

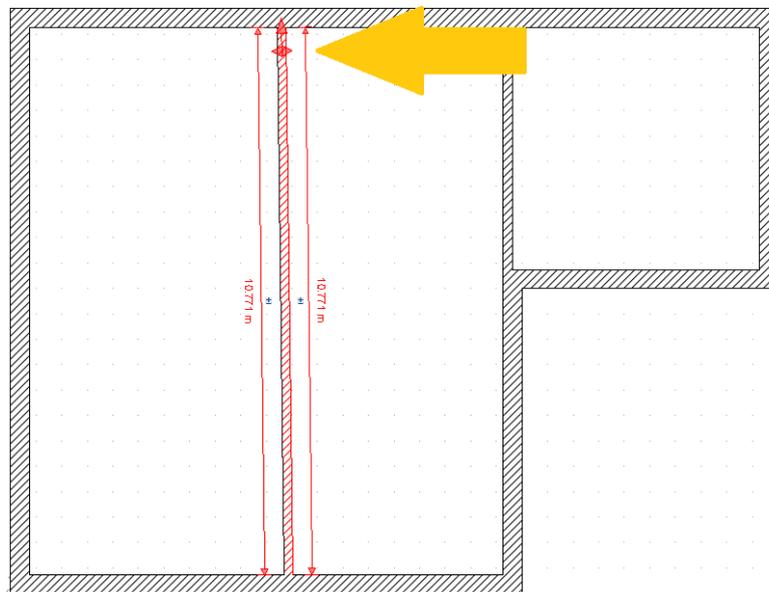
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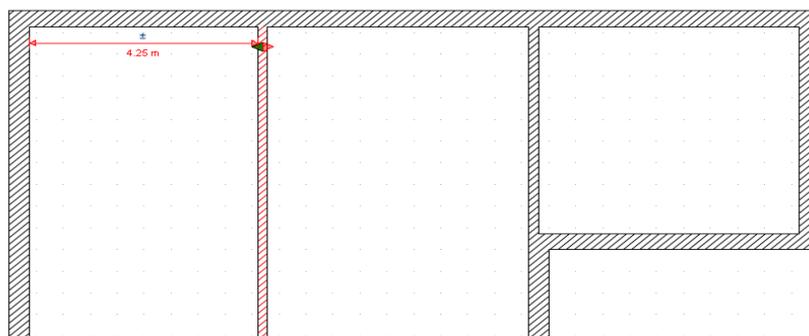
# 1 WHAT'S NEW IN VERSION 11

## 1.1 MOVING AND POSITIONING WALLS NUMERICALLY

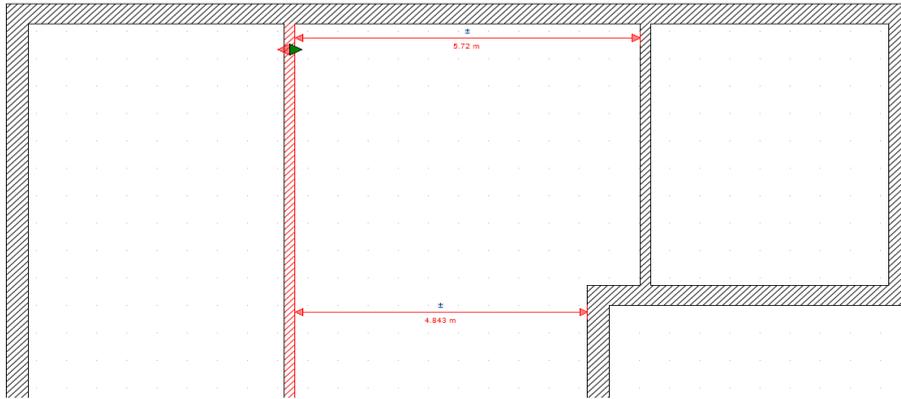
If you select a wall, version 10 already gave you dimension lines with a button for numerically lengthening or shortening the selected wall. Now the wall also shows a button as a double arrow on its axis.



This button works alternately in the direction of the active arrow. If you click on the button, the dimensions for entering the length will be hidden and dimensions in the direction of the green arrow will appear instead.



Depending on the current constellation of the floor plan, there can also be several dimensions if they meet other walls with different distances in the selected direction.

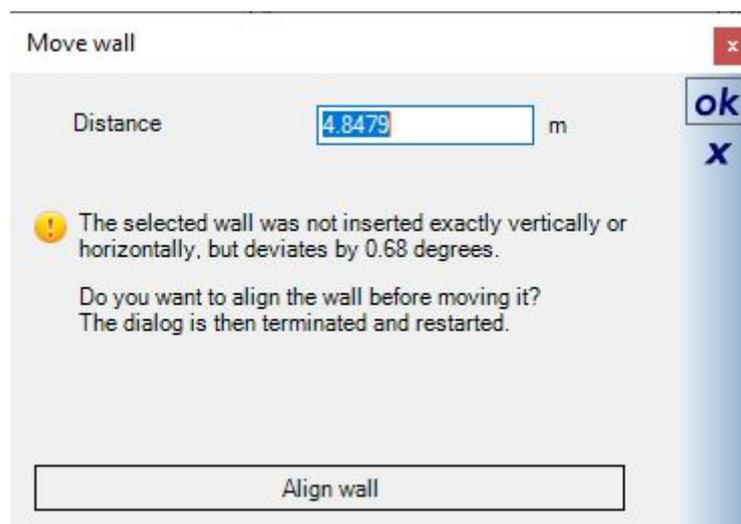


In this editing mode, you can change the direction by clicking on the respective part of the double arrow. A second click on the same part of the double arrow or on another part of the wall hides the moving dimensions and shows the usual dimension lines for the lengths again.

### 1.1.1 Moving not exactly vertical or horizontal walls

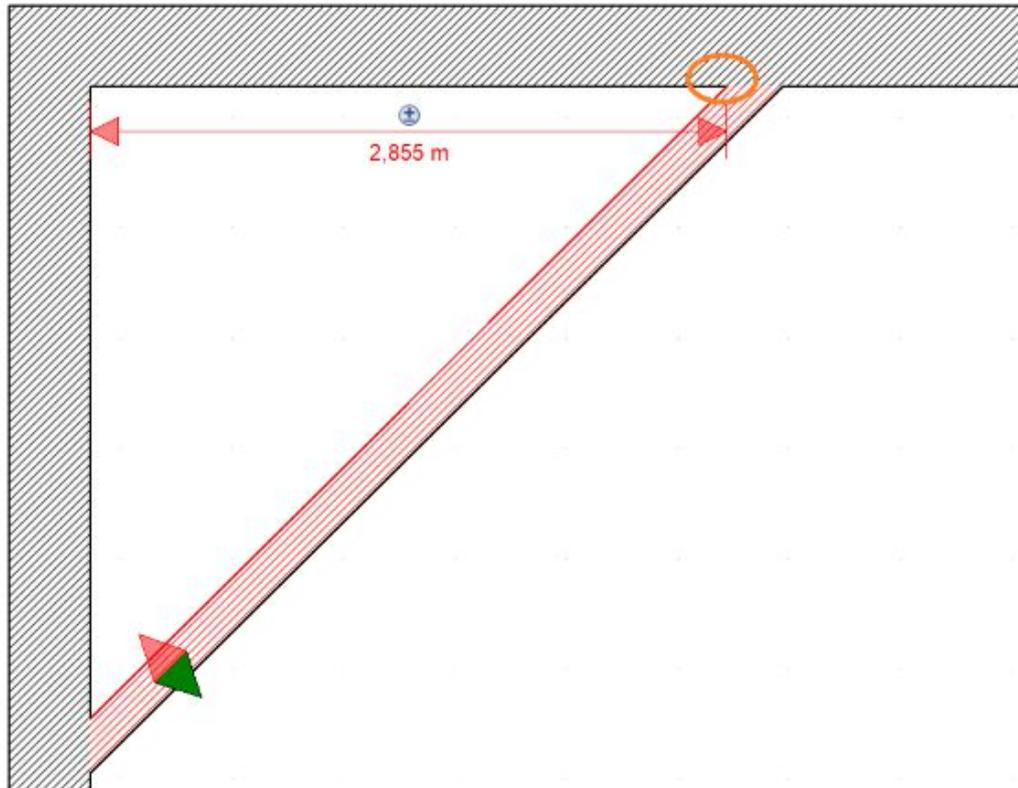
If you do not work directly on the grid when inserting the walls or without the internal angle grid while keeping the CTRL key pressed, it can easily happen that walls are inserted slightly out of the vertical or horizontal direction.

The new function takes the orientation of the wall into account and if this vertical or horizontal deviation is at an angle of less than 3 degrees, you will receive a dialog informing you of this when you click on the numerical button. And at the same time offers the possibility of aligning the wall before moving it.



It is also important to mention that the displayed distance does not refer to the point at which the dimension line is displayed, but to the point at which the wall is intersected with another.

An example to illustrate the position:



### ***1.1.2 Notes on changing the wall situation***

If a wall is moved, shortened or lengthened, other walls in the floor plan are not automatically changed, including adjacent walls. It is therefore possible that the connections between the walls are lost as a result of the changes or that walls initially overlap.

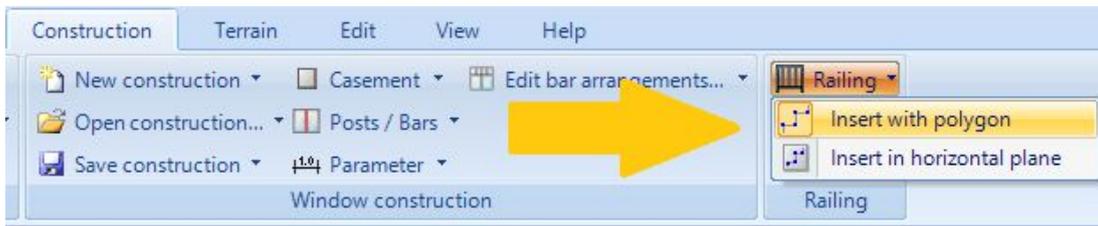
As a result, the room situation may also change, i.e. rooms can be lost or new ones can be created.

In general, rooms should only be edited, i.e. rooms should only be given names, when the work on the floor plan has been completed.

To rework the wall situation after moving or extending a wall, use the "Edit Walls" tools on the Edit Ribbon, or even easier by starting the lengthening tool by pressing the V key and then adjusting the walls one by one .

## **1.2 RAILINGS**

The functions for inserting and designing railings can be found on the CONSTRUCTION ribbon, since railing constructions can also be saved, loaded and, if necessary, edited further.



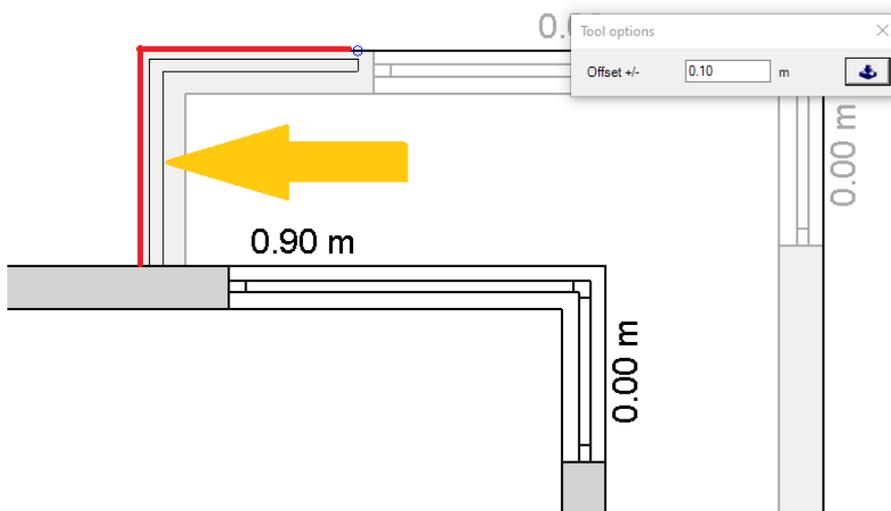
### 1.2.1 Inserting railings

A railing is inserted using a polyline. When you have reached the end point of the railing, complete the process with ENTER or via the context menu. The railing dialog then appears.

In most cases, the path of the railing should be based on the existing building construction, e.g. along the outer edge of a balcony. However, since the railing is not usually in the middle of the outside of the balcony, there is an option of defining an offset to the input polygon while you insert the railing.

In the following screenshot, the path of the polygon is red and the offset railing cursor is marked with the arrow at a distance of 10 cm. The direction in which the offset takes place depends on the input direction of the polygon, i.e. it differs depending on whether you enter the polygon to the left or to the right.

Therefore, positive and negative values such as "- 0.1" are allowed.

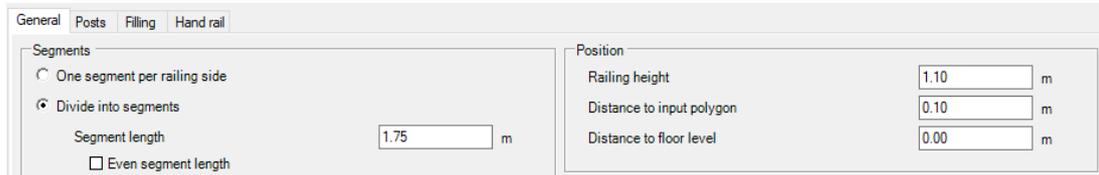


You can also set the polygon offset for existing railings any time later in our properties dialog. And as usual, you can also move the polygon points of a railing manually.

### 1.2.2 Level of a railing

There are two variants when inserting railings, one as a normal polyline or as a polyline in a horizontal plane.

