ALLPLAN 2021
Facade

Steps to Success

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Contents

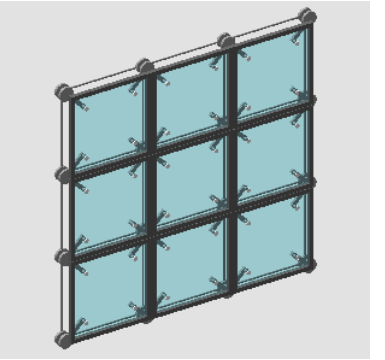
Welcome!

This guide introduces you to the versatile options of the **Facade** tool.

Seven steps show you how to create any facade – be it a straight facade, a subdivided structure, or a sloped glass dome. In addition, you will learn how to create and work with 3D objects.

A clear example in the form of an exercise will lead you through this training document. Each step is described in detail so that you can follow quickly and easily.

In the appendix, you will learn how to create your own facade and save it as a favorite.



Have fun with this guide! We wish you every success!

Basics

Be it an energy-efficient detached house or a modern office building – a facade is essential! This facade needs to be planned and designed. With Allplan 2021's **Facade** tool, you can create complex facades quickly and easily.

You can model individual elements or the entire structure of a facade in a comfortable and easy manner and then display your design in plan view, sections, or 3D. Facades are intelligent components; the individual elements of the facade automatically adapt to changes.

Advantages

BIM

We have been committed to BIM for a long time. So, **Allplan 2021** also comes with enhanced BIM features.

Allplan is ideally suited to your needs and requirements, encompassing the full range of CAD applications – from 2D drafting to 3D designing to component-oriented building modeling. Be it 2D or 3D – that's completely up to you! With Allplan, you can decide for yourself!

The **Facade** tool creates parametric 3D components in real time. **Allplan** comes with all required parameters, which are predefined. By creating favorites, you can even define components yourself.

A correct floor plan, true to scale, is available at any stage. You can define the height of the clipping plane in the **Settings**.

With Allplan's **Facade**, you can design almost any facade shape. There is no limit to creativity!

IFC export

Facades created with the **Facade** tool do not need to be adjusted for IFC export. Allplan transfers facades as **IfcCurtainWall** or as **IfcBuildingElementProxy** of the **CurtainWall** type if the **Grouped** or **Smart symbol** option is selected in the **Settings**.

Intelligent facades

A facade is an intelligent design object; its elements are internally linked. In other words, any points you enter and elements you create interact. You can change height settings directly in the 3D model. In addition, you can convert facade surfaces into 3D objects and vice versa. It is irrelevant whether the surfaces are linear, polygonal, circular, or spline-shaped.

You can create and modify facades in the same way as you enter linear, circular, polygonal, or spline-shaped surfaces. Facades can be at any angle. You can insert facade objects wherever you like, regardless of how you define the individual subdivisions. These objects automatically adapt to the geometry. The floor plan also adapts automatically. There is no limit to creativity!

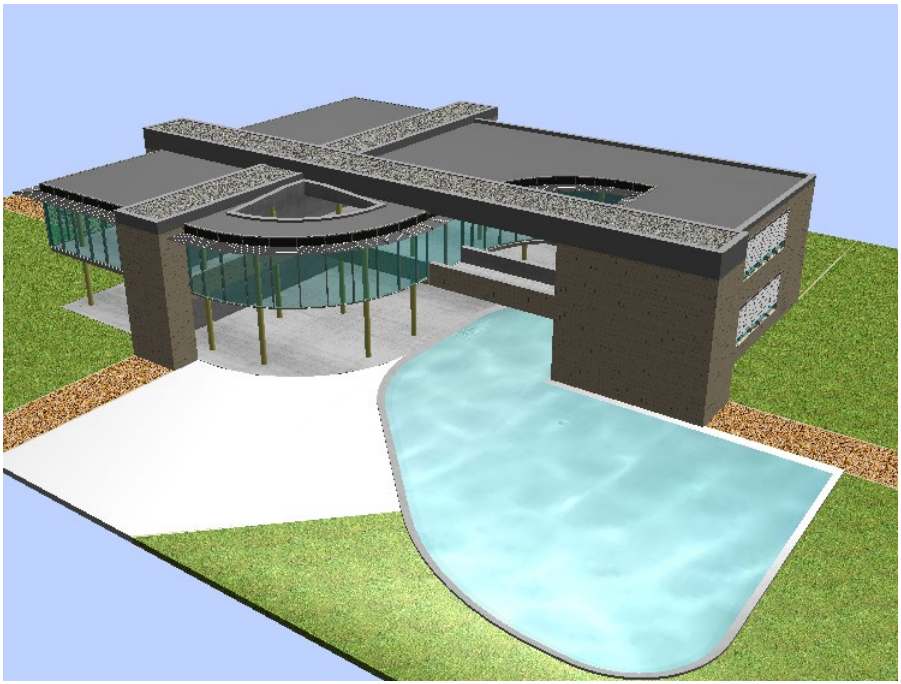
Some examples:

- Mullion/transom facades
- Glass facades
- Glass roofs
- Accessories for sun protection, winter gardens
- Facade elements like fiber-cement panels, curtain walls, aluminum panels, ceramic panels
- Paneling
- Acoustical and suspended ceilings

Quick reference guide

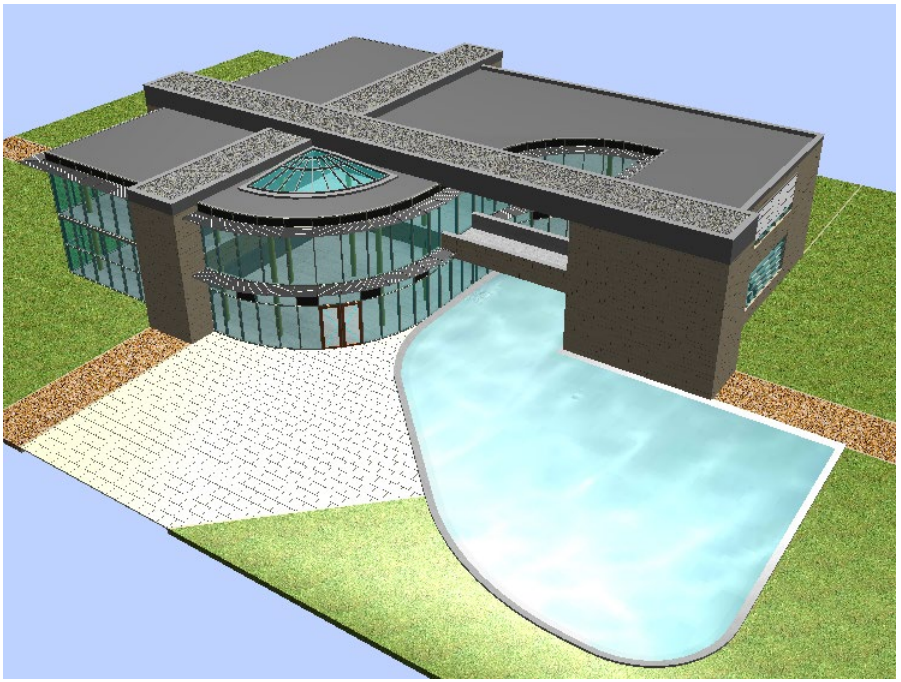
Exercise

This exercise presents a two-story office building. You will apply an exterior glass facade to parts of the ground floor. In addition, you will insert a skylight into the roof over the entrance area and add panels to the facade.



