the other side.
- Define the length of one side.



The position of node opposite the base of triangle depends on the position of pick point of the selected line. The program draws the first side from that endpoint of the base which is closer to the pick point.

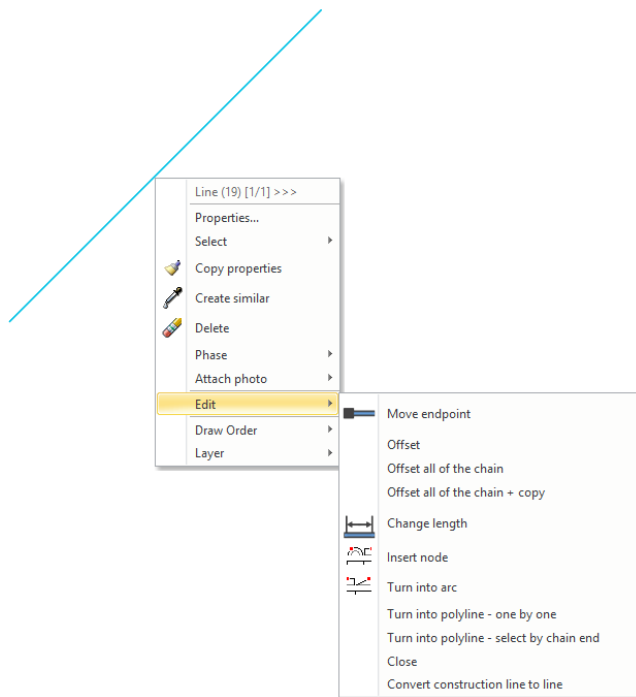


### 13.1.3. Modify line

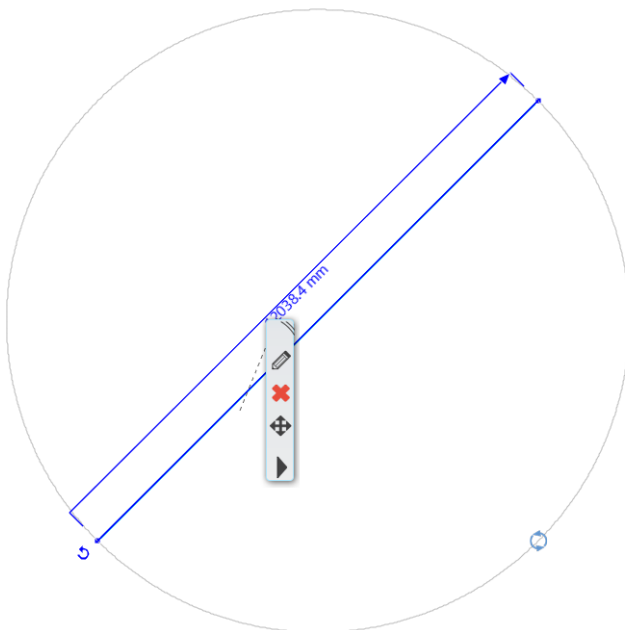
Commands for modifying can be achieved in more ways.

- ❖ In the **Line popup menu**: appears when right click on an object.





❖ **Graphically:** using grips and controls:



### 13.1.3.1. Add node (Conversion to Polyline)

Inserting new node into a line will convert the line into polyline.

- Define the place of the new node.

### 13.1.3.2. Convert Line into Polyline

The program creates polyline out of lines connected to each other.

- Select those lines that you want to transform to polyline.

#### Options:

OPENCHAIN	Select an open chain
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### 13.1.4. 3D extension of line nature objects

There is a possibility to convert line nature objects designed in the 3D View into 3D form.

You can create simple models in the planning phase fast and easily, what's more this method can be used well for creating surface nature objects necessary to the detailed visuals.



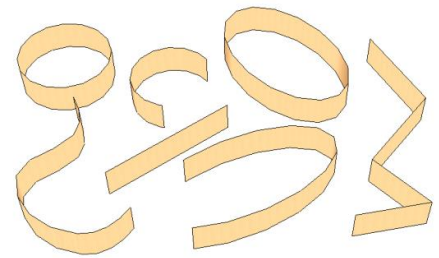
#### 13.1.4.1. Function

You can convert those line nature objects into 3D form that we placed in the 3D View with active global work plane. The 3D surface or body is created, that we draw out the line to the space perpendicularly to its own plane.

You can form the following types of objects into 3D:

- ❖ Line
- ❖ Polygon
- ❖ Circle
- ❖ Arc
- ❖ Ellipse
- ❖ Elliptic arc
- ❖ Spline

If there is no own plans of straight lines, in this case the surface is created by drawing out the line parallel to the Z-axis.



The breaking of created arched surfaces is determined by the resolution that is set in the moment of visualizing in the **Build 3D model**. If you change the resolution later by refreshing the 3D View this change has no effect on these objects.

#### 13.1.4.2. Custom setup of the line nature objects

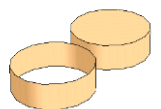
In the 3D View you can reach the line transforming into 3D form by determine the following properties: (These properties can be found in the Property manager after selecting the object or they can be found in the shortcut menu under the *Properties* menu point after clicking with right mouse button on the object.)

##### **Thickness**

These values determine the height of the 3D solid (the line nature object perpendicular dimension to its own plane, the value of lifting). The value is 0 by default then the objects behave as simple lines.

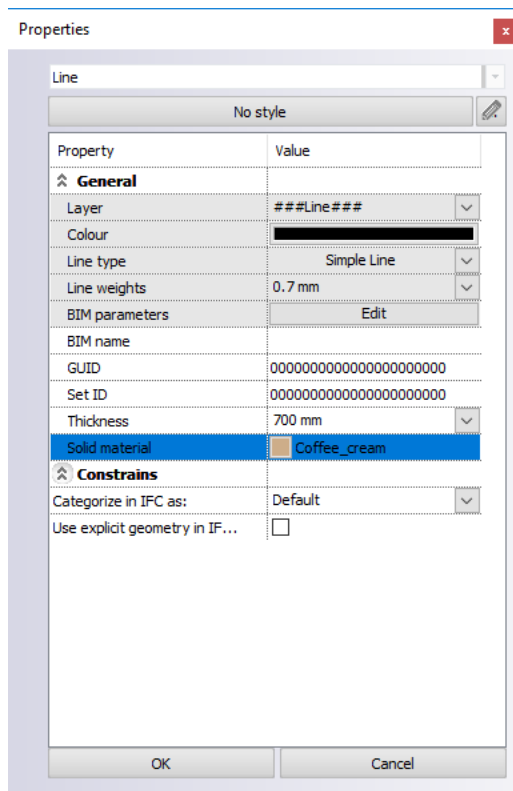
##### **Solid**

Closed formations (circle, ellipse, closed polygon) are formed in two ways to 3D solid: if the *Solid* button is switched off, the result will be a surface if it is switched on we create a solid 3D.



##### **Solid material**

After creating the 3D solid, the Solid material appears in the dialog window when you want to modify another property.



## 13.2. Polyline

Commands of Polyline tool draw polylines and polygons.

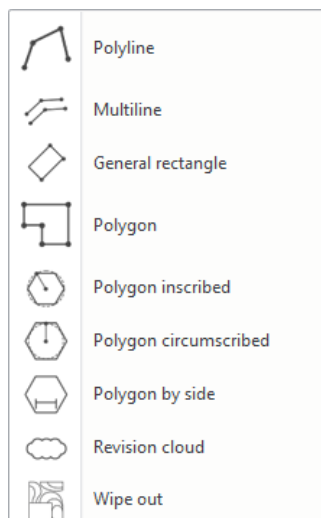
A **Polyline** is a series of lines that represent a single object. It can also contain arcs and splines.

A **Polygon** is a closed polyline.

You cannot modify the lines of the polyline as individual objects.

The line segments of the polyline are connected by nodes. The nodes represent the endpoints of the line segments.

To construct them, you can use the POLYLINE tool both on 2D and 3D views.



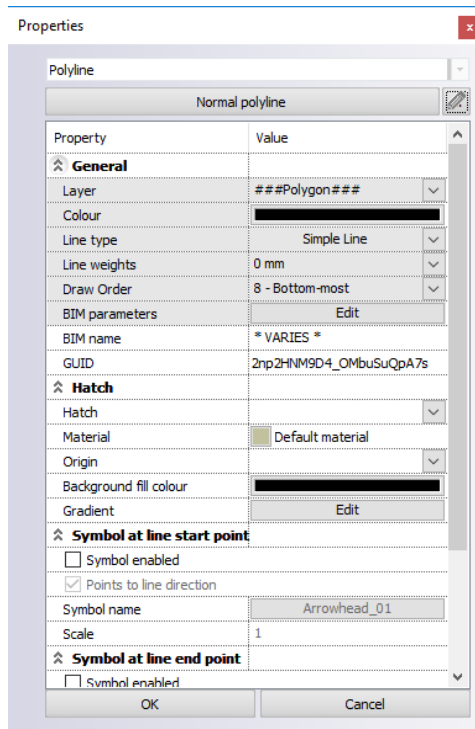
### 13.2.1. Polyline properties

Right click on the **Polyline** tool on the Ribbon Bar - Drafting tab or select the command **Ribbon Bar - Drafting tab - Properties - Polyline**.

The **Polyline properties** dialog appears where the general properties of the line can be set:

## General properties

Set the general properties of polyline: colour, line width, layer, line type and priority.

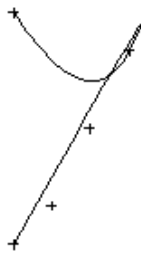
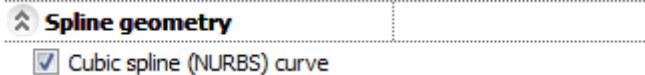


## Line segment

If the option *Explode to lines* is checked in, then the program draws individual lines instead of polyline. If it is checked off the result is polyline. The latest is the default setting.

## Spline geometry

The program makes Bezier curves by defining the nodes that makes computer aided design easier. In the program there are two possibilities to create splines: the quadratic curves and the smoother cubic curves.



**Quadratic spline, no control points**



**Cubic spline, one control point**

## 13.2.2. Creating polylines

Select one of the commands available from the polyline group.

### 13.2.2.1. Polyline

The polylines contain lines and arcs. Command draws:

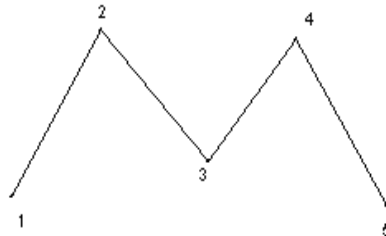
- Open polyline or polygon.
- Specify the polygon as a chain of lines and arcs.
- Press **Enter** to finish drawing the polygon.

**Options:**

<b>Arc</b>	The next object of the polyline is an arc.
<b>Select an object</b>	The next object of the polyline is an existing object.
<b>Smooth</b>	The next object of the polyline is tangential to the previous object.

**Open polyline:**

- Define the starting point of the polyline.
- Define the next nodes.
- Press **Enter** to finish drawing the polyline.



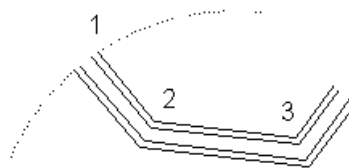
To draw polygon choose option **CLOSED** and keep drawing on according to the description.

**13.2.2.2. Multiline**

The command creates more parallel open polylines or polygons that are in a predefined distance from each other.

**Draw open polylines:**

- Type the values of the multi-line distance then press **OK**.
- Repeat sequentially if you define more polylines, or press **Cancel** to finish the definition of distances.
- Define the starting point of the polyline.
- Define the next node.
- Define the more node or
- Press **Enter** to finish the definition of nodes, and the program draws the multiline.



To draw polygon choose option **CLOSED** and keep drawing on according to the description.

**13.2.2.3. Rectangle**

Defines a rectangle by its opposite corners, the sides of the rectangle are vertical and horizontal.

- Define the first corner.
- Define the opposite corner.
- Repeat the command or
- Press **Enter** to terminate the command.

**13.2.2.4. General rectangle**

Defines a rectangle the following way:

- ❖ Draw the two points of the base.
- ❖ Set the height graphically, numerically or by a point of an existing object.

**Draw rectangle I.**

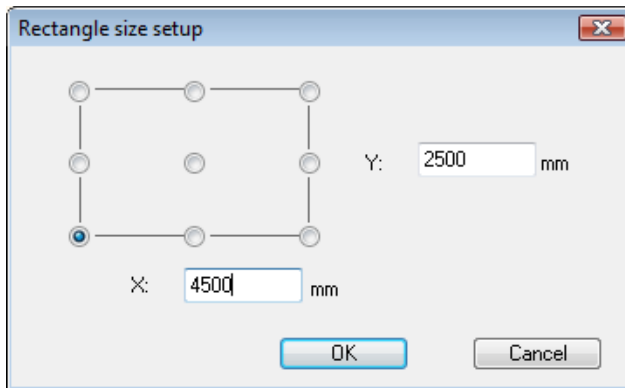
- Define the first corner of rectangle base line.
- Define the second point of the rectangle base line.
- Define the height of rectangle graphically, or numerically.

**Draw rectangle II.**

- Select the option **WIDTH** from the menu that appears in the upper right corner.
- Define the width of rectangle value in the dialog.
- Define the left corner point of rectangle base.
- Define the height of rectangle graphically.

**Draw rectangle III.**

- Select the option Define rectangle X/Y size...  
Dialog **Rectangle size setup** appears.



- Type into X and Y fields the adequate values.
- Select the reference point for the placement of the rectangle. **OK**.
- Place the rectangle on the drawing.

**Other options:**

<b>Horizontal</b>	Define rectangle HV
<b>Vertical</b>	
<b>Multiple lines</b>	Define rectangle with multiline.

**13.2.2.5. Polygon inscribed**

The command draws a regular n-sided polygon into a circle of defined centre.

- Define the number of polygon edges (three or more).
- Define the centre point of the regular polygon.
- Define the position of a node.
- Press **Enter** to terminate the command.

**13.2.2.6. Polygon circumscribed**

The command draws a regular n-sided polygon around a circle of defined centre.

- Define the number of polygon edges.
- Define the centre point of polygon.
- Define the position of the middle point of one side.
- Press **Enter** to terminate the command.

**13.2.2.7. Polygon by side**

The command draws a regular polygon. The length of sides and the number of vertices must be defined.

- Define the length of sides of the regular polygon in the appearing dialog then close it with the **OK** button.
- Define the number of polygon edges in the appearing dialog then close it with the **OK** button.
- Place the polygon on the drawing area by its centre point.

**Options:**

<b>ANGLE</b>	Angle of rotation for positioning.
--------------	------------------------------------

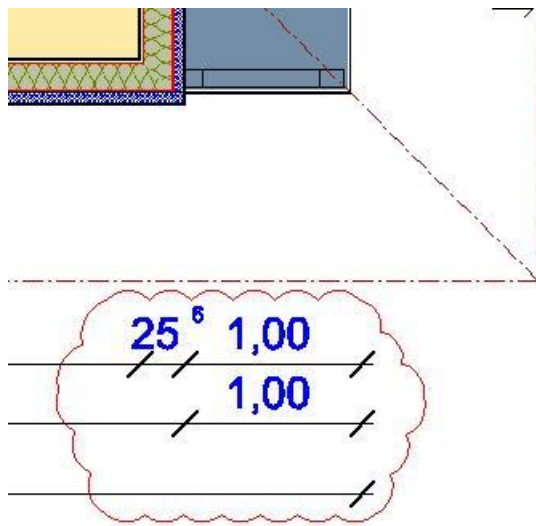
- Place more polygons or close the command with the **Enter**.

**13.2.2.8. Revision Cloud**

Revision cloud is commonly used on drawings to illustrate a design change. The revision cloud is made up of polyline arcs.

Revision cloud works like polygon command:

- Define the start point and the next points of a polygon to create the cloudlike effect.
- Press **Enter** to terminate the command.



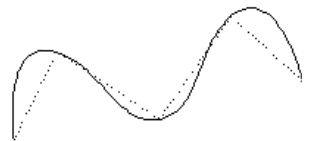
Revision cloud could be used for text and dimension as well. It is a new text frame around attribute selectable from the list of the "No bounding", "Bounding box", "Rounded Bounding box" and "Cloud" frame attribute.

### 13.2.2.9. Spline

The program draws open or closed spline on the given nodes.  
The length of tangent vector at the start and endpoints is 0.

#### **Open spline:**

- Define the first node.
- Define the following nodes.
- Define the control points.
- Press **Enter** to terminate the command.

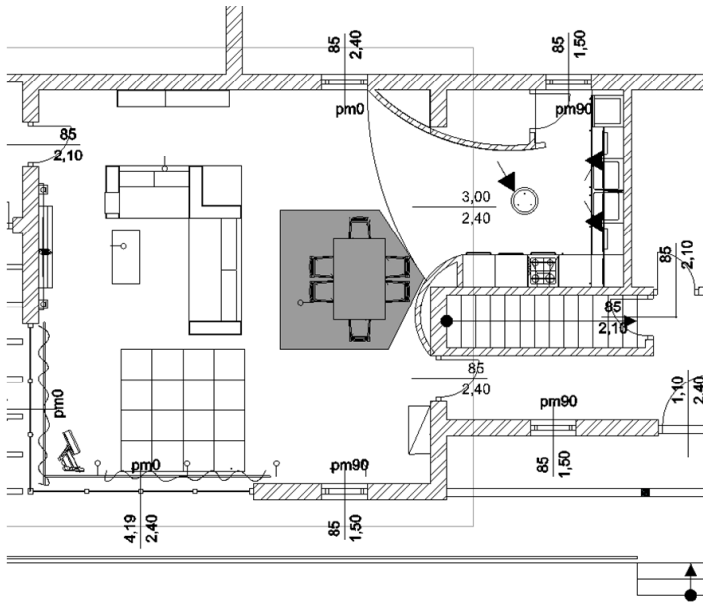


To draw closed spline, choose option **CLOSED** and keep drawing on according to the description.

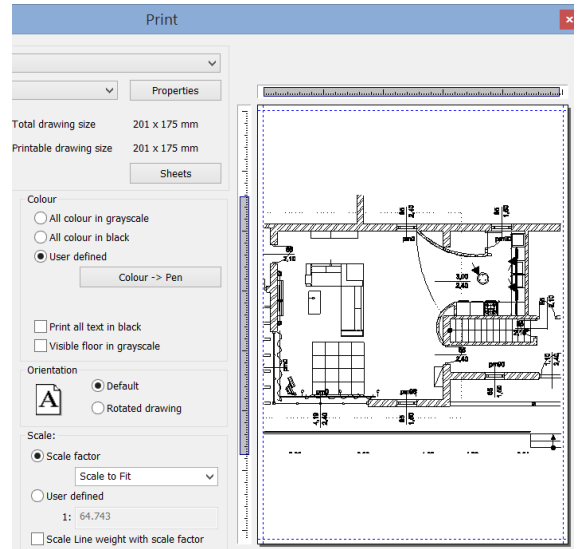
### 13.2.2.10. Wipe out – Blank area to mask objects

Create a polygonal area, called a Wipe out to mask underlying objects with transparent grey colour.  
This area is bound by a frame which can be edited. When printing the objects under the Wipe out object will not be visible on the printing.

Location of the command: **Ribbon Bar - Drafting – Polyline – Wipe out**



Wipe out on the layout

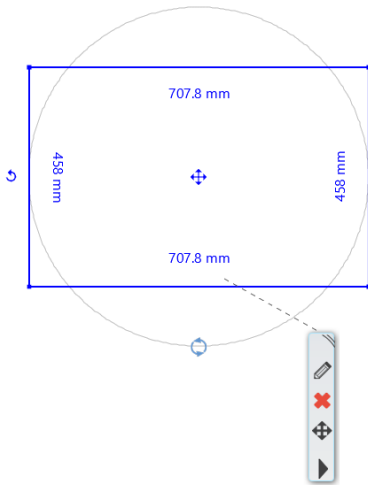


When printing the area is left out

### 13.2.3. Edit polyline

Commands for editing polyline can be accessed in more ways.

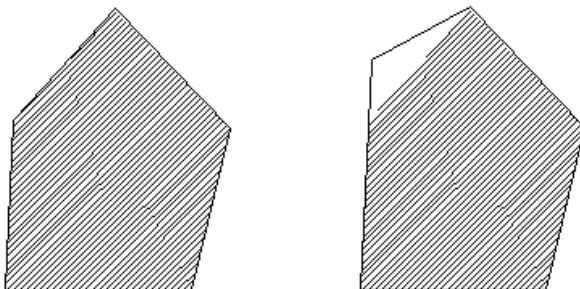
- ❖ In the **Polyline popup menu**: appears when right click on an object.
- ❖ **Graphically**: using grips and controls:



#### 13.2.3.1. Move node in direction

This command modifies the length of a polyline segment. The program adjusts the neighbouring side of the modified side.

- Define the new length of the object, the new node.





### 13.2.3.2. Delete segment

Delete the selected object of the polyline. The program deletes the object that was selected with the right button of the mouse.

### 13.2.3.3. Convert Polyline into Lines

Polyline will be transformed into chain of lines.

- Repeat the command for another polyline or
- Press **Enter** to terminate the command.

### 13.2.3.4. Convert Polyline into Spline

Polyline will be transformed into spline that passes the nodes of polyline.

- Repeat the command for another polyline or
- Press **Enter** to terminate the command.

## 13.2.4. Modify Spline

Commands for modifying can be achieved in more ways.

- ❖ In the **Spline popup menu**: appears when right click on an object.
- ❖ **Graphically**: using grips and controls:

### 13.2.4.1. Delete part

Delete a part of spline between two nodes. The program deletes that object of spline which was picked with the right button of the mouse.

### 13.2.4.2. Closed

Transform an open spline into a closed one.

### 13.2.4.3. Tangent

The line between the cursor and the selected spline node defines the direction of tangent at the selected node.

### 13.2.4.4. Convert Spline into Polyline

Transform the selected spline into polyline using its nodes.

- Select new spline to be transformed or
- Press **Enter** to terminate the command.

### 13.2.4.5. Convert Spline into Polyline by selection

The command transforms the selected splines into polyline. The spline whose popup menu was used to reach the command will not be transformed unless is selected again.

### 13.2.4.6. Convert Spline into Polyline with resolution

The command transforms the spline; the resolution of a single curve can be defined here.

- Define the resolution. The value must be bigger than 2.
- Select the objects.
- Press **Enter** to terminate the command.

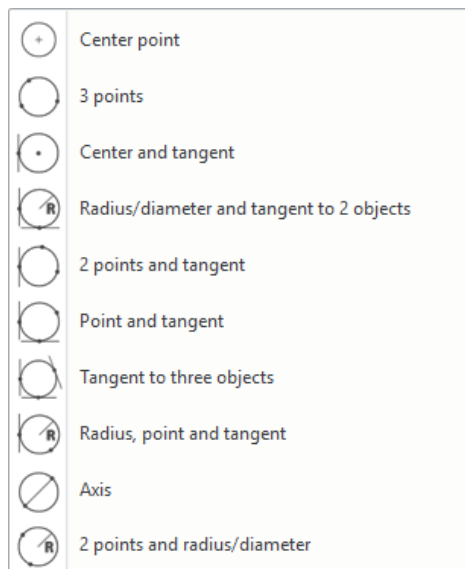
### 13.2.4.7. Convert Spline into Polyline with Bulge resolution

The command transforms the selected spline to polyline and limits the bulges of arc.

- Define the maximum bulge of arc
- Define the proper radius for maximum bulge of arc.
- Select the proper objects.
- Press **Enter** to terminate the command.

## 13.3. Circle and arc

The program draws circles and arcs in anti-clockwise direction.



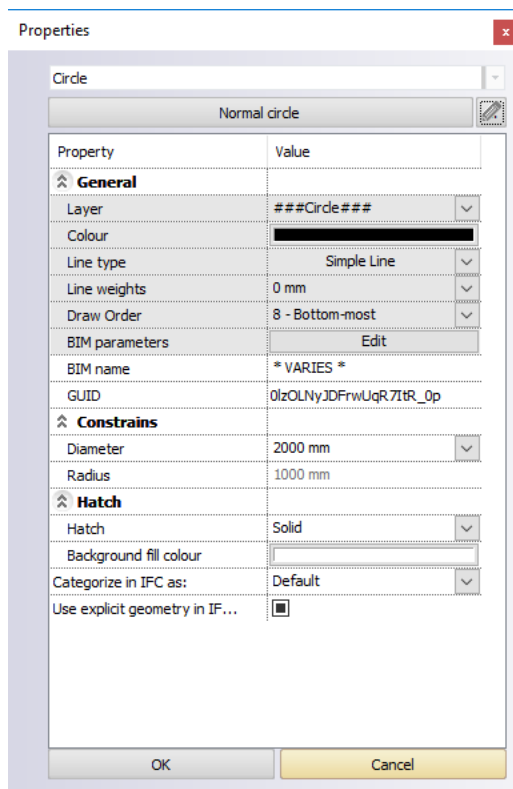
### 13.3.1. Circle and arc properties

Right click on the *Drafting tab Circle tool* or the *Arc tool* or select the command **Ribbon Bar - Drafting tab – Properties – Circle**.

The **Circle properties** dialog appears where the general properties of circle and arc can be set.

#### General properties

Set the general properties of polyline: colour, line width, layer, line type and priority.



**Diameter:** Define the value of diameter.

**Radius:** The program shows the radius value in an info field. It cannot be modified.

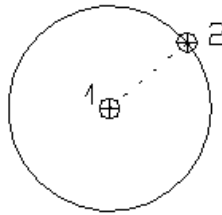
### 13.3.2. Creating circles

Select one of the commands available from the circle group.

### 13.3.2.1. Circle by center point

Defines a circle by its centre point and graphically defined radius.

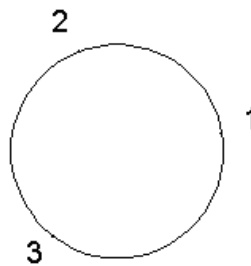
- Define the centre point.
- Define graphically the radius of circle with a point on the circumference.



### 13.3.2.2. Circle with three points

Draws circle by defining three points of its circumference.

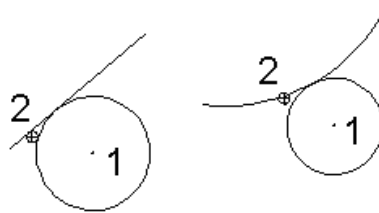
- Define the first point.
- Define the second point.
- Define the third point.



### 13.3.2.3. Circle with tangent

The command defines a circle that has a defined centre and is tangent to an object close to the pick point.

- Define the centre point.
- Define the object tangent to the circle.



### 13.3.2.4. Circle with diameter and two tangents

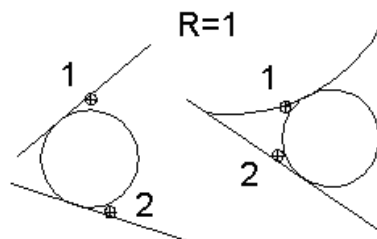
Defines a circle that is tangential to both given objects near the specified points and whose diameter is the actual diameter.

- Select the first object the circle will be tangential to, or

#### Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius

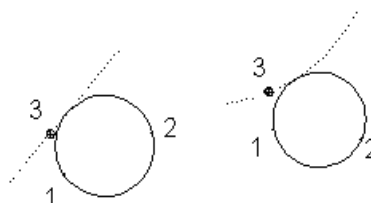
- Select the second object the circle will be tangential to.



### 13.3.2.5. Circle with two points and tangent

This command defines circle that passes through the two given points and is tangential to the given object near the pick point.

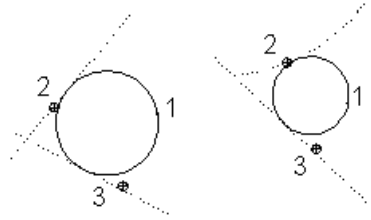
- Define the first point on the circle.
- Define the second point on the circle.
- Define the object the circle will be tangential to.



### 13.3.2.6. Circle with point and two tangents

This command defines circle that passes through the given point and is tangential to both given objects near the specified points.

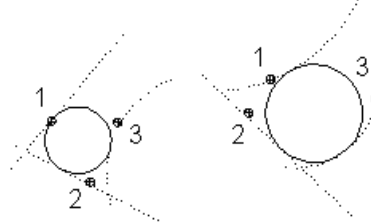
- Define the point.
- Define the first object.
- Define the second object.



### 13.3.2.7. Circle with three tangents

This command defines circle that is tangential to all three given objects near the specified points.

- Define the first object.
- Define the second object.
- Define the third object.



### 13.3.2.8. Circle with diameter, point and tangent

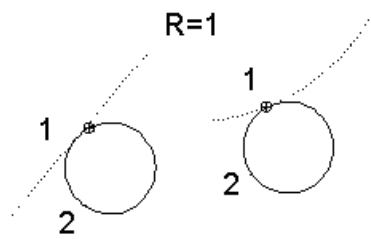
This command defines a circle that passes through the given point, is tangential to the given object near the specified point, and whose diameter is the actual diameter.

- Select the object the circle will be tangential to

Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius

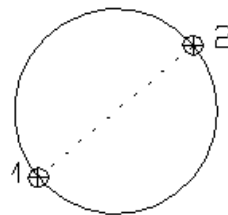
- Define the point.



### 13.3.2.9. Circle by axes

This command defines a circle that passes through two given points, which are the endpoints of the circle's diameter axis.

- Define the first point of diameter.
- Define the second point of diameter.



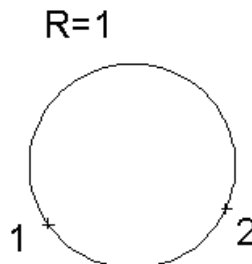
### 13.3.2.10. Circle with two points and radius or diameter

This command defines a circle that passes through two given points and has a given radius or diameter.

- Define the first point of the circle.
- Define the second point of the circle.
- Define the placement, or

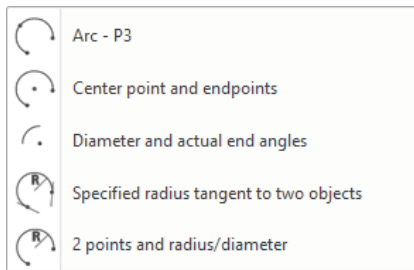
Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius



### 13.3.3. Creating arcs

Select one of the commands available from the arc group.



#### 13.3.3.1. Circular arc with three points

The command draws arc with defined start and endpoints and a middle point or by a defined tangent.

##### *Arc with start, end and middle points*

- Define the first /start point.
- Define the endpoint.
- Define an internal point of the arc or

##### Options:

<b>DIAMETER</b>	Value of the diameter.
<b>RADIUS</b>	Value of the radius.
<b>PERIMETER</b>	The value of arc length.
<b>ARC</b>	Height of segmental arc.

##### *Arch with defined start and endpoints and a tangent*

- Define the first /start point of the arc.
- Select the option **TANGENT** from the menu appearing in the upper right corner.
- Define the tangent with a point.
- Define the endpoint, or

##### Options:

• <b>RADIUS</b>	• Define the radius of arc
• <b>DANGLE</b>	• Define the endpoint of arc of given radius by the value of end angle.

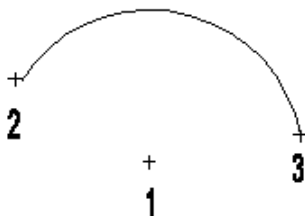
#### 13.3.3.2. Circular arc with centre point and endpoints

Define a circular arc by its centre point and the two endpoints.

- Define the centre point of arc.
- Define the starting point of the circular arc.
- Define the endpoint of the arc graphically in anti-clockwise direction or

##### Option:

<b>BACKWARD</b>	Define the arc in clock-wise direction
-----------------	--



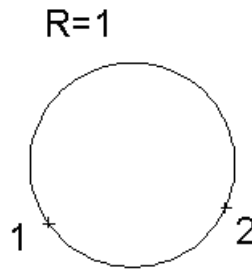
#### 13.3.3.3. Circular arc with diameter and actual end angles

Define a circular arc by its centre point, the actual radius, and the actual start and end angles. Angles are measured in anti-clockwise direction.

- Place the arc with its centre point on the drawing area or

Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius



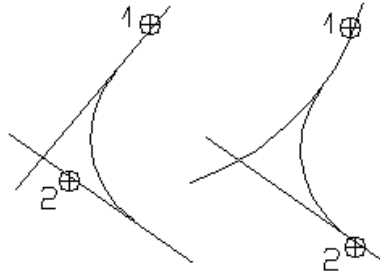
### 13.3.3.4. Circular arc by a specified radius tangent to two objects

The command draws arc with given radius tangent to two objects. The arc ends at the tangent point of the selected objects

- Define the first tangent object.

Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius



- Select the second tangent object.

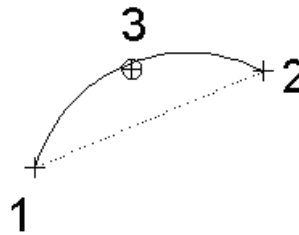
### 13.3.3.5. Circular arc by two points, and radius or diameter

This command defines circular arc between the two endpoints using the actual radius or diameter.

- Define the first endpoint of the arc, or

Options:

<b>DIAMETER</b>	Modify diameter
<b>RADIUS</b>	Modify radius



- Define the other endpoint of the arc.
- Give the position of arc.

### 13.3.3.6. Rounding

Define a rounded corner using the actual radius between two objects.

The program deletes the parts outside the rounded objects and adds parts if it is needed.

Two modes exist to select the objects to rounding:

- ❖ Select both lines to adjust.
- ❖ If you click on the option **INTERSECTION**, the program deletes the line together with the closest line intersecting it.
- Define the radius of the rounding or select the option **PICK UP**, if you refer to the length of an existing object.
- Select the first and the second object for rounding or

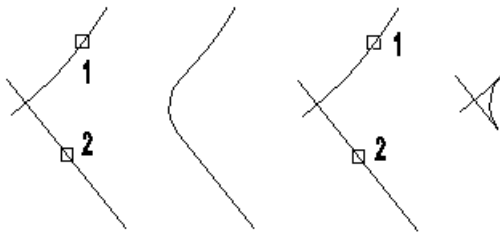
Option:

<b>ANGLESECTION</b>	Select an object to round it with the closest object intersecting it.
---------------------	---

The endpoints of objects closer to the pick point remain untouched.  
Press **Enter** to terminate the command.

Further options:

<b>DIAMETER</b>	Define the value of rounding diameter.
<b>RADIUS</b>	Define the value of rounding angle.
<b>TRIM</b>	Enlarges the lines until their intersection point.



Radius = 1m



It is important where you locate the selection point. The program calculates the rounding according the tangents of the pick point.

### 13.3.4. Modify Circle and Arc

Commands for modification can be accessed in more ways.

❖ In the **Arc Tool**:

**Complement arc**

**Line into arc**

**Arc into circle**

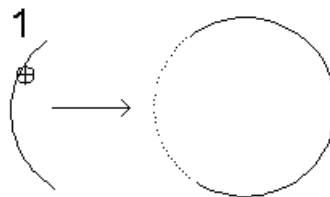
❖ In the **Shortcut menu**: appears when right clicking on an object

❖ **Graphically**: using grips and controls:

#### 13.3.4.1. Complement arc

Defines the complement of the selected circular arc and deletes the selected arc.

- Select the arc.



This command can be used from the **Arc shortcut menu - Complement** as well.

#### 13.3.4.2. Line into arc

Transforms a line into an arc, or modifies the radius of the existing arc while keeping its endpoints.

- Select the line or the arc to modify
- Define a point of arc on the perimeter or

**Options:**

<b>DIAMETER</b>	Value of diameter
<b>RADIUS</b>	Value of radius
<b>PERIMETER</b>	Value of perimeter (length of arc)
<b>ARC</b>	Value of height of the arc

#### 13.3.4.3. Arc into circle

Transform the arc into circle keeping the radius / diameter of the arc.

- Click on the arc you want to transform into circle.



This command can be used from the *Arc shortcut menu - Close (->Circle)* as well.

### 13.3.4.4. Modify Diameter

Modify the diameter of the selected circle/arc.

- Define the value of the new diameter.

### 13.3.4.5. Modify Radius

Modify the diameter of the selected circle/arc.

- Define the value of the new diameter.

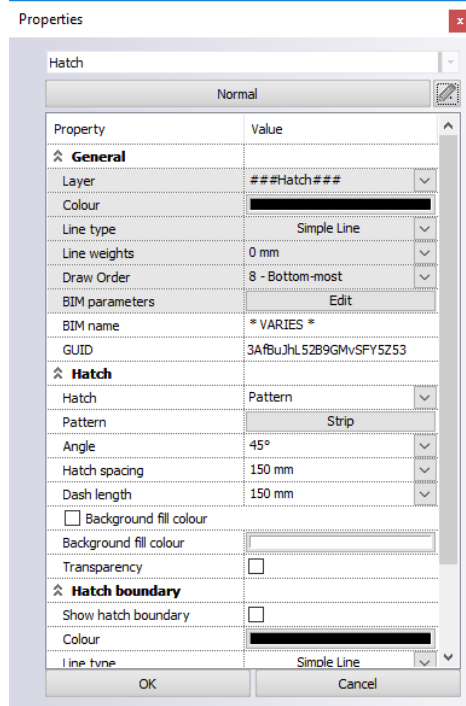
## 13.4. Hatch

With hatch commands you can apply different hatch patterns to enclosed areas.

### 13.4.1. Hatch properties

Before applying hatch to the desired area, set the global properties of hatching.

Right-click on the **Ribbon Bar - Drafting tab - Hatch tool** or select **Ribbon Bar - Drafting tab - Properties- Hatch** command to display Hatch properties dialog.



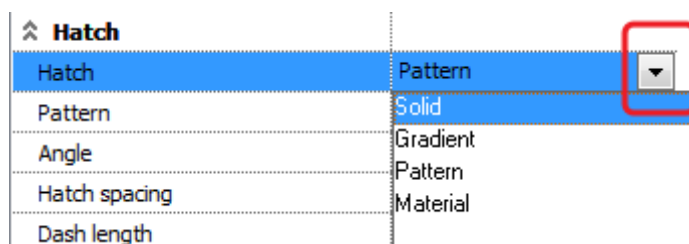
#### 13.4.1.1. Hatch general properties

Set the general properties of the hatch: colour, line width, layer and priority.

#### *Special properties*

The program offers three types of hatches:

- ❖ Normal hatch
- ❖ Gradient hatch
- ❖ Image filled hatch



- ❖ Transparent hatch



This means that both the hatch background colour and the solid hatch are transparent. Transparent hatches always have pale colour.

**Example:**

On site plans there can be a need of merging sites, for example. It can be represented by hatch. At the same time the original state should be represented underneath the hatch, too.

By selecting the *Transparency* option we can resolve the above mentioned task.

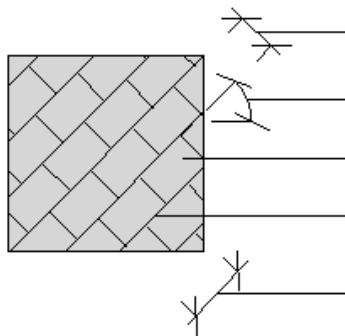


❖ **Hatch boundary**

You can use this option, when you define the contour of the area to be hatched as an imaginary polygon boundary.

**Normal hatch**

- Enable the Hatch option.



Hatch spacing: 150 mm

Angle: 45°

Background colour: grey

Colour: black

Dash length: 250 mm

**Solid hatch**

The hatch can be defined as a solid hatch, too. For this enough to select the *Solid* option.

**Hatch spacing (Y value)**

Define the line spacing of the hatch (in drawing units). The distance between the hatch lines is to be understood perpendicular to the hatch direction (y direction).

**Dash length (X value)**

Define the line spacing of the hatch (in drawing units). The distance between hatch lines is to be understood parallel to the hatch direction (x direction).

**Angle**

Define the direction of the hatch lines in angles (relative to the horizontal direction).

**Name**

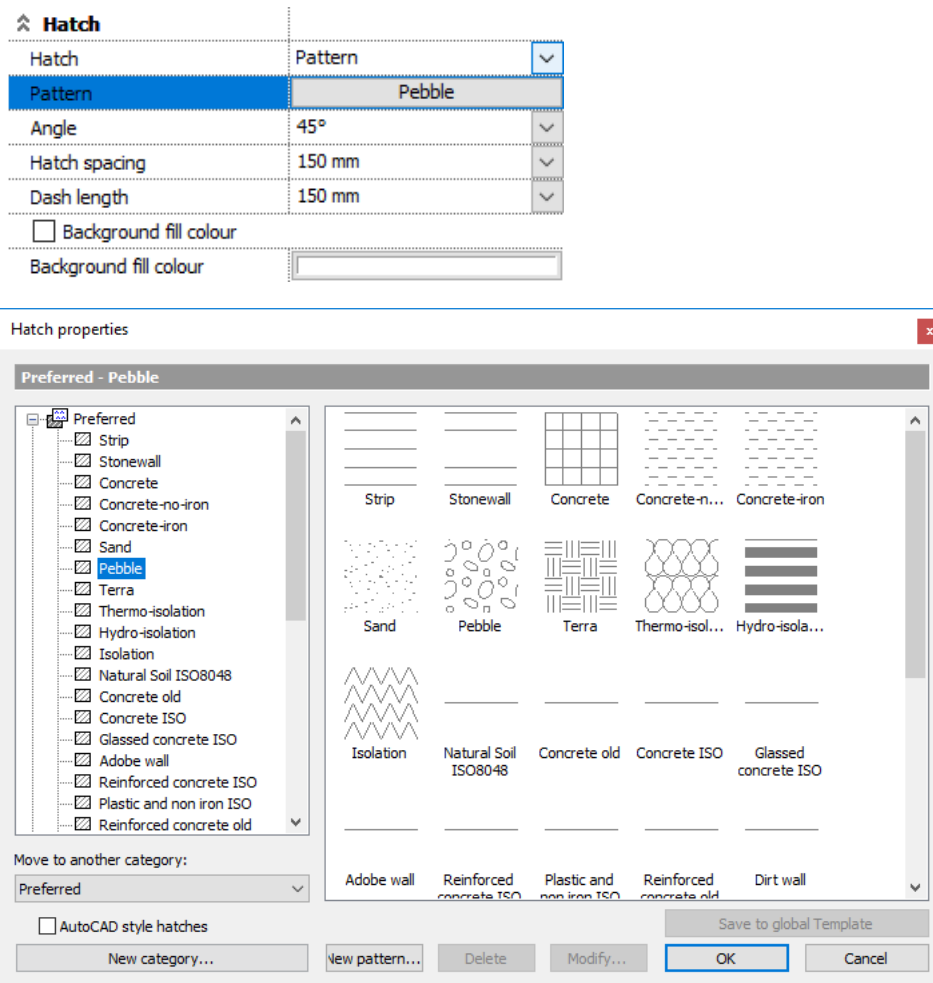
Show you the name of the hatch pattern.

**Background colour**

You can set the background colour for the hatch. By default, there is no background colour.

### 13.4.1.2. Pattern

This command defines the pattern of the hatch. Click on the icon to display **Hatch parameters** dialog. If you click on the name or the image of the hatch, a choice of predefined patterns to choose from appears (architectural markings: brick wall, stone wall, pebbles, etc., patterns: ceramics, wall patterns, etc. The specified hatch spacing and dash length values determine the dimensions of a single unit of the pattern along the two main directions.



#### New category

Enter the name of the new category in the appearing field. The category you created is displayed in the list of hatch categories; you can rearrange the existing hatch patterns between the categories.

#### Move to another category

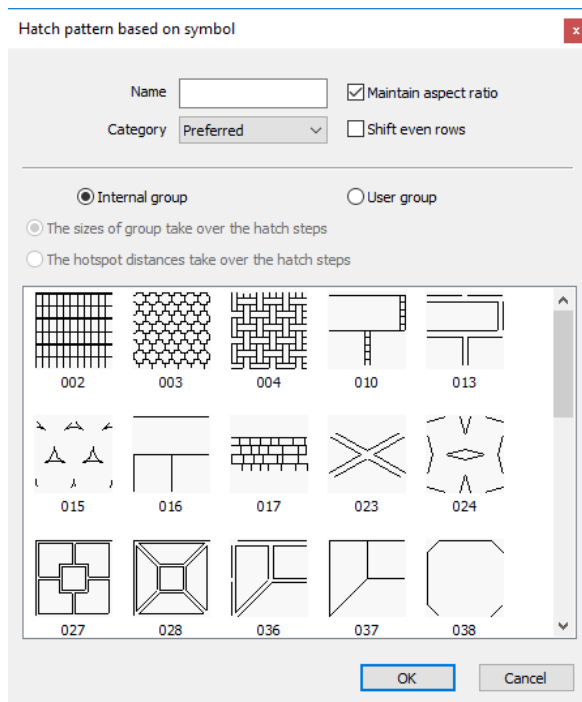
Move a pattern to a selected category. Choose the pattern type you want to move to another category, and then select the desired category from the pull-down list. (The program asks you if you are sure about moving the pattern.)

#### Delete

Delete patterns and categories. The program asks you if you are sure about deleting the selected pattern. Only user defined patterns can be deleted.

**!** Only delete newly created patterns, because this modification will affect all patterns of the same name in the plan, and the patterns in completed plans that have been open also get deleted.

#### New pattern



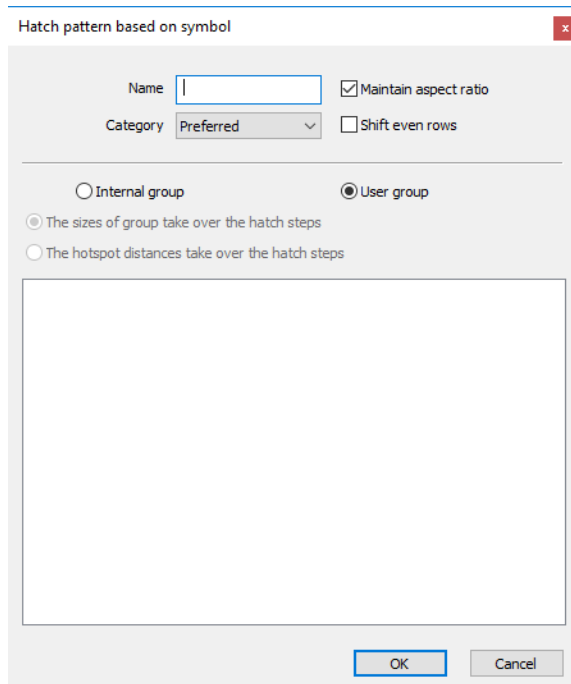
To create new patterns you can use the program's default 2D pattern groups, but there is a possibility to apply user defined patterns (2D groups).

Select the option **Internal group** to display hatch patterns. Choose a pattern and specify its name. Select the category where you wish to place it.

With the command *Keep aspect* command you can display the pattern in its original proportions; the option *Shift even rows* shifts every other row relative to the previous row.

The pattern you defined is displayed in the list of hatches. Consequently, after setting its properties (hatch spacing, dash length, and pattern direction) you can apply it as one of the hatch patterns.

By selecting **User group** those hatch patterns are displayed that you defined with the command *Drafting tab – Create pattern – Create hatch pattern*:



The hatch patterns selected with the abovementioned methods can be used to apply hatch to floor plans (e.g. 2D display of walls), to create precise drawings of front views, for 3D material display and to demonstrate cross-sectional cutting planes.

**Modify**

This command modifies the properties of user defined patterns: name, category, keeping proportions, pattern type etc.

**AutoCAD® style hatches**

In case of importing AutoCAD® drawing, default AutoCAD® style hatches are recognized automatically and handled differently from ARCHLine.XP style hatches. This means that scaling and rotating are the only possibilities for AutoCAD® style hatches, similarly as users can do it in AutoCAD®.

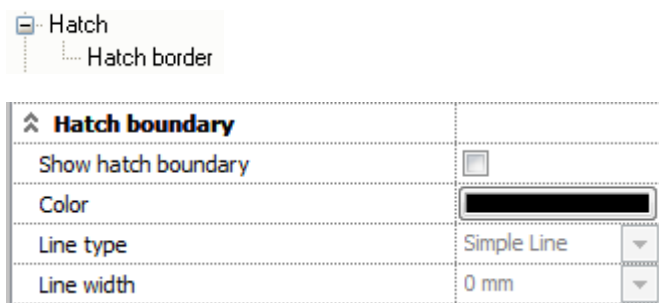
For selecting these hatches switch on the *AutoCAD® style hatches* option.

**13.4.1.3. Hatch boundary**

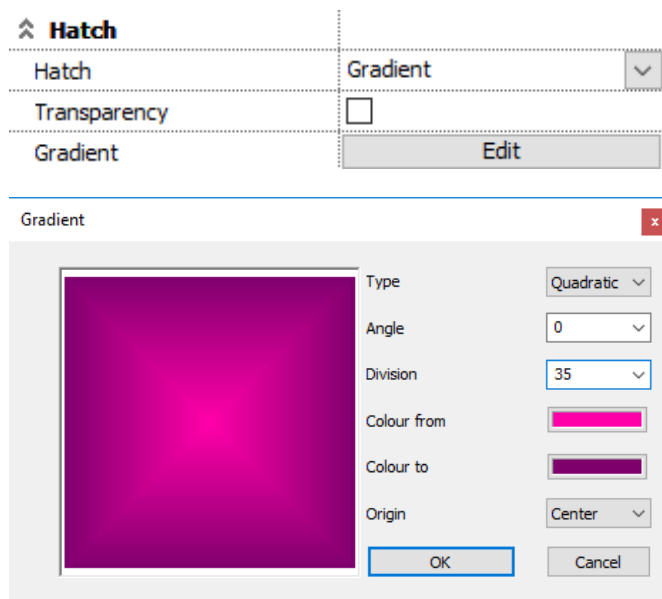
You can set whether to show the hatch boundary or not.

This option can be very useful when adding hatch to an area enclosed by a polygon boundary. The hatch boundary has its own properties.

To set hatch boundary properties you should enable the option Show hatch boundary. Then select the option on the left side of the dialog. In the dialog box appearing you can set the colour, the line type and line width of the hatch boundary.

**13.4.1.4. Gradient hatch**

Enable **Gradient** option in the Hatch properties dialog to specify the properties of shaded hatch:



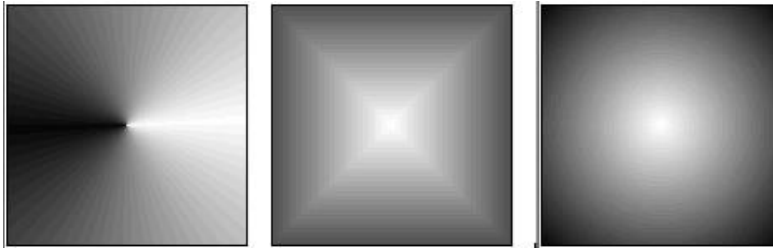
**Type of shading:** linear, centric, conic, quadratic.

**Angle:** defines the direction of the hatch lines.

**Division:** defines hatch density.

**Colour from – colour to:** defines the lightest and the darkest shades.

**Origin:** defines the origin of the light. (This is the focus of the shaded hatching.)



**Type:** Conic                      Quadratic                      Centric  
**Origin:** Centre                      Centre                      Centre



We suggest that you use shaded hatch when you wish to apply hatch to a 2D front view. In this case you can add quadratic shade to the hatch of the glossy window panes. Try it!

### 13.4.2. Hatch types

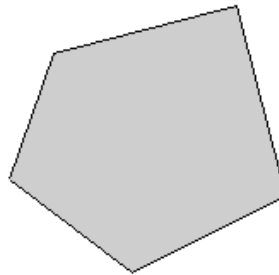
Hatching means filling enclosed areas. With ARCHLine.XP you can fill such areas in the following ways:

- ❖ with homogeneous colour
- ❖ with lines
- ❖ with a predefined pattern
- ❖ with image

#### 13.4.2.1. Filling with homogeneous colour

Fill the selected area with homogeneous colour.

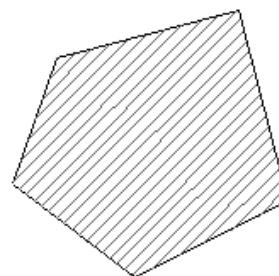
The hatch can be defined as a solid hatch, too. For this enough to select the *Solid* option in the *Hatch properties* dialog.



#### 13.4.2.2. Filling with lines

This is the standard hatch type.

You should set the parameters of the hatch lines (pattern direction) in the dialog box *Hatch properties*.



#### 13.4.2.3. Filling with predefined patterns

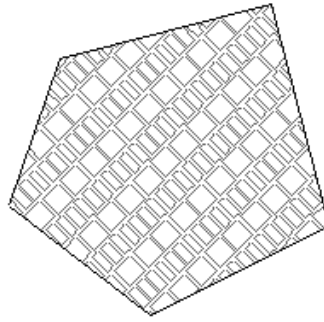
This option fills a selected area with a predefined pattern.

The patterns are basic graphical objects. The program offers 65 patterns to choose from in the dialog box *Hatch properties* – *Pattern* – *Hatch parameters*.

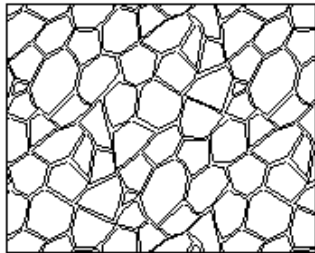
You can modify the dimensions of the pattern.

**X direction:** dash length

**Y direction:** hatch lines



Based on the program's internal pattern groups or on user-defined groups you can also create a predefined pattern.



#### 13.4.2.4. Image filled hatches

In ARCHLine.XP you can use images as filling for hatch areas. This option can be found in the Hatch Properties dialog.

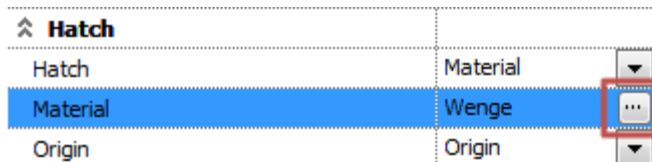
##### **Properties:**

##### **Hatch / Material option**

This setting allows you to set textures as hatch filling.

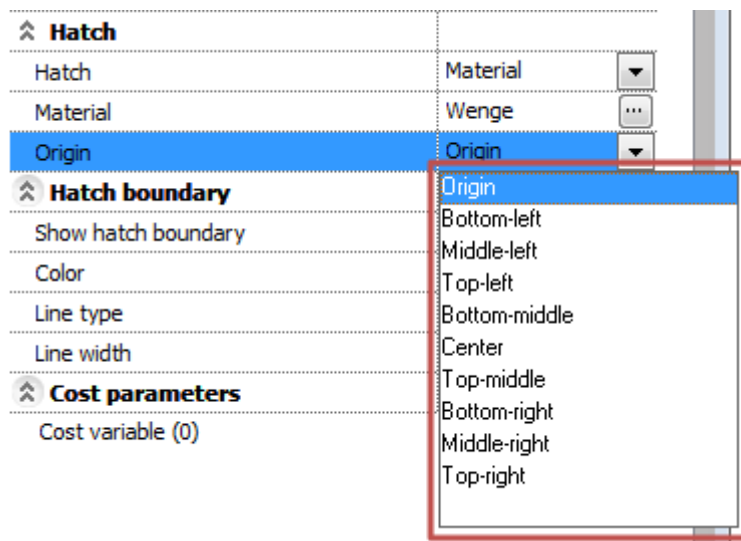
##### **Material setting**

This setting allows you to choose a material from the material library to use it as hatch filling. Click on the browse button to browse and select a material.



##### **Origin**

This setting allows you to set different texture alignment options for the material of the filling.