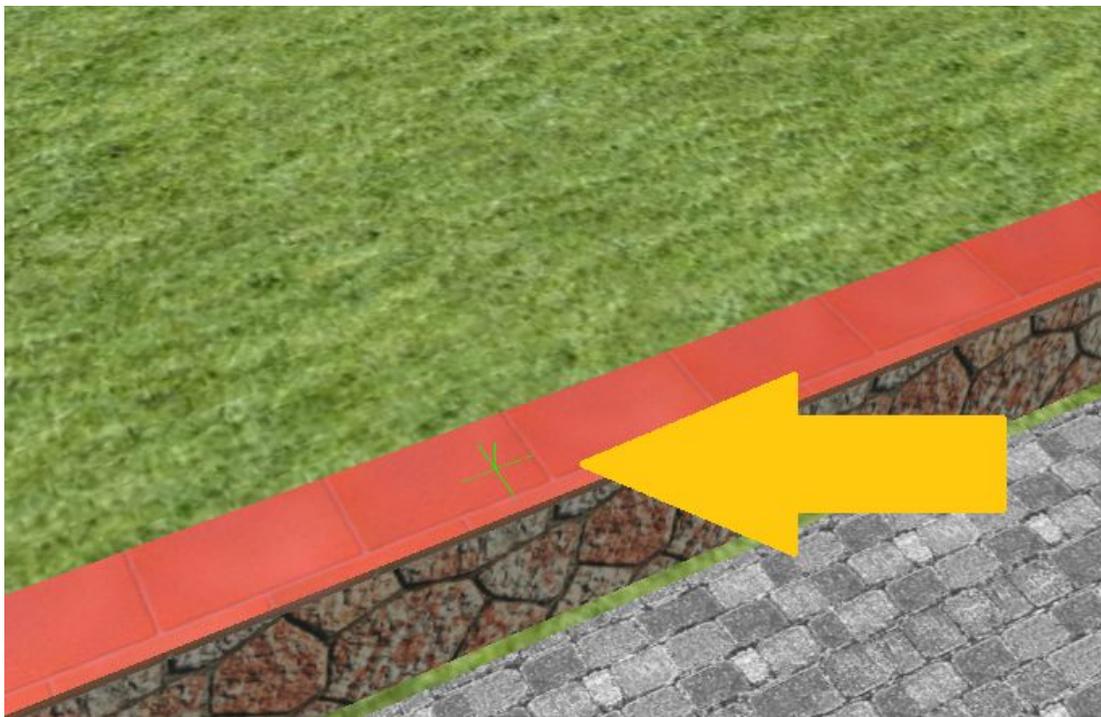
In the normal polyline tool, railings are inserted by default at the zero level of the active layer. Changing the level is done numerically in our properties dialog on the GENERAL page.



As an input aid and so that you don't always have to measure the necessary level from the 3D building model there is an alternative variant in horizontal plane.

As with other input tools, the level alias distance to floor level is preset by picking a level in a 3D view.

To do this move the mouse cursor over an area in the 3D view once you have started the tool. If a surface is recognized under your cursor it is marked in red and another left mouse click picks the shown plane.



The polygon is then inserted in a 2D view in order to guarantee the required accuracy.

Note: as the name of the input tool already suggests, the railing always runs horizontally, even if the determined plane was inclined. Sloping railings are currently not available.

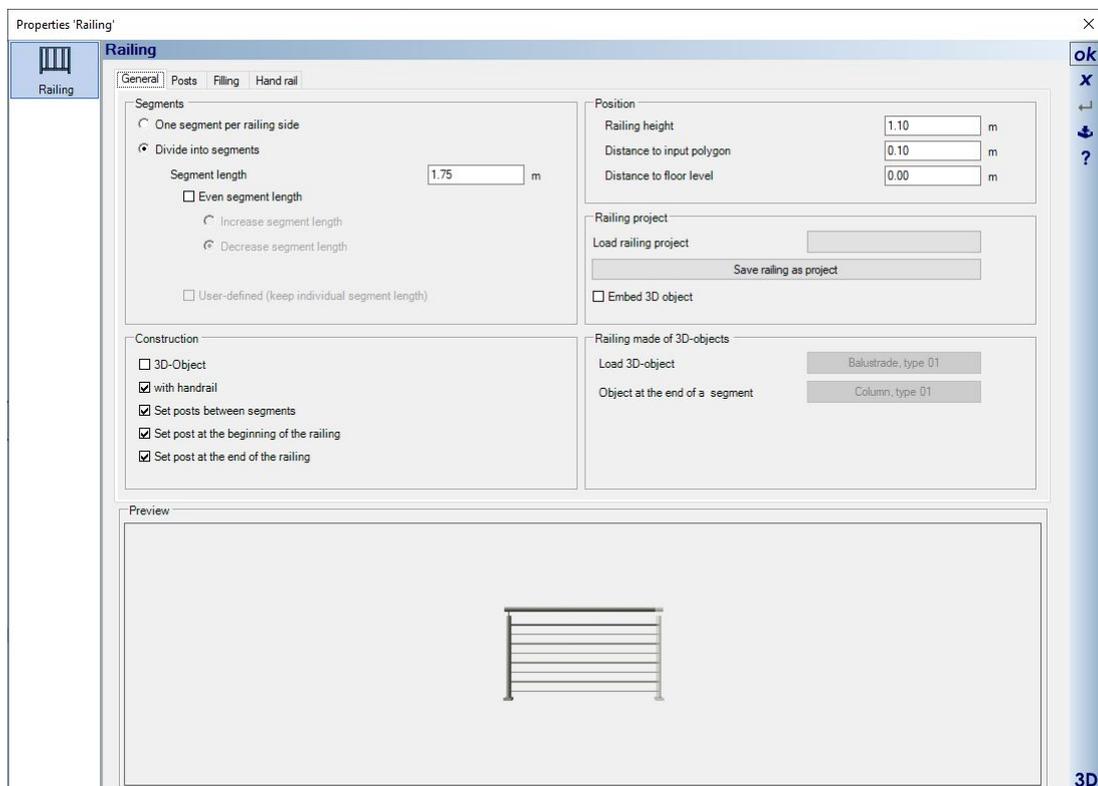
### 1.2.3 Railing dialog and settings

#### 1.2.3.1 General settings

On the general page of the railing dialog, you essentially determine the subdivision of the railing, the design and the position. There is also an option of loading a previously saved railing project or saving the currently configured railing for further use. That allows you to create your own railing catalog with different basic types.

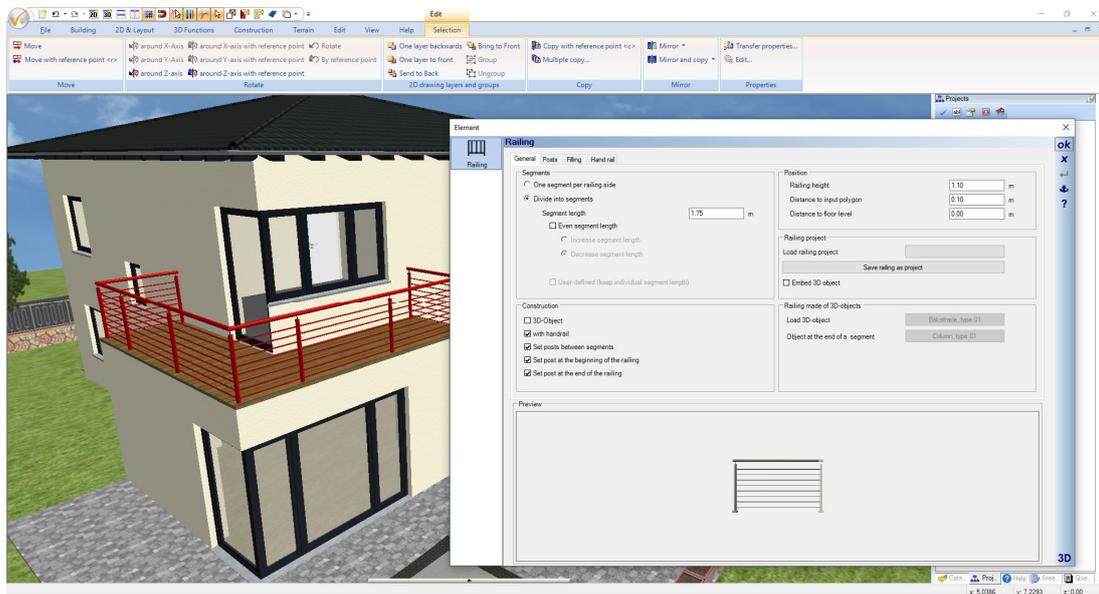
In the lower area you see a 3D preview of the railing, but only one segment of it. Therefore, the subdivision does not play a role here. It is more about the visual control of the properties such as posts, handrail, filling, etc..

The 3D preview behaves exactly like a 3D view in our main software, i.e. you can zoom or rotate in it.



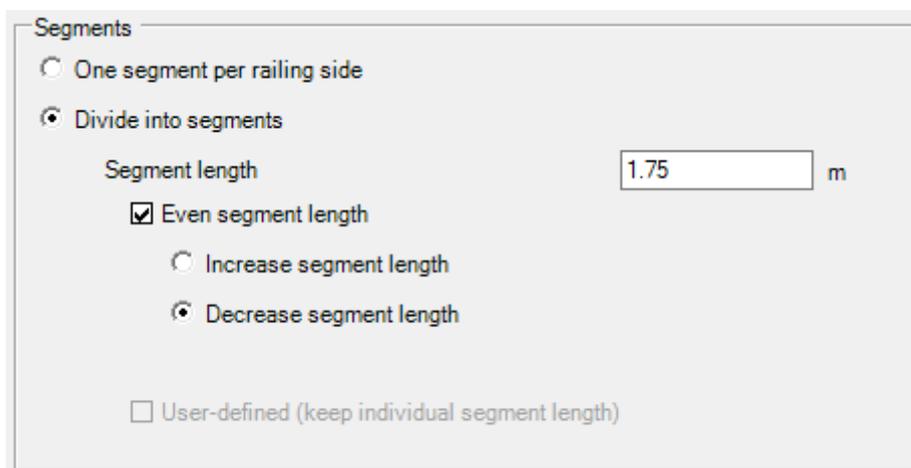
#### 1.2.3.2 The subdivision of a railing

By default, railings are divided into so-called segments with a specified length for each polygon side. The division in input direction of the railing begins with exactly this dimension and at the end a shorter segment of any length is automatically created to complete the railing side.

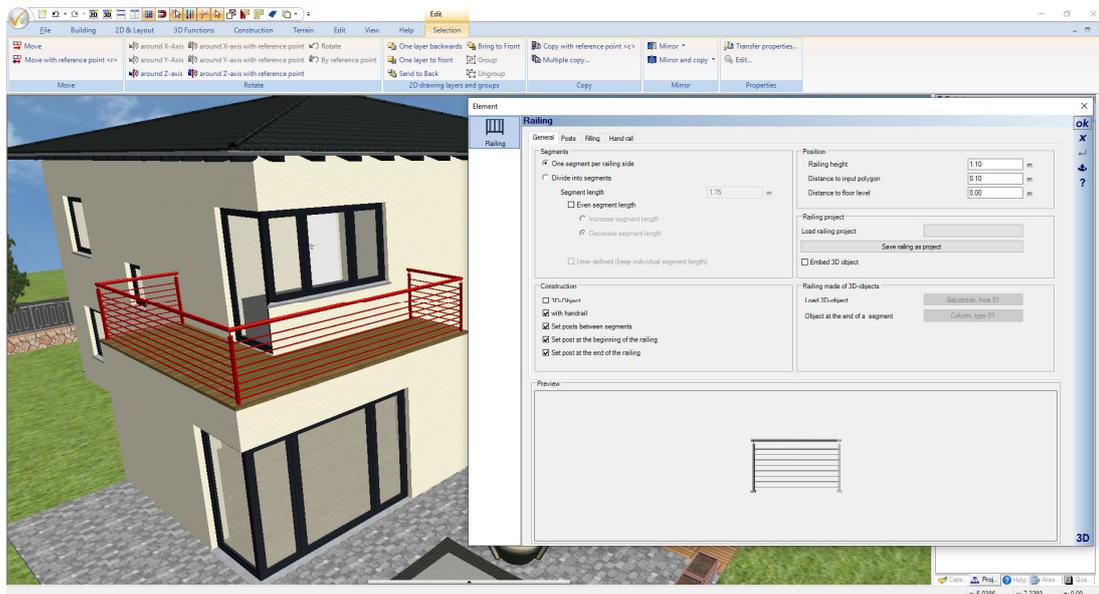


Alternatively, you can create segments of even length along the railing sides, either decrease or increase each segment.

Segments of the same length are then automatically calculated. The number of segments remains the same when reducing the length, segments only become shorter and when increasing the value, one segment is removed and the remaining ones become longer than the specified length, here in our example 1.75 m



The "Only one segment per railing side" option suppresses the division into segments and creates a railing side with a single segment.



### 1.2.4 Editing a railing segment individually

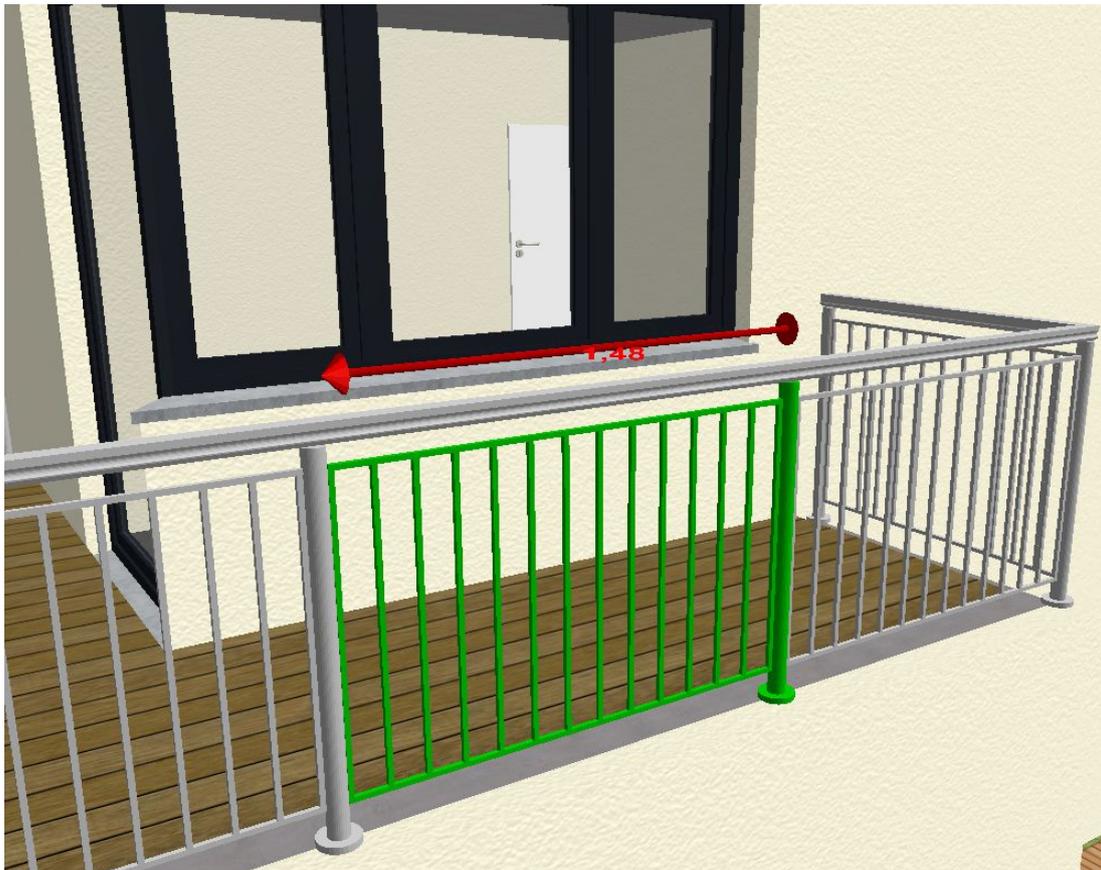
Railing segments can be individually selected and edited. In this case, editing means giving a segment a length that deviates from the usual division or using other filling properties.