Initial situation

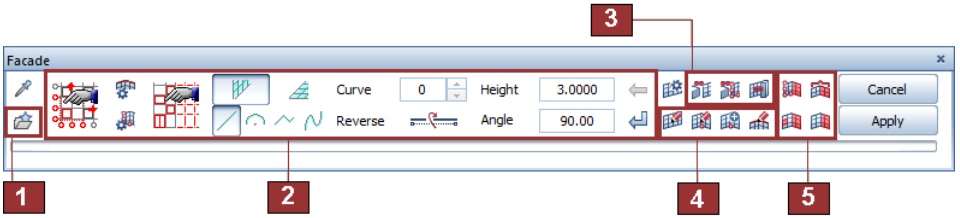
Note: The facade elements of the ground floor and the first upper floor are not subdivided consistently. Consequently, they are not always congruent. You would not do this in practice. This is only for the purpose of this exercise so that you can try out various settings for subdivisions.



Objective

How to create a facade – basic steps

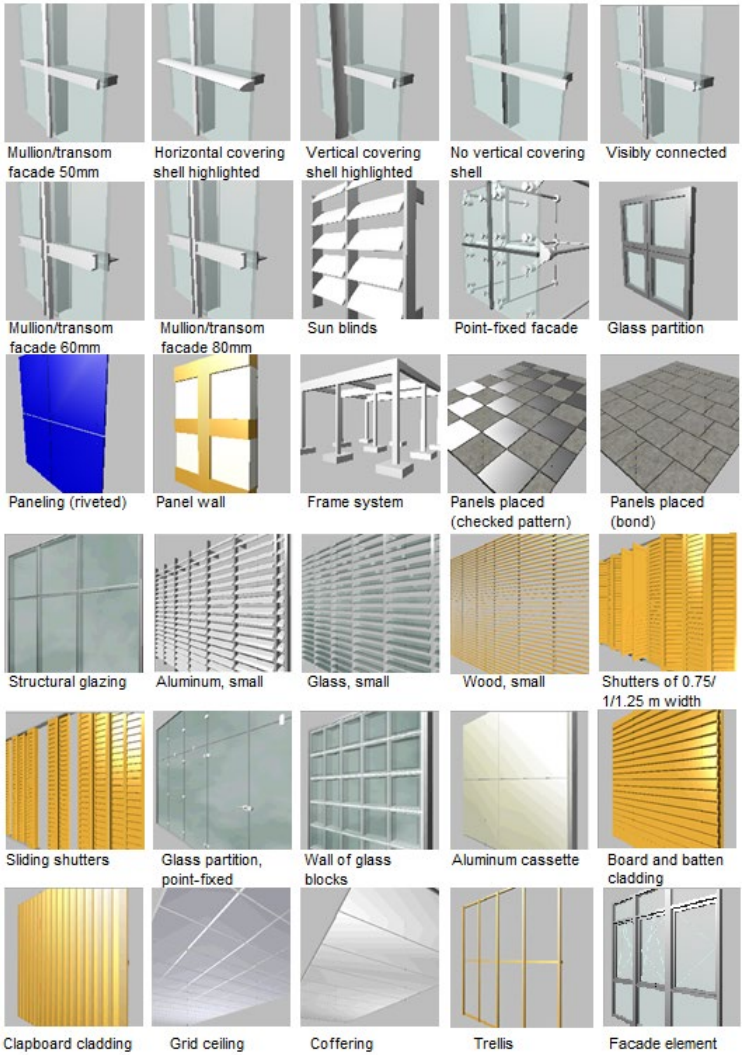
Designing facades involves five important parts:



First step – select favorites
Second step – create the facade
Third step – use special tools
Fourth step – modify the facade
Fifth step – detail the facade

Selecting favorites

So that you can get started immediately, Allplan comes with a wide range of favorites for facade walls and facade surfaces. The available facade types are commonly used in practice.



The **Retrieve facade favorites** tool provides a total of 32 favorites:

- Mullion/transom facade 50mm
- Horizontal covering shell highlighted
- Vertical covering shell highlighted
- No vertical covering shell
- Visibly connected
- Structural glazing
- Mullion/transom facade 60 mm
- Mullion/transom facade 80 mm
- Element facade
- Point-fixed facade
- Sun blinds, aluminum
- Aluminum, small
- Glass, small
- Wood, small
- Shutters of 0.75-m width
- Shutters of 1.00-m width
- Shutters of 1.25-m width
- Sliding shutters
- Glass partition
- Point-fixed glass partition
- Glass block, wall
- Paneling (riveted)
- Aluminum cassette
- Board and batten cladding
- Clapboard cladding
- Panels placed (checked pattern)

- Panels placed (bond)
- Panel wall
- Frame system
- Grid ceiling
- Coffering
- Trellis

You can display all favorites – be it horizontal, vertical, or at an angle – as circles, polylines, or splines. In addition, these favorites react to any angle. You can apply a 3D element (for example, a four-point canopy) to any facade type.

All favorites can be modified and customized at any time. You can then save the modified favorite as a new favorite, thus adding it to the list of predefined facade favorites.

The advantages of favorites are obvious:

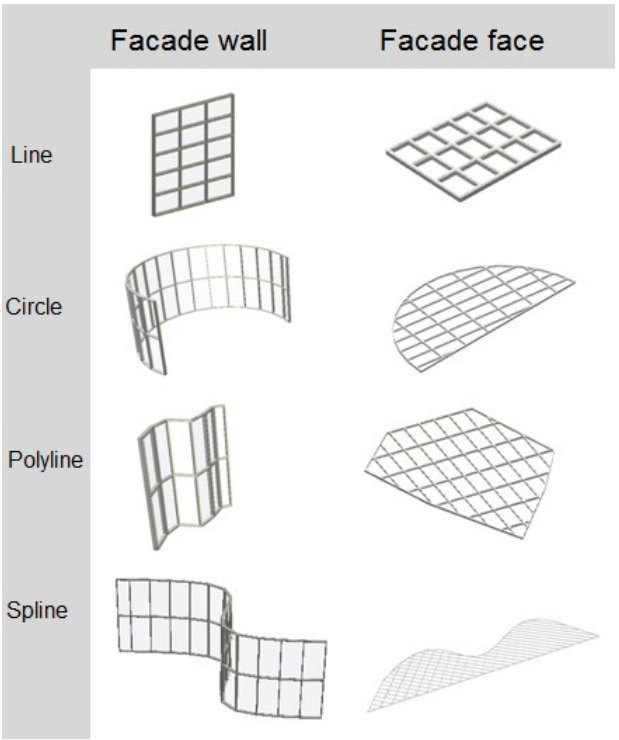
- Various predefined objects help you get started quickly and work efficiently.
- You can use predefined objects to create your own favorites in a comfortable and easy manner.

Creating facades

You can choose from eight different basic types.

Whenever you design an element of a facade, you must differentiate between a **Facade wall** and a **Facade face**. Either way, you can choose between

- straight components
- curved components
- polyline-shaped components
- spline-shaped components



When creating facades, you enter points and elements as usual in Allplan. For example, you draw a rectangle (area) by clicking two points. A special feature is available for creating curves. To draw an arc, all you need to do is enter three points.

In addition to all these options, you can create sloping facades of any type and angle.

So that you can design facades quickly and easily, Allplan provides objects for which you can define properties and styles.

Altogether these options form a **modular toolbox**, which is structured hierarchically.