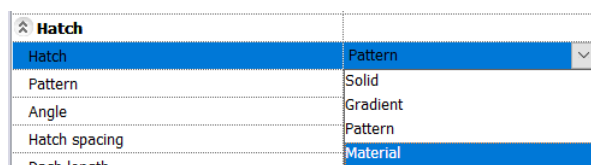
### How to use image filled hatches?

To use image filled hatches select the Material option in the Hatch settings section in the hatch properties dialog window and click on the Modify button at the Material property to select a material.

When a material is selected you can set its distribution origin as well, by using the Origin options.

### Filling a closed polyline or arc

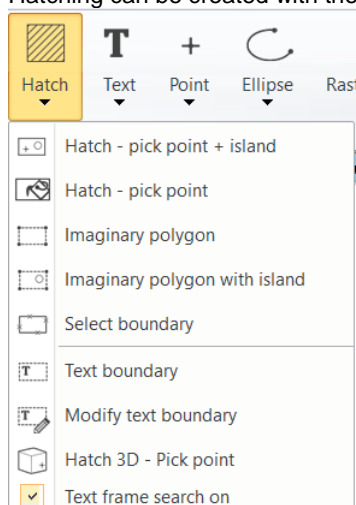
You can fill open or closed polyline, arc or ellipse in your drawing with solid colour, a one- or two-colour gradient fill, hatch pattern and texture. Filling with hatch pattern, you can select any predefined hatch pattern, or your own hatch pattern. Filling with texture you can choose any texture from the material library.



### 13.4.3. Creating hatch

The hatch is an individual drawing object. There is no strong relation between the hatch boundary and the hatch itself. You can delete or modify the object or the chain of objects enclosing the hatch without deleting or modifying the hatch. Of course, this does not apply to the hatch boundary when you add hatch to an area enclosed by an imaginary polygon. The hatching may consist of several, unconnected parts. Hatches created at the same time (e.g. if you select more than one closed contour lines) are considered as one object, so these can be modified together. Therefore, if you wish to modify a hatch, the command will apply to all hatches created at the same time.

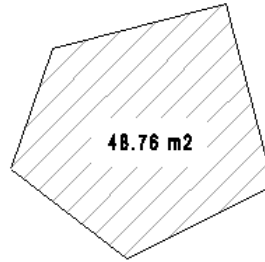
Hatching can be created with the following commands:



### 13.4.3.1. Hatch by Pick point

You can add hatch to a selected, enclosed area. To select the area you only have to click somewhere inside it.

- Select a point inside the area to be hatched.

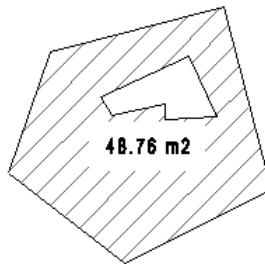


! If you select more than one area, and the area you selected second is an inner chain of the first one, this area will not be hatched.

! Make sure you select that side of the enclosed area where wish to add hatch.

### 13.4.3.2. Hatch by Pick point and island detection

This command hatches a selected, enclosed area. To select the area it is enough to click inside it. Every closed chain of lines (island) inside the area will not be hatched. Island detection only goes one level inside, so the program does not search for islands inside the islands.



- Select the area to be hatched.

### 13.4.3.3. Hatch imaginary polygon

Hatches an area enclosed by an imaginary polygon. You can define this polygon with its apexes.

#### Options:

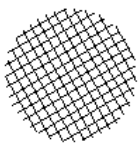
<b>CIRCLE</b>	To define the area to be hatched, you can apply methods used to draw a circle.
<b>SHIFT</b>	You can shift the hatched area to a certain distance relative to the defined polygon.
<b>WIDTH</b>	You can specify the path by a chain of lines and arcs. The value you specified in the dialog box defines the width of the path you wish to hatch.

- Specify the apexes of the polygon. The polygon may contain arcs.
- **Enter** Completes specifying the polygon and connects the first and the last apex.

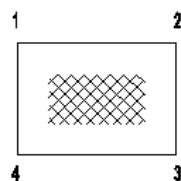
! If you select more than one area, and the area you selected second is an internal chain inside the first area, this area will not be hatched.

#### Example:

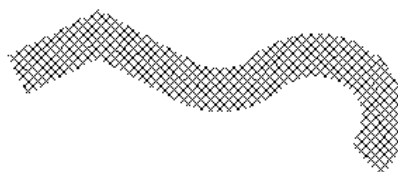
##### CIRCLE



##### SHIFT



##### WIDTH





### 13.4.3.4. Hatch imaginary polygon with island detection

This command hatches the inside of an imaginary polygon, leaving out the closed chain of lines inside it. To define the imaginary polygon, specify its apexes.

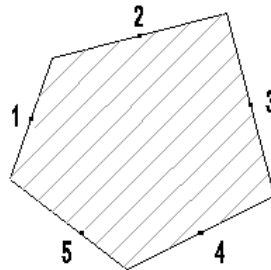


For detailed description see point 11.3.3.3 *Hatch imaginary polygon*.

### 13.4.3.5. Hatch by selecting boundary objects

Hatches an enclosed area whose objects you selected one by one.

- Select the sides of the object to be hatched one by one



! Make sure you select an enclosed area. The intersecting parts of the areas to be filled behave like islands and remain without hatch. You can select the objects clockwise or anti-clockwise, but you must follow a sequential order.

### 13.4.3.6. Hatch 3D surface by Pick point

With this command:

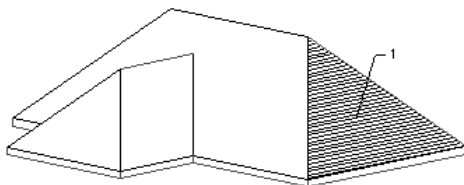
- ❖ You can add hatch to a selected 3D plane. To do so, you have to specify the origin and the direction of the hatch.
- ❖ You can delete a 3D hatch.

#### **Hatching 3D planes:**

- Select the plane of an object, which you wish to hatch.
- Define the origin of the hatch on the selected plane.
- Specify hatch direction.

#### **Option:**

<b>ENTER</b>	The direction is the local 3D x-axis.
--------------	---------------------------------------



#### **Deleting 3D hatches:**

- Select **DELETE**.
- Select the plane from which you wish to delete the hatch.

### 13.4.3.7. Hatch 3D surface by Pick point and island detection

With this command:

- ❖ You can add hatch to a selected 3D plane, while the islands remain without hatch. To do so, you have to specify the origin and the direction of the hatch.
- ❖ You can delete a 3D hatch.



For detailed description see point 11.3.3.6. *Hatch 3D surface by Pick point*.

### 13.4.4. Editing hatch

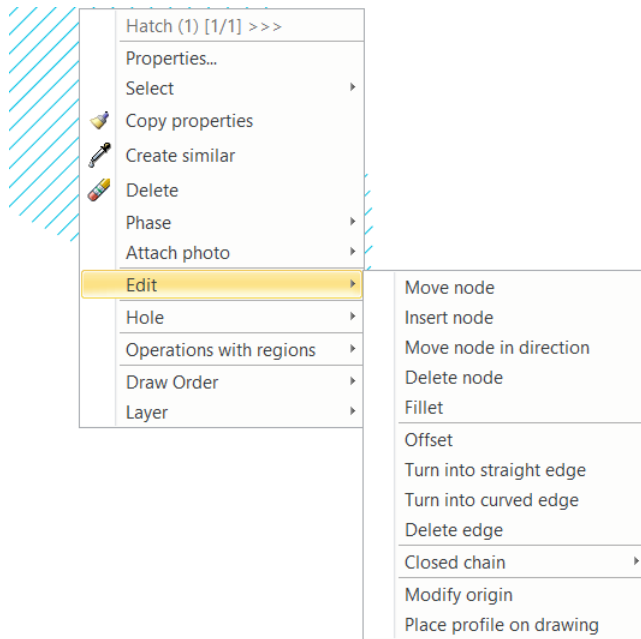
Hatch editing commands can be enabled from the following locations:

- ❖ **Hatch tool:**



Text boundary  
Modify text boundary

❖ **Shortcut menu:**



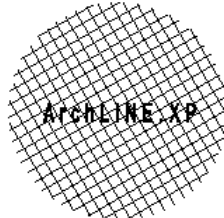
### 13.4.4.1. Text boundary


The icon works as a button, which you can turn on or off. If you enable the option Text boundary, the program creates a boundary in the hatch pattern for the measurements, arrows and texts so that these are easier to read.

**Text boundary ON**



**Text boundary OFF**



! If you wish to create a boundary for texts, measurements or objects that are already hatched, apply the icon  **Modify text boundary.**

### 13.4.4.2. Modify text boundary

Modifies the text boundary created in a hatch pattern for texts, measurements or objects:

- ❖ Deletes the boundaries in the hatch pattern created for the selected objects.
- ❖ Creates new boundaries in the hatch pattern for the selected objects.
- ❖ Deletes all boundaries created in the hatch pattern and creates new ones when necessary (e.g.: if the measurements of the object is modified), so it refreshes the hatch.

**Deleting the text boundary from the hatch pattern:**

- Select **DELETE**.
- Select the appropriate text boundaries in the hatch that you wish delete.
- **Enter** Deletes the selected text boundaries.

**Option:**

<b>ALL</b>	Deletes all text boundaries. Select the hatch from which you wish to delete all text boundaries.
------------	--

**Creating new text boundaries:**

This command creates new text boundaries for the selected objects. Cuts out a rectangular area from the hatch pattern around the selected object.

- Select **INSERT**.
- Select the hatches on which you wish to create new text boundaries.
- **Enter** Completes the selection.
- Select the texts, measurements or objects around which you wish to create a rectangular boundary in the hatch pattern.
- **Enter** Creates the new text boundaries and completes the selection.

**Refreshing the hatch:**

- Select REGENERATION.
- Select the hatches on which you wish to create the necessary text boundaries.
- **Enter** Completes the selection.
- **Enter** Completes the command.



See 13.5.1. *Text boundary* for more details.

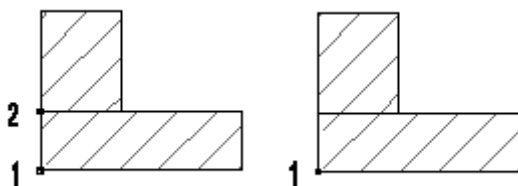
After the hatch is created you can modify it using the *Shortcut menu - Modify hatch origin* command

**13.4.4.3. Modify hatch origin**

With *Shortcut menu - Modify origin* command you can modify the origin of the selected hatch and shift the hatch pattern on the selected area.

By default the hatch global origin is the 0 0 point on the drawing.

- Specify the new origin of the hatch.

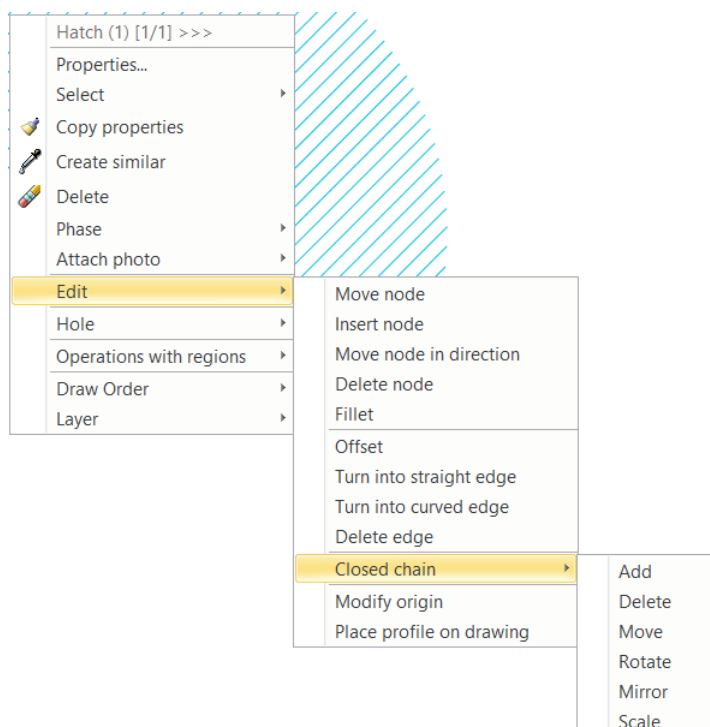


Different origins

Same origin

**13.4.4.4. Editing hatch contour**

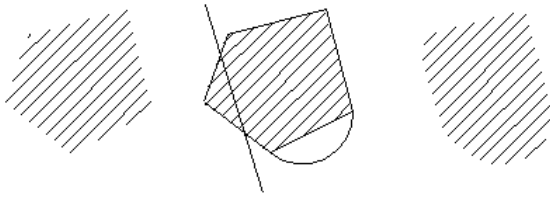
With the commands *Shortcut menu - Edit* and *Closed chain* you can edit the hatch contour:



With the commands in Closed chain it is possible, for example, to create „holes” in a hatch pattern.

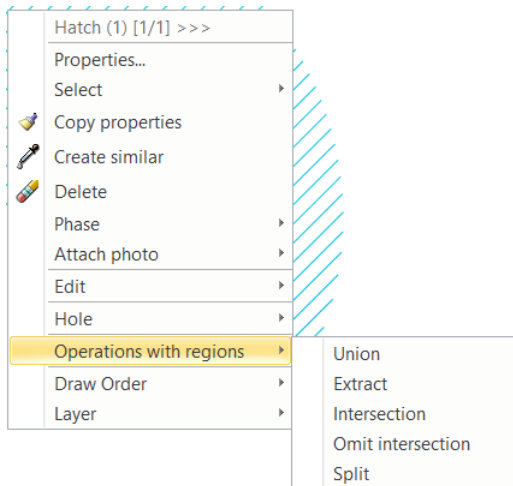


For a detailed description see Chapter 8.9.9 *Editable profile*



### 13.4.4.5. Operations with regions

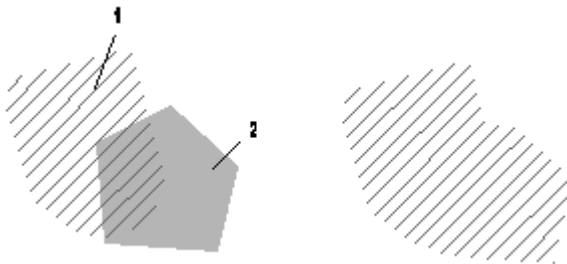
With the commands of the *Shortcut menu – Operations with regions* you can unite or extract hatches, add hatch to the common part and omit this part from the hatch:



#### Union

Unit the selected hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches to be united, or the closed objects whose contours you wish to unite for hatching.
- **Enter** Completes the selection and unites the hatches.



#### Extract

Extract one from the other of the selected hatches. Select a hatch and the program extracts from this the hatches selected afterwards.

- Select the hatches to be extracted.
- **Enter** Completes the selection.



### **Intersection**

Create a common part (intersection) of the selected hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches or closed objects whose intersection you wish to create.
- **Enter**      Completes the selection.



### **Omit intersection**

The program creates the „symmetric difference“ of the selected hatches. This means that it produces a common part, and then omits it from the union of the hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches or closed objects whose symmetric difference you wish to create.
- **Enter**      Completes the selection.



## **13.5. Text**

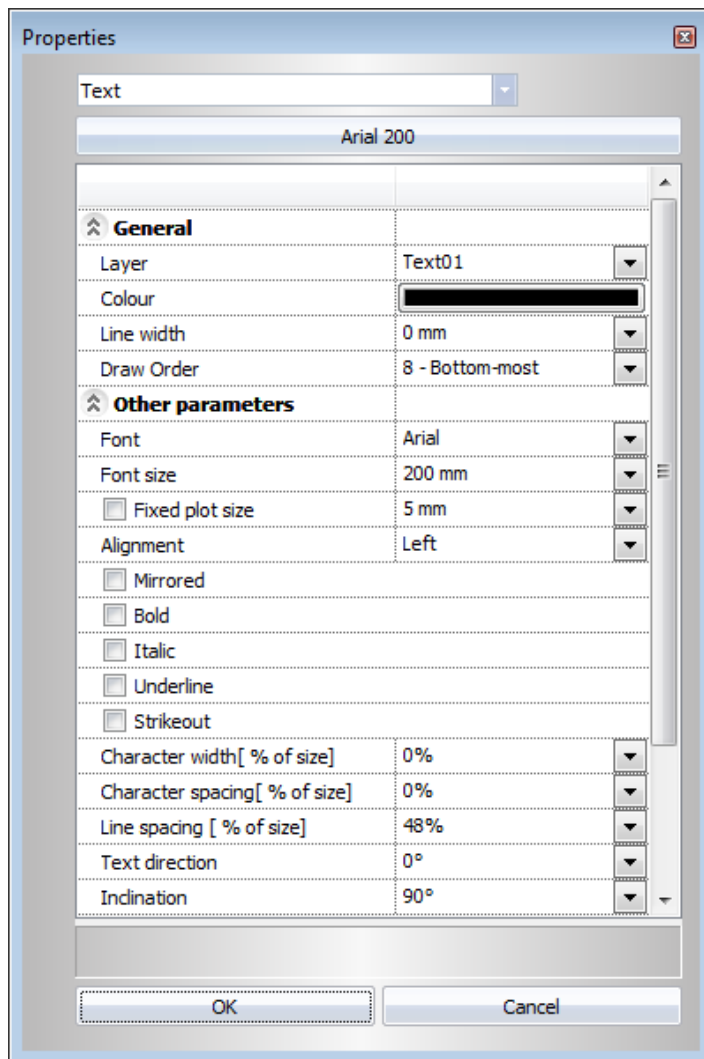
With the commands of the Text set, you can create texts at specified places applying the current text properties. The text can be multiline text – you may type it in or insert it into the Windows clipboard.




In the case of large drawings, inserting several texts in the drawing may slow down the redrawing process. To eliminate this, you can replace the texts by their bounding boxes.

### **13.5.1. Text properties**

Before inserting texts, set the text general properties.



To do so, right-click the Drafting Toolbox –  **Text** tool or select the **Drafting menu - Properties – Text** command. The **Text properties** dialog box appears.

### General properties

Define the general properties of the text: colour, line width, layer and priority.



See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

### Font

You can select the Windows True Type fonts, specify the style (Regular, Italic, Bold, Bold Italic), and the character height. This parameter defines the height of the character cell in the text.

### Alignment

By this command you can specify the current justification in the case of a multiline text.

- Select an option from the list:

<b>Left</b>	Left alignment
<b>Centre</b>	Centre alignment
<b>Right</b>	Right alignment

### Mirrored

This command allows you to mirror texts.

- Select an option from the list:

A B C D E F      F E D C B A

**OFF**

Inserts a legible text

**ON**

Inserts a mirrored text

**Style**

By activating the *Strikeout* option, the text will be stroked out, whereas you can underline the text if you turn on the *Underline* option. You can also specify whether you want a bounding box to enclose the text, and whether it should be rectangular, circular or cloud.

**Bounding**

The distance between bounding box and the text can be specified as a per cent value relative to the character height.

0 %

ARCHLine.XP

ARCHLine.XP

100 %

ARCHLine.XP

ARCHLine.XP

**Character width**

This setting defines character width relative to character height (percentage). By setting extreme values for this property, you can create very wide or very narrow characters.

**Character gap**

In this field, you can specify the spacing between characters. The setting defines spacing value relative to character height (percentage).

ARCHLine.XP 2005      0%

ARCHLine.XP 2005      31%

ARCHLine.XP 2005      60%

**Text direction**

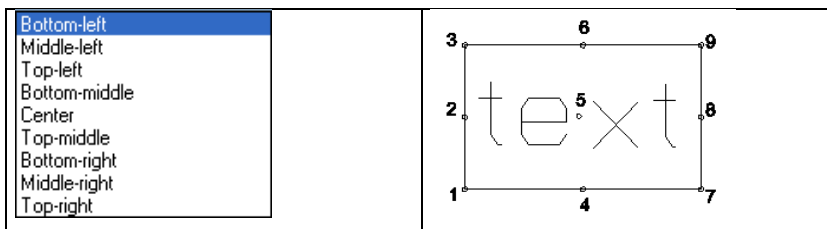
Here you can set the current text direction. If you set 0, the text will be horizontal, while a value of 90 results in a vertical text.

**Gap between lines**

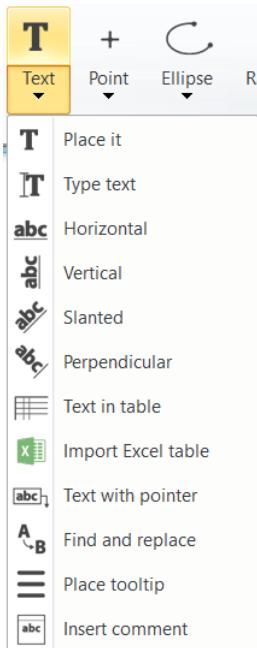
Here you can set the distance between the lines. The value of line spacing is interpreted relative to character height (percentage).

**Origin**

This command defines the origin of the text. If, for example, you choose the *bottom-left* option, the text will be inserted at the selected point by its bottom-left corner.

**13.5.2. Creating texts**

You may insert texts using the following commands:



### 13.5.2.1. Place it

Using this icon you can insert a text.

- Define the place of the text in the drawing.

### 13.5.2.2. Type text

Using this command allows you to type a text directly in the drawing area. You can start a new line by pressing the **Enter** key.

- Specify the place of the text.
- Type the text.
- **Esc** Ends the command.

### 13.5.2.3. Horizontal text

The command inserts the current text horizontally at the defined point.

- Specify the place of the text.

### 13.5.2.4. Vertical text

The command inserts the current text vertically at the defined point.

- Specify the place of the text.

### 13.5.2.5. Slanted text

Inserts the current text slanted by a specified angle.

- Define the angle of the slanted text.

**Options:**

<b>PICK UP</b>	Applies an angle similar to that of the drawing object.
<b>Type the value...</b>	Numerically defined angle

- Define the place of the text.

### 13.5.2.6. Perpendicular text

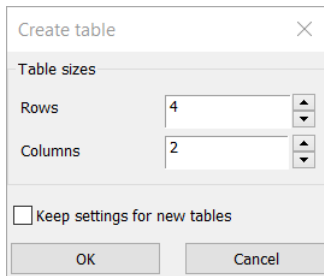
The command inserts the current text perpendicular to the selected object.

- Select the perpendicular object.
- Specify the place of the text.
-



### 13.5.2.7. Text in table

You can create a table by describing the columns and rows the table is going to have.

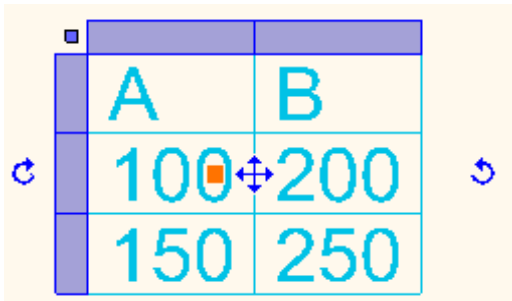


When the *Keep settings for new tables* are on, the current column and row number will be the new default value.

Now you can place the new text table with empty text fields.

#### Table text editing commands

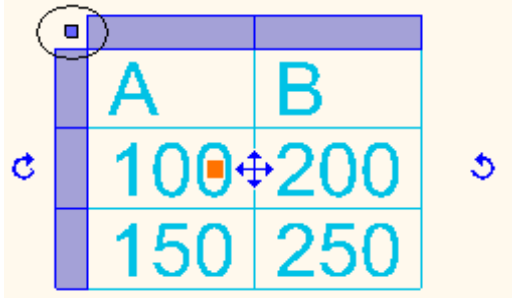
Select the table on the drawing with a left click to change its content or properties.



The text table management tools are linked to markers.

#### Table text properties

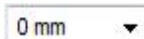
If you click on the top left square marker you can modify the table text properties with the following dialog box.



Border line



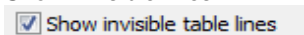
Border line width



Border line colour



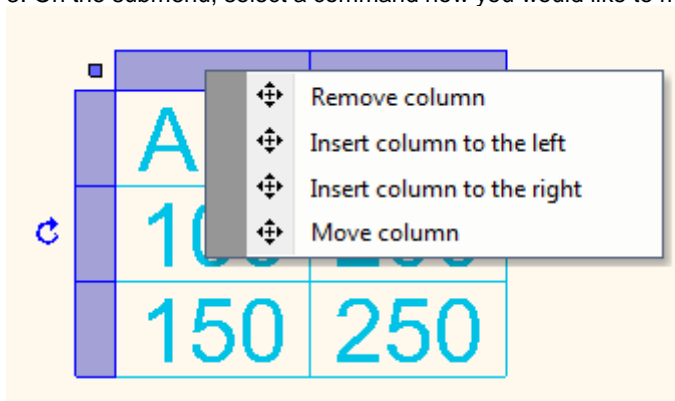
Show invisible lines



#### Table text - Edit column

To edit a column in a table text, follow these steps:

- 1. Select the table
- 2. Click the blue field above the column
- 3. On the submenu, select a command how you would like to modify the column.



### **Remove column**

Select the column to be deleted.

### **Insert column to the left**

Insert a new column to the left of the column that is selected

### **Insert column to the right**

Insert a new column to the right of the column that is selected.

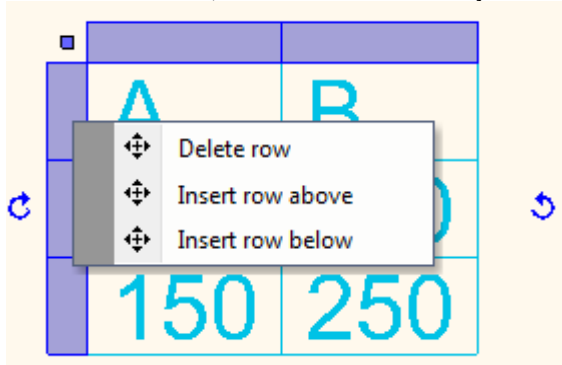
### **Resize column**

You can resize the width of a column with dragging the right line at a new position, and the column to the left of the line that is dragged, is resized. The part of the table to the right of the column that is resized will be repositioned (and not resized).

### **Table text - Edit row**

To edit a row in a table text, follow these steps:

- 1. Select the table
- 2. Click the blue field left to the row
- 3. On the submenu, select a command how you would like to modify the column.



### **Delete row**

Select the row to be deleted.

### **Insert row above**

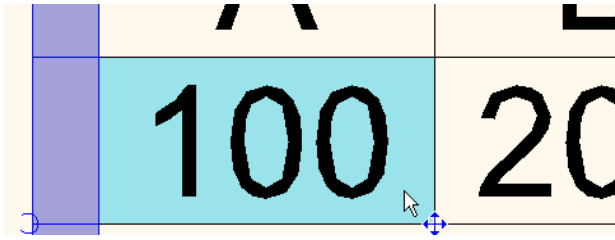
Insert a new row to the top of the row that is selected.

### **Insert row below**

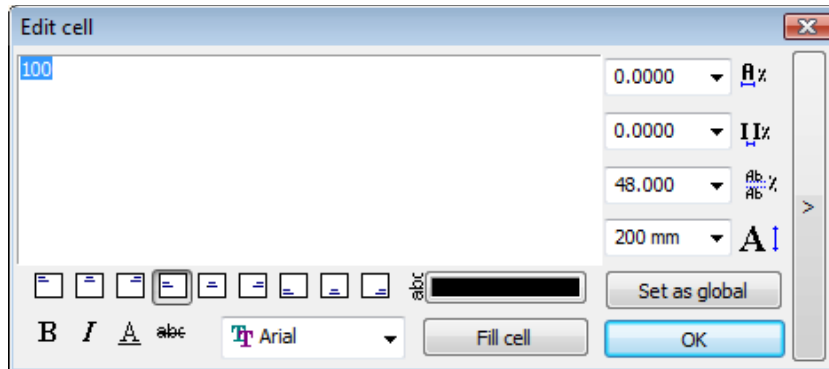
Insert a new row to the bottom of the row that is selected.

### **Edit fields**

You can edit a cell by selecting an existing table and click inside the cell.



This dialog box can be used to control the following settings:



### Input field

When you press the Fill cell button, the text input is updated into the selected cell. Each field can be a multiline string. Alignment of columns and rows are handled dynamically.

### Cell Alignment

It determines the vertical and horizontal position of the text within the cell:  
Left aligned text, right-aligned text or centred text



### Effects

The effects property is used to specify text as bold, italic, underline or strikethrough.

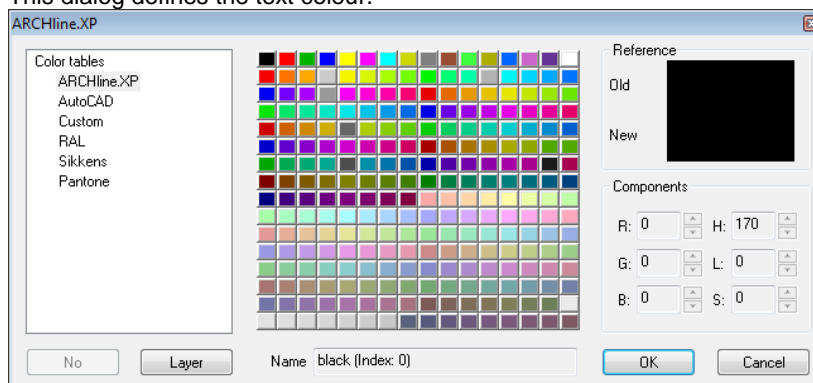


### Font names

Choose from the list of font family names installed on your operating system.

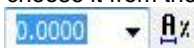
### Colour

This dialog defines the text colour.



### Font width

You can change the font width. The value of font width is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list.



### Character spacing

You can change the spacing between characters. The value of character spacing is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list.



### Line spacing

You can change the spacing between lines in case of multiline texts. You can stretch or compress an entire multiline text to make it fit and look the way that you want it to. The value of line spacing is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list



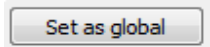
### Font size

You can specify the font size in mm. Negative values are not allowed.



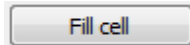
### Set as global

Set as global button applies all text formatting properties of the selected cell to the whole text table.



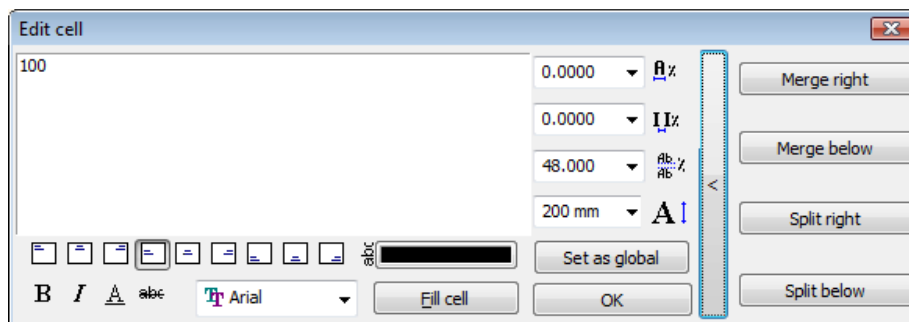
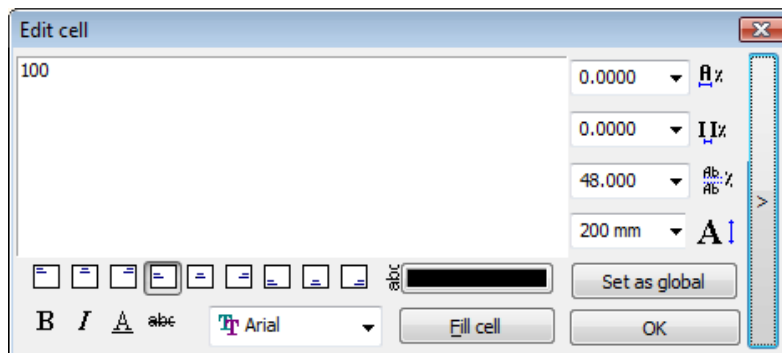
### Fill cell

Fill cell button applies text changes of the selected cell. The changes are applied immediately and there is no need to close the dialog with OK button.



### Merge cells into one cell in a table

You can combine two or more [cells](#) in the same row or column into a single cell. Press the „>” long vertical button to make the options visible.



### Merge right

Select the cell you want to merge to the right. The contents of the cell to the right will be deleted.

A	B
100	200
150	250

A	
100	200
150	250

Before merge

Merge

**Merge down**

Select the cell you want to merge to the cell below. The contents of the cell below will be deleted.

A	B
100	200
150	250

Before merge

A	B
100	200
	250

Merge

**Split right**

Select the cell you want to split to the right. The new cell will be empty.

A	
100	200
150	250

Before split

A	
100	200
150	250

Split

**Split below**

Select the cell you want to split to the below. The new cell will be empty.


A	B
100	200
	250

Before split

A	B
100	200
	250

Split

**13.5.2.8. Text with pointer**

You can insert the text with an arrow pointing in a specific direction. 

The pointer consists of a chain of segments (not more than two segments), which ends in an arrowhead.

You can select the object at which you want the text to point.

**13.5.2.9. Find and replace**

Using this new tool you can find and replace texts. Special characters can also be used to extend search. Click on Drafting menu – Text – Find and Replace command.

**Search**

Type the text into the search field.

**Replace**

Type the text you would like to use as replacement of the search result when Replace or Replace all is pressed.

**Match case**

The search can be set as case sensitive with this option. Otherwise the software won't make difference between uppercase or lowercase characters.

**Search hidden layers**

Enable this option if you want to extend the search for hidden layers also.

**Find next**

Push this button if you want to begin or continue the search for the next possible match.


**Replace**

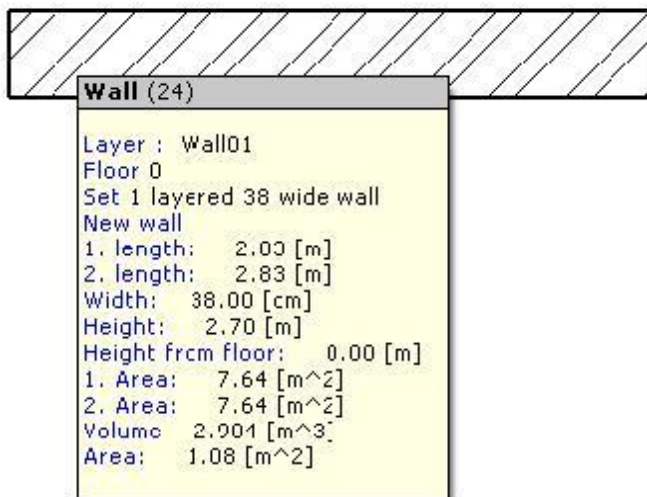
Click on Replace to replace the result of search by the text given in the replace field.


**Replace all**

Click on Replace all to replace all the results of search by the text given in the replace field.

**13.5.2.10. Place tooltip text**

The  icon in the Text tool menu allows you to place tool tips in the drawing. We mean those tool tip information tables, which will appear when you drag the mouse pointer over a given architectural object. In the case of wall, for example, the followings will be displayed in the tool tip:




- After clicking the  icon, select the object about which you want to place a tool tip information table in the drawing.
- Insert the table with the mouse:

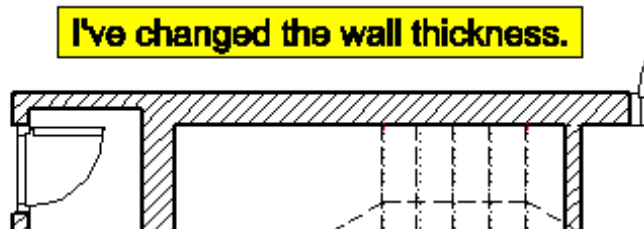
**!** The inserted tooltip table is still linked to the selected object, i.e. it follows the modifications of the object.

Wall (8)	
Layer :	Wall01
Floor :	0
Set :	1 layered 38 wide wall
New wall	
1. length:	5.81 [m]
2. length:	5.81 [m]
Width:	38.00 [cm]
Height:	2.70 [m]
Height from floor:	0.00 [m]
1. Area:	15.69 [m <sup>2</sup> ]
2. Area:	15.69 [m <sup>2</sup> ]
Volume:	5.961 [m <sup>3</sup> ]

### 13.5.2.11. Insert comment

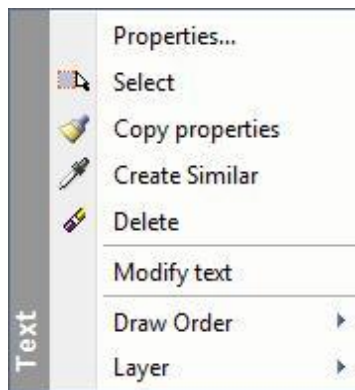
Comments, that are not visible on the printed document, can be placed on the drawings in a yellow label. The label should be a rectangle.

- Click Text -  Insert comment icon.
- In the appearing text input dialog enter the comment you want to place. Ok.
- Click the object to which you want to connect your comment. In that case the comment will be connected to the object. Moving or deleting the object will move or delete the connected comments as well. If you just want to place a comment without connecting it to an object, click the right mouse button (or press Enter).
- Place the text on the drawing.



### 13.5.3. Modify texts

When you right-click the text, the **Text shortcut menu** pops up which contains the following modifying commands:



#### 13.5.3.1. Modify text

You can modify the selected text without changing its properties.

- The *Text actual* dialog box appears where you can modify the selected text.



You may also modify a text by double-clicking it and pressing the 'text' button at the bottom of the appearing *Properties* dialog box. Again, the *Text actual* dialog box will pop up.

Text Table allows you to create and edit group of texts in a formatted way. In this release the text table management tools are linked to markers.

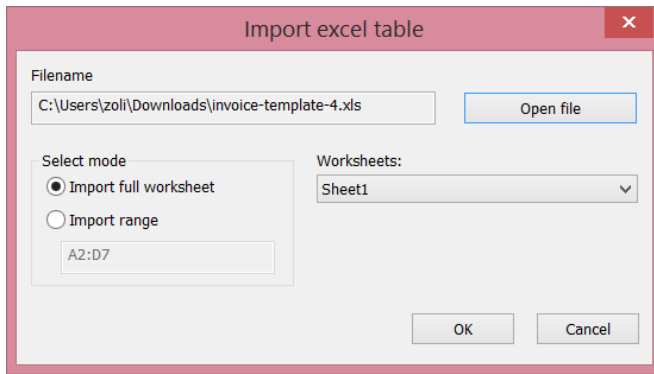
### 13.5.4. Importing Excel spreadsheet tables

Data can be imported from Excel worksheets as text table into ARCHLine.XP 2017.

By importing an Excel spreadsheet, you can include information from an entire worksheet, or part of a worksheet, referred to as a named range.

Start the command from File menu - Import – Excel Table or Drafting menu- Text- Excel table. In the dialog window "Import Excel table" follow these steps:

- Click on "Open file" and select a file with .xls or .xlsx extension.
- In the **Worksheets** drop-down list you can see the names of sheets in the selected Excel file. Select a worksheet.
- Choose " Import full worksheet" option or
- Choose " Import range" option, then specify that range of cells on the Excel worksheet you want to import (e.g. C4:G36)
- Press "OK"
- Place the table to right place by moving your mouse.



The import keeps all characteristics such as height, type, colour, alignment, but loses cell properties such as borders, fill colours.

*Excel spreadsheet tables are linked to the original Excel file. It means if a linked spreadsheet has been changed, such as a row or column has been added, the table in ARCHLine.XP drawing can be updated accordingly.*



**NOTE:** The XLS file is only linked but not embedded. If the Excel .XLS file path is not available for any reason on the computer that is performing the data extraction, a data link cannot be established.

### Update Excel file

The content of the linked Excel table can updated by selecting the command "Update Excel" in the appearing local menu. It may change the size of the table.

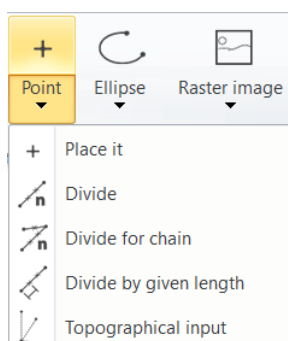
<b>Wall list</b>			
<i>ID</i>	<i>Style</i>	<i>Picture</i>	<i>Width [m]</i>
1	1 layered 38 wide wall		0.380000
<i>Name</i>	<i>Value</i>	<i>Description</i>	<i>Categorize in IFC as:</i>
ARCHline.XP Common			
Name		IFC name of the object	IfcLabel
Description		Description of the object	IfcLabel
Manufacturer		Manufacturer	IfcLabel
ArticleNumber		ArticleNumber	IfcLabel
Price		Price	IfcLabel

### Open Excel

You can always open the linked Excel file if you select "Open in Excel" from the local menu of table.


## 13.6. Point

The commands of Point Tool define points:






### 13.6.1. Point properties

Before placing a point set the global properties. Right click on the Drafting toolbox -  **Point** tool, or select the command *Drafting menu - Properties – Point*. **Point properties** dialog appears where the general and special properties of the point can be set.

#### General properties

Define the general properties of the point: the colour, the line width, the layer, the line type and the priority.

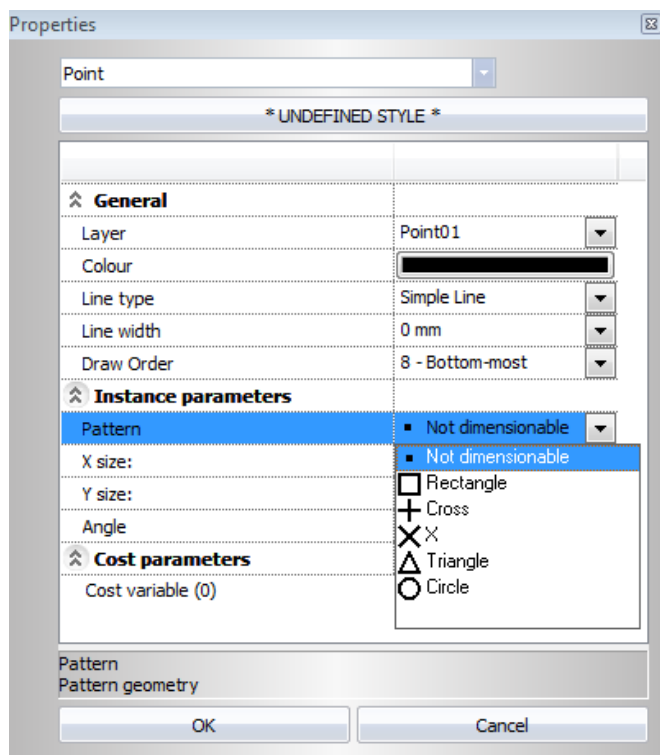
General	
Layer	Point01
Color	
Line type	Simple Line
Line width	0 mm
Draw Order	8 - Bottom-most



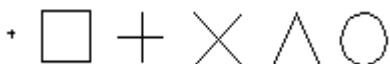
See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

#### Special properties

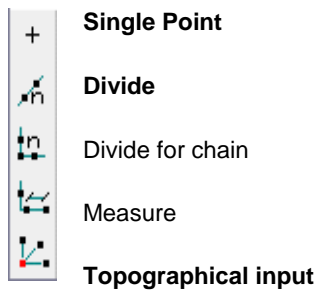


You can define the representation type of the point and besides the first symbol it is possible to define the width, length and the direction of it.



### 13.6.2. Creating points

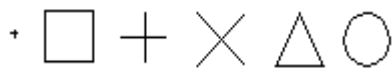
The following point construction commands are available:



### 13.6.2.1. Point

Left clicking on the *Point* icon the program places a point at the specified place.

- Define the coordinates of the point or define a place on the drawing.

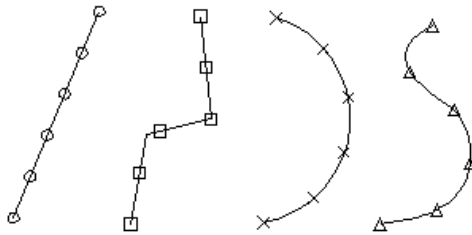


### 13.6.2.2. Divide

Divide the selected object into a given number of portions of equal length. The command creates a new point at the endpoints.

- Define the required number of portions.
- Select the object to divide.

**Example: number of division: 5** (in the case of line, polyline, arc, spline)

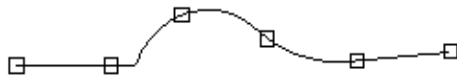


### 13.6.2.3. Divide for chain

This command divides not a single object but a chain of objects. Chain means objects connected to each other. (chain of sections, lines and arcs, etc.) Divide the selected chain along its length into a given number of portions of equal length. The command creates a new point at the endpoints.

- Define the required number of equal portions.
- Select the object to divide.

**Example: number of division: 5** (in the case of chain of lines and arcs)



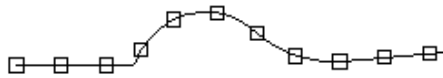
When you select the first or last object of the chain (near the endpoint), the command divides the entire chain. When you select a different part of the chain, the command divides the chain from this point to the endpoint of the chain passing through the middle point of the selected object.

### 13.6.2.4. Measure

The chain can be divided into parts by a given distance value.

- Define the distance to be used for the division, this is going to be the distance between the division points
- Select the chain to divide.

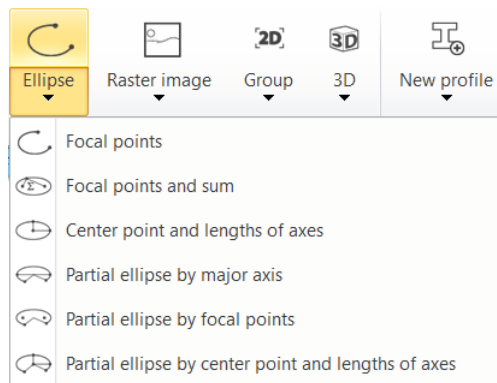
**Example: the distance, the length of the portions: 1 m** (in the case of chain of lines and arcs)




## 13.7. Ellipse and Elliptic arc

The ellipse is defined geometrically by the focal points, length and direction of the major and minor half axes, elliptic arc is defined by the same properties and by the start and end angles of the arc.

The icons of Ellipse tool:



### 13.7.1. Ellipse and elliptic arc properties

Right click on the *Drafting toolbox* -  *Ellipse tool*, or select the command *Drafting menu - Properties – Ellipse*.

The **ellipse properties** dialog appears where the general properties of the ellipse can be set.

#### General properties

Set the general properties of ellipse: colour, line width, layer, line type and priority.



See:




- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

#### Special properties

Define the special properties of ellipse.

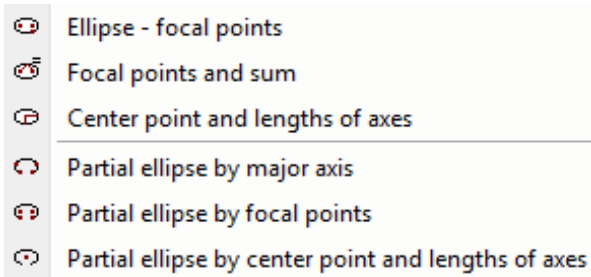
Minor axis	0.5 m	<b>Minor axis:</b> Set the value of half of the minor axis length.
Major axis	1 m	<b>Major axis:</b> Set the value of half of the major axis length
Major direction	0°	<b>Major direction:</b> Set the direction of the ellipse or elliptic arc.



These settings have importance when using commands:  *Ellipse tool* -  *Ellipse by centre point and lengths of axes* and the  *Elliptic arc by centre point and lengths of axes*.

### 13.7.2. Creating ellipse

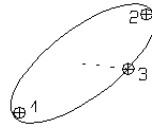
Select the type of ellipse or elliptic arc:



#### 13.7.2.1. Ellipse by focal points

Define an ellipse by its focal points and one point on the perimeter.

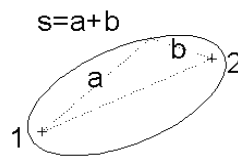
- Define the first focal point.
- Define the second focal point.
- Define a point of the circumference.



#### 13.7.2.2. Ellipse with focal points and sum

Defines an ellipse by its focal points and the sum of its circumferential point distances measured from the focal points.

- Define the first focal point.
- Define the second focal point.
- Define the sum of the circumferential point distances measured from the foci.



#### 13.7.2.3. Ellipse by centre point and lengths of axes

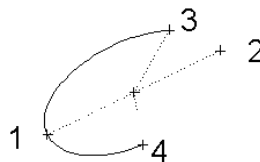
Define an ellipse by its centre point, the actual lengths of the half axes, and the actual direction (the direction of the major axis).

- Define the centre point.

#### 13.7.2.4. Elliptic arc by endpoints of the major axis and arc

Define an ellipse by the endpoints of major axis and the endpoints of the arc.

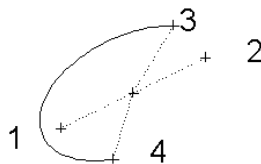
- Define the first endpoint of the major axis.
- Define the second endpoint of the axis.
- Define the starting point of the elliptic arc.
- Define the endpoint of the elliptic arc.



#### 13.7.2.5. Elliptic arc by focal points and endpoints

Define an elliptic arc by its focal points and the two endpoints.

- Define the first focal point.
- Define the second focal point.
- Define the starting point of the elliptic arc.
- Define the endpoint of the elliptic arc.



#### 13.7.2.6. Elliptic arc by centre point and lengths of axes

Define an elliptic arc by its centre point, the actual lengths of the half axes, the actual direction (the direction of the major axis) and the actual end angles. Angles are measured in anti-clockwise direction.

- Define the centre point of the elliptic arc.

### 13.7.3. Editing Ellipse and elliptic arc

Commands for modifying can be achieved in more ways.

- ❖ In the **Ellipse shortcut menu**: appears when right click on an object.

- ❖ **Graphically:**

Using grips and controls:



#### 13.7.3.1. Complement arc

The command **Elliptic arc shortcut menu – Complement arc** defines the complement of the selected elliptic arc and deletes the selected arc.

- Select the elliptic arc.

#### 13.7.3.2. Close (->ellipse)

The command **Elliptic arc shortcut menu – Close (-> Ellipse)** transforms the arc into ellipse by keeping the focal points or diameter.

- Select the elliptic arc.

#### 13.7.3.3. Modify axes by cursor

Modify graphically the radius of the selected ellipse.

- Define the new radius of the ellipse.

#### 13.7.3.4. Arc -> line

Transform the selected elliptic arc into lines crossing its nodes.

## 13.8. Raster images

### Introduction

Raster images are part of the drawing. Raster images behave like other drawing objects, so you can rotate, move, copy, scale, clip them as well. You can apply special commands for raster images like adjust an image for transparency, crop, and clip the image with a rectangle or polygon.

The image file formats supported by ARCHLine.XP include the most common formats like BMP, PNG, JPG, and TIF. Images can be 1-bit black and white, 8-bit, 16 bit, or 24-bit colour depth. ARCHLine.XP supports the transparent pixels. Transparency is scalable between 0-255.

ARCHLine.XP can import Raster file formats that support transparency include GIF, PNG, BMP, TIFF, through an alpha channel.

### Select the raster image by click on image boundaries or click inside

You can set the selection method for raster images in the Options Dialog – Item Settings tab:

- Click on image boundaries or
- Click inside.

The raster image becomes part of the project when you save it.

#### 13.8.1. Insert raster image

To insert and place a raster image, you can use the *Drafting menu – Raster image* command. The *Open image* dialog will pop up.



The maximum size of a raster image is limited to 30 mega pixels. Although you can insert larger image into a project, the program will automatically reduce its size to the limit.

- If you cannot find the image selected in the default directory, browse for the relevant folder and open the image.
- Click **Open** to close the *Open image* dialog.
- Once you've selected the image ARCHLine.XP brings up the image Dialog where you can enter the insertion point, change size, rotation and general properties.

#### Name

- In the *Image* dialog, click on the Browse button, if you wish to select another file.

#### Path

You can attach a reference to a raster image file to a drawing file using a linked image path.

#### Embedded or External Reference

Images can be placed in drawing files like external references (linked) and these images are not part of the drawing file. The image is linked to the drawing through the full path name.

When you place images as **(Attached)** in your drawing it increases the drawing file size with the image file size.

#### Insertion point

- You can type the global X, Y coordinate of the insertion point into the fields you can specify it later graphically.

#### Size

- You can define the size of the image by typing the value in the fields or you can specify it later graphically.

The selection mode can be personalized. There are two ways to select a raster image by clicking the inside area, or select raster images by their visible frames only. In this mode, the inside area is not sensitive. The selection mode can be selected in File - Options dialog Global Values panel. The Image frames are displayed on the screen but NOT plotted.

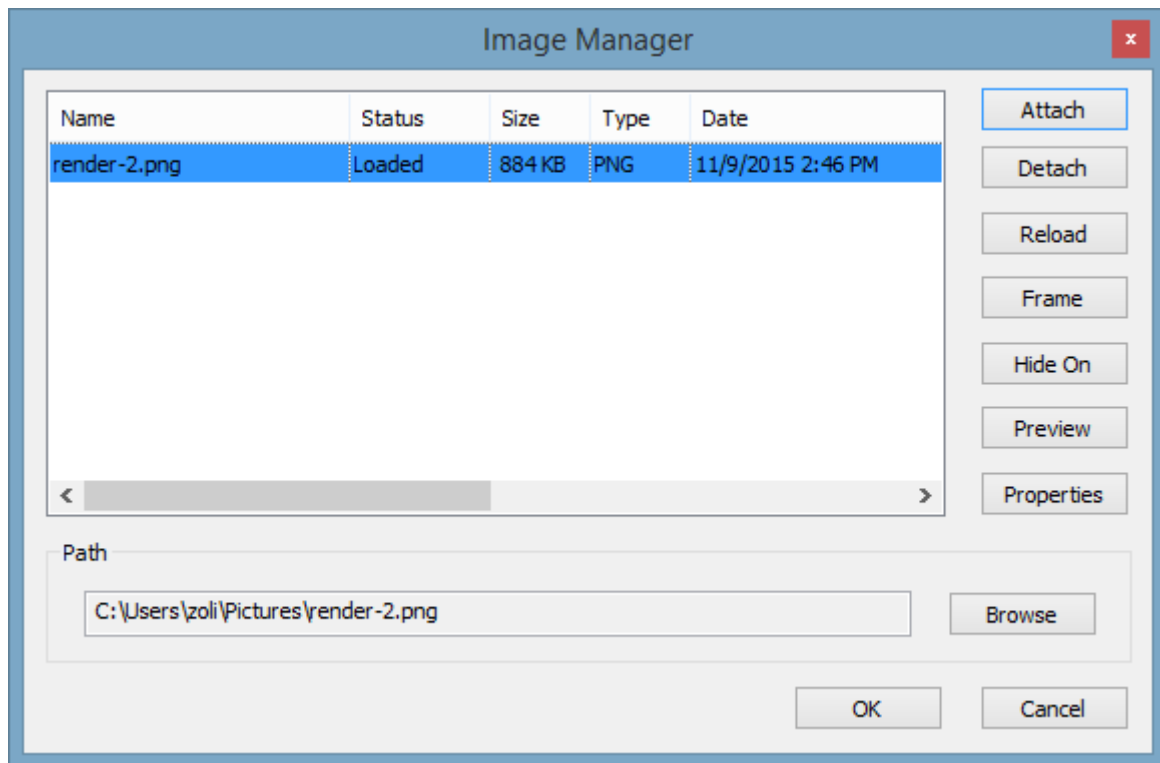
### 13.8.2. Manage raster images

Raster images can be managed in the *Image manager* dialog: you can attach, detach, reload, hide an image or show only its frame on the current drawing.

Click the *Drafting menu – Image Manager* Command. The *Image manager* dialog appears with a table.



You can activate the *Image Manager* dialog from the shortcut menu of a selected raster image on the floor plan, too.



### Name

Show the file names of the loaded images. When a row is selected in the list, the full path name of the selected image file is shown on the bottom of the dialog. (See below: *To change an Image path*).