Other railing elements such as posts or handrail apply to the entire railing instead and cannot be changed for a segment.

#### 1.2.4.1 Changing the length of a railing segment

If you click on the filling area of a segment in a 3D view, not the entire railing will be selected but only this single segment.

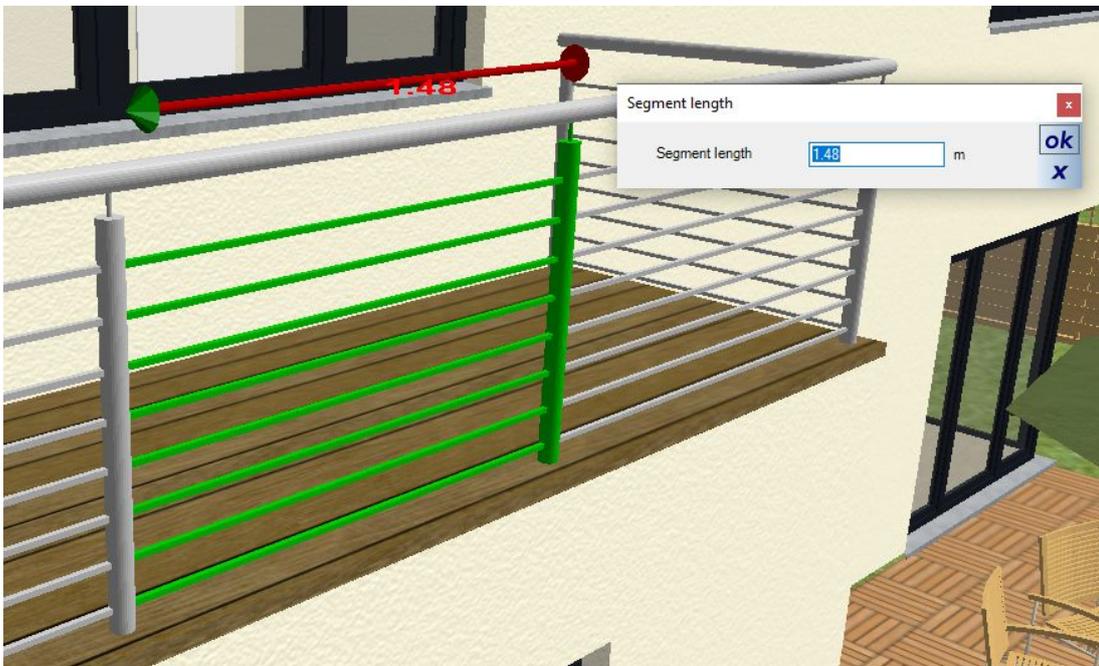
And a 3D dimension appears showing the current length.



Since changing the length needs a direction in which it should apply, you must first define this direction with a left mouse click on the 3D end of the dimension line.  
The end of the dimension line also changes its color.

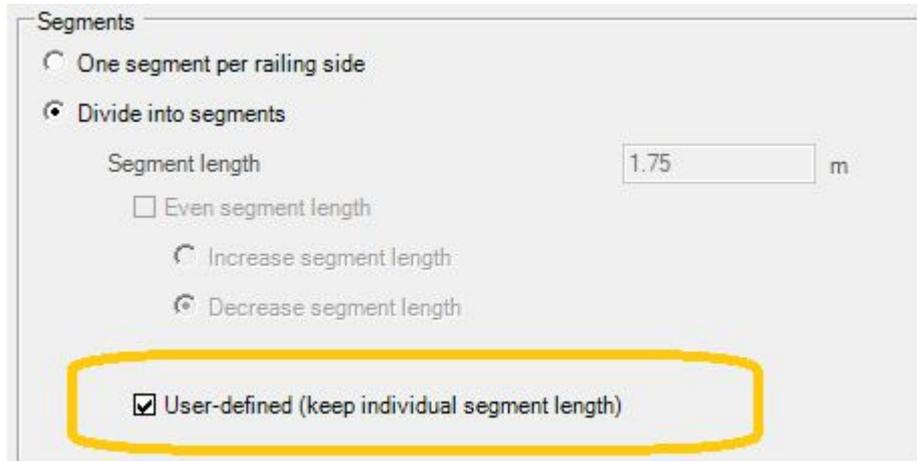


Double-click on the cone to open the dialog for entering the length numerically.



If a segment of a railing has been individually modified, the normal dividing options are disabled and the "User-defined" checkbox shows this status.

If you want to go back to normal segment division, you must first deactivate the checkbox.

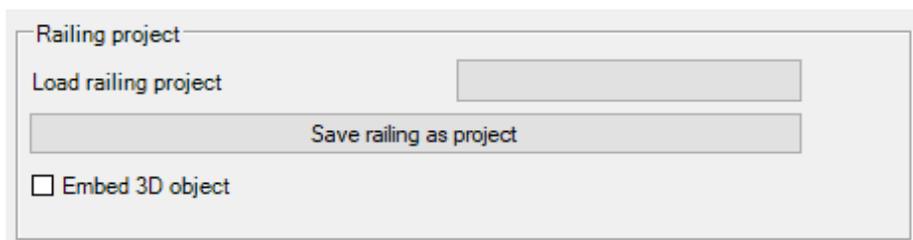


### 1.2.5 Saving and loading railing settings

In our "Railing Project" group, you can load and save a predefined railing. We have created some sample types in our standard catalog.

Basically you will design your own railings and save them there. This applies both for using the same type in future projects or as a template for multiple railings within the same building project.

Saving and loading railing project allows you to make the settings for the design and filling once, save the railing project and then simply read these settings in for the next railing.



The default location for the railing projects is the \AEC\Z-Railings directory in your version's installation directory. Railings use their own file type and extension (\*.cyr).

Unlike most other elements in our catalog, railing projects cannot be dragged and dropped into a planning. Since these files only contain the settings for a railing segment, they need an existing railing path inserted with a polyline.

Railing projects can only be read in via the properties dialog. General settings such as offset to the polygon or distance to the layer are not part of a railing project either. It's basically about fill properties.

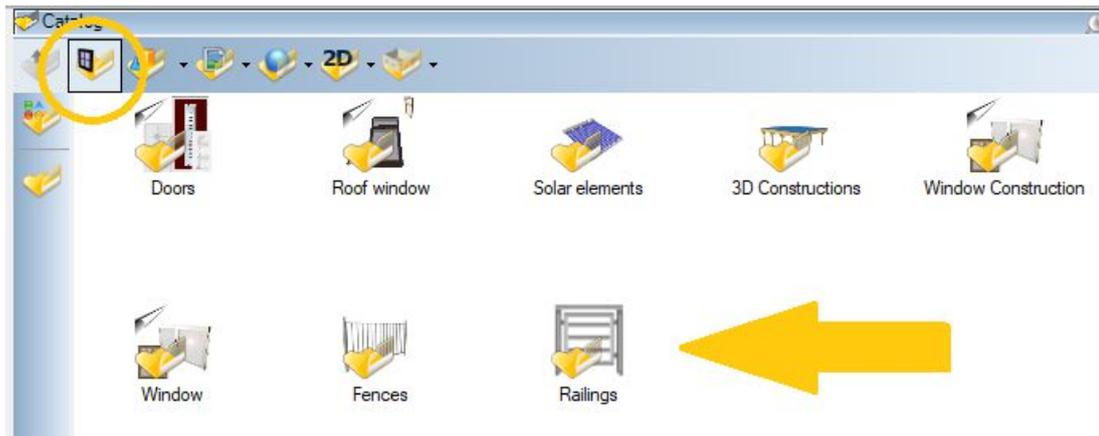
**Note:** on some computers, access to the installation directory may be restricted due to a lack of user rights on your Windows System.

Our software cannot overwrite these restrictions. So if you save a railing and you don't see the file in your catalog, that's probably the reason.

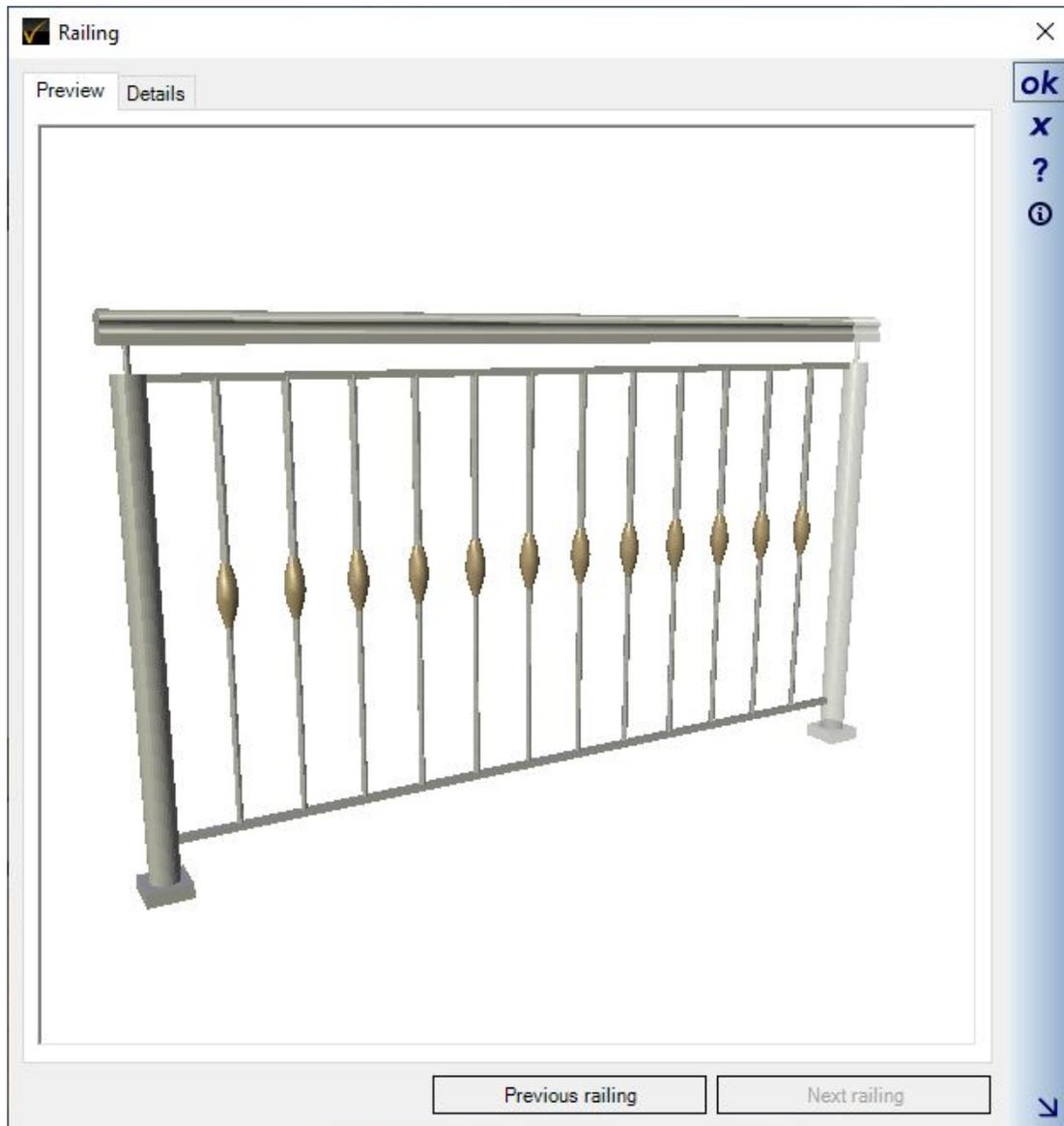
In this case save the railing file in a directory where you should have the necessary rights, on your desktop for example. And then copy the \*.cyr file manually in your Windows Explorer to the required target directory.

Alternatively, you could extend your user rights to the installation directory in your Windows Explorer.

Railing folder in our AEC catalog:



Within the catalog you can see the railing projects and, as usual, you can open a preview dialog with a double-click.



### ***1.2.6 Changing railing materials***

The easiest way to change materials on railing components is to add a new texture or a material in a 3D view via drag and drop from the catalog.

All components of the same type of railing, i.e. posts, fillings, bars change their properties together. All others remain as they are.



### ***1.2.7 Railings made from catalog 3D-objects***

Instead of the configurable railings, you can also use ready-to-use 3D objects from the catalog via the dialog and follow the course of the railing.

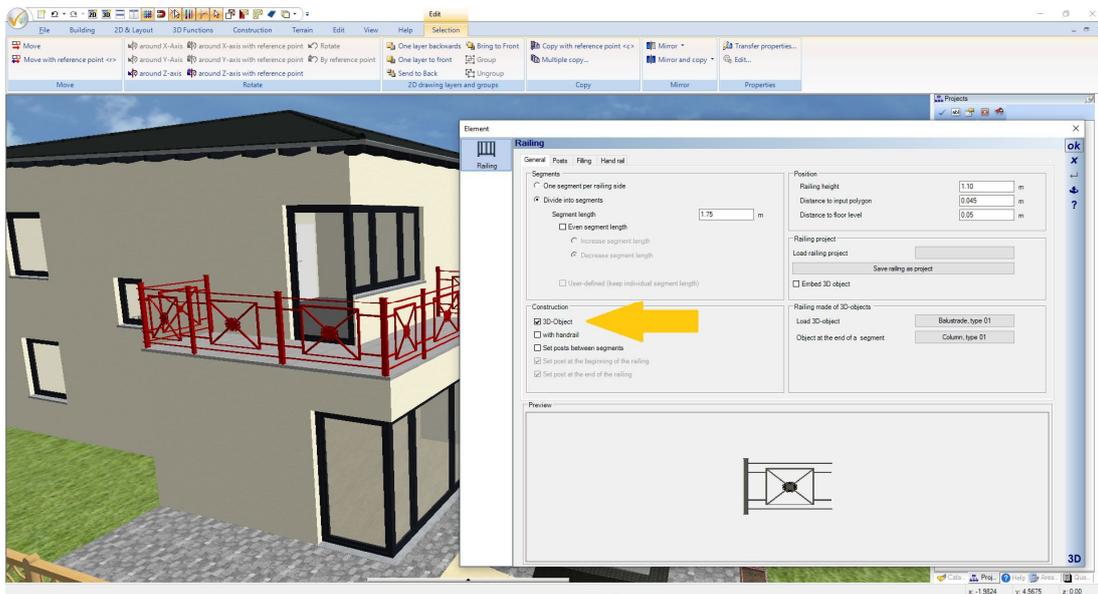
You will find this option in the CONSTRUCTION group and next to it buttons for the selection of 3D objects.