The components are predefined, parametric, and thus configurable. You can save, replace, and re-create all components. Here are some examples:

- Point objects are point fixers of point-fixed facades.
- Linear objects are canopies or sun shading.
- Face objects are doors and windows.
- Elements are exterior facade panels.
- Favorites
- Object properties
- Object styles, subdivision styles saved, fields combined, and so on.

By using these predefined objects, you can get started immediately and work efficiently.

Furthermore, you can use a pattern consisting of basic 2D lines to create a 3D facade with this pattern. All you need to do is define the pattern as a subdivision and create the facade with this subdivision.

By the way, you can use the subdivision settings to create directional and nondirectional grids of as many angle-independent subdivisions as you want and superimpose these subdivisions **as often as you need**. There are no limits!

Special tools for working with 3D objects

You can configure Allplan to automatically adjust a facade to a 3D object – all you need to do is click the 3D object. So, you can apply different facade types to any 3D objects consisting of planar surfaces. Thus, you can create various facade alternatives in no time at all.

You can use the following tools:

- **Convert 3D object to facade** (imports the facade)
- **Convert 3D object to facade and subdivide facade** (imports and subdivides the facade)
- **Convert facade to 3D object** (exports the facade)

These tools help you visualize existing 3D objects in a quick and comfortable manner.

Note: General 3D elements with curves cannot be imported. Convert these elements to polygonal 3D solids before you import them. To do this, use **Convert Elements – General 3D element to 3D solid, 3D surface**.

Modifying facades

You can modify facades quickly and easily. The entire structure of a facade automatically adapts to changes you make to the parameters, points, or subdivisions defined for the facade. This makes it much easier for you to work with facades. After modifications, elements and objects adjust automatically; changes are immediately visible in the preview.

Basically, you can make changes in the floor plan, section, or 3D object. To do this, use the specific modification tools:

- **Modify points of curve, path**
- **Add points to curve**
- **Modify lower or upper height**

Detailing facades

You can create facades in many different ways. In Allplan, the tool for designing facades reflects the conventional way: You start by defining the grid, length, height, and the corresponding subdivisions. Then, you add elements, which can be open or closed. All you need to do is assign the objects to the relevant fields in 3D. You can always see what you are doing; just look at the preview.

To finish, you can detail the facade, that is, assign new subdivisions, subdivide existing fields again, and so on. You can also combine fields and assign objects. In doing so, you can assign objects to individual fields or to the entire facade so that these objects stretch across the entire width of the facade.

Advantages:

- When modifications are necessary, you do not need to create the data from scratch. Rather, you can simply edit the relevant data. This considerably speeds up the design process.
- Various predefined objects help you get started quickly and work efficiently. This increases the productivity in your office.

Overview of steps

Step 1 – creating a facade across corners

- Defining subdivisions
- Predefined facade favorites
- Drawing the facade

Step 2 – displaying additional favorites

- Modifying the facade

Step 3 – creating a spline-shaped facade

- Two options for subdividing and creating a spline-shaped facade

Step 4 – inserting opening elements

- Combining fields
- Assigning objects

Step 5 – applying objects to the exterior

- Placing face objects and linear objects

Step 6 – converting the 3D geometry into a facade (import 3D geometry)

- Creating a sloping glass surface as a skylight

Step 7 – placements

- Placing panels
- Placing windows

Appendix – designing your own facade

- Creating face objects
- Creating linear objects
- Creating point objects
- Saving the facade as a favorite

Getting ready

Training data on the internet

If the training data is not available to you, you can download the data from **Allplan Connect**, the service portal for Allplan.

Downloading the training data

You can download the training data from Allplan Connect, the service portal for Allplan.

Go to
connect.allplan.com

- Register with your customer number and email address.
  Registration is free and not subject to any conditions.
  After a few minutes, you will be able to access the data and information there.
- To download the data for this step-by-step guide from **Allplan Connect**, open the **Training** area and select **Documentation**.
- In addition to the training data, this area provides the latest version of this document as a PDF file.
- Download the training data (`Allplan training project for steps to success - facade`) from Allplan Connect to any folder, for example, **C:\data\training**.

Note: Serviceplus customers can find more step-by-step guides in the **Training** area of Allplan Connect. It usually takes us one to two working days to activate this restricted area so that Serviceplus customers can access and download documents. Please note that this service is available to Serviceplus customers only.

Contents of the training project

The following section – ''Importing the training project (on page 16)'' – shows you how to import the training project.
The **Steps to Success – Facade** project consists of eight drawing files, where you can find the initial situation of the office building shown in ''Exercise (on page 5)''. You will create parts of the facade for this building in several drawing files.

Importing the training project

To import the training project to Allplan

➲ You have downloaded the training project from Allplan Connect.

➲ Allplan is running.

1 Click **New Project, Open Project...** on the **Quick Access Toolbar**.

The **New Project, Open Project** dialog box opens.

2 Drag the downloaded ZIP file from File Explorer into the area where the projects are listed in the **New Project, Open Project** dialog box.

Or:

Right-click in the empty area of the project list and select **Import compressed project** on the shortcut menu. Select the downloaded ZIP file in the **Open** dialog box.

3 Click **OK** to confirm the **New Project** dialog box.

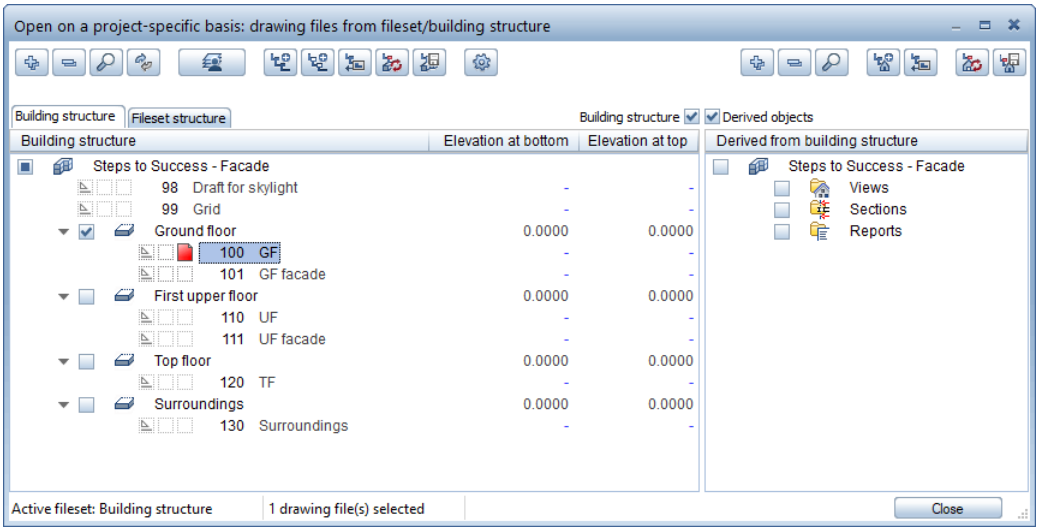
Allplan opens the **Steps to Success – Facade** project.