### Status

Right after opening the image manager this column shows the status of each loaded image: *Loaded*, *frame* or *hidden*. Later you can specify what to do with the images; for example you can unload reload, hide or show only the frame of a loaded image. Accordingly, you may see the *Unloaded* or *To Reload* status as well.

### Size

Show the file size of the image.

### Type

Show the file type of the image.

### Date

Show the last date when the image was modified.

### Path

Show the full path name of the image.

In the *Image Manager dialog* you can manage the images as follows:

### Attach

Attach an image in the appearing *Open image* dialog. This command is identical with the *Drafting menu –Raster image* command.

### Detach

Detaches (unloads) the selected image from your drawing. When you detach an image, all instances of the image are removed and the link to the image is removed.

- Select the image name you want to detach (unload).
- Click *Detach*. Click *Ok*.

### Reload

This option loads again and displays the latest version of the image.

- Select the image name that you want to reload.
- Click *Reload*. Click Ok.

### Frame / Hide off

You can show the image only with its frame if you do not need to show it the current drawing. Images with frame only are not displayed on the screen and only the frames will be printed. You can see only the rectangle frame of the image.

To represent an image only with its frame:

- Select the name of the image you want to represent only with its frame.
- Click *Frame* to display only the frame of the image. Click Ok.

To turn back to the original representation of the image:

- Select the name of the image represented currently with its frame only.
- Click *Hide off* to display the image. Click Ok.

### Hide On / Show

You can hide images you do not need to show in the current drawing. Hidden images are not displayed on the screen and not printed at all. (Even the frame is not printed)

To hide an image:

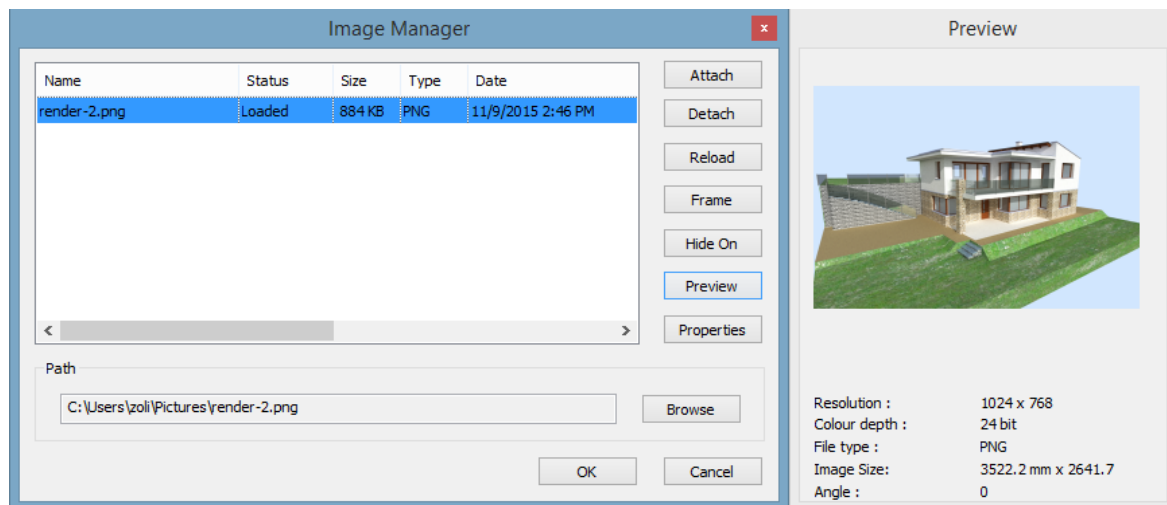
- Select the name of the image you want to hide on the drawing.
- Click *Hide On*. Click Ok.

•

- To turn back to the original representation of the image:
- Select the name of the hidden image.
- Click *Show* to display the image. Click Ok.

### Preview

Clicking on the *Preview* the selected image appears with its properties.



### Properties

Clicking on the *Properties* the *Image* dialog appears. You can modify the properties of the image.



See the description of the *Image* dialog in the chapter *Insert raster image*.

## 13.8.3. Edit raster images

Select the raster image whose properties you want to modify. Click on *Properties* or right-click on the raster image and choose *Properties* from the Menu.

### Modify properties

Choosing the *Properties* command from the shortcut menu, you can modify its properties. Beside the general properties, you can specify the background image location, the image size, rotation and transparency.

By default, the raster image is saved into the project file. However, if you want to reduce the file size of your project, use the *Insert only as reference* option. With this option only the path of the raster image will be saved.



The dialog box displays the current size of the image and you can enter the new size here. Although no part of the image will be lost, its resolution decreases.



If you use the *Insert only as reference* option, don't forget to keep your raster image with its original path name, otherwise you will lose your raster image.

### Stretch

Graphically stretches the raster image. When you click on the STRETCH option, the proportions of the image change during the transformation.

- Specify the corner point of the image to stretch it.
- Specify the endpoint of the stretching.

### Grips

The raster images behave like any other drawing objects, so you can resize it using the *Move palette – Scale* command or using the *Resize control grip* of the selected raster image.



### Crop

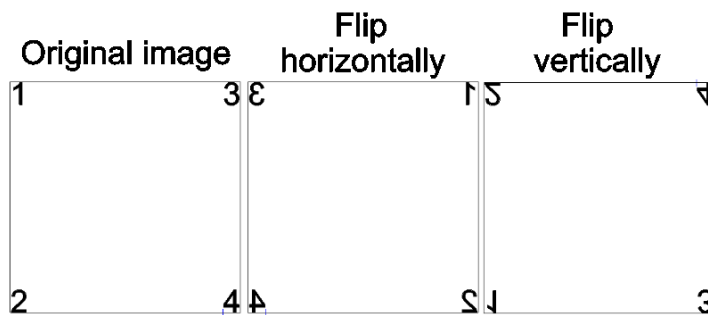
The command of cropping an image involves selecting the part of an image that you want to display and deleting the rest. The cropped image takes less space in the memory as the original image.

Click on a Raster Image, and select the Crop command from the context sensitive menu. Move the sensitive rectangle boundary lines to the part of the image you want to show. Click on ENTER to close the command.



### Flip

You can flip a raster image horizontally or vertically:



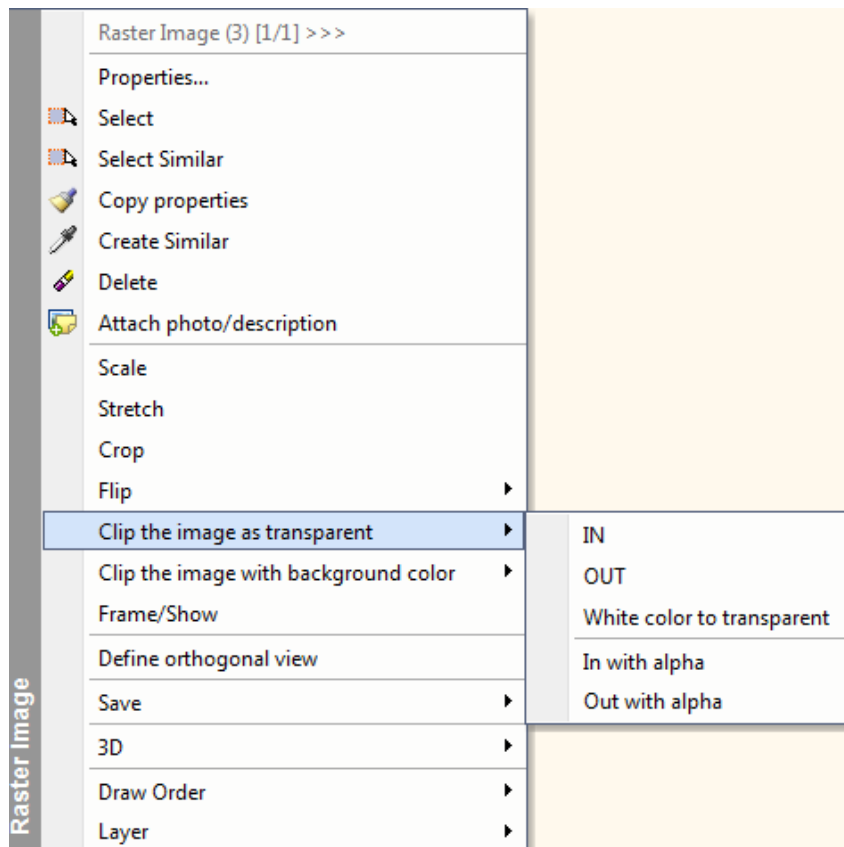
### Clip the image with a rectangle or polygon

You can clip a raster image in two ways:

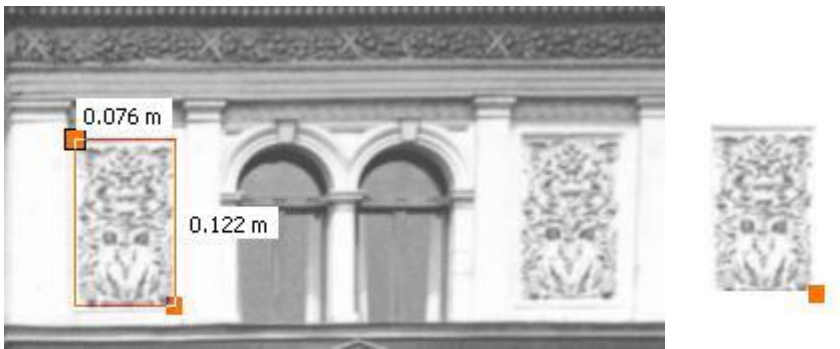
- ❖ with transparency or
- ❖ with background colour.

The clip is valid for the area of the polygonal boundary. You can choose the part of the image to be displayed:

- ❖ inside or
- ❖ outside of the polygonal boundary



- Select the appropriate command from the shortcut menu. You can clip a part of the raster image.
- Specify a closed profile to mark the part to be clipped.



### Frame / Show

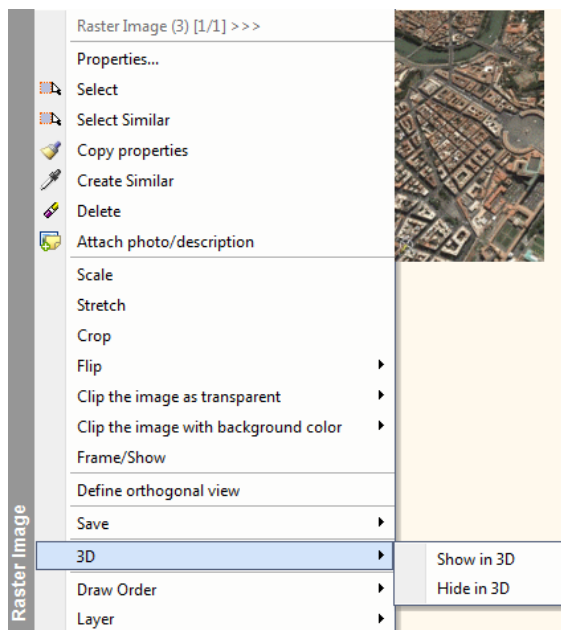
You can hide images that only the image boundary is displayed. Hidden images are not displayed or printed. You can select the command from the Shortcut menu:

- Click on the raster image on the floor plan with your right mouse button.
- Select *Frame / Show* command to make visible or invisible the raster image.

### 3D: Show/Hide Raster image

You can display the raster image in 3D View placed on the current floor elevation. Later, you can switch off the 3D view of the raster by the *Hide in 3D* command.

- Click on the raster image on the floor plan with your right mouse button.
- Select *Show in 3D* command to show the raster image in 3D:



When you delete the raster image from the floor plan, the 3D image will be deleted too.

## Flip

This command mirrors the active image – i.e. rotates it by 180 degrees –horizontally or vertically.

## Rotate

When using this command, the **rotate image** dialog box appears. Specify the angle of rotation.

When selecting the *Free* option, enter the desired angle of rotation and choose between the methods of **Expand** or **Clip**.

## Expansion

Use this option to modify the size of the image according to your needs. This option rotates the image with the specified angle; however the full image is displayed in the original frame. Consequently, the size of the image must be decreased.

## Save as

Using the *Shortcut menu - Save as...* Command you can make a copy of the image. You can save the image under a new name or to another location.

## 13.8.4. Calibration and vectorization

### Introduction

Drawing often requires raster images. You can create a raster image by using a general plan, a handmade plan, a contour map, etc.

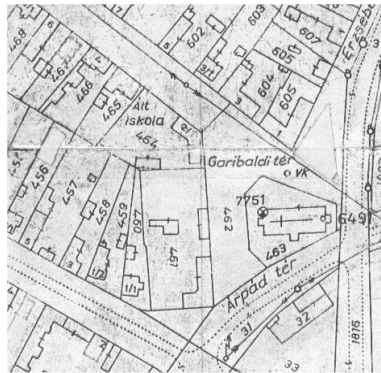
Raster images are either supplied in a digitalized form or available after scanning. Raster images can be imported into the drawing to create a background.

### Raster image

The raster image created this way contains background points (pixels).

The number of pixels defines the display resolution of the raster image and so its quality, however it represents no other specific value. Accordingly, the raster image cannot be considered particularly useful with respect to the actual drawing.

The image imported into the background unquestionably increases the aesthetic value of the drawing but is only relevant if its scale aligns with the corresponding scale of the drawing area. Thus the scale of the raster image has to be changeable.



To insert a raster image into the drawing area use *Drafting menu- Insert raster image* command to read the image into the drawing area.



See description in 11.8. Raster images chapter.

### Calibration

Calibration is a special method that coordinates the imported raster image with the vector drawing thus ensuring the possibility of specifying real distances, areas or angles in the raster image.

When an imported raster image can be coordinated with the drawing (e.g. a general map), the true-to-scale size of the drawing can be configured by **linear calibration**. Linear calibration enables the setting of a certain scale to establish a proportional relationship between the pixels of the raster image and the drawing area (and its coordinates) of ARCHLine.XP. When the scale set for calibration matches the true scale, you can work in true scale (1:1) in the raster image as well. It means that each vector graphics operation, editing or query is performed by the program in true scale from the user's point of view; however the configuration of the size depends on the background.

*You find calibration in the Add-On menu - Raster Image Calibration.*

Depending on the available information calibration can be performed in different ways:

Calibrate Raster - Fast

Calibrate Raster - New

Calibrate Raster - Contin

Raster to vector

- ❖ *matching 2 points with 2 other points*
- ❖ *with distances*
- ❖ *with coordinates*

In the first case use the *Calibrate raster- Fast* command, while in the second and third cases use *Calibrate raster*. Start the operation with the *New* option and use the *Continue* option for more accuracy.

### Vectorization

The calibrated image still contains pixels, meaning that during drawing the program does not recognize the content of the image, e.g. the lines of the handmade plan. That is why vectorization is needed.

ARCHLine.XP enables the vectorization of an imported image (a general plan, a contour map, a handmade plan). It means that the program recognizes the contours in the scanned image and generates lines on top of them. The result is a lined drawing. Using the command allows for the recognition of not only lines but of open and closed line chains. This method significantly decreases the time of planning by eliminating the time-consuming tracing of scanned general plans or models.

After vectorization you can turn off the image file and edit the already lined drawing further.

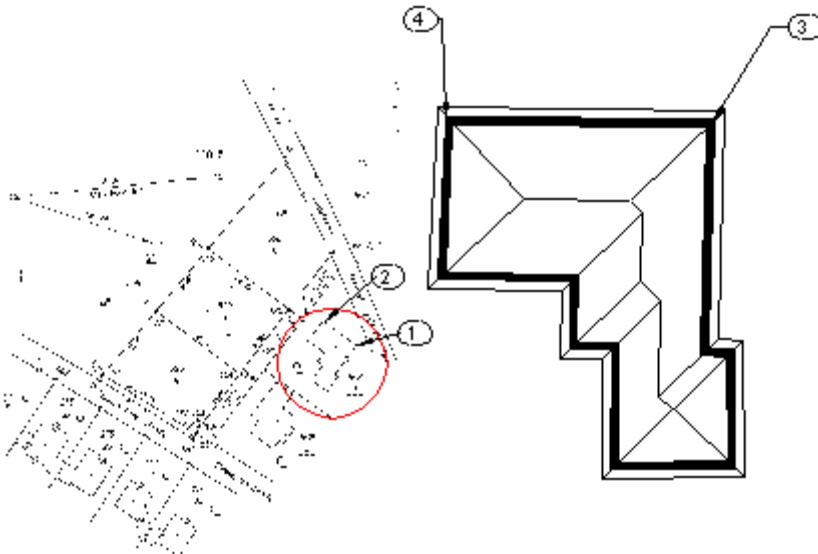


You can reach the command via the *Add-On menu – Raster Image Calibration- Raster to vector*.

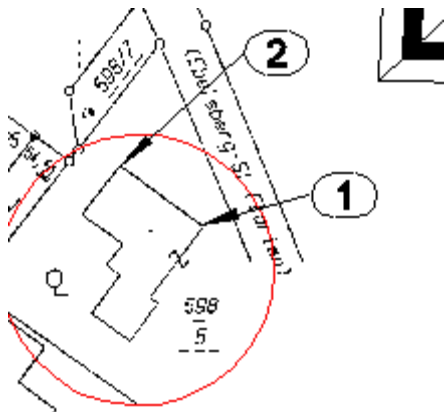
#### 13.8.4.1. Calibrate Raster - Fast

You can use the *Add-On menu - Raster Image Calibration- Calibrate raster- Fast* command when you have two coordinating reference points on both the general plan and the plan. The command renders the two original points selected first to the two other points. By specifying rototranslation the program configures the general map to the scale matching with that of the plan and rotates it in the right direction. This way calibration and matching are performed in one step.

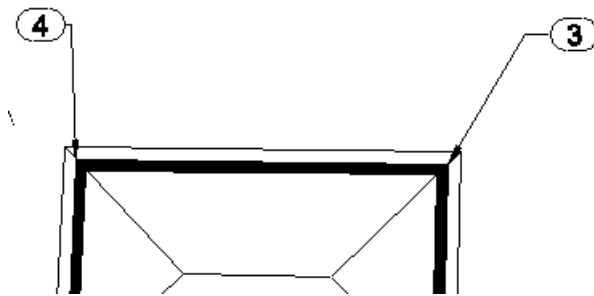
E.g.: One building on the general plan is also there on the plan. Here you can use the two endpoints of one of the building walls as reference points on both the general plan and the plan.



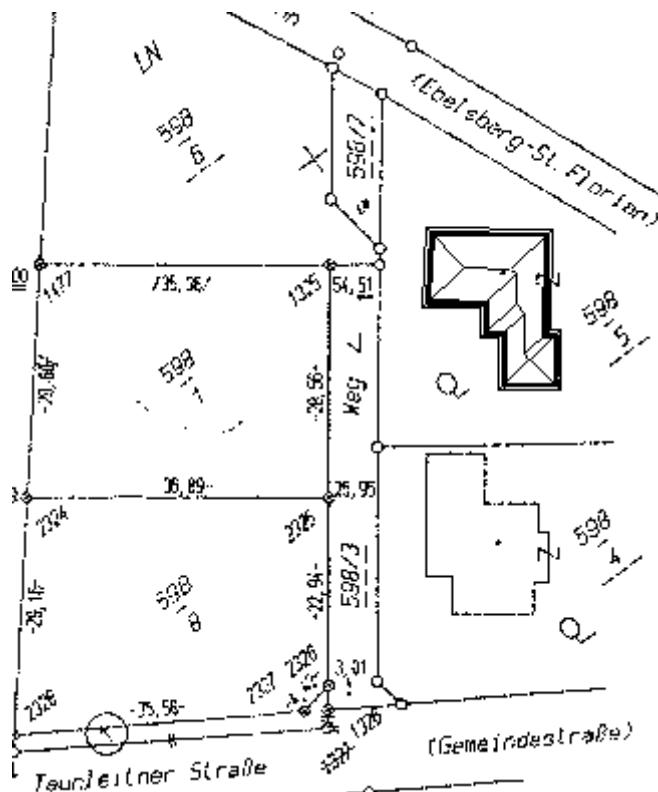
- Specify the start point of rotation and movement transformation: 1st point.
- Specify the endpoint of rotation and movement transformation: 2nd point.



- Specify the new location of the start point: 3rd point.
- Specify the new location of the endpoint: 4th point.



The program matches the general plan and the plan:



### 13.8.4.2. Calibrate Raster - New

When you know distances or coordinates in the raster image, start the true-to-scale configuration of the image via the *Add-On menu - Raster Image Calibration- Calibrate raster- New* command.

You can calibrate an image file in two ways or with their combination:

- ❖ with distances, or
- ❖ with coordinates.

You can use coordinates for calibration, e.g. when they are indicated on the general plan. If coordinates are not available, use distances when calibration.

E.g. If you know the location of the coordinate cross on the general plan, specify the coordinates. However, if later on you want to use the distance between the corners of two buildings or the width of the road, specify the relevant distance for calibration.

In case of a handmade plan the length of the walls are available, consequently you specify the distance when calibration.

### With distances

- Specify the start point for calibration.
- Specify the endpoint.  
Specify the distance between the two points.
- Specify further pairs of start and endpoints.  
**Enter** Finishes the specification of distances.

### With coordinates

- Specify the start point of calibration.
- Select **XCOORD** option to indicate that you wish to specify the points with true coordinates. Then enter the coordinates in the window thus displayed.
- Chose the endpoint for calibration and specify its coordinates.
- Specify further pairs of start and endpoints and indicate their true distances.  
**Enter** Finishes the specification of points.

### Options:

<b>PREVIOUS</b>	You can select the <i>PREVIOUS</i> option if you want to specify the start point of the previous pair of points as the start point of the next pair of points.
<b>LAST</b>	<ul style="list-style-type: none"> <li>• You can select the <i>LAST</i> option if you want to specify the endpoint of the previous pair of points as the start point of the next pair of points.</li> </ul>

The program asks in both cases if you really want to finish calibration.

If the answer is yes, the *Calibration dialog box* appears and indicates the average quadratic error in case of all the distances used.

The error equals the difference between the expected and the specified values and is indicated next to each distance.

The maximum number of distances you can calibrate in the raster image is 100. You can exclude some of the distances by using the dialog box. You are suggested to exclude distances with larger values of error. Thus you can decrease the value of the average quadratic error. The more distances you specify the more accurate your calibration is.

Status	Distance	Error
Used	200.000000	0.036621
Used	200.000000	0.004248
Used	66.500000	0.983004
Used	52.300000	0.186519

Average square error for all

Average square error for used

E.g. exclude the 3rd value where the error of 0.9 is the largest.

Status	Distance	Error
Used	200.000000	0.000001
Used	200.000000	0.003368
	66.500000	0.994534
Used	52.300000	0.186753

Average square error for all 0.505961

Average square error for used 0.107840

Thus you have decreased the value of the average quadratic error.

### 13.8.4.3. Calibrate Raster - Continue

You can use this command if you have already started calibration but you would like to specify more points in order to increase the accuracy of the calibration:

- Open the project containing the calibrated raster image.
- Specify the new points for calibration.

When you have finished calibration, the dialog box indicates the distances and the percentage of error for each calibrated point of the image (the list includes the points specified previously as well).

### 13.8.4.4. Vectorization of images

As mentioned previously, image files contain pixels. As the program does not recognize the content of the image that is why vectorization is needed.

The *Add-On menu – Raster Image Calibration – Raster to vector* command enables the transformation of the imported image file into a vector drawing. The image file can be a general plan, a contour map or a handmade plan.

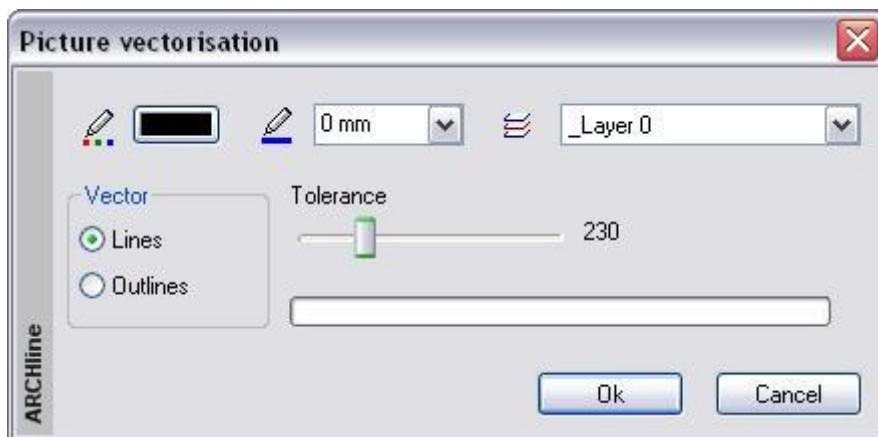
The algorithm finds the contours on the image file and generates lines on top of them. The result is a lined drawing. The algorithm allows for the recognition of not only lines but of open and closed lone chains.

You can set the following parameters in the Vectorization dialog box thus appeared:

- ❖ The properties of the generated lines: *colour, width, and layer*.
- ❖ The tolerance that influences the accuracy of vectorization.
- ❖ The type of vectorization: line or contour vectorization.

*Line vectorization* recognizes e.g. the boundary of a site as a line.

*Contour vectorization* generates a line on both sides of the boundary line.

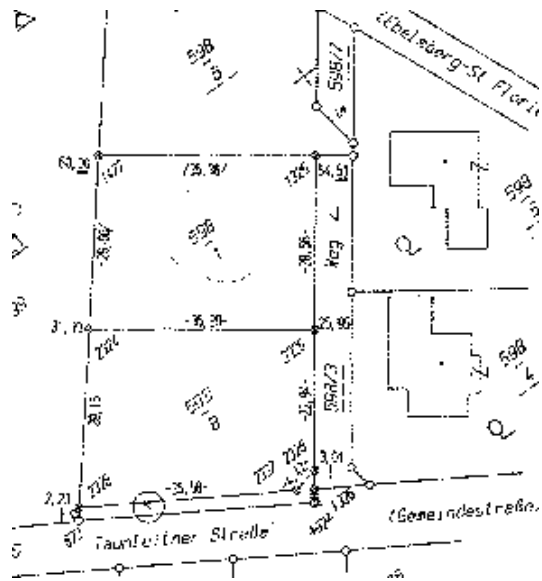


This method can be effectively applied together with the calibration function.

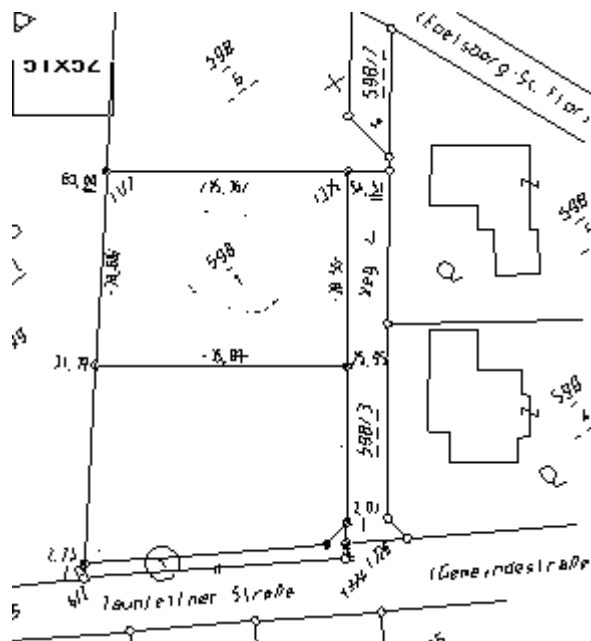


For example: In the case of a general plan first you have to use calibration. After calibration your general plan is true-to-scale. Now you can use vectorization. The result is a true-to-scale lined drawing. You can switch off the image file if it is no more needed. You can further edit the lined general plan.

The general plan as an image file after calibration:

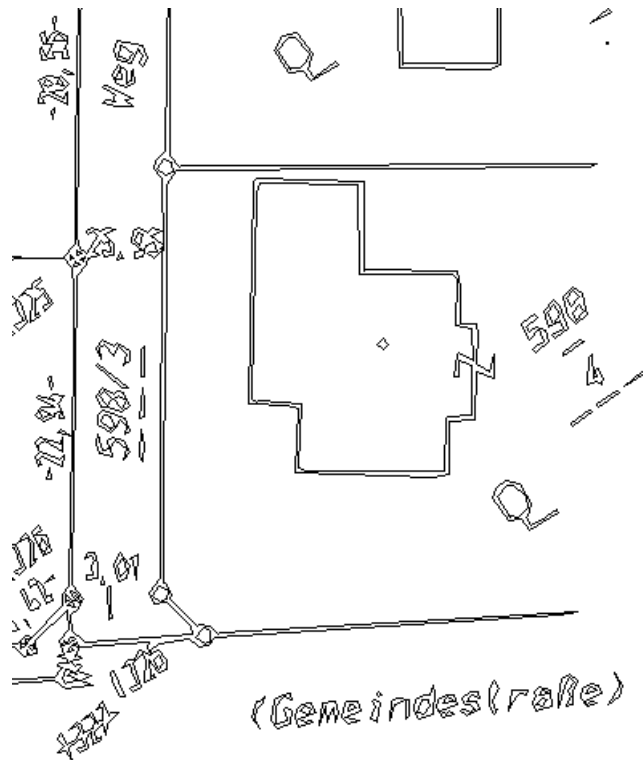


The general plan after line vectorization:



We have erased the unnecessary words (that have been generated into lines, too) of the lower site in the lined drawing.

The general plan after contour vectorization:



There is a difference between the Vectorization function and the Find edges function of photogrammetry. Find edges can be applied for *photos* and measures the difference between the grey levels of the image file pixels.

## 13.9. 2D group

Group means saved sets of elements, handles as unit.

You can select elements into a group, save it, and then place that group as a unit.

You can move, copy, and rotate a group just as you can manage any element type in ARCHLine.XP.

You can create local or global group. Global group is saved in a group library, so it can be used in any project later.

Local group is not saved in the group library, it cannot be used in other projects.

Explode group command breaks up the group and disassociates the elements from a group.

### Local group

Usage of local group is recommended if more objects are handled together on the actual plan. This group will not be saved in the group library; it cannot be loaded into other project. A local group can contain other groups.

### Global group (Groups in library)

Saving a global group is recommended when the group is going to be used in other projects as well. Groups can be loaded from the *Group library*. A global group does not contain other groups.

### How to make a group?

Groups are described by the following components:

- ❖ Selected elements to be grouped,
- ❖ Reference points or hotspots added to the group in arbitrary number. A group can be placed by the active hotspot.
- ❖ Assigned name.

Global groups will be saved in the selected category.

Group name with special characters

When groups are created, the following special characters can be used in the group name:

Space, &! @ \$ % + = ( ) [ ] { } ' ; , ~

The following characters cannot be used:

\ ? | > < : / \* "

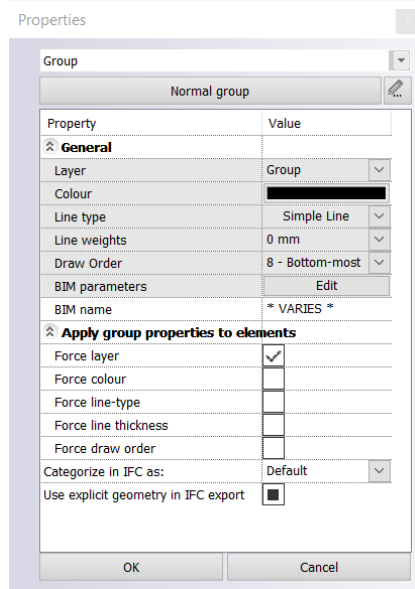
## Place group

You can place group by command Ribbon > Drafting > Group > Insert group, or from the Design centre. Default groups of the program are in the Groups library.

### 13.9.1. Group properties

All groups have general properties.

These properties cannot be changed directly. Click on the *Property* command in the shortcut menu of group. In the appearing dialog modify the colour, line thickness, layer and priority of the group.



See:

- ❖ detailed description of *General properties* in chapter 3.2.1. *Setting general properties*
- ❖ description of *Stiles* in chapter 3.2.3. *Attribute sets*.
- ❖ description of *BIM parameters* in chapter 3.2.4. *Define BIM parameters*.

When setting the general properties of group objects (colour, line thickness, and line type) there is possibility to set the **Group** properties as well. This may have importance if the properties of the group (colour, line thickness, line type) are controlled by the settings of **group** general properties.

If properties of all objects of the group are controlled by the group properties settings, it is not necessary to set it in the case of each object, *apply group properties to objects*.

Select from the options which properties will be forced to all the objects of the group. Layer, colour, line thickness, line type.

Now all objects of the group take up the forced properties even if the properties of the objects were not selected earlier to be **Group** type. It is important to mention, that after applying the force option and then switching it off the original state will not be reset. It can be done only by entering the group and defining the properties of each object one by one.

Let's see an example to make this function clear.

#### Example:

Create a group with three objects.



See chapter 11.9.2. *Creating group*.

Draw two lines and a circle each line thickness 2.11 mm.

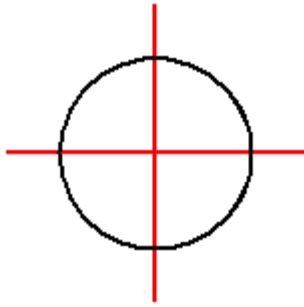
- Enter the group by right clicking and selecting the command *Enter into group*.
- In the case of circle set:

Colour: **Group**  
Line thickness: 2.11  
Line type: Line

- In the case of *lines* set:  
Colour: red  
Line thickness: 2.11

Line type: Group

- Close the group by right clicking on any of the group objects, click in Close group command.



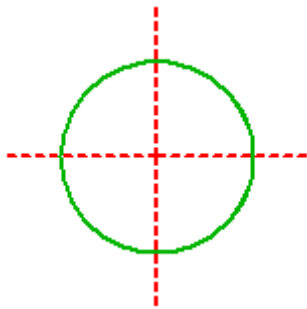
Colour of the group is black, line type is Line.  
Therefore the colour of the circle becomes black, the colour of the lines remain red.

In this group the colour of the circle and the line type of line will be controlled by the group general properties.

- Right click on the group and select from the popup menu Modify command.  
Now set the group general properties.

Colour: green  
Line thickness: 0 mm  
Line type: dotted

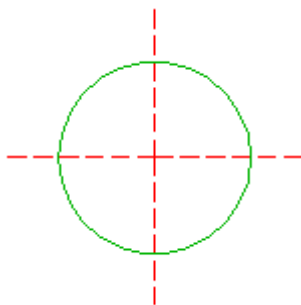
Do not sign any of the *Apply group properties to objects* options in the bottom of the dialog, it will be explained later.



The result:  
circle:  
colour: green  
line thickness: 2.11 mm  
line type: Line  
line:  
colour: red  
line thickness: 2.11 mm  
line type: dotted

- Colour of the circle becomes green, because its colour was set **Group**. The line becomes dotted for the same reason. Line thickness will not be changing for any of them (remains 2.11 mm), because their line thickness is not **Group** type, but defined by value (in the example 2.11 mm). *Group settings* have influence on those properties of group members that were set to **Group**.
- If the layer and line thickness properties of the group are to be applied to all the objects of the group, check in the *Force layer* and *Force line thickness* options.

**The result:**



Line thickness of both the lines and the circle becomes 0 mm. The circle and the lines will be placed onto the *\_Layer 0* layer.

*This state* will not be changed in the following if you enter again into **Properties** dialog and check off the Force options.

### 13.9.2. Create local group

Local group will not be saved in the group library; it cannot be loaded into other project. A local group can contain groups.

Location of the command: Ribbon > Drafting > Group > Create Local Group.

- Select the existing elements or existing groups. Press Enter to close the selection.

### 13.9.3. Create group in library

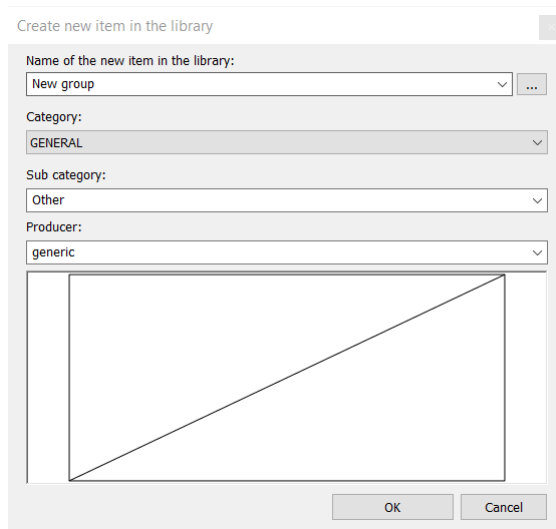
You can create a named group with reference hotspots in the library from the selected items.

Use this command to create new 2D symbols, logos, or other library items that you would like to pick up in the Group Library and place on your different projects many times.

Location of the command: Ribbon > Drafting > Group > Create group in library.

Steps of creating new group and saving it into the Group library are the followings:

- Select the existing elements or existing groups. Press Enter to close the selection.
- Define the hotspots (reference points). Any of the selected hotspots can be used later for placement the group. Alternatively you can press Enter to apply the four corner points of the enclosing box as reference points. Press Enter to close the definition of hotspots.
- In the Create Group dialog, enter a name for the group, select the Category. Select the Sub category where you would like to save the new group. If no such category exists, you can create new one. Select Producer (optional). Click OK to close the dialog.



When selecting objects for a new group you can choose groups that already exist on the plan. These will not be subgroups in the new group. This is available for local groups only.

### ***Parameters in group***

Text can be part of a group. If a text starts with \$ character, the program handles it as a variable. Values can be assigned to variables. These are parametric groups.

Visibility of variables can be set in *Group - Parameters* command.

### **13.9.4. Creating group from architectural objects**

Design offices often use pre-defined modules (drawing parts) for their work. For example they use pre-defined bathroom modules in different flats.

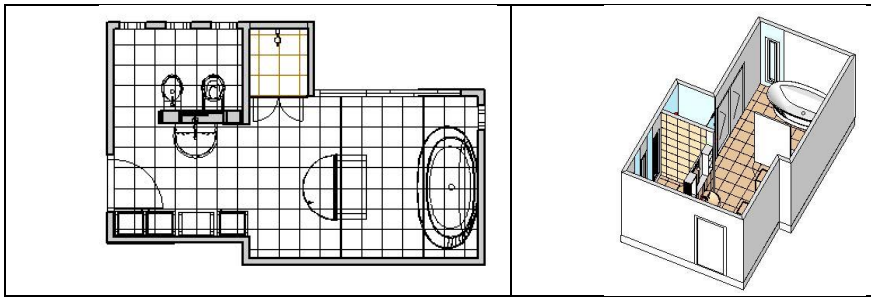
Currently designed floor-plan on the active floor can be saved as a new group into a program library.

The group keeps the architectural object properties and the 3D model if possible to regenerate.

Later you can place the group as a unit from the library onto the floor-plan.

By entering into the group you can modify its objects - the architecture objects as well.

*How to use it?*

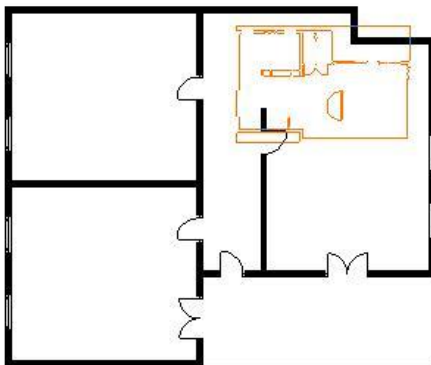


- ❖ Open the desired project where you want to insert the needed unit.
- ❖ Drag and drop the group from the Design Centre to the floor-plan.
- ❖ If necessary, enter into the group with mouse right click and modify its objects.
- ❖ Close the group.

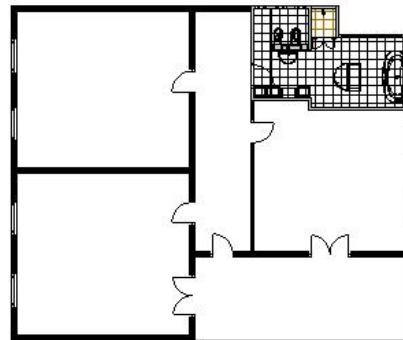


With the *Shortcut menu – Explode* command you can explode the group in such a way that the architectural objects become available again.

❖



❖



❖

❖



### 13.9.5. Place group

Groups can be placed from *Insert group* dialog, or drag and drop from the Design centre.

#### Reference point

The reference point for the actual placement can be selected directly in the drawing field of the dialog. The hotspots are identified graphically by small green points (the active hotspot is red). The group can be placed by its active reference point. (When creating a new group the first defined reference point becomes the default active hotspot.)

### 13.9.6. Edit group

You can enter into the group with right-click on the group and choose the Enter into group command. When you entered into the group you can edit its components. After finishing the editing the group has to be closed with Close group command.

The Edit group command is available from: *Drafting > Group > Edit group*, or through the popup menu of the group.

Select the group on the drawing area to activate it.

The selected group becomes active. Elements that do not belong to the group become lighter and they cannot be modified now, but their point can be referred to.

The elements in the editable group have priority against the outside elements in the selection operations.

### 13.9.7. Close group

The command *Close group* closes the editing of a group and returns to the top level of the drawing.

The Edit group command is available from: *Drafting > Group > Close group*, or through the popup menu of the group.

Close group command exists on two levels:

#### **Close group**

Closes all group levels and returns to the top level of the drawing.

#### **Close one level up**

Closes the active group level and activates the group on the previous level.

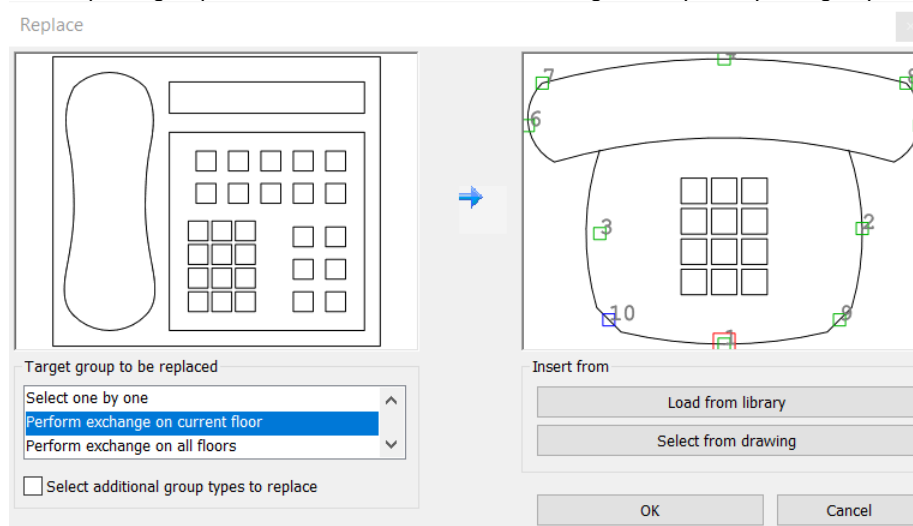
### 13.9.8. Replace group

With the replacement of identical objects it is possible to replace groups, and objects identical with the selected one with another one.

During the design work it can happen that you need the replacement of the previously designed furniture objects of a bathroom or a living room. In that case the *Replace group* function gives you an effective help.

#### **How to use**

The Replace group command is available from: *Drafting > Group > Replace group*.



The command works as follows:

- Select a group. This is the group you want to replace.
- Specify a group for the replacement. The previously selected group will be replaced with this one.
- Specify the scope of objects for the replacement. The replacement will be performed on these objects.

#### **Source of group to insert from**

- ❖ **Load from library**  
You can select an object as exchange group from an existing library.
- ❖ **Select from drawing**  
You can select an object as exchange group from the 2D groups or 3D objects that exist on the drawing.

#### **Target group to be replaced (Replacement rules)**

- ❖ **Select one by one**  
After specifying the *Group to exchange* and the *Exchange group* you can select *Group to exchange* exemplars on the drawing you want to replace one by one.
- ❖ **Perform exchange on current floor**  
The exchange is performed on all *Groups to exchange* exemplars on the active floor.
- ❖ **Perform exchange on all floors**  
The exchange is performed on all *Groups to exchange* exemplars on all floors of the current drawing.

### 13.9.9. Group Parameters

Text can be assigned to groups that start with \$ and are handled as variables. Values can be assigned to variables.

In **Group Options** submenu parameters and values can be activated.

- ❖ Active
- ❖ Off
- ❖ Variable name
- ❖ The value of variable will be presented.
- ❖ The name of variable and its value will not be visualized.
- ❖ The name of variable appears.

### 13.9.10. Create hatch pattern

This command creates hatch pattern based on a group.

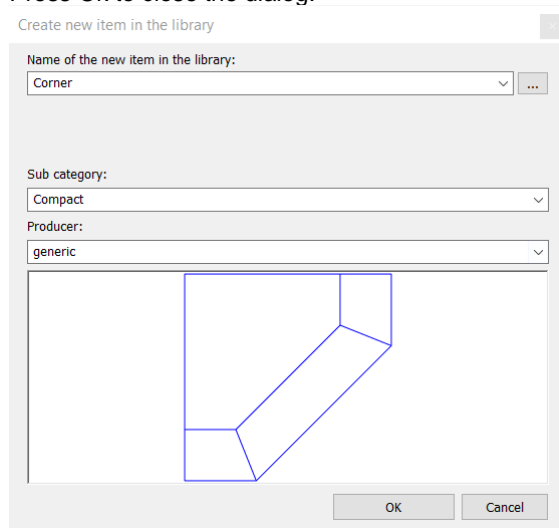
The Create hatch pattern command is available from: *Drafting > Create Pattern > Create hatch pattern.*

The method has two phases:

- ❖ Create the group that will serve as pattern.
- ❖ Define the hatch pattern based on this group.

#### Phase 1:

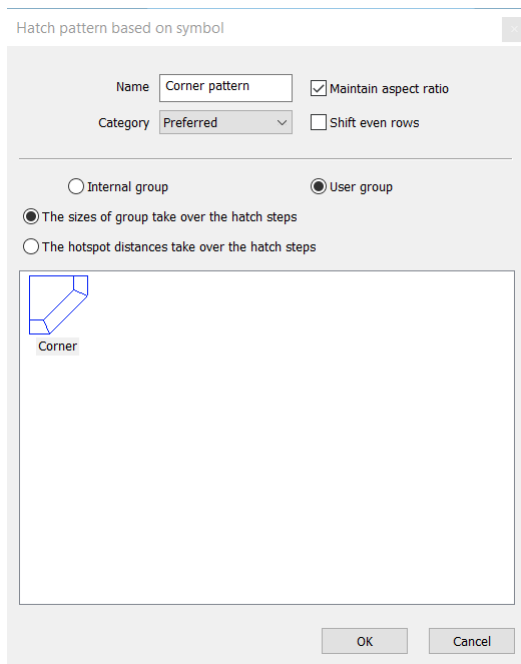
- Select the objects of group. Press Enter.
- Define the reference point for placing the group. Press Enter.
- Enter the name of the group in the dialog, the new hatch pattern will use this group.
- Press Ok to close the dialog.



#### Phase 2:

Dialog **Hatch pattern based on symbol** appears, where you can also define the new hatch pattern.





The following characters cannot be used:

Space \ ? | > < : / \* "

This pattern can be used for hatch. It appears among the *Architectural patterns* in the *Hatch properties* dialog.



A hatch itself can be pattern among the objects of user defined line type or 2D group of hatch pattern. This may have importance when a new line type with text in it is defined. E.g.—GAS-- In this case the text must be exploded by the command *Modify menu – Explode*. The filled hatch created in this way can be used as pattern.

### 13.9.11. Define line type pattern

You can define new line types with the help of *Drafting > Create Pattern > Create line type pattern* command

New line type is based on groups that will be repeated periodically as part of the line.

The method has two phases:

- ❖ Create the group that will serve as pattern.
- ❖ Define the line type based on this group.

#### **Create pattern**

- Select the objects of the pattern.  
**Enter** Closes the selection.
- Define the reference points.  
**Enter** Closes reference point definition.
- Type the name of the new group. Use alphanumeric characters, do not use space.  
**OK** Closes the dialog.

#### **Define line type**

Dialog *User line types* appears.

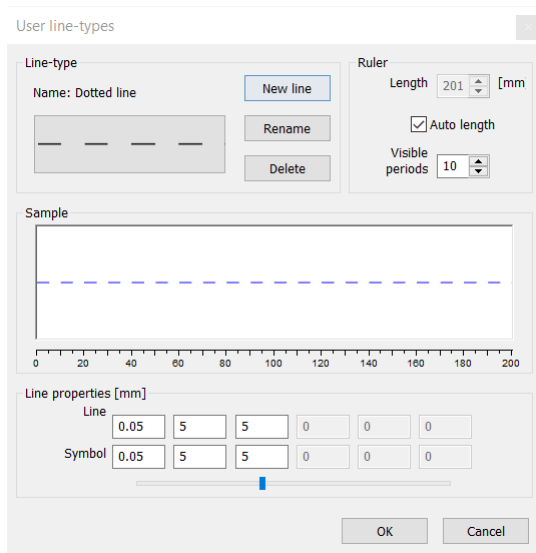
- Click on the *New line* button, switch on *Symbol* option and select from the list the group created for the line type.
- Define the values of the new line type.  
Operation from this point is the same as that of *Create line type*.



See detailed description in the following, 11.9.9. *Create line type* chapter.

### 13.9.12. Create line type

You can define new line types with the help of *Drafting > Create Pattern > Create new line type* command



## Ruler

Visible part of ruler can be defined as follows.

- set the length of the ruler, or
- set the *Visible periods* of the line type on the ruler.  
if you *switch on* the *Auto length* check box, the number of periods will define the length of the ruler,  
if you *switch off* the *Auto length* check box; it visualizes the defined period and the defined ruler length

## Modify existing line type

- Select the name of **line type** to be modified. Only user defined line types can be modified.
- Define the sections and spaces within a period.

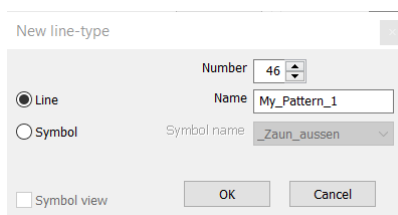
## Name line type

Select the line type name from the combo box either to rename the line or to delete it. The first 22 entries are predefined. You cannot modify them.

## Define new line type

Pressing the **New line** button, a dialog appears. Here you can define the name of the new line type and decide that it will be made up.

- ❖ of lines, or
- ❖ Groups.



- Give the name of the new line type.
- Switch on the **Line** button. In this case the new line type can be defined by line sections and spaces, or
- Switch on the **Symbol** button, the line type can be defined by the predefined patterns among the patterns appear those that were created by the *Create line type pattern* command. Choose a group from the list.

Check in the **Show** button, the image of the selected group appears.

Close the dialog. The new line type will be put at the end of the list, from where it can be selected.

### 1. New line type by periods

Line properties [mm]

Line	0.05	5	5	0	0	0
Symbol	0.05	5	5	0	0	0

\_\_\_\_\_

If you have selected the *Line* option when creating a new type, you can define the periods of repetition. The period of the new line type can be given by the definition of lines and the spaces between them. A period cannot contain more than six line part and six spaces. Using the slide fill in the adequate fields.

### Line

Define the length of line parts.

### Space

Define the distance between the line parts.  
By the definition of the last space the distance between the periods can be given.

## II. New line type by group

### Width and height

Define the width and height of the group. By modifying these values you can stretch the group.

### Max. Number

Define the **maximum number** of the groups.  
If there are more groups on the drawing than this value, the program displays the line only.

### Space

Define the **gap between** the symbols. If the gap is 0, the symbols are connected.

### Keep aspect ratio

If you check in this option the width and height values of group will change proportionally.

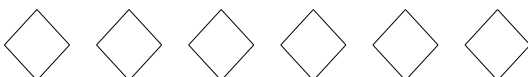
### Anchor line

**In** Anchor line is visible.  
**Off** Anchor line not visible.

**OK** Closes the dialog.



Space = 0



Space > 0



Anchor line in

### Rename

Press the **Rename** button to change the name of the selected line type.

### Delete

Press the **Delete** button to delete the selected user defined line type

## 13.9.13. Continue tiling popup menu

If tiling layout is placed on the drawing there is a possibility to continue with distributing tiles or making other modifications on the decoration. If you right click on the decoration group of the drawing, the **Continue tiling** command can be selected from the popup menu of the group. In the appearing **Tiling** dialog the option for continuing the decoration modifications can be selected.

## 13.10. Detailed view

The detailed view displays part of the view with larger scale.

The detailed group is useful in technical documentation when you want to enlarge a part of the view.

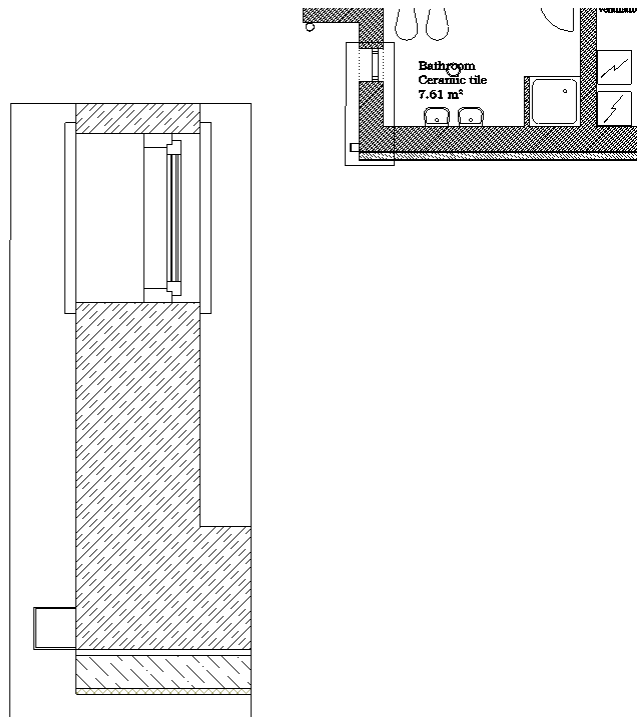
Location of the command: Ribbon > Drafting > Group > Create Detailed View.

The detailed view is a group defined by the elements, belonging to an area (rectangle or polygon).

The part of the elements that are inside the area are copied and scaled by the given scale factor.

You can enter into detailed view and add further details. These details do not display in the parent view.

- **Define** the detailed view area: choose any Profile definition command **from** Profile toolbar
- Define the base and end points of the displacement.
- Define the scale factor to enlarge the area, e.g. 5.
- Opening Scale factor dialog appears. Select the adequate opening scale and wall fill pattern.



## 13.11. External references

You can perform several operations on referenced drawing files including attaching, updating and detaching them. When you attach a drawing as external reference (referred later as xref), you link that referenced drawing to the current drawing; any changes to the referenced drawing are displayed in the current drawing when it is open or reloaded. Attached xrefs can be nested: that is, you can attach an xref that contains another xref. When you open a drawing, all xrefs update automatically. You can also update xrefs whenever you want to ensure that the most current versions are displayed in your drawing. When you archive final drawings that contain xrefs, you can choose how you store the xrefs in the drawings. The xref drawing can be DXF, DWG or ASC drawing.