As in the predefined example, the 3D object for a segment should only have one post, otherwise two posts would always appear directly next to each other on the railing path.

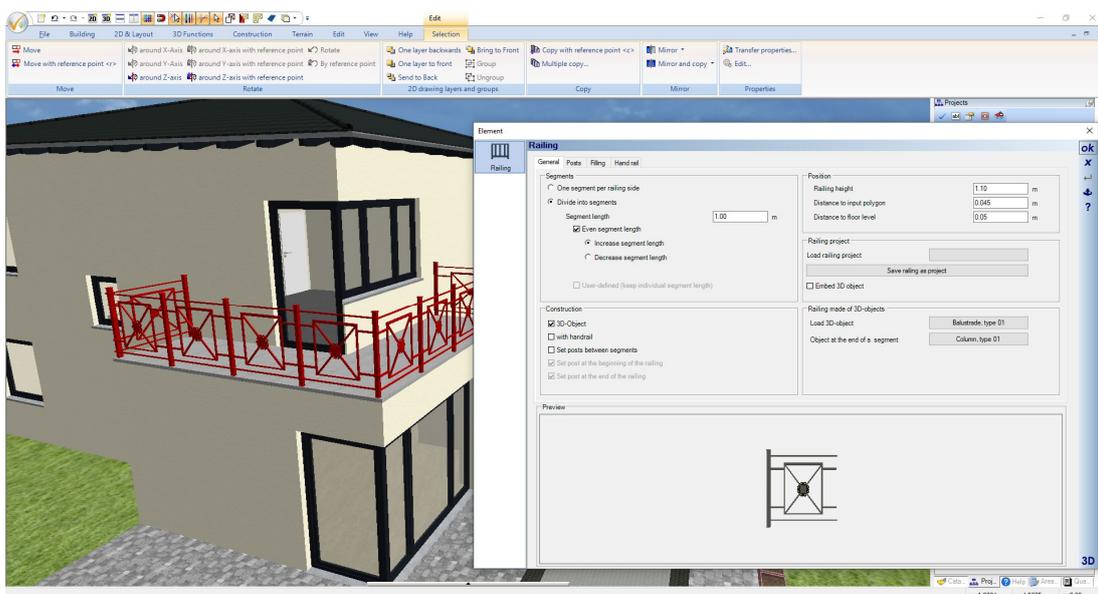
And the final object is a single post that is placed at the end of the railing, where the last segment would be missing the post of the main object.

If you use 3D objects, they are scaled distorted to the segment length. In order for this to look reasonably appropriate, you would have to an even segment length, ideally with the width of the finished 3D object, which you can find in our preview dialog in the catalog of 3D objects.

Here is an example of how distorted 3D objects would look like:



Here the railing with the same 3D object, but with an even segment length in the width of the 3D object.



### 1.2.7.1 Materials for railings made from catalog 3D objects

Normally you can change materials on 3D objects by dragging and dropping textures and materials from the catalog.

This is not possible with railings, at least not beyond saving and loading the project. When loading, the original 3D objects are retrieved from the catalog and assembled into a railing based on the parameters.

So if you want the railing 3D objects in other colors, you would have to change the original 3D object or create a new 3D object and add it to the catalog.

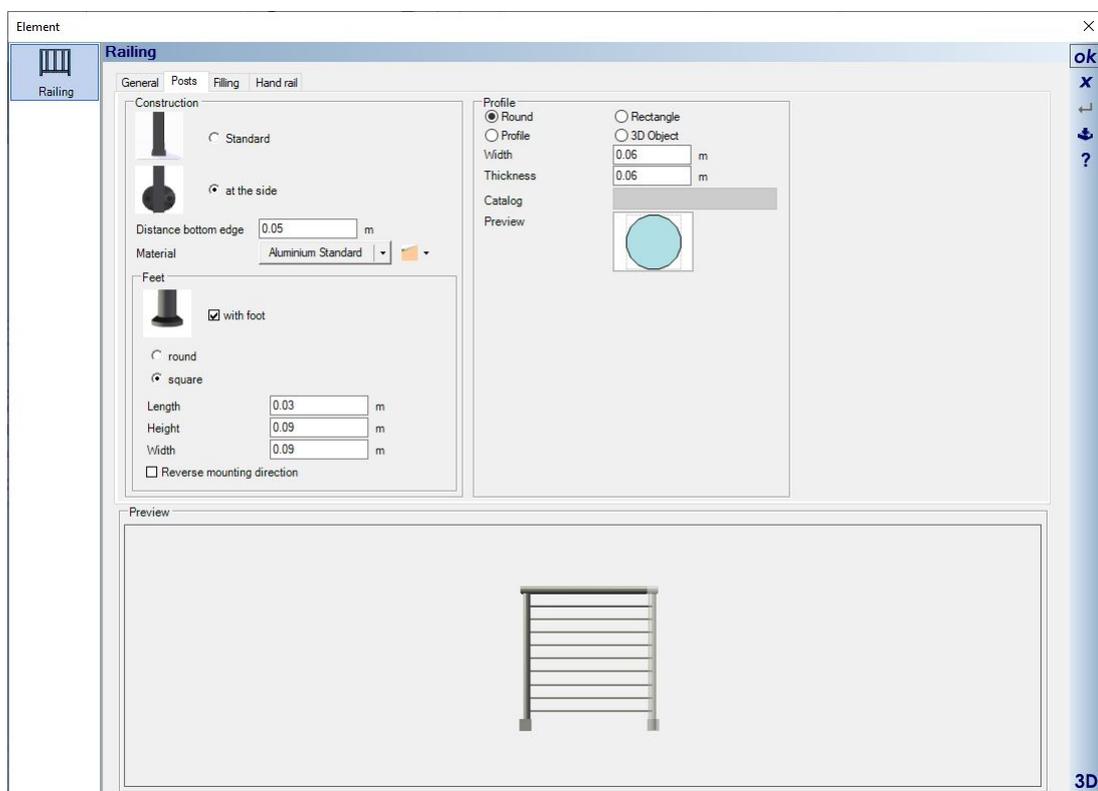
### 1.2.8 Posts

On the Posts property page, you have the option of determining the type of attachment for the railing, i.e. standing as standard or on the side.

The lower edge distance extends the post downwards, the railing height remains the same.

The posts are created from profiles, of which a round or rectangular variant is predefined as an option. Alternatively, you could choose a different profile from the profiles catalog, or draw your own profile, save it in the catalog, and use it to adjust the outline of the posts.

Instead of posts made from profiles, you can also use a ready-to-use 3D object. We have added some examples in the catalog of 3D objects, in the Components\Railing\Posts directory. The catalog button also refers to this directory.



Below is a screenshot showing both mounting options. In the case an attachment at the side, it is not clear to which side the attachment must point when inserting the railing polygon.

In order to reverse the mounting direction, i.e. so that the feet point to the other side, the corresponding option is activated.

Incidentally, the railing of the example balcony on the left side of the following figure consists of 5 individual railings, so that no posts and fasteners are placed in the corners.

It consists of three straight railings and two over the corners and for these two the options to create posts at the beginning, at the end and between the segments have been deactivated.

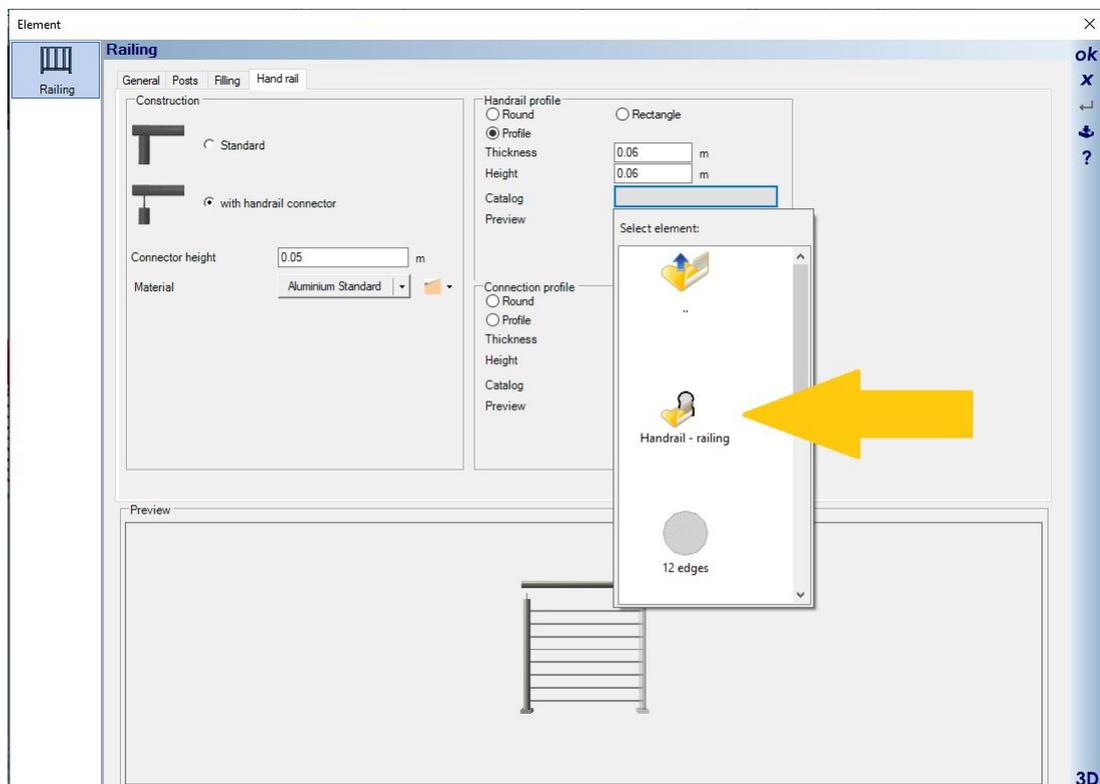


### 1.2.9 Handrail

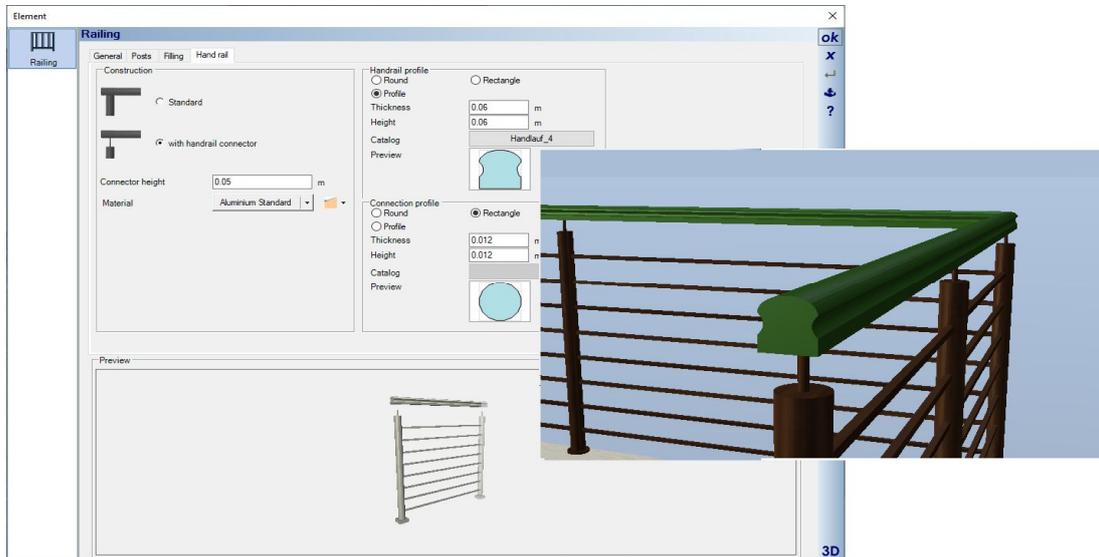
Handrails are created from profiles along the entire length of the railing. They consist of sweep solids like in our 3D constructions plug-in and just like these, the shape can also be adjusted using a 2D profile from the profile catalog.

We have added some handrail examples to the catalog, which can be found in the directory \AEC\PROFILES\Basic forms\Handrail.

Of course you can also draw your own profiles from closed 2D polygons and use them in the catalog.