Selecting the drawing file

To select the current drawing file

1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

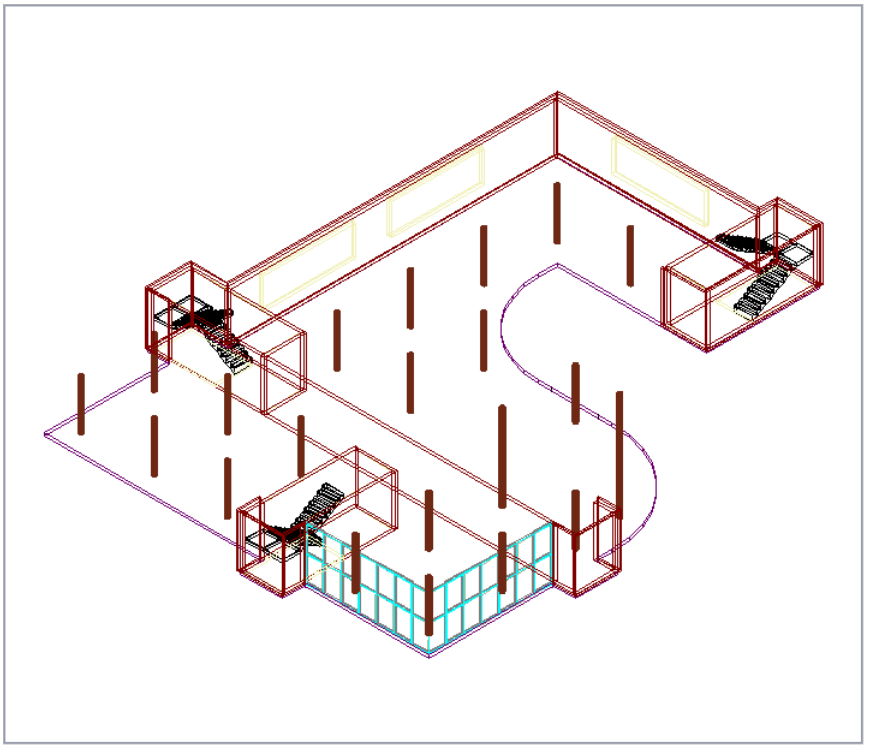
2 Make drawing file **100 GF** current.



3 Close the dialog box.

Step 1: creating a facade across corners

Objective

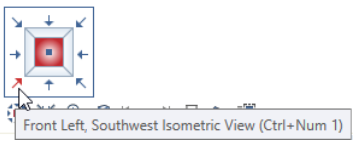


Defining subdivisions for the facade

To define subdivisions for the facade

1 Open the **Window** drop-down list on the Quick Access Toolbar and click **1 Viewport**.

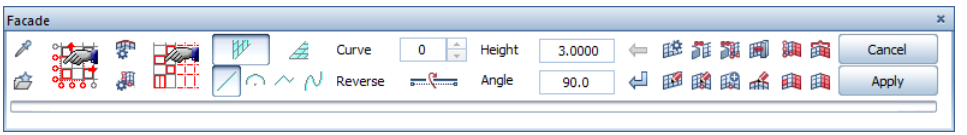
2 Click **standard views** in the border of the viewport and select **Front Left, Southwest Isometric View**.



3 Zoom in on the corner at the bottom of the ground floor.

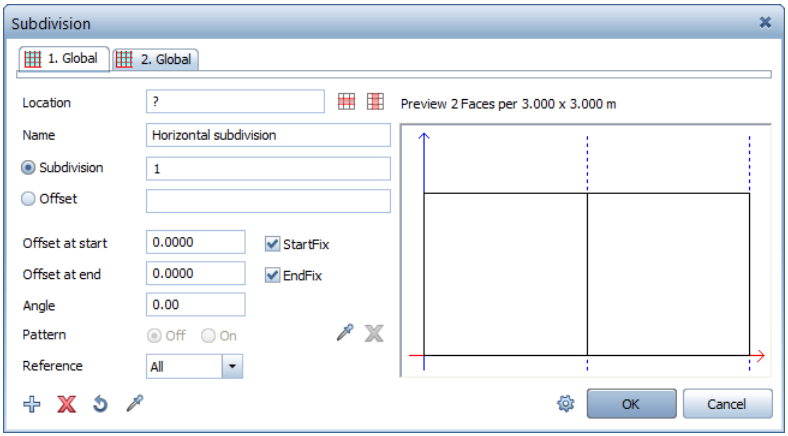
Note: Check the settings for the scale = 100 and length = m.

4 Click **Facade** (**Architecture** role – **Elements** task – **Opening Elements** task area).



When creating a facade, you work from left to right on the **Facade** context toolbar.

5 Click **Subdivision settings** on the **Facade** context toolbar.



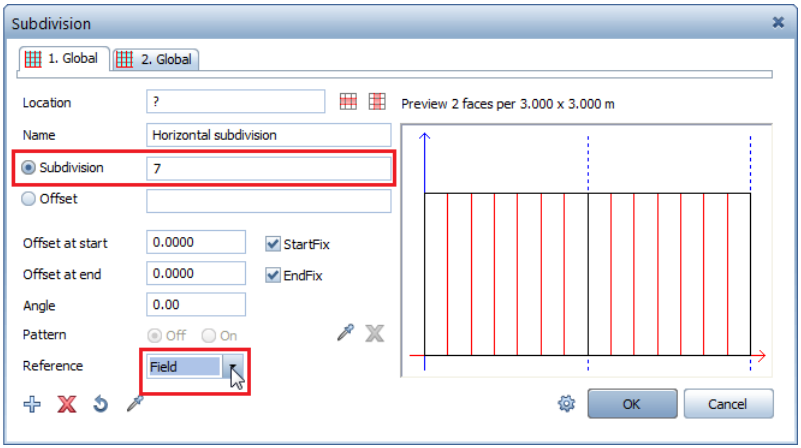
There are two options to define subdivisions: You can choose between **subdivision** and **offset**.
When you select **subdivision**, Allplan divides the length to be subdivided into the number of sections specified. When you enter several values (separated by ";"), Allplan creates the sections at the ratio specified.

When you select **offset**, Allplan divides the length to be subdivided into sections of the specified size. Allplan applies the rest in accordance with the values entered for **offset at start, end**. When you enter several values (separated by ";"), Allplan creates the sections in the sequence of the **offset** values.

You will use the **subdivision** setting to create the first facade. Click this setting if it is not selected.

6 Enter **7** for the number of subdivisions.

7 To define the **Reference** for the subdivisions, select **Field** in the list box.

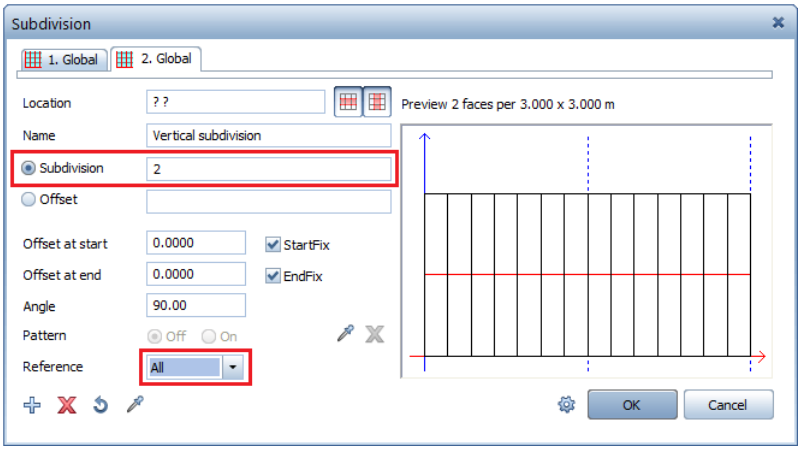


The preview shows 7 subdivisions per field.

8 Open the **2. Global** tab to define the vertical subdivision.

Note: Click to add more tabs.