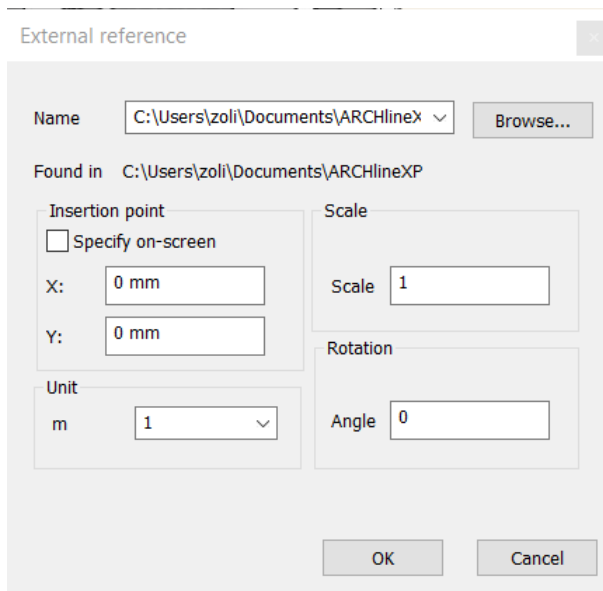
### 13.11.1. Load external reference

Using the *Tools menu – External Reference* command you can load a DXF, DWG or ASC file like an external reference. The *Open file* dialog appears:

- Select the file type: .dxf, .dwg, or .asc.
- Select the file you want to attach.
- Click Open.

In the *External reference* dialog, under Name, you can browse to select another file.

- Specify the insertion point, scale, unit, and rotation angle. Click Specify on-screen to use the pointing device. Attachment includes all nested xrefs.
- Click OK.



### 13.11.2. External reference manager

External references can be managed in the *External reference manager* dialog; you can attach, list, bind, detach, reload, unload external references (xrefs) or modify their path in the current (or host) drawing.

Click the *File > Tools > External Reference*.

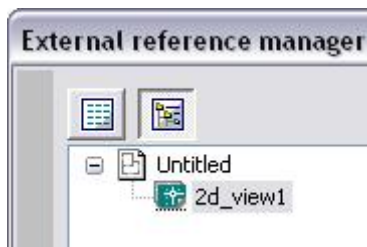
The *External reference manager* dialog appears.

In the dialog you can see all xrefs in the drawing in a tree view or a list view:



#### Tree view

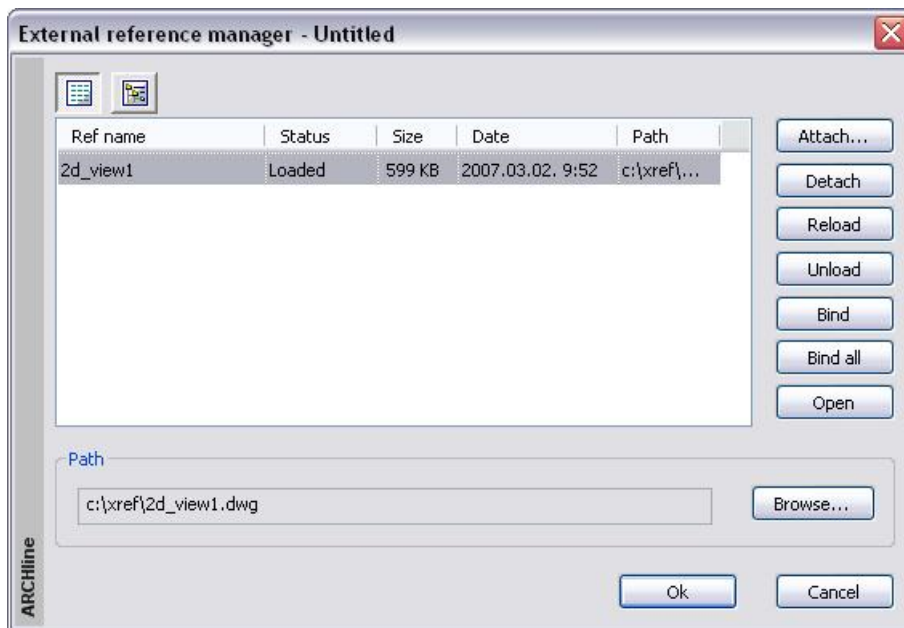
This view represents the external references, displaying the relations between them. The tree view lists the level of nesting relations of the attached external references. In tree view you can overview the nesting of each xref.



#### List view

It displays the flat listing of the attached external references and their attributes.

In list view you can see the reference name, status, size, date of modification, and path information of each xref.

**Ref name**

Display the external reference name in the list after an external reference is attached. When the attached external reference is selected in the list, its path is displayed in the Path column. (See below: *To change an xref path*)

**Status**

Shows whether the external reference is loaded, deleted, reload, not to load, bind, bind all, or open.

**Size**

Display the file size of the related reference drawing.

**Date**

Show the last date when the related reference drawing was modified.

**Path**

Show the saved path of the related reference drawing.

In the *External reference manager* dialog you can manage the xrefs as follows:

**Attach**

Attach an external reference using the *Open file* dialog. This command is identical with the *Tools menu – External Reference* command.

**Detach**

Detach the selected external reference from your drawing. Only the external references attached to the current drawing can be detached.

Nested external references cannot be detached.

- Select the reference name that you want to detach.
- Click *Detach*. Click *Ok*.

**Reload**

This option updates the selected xref - use this if the external reference was changed.

- Select the reference name that you want to reload.
- Click *Reload*. Click *Ok*.

**Unload**

Removes an external reference, but retains the reference for future use. Unloaded external references can be reloaded. Unload hides the external reference in order to improve speed and performance.

- Select the reference name that you want to unload.
- Click *Unload*.
- Click *Ok*.

**Bind**

Permanently attaches an external reference, so that it is part of the drawing.

- Select the reference name that you want to bind.
- Select Bind. Click OK.

From that point all objects of the drawing, except with the nested external references, will be part of the current drawing.

**Bind all**

Permanently attaches an external reference with its nested xref drawings to the current drawing:

- 
- Select Bind all.
- Click OK.

From that point all objects of the drawing, along with the subsequent xref drawings, will be part of the current drawing.

**Open**

Open the selected external reference drawing for editing in a new window.

- Select the reference name of the drawing that you want to open in a different window.
- Click Open.
- Click Ok. In the Import file dialog select the first option to show the drawing in a different window. Click Ok.
- The drawing will appear in a different window. Modify the drawing and save it. All the changes you make in this window will appear on the xref of this drawing after reloading it.

**To change an xref path**

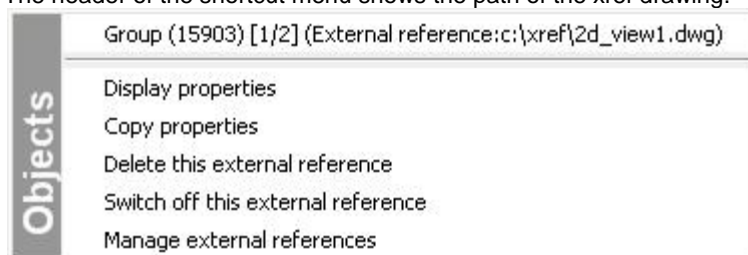
- Select a reference name.
- Use the *Browse* button on the bottom of the dialog to change the path.
- Click Ok. The other external reference properties like insertion point, scale, unit and rotation will not change.
- or
- Double click on a reference name.
- In the *External reference* dialog, under Name, you can browse to select another file (if you want to change the referenced file).
- Specify the insertion point, scale, unit, and rotation angle. Click Specify on-screen to use the pointing device.
- Click OK to exit from the *External reference* dialog and to place the xref.



The second method gives you the possibility to relocate an existing xref drawing.

**13.11.3. XREF Shortcut menu**

Right click on any object of the xref drawing appears the shortcut menu.  
The header of the shortcut menu shows the path of the xref drawing.

**Display properties**

The properties of the drawing objects inside an xref can be viewed through the shortcut menu.

- Click on the object with your right mouse button and select *Display properties*, or
- Go over the object of an xref with your mouse and wait a little bit. You will see the information about the object in the tooltip.

**Copy properties**

In the shortcut menu of an xref you can copy the properties of an object inside the xref to other objects in your current drawing with the *Copy properties* command.

**Delete this external reference**

It detaches the selected xref. This command is identical with the Detach command in the External reference manager dialog.

### Switch off this external reference

It unloads the selected xref. The referenced drawing will not be seen on the current drawing. This command is identical with the Unload command in the *External reference manager* dialog.

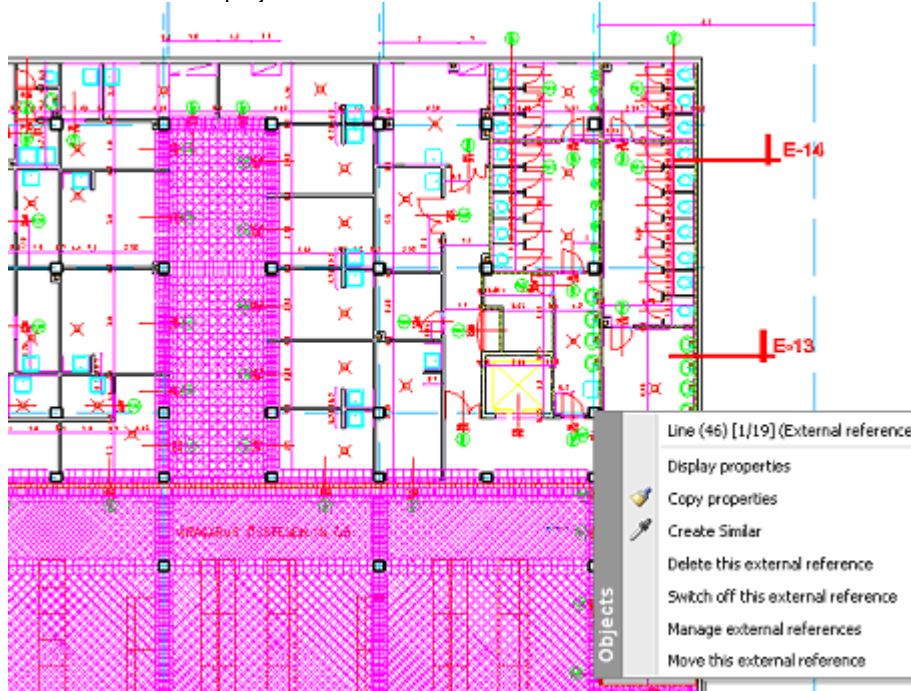
### Manage external references

It displays the External reference manager dialog.



### 13.11.4. Move external reference command

XREF allows many users to work on individual components of a project. As XREF can be updated, added, or unattached to the project the new Move command enables to relocate an XREF according to the user needs.



Click on the external reference with right mouse button and select the Move this external reference command. You can move the external reference by clicking first on the reference point and then on the target point.

## 13.12. Attaching photo and description to objects

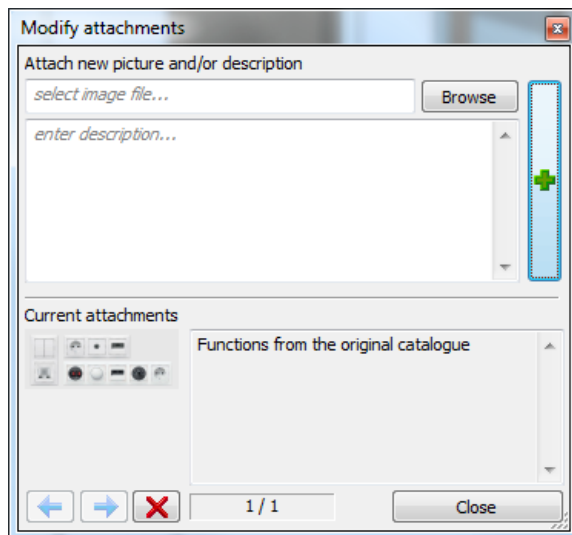
You can attach pictures and photos to any object of a drawing. This can be useful during a survey of a building by using the original photographs and compare it with the actual state of the model or 2D drawing.



### 13.12.1. Attaching photo and description to objects

Click on an object with right mouse button and select the **Attaching photo / description** command from the local pop menu. The following dialog appears:



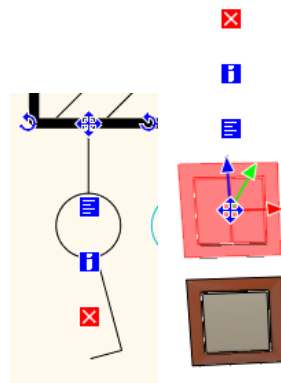


You can select an image with the Browse button and describe the object in the text field. Press the + button to attach them to the object. If more objects are attached, you can step to the next one by pressing the arrow buttons. An object can be deleted by the X button.

### 13.12.2. Viewing attached photos and descriptions

Select an object on the drawing or in the 3D View. If an object has photos and descriptions attached to it, a

**I** marker appears besides to the regular ones. By clicking on it you can see the attached photos and descriptions. If more objects are attached, you can step to the next one by pressing the arrow buttons.

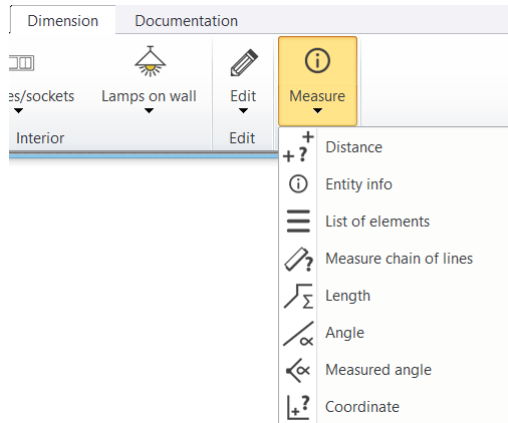


## 14. Inquiry

### 14.1. Query information

ARCHLine.XP offers a wide range of options to query information concerning the drawing, geometry, properties and commands.

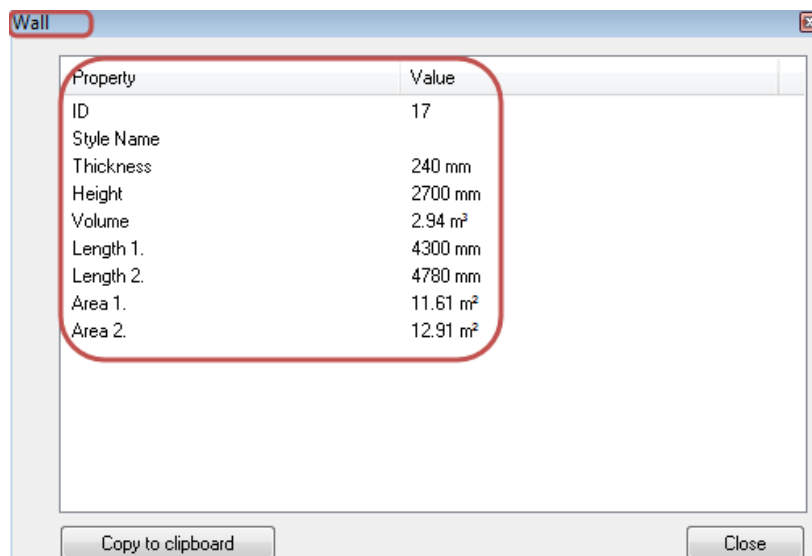
You can access the information requesting commands in the **Dimension > Measure** commands



#### 14.1.1. Entity Info

This command lists the graphical properties of the selected objects with their respective assigned costs (if applicable).

- Select an object.  
The **Info** dialog box concerning the selected object will appear.



You can copy and paste the content of the window to the Windows clipboard and use the information in other applications.



You can also query information concerning architectural objects by moving the mouse pointer over the object concerned.

Then the information table tool tip appears. Use the **Text – Place tool tip text** icon to insert this table into the drawing.

Wall (17)	
Layer :	Wall01
Floor	Ground
New wall	
1. length:	4300.00 [mm]
2. length:	4780.00 [mm]
Width:	240.00 [mm]
Height:	2700.00 [mm]
Height from floor:	0.00 [mm]
1. Area:	11.61 [m <sup>2</sup> ]
2. Area:	12.91 [m <sup>2</sup> ]
Volume	2.942 [m <sup>3</sup> ]

Wall	(17)
Layer :	Wall01
Floor	Ground
New wall	
1. length:	4300.00 [mm]
2. length:	4780.00 [mm]
Width:	240.00 [mm]
Height:	2700.00 [mm]
Height from floor:	0.00 [mm]
1. Area:	11.61 [m <sup>2</sup> ]
2. Area:	12.91 [m <sup>2</sup> ]
Volume	2.942 [m <sup>3</sup> ]

! Any tool tip table placed into the drawing is still connected to the selected object, so it follows any modification to the object.

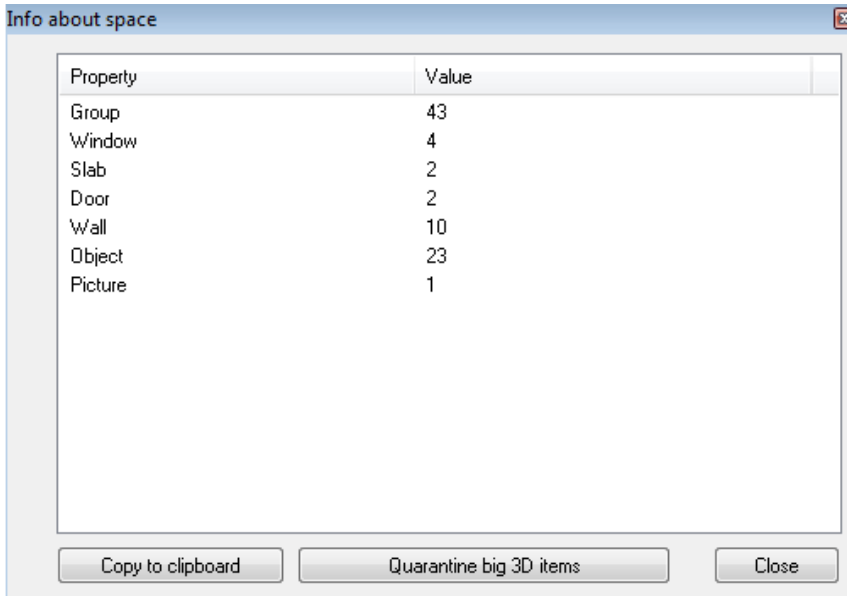
### 14.1.2. 3D object info

### 14.1.3. List of Elements

The program lists all the elements of the current project floor plan.

You can request the list from the floor plan window where you will see the following summary:

The **Info** dialog box concerning the sum of objects will appear.



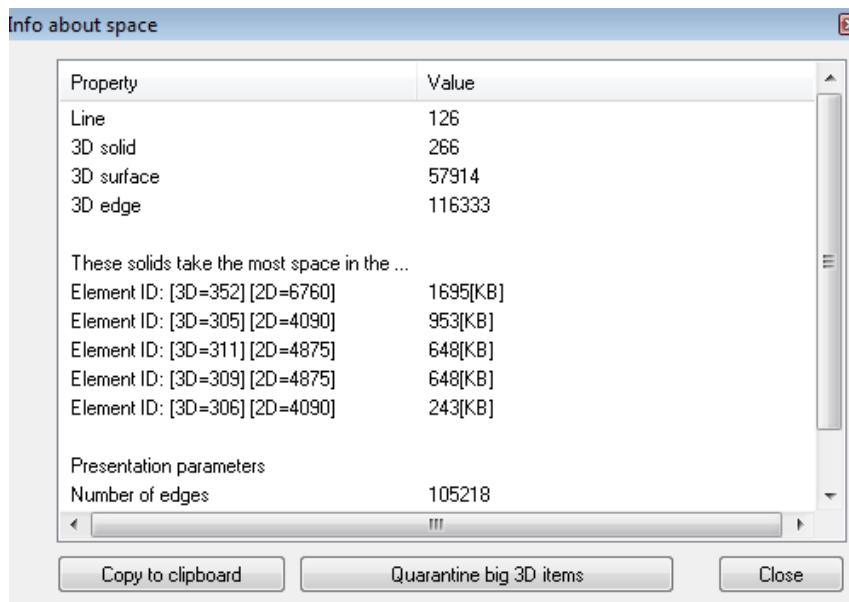
Property	Value
Group	43
Window	4
Slab	2
Door	2
Wall	10
Object	23
Picture	1

Copy to clipboard    Quarantine big 3D items    Close

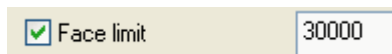
You can also request the list from the 3D view; the program will then list the 3D solids and surfaces, too.



The 3D solids taking the most space in the memory are listed when you start the tool in a 3D View.



! It is good to know the number of surfaces used in the drawing. An excessive number of surfaces may slow down the computer considerably. To prevent this, you can limit the number of surfaces in ARCHLine.XP. To limit faces, go to File menu – Options – General – 3D Preferences:



#### 14.1.4. Perimeter

Define the length of the selected object.

- Select the desired object.

#### 14.1.5. Length by chain

With this command you can measure the length of an open or closed chain of lines.

The objects constituting the chain of line can even be walls. In the case of a closed external contour you get the perimeter of the building.

#### 14.1.6. Distance

Display the distance between two points.

- Specify the first point.
- Specify the second point.

Measured distance	1.485 m
Measured distance in x	1.138 m
Measured distance in y	0.9545 m

#### 14.1.7. Querying angle

Display the angle of a selected object in the drawing.

- Select the object whose angle you want to measure.



The program will measure the angle in the direction clockwise or anti-clockwise defined in the **File menu – Options – General – Angle** dialog box.

#### 14.1.8. Measured angle

Measure the desired angle graphically.

- Specify the vertex of the angle.
- Specify a point on one of the rays of the angle.
- Specify another point on the other ray of the angle.

### 14.1.9. Coordinate

Display the coordinates of any selected point on the screen.

- Select the desired point of the screen.

## 15. Rendering

### 15.1. ARCHLine.XP Rendering

ARCHLine.XP provides an integrated powerful, easy-to-use rendering and visualization technology based on the latest release of REDRender product.

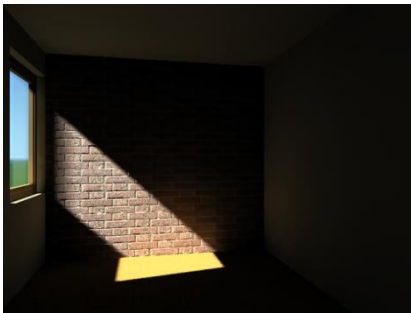
This photorealistic-rendering engine includes a physically based lighting model supported by advanced sky, analytical anti-aliasing, ray-trace algorithms, and a range of global illumination techniques.

This release contains High Dynamic Range Images, or HDRI's, which makes easy Image Lighting and scene creation.

#### 15.1.1. Ray tracing

Ray tracing is a technique for generating an image by tracing the path of light through pixels in an image plane. The technique is capable of producing a very high degree of photorealism.

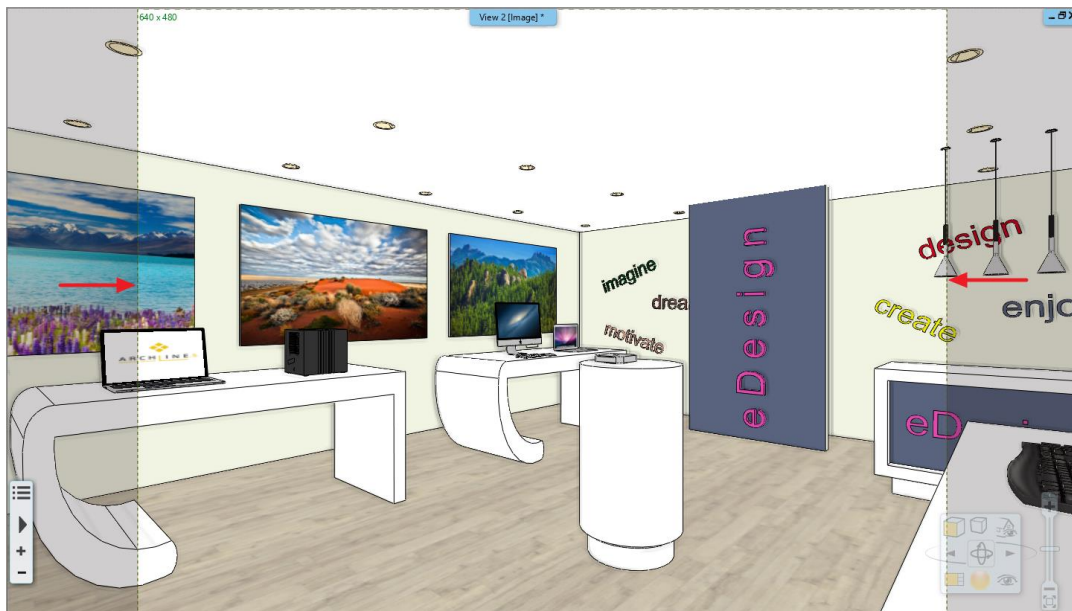
See more: [http://en.wikipedia.org/wiki/Ray\\_tracing\\_\(graphics\)](http://en.wikipedia.org/wiki/Ray_tracing_(graphics))



#### 15.1.2. Rendered frame on / off

To set up the views needed for rendering, it is essential that you know when you're setting up your view to see exactly what will appear on the rendered image when you take a certain picture with a certain aspect ratio. In the dialog that displays photorealistic display settings, you can use the "Render Frame On / Off" option to display the frame for the currently selected mood.

This option is available from the **Ribbon Bar – View – Rendering – Render frame on/off**.



*The rendering resolution frame (highlighted with the red arrows).*



It is important to note that rendering of the rendering frame is not so much the resolution itself, but rather the choice of the same resolution as the image used to produce the final image is the most important aspect.

EXAMPLE: Everyday workstation renders a lower resolution (such as 854 x 480 - 16: 9 aspect ratio) to reduce the rendering time, but the final image is taken at a much higher resolution (for example, 1920 x 1080 to 16: 9 aspect ratio).

Equivalent resolutions represent the same space, so in this case, exactly the same area is visible on low resolution workstations and the final high resolution image.

### 15.1.3. Render time

Which factors define the render time?

1. The computer you are working on (processor speed, memory size).
2. Project size (number of surfaces).
3. The complexity of the materials.
4. The complexity of the lights.
5. The render settings.

When rendering, it is recommended to turn off all the details of other rooms, except from the room currently being rendered. This will save you a considerable amount of render time, as the program does not need to calculate items that are not displayed in the final result.

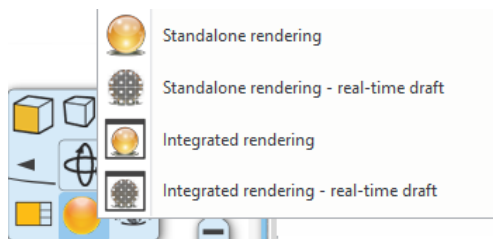
### 15.1.4. Usage of rendering

You can create photorealistic pictures starting the rendering with the rendering icon.



The icon is active if you work in the 3D View.

If you click on the icon you can choose from different rendering options.



You have two main choices: you can start a **standalone** or an **integrated** rendering.

The **Integrated rendering** appears as a drawing in the project and you can handle it as the drawing windows.

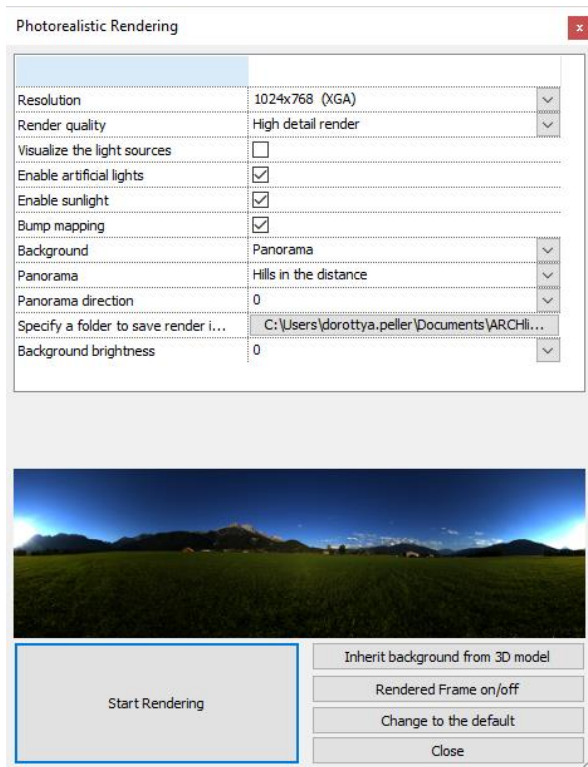
The **Standalone rendering** opens an application which is in close connection with the program but runs separately.

You can start these two modes as real-time draft, which are in a live connection with the content of the 3D View and can react immediately to several modifications, and display the draft of the result in a short time.

After selection the render dialog appears, which is the same in every case except for the render quality which is set according to your previous choice. (However, it can still be modified here.)

### 15.1.5. Rendering Settings

In the appearing render dialog you can set the followings:



### Resolution

You can use from the standard resolutions on the list. The Same as view size option will make the software use the 3D View content size for rendering. This option is very useful when you would like to see the same part of the scene in the 3D view and on the rendered image. You can also define unique resolutions by selecting the User defined option and typing in the number of pixels horizontally and vertically.

### Render quality

There are four render quality options including the real-time options. However, if you want to create a presentable render for your client, you have to choose from the following options:

- ❖ **Exterior – Quick render:** For exteriors and well-lit interiors.
- ❖ **Interior – Quick render:** For images that are not clear enough using the exterior render. (Most probably when there is not enough direct light).
- ❖ **High detail render:** More details are displayed; the result will be clearer and noiseless but it will take more time.

Therefore, it is not advisable to make the final image routinely with the High detail render, only in justifiable cases, since it is obvious from the facts mentioned above that the rendering can be created in high quality in a number of cases with using only the Quick Render settings. When the Quick render is clear and noiseless, the High detail render will not give you a different result either.



Interior quick



High detail



### Visualize the light sources

Using this option you can turn on a simulation which visualize the light sources of the project as light bulbs. This option is recommended when the light sources are not directly visible. Usually this option should be turned off because the light is seen without it too.

### Enable artificial light

This option switches on and off the lightsources of the lamps in the project.



Artificial lights off



Artificial lights on

### Enable sunlight

Turns on and off the direct sunlight. (It does not mean that we will have a night time render, if this option is turned off, the result will only be a cloudy scene.) If this option and the artificial lights are turned on you will have a combined render, in which these two will result in a combined effect.



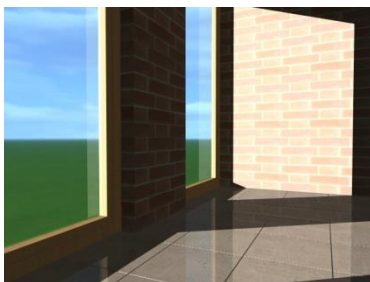
Sunlight off and artificial lights on



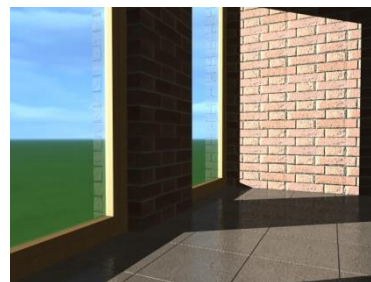
Sunlight on and artificial lights on

### Bump Mapping

Bump mapping is a technique used to add more realism to images without adding a lot of geometry. Texture mapping adds realism by mapping images to geometric surfaces. Bump mapping adds per-pixel surface relief shading, increasing the apparent complexity of the surface. This uses lighting properties and indicates which parts are dark and which are light on a texture, making it look more geometrically complex because of light refraction.



Without Bump Mapping

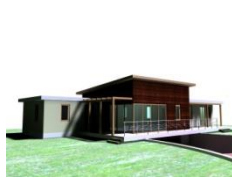


Using Bump Mapping

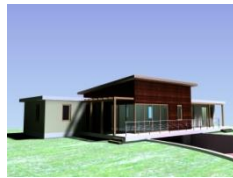
### Background type

The image background can be uniform, gradient, an imported picture or a panorama.

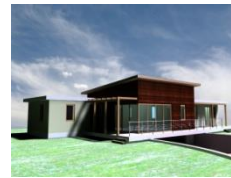
- ❖ **Uniform:** Set background colour with the colour table.
- ❖ **Gradient:** Define a top and a bottom colour to set the background colour of the image. The colour of the background will change gradually from the top colour to the bottom colour. Set the top and the bottom colour of the background in the colour table. You can also define the top colour of the ground.
- ❖ **Image:** You can select from the list from some default images or load one into the background of rendering. In this case select the Custom background image from the list and specify the filename and path.
- ❖ **Panorama:** A panorama background, in contrast to the image completely surrounds the model so the view from each window will be different for example. You can select from the list from some default panoramas or load one into the background of rendering. In this case select the Custom panorama from the list and specify the filename and path. You can also set the direction of the panorama.



Uniform



Gradient



Image

### Specify a folder to save render images

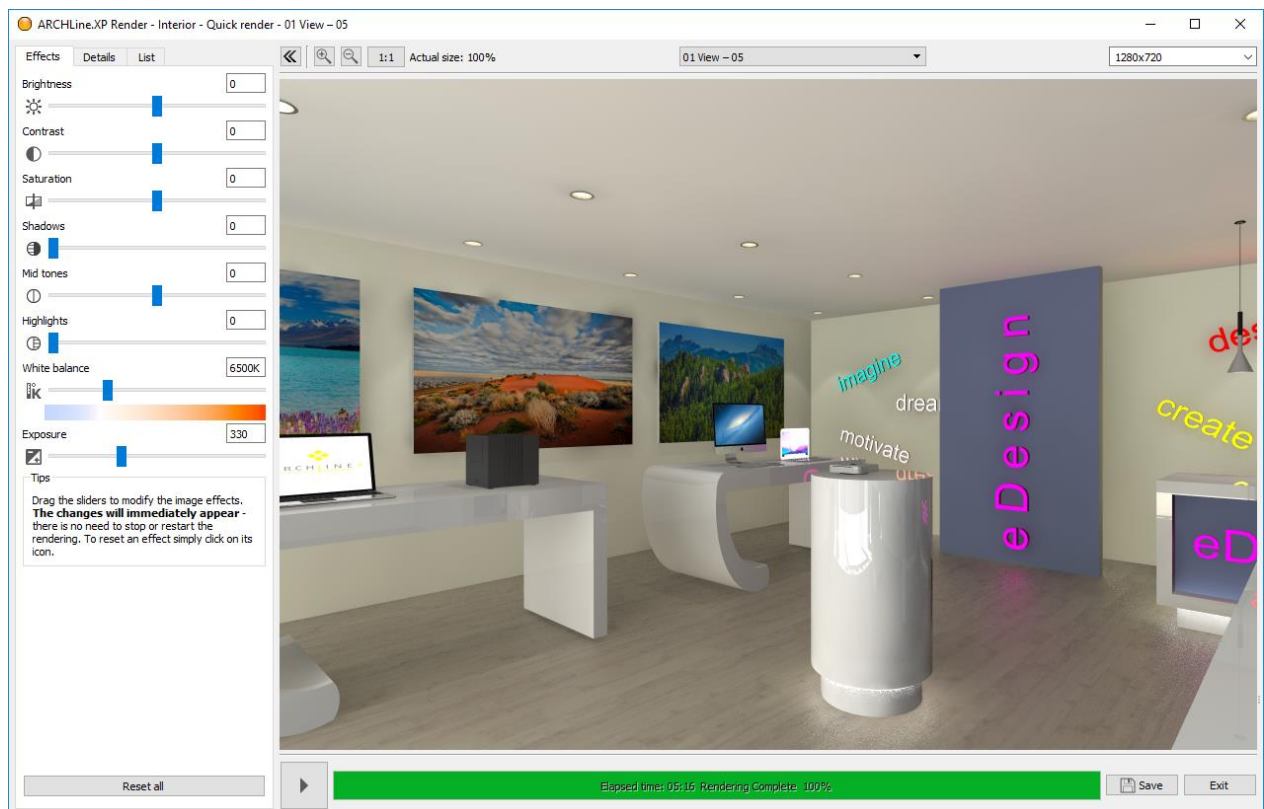
This is basically a back-up save path, where the program creates a back-up of the last state of each image.

### Background brightness

The brightness of backgrounds from different sources are not the same. You can adjust it here if necessary. For interior scenes you will need darker backgrounds while rendering an exterior image requires a brighter background.

## 15.1.6. Render dialog

The render dialog consists of an image area, a progress bar and three tabs on the left. The simple interface of the ARCHLine.XP Render is offering ready-made templates to quickly set up the quality of the final image. The image is rendered with a progressive rendering method which gives you the ability to have an idea of the full image and make decisions based on that even at the initial phase of the rendering. You can also zoom and pane the image while it is still not finished to check the smallest details. If that is necessary, you stop the rendering at any time; you can make fundamental changes and start another render without closing the renderer.



## Image area

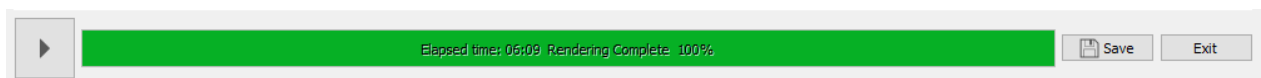
The largest part of the ARCHLine.XP Render interface is occupied by the Image area. At the initial phase of rendering the Image area represents a snapshot of the scene to be rendered. The final image starts to be processed over the top of this snapshot once the calculations reach a certain level.

- ❖ **Zoom image:** The image represented in the Image area can be zoomed and panned even during the rendering process. To zoom in or out use the Zoom buttons at the top of the Image area. You can also zoom the image by simply hovering your mouse over the image area and using the mouse scroll-wheel. Scroll up to zoom in and scroll down to zoom out. The current zoom ratio is represented next to the zoom buttons on the right hand side. To see the image in real size, just click on the 1:1 button.
- ❖ **Pan image:** If the represented image is larger than the Image area you can pan it even during rendering. To pan the image hover your mouse over the Image area, press and hold the scroll-wheel and move your mouse.

## Stop / Re-render button

At the bottom of the Image area you can find the Stop / Re-render button on the left hand side. If you push it during rendering, the process will be stopped immediately. When rendering is finished normally or stopped by the user, all the quality settings become editable under the Stop / Re-render button. If you make changes you can push the Re-render button to render a new image with these changes.

## Progress bar



Right under the Image area you can see the Progress bar. The Progress bar is providing information about what actually happens. When the renderer appears model initialization starts. During this there is no rendering yet, only a snapshot of the model appears. When the calculations start you can see information about the time elapsed, the percentage of readiness of the whole rendering process and the estimated time left on the progress bar.

## Resolution

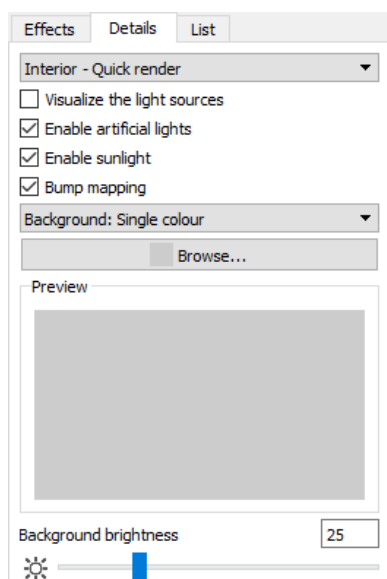
In the right top corner of the dialog you can find the resolution of the currently rendered image. To change this you have to stop the render, set the desired resolution, and then restart the process.

## Views

At the top of the render dialog you can select from the list of the previously saved perspective views in the model and other views such as axonometric, left, right, back, top, front, bottom.

### 15.1.6.1. Details

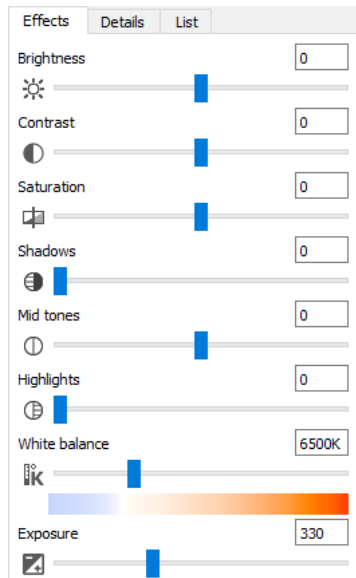
On the details tab you can see the settings you have chosen in the render settings dialog. The changes made on this tab will automatically appear during real-time rendering ONLY. In case of other render quality settings you have to stop and then restart the render process to visualize the changes.



### 15.1.6.2. Effects

The effects are extremely useful as they allow you to make changes on the image even during rendering, so you can fine-tune features like brightness, contrast or many more without having to save the image and open it in an image manipulator tool.

Once the image is ready some of its features are often need some fine tuning. The post-processes of the ARCHLine.XP Render are a great help in this job. Using the post-processes of the renderer you can change the brightness, contrast and many other features of the image, even on the fly when the renderer is still working.

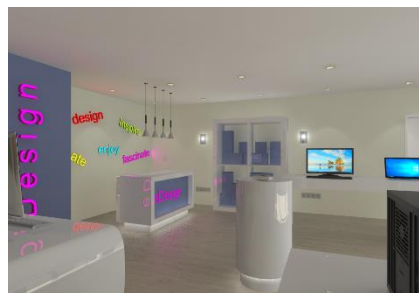


#### Exposure

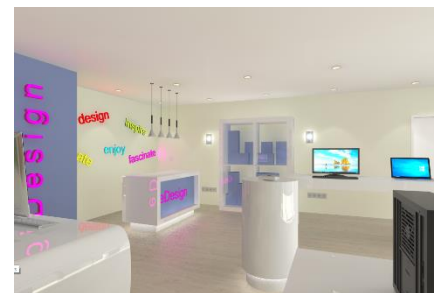
Use the Exposure to change the image brightness even while the image is still rendering. Lower exposure value means that the light touches the surface for a shorter period of time which results in a darker scene. By increasing the exposure you can achieve brighter scenes without fading the colours of the image - this is the most important difference between brightness and exposure. Amongst the effects exposure should be set first to be able to adjust the other effects to it. During setting the exposure you should focus on the white surfaces and adjust the value so that they appear white without burning the image.



Exposure = 230



Exposure = 330



Exposure = 430

#### Brightness

Use the Brightness to change the image brightness even while the image is still rendering. Use the slider or type a specific value between -100 and +100 to see a darker or brighter version of the rendered image.

The Brightness post-process is not the same as the Background brightness value of the Render settings dialog. The main purpose of the post-process is to give you an additional tool to change the brightness of an image that was already rendered with specific render settings. This setting has no effect on the quality of lighting – while the Background brightness option in the Render Settings dialog actually has.



Brightness: -100



Brightness: 0



Brightness: 100

### Contrast

Use the Contrast post-process to change the image contrast even while the image is still rendering. Use the slider or type a specific value between -100 and +100 to see a different version of the rendered image.



Contrast: -100



Contrast: 0



Contrast: 100

### Saturation

Use Saturation post-process to change the saturation of a rendered image. If you lower saturation, the image will tend to lose its colours. If you increase saturation you can boost the colour saturation of the image even over the normal level.



Saturation: -100



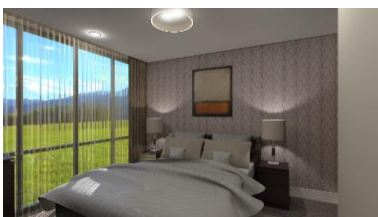
Saturation: 0



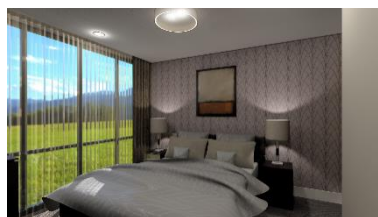
Saturation: 100

### Shadows

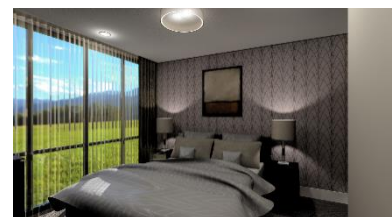
Increasing the value of shadows effect you can make stronger the darker shades of the image.



Shadows = 0



Shadows = 30



Shadows= 60

### Mid tones

By changing mid tones you can make those tones lighter or darker which were initially not too dark or completely bright. Increasing the value you can lighten, decreasing it you can darken.



Mid tone = -50



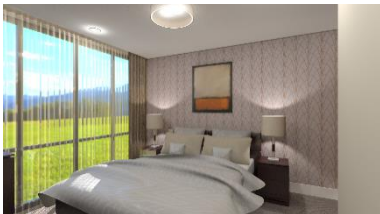
Mid tone = 0



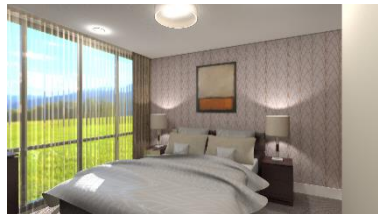
Mid tone = +50

### Highlights

Altering the highlight effect you can emphasize the light shades of the image such as white ceiling



Highlights = 0



Highlights = 30



Highlights = 60

### White balance

Use the White balance post-process to create a warm-tone or a cool-tone version of the same image. White balance is measured in Kelvin. Lower values result in warmer colour tones (deep orange tones) and higher values result in cooler colour tones (sky-blue tones). Using this post-process you can create different colour tone versions of the same image without having to change the real light colours of the whole scene.



Colour temperature: 3500 K



Colour temperature: 6500 K



Colour temperature: 9500 K

### 15.1.7. Render list – batch render

Render list feature in ARCHLine.XP® raises the efficiency of workflow of generating photorealistic images. Render list can store all necessary information and settings to create rendered images later on. You can add previously saved views of a model to render list.

#### How to use render list

You can access render on the third tab of the Render dialog.

Using render list is quite simple. The program automatically lists the previously saved views of the model on this tab. To render views you have to tick the checkbox before them. After you have selected the views to render, you can start the batch production by clicking on the START button on the bottom of the tab.



Please note that ARCHLine.XP keeps render list until it is running. When you close ARCHLine.XP the actual render list will be erased, and the list will be empty next time you start the software!

#### Move images up or down on the list

Using the arrows above the Start button you can change the order of the render list, setting the selected object to be rendered earlier or later.

#### Render settings

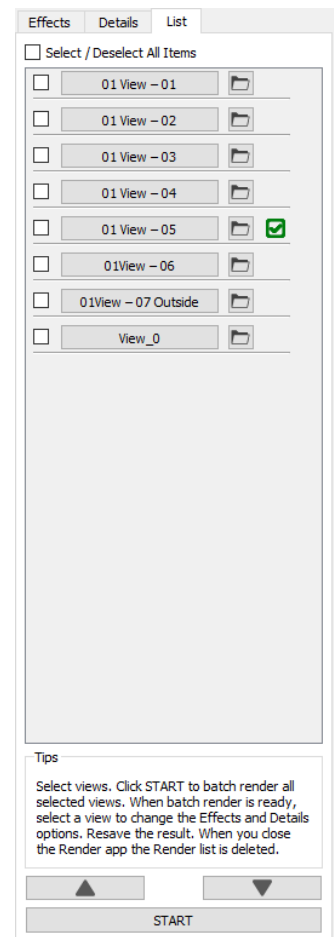
Every render parameter can be set individually for each image on the render list. Select the image and then set the desired parameters on the other tabs of the Render dialog, for example the render quality, the background, the exposure etc. It will be stored for each image individually. If you do not wish to alter the settings for each image the program will use the ones you set in the render settings dialog. After the images are ready you can select the one you wish to modify with the Render effects.

#### Save images from the render list

The images that are ready will be marked with a green tick on the list. After that you can save them by clicking on the folder icon next to them. In the file manager you can rename them and specify a save location.



Rendering a photorealistic image costs a lot of the computer's resources (like memory and processor). Because of this, we recommend you to start rendering a render list in times when it is not disturbing.

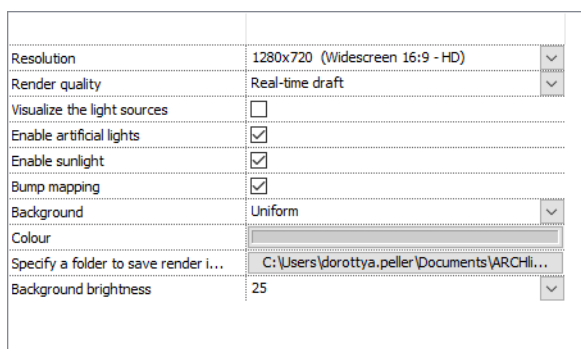


### 15.1.8. Real-time rendering

Thanks to this function you can get a quick feedback how some modification can affect the final result in the visualization. All this without having to wait a long time to test the final result. The real-time rendering is in constant connection to the content of the actual 3D View, it gives immediate reaction to many modification and presents a draft of the final outcome in short time.

#### 15.1.8.1. How to start the real-time rendering

You can start the real-time rendering by clicking on the render icon from the Navibar or from the **Ribbon Bar – View tab**. After that select the real-time render quality. You can always switch to real-time or vice versa whenever you want in the render dialog. This always means the restart of the current render.



### 15.1.8.2. Following up modifications

The fundamental feature of the real-time rendering draft is to track the vast majority of the changes executed on the model. Implementing changes will start a new rendering, which is able to provide a well estimated sketch in a short time how changes affect the rendered result.

Tracking of changes is automatically happen, there is no need for pressing a special button. When you remove an item from the model while editing, or even creating new one, or changing the perspective, or switching on or off an existing light source or changing a material or just the properties of one, any of these events immediately initiates a new rendering in the render application of real-time rendering draft mode.



Real-time draft of the current status



Modifying perspective



New draft is preparing



It is recommended to run real-time rendering on computers which has powerful processor and high memory storage (due to its ongoing need for resources). These are essential to present modification on rendering quickly and real-time or with slight delay.

### 15.1.8.3. How to finish real-time rendering

#### **Termination automatically**

The real-time rendering stops when the progress bar shows the end of the rendering process. In case we make any changes on the model then it restarts automatically.

#### **Termination manually**

The real-time rendering can be finished by pressing "Exit" button.

#### **Termination by render quality changes**

The real-time rendering can be terminated by changing the rendering quality for example changing to Interior – Quick render. The calculation of the image in this case starts with the selected quality settings on the basis of the actual status. Changes on the model no longer will be synchronized and will not trigger an automatic restart of the rendering process - rendering creates images on the traditional way.

## 15.2. DirectX

### 15.2.1. DirectX settings

You have new settings and fine-tuning possibilities with introducing DirectX.

It has to be emphasized that if the quality of the represented 2D and 3D content is required, you don't need the following mentioned settings modifications or fine tunes.

When the ARCHLine.XP runs on such computer, that supports the DirectX technology, there is a possibility to fine-tune the quality of the displayed content. Fundamentally we can mention two types of settings area in this respect: the representation settings of 2D windows and the 3D Views.

The modification of settings depends on, that which window is active. For example if a 2D (floor plan) window is active, then you can modify that settings belonging to it with opening *Property*.

For this click on *Property* on the bottom of *Toolbox*:



It is important not to select any drawing objects in the active window, because in this case the *Property* represents the preferences of the selected object.

#### **Visual settings in the 2D windows**

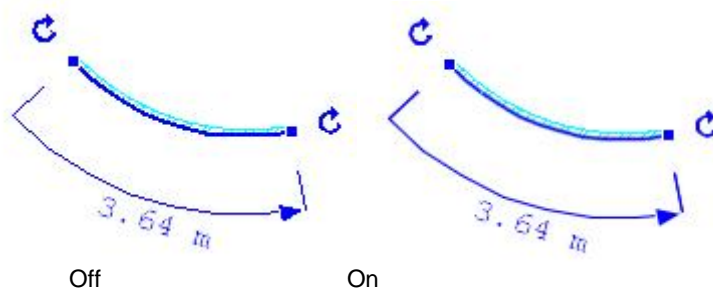
The available visual effects in the 2D windows are as follows:



Properties	
Graphics settings	
No style	
Property	Value
<b>Drawing settings</b>	
<b>Visual effects</b>	
Joining Surfaces	<input checked="" type="checkbox"/>
Classes for Joining Surfaces	Edit
Joining Surfaces is disabled between roofs	<input type="checkbox"/>
Display of Facet Edges	<input type="checkbox"/>
Dynamic section transparency (%)	
Antialiasing	<input checked="" type="checkbox"/>
Hardware vertex processing	GPU (hardware mode) in...
Texture optimization	GPU (hardware mode) in...

### Anti-aliasing cursor

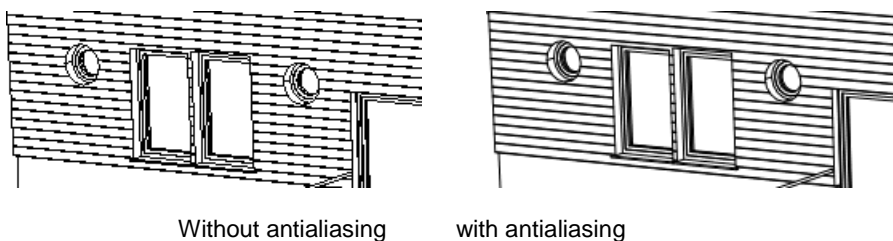
With this option you can apply the antialiasing on the markers. As a result, markers that appear at selection and drawing have a smoother look.



### Antialiasing

The antialiasing can be applied to the representation of the content in the selected window types. There are four options:

- ❖ **Off**  
The Off setting means that there is no antialiasing. In that case the contents of the 2D and 3D Views look coarser.
- ❖ **Only in 2D**  
The Only in 2D setting means that antialiasing is applied only to the content of the 2D (floor-plan) windows.
- ❖ **Only in 3D**  
The Only in 3D setting means that antialiasing is applied only to the content of the 3D Views.
- ❖ **In 2D and 3D**  
The In 2D and 3D setting means that antialiasing is applied to the content of all windows in the project.



### Hardware vertex processing

With hardware vertex processing the video card stores and processes the data of vertices found on the drawings. Since two vertices belong to each line, it is easy to imagine the amount of vertices on a drawing. Hardware vertex processing can speed up your work if you have a fast video card.

### Texture optimization

Texture optimization is a useful setting if you have large drawings. Using this setting, the program anti-aliases only the visible content of a window, while the appearance of the content outside the window (which is not visible) is simplified substantially.

This simplification is visible at pan. However, the visible content is refreshed as soon as the pan is finished, and then it looks smooth again.

By enabling the texture optimization it is possible to use the FPS limit and Model optimization (%) options too.

***FPS limit***

FPS stands for frames per second or we can say images/second. The program tries to represent the content of any windows with the highest speed that it is possible. This speed is expressed in frames per second, which means the number of frames represented consecutively in one second. (When representing a moving model or a video, at least 24 frames/second are needed to make full motion for a human eye.)

When the program detects that it is not possible to keep the limit value, it starts to simplify the representation of the content by texture optimization.

***Model optimization (%)***

Model optimization (%) is an adjustable checking function. Setting 10% here, for example, means that the program checks whether the specified FPS limit can be kept or not only at that time when 10% change has been made in the project compared to the previous checking. If yes, then it switches off the texture optimization automatically because there is no need of it for increasing the speed. If it finds that the specified FPS limit cannot be kept, then it leaves the texture optimization switched on to increase the speed.