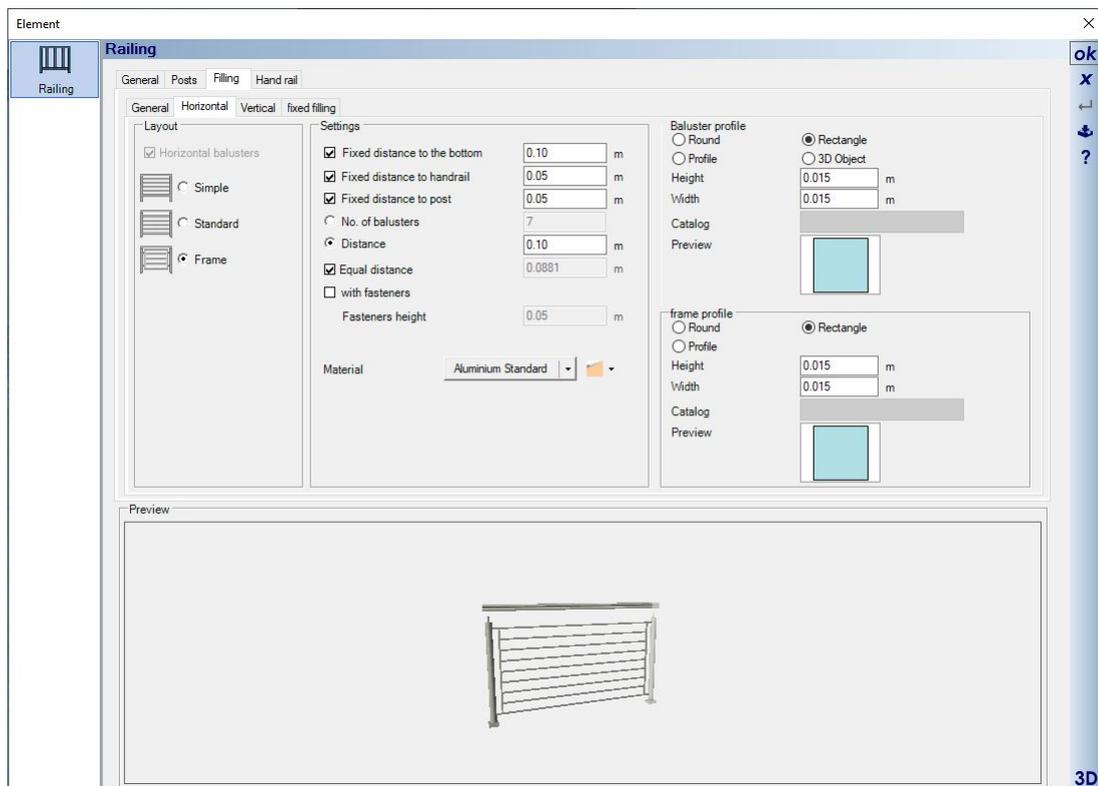


An example of a handrail profile with the associated representation in 3D.

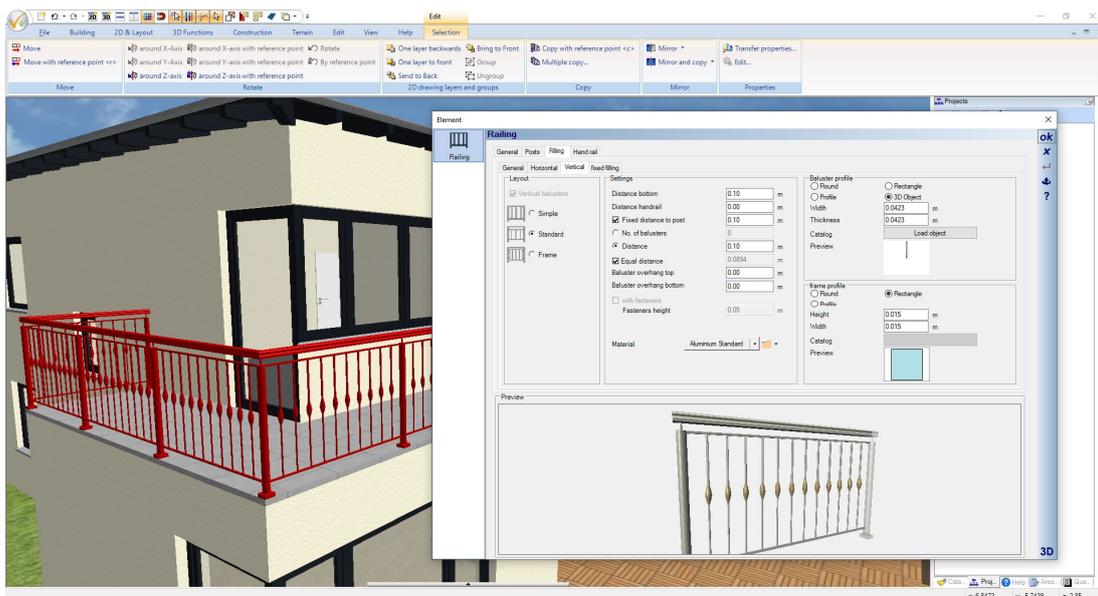


### 1.2.10 Fillings

There are basically three variants of fillings, with vertical or horizontal bars or with so-called fixed fillings, which represent glass, for example. You specify which type of construction is used either on the GENERAL page or via the checkbox on the respective properties page.

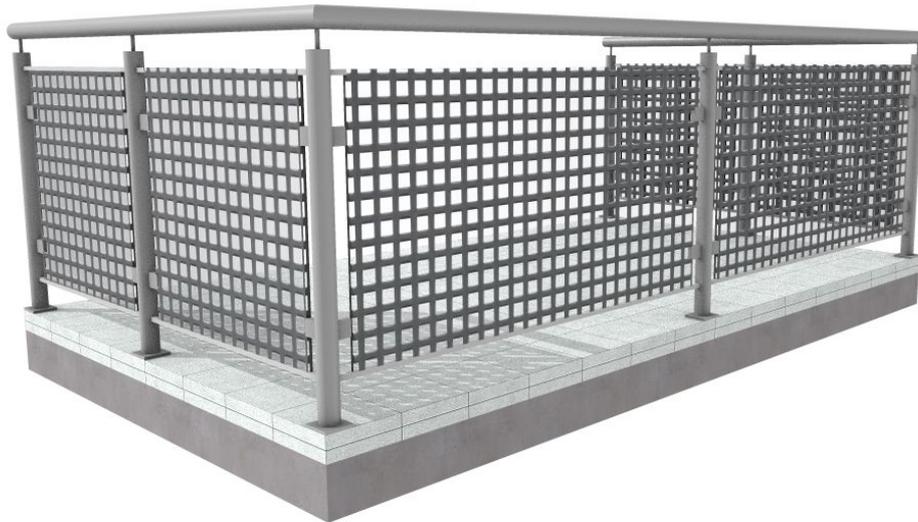


In addition to the parameterized components of a filling you can also use 3D objects from the catalog as bars. We have prepared a small catalog for this as an example, each for vertical and horizontal elements. The directory with the 3D objects is in our object catalog under COMPONENTS - RAILINGS - BARS... You could also save your own 3D objects there.



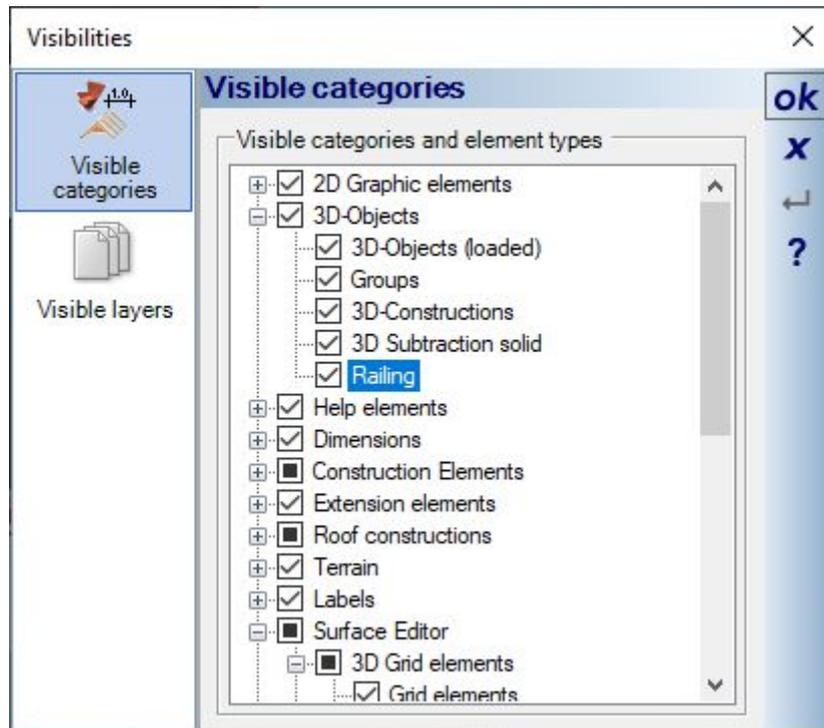
Fixed fillings, simple 3D solids with a glass material by default on it, can also be designed with other materials by dragging and dropping them from the texture or material catalog.

This also includes so-called mask textures, some of which can be found in the mTextur - metal directory. With such a mask texture, you can simply make a solid filling appear like a wire mesh, only with the texture image, which is much more performant than creating each wire as a 3D element.



### ***1.2.11 Visibility of railings***

As standalone elements, railings also have their own visibilities. These can be found in the 3D Objects – Railings category.



### ***1.2.12 Using railings in groups, e.g. for ready-to-use balconies***

Railings can be saved individually but also in combination with other building components in our groups catalog and easily reinserted from there using drag and drop.

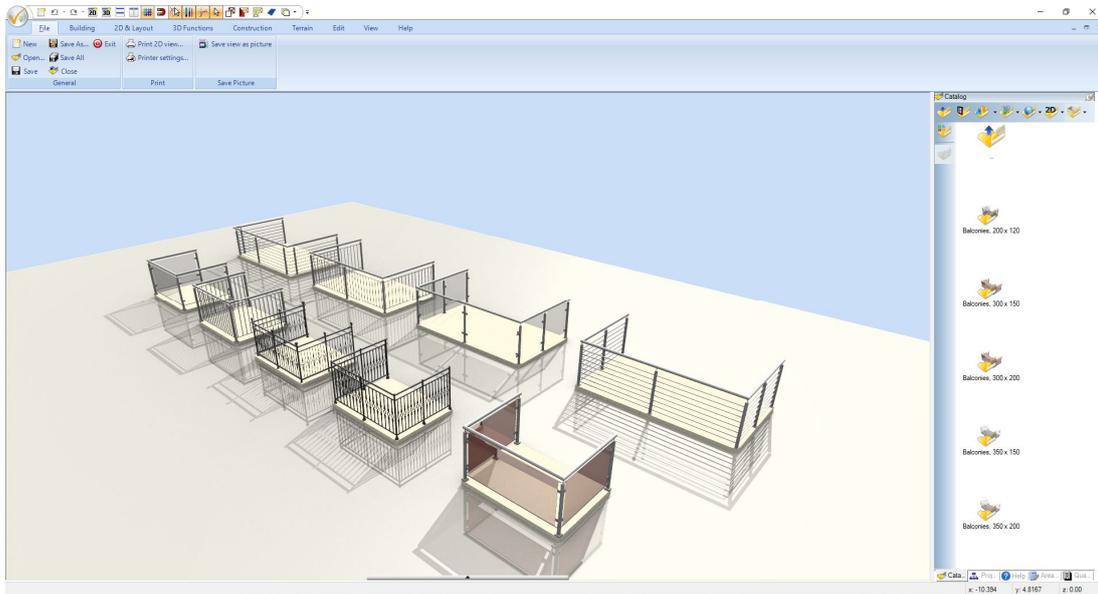
This can be useful if you need several identical railings in the project. Then you would not have to enter the path and make the settings in each individual case, but only create the railing once and then use it as a group as usual.

In this case both the 2D and the 3D representation are identical to the standard planning display.

We have added various combinations of 3D constructions and railings as balconies to our catalogue.

## **1.3 BALCONIES, AS GROUPS IN OUR CATALOG**

With our new railing functions, we have pre-constructed several balconies in standard dimensions and added them in the group catalog.



These balconies consist of three parts, two extrude solids for the floor slabs, one as a "replacement" for the ceiling and one as a covering. The railing is mounted on it.

The construction of the balconies is 16 cm thick for the ceiling solid which corresponds to our standard thickness for ceilings, 8 cm covering and railing height 1.10 m.

The level of the ceiling solid is - 16 cm relative to the floor level. So if you insert one of the finished balconies in a 2D plan view, ideally it will automatically position itself correctly.



### 1.3.1 Editing balcony groups

If there is a need for changes, you must first separate the group into its individual parts. This also applies if you only want to change the material of one of the components. To do this, select the balcony and choose "Separate group" from the right mouse button context menu.

Now you can edit all individual parts as usual, change materials and size. If you have already prepared a floor slab for the balcony, simply delete the lower 3D solids coming from the group.

In a building with several identical balconies, it could make sense to adjust only one and then save it as a new balcony in your group catalog. To do this, select all components and choose "Save selection as group..." from the context menu. Now you can simply insert all other balconies of your project as a group.

Since both the 3D and the 2D representation correspond exactly to the original, you do not need to separate the other balcony groups either.

## 1.4 PLOTS IN 3D AND 2D WITH AUTOMATIC BORDER

On the terrain ribbon you will find, among other things, the functions for inserting a plot representing an area within the general terrain solid.



Three input variants are available, which always form a closed contour.



If no separate layer is active below the ENVIRONMENT layer, the terrain is automatically inserted on the ENVIRONMENT layer, regardless of which layer is actually active in the view.

As with the other terrain elements, it is therefore not intended and not possible to insert the plot at a different point in your project structure.

It is possible to create more than one plot within the terrain solid. Ideally, these plots should not be directly edge to edge, even if that should be the case in reality. Better leave a little gap between them.

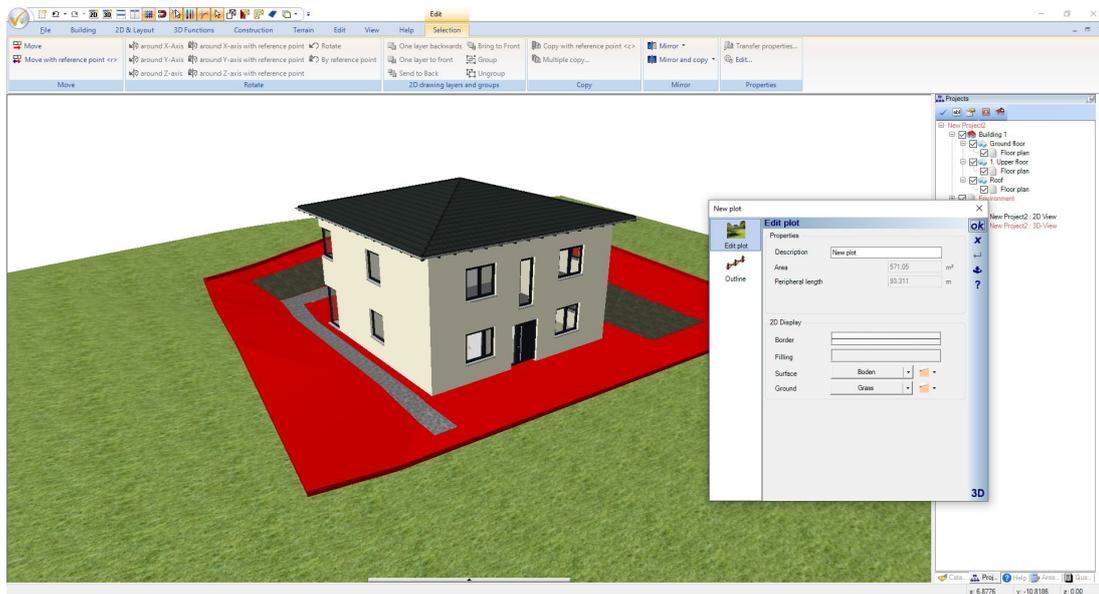
Otherwise, collisions can occur when creating the 3D solids and when the 3D plots intersect with the 3D terrain.