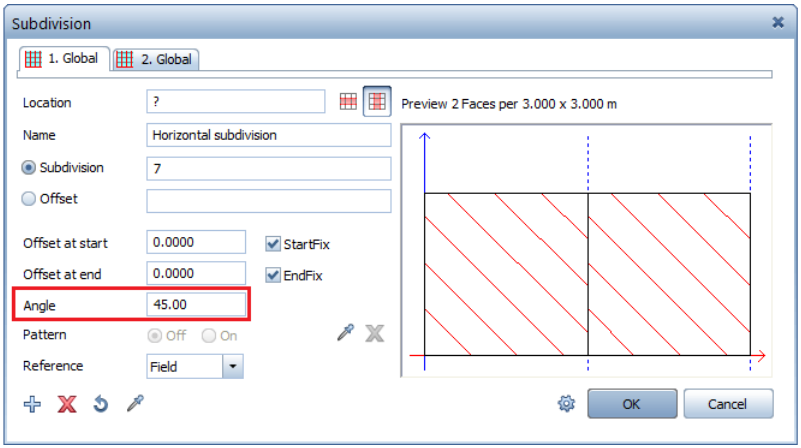
9 Here, too, select **Subdivision**. Enter **2** for the number of subdivisions. As Allplan is to apply these settings to the entire facade, switch the **Reference** to **All**.



10 Click **OK** to confirm the settings in the **Subdivision** dialog box.

Notes:

If you want, you can also enter subdivisions at an angle:



You can superimpose as many subdivisions as you want. However, the amount of data generated also increases significantly, thus slowing down processing time.

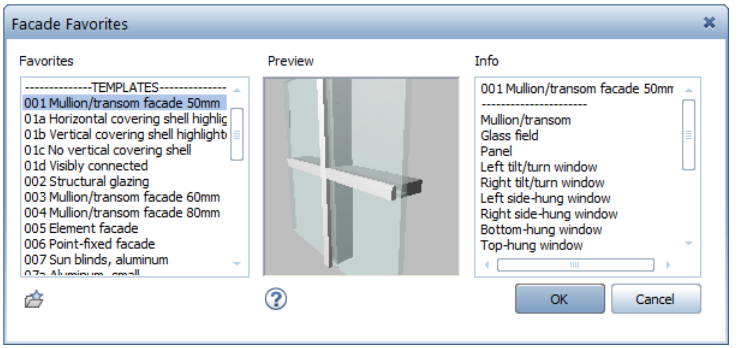
Predefined facade favorites

Before you start drawing the facade, select a predefined facade favorite.

To retrieve a predefined facade favorite

1 Click **Retrieve facade favorites** on the **Facade** context toolbar.

2 Select **001 Mullion/transom facade 50mm**.



Tip: Facade favorites you defined yourself are listed above **---TEMPLATES---**.

Facade favorites below **----TEMPLATES----** are predefined and cannot be modified. The **preview** displays an example of the facade favorite. You can find a description of the facade in the **Information** area.

3 Click **OK** to close the **Facade Favorites** dialog box.

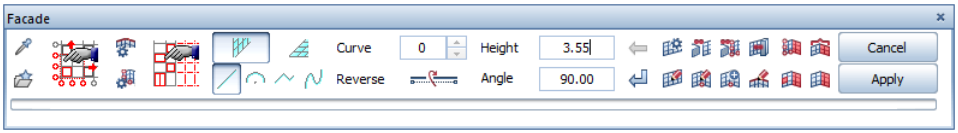
Drawing the facade

To draw a facade

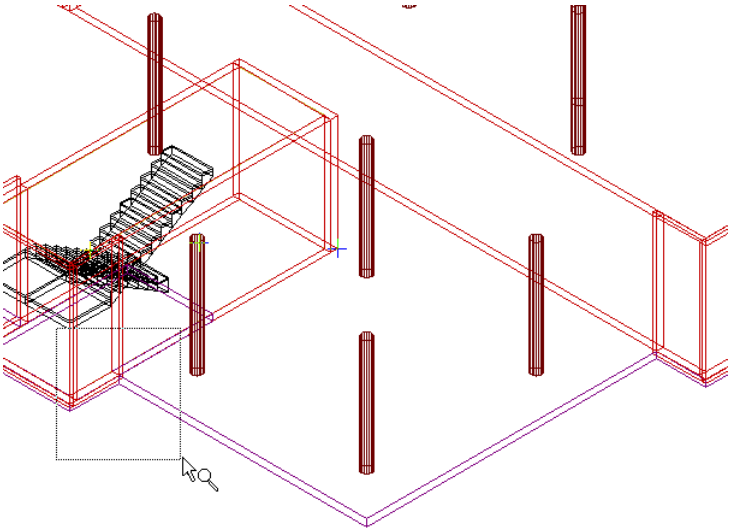
1 The **Facade** context toolbar is still open. Click **Facade wall** and **Straight component**.

Note: To join the facade correctly with the wall, consider the following point:
Allplan uses axis dimensions (and not unfinished dimensions) to display the facade. Therefore, you must enter half the transom width or half the mullion thickness when designing the facade.

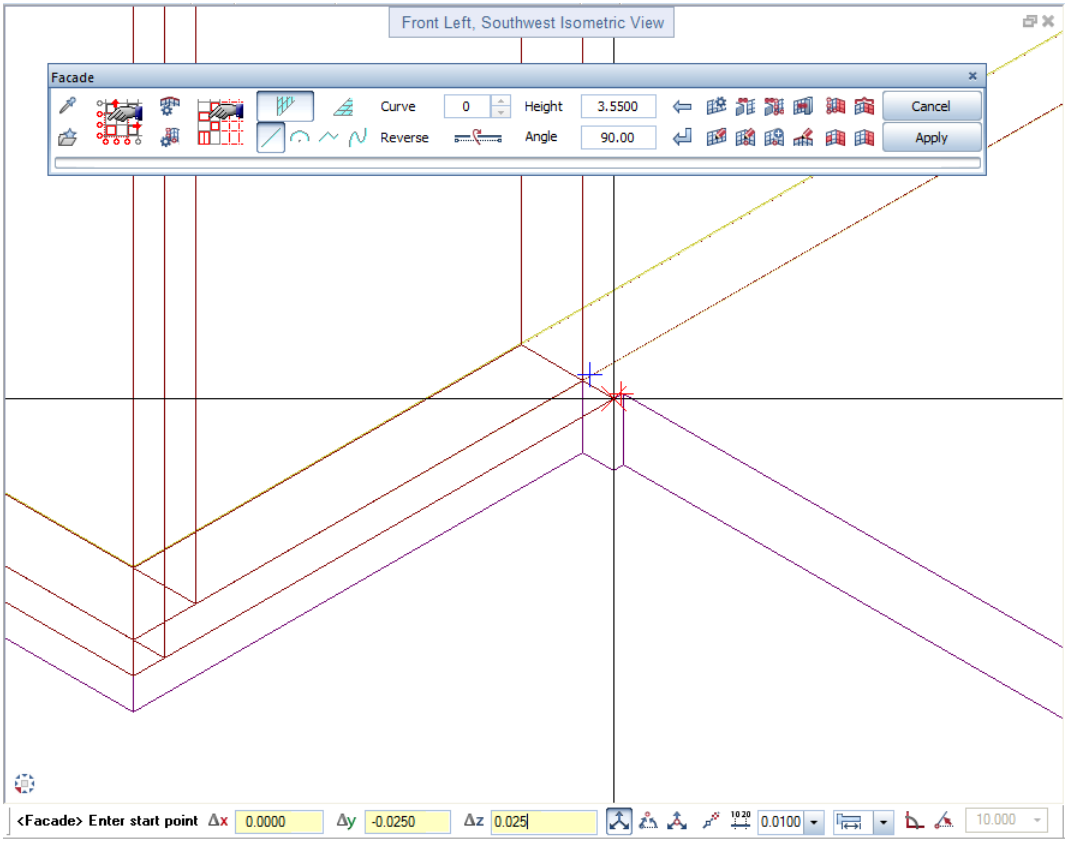
2 The room height is 3.60 m. The width of a transom is 5 cm.
To define the height of the facade, you need to subtract the transom width from the room height. As a result, the facade is 3.55 m high.
Enter **3.55** m for the height.