## 16. Documentation

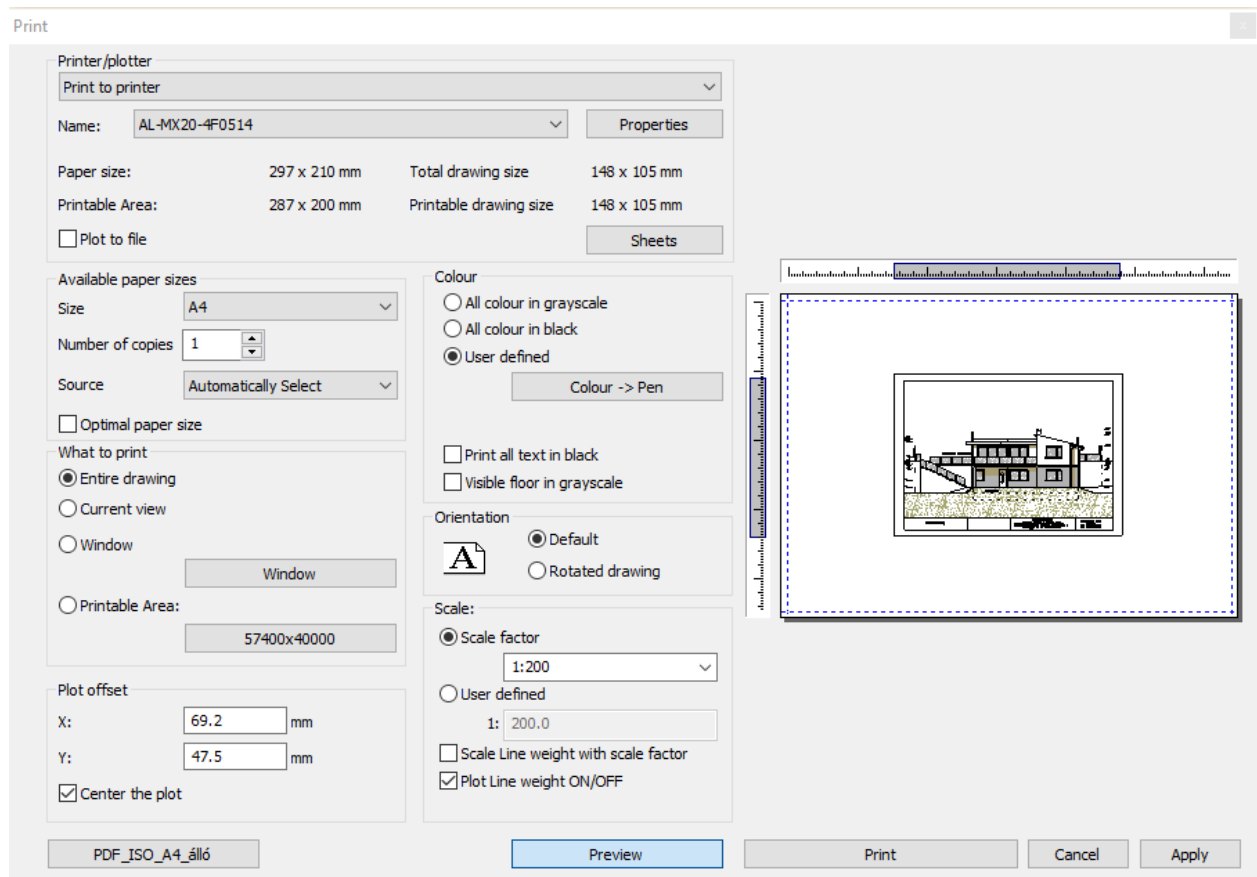
Following the instructions in this chapter, you can learn how to make documentation to your clients and professionals based on the project created in ARCHLine.XP. Through a family house project, we demonstrate the steps how to create documentation.

### 16.1. Send printing to printer

The File / Print command allows the followings:

- ❖ printing the current drawing or
- ❖ the current plot layout.

The Print dialog window sends the prepared drawing (or the printing environment) to the default printer (printer, plotter file) set in the operation system.



#### Printer

On top of the dialog, you can find the type of the printer, the paper size and the printable area. You can get the dimensions of the printable area if you take away the least margin size required by the printer from the size of particular sheet of paper. You can select here the type of the printer tool.

#### Settings

The Setup button displays the MS-Windows standard Printer Setup dialog window. Here you can set up the printer properties. If you would like to print into file, switch on the here appearing **Print to file** option.

These values are valid on the current printing only!

If you wish to use your new setup continuously, please use the MS-Windows standard Printer dialog (*Start menu – Setting – Printers*).



We recommend to define the sheet size and orientation under Paper size.

### Tiling support

Define the new paper size. You can define a custom paper size as well. Click OK to return to the Print dialog. The Tiling button displays the number of pages needed in X and Y direction (e.g. your A4 printer can print an A3 size drawing as 2 pieces of A4 paper, adding the margin!).



If you wish to use the default paper size of your printer, please choose the DEFAULT option from the Paper size list. Choosing any other option the printer will indicate that the default paper size is not sufficient to complete the printing.

### Paper size

Here you can set the paper size, orientation, and the number of copies. On the basis of these set parameters automatically will refresh the paper and printable size information in Print dialog.

### Orientation

Specifies the drawing orientation. You can select Default or Rotated drawing option.



Don't mix up the Orientation with paper orientation. The first one refers to the drawing and the other to the paper sheet.

### Content to print

Specifies the area of the drawing to be printed.

### Entire drawing

Displays and prints the entire drawing.

### Current view

Displays and prints only that part of the drawing which actually appears.

### Window

Displays and prints only a selected part of the drawing. By choosing Window option you can select the printable area by a rectangle. Then the program automatically returns to the Print dialog.

### Printable area

Shows and prints only the selected part of the drawing but using the predefined printing paper size and printing scale factor.

- First, choose a printing scale.
- Choose the paper size.
- Selecting this option the program automatically turns back to the drawing and there you can select the printable area by using the square that the program offers. This square corresponds to the paper size in the given scale. Finally the program turns back to the Print dialog.



We recommend using this option when you print only a part of your drawing!



The *Printable area* option uses the paper settings of the default printer. Therefore if you set the paper properties in *Printer* dialog window, or if you use the *Rotated drawing* option the end result will be [inappropriate](#). We recommend in

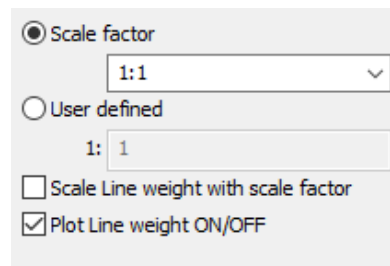
this case to use the *Printable area option* in order to set the paper properties in *Windows – Control panel – Printer settings* window. This problem will not occur when you print PDF.

## Scale

You can define the scale factor in the following ways:

### Scale factor

Choose a predefined scale factor: e.g.: 1:100  
The Scale to Fit calculates the best scale to fit the current paper size.



### User defined

Enter the scale value : 1: 15



We recommend using the scale 1:1 in case of plot layout!

## Scaled line width

Scales the line width in proportion to the scale factor when activated.

## Line width active

If the check box is switched **Off**, all the lines are printed with zero line width. It can reduce the printing time significantly.  
If the check box is switched **On**, the program prints all lines with the defined line width.

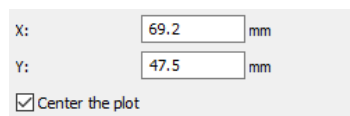
## Shift

## X and Y

Defining the X and Y coordinates you can shift the printing origin.

## Centre point

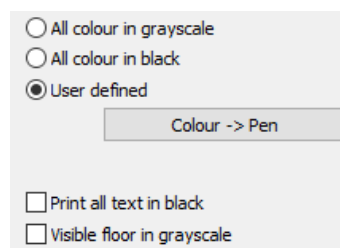
It moves the drawing centre point into the paper centre point.



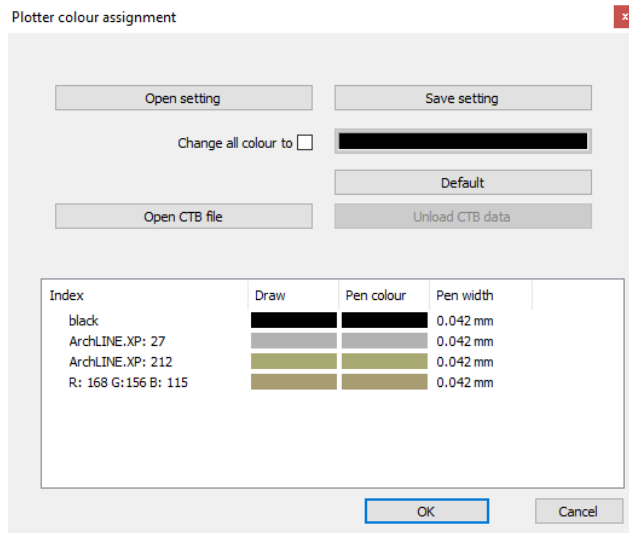
## Colour

There are several possibilities for printing. You can choose:

- ❖ All colour in greyscale
- ❖ All colour in black
- ❖ User defined  
Here you can change colours and associated line width.
- ❖ Print all text in black
- ❖ Visible floor in grey scale



## Plotter Colour assignment



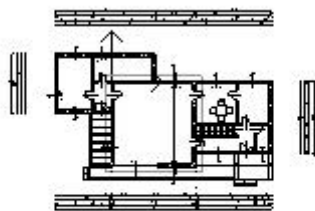
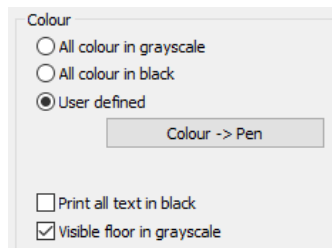
Choosing “Colour- Pen” option in the appearing dialog, you can assign to the colours of the drawing, different pen colour and pen width.

You can save your settings by selecting “Save setting” and later you can reload these by “OPEN” button. The **Change all colour to** option assigns the same colour to each colour in the list.

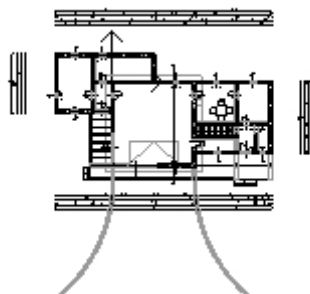
### Printing: Visible floor in greyscale

In the Print dialog window, you can find the “Visible floor in greyscale” option in the top right corner. When you activate this option, you will be able to print out the content of the visible floor too, as you see it on the drawing.

The content of the active floor will be printed as previously was set, and the content of the visible floor will be printed in plain grey. Turn on this option if you want to print the content of the visible floor as well.



Visible floor in greyscale OFF



Visible floor in greyscale ON

### Preview

The “Preview” dialog window shows the drawing as it will be printed. You can save time by using this tool and avoid the wrong end result.

The white rectangle represents the paper. The selected drawing is in the grey rectangle. The rulers on the top and side helps you to move the drawing graphically.



If the drawing window is outside the paper frame, please note that part will not be printed!

### Scale

Enter the scale value from the list, or type in the box.

### Manual

Scale factor  
 1:1

User defined  
 1: 1

Scale Line weight with scale factor  
 Plot Line weight ON/OFF

## Printing

Start printing clicking on the button.

## 16.2. Printing in PDF

Printing the plot layout into PDF format happens the following way:

Choose the File menu - Print to pdf command and set the following properties in the dialog window:

- **File:** Here you can specify the folder under the PDF will be saved and the give name of the file. (1)
  - **Available paper sizes:**
  - Size: A3 (The same paper size as the plot layout) (2)
  - Source: Landscape (3)
  - **What to print:** You can choose to print your entire plot layout, or just one of the pages. In this case, you can change the „Window” option. (4)
  - **Colour:** User defined (5)
  - **Scale:** Select the optimal scale factor (6)
  - **Plot offset:** Center the plot (7)
- If the desired result appears on the preview window (8), click the Print button to create the PDF (9).

Print

Printer/plotter  
PDF Printing

Paper size: 420 x 297 mm Total drawing size: 297 x 210 mm  
Printable Area: 412 x 289 mm Printable drawing size: 297 x 210 mm

1 E:\ARCHLINE XP\2010\ANATOLIJ\engterv\hom 4.pdf Sheets

Available paper sizes  
Size 2 ISO A3 297x420 mm  
420 mm 297 mm  
Source 3 Landscape

Colour  
 All colour in grayscale  
 All colour in black  
 User defined  
 5 Colour -> Pen

What to print  
 4  Entire drawing  
 Current view  
 Window  
 Printable Area: 41200 x 28900

Orientation  
 Default  
 Rotated drawing

Scale:  
 6  Scale factor  
 1:100  
 User defined  
 1: 100.0  
 Scale Line weight with scale factor  
 Plot Line weight ON/OFF

Plot offset  
 X: 57.5 mm  
 Y: 39.5 mm  
 7  Center the plot

8

9 Print Cancel Apply

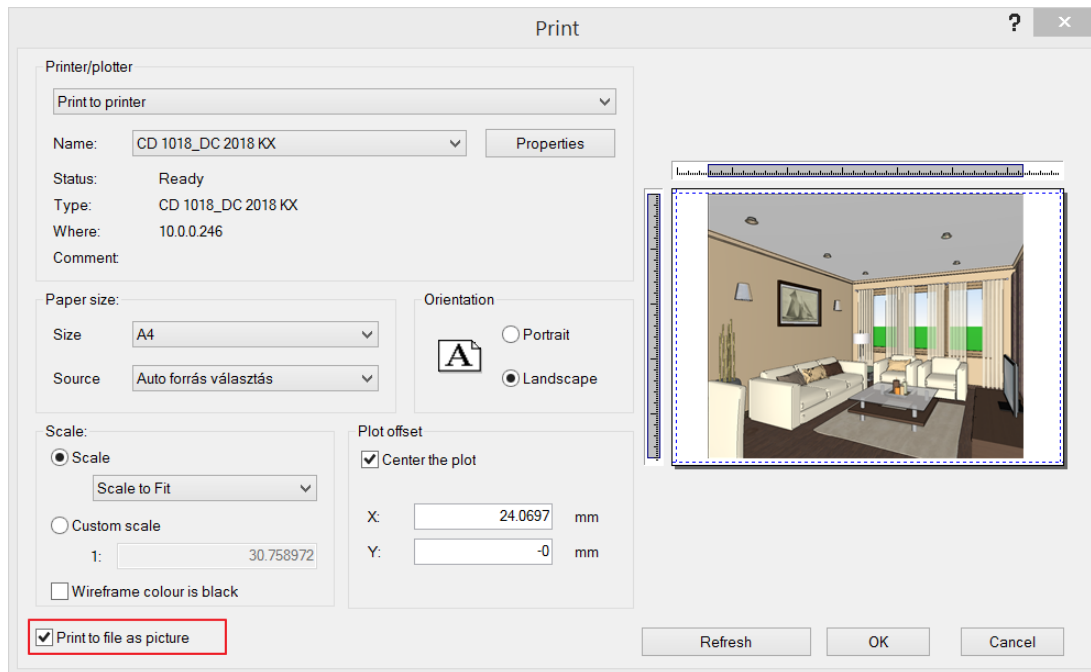
PDF is created in the predefined folder under the specified name.

## 16.3. Printing the 3D image window

### Print directly

There is an option to print vectorial the content of 3D image window and also to save the model as image in an image file.

- Activate an Image window.
- Select File menu – Print command.  
The settings are similar to the general printing dialog, but it is simplified.



### Print to file as image

The program saves the content of the 3D Image window as a jpg image file. The image can be printed out afterwards.

### Print to PDF file

If you select the *File menu – Print to Pdf* file command, a similar window will appear, there you have to define the name of PDF file. There is also an option to set the image resolution.

We recommend scaling the 1:100 (In case of 1:1 the file size will be too large.)

### Placing the Image window on the plot layout

It is possible to place the content of the 3D Image window on the plot layout. The resolution of the image will be the same as the resolution of the screen. Before printing, it is suggested to apply the *Plot Layout menu – Refresh layout* command, so the resolution of the image will change to the best available settings.



The refresh layout resolution means that the image size and the project file size will increase substantially.

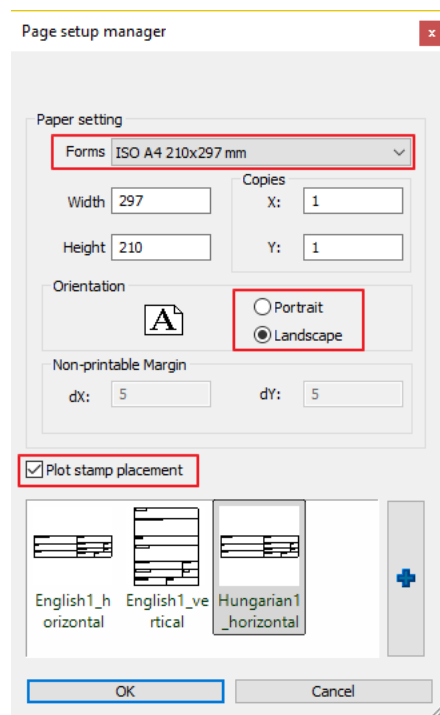
## 16.4. Create plot layout

Plot layout is a documentation view to collect large number of entire views and portion of views and images in one paper sheet.

Location of the command: Ribbon > Documentation > Plot layout > Prepare plot layout

You can specify in the dialog the following options:





### Paper sizes

To prepare printing you can define the plot layout size. This format might be different from the actual printing format. The user can also define a special customized size. The default format is determined by that actual paper size which is used by the current printer, so it is recommended to use that.

### Orientation

The Orientation setting defines the position of the paper. Portrait or Landscape can be selected from Paper Size.

### Margin

The dialog displays the margin values that belong to the current printer driver. They are the absolute minimum; you should not enter values less than these because it might happen that some part of the drawing will be out of the paper printable area.

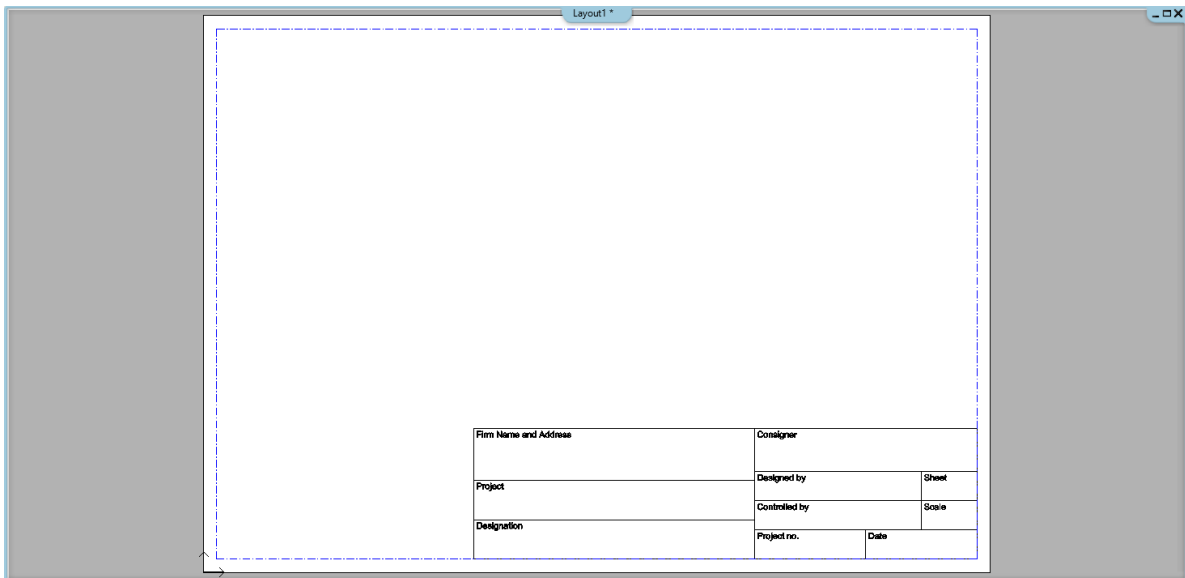
### Template plot stamp

Select a plot stamp template from the list, or click Select New Item (Blue Cross) button to select other plot stamps.

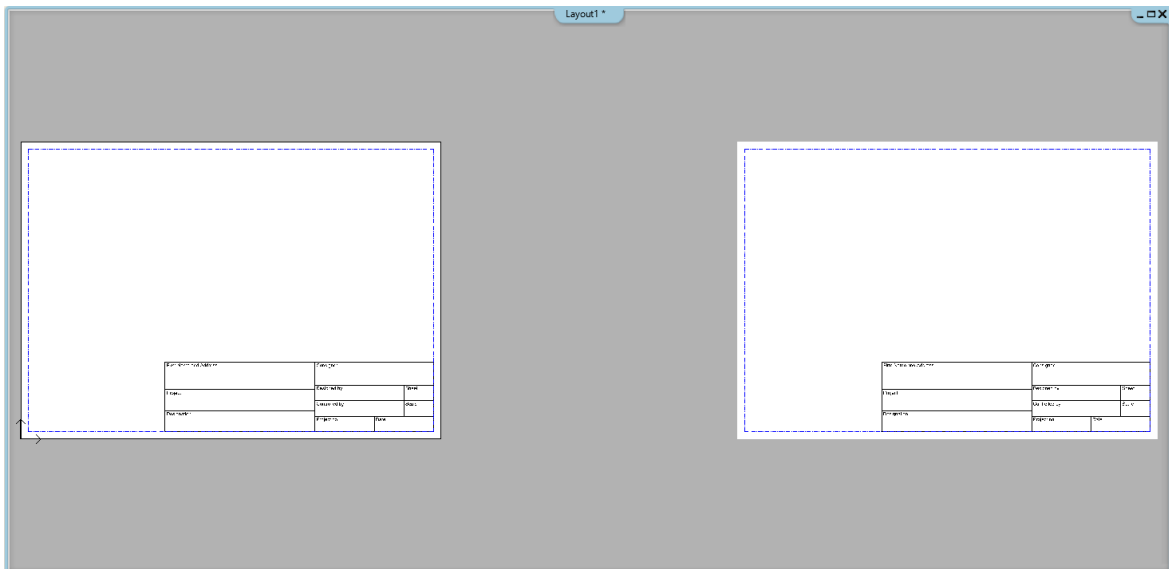


How to calculate the printable area? You can get the dimensions of the printable area if you take away the least margin size required by the printer from the size of particular sheet of paper. The dimensions of the printable area can be calculated as follows: Printable area length = paper length - (top + bottom margins) Printable area width = paper width - (left + right margins).

- When you press OK, the ARCHLine.XP will create a new Print Page window and if you activated the Plot Stamp Placement option, the program will automatically place the selected plot stamp on the print page.



- If you want to create a new plot layout next to the existing plot layout, start the Prepare plot layout command by pressing the Print Page window. In this case, the new print plot layout is automatically placed on the right side of the last print page.
- 



If you want to create a new print page window, start the command from an active window which is not a print page window (eg. floor plan window, 3D view, section, etc.).

#### 16.4.1. Fill out the placed plot stamp automatically

The File / BIM / Project parameters dialog parameter values are automatically copied to the plot stamp on the page only if the text starting with the \$ character on the plot stamp matches to the name of the parameter used in the dialog.

Project properties

Parameters	Value
<b>Building information</b>	
Building type	Office
Project name	
Project number	
Building site name	
Project phase	Existing
Begin date	
Completion date	
Type Of Construction	
Current Floor	
Status	
Office area	
Building volume	
Area available for Building	0 m <sup>2</sup>
Maximum height of the Building:	0 m
Building site total area [m2]	0 m <sup>2</sup>
Building elevation above sea level in m	
<b>Location information</b>	
Project location	45°19'0.12",11°52'0.12"
Project address	
Postal code	
Region	
Town	
Country	

Do not show this dialog again

OK Cancel

Enter Parameter Value

Parameters (grey) and static text (white) that are listed in the dialog, Modify the values in the 2nd column if necessary.

Name	Value
Controller	
Company Address	
Company Name	
Consigner	
Date	
Designation	
Designer	
Project	
Project no.	
Scale	
Sheet	
	Project
	Designed by
	Project no.
	Scale
	Date

Update Project parameters

OK Cancel

Enter Parameter Value

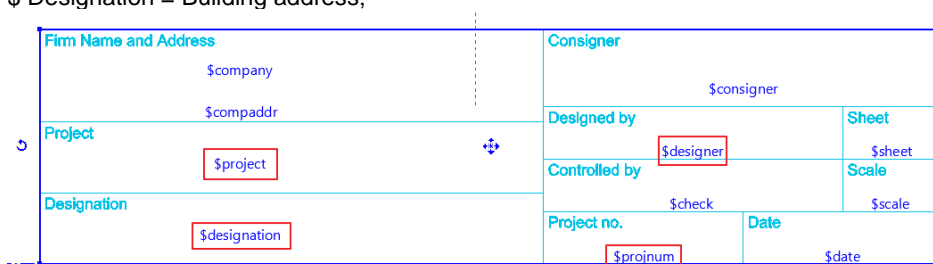
Parameters (grey) and static text (white) that are listed in the dialog, Modify the values in the 2nd column if necessary.

Name	Value
Controller	
Company Address	
Company Name	
Consigner	
Date	18/08/2017
Designation	King Str.
Designer	Istvan Kiss
Project	Family house
Project no.	B/1
Scale	
Sheet	
	Project
	Designed by
	Project no.
	Scale
	Date

Update Project parameters

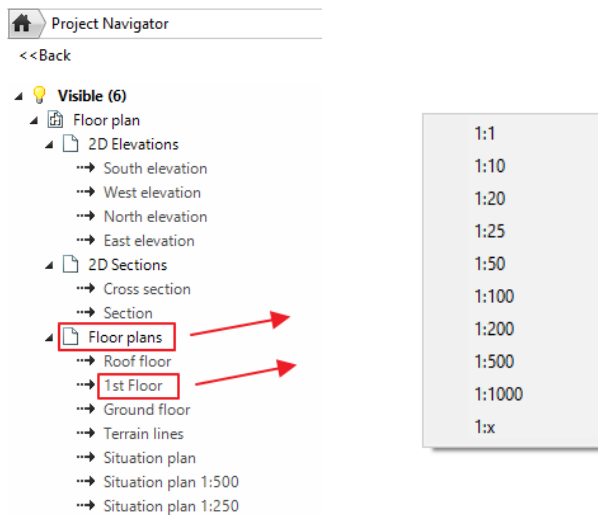
OK Cancel

- \$ Project = Project Name;
- \$ Designer = Designer name;
- \$ Projnum = Building number;
- \$ Designation = Building address;



### 16.4.2. Placing a drawing on the plot layout with drag and drop method

From the Project Navigator, you can drop drawings on the plot layout by dragging the desired level name or 3D view by keeping the left button down and moving to the plot layout. The Project Navigator is available under **Documentation / Drawing Import from Project Navigator**. Releasing the left button above the print layout window, you can specify the scale of the 2D drawing in the appearing menu.



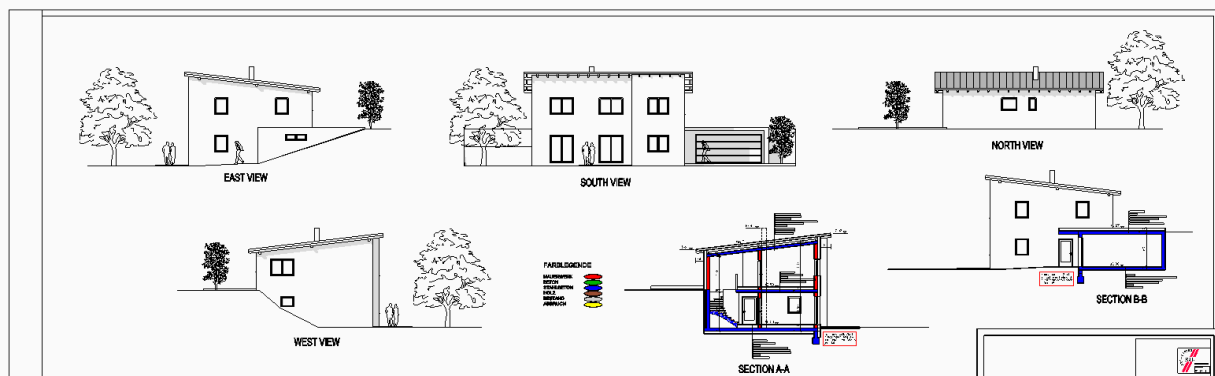
After loading and placing the drawing files on the plot layout you can freely place scales, text, North Symbols, and image files as a background image. For example, from the Project Navigator, you can place the saved photorealistic images of the 3D model.

### 16.4.3. Plot Layout: View Titles on Sheets

When you place a document on Plot Layout, ARCHLine.XP displays the title, such as floor plan and storey, elevation, section, and 3D view name.

The title is Project-specific information and linked to Project Navigator documents name.

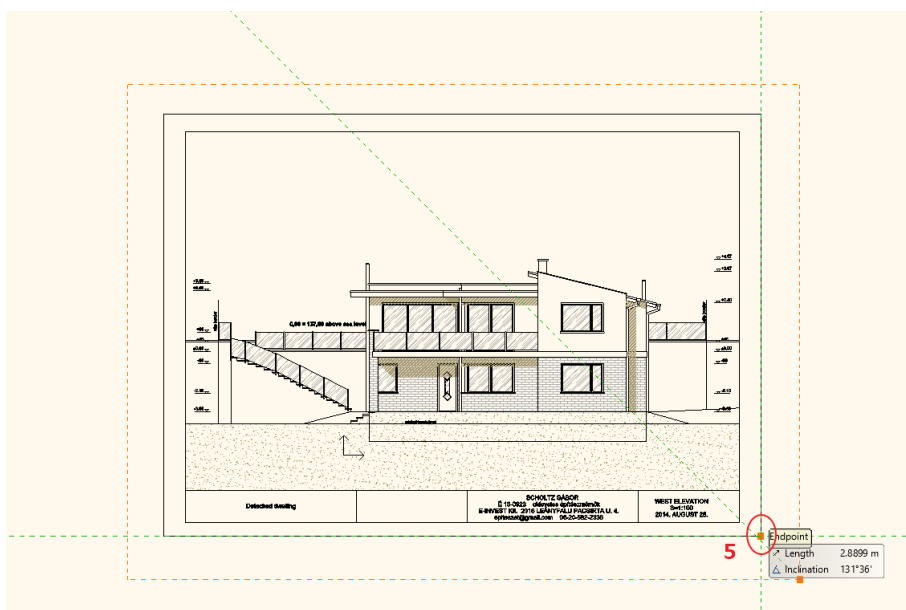
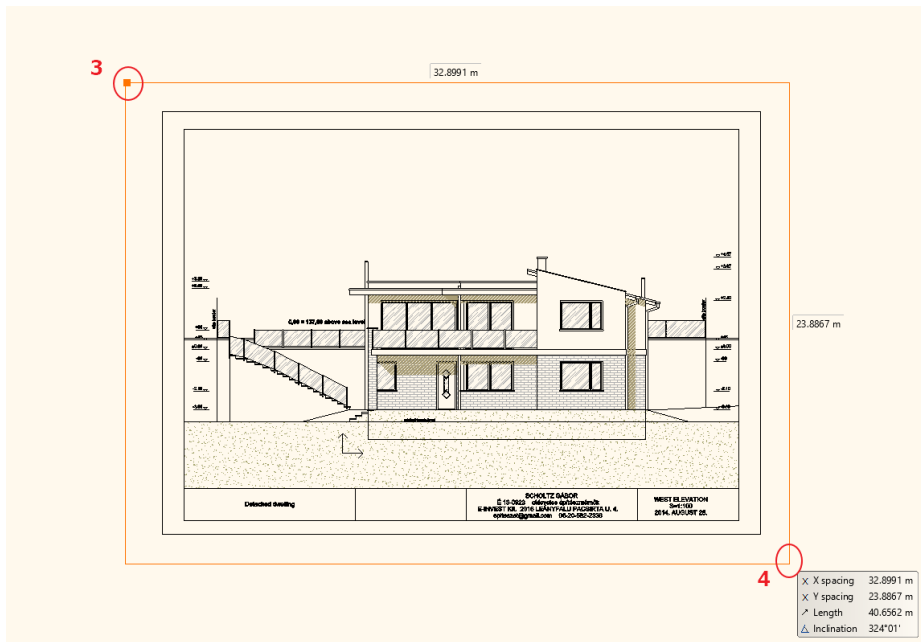
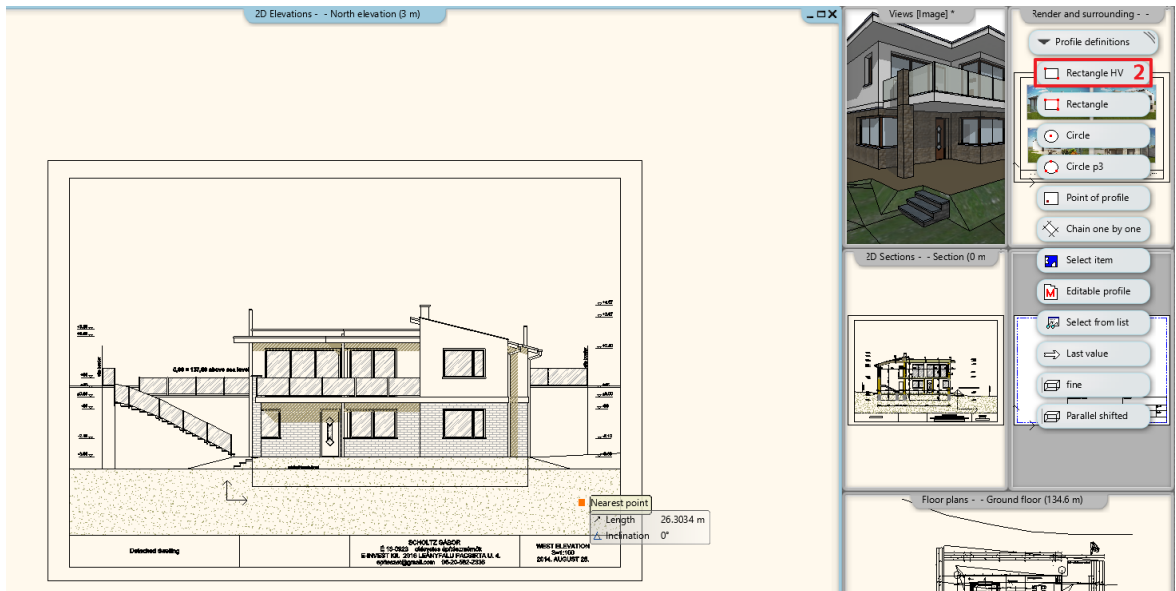
You can rename the title text. The renaming method changes the name of the document in the Project Navigator and on the Plot Layout together.



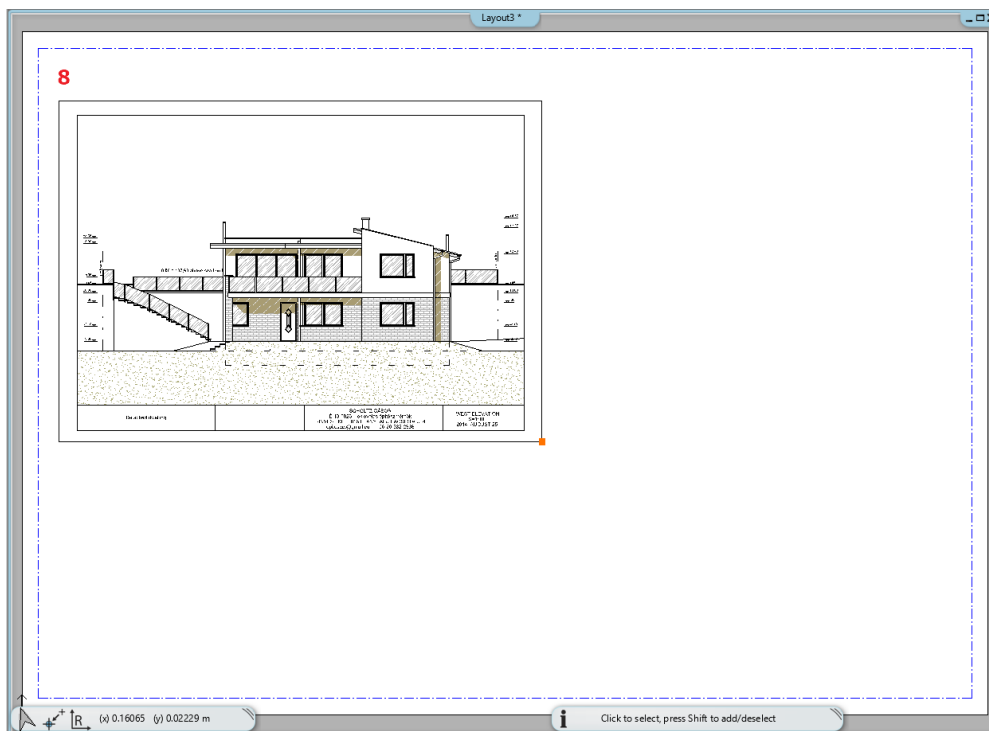
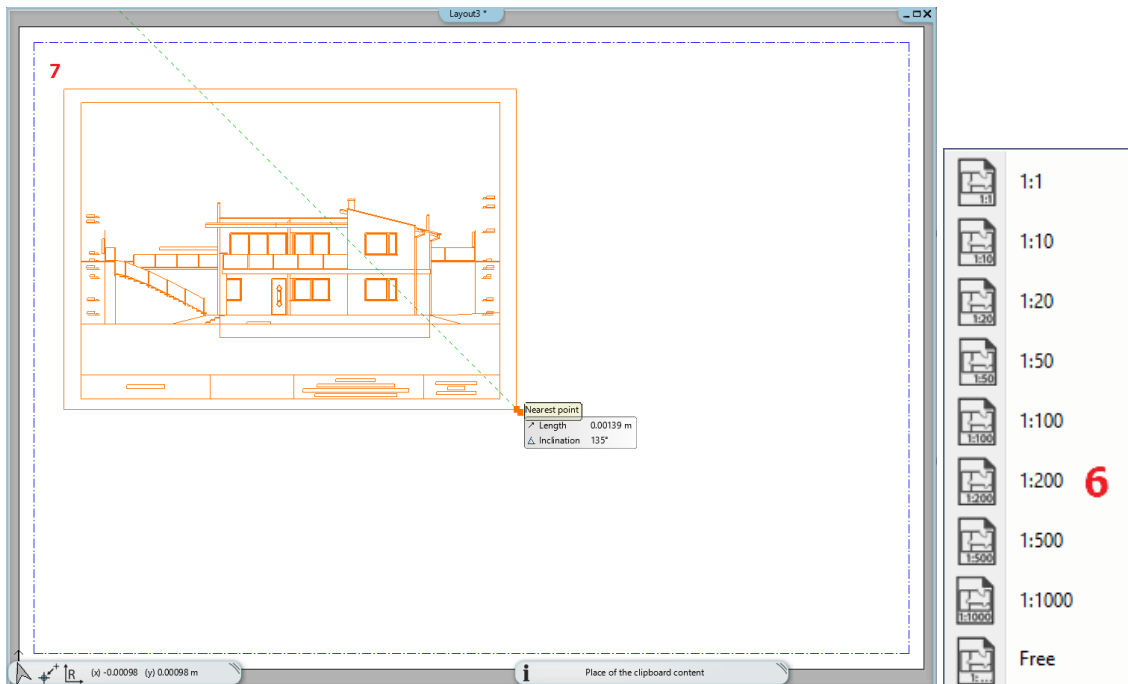
### 16.4.4. Copy a partial content and paste it onto the plot layout

Next, from the records of the existing floor plan with a given scale factor, we will paste some of its details to the empty page. Please follow these steps:

- Activate the window you want to copy the content from.
- Choose Documentation / Copy with to plot layout command (1).
- Select the part you want to copy (2,3,4).
- Define the starting point to grab the selected part for placing (5).

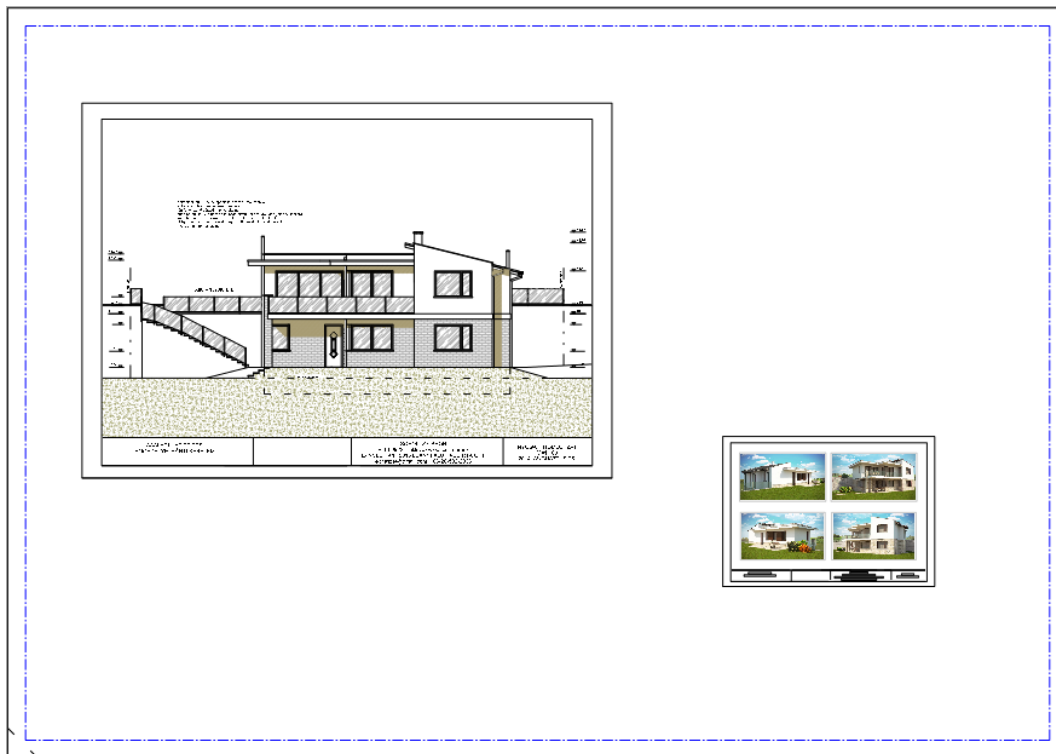


- Activate the plot layout (print layout).
- Select Paste to plot layout command from the Documentation menu and specify the scale you want to place the drawing on the page (6).
- Place the drawing (7,8).



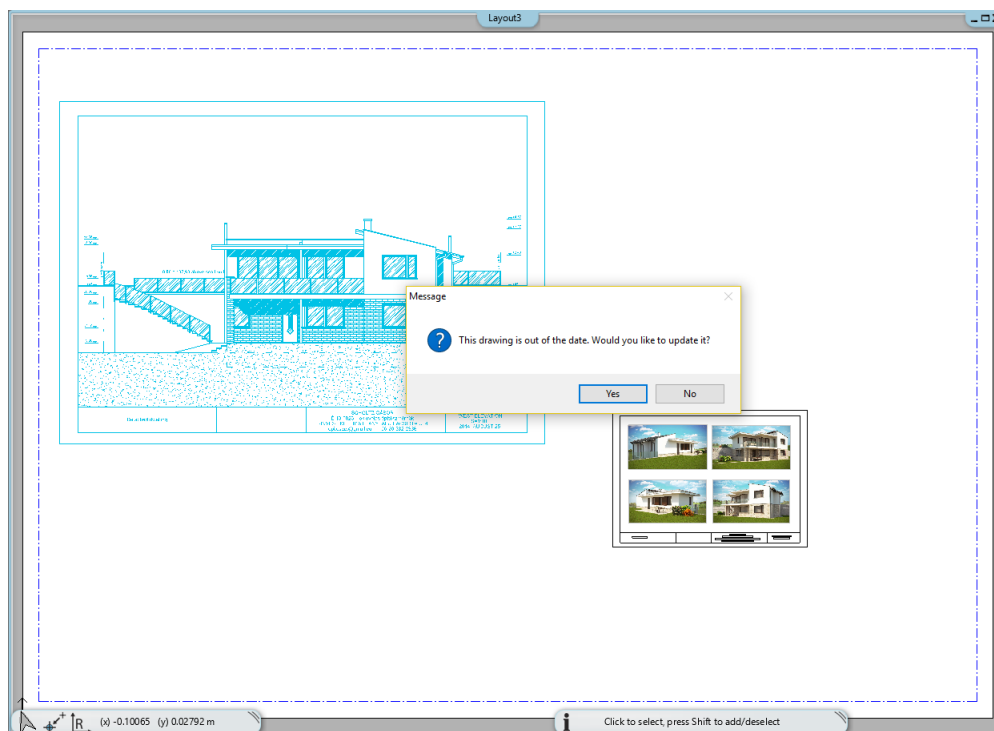
! The command differs from the general Copy command because this cuts accurately the selected part including the boundary line. Also it intersects the border crossing elements, e.g. dimension, text, and wall.

- Copy the layout of the 3D model, floor plan, wall view, etc. as it is described above. So, thus it is possible to place drawings of different scales on the same page.



### 16.4.5. Time stamp, refresh drawing

The Time Stamp function compares the drawing on the plot layout to the state of the source. In case the latest one is the newest, when you click on a drawing, it offers you to update the drawing on the page. The time stamp helps keeping the design elements in line with the print state.



### 16.4.6. Refresh plot layout

The program keeps the connection with the original drawing; the modifications made on the drawing will appear on the layout as well.

When the layout has already been created, but you are still working on the project, the modifications will automatically refresh on the layout when the command is selected.

When the layout contains a drawing that is not a part of the project, the command looks for this drawing on the hard disk and loads and refreshes it.

When you move the project to another computer, the command is not able to find the drawing on the original path, therefore it offers to find the new path of the drawing.



Attention! Before you execute the Refresh Layout command please save the project because the layout will be updated with the latest version saved on the hard disk'

### Placing the Image 3D View content on the plot layout

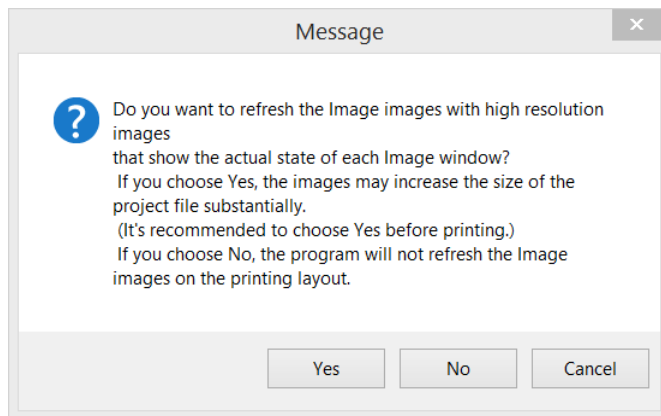
It is possible to place the content of the Image 3D View on the plot layout. The resolution of the image will not be the same as the resolution of the screen.

Before printing, it is suggested to use the *Plot Layout menu – Refresh layout* command. The resolution of the image will change to the best available settings of the printer.



Corresponding to the printer settings in case of a high resolution, the image size will increase significantly, causing enlargement of the project size.

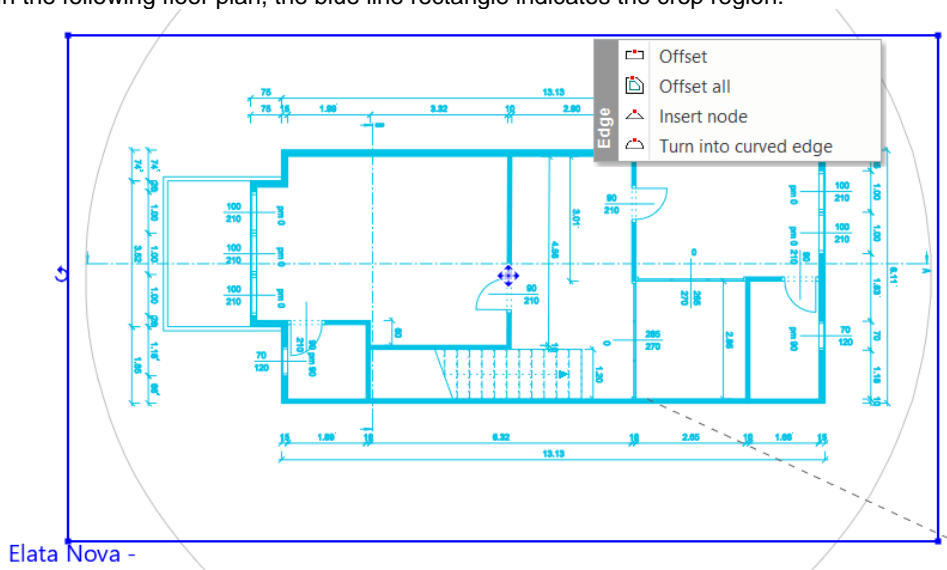
If the saved file and the current status differs from each other, the following message appears when the page is updated:



### 16.4.7. Crop boundaries

The boundary of the view on the plot layout can be cropped, so details that are outside the crop region do not display and printed.

In the following floor plan, the blue line rectangle indicates the crop region:





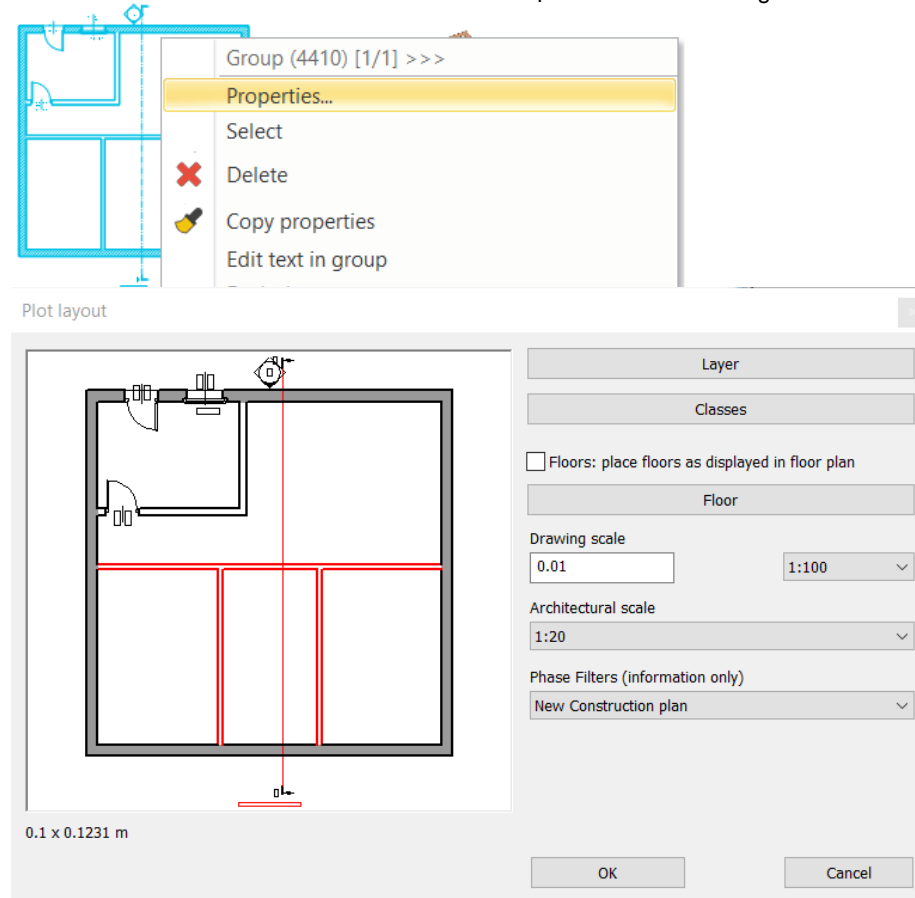
- Select the view you want to crop on the plot layout. The blue contour (1) line displays. Click on any of sides to appear the context menu and select Offset or other commands to edit boundary.
- Press ENTER to apply changes.  
Elements that are outside the crop region do not display in the plot layout on which the view is placed.

## 16.4.8. Edit view properties

You can modify the following properties of the view just placed on the plot layout:

- ❖ Layers : Turn off or on layers
- ❖ Classes: Turn off or on classes
- ❖ Floor: change floor
- ❖ Drawing scale
- ❖ Architectural scale
- ❖ Phase filters

The architectural scale factor can be handled irrespective of the drawing scale.



## 16.5. Create, save, place and modify the plot stamp

Documentation can be formally unified with the use of the plot stamp, which provides a suitable framework for the presented plans. It is possible to create a plot stamp characterized by repeating elements such as project name, company name, etc., which that can be saved later on the plot layout. It is desirable to draw a plot stamp in different sizes, as well as in portrait and landscape positions, which you can use afterwards.

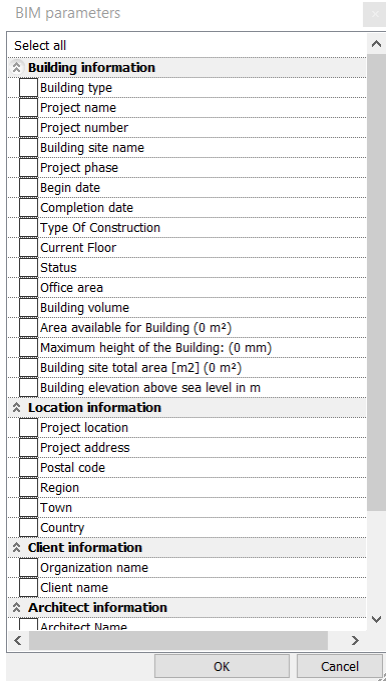
### 16.5.1. Creating plot stamp

You can create a symbol /plot stamp with the following steps.

When you create a text starting with the \$ character, ARCHLine.XP handles it as parametric text and this way the unique plot stamp will work as a dynamic plot stamp.

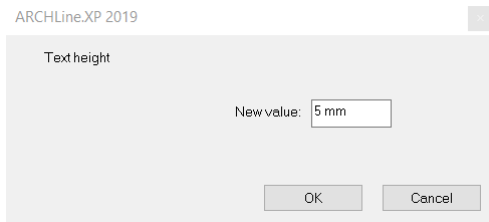
- Draw a rectangle in a real 1:1 size, for example 190 x 50 mm.
- Draw the cells with the line drawing tool.
- Change the height of the text to 5-10 mm to fit in the columns.

- Add text starting with \$ characters, the content of which can be modified later after placing the stamp from the library. You can add BIM parameters with Documentation > Plot Layout > Create Plot Stamp > Variables command.

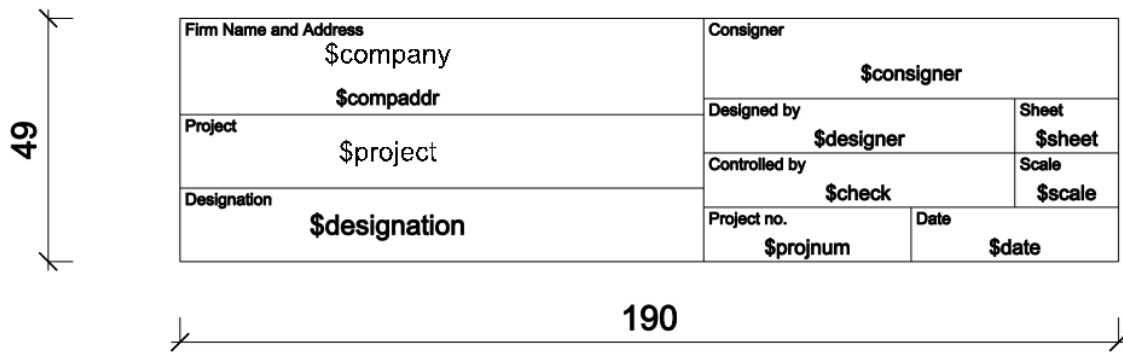


- Place subtitles (for example consigner, project name, etc.) using the Drawing / Text / Text – place command in the plot stamp.