### 1.4.1 Visibilities of 3D plots and 3D terrain

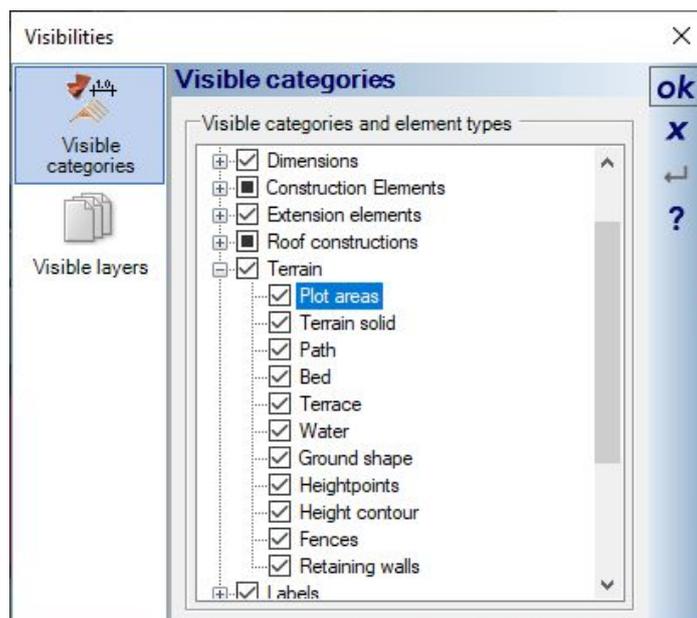
The plot always consists of a 3D solid whose surface follows the 3D terrain.

Since the surface follows the terrain, height points and heightlines outside the plot solid are also taken into account, but of course these points must remain inside the terrain as before.

## What's new in Version 11 Plots in 3D and 2D with automatic border



Plot and terrain have separate visibility options.



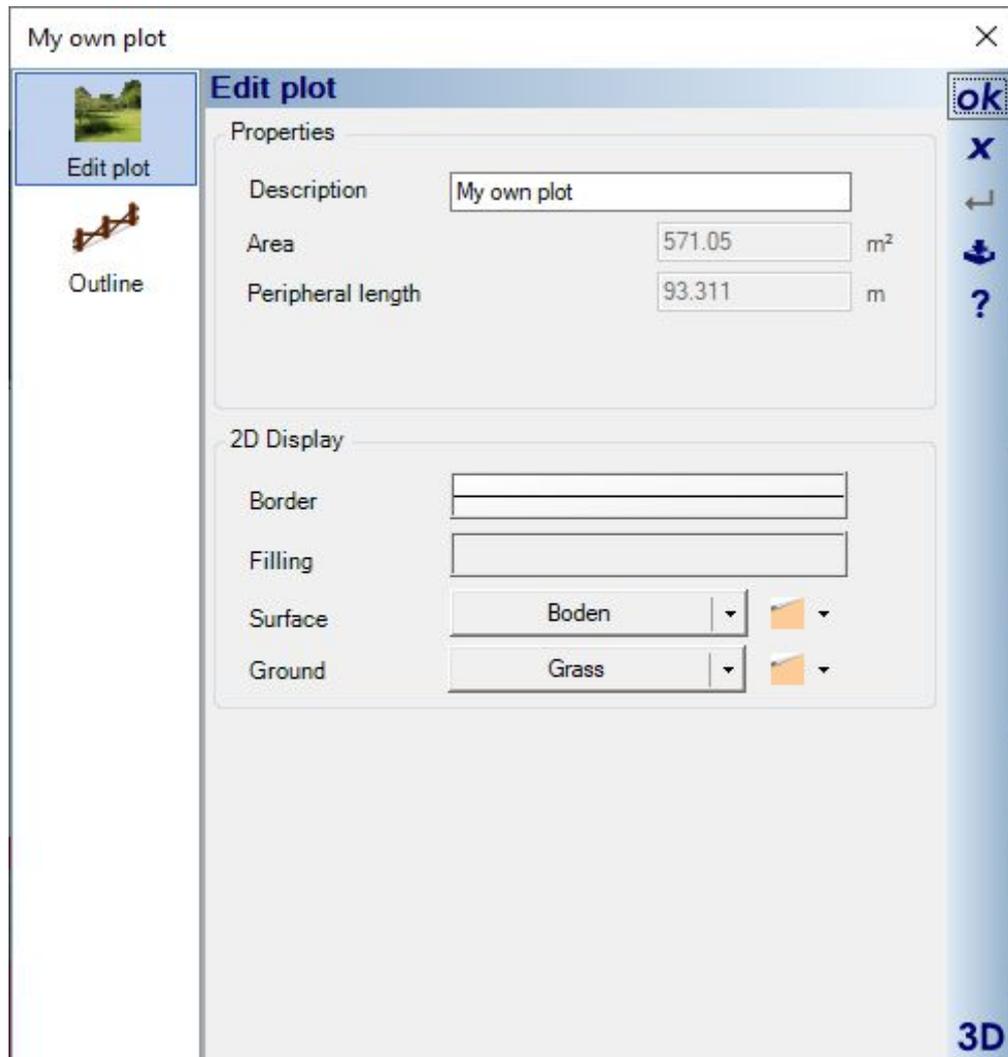
This allows you to switch the terrain off and leave only the plot visible. You will then receive such a display.



The plot forms a closed 3D solid downwards like the terrain itself. Also with the necessary depth. This prevents a basement, for example, from becoming visible below the surface of the plot.

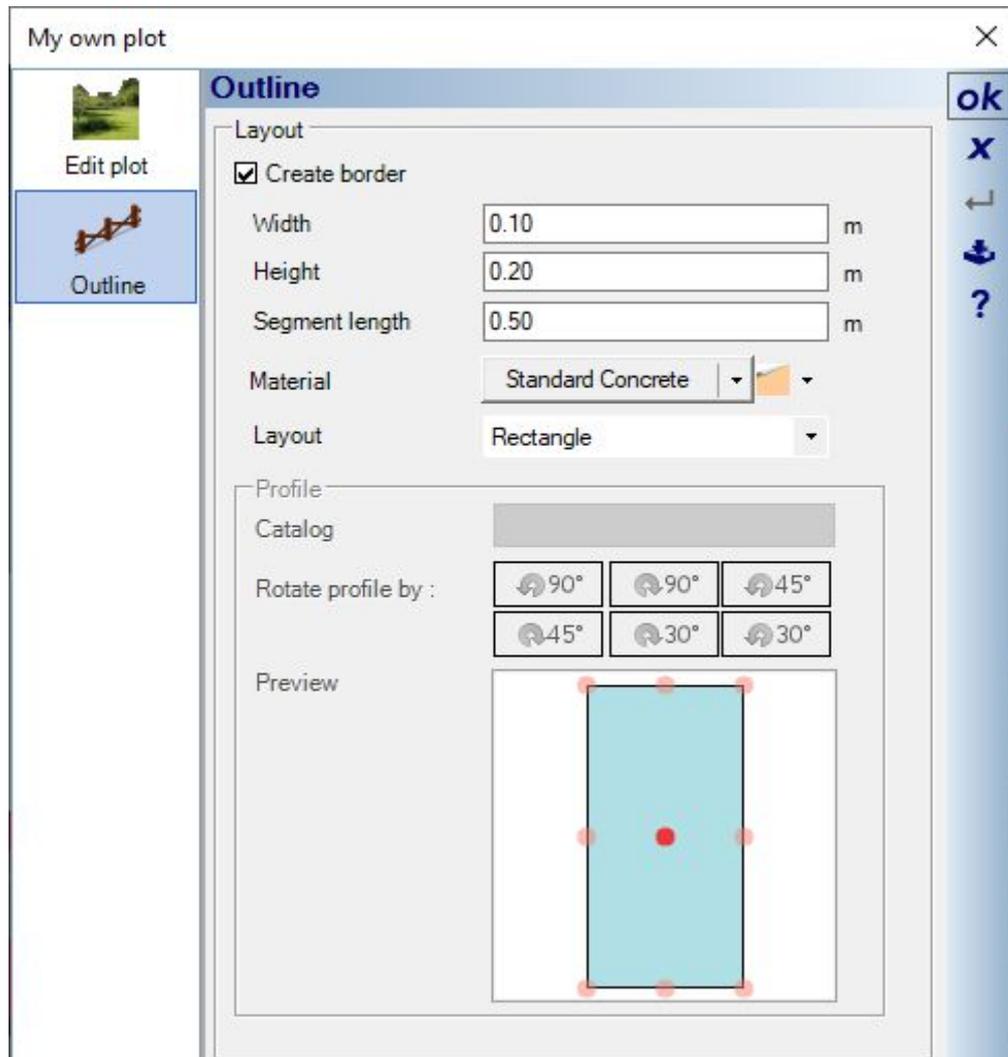
#### ***1.4.2 Property dialog of plots***

If necessary, you can assign a proper name to the property for identification purposes. The other options, such as the representation in 2D top views etc. correspond to the previously known terrain.



### 1.4.3 Automatic border of a plot

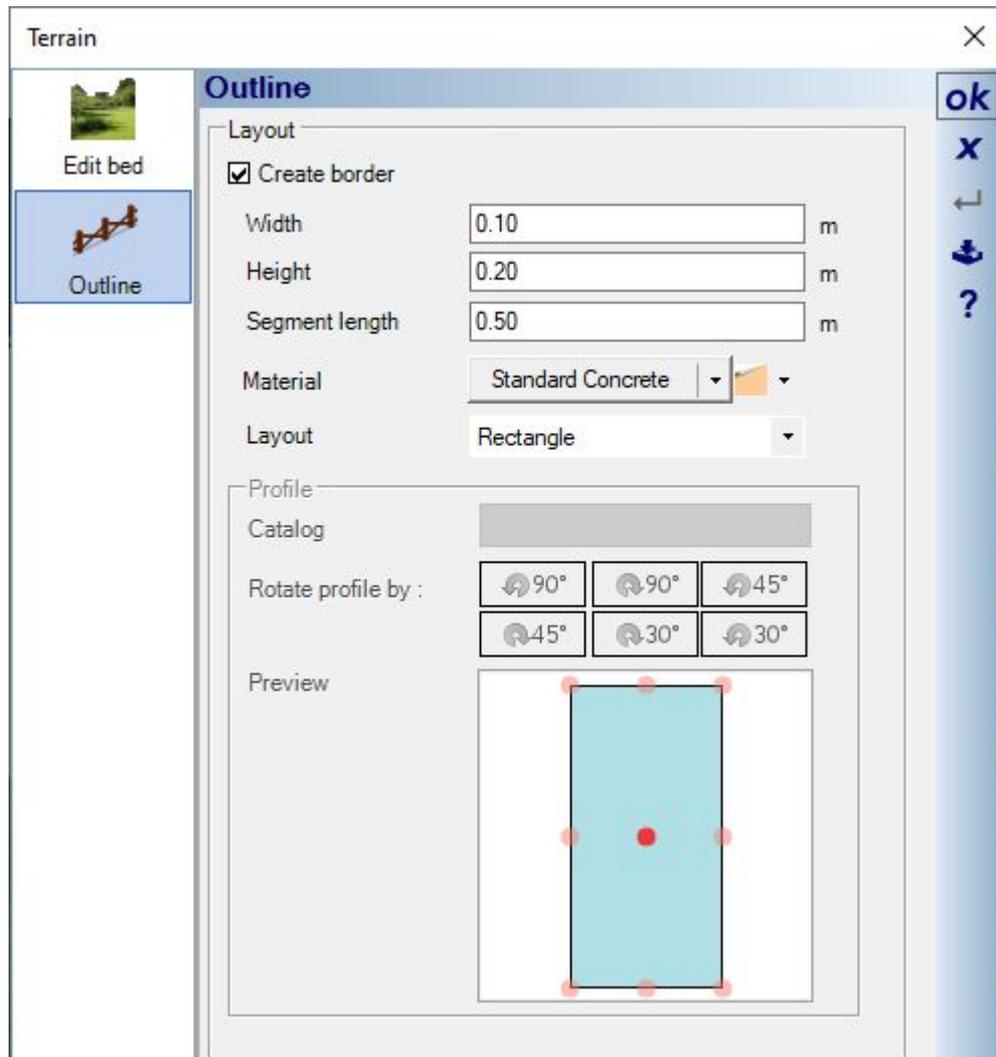
Sometimes it is necessary or desired to make the contour of the plot visible in 3D as well. For this purpose the dialog contains properties for an automatic border.