3 Zoom in on the area as shown in the illustration:

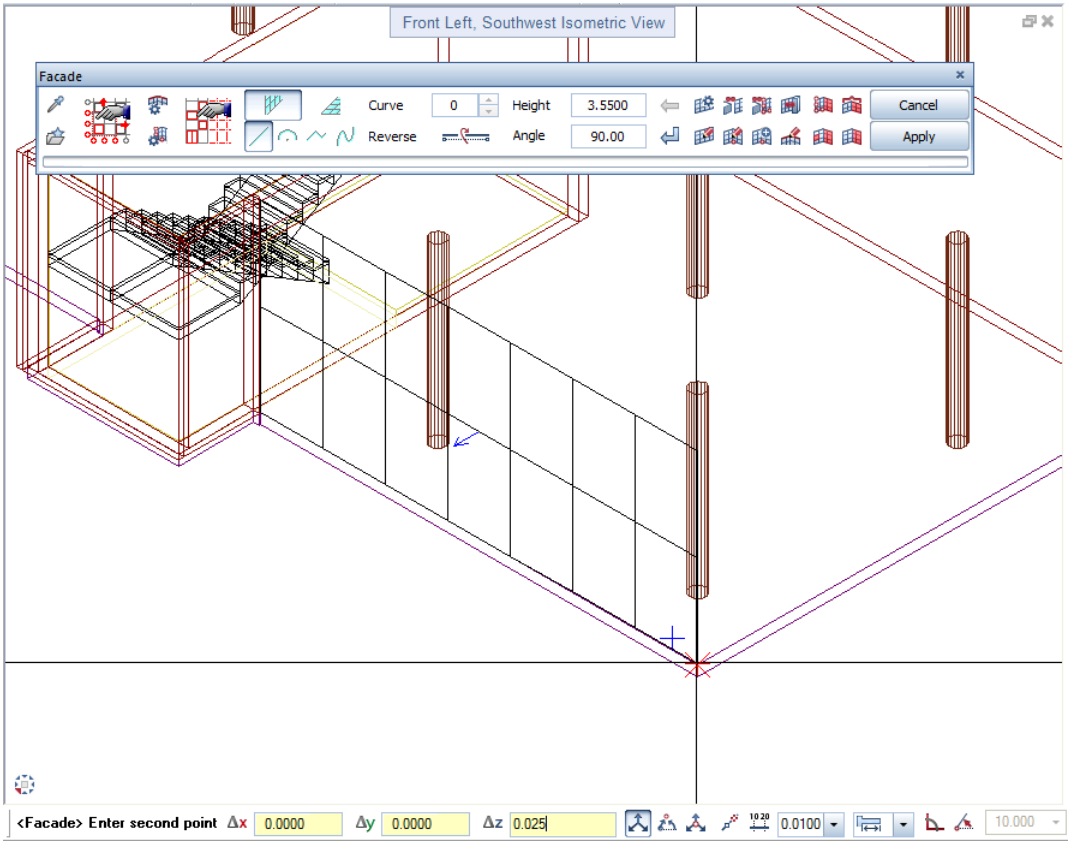


4 *<Facade> Enter start point*
Point to the point marked in the illustration and enter
Δy dy = –0.025 m and
Δz dz = 0.025.



5 Select Enter to confirm.

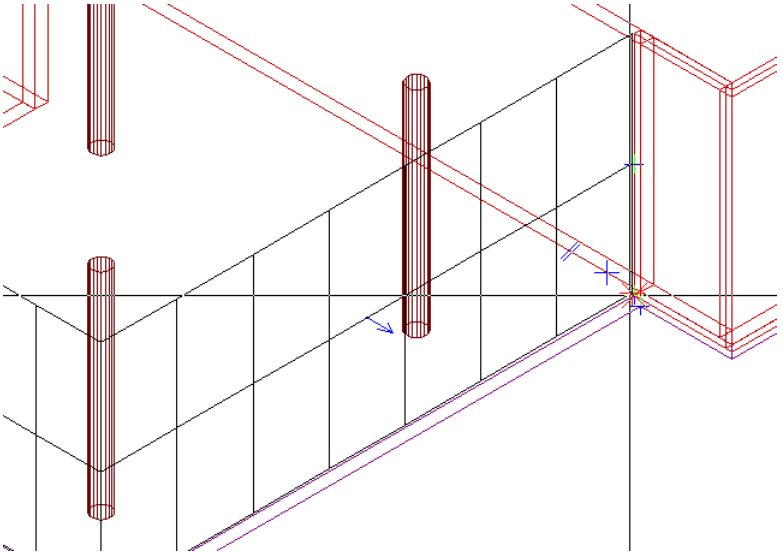
6 *‹Facade› Enter second point*
Point to the corner and enter Δz dz = 0.025 in the dialog line.



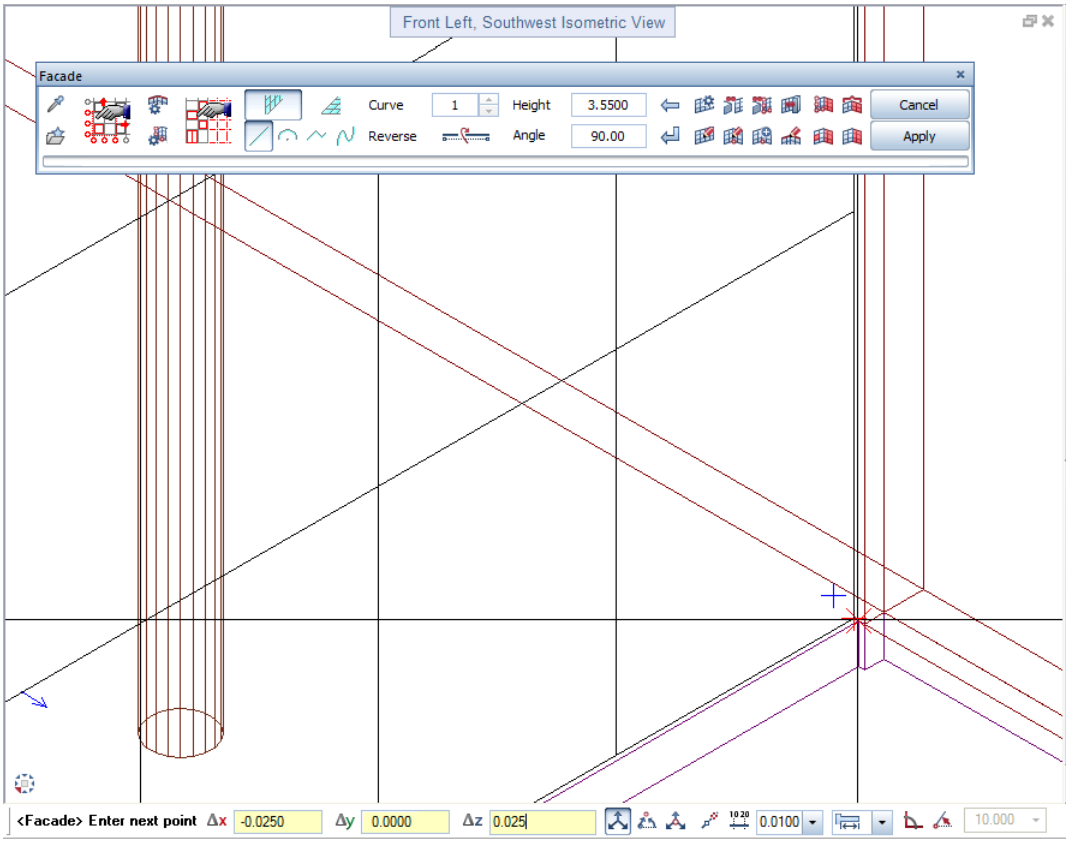
7 Select Enter to confirm.