At this point you can define the text height directly

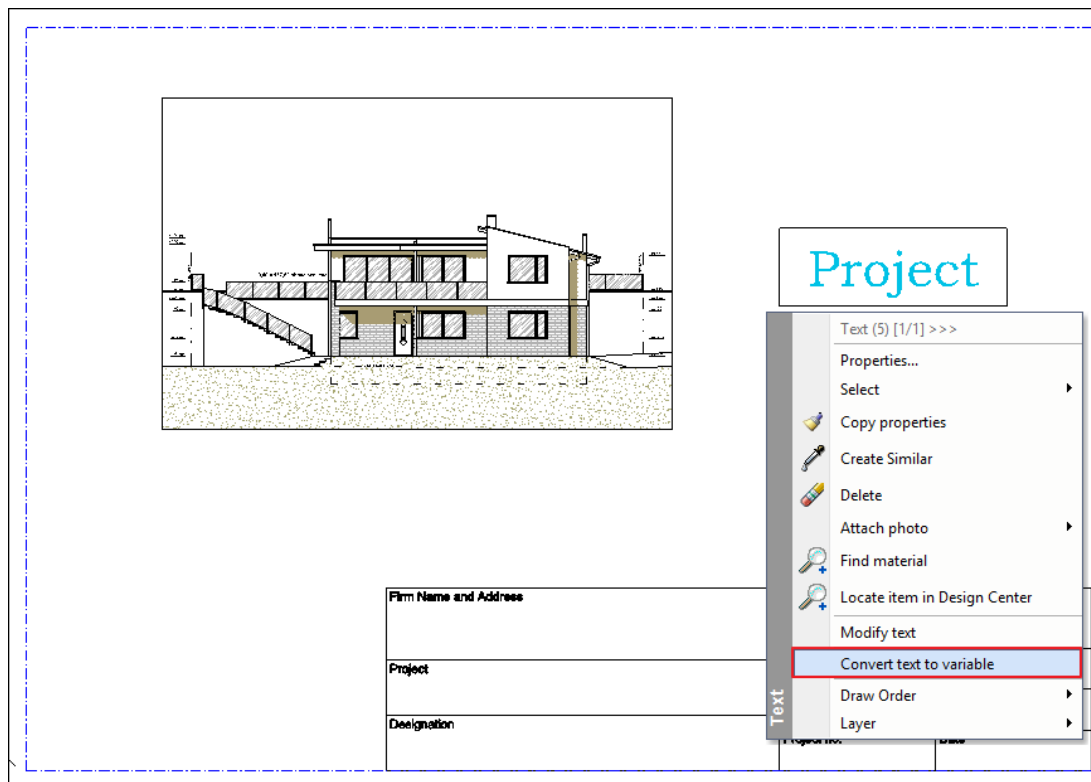


- If you want to place a logo / image in the plot stamp, select the Drafting > Raster Image > Place command, select the image and place it on any point, then move the mouse to determine the size of the image, then click on the final position.



### 16.5.2. Convert text to variable

Convert text to variable: Draw a rectangle with help of Drafting / Polyline / Rectangle command. When the rectangle is created choose the Drafting / Text / Text – place option. Adjust the height of the text to the correct size, then right click and „Convert text to variable” command.



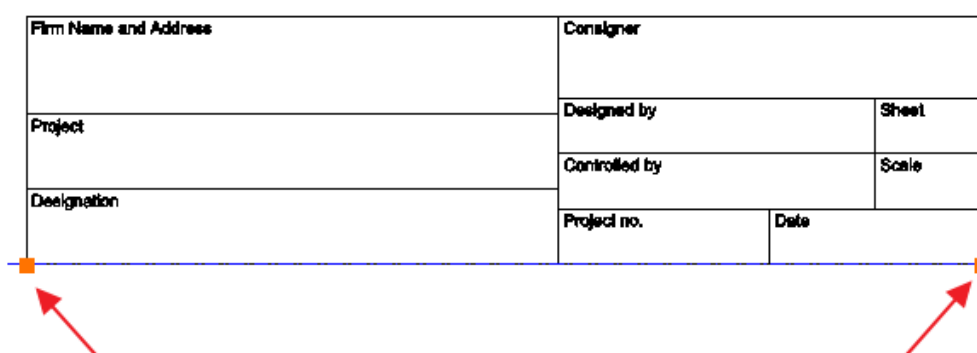
### 16.5.3. Save the plot stamp

When you have finished setting up permanent content, it is recommended to save the plot stamp. It will be available later and make easier the documentation.

- Select Drafting / Group / Create group in library command.



- Select the items and close the selection by pressing Enter.
- Then define at least two reference points, which you will use to place it with and then press Enter. It is a good idea to choose the corners of the rectangle, so when you place them later, the plot stamp will always be within the printing range.



- Type the name, category, sub category and Producer fields in the dialog window that appears.
- Type the name of the library element (eg A3\_landscape).
- Define the category and subcategory of the item (e.g. PRINTING / Englis or My), and then click OK.

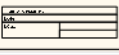
Create new item in the library ✕

Name of the new item in the library:  
 ...

Category:  
 PRINTING v

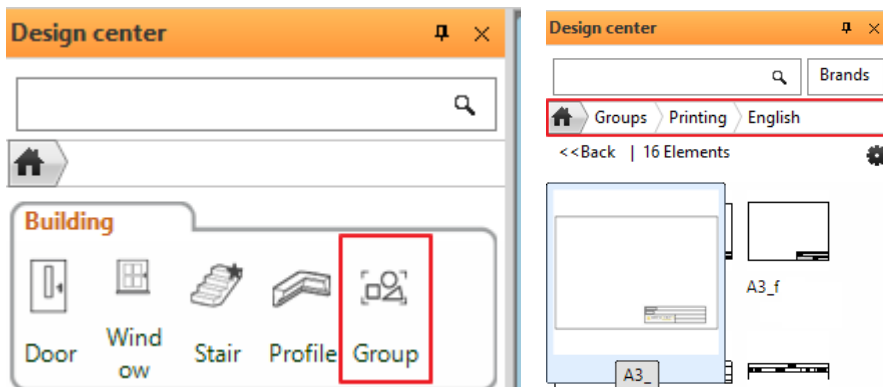
Sub category:  
 English v

Producer:  
 Generic v



OK Cancel

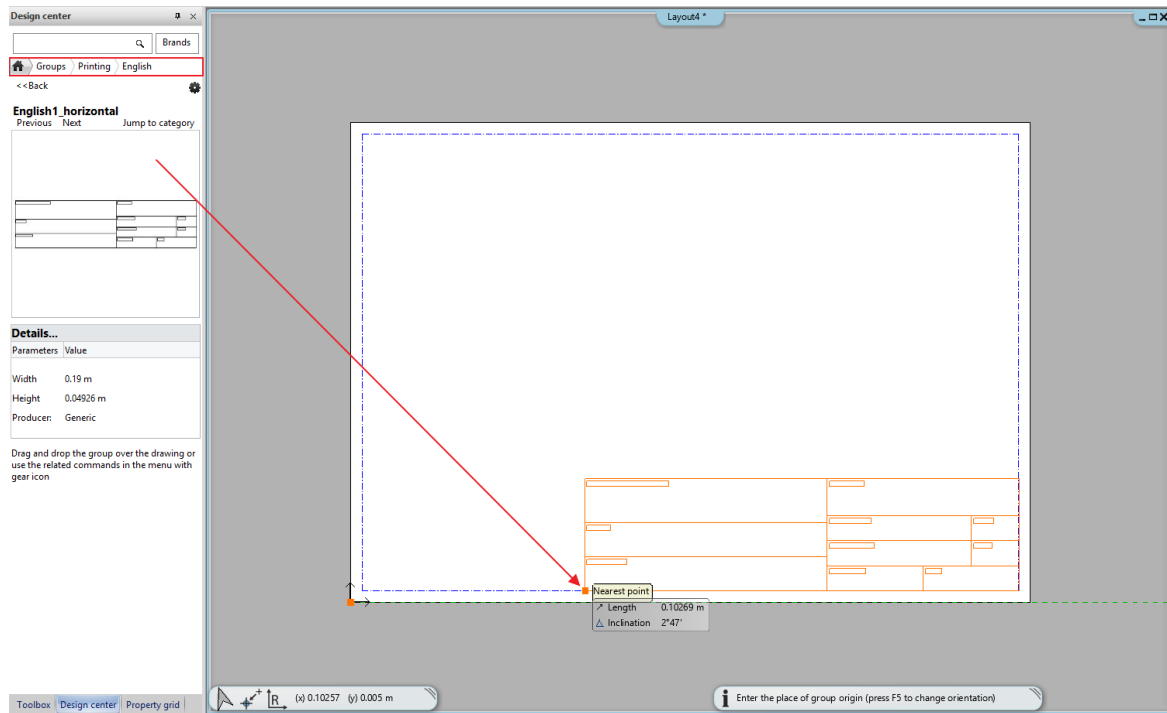
The new unique plot stamp will be found in the Design Center / Group / Printing / English or My Category.



#### 16.5.4. Place the plot stamp

You can always use the saved plot stamp as a group and place it on the plot layout at any time:

- Open another empty plot layout.
- The plot stamp is located in the Design Center / Building / Group category, where it had been saved before (Printing /English). Find it in the library.

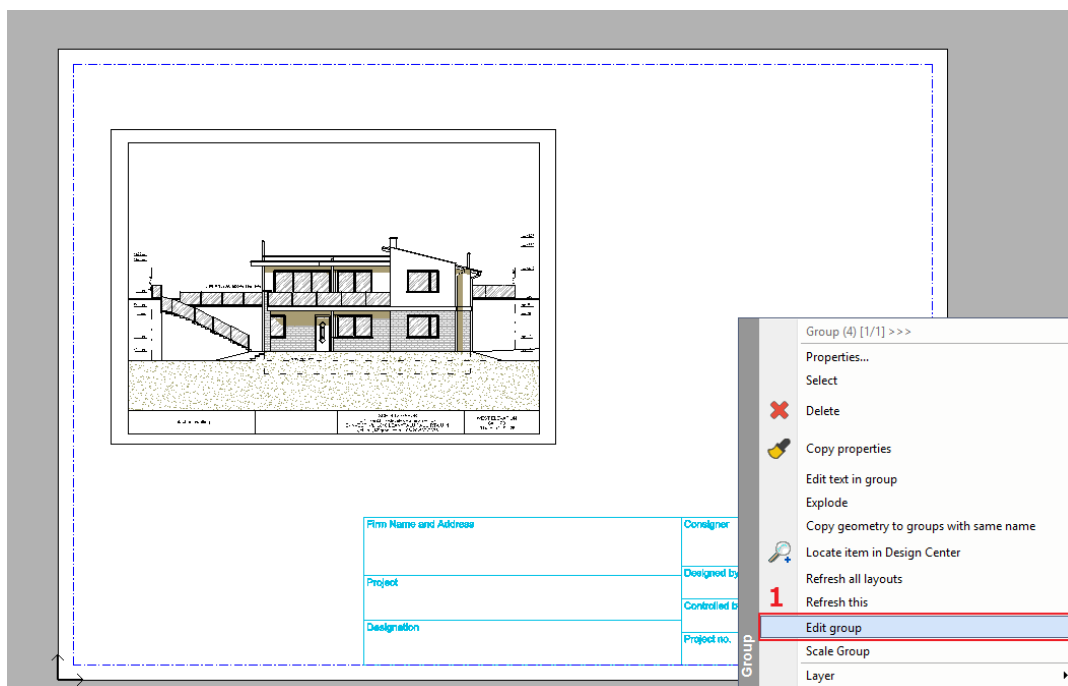


- Simply use “drag and drop” method and place it on the empty plot layout in the bottom right corner.

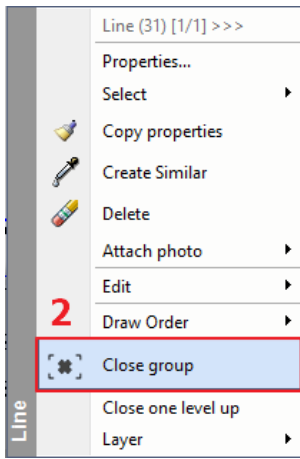
### 16.5.5. Modify the plot stamp

If it is necessary the saved plot stamp can be also modified after placing it:

- Select the plot stamp and choose Edit group from the Local menu (1), the contents of the plot layout turns grey.

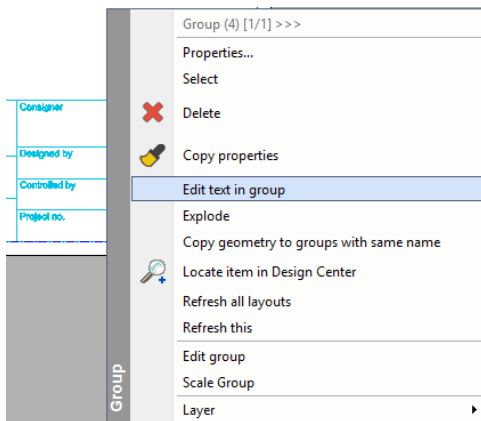


- Then you can modify the elements of the group (text, lines).
- After making the changes, make sure to close the group by using the Close group command in the Local menu (2).

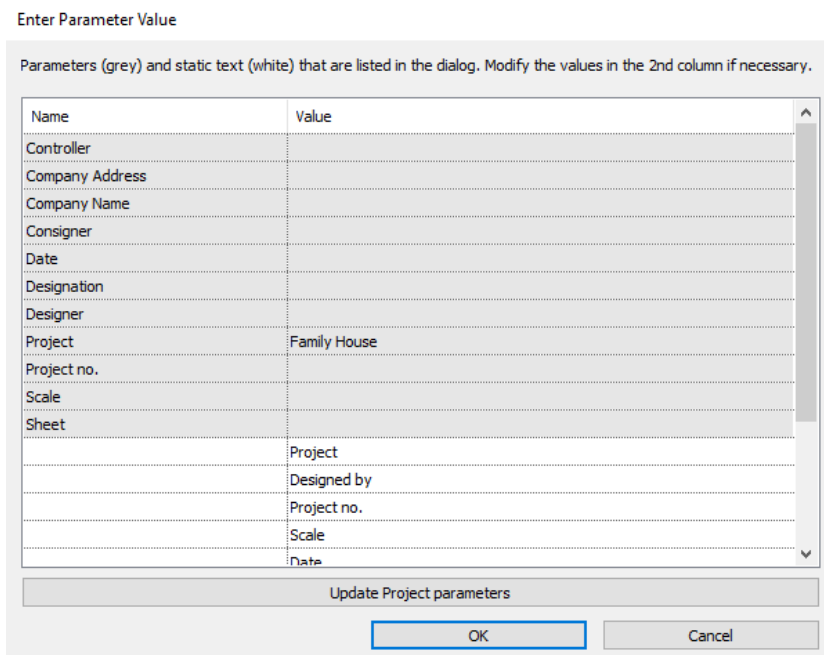


### 16.5.6. Edit text in group

Right-click on the plot stamp and then select Edit text in group from the context menu.



- Parametric texts are in the grey zone. In the Value box, type the new text.



Enter Parameter Value

Parameters (grey) and static text (white) that are listed in the dialog. Modify the values in the 2nd column if necessary.

Name	Value
Controller	
Company Address	
Company Name	
Consigner	
Date	
Designation	
Designer	
Project	Family House
Project no.	
Scale	
Sheet	
	Project
	Designed by
	Project no.
	Scale
	Date

Update Project parameters

OK Cancel

- Non-parametric (static) texts are in the white zone. In the Value box, type the new text.

Enter Parameter Value

Parameters (grey) and static text (white) that are listed in the dialog. Modify the values in the 2nd column if necessary.

Name	Value
Controller	
Company Address	
Company Name	
Consigner	
Date	
Designation	
Designer	
Project	Family House
Project no.	
Scale	
Sheet	
	Project name
	Designed by
	Project no.
	Scale
	Date

Update Project parameters

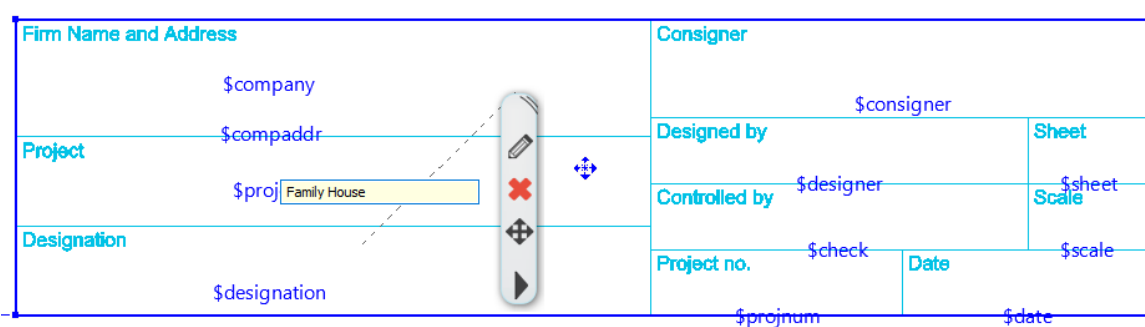
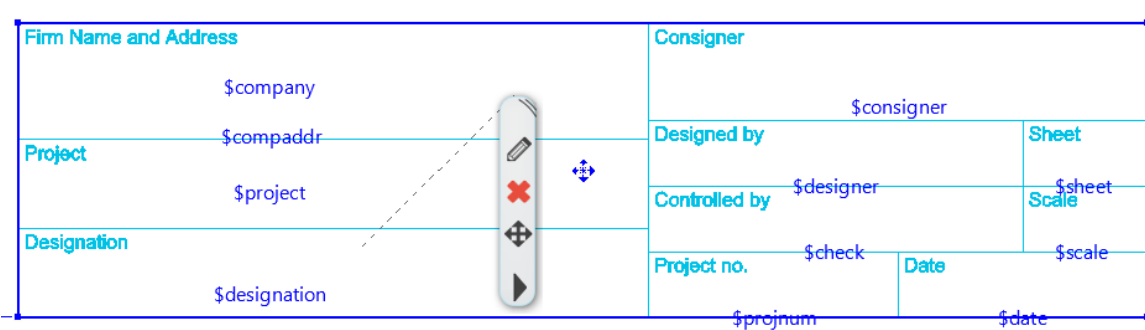
OK Cancel

- Press OK to close the dialog window. The plot stamp is refreshed.

Firm Name and Address	Consigner	
Project name	Designed by	Sheet
Family House	Controlled by	Scale
Designation	Project no.	Date

### 16.5.7. Edit directly text in the plot stamp

Click on the plot stamp. Parametric texts appear with blue markers. You can modify the blue-labeled parametric text by clicking and typing new content and then press Enter.



Firm Name and Address	Consigner	
Project	Designed by	Sheet
Designation	Controlled by	Scale
	Project no.	Date

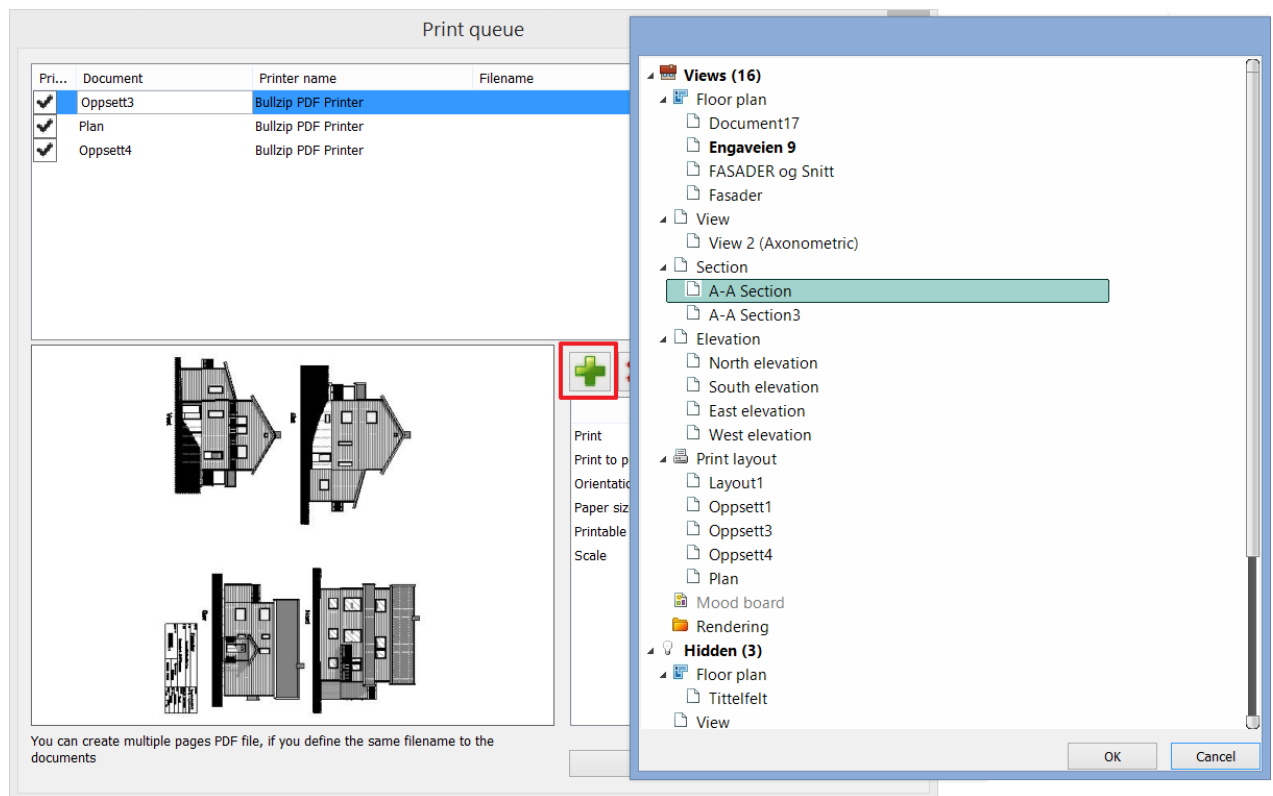
## 16.6. Print queue

The Print Queue dialog lets you collect upcoming documents to be printed. Print Queue tool can be found under File menu. You can add, modify and cancel documents before starting to print. You can print the documents as one PDF file with multiple pages or you can print it directly to any selected printer.

The Print queue list is stored in the project, which means you can collect print jobs of multiple drawings of your project into the same list.

Pressing the green plus button you can choose a view from Project Navigator to insert into the Print queue.





Print queue dialog consist of actual job list, preview area, settings area and controller area.

### 16.6.1. Current job list

The current job list is at the very top of the dialog window, and it is empty by default. When a printable task is added, it will be listed in this area. A print job has the following properties:

- Printable
- Document
- Printer name
- Filename
- Error report

#### Printable

You can use the Printable option in the Current job list to enable or disable the printing.

When you add a print job to the list, the printable option is enabled by default. If you do not want to print the selected print job, but you want to keep it in the queue just disable this option. When you start the Print command all disabled print jobs will simply be skipped.

#### Document

The document field of the selected print job shows the name of the document. You can rename it at any time.

#### Printer name

The Printer name shows the name of the printer that will be used to print the selected print job.

If you selected the Print to PDF option, you will see the Print to PDF text here.

#### Filename

If you want to print into a PDF file, here you can find the name of the file and the path to access.

#### Error report

If there is an error you will see the error report message in the Error report field.

### 16.6.2. Print preview

The Print preview shows the preview of the selected print job. The quality of the print preview is usually lower than the final result. It only gives information about the position of the printing area.

### 16.6.3. Print job information

The Print job information list shows information about the selected print job, such as the print size, orientation and scale of the printed drawing.

### 16.6.4. Controllers

The Print queue dialog has few controllers, which allow you to modify the print queue by adding or removing a job or changing the execution order.

#### **Add print job**

You can add drawings as a new print job to the print queue by pressing the Add print job button.

If you would like to add another drawing to the print queue press OK in the Print queue dialog. Then activate the drawing that you wish to add. Open again the Print queue dialog and press the Add print job button.

#### **Remove print job**

Select the document you want to remove from the Print Queue and press Delete.

#### **Print job details**

The Print job details button allows you to modify details of the currently selected print job such as: Paper size, printer, orientation, and scaling or pen settings.

#### **Move up**

The print queue is ordered by print priority. This means that the list that you can see is the actual printing order. The first object of the print queue will be printed first and the last object will be printed at last. If you press the Move up button, the selected print job will be moved up one level in the print queue.

#### **Move down**

The print queue is ordered by print priority. This means that the list that you can see is the actual printing order. The first object of the print queue will be printed first and the last object will be printed at last. If you press the Move down button, the selected print job will be moved down one level in the print queue.

### 16.6.5. Start printing

The Start printing button starts the print queue based on the current order. Print jobs will be sent to the printer (or printers) you set and PDF files will be saved and automatically open when the printing is done.

## 16.7. Section

### Overview

You can create a section view by cutting the model with a section line. The section view can be a straight cut section line or a polyline section defined by a stepped section line.

Section views are listed in the Project Navigator.

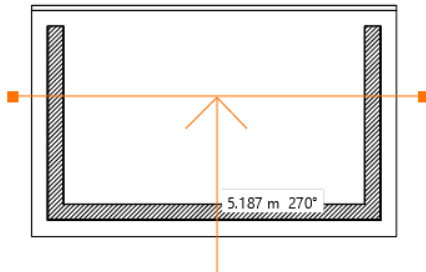
Section view displays the section with its section representation properties.

There are 2 ways to create section views:

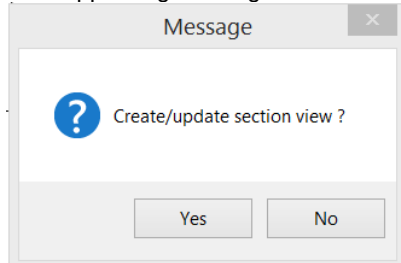
- ❖ Section on floor plan.  
Section line can be created in floor plan with straight line and Segmented Section with polyline.
- ❖ Cut 3D model temporarily.  
You can cut the model with a polygon. This command physically cuts the 3D model.

### 16.7.1. Creating section

- Click *Documetation > Section – Define section* command to insert a new section line on the floor plan.
- The Section properties dialog appears. Specify the properties of the section.
- Set the start and the end point of the section line on the floor plan.
- Click on the side of section line where the section is viewed from. The program places the arrows on that side of the section line.



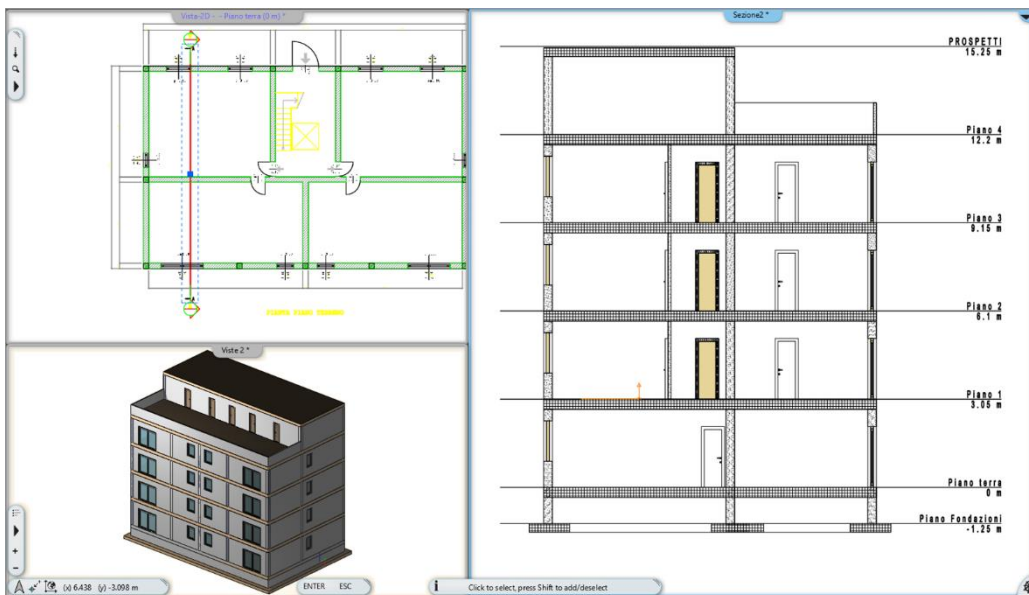
- The section line is visible by default on the floorplan where it was created.
- In the appearing message window confirm the creation of the section view.



- ❖ Clicking on **Yes** will create the section.  
The section view is created in a new section view.
- ❖ Clicking on **No** will leave the possibility to create the section later.



The program applies hatch to the cross-sectional cutting planes depending on the status of the *Hatch section plane* option in the *Section properties* dialog box..



Besides the appropriate setting of view properties in the 3D view (right view, front view etc.), the section view is also capable of creating façade view. In that case place the section line outside of the building.

### Work on 3D section

The objects in the section view are editable. You can edit objects in the section view as well as on the floor plan.

Section view can be combined with vector graphics shadowing and with vector graphics hatching but it requires longer generation time. Vector graphic shadows can be calculated from the sun or from an arbitrary angle.

This section view enables the visualization of objects crossing the section plane with or without material hatches and with thin or thick contour lines.

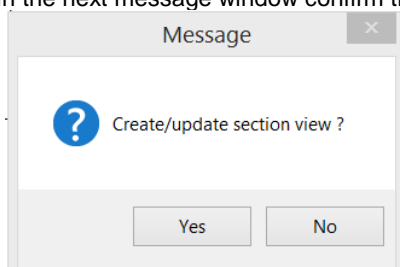
### Good to know

- ❖ When creating a 3D section view, the name of the view will be generated automatically (Section1, Section 2 etc.). In the *Project navigator* dialog you can rename the section view (the original name of the file that represents the section view will not change).
- ❖ One 3D section view belongs to each section line. This way the connection of one section line to more 3D section view, which makes the section unidentifiable after some time, can be avoided.
- ❖ If a 3D section view that belongs to a section line is in invisible state (you can check it in the *Project navigator* dialog) then the Create section command will pop up a warning message and no new 3D section view will be created.
- ❖ If a visible 3D section view belongs to an existing section line then the section view will be refreshed by the *Create* command.

#### 16.7.1.1. Creating segmented section

You can create segmented section with polyline segments. This allows you to integrate a section view to show separate parts of the model without having to create a different section.

- Click *Documentation > Section – Segmented section* command to insert a new segmented section line on the floor plan.
- The Section properties dialog appears. Specify the properties of the section.
- Specify the polyline of the section line on the floor plan.
- Click on the side of section line where the section is viewed from. The program places the arrows on that side of the section line.
- The section line is visible by default on the floorplan where it was created.
- In the next message window confirm the creation of the section view.



- ❖ Clicking on **Yes** will create the section.
- ❖ Clicking on **No** will leave the possibility to create the section later.  
The program creates the section view of the model according to the selected section line

The segmented section view is created in a new section view.



The program applies hatch to the cross-sectional cutting planes depending on the status of the *Hatch section plane* option in the *Section properties* dialog box..

### 16.7.1.2. Section properties

You can set options for various aspects of section representation either in floor plan and section view.

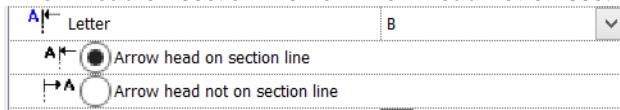
You can define the section properties in the dialog:

Parameters	Value
<b>Representation in 2D</b>	
Layer	00_Fólia 0
Colour	[Black]
Line type	Pontozott-szaggatott1
Line weights	0 mm
Draw Order setting	8 - Bottom-most
Letter	A
<input checked="" type="radio"/> Arrow head on section line <input type="radio"/> Arrow head not on section line	
Left visible	<input checked="" type="checkbox"/>
Right visible	<input type="checkbox"/>
Other side visible	<input type="checkbox"/>
Visible on all the floors	<input checked="" type="checkbox"/>
Display on additional floors	[...]
<b>Representation in 3D</b>	
Raster image section	<input type="checkbox"/>
<input checked="" type="checkbox"/> Section lower limit	-3 m
<input checked="" type="checkbox"/> Section upper limit	3.5 m
Zero depth section - 3D model behind the section line is not r...	<input type="checkbox"/>
<input type="checkbox"/> Crop region, Depth:	1 m
Partial section view - display the division between the sectio...	<input type="checkbox"/>
Elevation gridlines are visible in Section View	<input checked="" type="checkbox"/>
<input type="checkbox"/> Symbol on the end of elevation gridlines	[...]
Width of symbol	250 mm
Style of elevation gridlines	Linedot 0,18
Style of elevation gridline texts	Arial 200
Hatch on section	<input type="checkbox"/>
Hide all the objects	<input checked="" type="checkbox"/>
Item types for applying section Line weight	[...]
Section Line weight	0.3 mm
<b>Marker properties</b>	
<input type="checkbox"/> Symbol on the ends of section line	[...]
Width of symbol	250 mm
Colour	[Black]
Line weights	0 mm
Arrowhead size	200 mm
Arrowhead type	Arrow blank
Arrowhead line length	250 mm
Projection Line weight	0.3 mm

### Representation in 2D

You can set the general section line properties like layer, colour, line type, line width and draw order. In addition, you can set:

- ❖ the section's **Letter** label :
- ❖ **Arrow head on section line** or **Arrow head not on section line**:

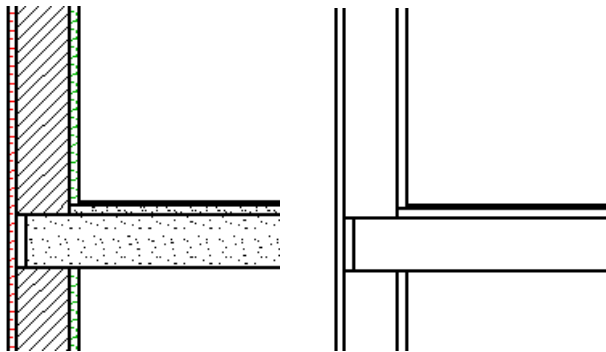


- ❖ **Visibility** of letter label: Left or right visible or both.
- ❖ **Cut direction**: Other side visible option moves the cut direction of view to the opposite side of the section line.
- ❖ **Visible on all the floors**. Check this option if you want to make visible the section line on all floors on the floor-plan. Optionally, you can deselect this option and click the ellipsis button next to **Display on additional floors**. This way you can select additional floors on the floor plan to represent the section line.
- ❖ **Polyline section**. With this option you can define a polyline section line on the floor plan, instead of a single line.

### Representation in 3D

- ❖ **Raster image section**. With this option you can create an image of the section view, instead of a vectorial drawing. If you select this option, you can set only the **Graphics settings** and **Crop region. Depth** parameters. Optionally, items behind the crop region can shown by checking the **Show items behind the crop region, too**.
- ❖ **Section lower limit/Section upper limit**. With these options you can set lower/upper height limits for the representation of the section view.
- ❖ **Zero depth section**. 3D model behind the section line is not represented in this view.
- ❖ **Crop region. Depth**. The region displayed behind the section line can be adjusted .
- ❖ **Level annotation lines are visible**. With this option the level annotation line appears at each floor level on the section view. If you check the box it displays the level annotation with its name and its height. If you uncheck the box, it will hide that annotation.
- ❖ **Symbol on the end of elevation gridlines**. With this option a symbol is displayed on the end of elevation gridlines. Click the ellipsis to select a symbol.
- ❖ **Width of symbol**. With this value you can set the size of the symbol displayed n the end of elevation gridlines.
- ❖ **Style of elevation gridlines**. Here you can select a line style for displaying the elevation gridlines.
- ❖ **Stile of elevation gridline texts**. Here you can select a text style for displaying the elevation gridline texts.
- ❖ **Hatch on section**. Each material has a **Hatch in 3D** setting. On the section view the sectioned items are represented with this setting if the option is switched on.

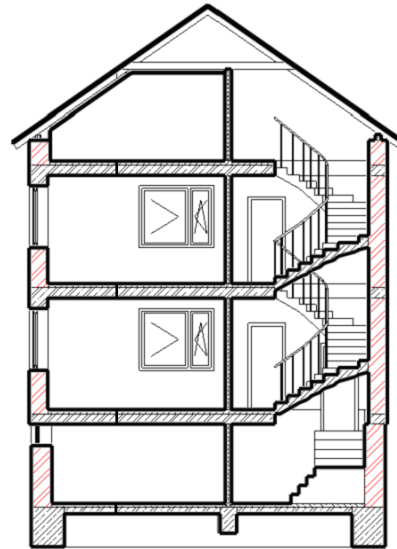
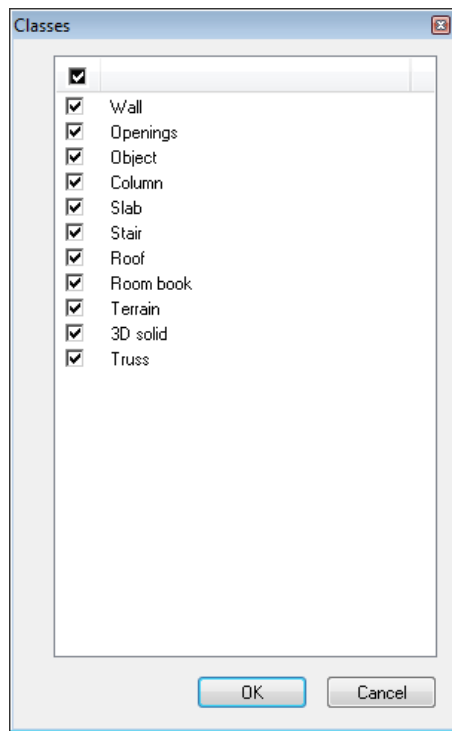
When you generate a section view, the program does not apply hatch automatically to the cutting planes, because in the case of big models it would take too long. If you want to apply hatching to the cross-sectional cutting plane, activate this option.



- ❖ **Hide all the objects**. With this option you can omit all the objects from the section view.
- ❖ **Item types for applying the section Line weight**.

Using the section tool there is the possibility to set different line thickness based on the item type that was intersected by the section plane.

This possibility gives you the ability to visualize main structural objects and other objects with different conditions. Click the ellipsis button and check item types in the **Classes** dialog. The **Section line weight** setting is applied to the selected classes in the section view.

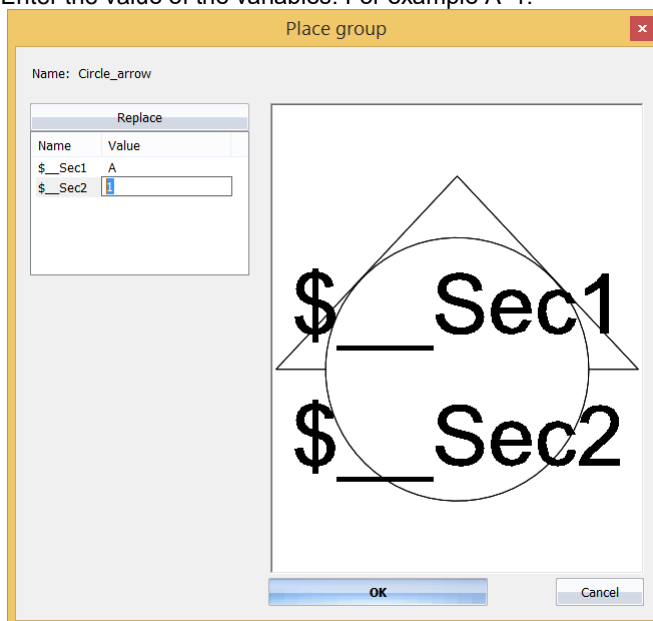


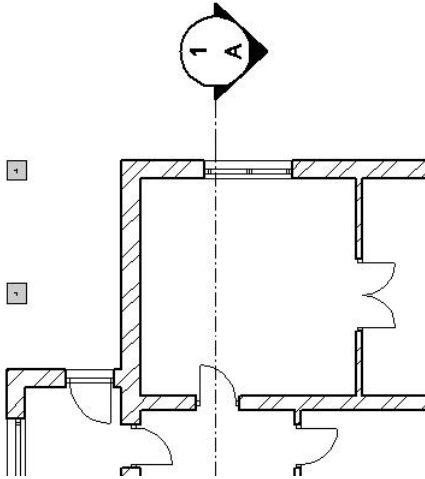
### Marker properties

The following properties can be set:

❖ **Section head symbol on the ends of section line.**

On the ends of section line you can apply different section head symbols. To do this, select this option. Click the belonging button and select the appropriate symbol from the Section endings library. Enter the value of the variables. For example A '1.

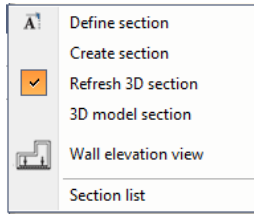




- ❖ **Width of symbol.** In case of symbol selection you can set the size of the symbol. You can also set the
- ❖ **colour** of the symbol/arrow,
- ❖ **line weights** and **arrowhead size** and **arrowhead type** of the arrow,
- ❖ **arrowhead line length**,
- ❖ **Projection Line weight.**

### 16.7.1.3. Section update

The program automatically updates the section view when changes are made to the model. This is automatic when Refresh 3D section checkbox is on.



When the Refresh 3D section checkbox is off you can update the section with right-click of the section line and select Create / Rebuild to update the section view.



If you work with a large model it is recommended to **switch off** the Refresh 3D section. It makes quicker to regenerate and display the 3D views.

### 16.7.1.4. Displaying a Section View

There are several ways to regenerate a section view.

- ❖ Right-click on the section line and choose Properties from the shortcut menu. Close the dialog with Ok and the program displays a dialog:  
Create / Update section view?  
Choose YES to regenerate the section view.
- ❖ Right-click on the section line and choose Create / Refresh section command from the shortcut menu..
- ❖ Activate the section view and click on the view name. Select Refresh from the menu.

### 16.7.1.5. Modifying section

You can make changes to a Section View or the Section Line by editing the section properties. You can set these properties before or after creating the section view.

To change the length or location of the section line	Click on the section line on the floor plan. Markers appear on the section line. With the help of these markers the section line can be moved, resized, rotated.
To edit the letter label on the section line:	Select the section line and edit the letter label in the <b>Section properties</b> dialog.
To change the cut direction as indicated by the arrows:	Select the section line and change the Other side visible option in the <b>Section properties</b> dialog.
To switch on or off the crosshatch pattern:	Select the section line and change the Hatch on Section checkbox in the <b>Section properties</b> dialog.



To display the elevation gridlines in section view:	Select the section line and change the Elevation gridlines visible checkbox in the <b>Section properties</b> dialog.
To Modify Section Line Properties	Select the section line and change the properties in the Representation 2D chapter in the <b>Section properties</b> dialog
To make visible Section Line on all floors or selected floors	Select the section line and change the <b>Visible on all the floors</b> checkbox or the <b>Display on additional floors</b> button in the <b>Section properties</b> dialog.

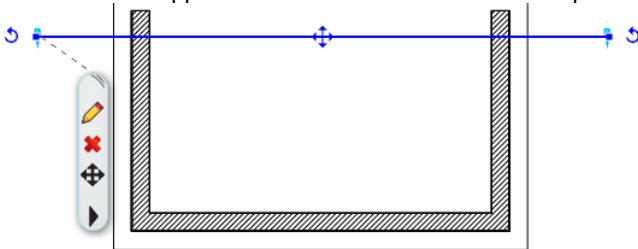
### Resize and reposition the section line

You can resize and reposition the section line by dragging it with marker commands.

The section view follows the section line: Moving, rotating or mirroring the section line on the plan view by any markers, the section view will be updated immediately

- Click on the section line on the floor plan:

Markers appear on the section line. With the help of these markers the section line can be moved, resized, rotated.

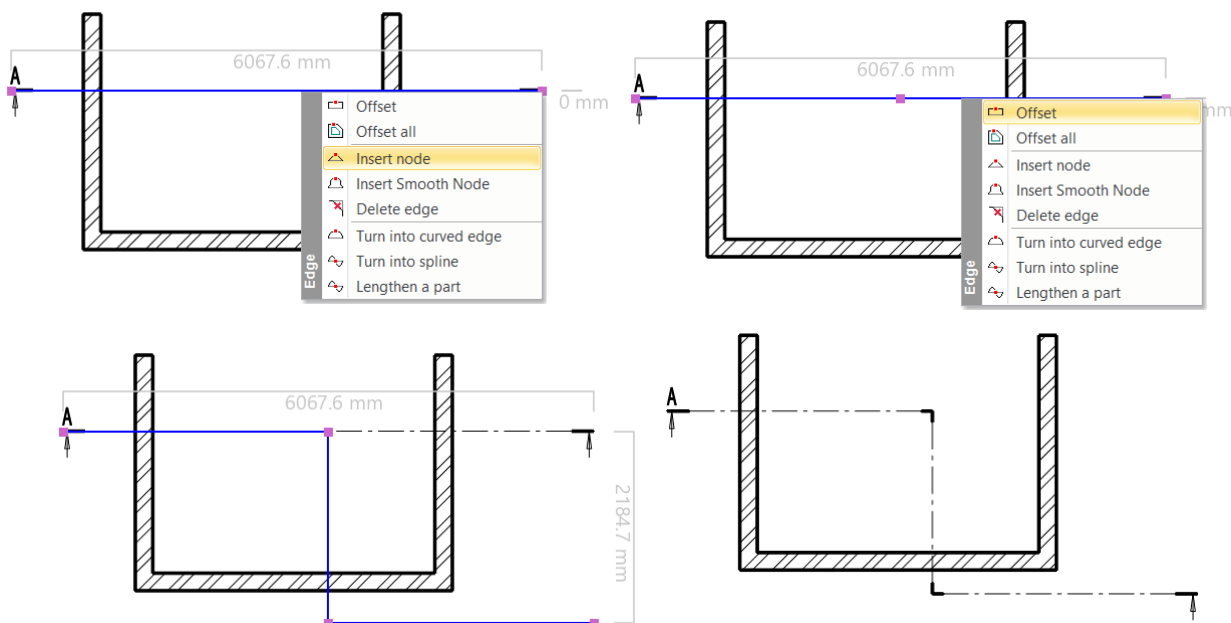


### Divide the section into segmented section

You can convert the section into segmented section with marker commands.

- Click on the section line on the floor plan:

Markers appear on the section line. Click on the blue line and choose Insert a node then make an Offset for the second part of the section line.



#### 16.7.1.6. Continue processing the section view

You can copy and paste a section view to a different view like a floor plan than the parent view for further editing (texts, dimensioning etc.).

The copied drawing is detached from the section view, and it is freely editable, the section can be "dressed up".

For example, you can add dimensions, delete or add details you need. However, the copied drawing is a separate drawing the section update command has no effect on it anymore.

*We recommend to do the following workflow:*

When you finished your work with the model, copy each section views into separate 2D drawing (named as Sections) on different floors. For example Section A-A floor, Section B-B floor etc. You can activate the requested section view by switching between floors.



It is not recommended to create as many 2D drawing views as the number of section views!

We recommend you to detail the section views in these 2D views.

### How to do it?

- Create a new view with the *Views - New view 2D* command: for example 2D Sections.
- Make the appropriate 3D section view active.
- Use the Edit menu - Copy to clipboard (Ctrl+C) command.
- Select all objects in the view. Enter - close the selection.
- Specify a reference point on the drawing.
- Make the newly created floor plan view (2D Sections) active.
- Use the Edit menu - Paste from clipboard (Ctrl+V) command.
- Place the drawing in the view by mouse click or keyboard input. Enter.
- In the *Edit floor levels* dialog rename floor 0 to Section A-A, for example. Add new floors and then rename those accordingly.
- Repeat the previous steps and copy each section view on the appropriate floor.
- After this, detail the sections. You can add text and dimensions and additional lines, groups or hatches to finish up your drawing.

There are major differences between 2D section drawing and 3D section views:

- ❖ The 3D section view follows the changes in the model automatically; it is connected to the floor plan.
- ❖ The connection between the 2D section drawing and the 3D model is lost; changes on the floor plan are not followed. It includes only 2D drawing elements (line, arch, hatch...); therefore you can edit it freely.



The same method is recommended when you work on e.g. *facades*.

### Recommendation:

The number of 2D floor plan views is not limited but it is recommended to work with a maximum of 3 or 4 2D drawing views, ensuring a clear structure of your project.

- ❖ 1 floor plan view for the *real floor plan*; there are floor plans on different floors
- ❖ 1 floor plan view for the *2D sections*; there are different sections on different floors
- ❖ 1 floor plan view for the *2D facades*; there are different facades on different floors
- ❖ 1 floor plan view for the *site plan*; floors are not used in that case.

### 16.7.1.7. Cutting the 3D model

You also have the possibility to cut with real bool operation the model in the 3D view with a segmented section line.

For this you have to use the following commands:

- Activate a 3D view
- Select View menu - Section - 3D model section command.
- Select the **Polygon option** from the Profile definition tools appearing on the left side.
- Draw the stepped section line with the polygon. Close the profile.
- Click on the part of the solid, which you will keep after cutting.
- Rotate the model in the view and the stepped section will appear.

The program cuts the model in the 3D view. The cut model remains in the 3D view until you regenerate the whole 3D model again.

#### Advantage:

As you cut the real 3D model, you can also create a rendered image of the stepped 3D section of the model.

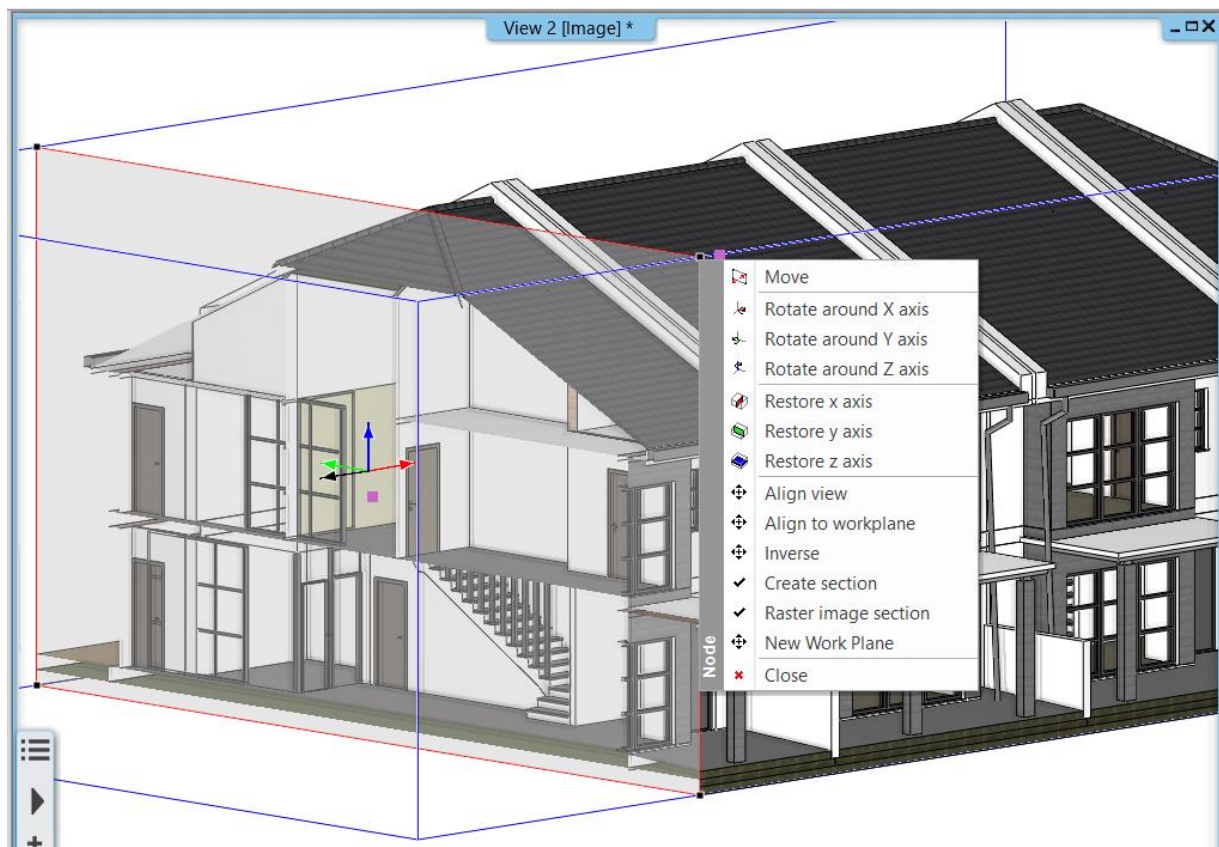


### 16.7.1.8. 3D section box

3D section box enables to clip the viewable portion of a 3D view in real time.

It clips the 3D model with an invisible (optionally angled) plane, so you can only see the content of one side of it.

The following image shows a 3D view with a section box enabled.



#### To activate 3D section box

Click View > Visual Styles > 3D section box.

Markers appear in the corners of the 3D section box. Click on these markers to see the 3D section boxmarker menu:

- ❖ **Move:** With this command you can shift the section plane to a direction defined by a normal vector perpendicular to the section plane.
- ❖ **Rotate:** With these commands the section plane can be rotated around horizontal and vertical axes.
- ❖ **Restore:** With these commands you can restore the default position of the section plane.
- ❖ **Align view:** With this command you can set the view to be parallel to the section plane.
- ❖ **Inverse:** This command inverts the section.
- ❖ **Create section:** With the help of this command you can create an architectural section.
- ❖ **Create raster image section:** You can create an image section view.
- ❖ **New work plane:** This command sets the work plane to actual plane.
- ❖ **Close:** This command closes the 3D section boxtool. The section plane disappears and you can see the whole actual model again.

### Limitations

Be aware of the following limitations when you work with 3D section box:

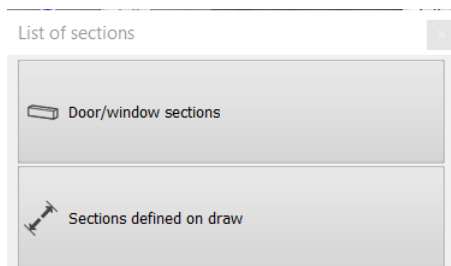
- ❖ **Size of the generated section:** the size of the generated section is independent from the section plane you work with. You will see the whole section in every case.
- ❖ **The angle of section:** in every case a vertical architectural section will be created, independently from the tilt angle of the section plane.
- ❖ **Section line created on the floor plan:** along with the section a section line will be created on the floor plan. The length of this section line is equal with the width of the 3D section box. The position of the section line is defined as the horizontal centre line of the section plane projected on the floor plan.

### 16.7.1.9. Sections table list

You can create a graphic table list and place it on the drawing based on the section of the openings and the section lines. Click Documentation > Section > Section list.

### Section lines

Choose the Sections defined on draw command.