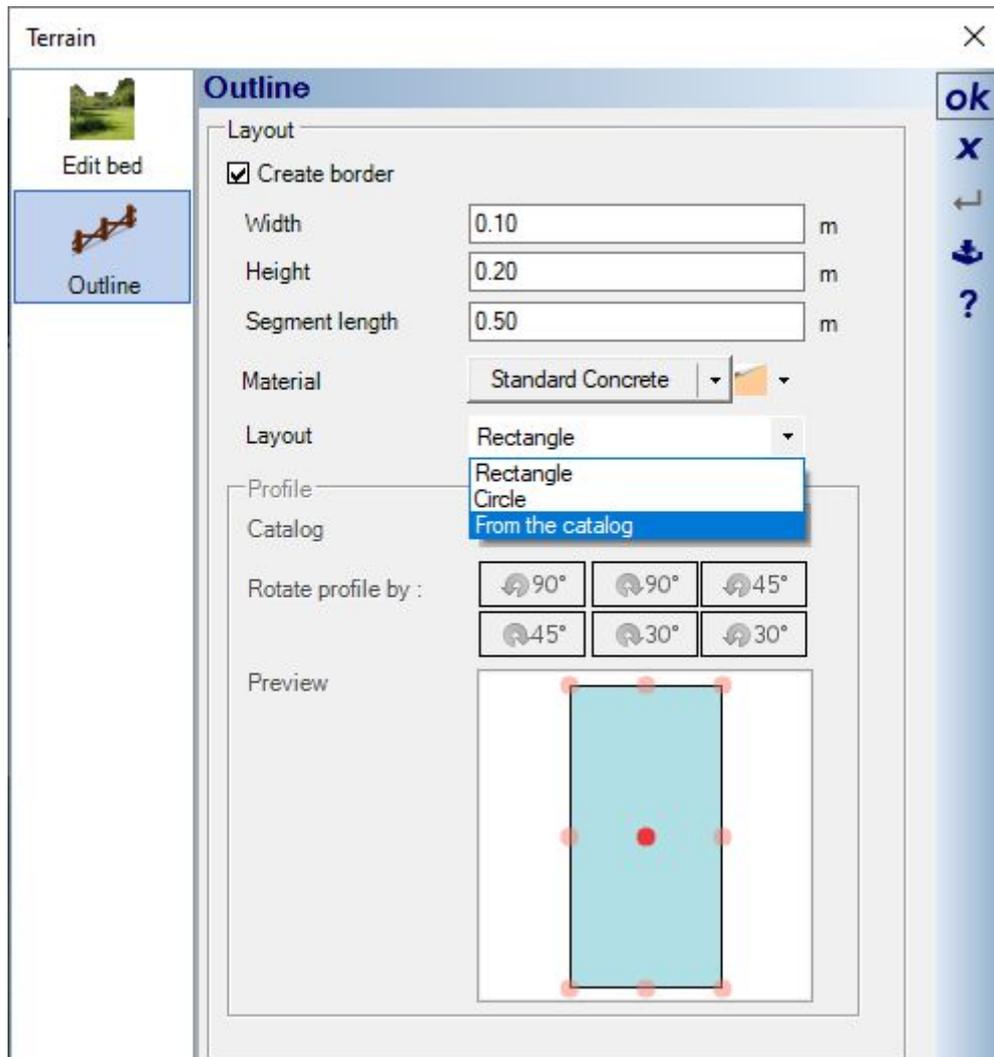
The border is all the way around, leaving no gaps for driveways or ways into the plot. It is really only intended to show the plot contour in 3D.

## 1.5 BORDERS FOR TERRAIN ELEMENTS SUCH AS BEDS AND TERRACES

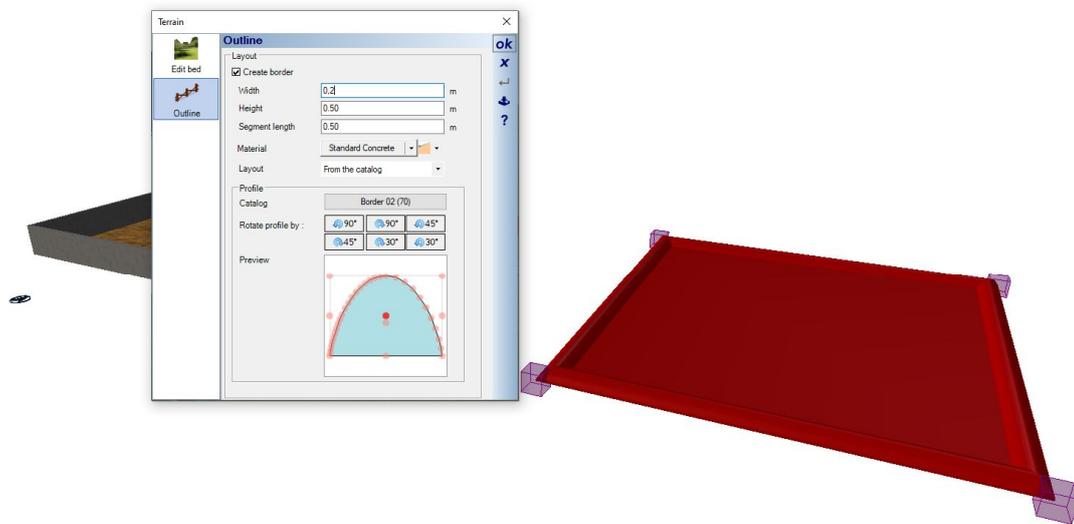
Similar to the plot, you can also have an automatic border created for beds and terraces, e.g. to display curbs.



The contour of the border is almost arbitrary. Instead of the predefined variant rectangle, you can access the catalog of 2D profiles and either use one of the existing profiles or one of your own that you have previously drawn yourself and saved in the catalog.



As an example a border made of a half round edge profile.



## 1.6 NORTH ARROW DIALOG

Previously, the north arrow could only be rotated and moved manually via the dialog and only if the ENVIRONMENT layer on which it is located was activated beforehand.

The dialog for the properties of the north arrow can now also be started on the terrain ribbon.

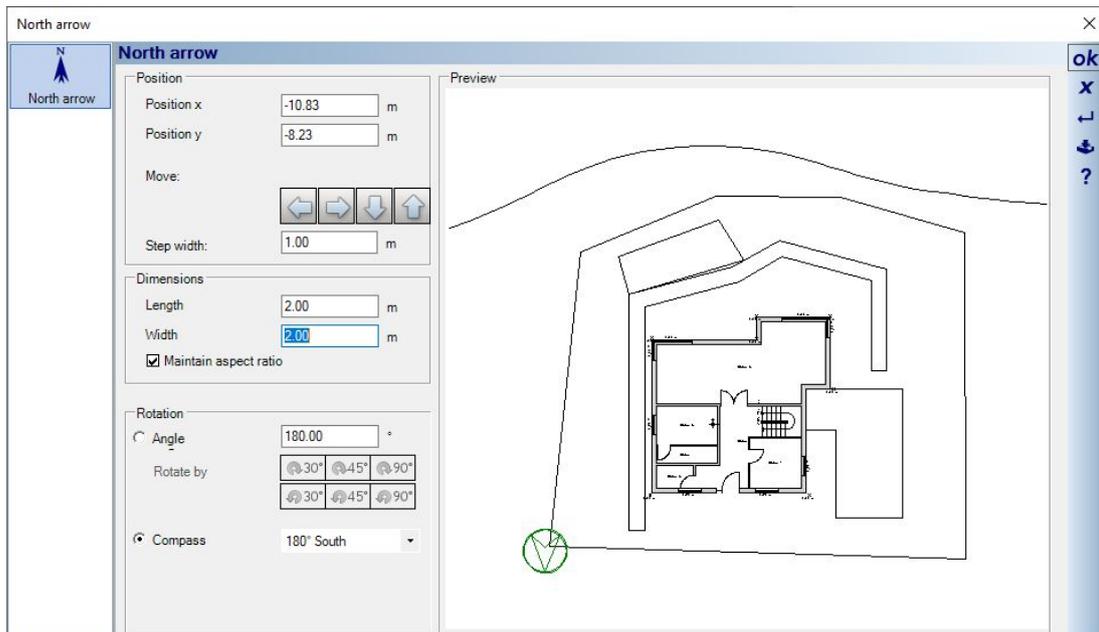


In the dialog you see a preview of the currently active 2D view and the north arrow setting options.

You can use the move button to position the north arrow in the adjustable increment in relation to the drawing.

The drawing in the preview area updates automatically. The scaling of the north arrow is also new.

The rotation of the north arrow also influences the shadow calculation in 3D views if you have determined the position of the building in the sun position settings of the 3D view. You can set the angle or use the predefined alignments in the compass list. 0 degrees would be the orientation to the north



## 1.7 RETAINING WALLS

Retaining walls are used to design the exterior area of your planning, i.e. on the plot. Therefore, the function is also located on the Terrain Ribbon.

Unlike the other wall types of the building, retaining walls do not create rooms and will not allow windows or doors. A layer structure is also not provided. Basically, the retaining walls are sweep solids, i.e. pure 3D constructions.

### 1.7.1 *Retaining walls or real walls?*

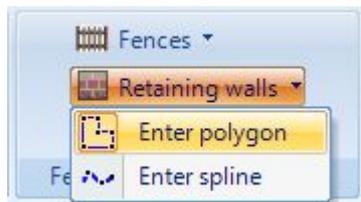
Occasionally real walls were used to design the garden, but this is generally unfavorable. These walls, with the exception of our partition wall type, always try to intersect with other walls and thereby create rooms.

And the rooms are then used to create floors, etc. This can lead to problems with the entire room calculation and to other undesirable effects.

Whenever a wall is needed in the garden, a retaining wall should be used. Unless the wall needs to intersect under a roof, requires a layer structure for your 2D display, or must contain a door. Then you need a normal wall, preferably of the partition wall type, because these walls also do not intersect with other walls and side effects in room recognition are avoided.

### 1.7.2 *Inserting retaining walls*

Retaining walls can be entered polygonally or via a spline.



While inserting retaining walls you can already open the properties dialog via the context menu and set the thickness.

This prevents you from making subsequent changes afterwards, especially with regard to the input polygon.

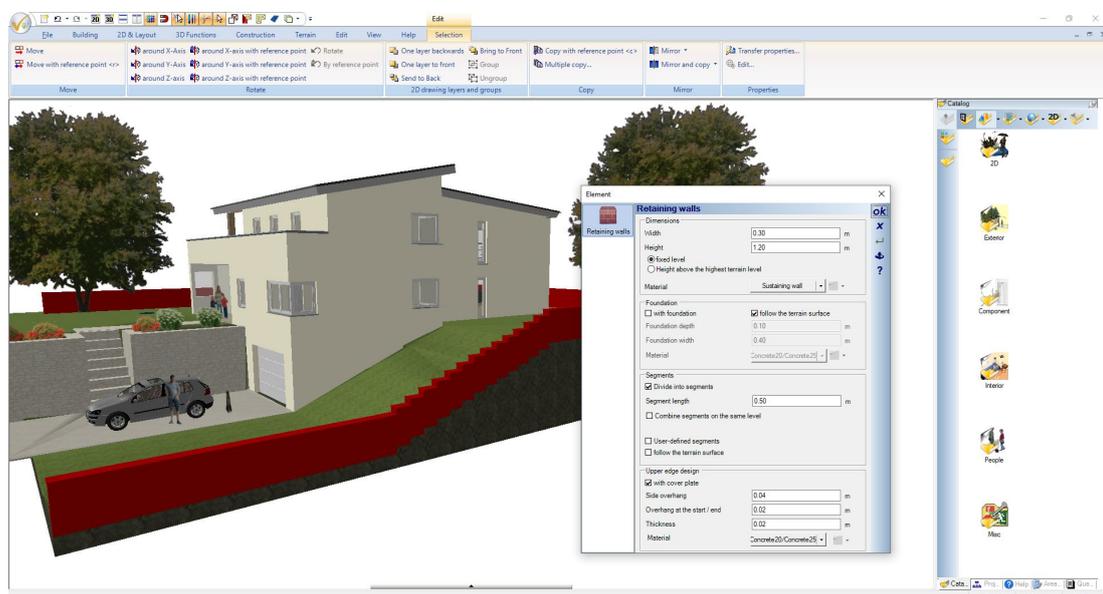
So set the starting point of the retaining wall, click with the right mouse button and open the properties dialog via the context menu.

Set the width of the retaining wall. This is the only property that affects the input. For example, if you insert a retaining wall on the plot outline and then change the thickness, it would protrude into the neighboring property.

Once the thickness is set, continue inserting. Use the key combination CTRL + W to change the reference side of the wall as usual. Each time you press CTRL + W, the wall side at the cursor switches from the axis to the sides.

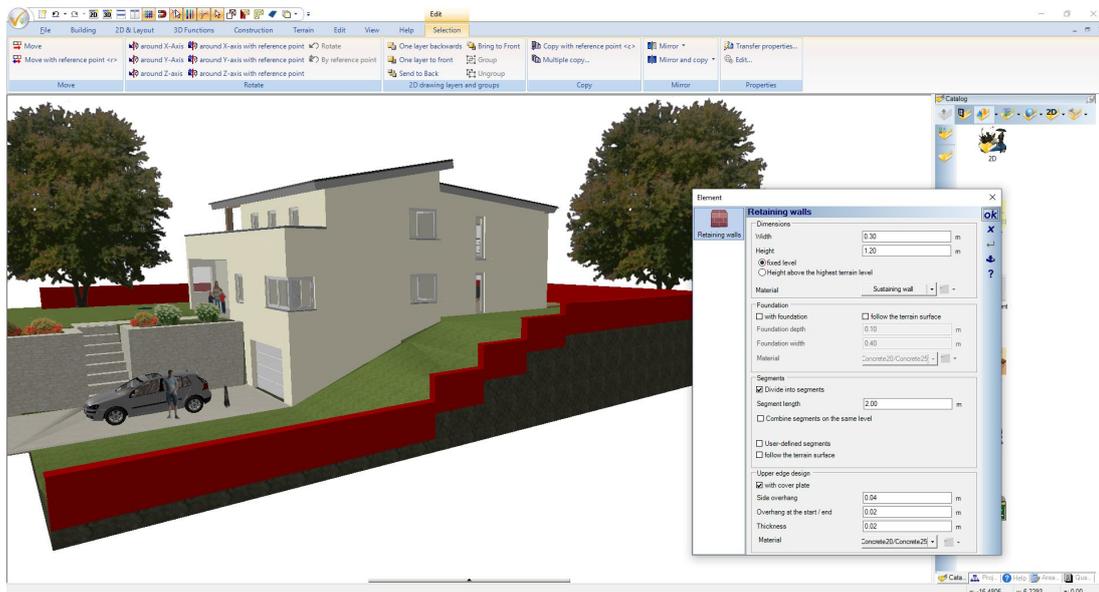
### 1.7.3 Properties of retaining walls

Like railings and fences, retaining walls are created segment by segment. The default value of 0.5 m has a visual effect on inclines. As you can see in the screenshot below, there is a staircase effect with relatively small steps. This is the segment length.