Note: The blue arrow shows the construction direction of the facade structure. The arrow points to the outside, which means that Allplan starts on the outside, placing the first layer there.

8 *<Facade> Enter next point*
Point to the end point of the facade.



9 To correctly join the facade with the wall and floor, enter **dx** = **–0.025** m and **dz** = **0.025** m in the dialog line.

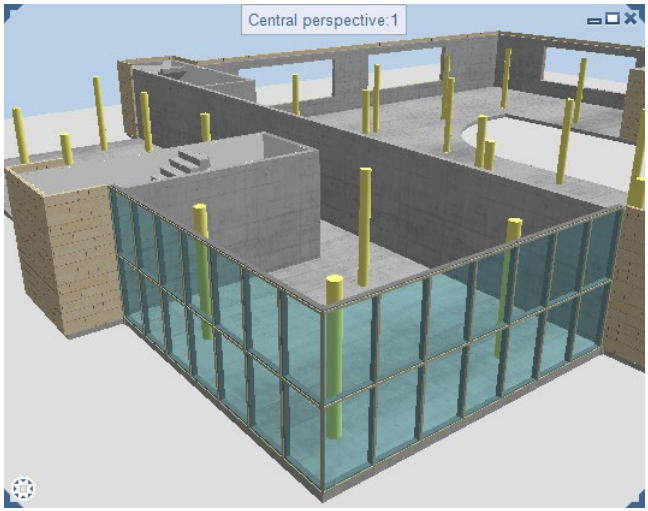


10 Select Enter to confirm.

11 Go to the **Facade** context toolbar and click **Apply**.

You have created the first facade.

12 Select F4 to see the facade in animation.
To make sure that the facade looks correct in animation, turn off **Color stands for pen** in **Show/Hide** (**View** drop-down list on the Quick Access Toolbar).

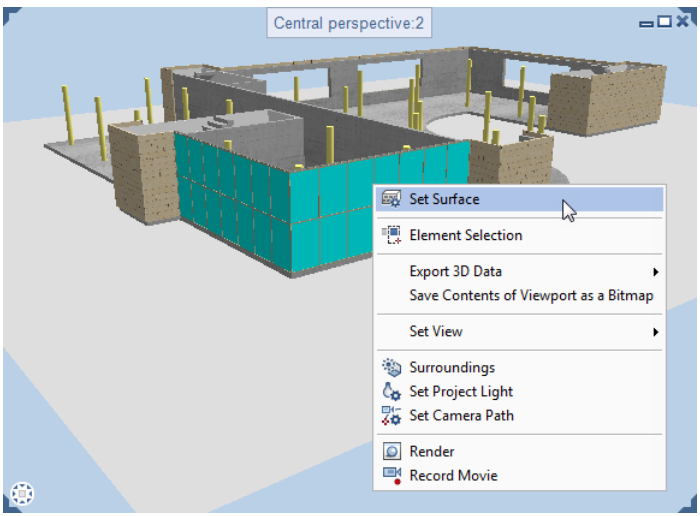


What if my facade is not transparent?

To make the color of the glass pane transparent

1 **Navigation Mode** is selected in the viewport of the **Animation** view type.
Right-click a glass pane of the facade. The shortcut menu opens.

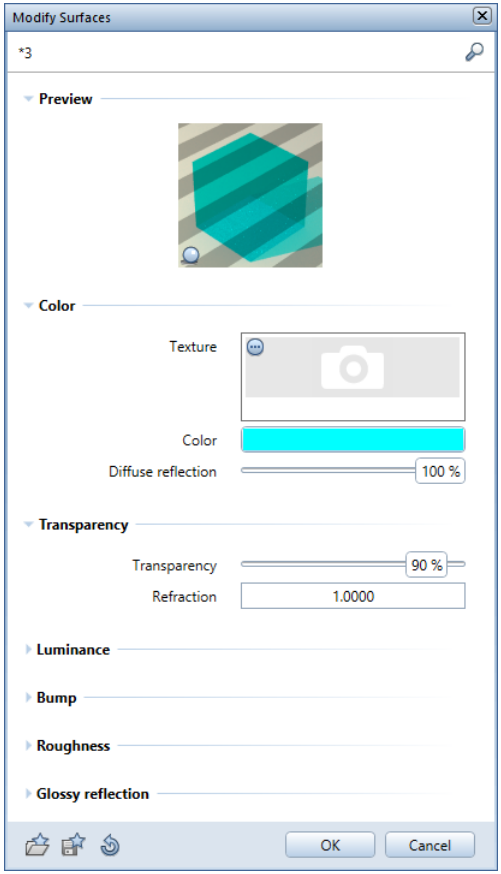
2 Select the **Set Surface** tool.



You can see and change the properties of the surface (glass pane) clicked.

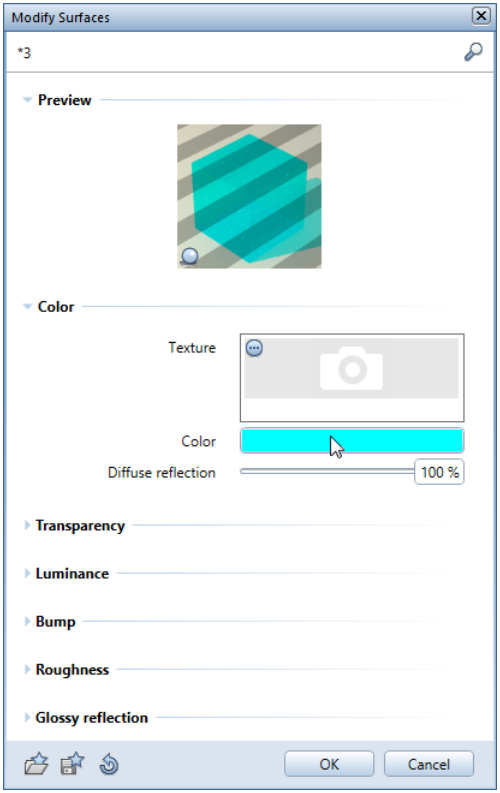
3 The subpalette of color *3 opens. Start by defining the transparency:

- Transparency: 90 %



4 To achieve good rendering results with **global illumination**, you should adjust the object color, too:

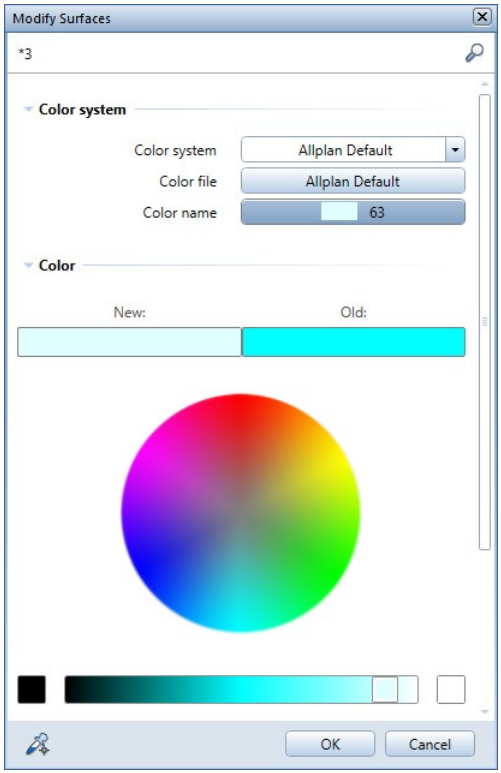
Click the **Color** button in the **Color** area.