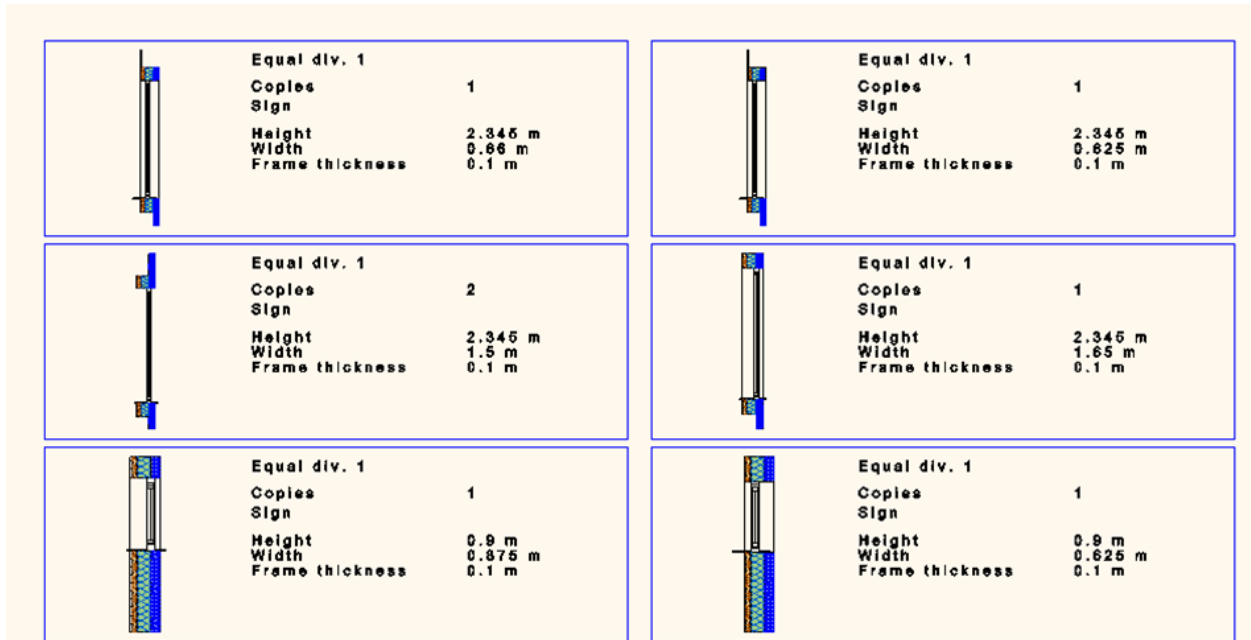


### Section properties

Parameters	Value
<b>Representation in 3D</b>	
<input checked="" type="checkbox"/> Section lower limit from bottom of actual floor (>0: upside)	0 mm
<input checked="" type="checkbox"/> Section upper limit from top of actual floor (>0: upside)	0 mm
Zero depth section - 3D model behind the section line is not represented in this view.	<input type="checkbox"/>
<input checked="" type="checkbox"/> Crop region. Depth:	1000 mm
Partial section view - display the division between the sectioned and not sectioned part.	<input checked="" type="checkbox"/>
Hatch on section	<input type="checkbox"/>
Hide all the objects	<input checked="" type="checkbox"/>
Item types for applying section Line weight	Edit
Section Line weight	0 mm

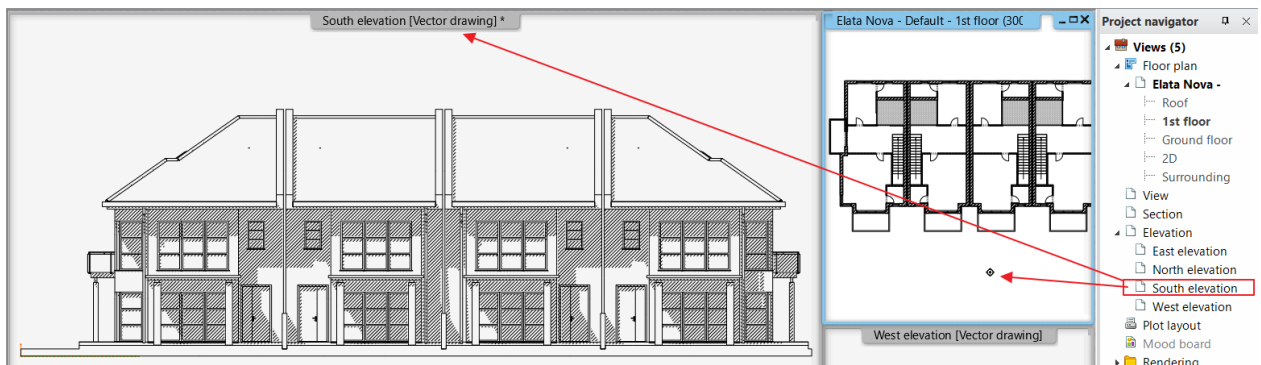
OK Cancel

**Door/window sections**



**16.7.2. Elevation views**

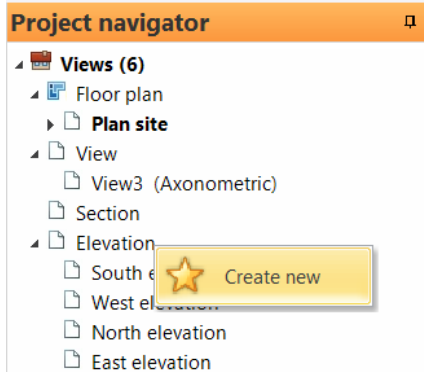
The elevation views enables to create the four main views in one project with one single click. Elevation labels in the Project Navigator: North, South, East and West. The program automatically places a reference onto the floor plan by clicking one of the labels.



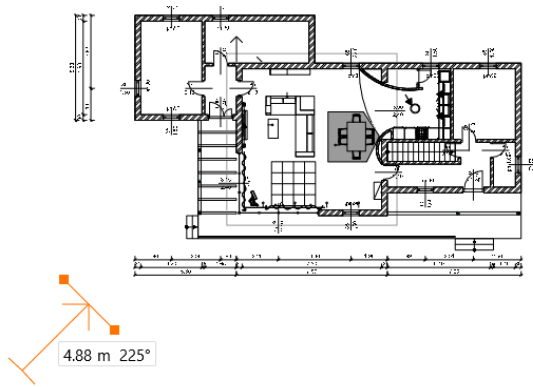
**Additional elevation views**

You can create additional elevation views. Click on with right clicking on the word "Elevation" and similarly to the section definition draw a line and give the direction.

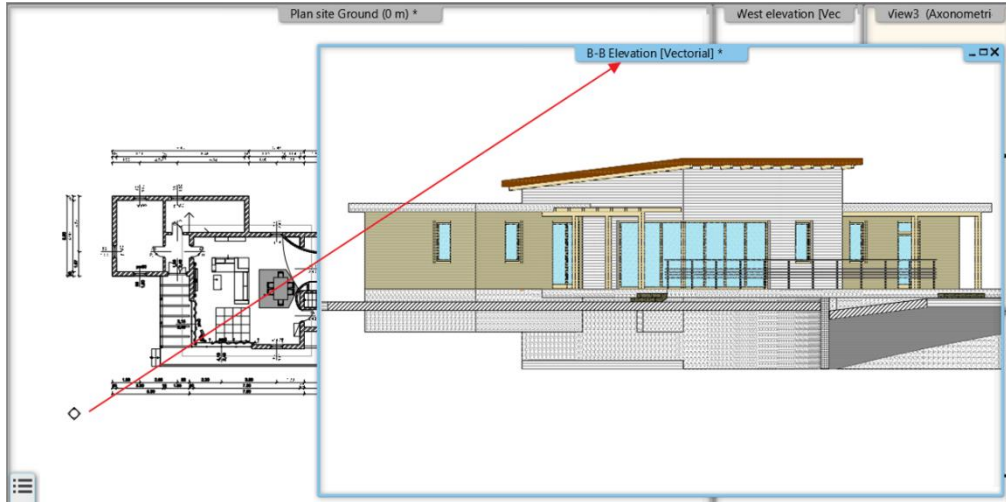
In the pop-up dialog menu click on Create new command.



Place the new Elevation symbol on the floor plan:



ARCHLine.XP creates an additional elevation view.



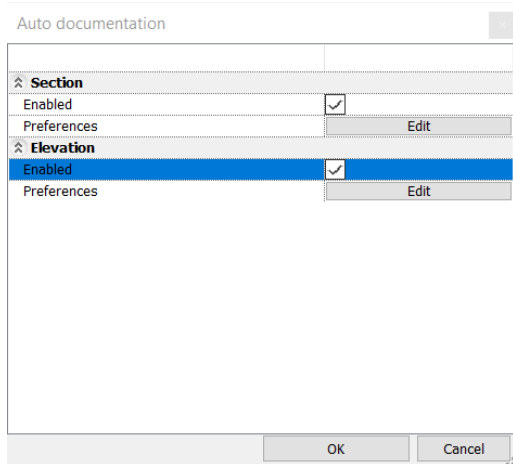
Click on the elevation view marker on the floor plan to display the actual geometry that can be modified with the help of the grab points.

### 16.7.3. Section and Elevation

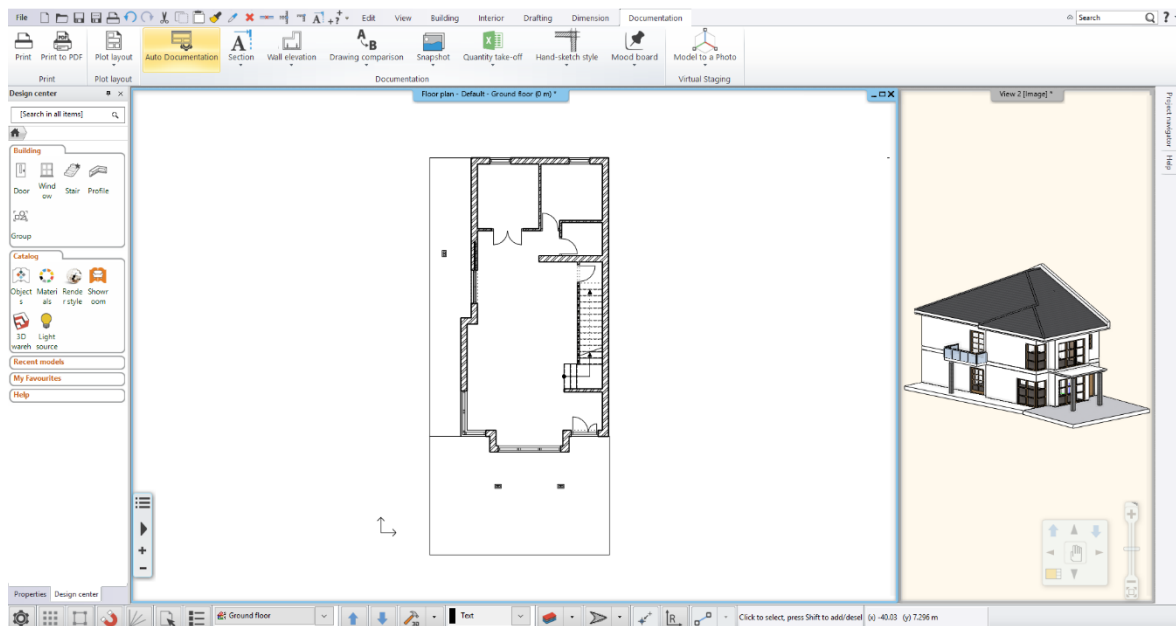
The command places two sections across the centre of the model perpendicular to each other (A-A, B-B) and creates the four main elevation views in one step

Location of the command: Ribbon bar > Documentation > Section.

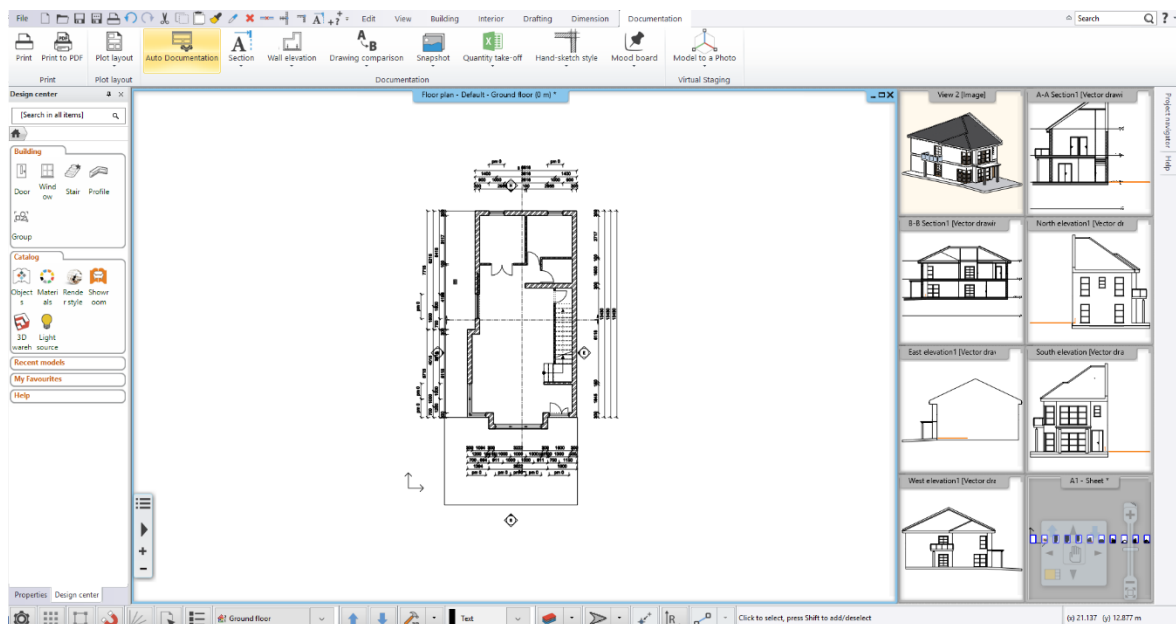
The setting dialog helps to select which steps you want to activate and what are the main parameters.



Screen layout before Section and Elevation command:



Screen layout after Section and Elevation command:



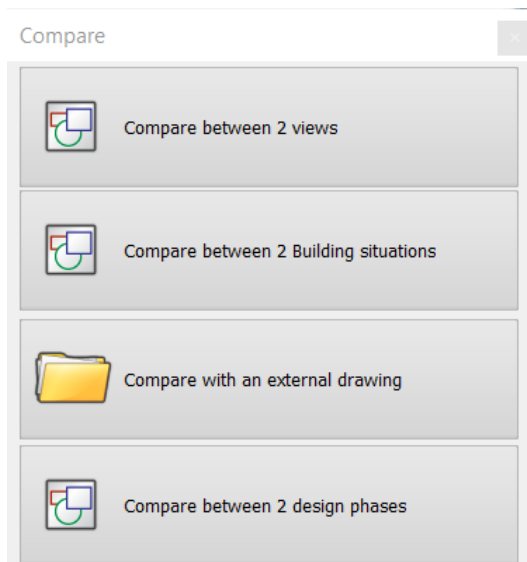
However, the documentation files usually require further modification.

## 16.8. Drawing comparison

The compare drawings function compares the current drawing with a previous phase and displays the graphical changes visually. The result is a third drawing which displays the changes between the two phases with the assigned colours. Location of the command: **Documentation > Drawing comparison > Drawing comparison**

### 16.8.1. Comparison of two floor plans

- Open your project and activate the view that includes the original floor plan. The content of this drawing will be compared to the appropriate floor plan in your new project.
- Select the Add-On menu – Drawing Comparison command.



By default, the active floors of the selected floor plans will be compared to each other.

#### All floors

- With this option the comparisons will be made for all floors, one by one.

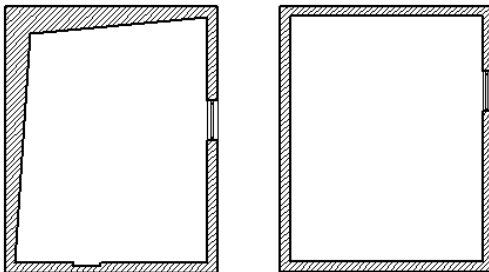
#### All buildings

- With this option, if there are more buildings on the floor plan, all buildings will be compared by the program.

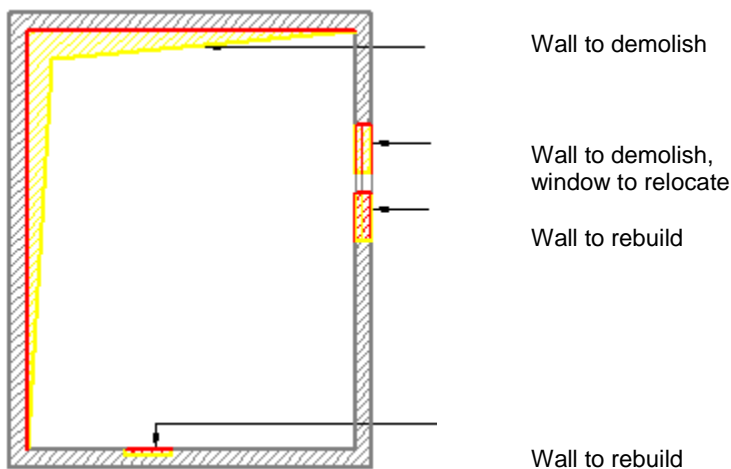
By clicking on the **Ok** button the comparison will start and the result will appear in a new view. The content of this view is a vector graphics 2D drawing (without any 3D content), where the changed and unchanged objects are shown by different colours. You can switch between floors with the Page Down and Page Up buttons.

#### Original state

#### Future plan



#### Comparative drawing



### 16.8.2. Comparison of two 2D/3D drawings

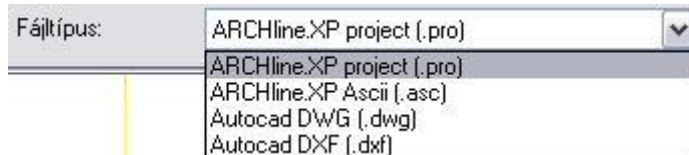
Comparative drawings can be made not only for floor plans but for any other drawings.



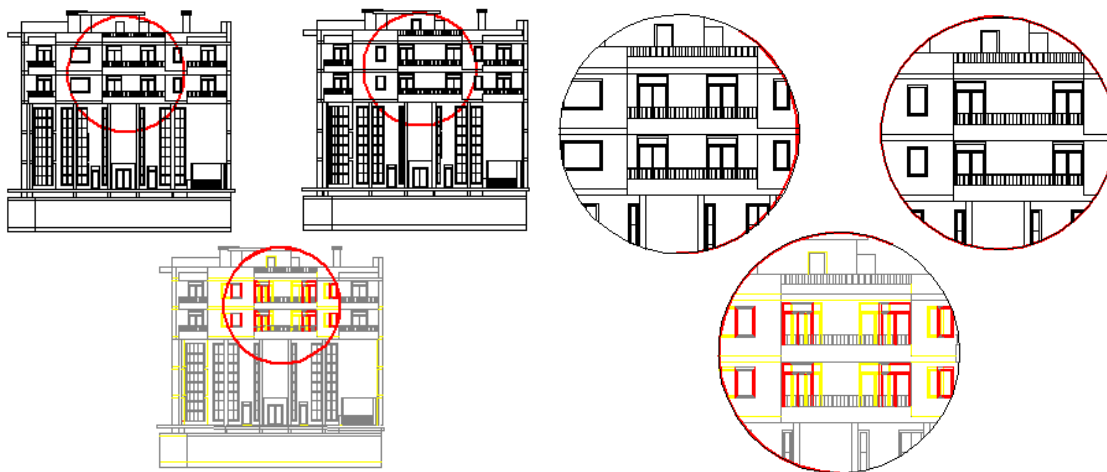
For example:

- ❖ A floor plan can be compared to the appropriate 2D DXF or DWG drawing.
- ❖ Similar 2D drawings can be compared.
- ❖ Different 3D view contents like main views, sectional views, or even two axonometric views with similar settings, can be compared.

In these cases all go the same way as for floor plans. At the file selection you have to specify the appropriate file type.



Using the all floors switch can make sense in these cases, too: for example you can place the copies 3D views onto different floors of a floor plan window, which means that you are working with 2D drawings. Then you can make the comparison of these drawings, floor by floor.



### 16.8.3. Update drawing comparison

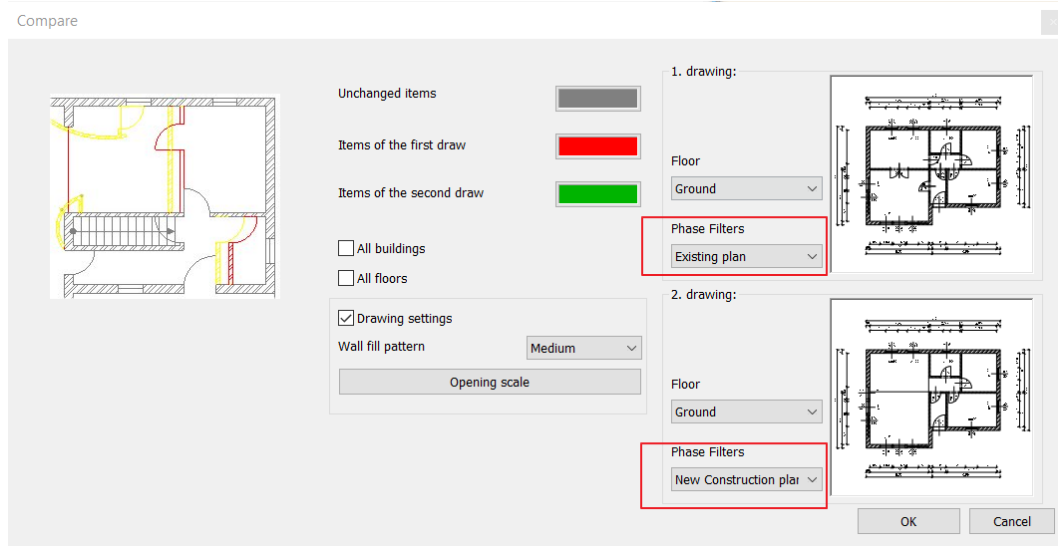
The result view can be updated using the Update drawing comparison command.

Location of the command: Documentation > Drawing comparison > Update Drawing comparison

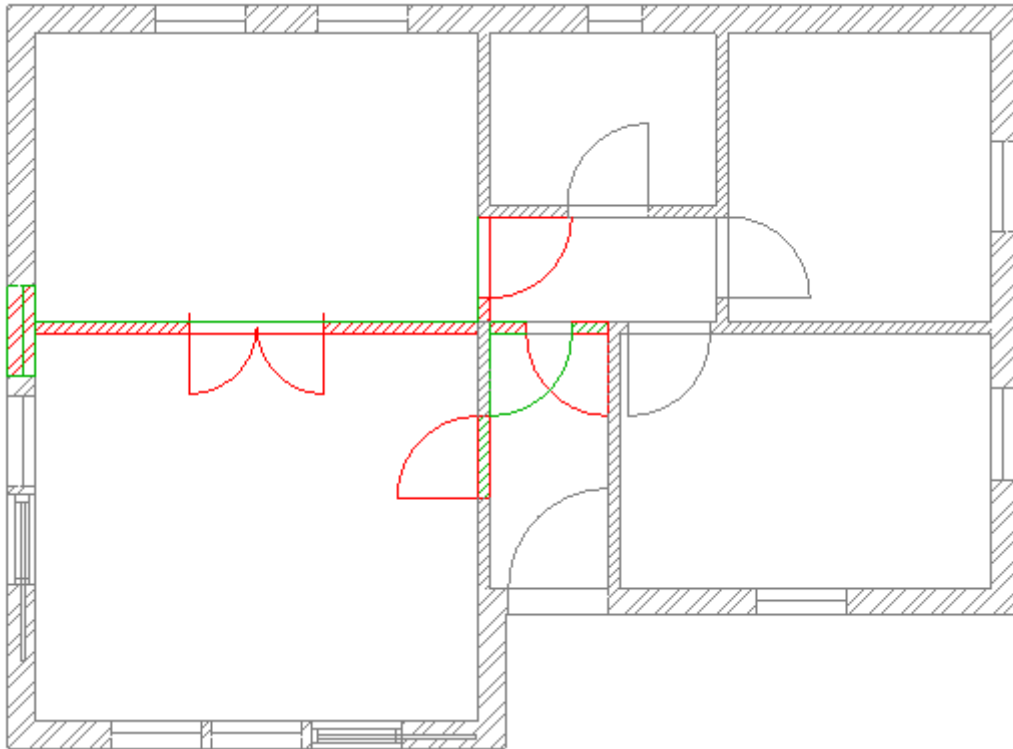
### 16.8.4. Compare between 2 design phases

The function compares two design phases of the same floor plan and displays the graphical changes visually.

- Choose the design phases to compare.
- Specify different colours for unchanged objects, objects of the first (original) drawing, and objects of the second (new) drawing.



The result is a third drawing which displays the changes between the two phases with the assigned colours.



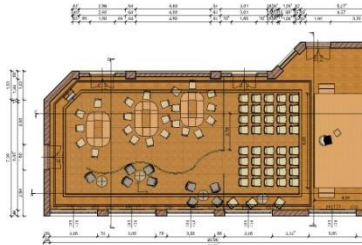
## 16.9. Snapshot

Snapshot is a raster image that is taken in the current view.

### 16.9.1. Snapshot

Snapshot enables you to create attractive coloured documentation of elevation views and floor plans.

Location of the command: Ribbon > Documentation > Snapshot > Copy image

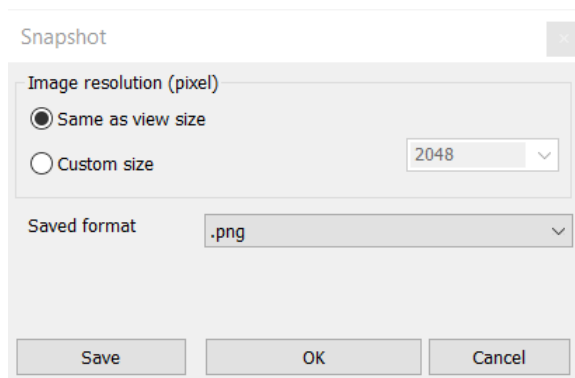


Floor plan with Snapshot



Wall view

The command displays the following dialog.



### Resolution

The raster image resolution defines the document quality. You can choose as:

#### ❖ Same as window size

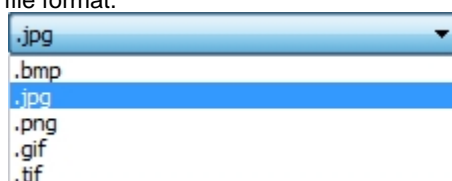
The software captures a screen shot of your current view to an image with the same resolution.

#### ❖ Custom size

Choosing the custom size option you can select a predefined resolution from the drop-down list at the right, as the resolution for the image's largest size. Choose a larger value to set the final result more detailed. Using larger values will make the project file size growing larger also. Please choose the size of the snapshot carefully, as you want your project not to grow too large, because handling larger projects could make workflow slower on some machines. Otherwise if you choose a small resolution, the final image may be pixelated which can make it less useful. Please choose from the drop-down list.

### Saving format

You can choose the snapshot image's file format from the drop-down list. This file format will be used during the process of the snapshot. Different file formats store images with different file size and quality conditions. Please select the desired file format.



### Save

Use the Save button to save the snapshot image into an image file on your hard drive instead of a target drawing. Please specify the path and name of the file in the appearing Save as... dialog window.

## 16.9.2. Snapshot 3D view

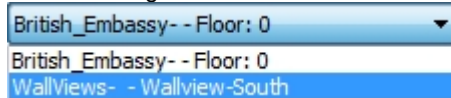
The Snapshot function helps you to move and calibrate a raster image into the 2D floor plan exactly in the right place and size.

It is a special raster image that keeps the 3D model vertex points so you can precisely measure distances and angles on that 3D view raster image.

Location of the command: Ribbon > Documentation > Snapshot > Snapshot 3D view

The command displays the following dialog.

Select the target view where to insert the snapshot image.



### How to make a snapshot

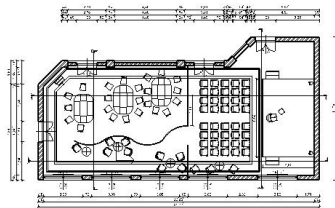
To create a snapshot of the 3D content you need to choose the 3D view that you want to use as the theme of the snapshot. (For example: a top view of the 3D model).

As a second step you need to start Snapshot 3D view tool. In the dialog set the resolution for the snapshot image, set its format and set the target drawing from the drop-down menu as well. When finished please press the OK button.

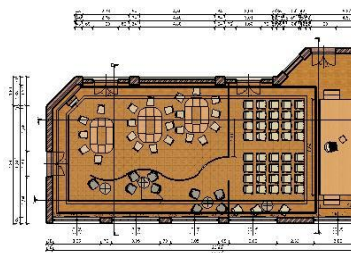
The software will automatically create the snapshot image of the current 3D view, and it will be placed soon into the selected target drawing. The result of snapshot will be scaled.



Top view of the 3D model  
(theme of the snapshot)



Original 2D drawing (the  
drawing, which is set as the  
target)



Result - 2D drawing and  
Snapshot combined

## 16.9.3. Wall elevation view snapshot tool

This command makes a frontal view of the selected wall together with a part of the 3D model.

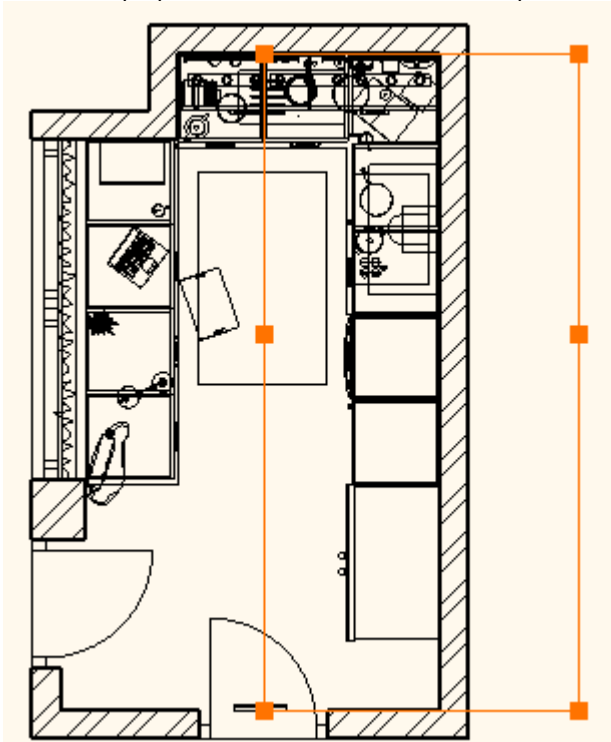
Location of the command: Ribbon > Documentation > Snapshot > Wall elevation

You can select the wall and the visible wall side.

The program makes visible the part of the 3D model that is inside the polygon limited by the wall endpoints and the visible part click point.

You can edit these polygon nodes and when you press the ENTER button the 3D partial model is created.

The perpendicular view of the wall will be placed as an image onto the selected floor plan.



Snapshot ✖

Image resolution (pixel)

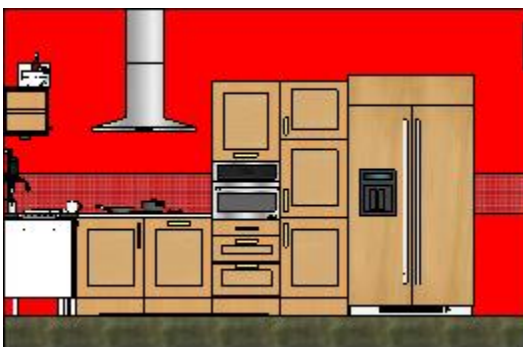
Custom size 2048 ▼

Saved format .png ▼

Drawing Floor plan - - Ground floor (0 m) \* ▼

Save OK Cancel

Here is an example of the result:



#### How to use the tool

- ❖ Start the Ribbon > Documentation > Wall elevation tool.

- ❖ Choose the side where you would like to see the elevation from.
- ❖ Edit the rectangle contour if needed.
- ❖ Press Enter
- Set the resolution and click OK.

#### 16.9.4. Snapshot special feature: object snap

Snapshot is able to copy and paste any 3D view into 2D view in 1:1 scaling, and it is also able to keep the reference points of the original 3D view. This will happen automatically when using the Snapshot tool.

This way you can use snapshots as individual drawings too. The software will recognize the reference points of the snapshot, so for example you are able to place dimension on it.



Snapshot with dimensions

##### 16.9.4.1. Contour of a snapshot

Contours of a snapshot equal to the contours of the original 3D view.

This feature is great when you want to place some specific drawing or 2D group behind the snapshot.



2D group in front of a snapshot



2D group behind a snapshot

##### 16.9.4.2. Refresh

Snapshots can be refreshed once they are placed on the target drawing as they are keeping their connection to the original model view. Just use the context menu of a Snapshot, select Refresh and wait for the result.

##### 16.9.4.3. Refresh all

Use the Refresh All option to refresh all the Snapshots on the current drawing. This option can be found in the context menu of the Snapshot. Simply click on it and wait for the result.

When you have multiple large or detailed snapshots, it can take a while until the software will finish the refreshing of all the snapshots.

This tool is extremely useful when you have multiple snapshots of the same model and after changes you would like to update all the snapshot drawings.

## 16.10. Schedules

A schedule is a spreadsheet representation of extracted properties of the project elements. The schedule lists the selected properties of every instance of any type of element according to schedule's grouping criteria.

Location of the command: Ribbon > Documentation > Schedule

### About schedules

You can create and place a schedule at any moment in the project. Any changes that affect then the schedule, will automatically update the content of the schedule.

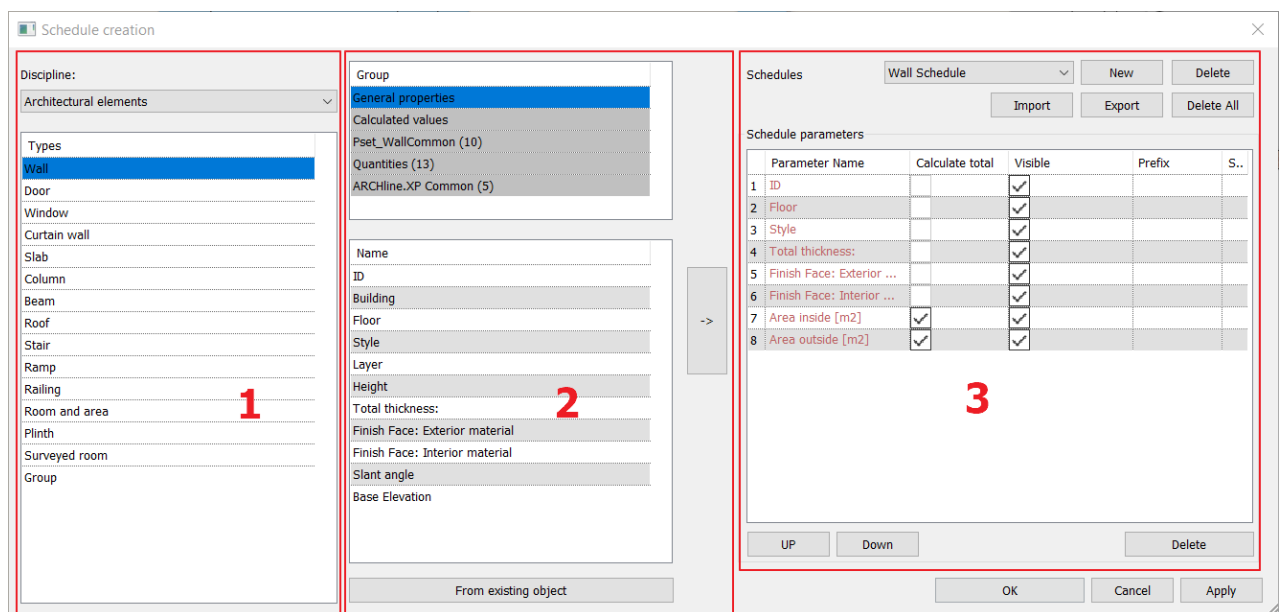
You can export a schedule to an Excel spreadsheet with Save to Excel command.

You can apply design phases to a schedule.

### 16.10.1. Creating a Schedule

You can create a new schedule in the Schedule Creation dialog.

Location of the command: Ribbon > Documentation > Schedule > Define schedule



The dialog is separated into three columns.

The first column displays automatically the type of element grouping as Architectural elements, Interior and Site. Select the type you are going to assign the new schedule.

The second column displays the General properties of the selected element, the calculated values and BIM parameter groups. Select from the list a property and click on the right arrow button to add this property to the schedule.

The third column in the dialog displays the schedule template.

### How to create a schedule?

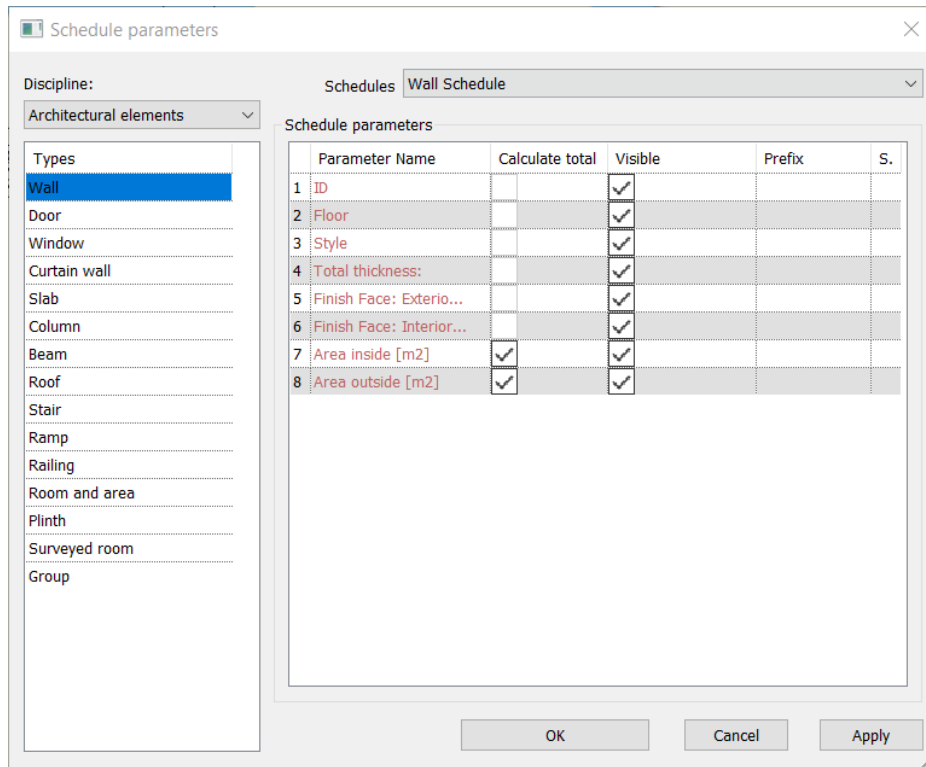
1. Select the appropriate type of element to create a new schedule (such as a wall schedule).
2. Select a category from the Group. Select a property from the list. Click on the right arrow to place it into the schedule.
3. Repeat the step 2. to add more properties to the schedule.
4. Optionally, sort the schedule template with Up and Down button or Delete the property placed by mistake.
5. Optionally, format the schedule with Calculate Total, Visible, Prefix, Postfix options.

### 16.10.2. Placing a Schedule

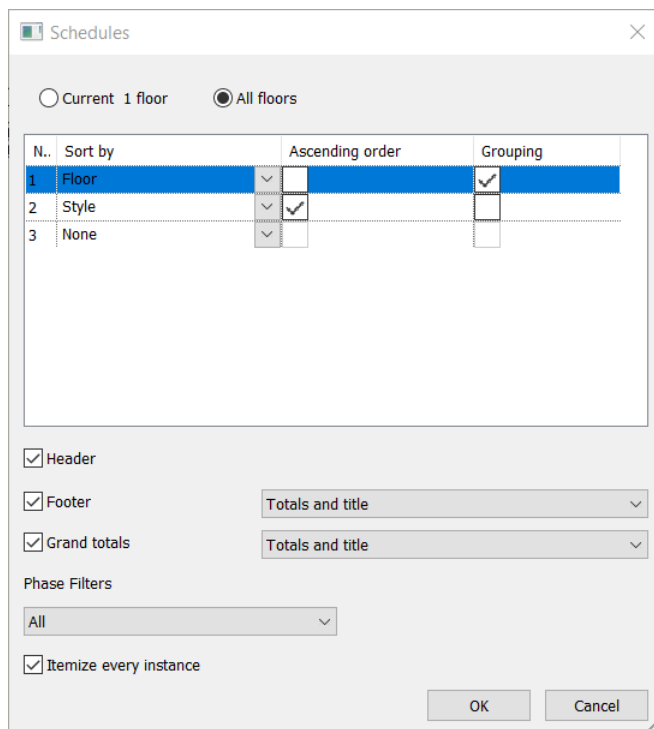
Schedules can be placed at any time during the planning process.

#### How to place a schedule?

1. Select the discipline and the appropriate type of element (such as a wall schedule).
2. Select a Schedule from the Schedules Group.
3. Optionally you can change the fields for schedule parameters: Calculate total, visibility, prefix and suffix.
4. Press Ok to close the dialog and format the schedule in the next dialog before placing.



After you have selected the type of schedule, you need to specify how the information should display.



You can specify multiple sorting options by properties (Ascending / descending order, Grouping) and add header, footer, and grand-total.

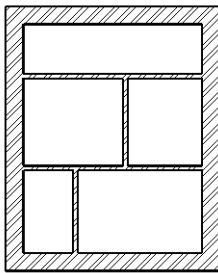
Footer and Grand Totals display the sum of the elements from all the groups.

Options:

- ❖ Totals: Displays subtotals and gran totals only for those columns that can have them.
- ❖ Totals and title. Displays total and title information.
- ❖ Count totals and title: Title shows the header information. Count shows the number of elements in the group. Totals display the total below a column that can have a sum.

Example: Wall schedule having subtotals and Grand Totals are „Count totals and title”.





ID	Style	Total thickness:	Finish Face: Exterior material	Finish Face: Interior material	Area inside [m2]	Area outside [m2]
<b>Floor - 1. floor</b>						
161	1 layered 10 wide wall	100 mm	Bright white	Bright white	10.16 m <sup>2</sup>	10.16 m <sup>2</sup>
141	1 layered 10 wide wall	100 mm	Bright white	Bright white	10.16 m <sup>2</sup>	10.43 m <sup>2</sup>
198	1 layered 10 wide wall	100 mm	Bright white	Bright white	4.81 m <sup>2</sup>	4.81 m <sup>2</sup>
21	1 layered 10 wide wall	100 mm	Bright white	Bright white	5.08 m <sup>2</sup>	5.08 m <sup>2</sup>
<b>Count: 0 Totals:</b>						
<b>Floor - Ground floor</b>						
17	1 layered 10 wide wall	100 mm	Bright white	Bright white	8.57 m <sup>2</sup>	8.57 m <sup>2</sup>
103	1 layered 10 wide wall	100 mm	Bright white	Bright white	9.28 m <sup>2</sup>	9.51 m <sup>2</sup>
<b>Count: 6 Totals:</b>						
<b>Count: 14 Grand totals:</b>						
					76.38 m <sup>2</sup>	86.2 m <sup>2</sup>
					60.88 m <sup>2</sup>	70.28 m <sup>2</sup>
					137.26 m <sup>2</sup>	156.48 m <sup>2</sup>

Grouping. A new blank row displays between the grouped elements, as shown in the following image.

**Schedules**

Current 1 floor  All floors

N. Sort by: Floor (selected), Ascending order, Grouping (checked)

2 Style: [dropdown], [checkbox]

3 Total thickness: [dropdown], [checkbox]

4 None: [dropdown], [checkbox]

Header

Footer: Count, totals and title

Grand totals: Count, totals and title

Phase Filters: All

Bemize every instance

OK Cancel

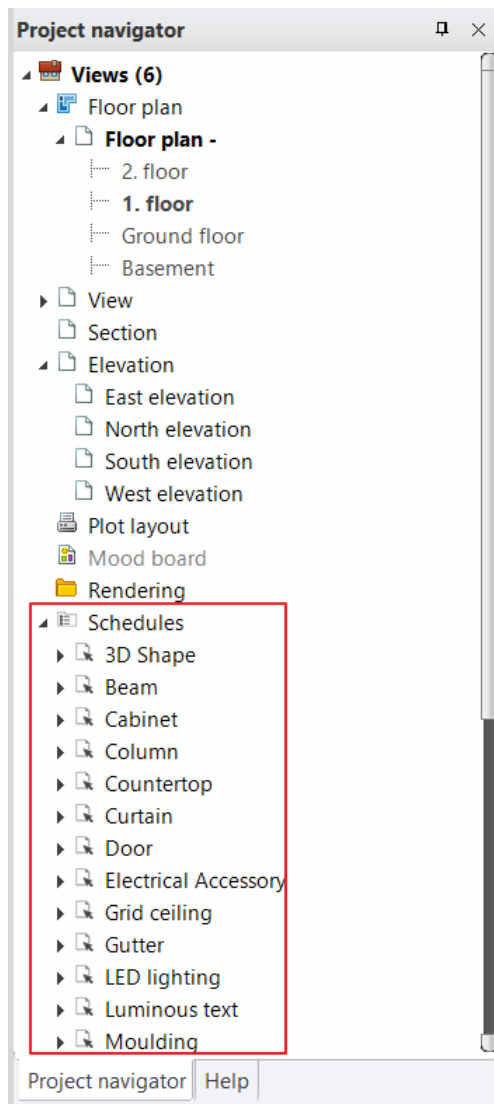
Floor plan - Default - 1. floor (3000 mm) \*

ID	Floor	Style	Total thickness:	Finish Face: Exterior material	Finish Face: Interior material	Area inside [m2]	Area outside [m2]
<b>Floor - 1. floor</b>							
161	1. floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	10.16 m <sup>2</sup>	10.43 m <sup>2</sup>
198	1. floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	10.17 m <sup>2</sup>	10.17 m <sup>2</sup>
21	1. floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	5.08 m <sup>2</sup>	5.08 m <sup>2</sup>
141	1. floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	9.89 m <sup>2</sup>	10.43 m <sup>2</sup>
<b>Count: 8 Totals:</b>							
<b>Floor - Ground floor</b>							
17	Ground floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	8.57 m <sup>2</sup>	8.57 m <sup>2</sup>
103	Ground floor	1 layered 10 wide wall	100 mm	Bright white	Bright white	9.28 m <sup>2</sup>	9.51 m <sup>2</sup>
<b>Count: 6 Totals:</b>							
<b>Count: 14 Grand totals:</b>							
						81.47 m <sup>2</sup>	91.83 m <sup>2</sup>
						142.35 m <sup>2</sup>	162.11 m <sup>2</sup>

The schedules can be applied to phase filters. You can also choose to list all instances of an element type, or collapse multiple instances onto a single row.

If automatic update is on, changes to the project, that affect the schedule, update the schedule. Schedule can be placed on the floor plan and saved in an Excel spreadsheet too.

**!** Note: You can choose and place a schedule from Project Navigator too. Use Drag and Drop to add a schedule for the drawing.



### 16.10.3. Update Schedule

As a result of this command, changes to the project, that affect the schedules, update the schedules.

As a result of this command, all schedules update displaying all changes that affect the schedules.

Example: If you change or delete a wall, the wall and room schedule having Footer and Grand Totals are updated accordingly.

#### **Editing Cells in a Schedule**

You can edit some cells in a schedule by clicking in them.

You can either select a value, text or Material name.

To finish editing in a cell, press Enter. The changes are applied to the appropriate element.

Example:

1. If you have a door or window schedule and it contains the BIM parameter Manufacturer, click on the field and change the manufacturer name.
2. If you wish to change the wall finish face: Exterior Material click on the material name and select a new material from the Material dialog.

### 16.10.4. Save to Excel

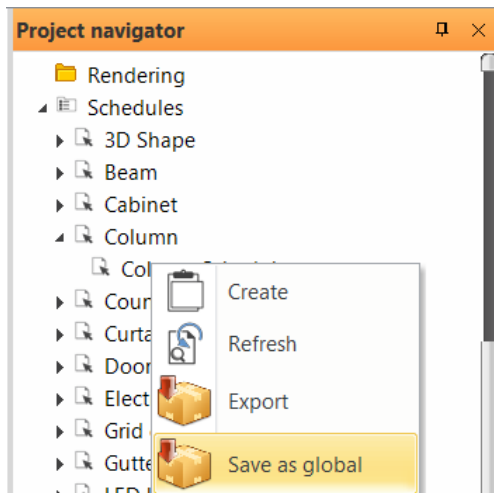
As a result of this command, the selected schedule is saved in an Excel spreadsheet.

### 16.10.5. Exporting Schedule to another User or Project

You can save the schedule template in an XML format file for use in another project or sending to another user.

1. In the Project Navigator, right-click the schedule name, and click Export. You find the same function in the Define Schedule dialog clicking on the Export button.
2. In the Save As dialog, enter a name for the file, and click Save.

This procedure saves the schedule template.



### 16.10.6. Import Schedule

You can import the schedule template from an XML format file.

1. In the Define Schedule dialog click on the Import button.
2. Select the schedule file in the Open dialog, and click Ok.

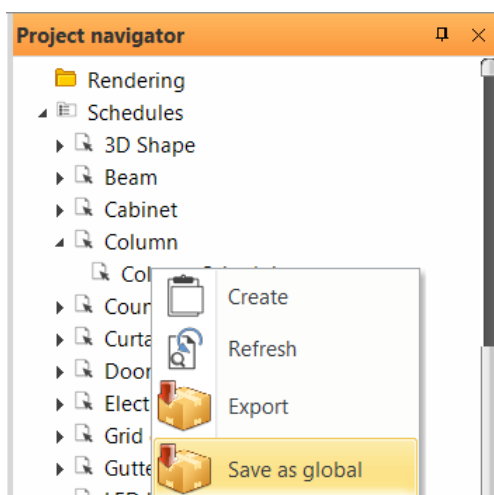
This procedure imports the schedule template.

### 16.10.7. Save Schedule for use in all projects globally

You can save the schedule template in an XML format file for use in all projects globally.

1. In the Project Navigator, right-click the schedule name, and click Save as global.
2. In the Save As dialog, enter a name for the file, and click Save.

This procedure saves the schedule template.



## 16.11. Quantity Take-Off

Cost-estimation calculations constitute a basic part of projects.

ARCHLine.XP is capable of extracting quantitative, geometrical and descriptive data of the objects (rooms surveyed, walls, slabs, roofs, etc.) used in a project. These data can contain calculations on length, perimeter, area, volume or lighting (the latter is based on the window area / wall area ratio). The calculations can be listed:

- ❖ Graphically
- ❖ In tables – Object geometrical info
- ❖ in .RTF format – Word list
- ❖ in .XLS format – EXCEL list

You can assign material and labour costs to the objects in the *Properties* dialog box with the *Cost parameters* option. The program prepares cost estimation with the help of the geometrical data and the cost parameters. Results can be presented in an EXCEL list.

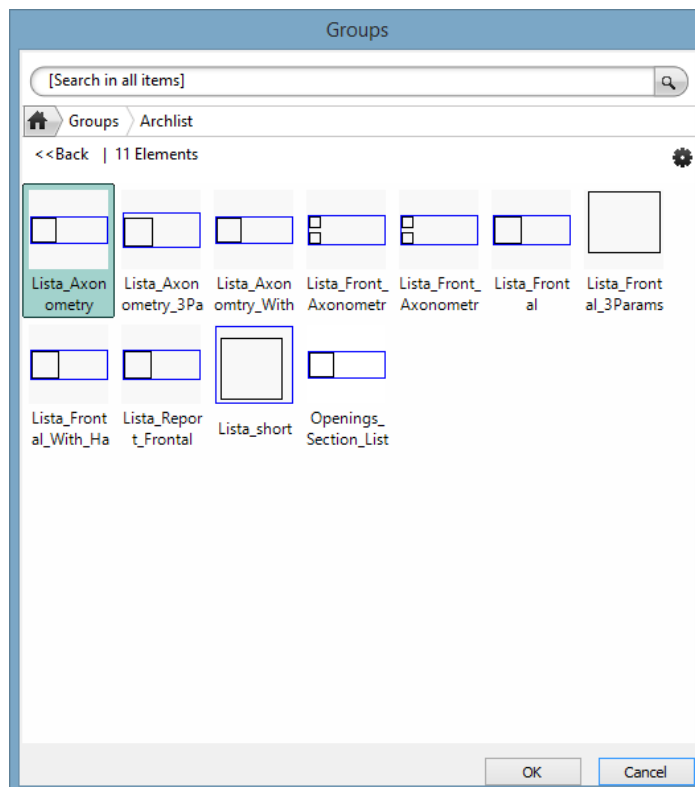
Location of the command: **Ribbon bar > Documentation > Quantity Take-Off.**

### 16.11.1. Graphic list



If you want to make a detailed graphical list of the objects in the drawing and also wish to place that list in the drawing, use the *Add-On menu Quantity Take-Off – Graphic list* command.

You can find several list schemes in the *Groups – Archlist.oli* directory, to be displayed (or some of them to be displayed) when using the *Info – Object query* command. You can request the front view and the axonometric view of the object (or both views if you like), and you can also colour them.

- In the **Insert group** dialog box select any list group from the *Archlist.oli* library.



- Specify the properties for placing the group.
- **OK** closes the dialog box.
- Select the architectural objects with those parameters you want to display in the list.  
**Enter** completes the selection of the objects.
- If you selected multiple objects, specify the number of columns of the graphical list of the objects.
- Specify the origin of the list in the drawing.  
The program places the graphical lists in the drawing.
- Select new objects, or  
**Enter** completes the command.

	ID	49
	Storey	0
	ID	49
	Height	2.7 m
	Av. Height	2.7 m
	Thickness	0.38 m
	Volume	5.13 m <sup>3</sup>
	Length 1.	5 m
	Length 2.	5 m
	Area 1.	13.5 m <sup>2</sup>
	Area 2.	13.5 m <sup>2</sup>



The list of parameters and the 3D view of the object forms a group.

If you want to modify the text in the list or the 3D view image of the object, you must enter the group. To do so, use the *Tools menu – Activate – Select* command. To deactivate the group, use the *Tools menu – Deactivate – Top level* command. You may also use the Group shortcut menu – Activate group or Deactivate group commands.

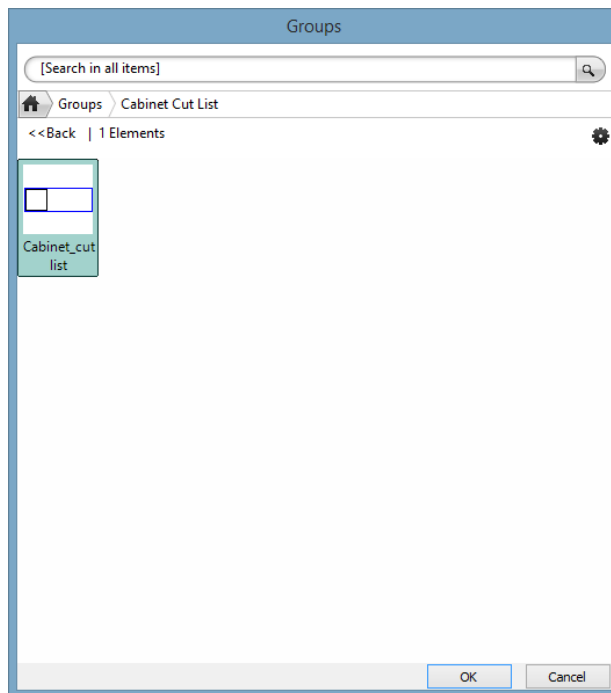


Lists already inserted are no longer connected to the selected object, so they do not follow the modification of the object.

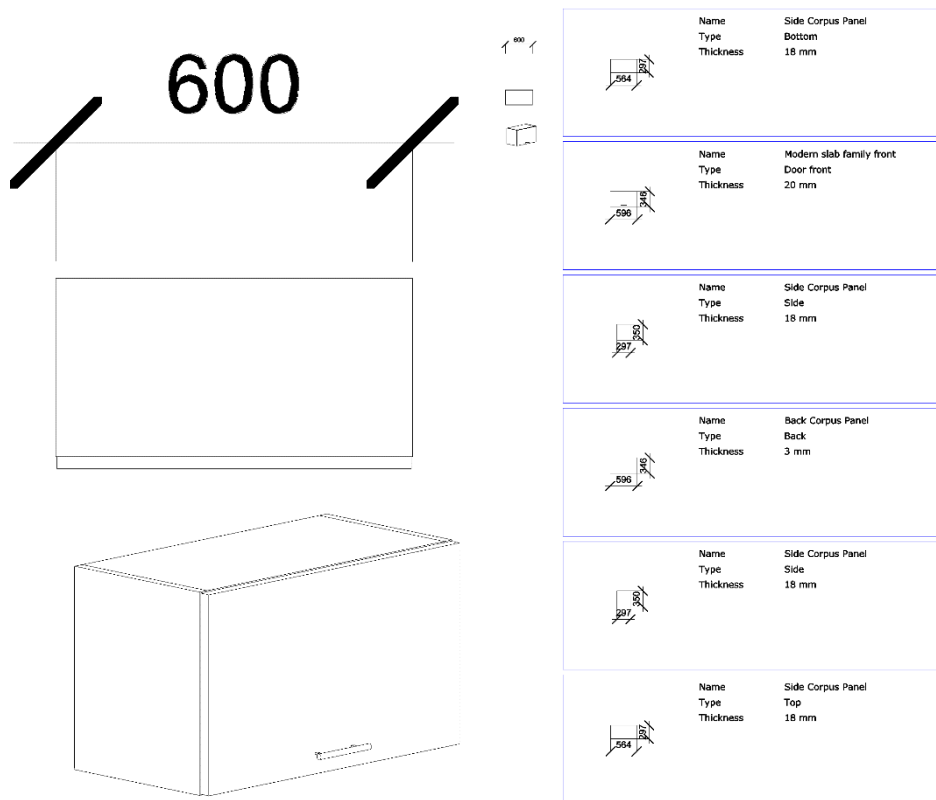
### 16.11.2. Cabinet Cut List

If you want to make a detailed graphical list of the cabinet components and place that list in the drawing, use the *Manufacture -> KBB Manufacture Tool -> Cabinet Cut list* command.