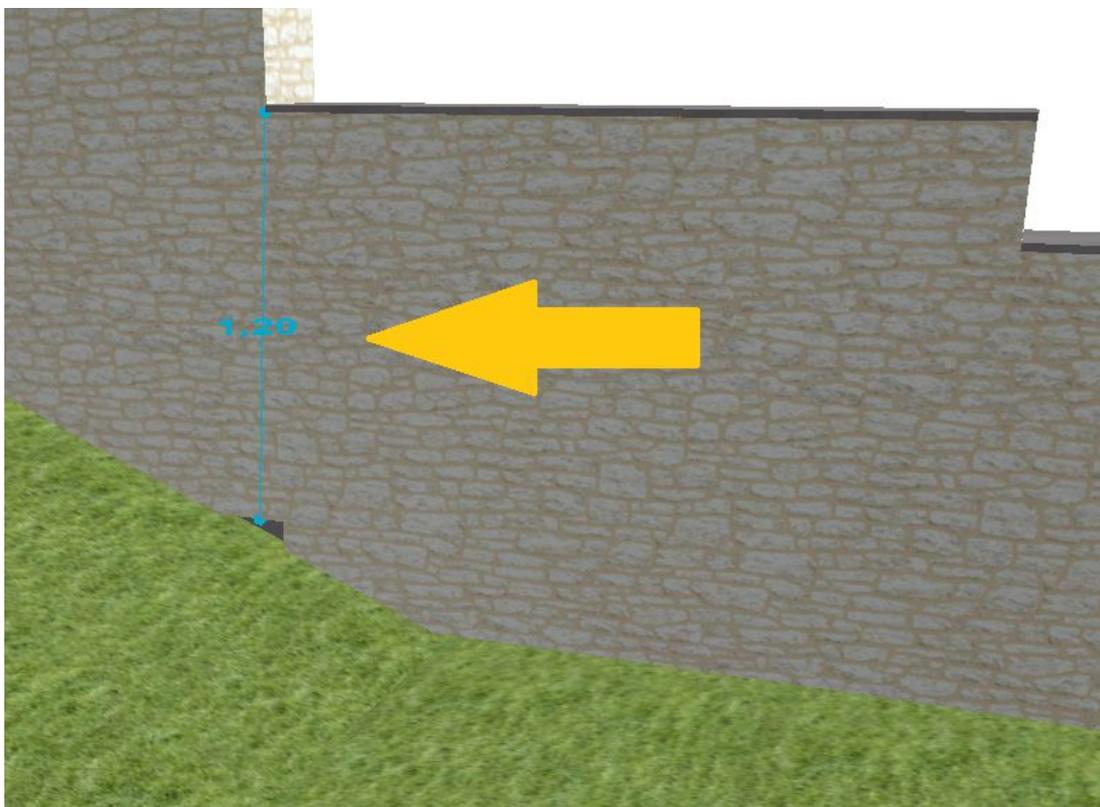
If you change the length of the segments to e.g. 2 m, the following wall is created

## What's new in Version 11 Retaining walls



Retaining walls can have a fixed height, or a height that takes into account the terrain at the end of the segment and forces the segment to the specified value at that point. This also means that the height elsewhere is higher than specified in the dialog.

The figure below shows where the value of 1.2 m is measured at a height above the highest ground point (of the segment).



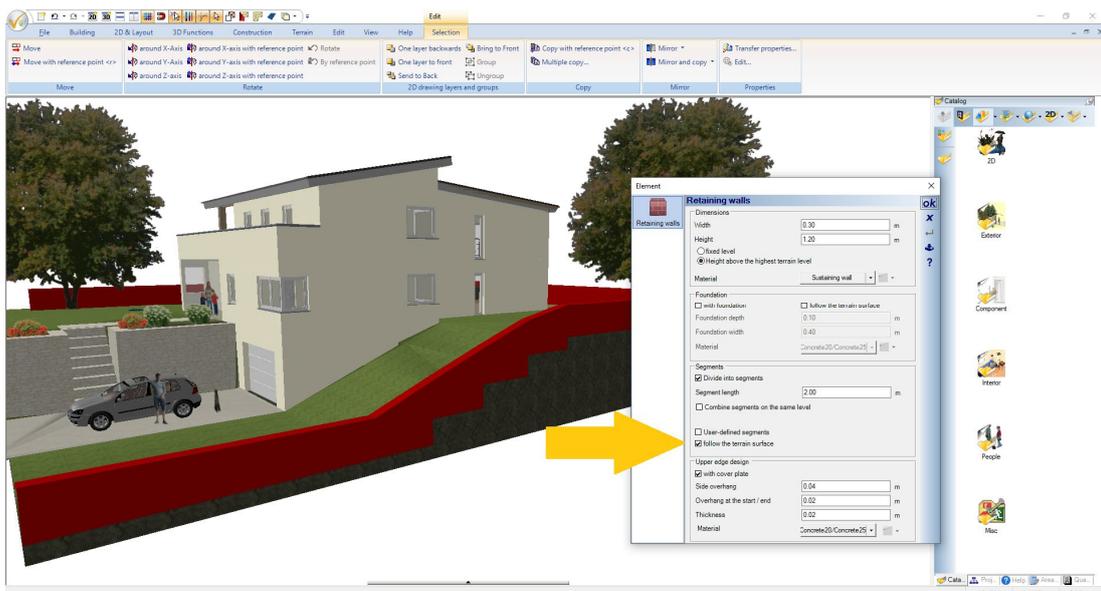
### 1.7.4 Foundations under retaining walls

You can create automatic foundations underneath the retaining walls. The option and parameters can be found in the properties dialog.



### 1.7.5 Retaining walls without a horizontal top edge

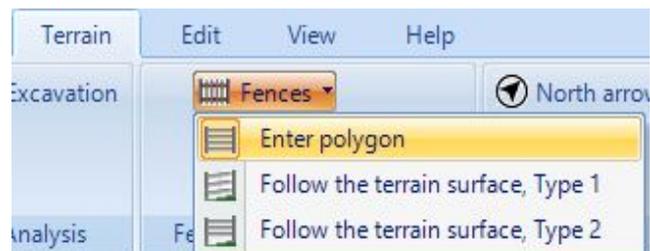
If you do not want the staircase effect shown along the retaining wall, you can use the "Follow the terrain surface" option to create a largely even progression that corresponds to the terrain surface. The finer the segmentation, the "smoother" the progression.



## 1.8 FENCES

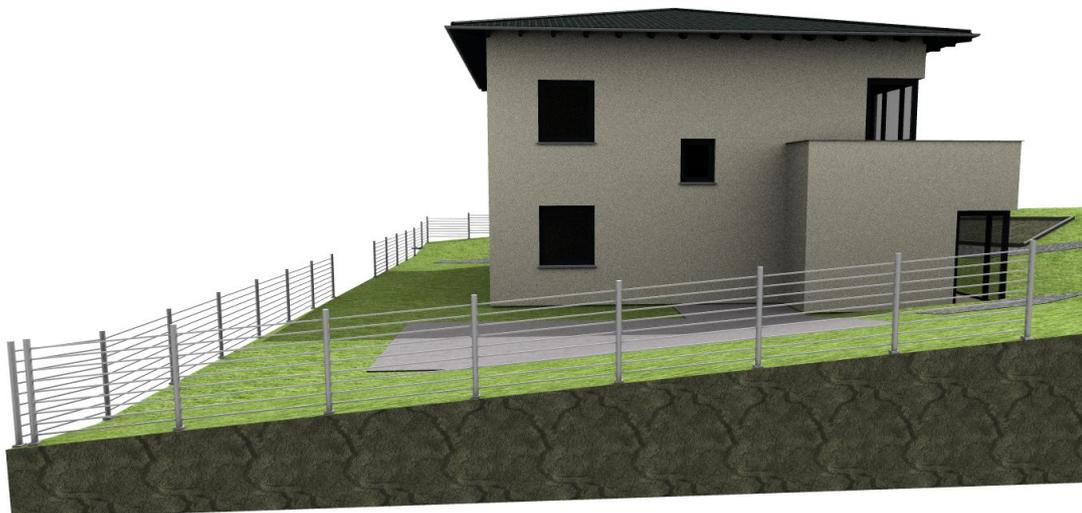
Fences are basically a variant of railings. If necessary, you can find details about the properties in their description.

However, fences have other input tools and automatically follow the terrain surface depending on the input variant.

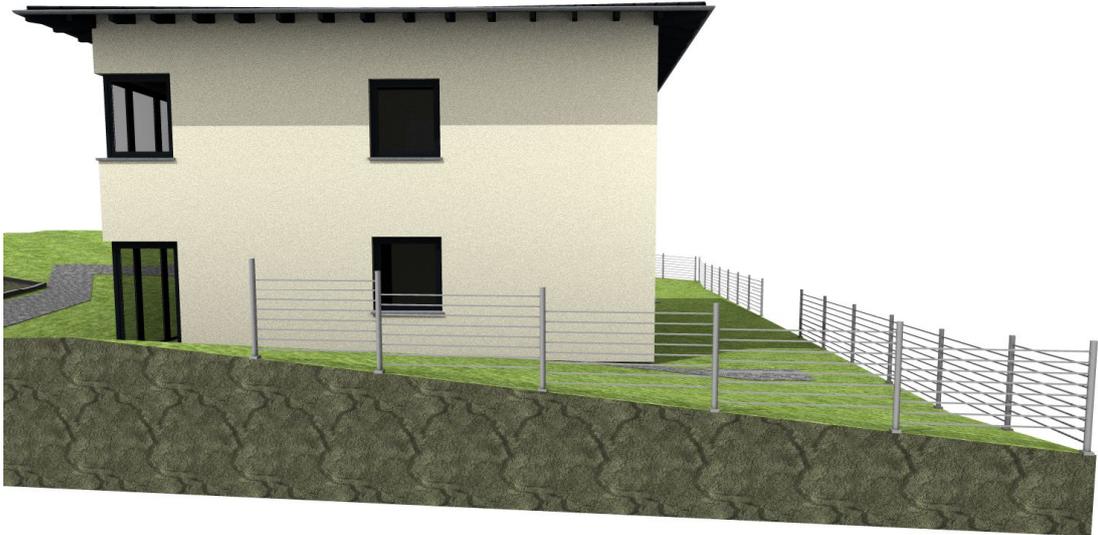


Fences are also created in segments whose length is adjustable, just like railings. At the end of each segment, i.e. where posts are typically placed, the fence determines the height of the terrain and adjusts the height accordingly. This is how the progression is created.

With variant 1, the fillings are calculated accordingly and are given a gradient from segment to segment, so that the height of the fence is measured at each post position and the spacing of the fillings fit at the top and bottom of the segment.



In variant 2, the filling remains horizontal and instead the posts are extended downwards and upwards. A stair-like look is the result.



The distribution of both variants on their own input tools is only a work simplification. The option responsible for this can be found in the properties dialog of the fences. You can therefore switch between the variants at any time without having to re-enter the fence.

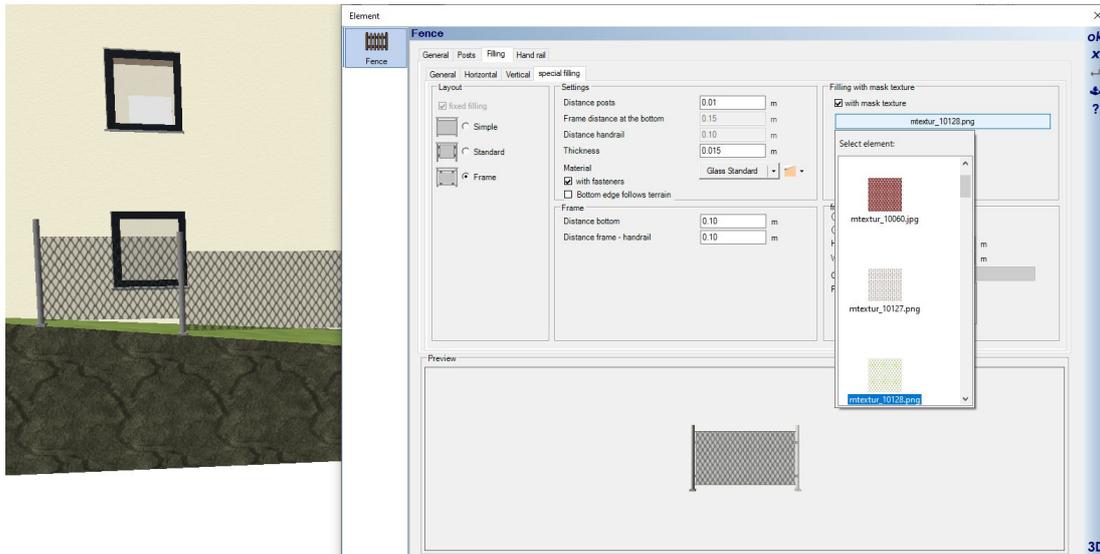
Construction

- 3D-Object
- with handrail
- Set posts between segments
- Set post at the beginning of the fence
- Set post at the end of the fence
- Fence follows the terrain contour
  - Filling follows the terrain contour

### ***1.8.1 Special fillings - wire mesh fence***

As already mentioned for railings, mask textures are suitable for giving a filling the appearance of wire mesh, of course only in 3D.

For fences we have added an additional selection button for the texture catalog.

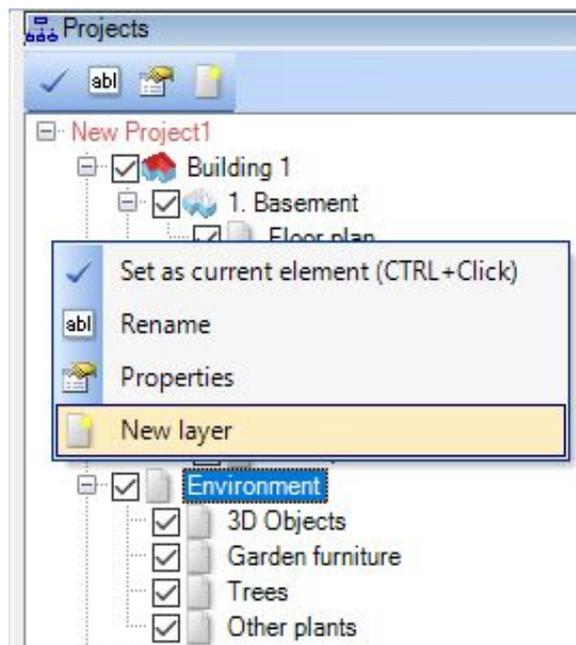


## 1.9 CUSTOM LAYERS BELOW THE ENVIRONMENT LAYER

Below the Environment layer, you can create a hierarchy of other layers, for example to subdivide the design of your property.

This is primarily used to sort elements that have no constructive influence on the terrain design, such as 3D objects or self-modeled content with 3D constructions

Height points, heightlines, terrain areas as well as plots do not have to be sorted. The visibility of such elements should be handled as before via the view's visibilities settings and not via layers in the ENVIRONMENT.



## 1.10 MORE THAN 500 NEW 3D-OBJECTS

Mainly office furniture.

## 1.11 3D-OBJECTS FOR TRADITIONAL INTERIOR DOORS



## 1.12 MISC

- More 2D symbols with fill properties
- When minimizing views, an info dialog that can be switched off is displayed.
- Section views are fully restored after closing and reopening
- Origin is now invisible by default
- Module output for flat roof solar systems was previously read from a file. Now the nominal power stored in the chunk editor is used, which can now also be changed manually
- ...