You find one predefined list scheme in the *Groups – Cabinet Cut List* folder.



- Select the group from the folder.
- **OK** closes the dialog box.
- Select the cabinet with those parameters you want to display in the list.  
**Enter** completes the selection of the objects.
- If you selected multiple objects, specify the number of columns of the graphical list of the objects.
- Specify the origin of the list in the drawing.  
The program places the graphical lists in the drawing.
- Select new objects, or  
**Enter** completes the command.



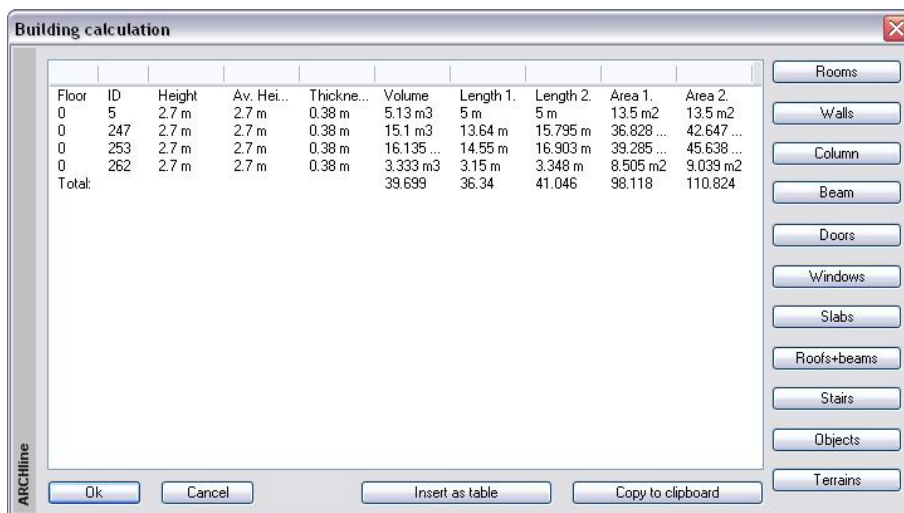
### 16.11.3. List by selection

With the *Add-On menu Quantity Take-Off – Selection* command the program will list the calculation data concerning the selected objects in a dialog box as a table.

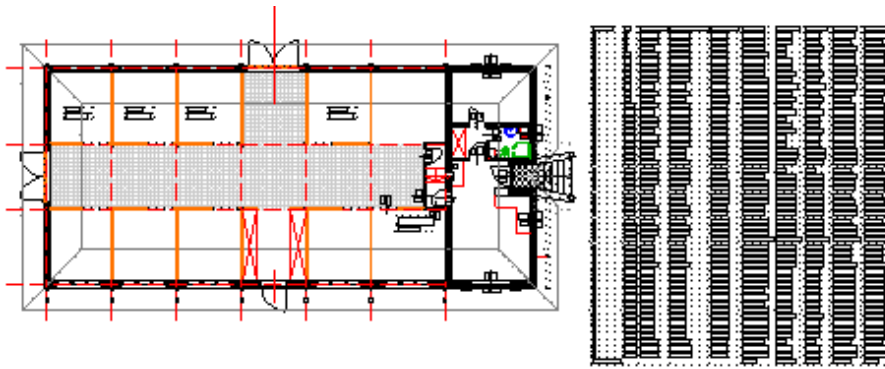
- Select the objects to obtain calculation data about them, or **Enter** to select all the objects in the drawing.

The **Building calculation** dialog box appears.

Use the buttons on the right to select object types (walls, columns, beams and doors, etc.) for the information you want to display in the dialog box.



- Press the **Position as table** button and place the table with the calculation lists on the screen, or



- Press the **Copy to clipboard** button. The program copies the content of the dialog box to the Windows clipboard, so you can export them to external applications. You can place the list in a Word or EXCEL document.
- OK** Closes the dialog box.

#### 16.11.4. Building list

ARCHLine.XP comprises quantitative, geometrical and descriptive data concerning the architectural objects (walls, slabs, doors and windows, roofs, etc.) used in the projects.

Location of the command: **Ribbon bar > Documentation > Quantity Take-Off**.

The program calculates the list and after specifying the file name opens an **Excel** document which displays relevant data of element types on different worksheets.

The door and window worksheets refer to the consignment of doors/windows. The program will sum up object types in the integrated worksheet:

ID	Name	Picture	Width [mm]	Height [mm]	Area	Code	Description	Price	Unit	Value
31549;137282	2 Leaves standard		885	2135	1.89					

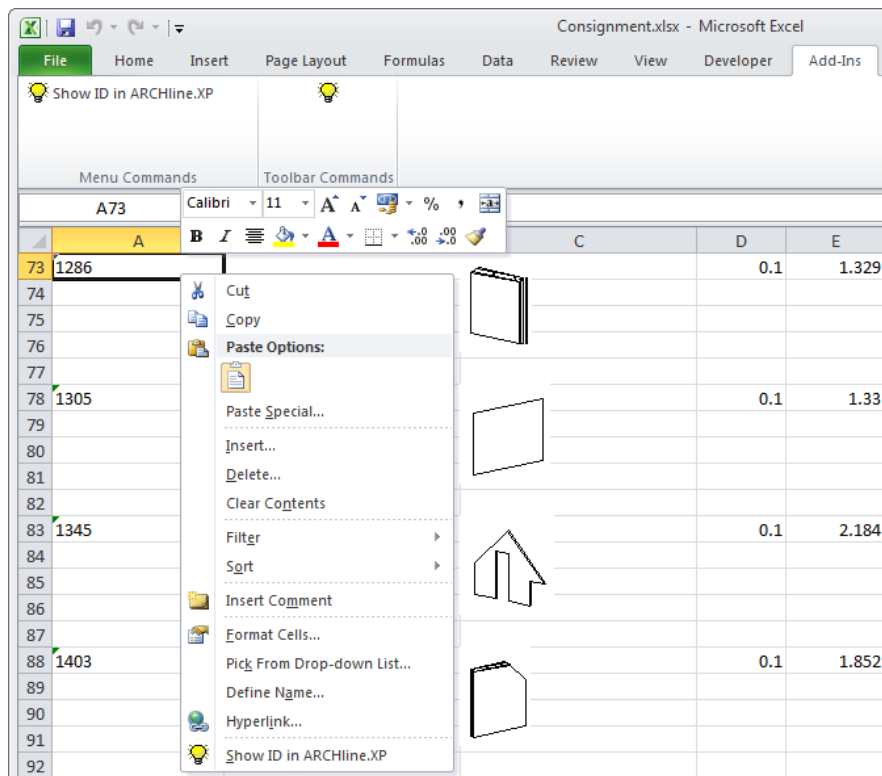
#### Calculation sheets

Excel lists created by the program can be used as calculation sheets. After creating the lists you have the possibility to add new columns with relevant cost data. Based on these data you can make further calculations and create tables.

#### ARCHLine.XP link in the Excel list

In the completed Excel list the tables contain the ARCHLine.XP ID of the objects. ARCHLine.XP can visualize the requested object in the drawing according to the object ID in the *Excel* list.

- Right-click the object ID in the list.
- Select the *Show ID in ARCHline.XP* command in the shortcut menu popping up.



To enable this function, you have to move the **ARCHLine.xls** file from the ARCHLine.XP\Templates\XLStart folder to the Office\... \XLStart folder.

### 16.11.5. Room consignment

Using the *Add-On menu Quantity Take-Off – Room consignment* command you can create three kind of list of all Rooms referenced in the current plan sorted out by floors and apartments.

Calculation of used area:



	A	B	C	D	E
1	<b>Calculation of used area</b>				
2	<i>Level</i>	<i>Room name</i>	<i>Gross area</i>	<i>Reduce by</i>	<i>Net area</i>
3					
4		<b>19 Rooms</b>			
5	<i>Ground</i>	0 Utility	3.07	0	3.07
6		0 Kitchen	26.34	0	26.34
7		0 Toilet	1.36	0	1.36
8		0 Garage	15.05	0	15.05
9		0 Living-room	24.71	0	24.71
10		0 Study	16.09	0	16.09
11		0 Entrance-hall	13.07	0	13.07
12					<b>99.69</b>
13	<i>F1</i>	0 Study	7.9	0	7.9
14		0 Bedroom 1	21.37	0	21.37
15		0 Bedroom 2	13.6	0	13.6
16		0 Bedroom 3	13.38	0	13.38
17		0 Bedroom 4	9.69	0	9.69
18		0 Bathroom 1	4.55	0	4.55
19		0 Bathroom 2	6.08	0	6.08
20		0 Hall	14.28	0	9.03
21					<b>85.6</b>
22	<i>Roof</i>	0 Bedroom 5	13.73	0	16.53
23		0 Bathroom	1.99	0	3.89
24		0 Store	2.47	0	4.29
25		0 Store	0.44	0	1.88
26					<b>26.59</b>
27	Net area				<b>211.88</b>
28					
29	Total used area				<b>211.88</b>
30					
31	<i>Unit: m2</i>				

## Room information in details

	A	B	C	D
1	<b>Ground</b>			
2				
3	<b>Entrance-hall</b>			
4	ID	16839		
5	Flat	B2		
6	Room kind			
7	Gross area	13.07 m2	0.70*1.25	
8			1.65*3.13	
9			0.77*0.77/2	
10			0.77*1.65	
11			0.55*2.42	
12			3.96*0.18	
13			0.83*0.83/2	
14			0.83*3.13	
15			0.34*0.34/2	
16			0.34*1.25	
17				
18	Used standards	DIN 277		
19	DIN277 area	13.07 m2		
20	Net area	13.07 m2		
21	WoFIV area	13.45 m2		
22	Perimeter	19.79 m		
23	Door areas (5)	10.14 m2	1.70 + 1.70 + 3.15 + 1.70 + 1.89	
24	Window areas (1)	1.15 m2	1.15	
25	Wall surfaces	52.16 m2		
26	Volume	34.54 m3		
27	Room height	2.64 m		
28	Illumination area	11.29 m2		
29	Illum. ratio	0.86		
30	Room number	16		

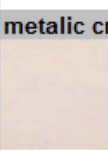


## Combined list

	A	B
1	<b>Combined list</b>	
2		
3	<b>Ground</b>	
4	Room areas	99.69 m2
5	Window areas	8.52 m2
6	Door areas	35.68 m2
7	Wall surfaces	0.00 m2
8	Volume	263.35 m3
9		
10	<b>F1</b>	
11	Room areas	90.85 m2
12	Window areas	11.95 m2
13	Door areas	23.81 m2
14	Wall surfaces	0.00 m2
15	Volume	192.34 m3
16		
17	<b>Roof</b>	
18	Room areas	26.79 m2
19	Window areas	1.26 m2
20	Door areas	9.21 m2
21	Wall surfaces	0.00 m2
22	Volume	58.29 m3
23		
24		
25	<b>Whole plan</b>	
26	Room areas	217.34 m2
27	Window areas	21.73 m2
28	Door areas	68.71 m2
29	Wall surfaces	0.00 m2
30	Volume	513.99 m3

## 16.11.6. Tiling list

Using the Tiling report feature, you can view four kind of list of all tiling and areas without tiles referenced in the current plan.

Menu: Add-on > Quantity take-off > Tiling

	A	B	C	D	E	F	G	H
1	<b>Tile summary</b>							
2	<b>metallic crema_25x40</b>							
3		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
4		250	400	17.95	256	(138/14/104)	0	
5								
6								
7								
8								
9	<b>metallic crema_33x33</b>							
10		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
11		333	333	2.86	35	(15/9/11)	0	
12								
13								
14								
15								
16	<b>metallic flower_25x40</b>							
17		Width (mm)	Height (mm)	Area (m2)	Total (pc)	Full/Part/Fragment	Price	Value
18		250	400	3.73	46	(30/3/13)	0	
19								
20								

	A	B	C	D	E	F	G	H	I
1	<b>Tile detailed data</b>								
2	<b>Slab</b>								
3	<i>ID</i>	<i>Area (m2)</i>	<i>Whole</i>	<i>&gt;50%</i>	<i>&lt;50%</i>	<i>Total (pc)</i>	<i>Material</i>	<i>Width (mm)</i>	<i>Height (mm)</i>
4									
5	5	2.86	15	9	11	35	metalic cr	333	333
6									
7	<b>Wall</b>								
8	<i>ID</i>	<i>Area (m2)</i>	<i>Whole</i>	<i>&gt;50%</i>	<i>&lt;50%</i>	<i>Total (pc)</i>	<i>Material</i>	<i>Width (mm)</i>	<i>Height (mm)</i>
9									
10	2	6.05	54	0	26	80	metalic cr	250	400
11									
12	8	3.12	24	0	24	48	metalic cr	250	400
13									
14	8	2	18	0	6	24	metalic_fl	250	400
15									
16	19	4.71	42	0	22	64	metalic cr	250	400
17									
18	19	1.34	12	0	4	16	metalic_fl	250	400
19									
20	48	3.46	18	10	24	52	metalic cr	250	400
21									
22	129	0.61	0	4	8	12	metalic cr	250	400
23									
24	129	0.39	0	3	3	6	virágos ut	250	400

	A	B	C	D	E	F
1	<b>Area without tiles summary</b>					
2	<b>Dark_grey</b>					
3		<i>Area (m2)</i>	<i>Price</i>	<i>Value</i>		
4		21.22	0			
5						
6						
7						
8						
9	<b>25%Grau</b>					
10		<i>Area (m2)</i>	<i>Price</i>	<i>Value</i>		
11		3.96	0			
12						
13						

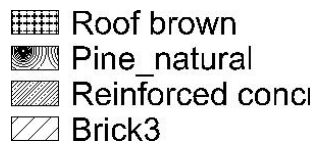
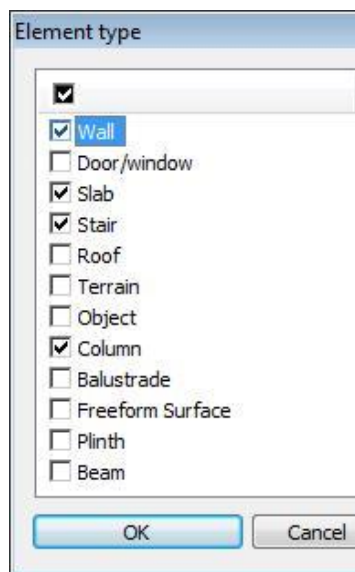
	A	B	C	D	E	F
1	<b>Area without tiles detailed data</b>					
2	<b>Slab</b>					
3	<i>ID</i>	<i>Area</i>	<i>Material</i>			
4						
5	5	2.92	25%Grau			
6						
7	<b>Wall</b>					
8	<i>ID</i>	<i>Area</i>	<i>Material</i>			
9						
10	2	6.21	Dark_grey			
11						
12	8	5.26	Dark_grey			
13						
14	19	6.21	Dark_grey			
15						
16	48	3.54	Dark_grey			
17						
18	129	1.03	25%Grau			



See chapter 15.1.Tiling.

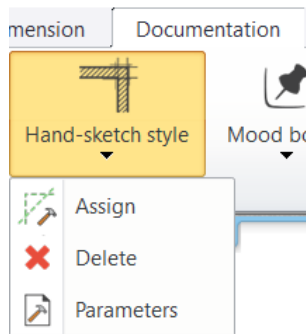
### 16.11.7. Legend of materials

Architectural versions – Drafting menu – Legend of materials tool generates a legend of the selected objects' materials representing the names and hatches of the materials used on the drawing.



## 16.12. Hand-sketching

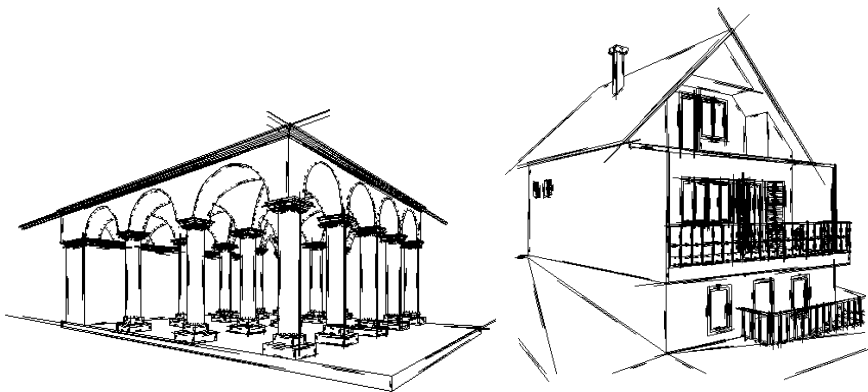
Activate the **Documentation – Hand sketch style** command to display the drawing hand-sketched. The quality of the freehand drawing depends on the parameters you set.



The hand – sketching is not available on 3D image views.

### 16.12.1. Assign to all

The command assigns freehand-style to the whole active drawing.



To restore the previous style of the drawing, click on **Assign to all** again.

### 16.12.2. Assign

The command assigns freehand-style to a group of drawings. For instance, you can select the perspective drawing (which is a group) from other drawings on the plot layout, and you can assign freehand-style to it. Naturally, the floor plan is displayed in normal mode.

- Select a group to which you want to assign this style.
- Select other groups, or **Enter** to complete the command.  
The command deletes freehand-style from the selected areas of the active drawing.

- Select a group to delete freehand-style from.
- Select other such groups, or **Enter** to complete the command.

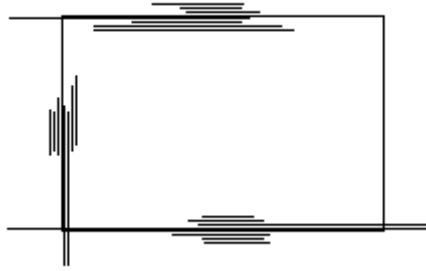
### 16.12.3. Parameters

The display of freehand drawings depends on the parameters set in the dialog box.

You can modify the following values:

- ❖ the **number of iterations**, which defines line width, and
- ❖ the **divider**, which defines the length of lines.

Try different values and choose the one you find best.



#### Default

Sets the values back to default.

#### Set as default

The values you set become default settings.

- **Ok** The program applies the values you set to the existing and future freehand drawings.

## 16.13. Model to a photo

Model to Photo tools enable you to align a photo of an architectural site with the 3D model

ARCHLine.XP offers two methods:

**Method I – Estimation**

**Method II – Known Distances**

### 16.13.1. Method I – Estimation

This method requires a set of point correspondences between characteristic edges of the 3D model and their respective depictions on the photo you want to match to.

There is no need for exact distances.

**Method I – Estimation** means the following steps to perform:

- ❖ Import Raster Image
- ❖ Define a reference box and use it later to find the approximate viewpoint on the photo.
- ❖ Set up perspective view.
- ❖ Refine perspective view
- ❖ Create the photorealistic image
- ❖ Edit matched photo

#### 16.13.1.1. Import Raster Image

Select *Add-on/ Method I. - Estimation / Import Raster Image* command.

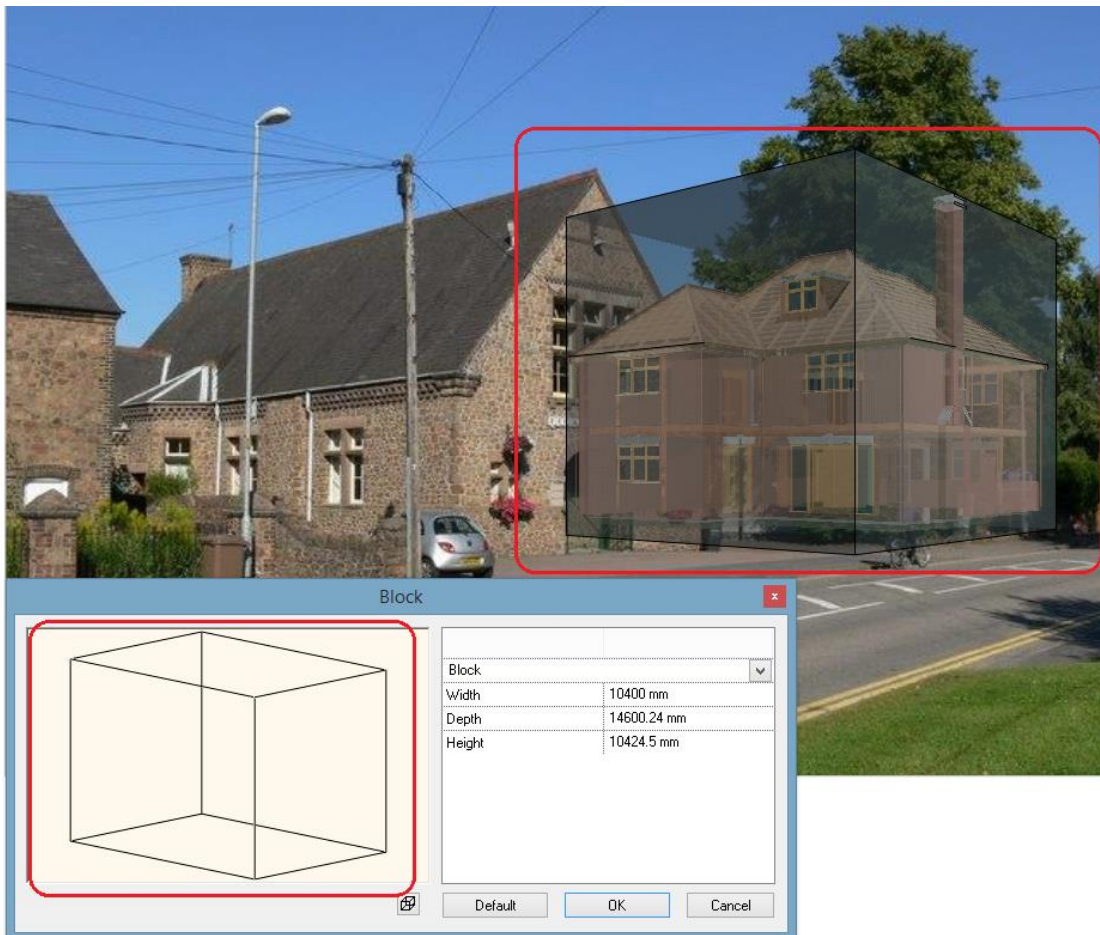
Select the photo in which you want to insert the model and then place it into the 3D View by giving its bottom-left and top-right corner.

#### 16.13.1.2. Define a reference box

Select *Add-on/ Method I. - Estimation / Set up Reference 3D model* command.

This command is a necessary step prior work on aligning 3D models to photo. The dialog offers the reference box with the size of the enclosing box of the 3D model.

Accept it or use dimensions which make the aligning to the photo easier, e.g. room height. The software aligns this box to the imported photo.



### 16.13.1.3. Set up Perspective

Select *Add-on / Model to a Photo / Method I. - Estimation / Set up Perspective* command.

The established correspondences is in turn allow to find an approximate viewpoint of the 2D depiction with respect to the 3D model.

This command works with perspective guide lines.

1. **Vanishing point bar:**

The two red bars with dashed lines should match characteristic edges on the photo on one side, and the two green bars with dashed lines should match lines on the other side. You find square marker on each end. Click and drag the grips to align these bars with characteristic edges on the photo.



Use the zoom in and out commands with the mouse wheel to make sure your lines are as accurate as possible.

2. **Horizon line:**

This blue horizontal line aligns with the horizon in your model. You can move up and down the horizon line according to the photo but most of the times the horizon line takes care of itself.

3. **Axis bars:**

The solid green, red, and blue lines represent each axis. As you adjust the vanishing point bars, the axis bars move automatically

4. **Axis origin:**

The origin is where the three axes meet. Click on this marker and drag to align this point to locate the 3D model properly on the photo.

5. **Scale marker:**

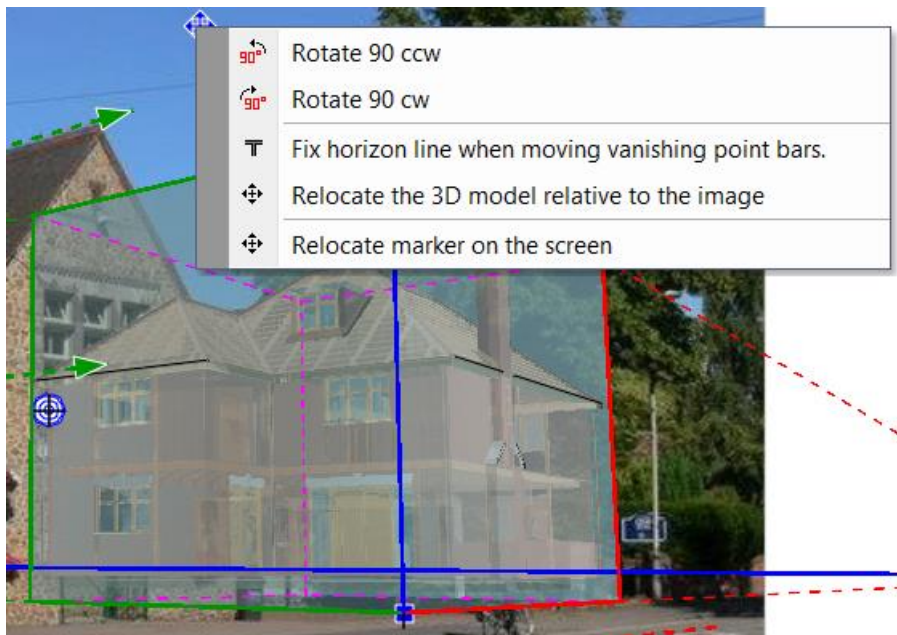
Click on this marker and drag up and down the blue axis bar to scale the 3D model on ther photo.



#### 6. Options marker:

You find some additional options on the Anchor marker.

- **Rotate 90 ccw**: You can rotate the model in 90 degree units counterclockwise.
- **Rotate 90 cw**: You can rotate the model in 90 degree units clockwise.
- You can fix the horizon line with **Fix horizon line when moving vanishing point bars**. You can give priority to the horizon line against the vanishing point bars or the opposite.
- **Relocate the 3D model relative to the image** means to relocate the 3D model relative to the image. The axis origin will follow the move.
- **Relocate marker on the screen** command enables to move the Options marker on the screen to a more convenient position.



#### 16.13.1.4. Refining perspective

You can continue to find more precisely the approximate viewpoint of the 2D depiction any time by selecting *Add-on / Model to a Photo / Method I. - Estimation / Refine perspective* command. The command offers the same tools like described in the previous chapter.



### 16.13.2. Create photorealistic image

Select *Add-on / Model to a Photo / Rendering* command.

This command executes the accurate matching of the model's photorealistic image and the photo.

The Render Properties dialog automatically appears on the screen. Set the Rendering properties and press Start Rendering.

The Render application creates two images. The first file contains the photo with the model and the second one contains only the photo.

Press SAVE when the first render is finished. The creation of the second image starts only when you press the Save button.

The size and the tone of the second image correspond to those of the first one.

When the second rendered images is completed the two images are placed on the floor plan automatically.

You can make the necessary corrections by using the *Edit matched photo* command.



The rendering applies the current light settings of the 3D view.

### 16.13.3. Edit matched photo

Select *Add-on / Model to a Photo / Edit matched photo* command.

This command allows you to make the necessary corrections on the rendered image.

You can often face typical problems such as for example when the side of the building covers the adjacent building in the photo. To overcome these obstacles, you need to edit the image.

Click on the images to start the editing.

Now you have two images on the drawing in a group. The first file contains the photo with the model in it and the second one contains only the photo. The size and the colour of the second image correspond to those of the first one.

#### **Image editing floating toolbar**

The floating toolbar automatically appears on the screen when you click on the images to start the editing.



The following table explains the individual functions on the Image editing toolbar

Icon	Command
	Use Polygon to draw and copy a part of the background image to the rendered image.
	The degree of transparency of the rendered image can be adjusted between 0% (fully transparent) and 100% (opaque)
	Edit any of the polygons. Click inside the polygon to start editing.
	Choose a polygon to delete
	Delete all polygons
	Save the edited image in a new file.

1. Transparency slider to adjust the transparency of the rendered image.



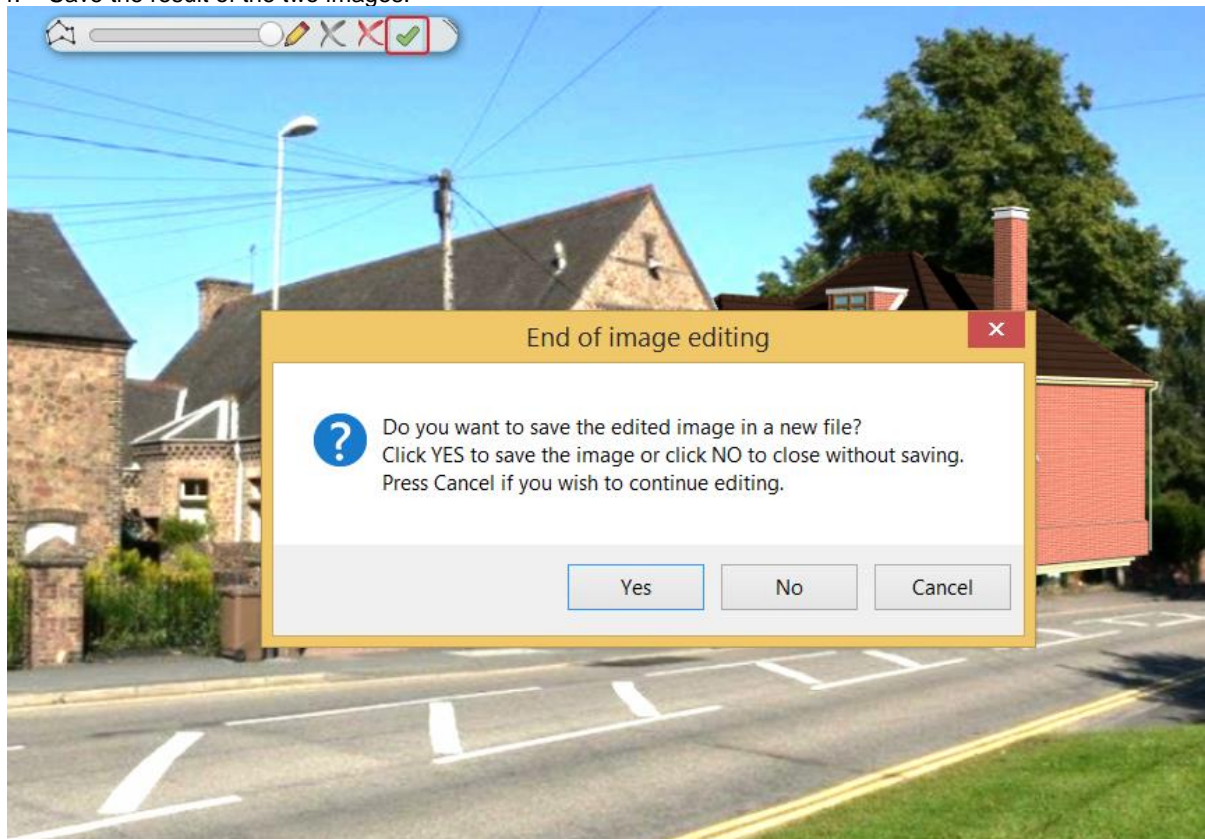
2. Draw a polygon. The polygon area is forwarded from the background image and covers the rendered images. You can add more polygons to forward more details. Later you can edit, delete and delete all polygons.



3. Display the result of the two images. Move the slider to the maximum position.



4. Save the result of the two images.



### 16.13.4. Method II. - Known Distances

The Known Distances method requires exact distances.

You find the command in the *Add-On menu – Insert 3D Model in photo's context menu*:

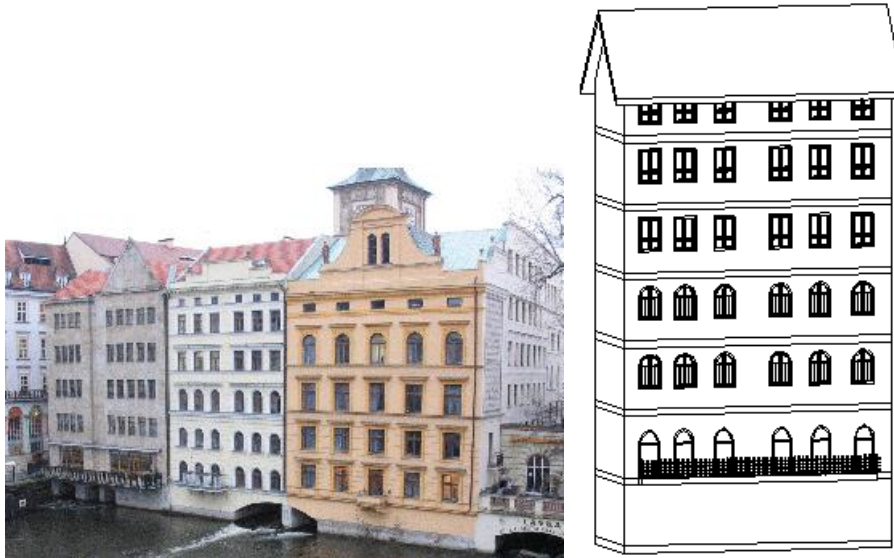
#### 16.13.4.1. Set up view by block

Activate the 3D View.

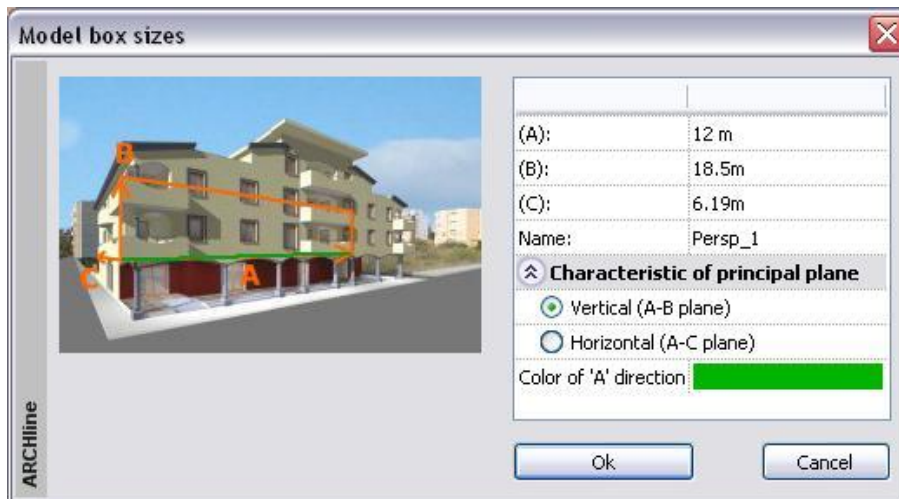
Select **Add-on/Insert 3D model in photo's context / Import Raster Image**. Select the photo in which you want to insert the model and then place it into the 3D View by giving its bottom-left and top-right corner.

You must define the perspective of the photograph. For this you have to use a reference block.

The following example will demonstrate this method. The task is to insert the model into the place of the second building on the right.



Select the **2. Set up Axis Markers on Raster Image** command to display the following dialog box:



This dialog box contains the dimensions of the model to be inserted. Of course, you can freely change the values according to your needs.

You can choose here whether you would like to use the horizontal or the vertical plane for the perspective plane. In this example we use the vertical plane.

- Specify the dimensions of the enclosing rectangle with the help of the distances measured on the photograph:

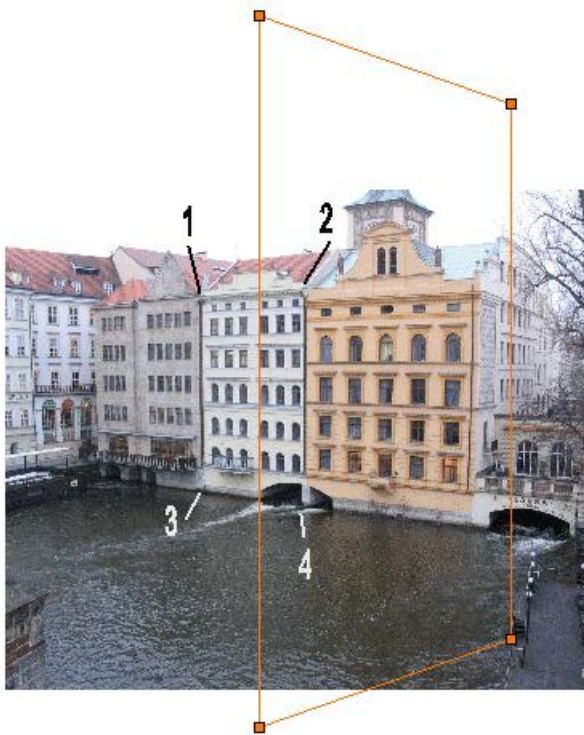
*Width:* 12 m, the distance between the two neighbouring houses, this equals the width of the model.

*Height:* 18.5 m, the height of the building shown in the photograph, up to the cornice.

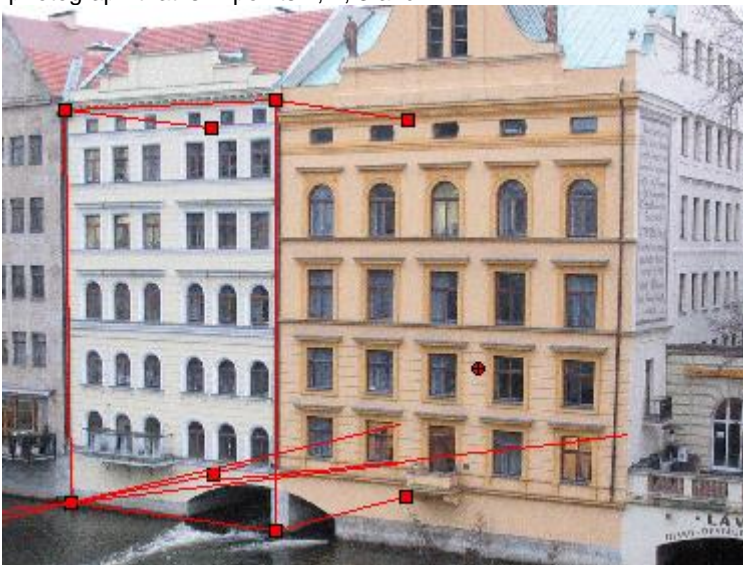
*Depth:* 6.19 m

- Define the name of the perspective transformation: Persp\_1

The program inserts the reference block according to the dimensions that you have defined.



- Define the perspective of the photograph in a way that you move the nodes of the block to the appropriate places on the photograph that is in points 1, 2, 3 and 4.



- Press **Enter** to display the result on the screen.
- Move the edge of the block representing its depth along the hyperbole, taking account of the edges representing the depth of the building.
- If you are satisfied with the perspective you have created, press **Enter**, and the program completes the definition of the perspective.

#### 16.13.4.2. Update 3D model on Raster Image

If you are dissatisfied with the perspective formerly defined, you have the possibility to modify the perspective definition later.

By applying the *Update 3D model on Raster Image* command you can adjust the position of the nodes of the previously defined perspective block.

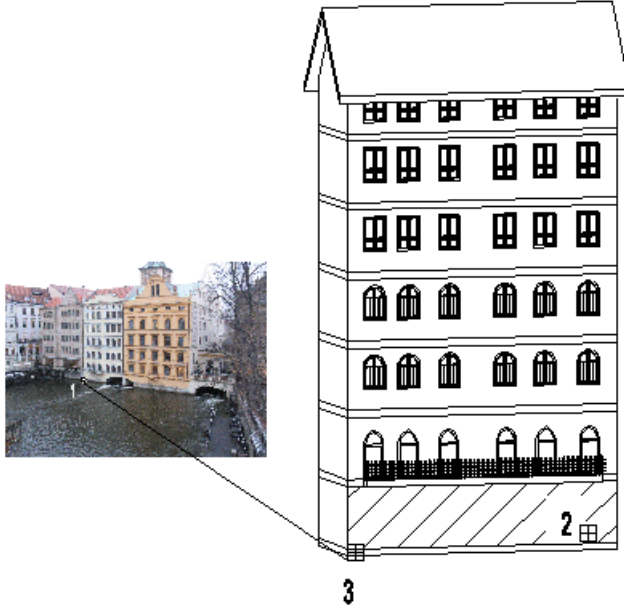
- Select the point of the perspective plane you wish to move.
- Specify the location of the new point.

#### 16.13.4.3. Assign 3D model on Raster Image

With this command you can insert the object into the perspective of the photograph in a way that you assign a point of the perspective plane to the corresponding point of the 3D model (see the previous figure).

The program fits the 3D model into the original viewpoint of the photograph. If you apply precise values the program performs the command with high accuracy.

- Define a point on the perspective photograph: *point 1*.
- Define the appropriate 3D plane on the object: *point 2*, or choose from the options of **SSOLID MENU**.
- **ENTER** The selected plane is rotated in the appropriate direction.  
**NO** Selects another plane.



- Specify the corresponding reference point on the 3D plane: *point 3*, or select an option from *3D point definition*. As a result the program projects the 3D model into the photograph.



This way we have inserted the model into the photograph and now it is displayed in the same perspective as its surroundings.



If the perspective has not been defined precisely, the result can be imprecise. In this case modify the definition of the perspective by applying the *Modify definition* command.

There are two more tasks to be completed:

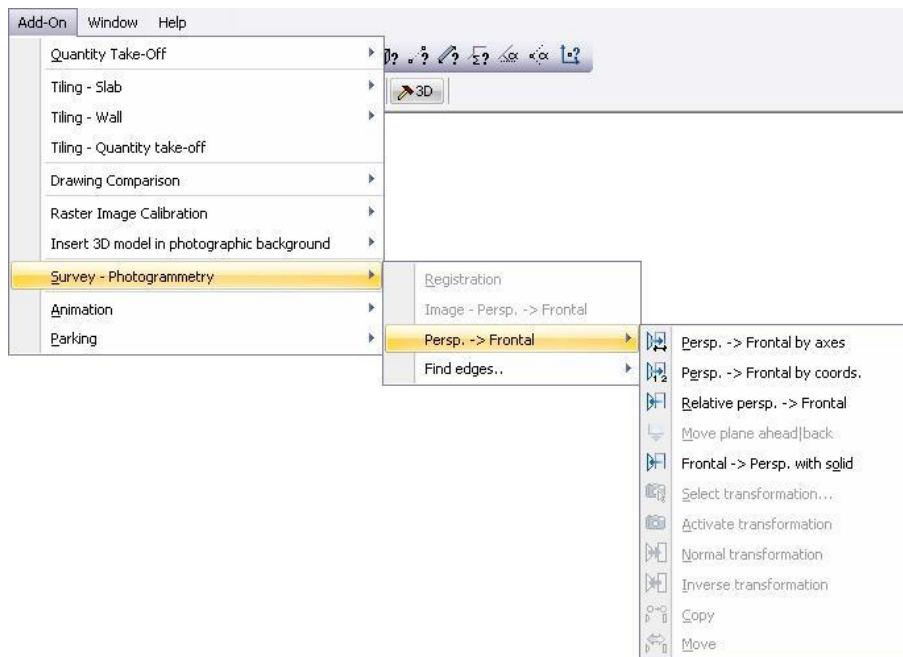
- ❖ to create the photorealistic display of the model, and
- ❖ to edit the ready image in a way that the sides of the building does not hide the parts of the photograph.

If you are satisfied with the result of the previous perspective transformation, select *insert 3D model into perspective in Render window* command.

## 16.14. Reconstruction - Photogrammetry

### 16.14.1. Introduction

The topic to be discussed in this part is *Photogrammetry*. You find the commands in the *Add-On menu - Survey - Photogrammetry* and in the *Reconstruction toolbox*



## Photogrammetry

In architecture photogrammetry means the proportional documentation of building fronts.

This documentation provides the data necessary for the calculation of reconstruction or rebuilding costs, and makes possible to create the plans.

Without photogrammetry, surveying and drawing building fronts, frescos or different architectural objects would be the most time-consuming and costly tasks in architecture.

## Photograph

A *photograph* is used to survey the object to be documented (a building).

The photograph always implies a perspective, even if we have a front view photo of the object. As a reference document you can use a traditional photograph or an image taken with a digital camera. In the former case you must scan the photo to create the image file. The extension of the file can be *.jpg*, *.bmp*, or *.tiff*.

With *perspective calibrating* the photogrammetry tool of ARCHLine.XP enables you to make the photograph proportionate, so that later on you can work on the image. This way, with the help of the photographs, the measured values and the photogrammetry tool you can reconstruct damaged buildings, parts of buildings or other objects, of which no plans or drawings are available.

### Practical advice

It is advised to mark the selected points on the building so that they can be recognized during calibration.

For the sake of precise measurements we suggest that you use calibration points located at the sides of the photograph.

To get even more precise values you should define distances that represent 70–80% of the base or the height of the photograph.

## Overlay image

The next step is loading the image file. With the *Drafting menu – Insert raster images* command you can adjust the preferences of the loaded image file, i.e. the overlay image, and apply *Perspective calibration*.

## Perspective calibration

The aim is to gather overall, proportionate measurements about the object during calibration, based on the measured distances and the photograph.

With perspective calibration you can proportionately represent in the Descartes coordinate system the points of that plane of the object that is displayed on the photograph. This way, you can define a complex transformation.

### I. Defining orthogonal view

With this function you can create – based on a perspective photograph – an orthogonal photograph, on which you can carry out the survey of a building front.

In this case the program transforms the original photograph into a proportional frontal view, which has the shades of grey, after you have defined the following:

- ❖ a horizontal and a vertical distance, and
- ❖ at least two horizontal and two vertical directions.

## II. Finding edges

This method is used in particular when you have to carry out a quick survey and there are complex forms, decorations or stonework on the frontal view. The *Find edges* method means that the program recognizes the edges of the object displayed on the photograph by identifying the shades of grey. Therefore, with this method you can demonstrate the frontal structure of the building. Naturally, the *Find edges* method does not substitute drawing the frontal view plan, but it can supplement it.

We recommend that you use this method if you wish to carry out a quick survey, but there are complex forms, decorations or stonework on the building front.

The *Find edges* function means that on the orthogonal photograph the program recognizes the edges by distinguishing between the different shades of grey. This way we can demonstrate the frontal structure of a building. Of course, this method cannot substitute drawing the frontal view plan, but it can supplement it.

It is best to use a photograph on which the edges, sills etc. on the building front can clearly be distinguished, and which contains the fewest possible shady areas, because these can be considered edges by the program.



### 16.14.2. Define orthogonal view

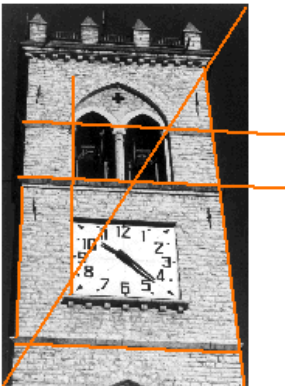
To define an orthogonal view you need to define the following:

- ❖ a horizontal and a vertical distance, specifying the dimensions of the orthogonal photograph, and
- ❖ at least two horizontal and two vertical directions, to calculate the focus points,
- ❖ a diagonal, to select that part of the image you wish to display on the orthogonal view.

Following these steps the program transforms the perspective photograph into an orthogonal view.

The function is demonstrated on the photograph of a tower (*campane.jpg*).

#### Defining horizontal lines:



- Select the raster image.
- Define a line on the photograph that is horizontal in real.
- Specify the length of the line (the width of the tower: 6 m)
- Define at least two more horizontal lines according to the figure. After this the program asks you to define the distances again. If you do not know the precise numbers, tick the **Distance unknown** option.
- **Enter** Completes the definition of horizontal lines.

#### Defining vertical lines

- According to the above figure, draw the vertical line at the edge of the column that is between the two string cornices.
- Specify the length of the line: 5.5 m.
- Define at least two more vertical lines, according to the above figure.
- It is not necessary to define distances.
- **Enter** Completes the definition of vertical lines.

When you define a direction with horizontal and vertical lines, in order to get a more precise result, draw these lines longer than they are in real life. You can be even more precise if you zoom on the photo when tracing the lines.

#### Defining a diagonal

Select the part of the image you wish to display on the orthogonal view by defining the diagonal.

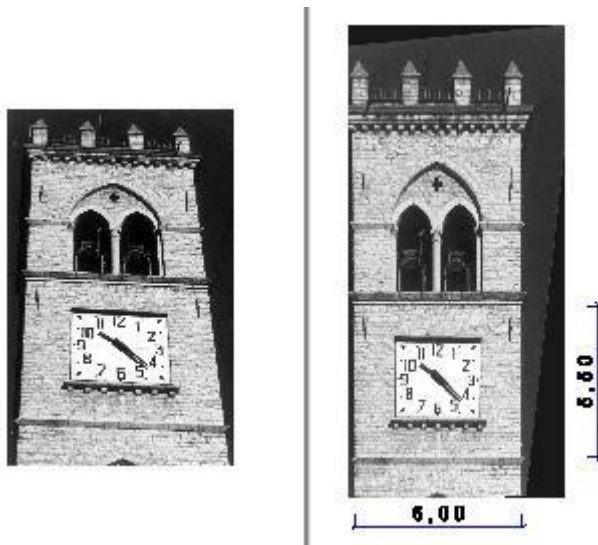
- Draw a diagonal from the bottom left corner to the top right corner of the photograph. As a result, the front view of the tower will be fully visible.



To display only part of the photograph in frontal view, you should draw the diagonal only on the part you wish to display. In this case the rest of the image will not be visible.



When you have finished the definition, the program creates the orthogonal image of the tower. The easiest way to check the accuracy of your work is to press Shift and draw actually horizontal and vertical lines along the most visible horizontal and vertical sides and edges on the photograph.




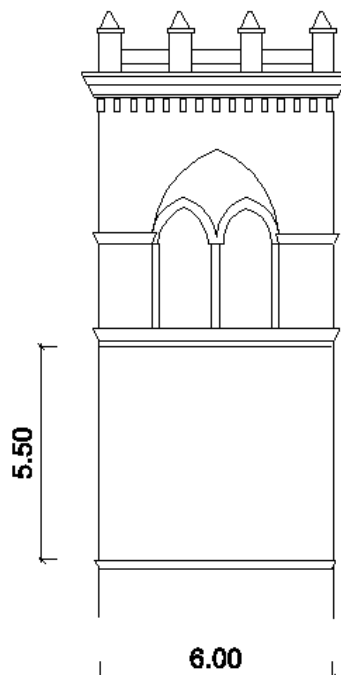
The program creates the orthogonal photograph under a new name, CAMPANEOrto.jpg, and saves it in the project.

### Creating a frontal view plan

The frontal view of the tower has become proportional during the transformation process, so you can measure real values. Each object you draw on this image with the help of the geometrical drawing tools will correspond to the original dimensions of the tower.

After defining the orthogonal image the Perspective – Frontal transformation command becomes active.

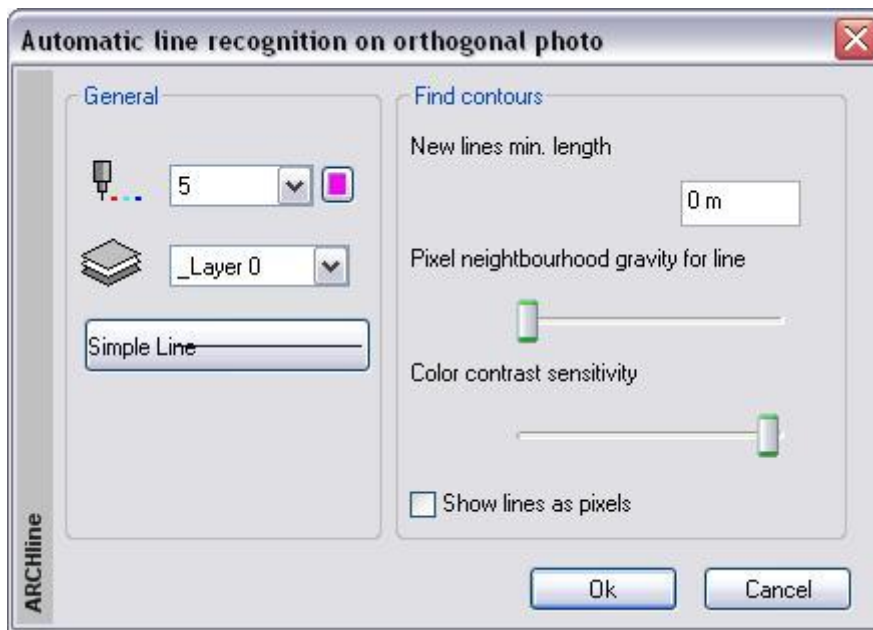
- Switch off the transformation by clicking on the  camera icon in the **Photo** toolbar.
- Trace the contours of the image on the frontal view image. This way you get the frontal view plan of the building.



### 16.14.3. Find edges – General

Drawing building fronts is a very demanding and time-consuming task. The Find edges function of ARCHLine.XP offers two possibilities to facilitate this work. The **Find edges – general** function distinguishes every line on the photograph by recognizing the different shades of grey.

- Select the raster image.  
The **Automatic line recognition on orthogonal photo** dialog box appears.



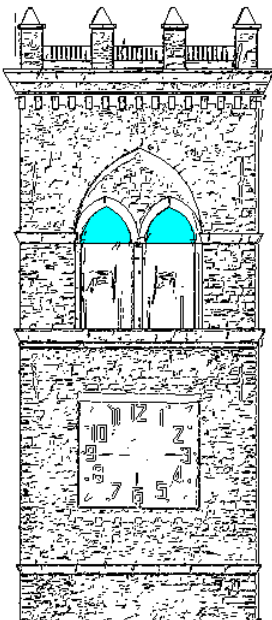
### General

- First, specify the general properties (colour, layer, line type). It is recommended to choose a colour that is distinctly visible on a grey photograph.

Assign separate layers to the edges you have found.

### Find contours

- The smaller value you determine for *new lines minimum length*, the more lines the program will draw. We suggest you set 0 as minimal length.
  - The *pixel neighbourhood gravity for line* value should be the smallest possible, while the *colour contrast sensitivity* value should be the highest possible.
- The *show lines as pixels* option can be turned on or off.



- Click **OK** when you have defined all the properties in the dialog box. The program begins the line recognition process.

To be able to see the lines drawn on the building front better, display the drawing without the photograph.

- Select from the photo shortcut menu the Frame / Show command. Then just the frame of the photo appears.

The displayed image is a real vector graphics drawing, which can be enlarged. On this image you can continue drawing your building front, by using any geometrical objects.

### 16.14.4. Find HV edges

Find HV edges are very similar to the previous command. The only difference is that in this case the program only searches for the horizontal and the vertical lines on the drawing.