5 The **Color** subpalette opens. In the **Color system** area, click the button to the right of **Color name**.

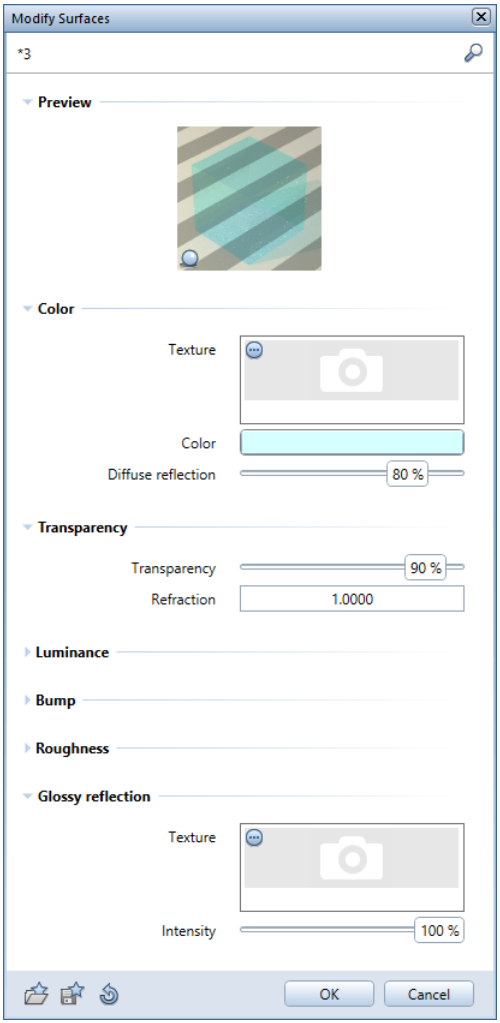
6 A color table opens. Select the Allplan default color **63** by clicking it.

The color table closes. You can see the new color in the **Color** subpalette.



7 Adjust the following values:

- **Diffuse reflection**: 80 %
- **Glossy reflection**: 100 %

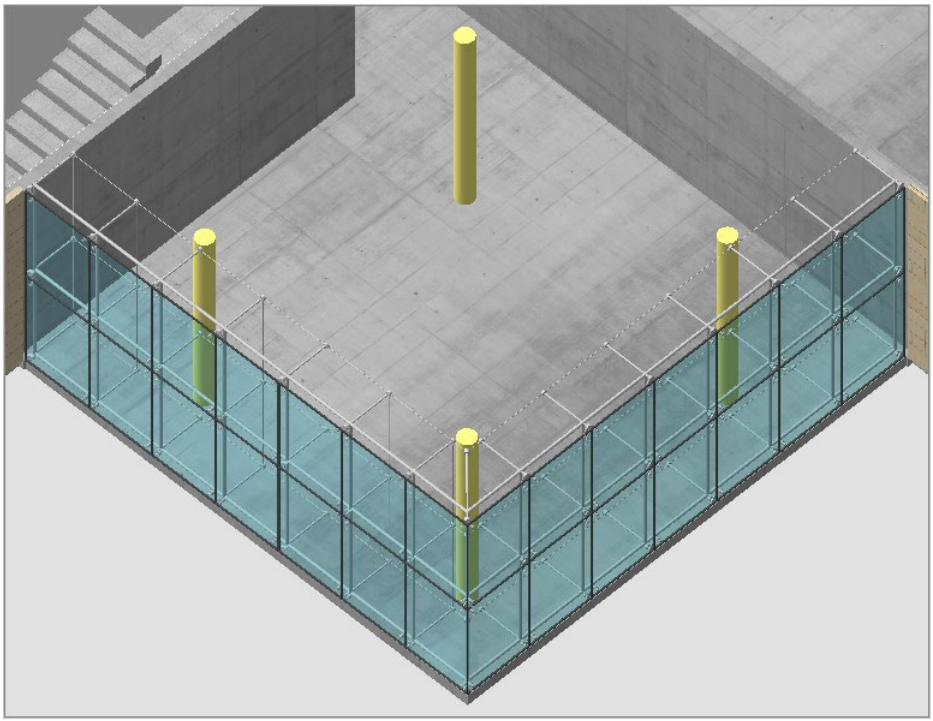


8 Click **OK** to confirm the palette.

As a result, the facade elements are transparent.

Step 2: displaying additional favorites

Objective



Modifying the facade

You can use the **Modify** tool to change the facade favorite quickly and easily, thus displaying an existing facade with another favorite.

To modify a facade

1 If the **Facade** tool is closed, open it again.

2 Click **Modify** on the **Facade** context toolbar.

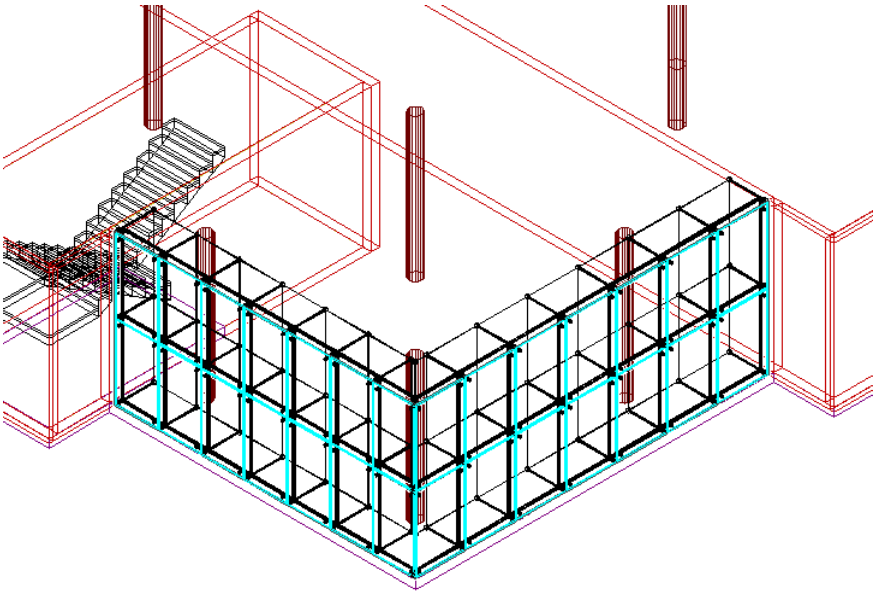
3 *<Facade> Select facade*
Click the facade you just created. The point you click is irrelevant.

4 Click **Retrieve facade favorites** on the **Facade** context toolbar.

5 Select the new facade favorite, **006 Point-fixed facade**, for example. Then click **OK** to confirm.

6 Go to the **Facade** context toolbar and click **Apply**.

The new facade looks like this:

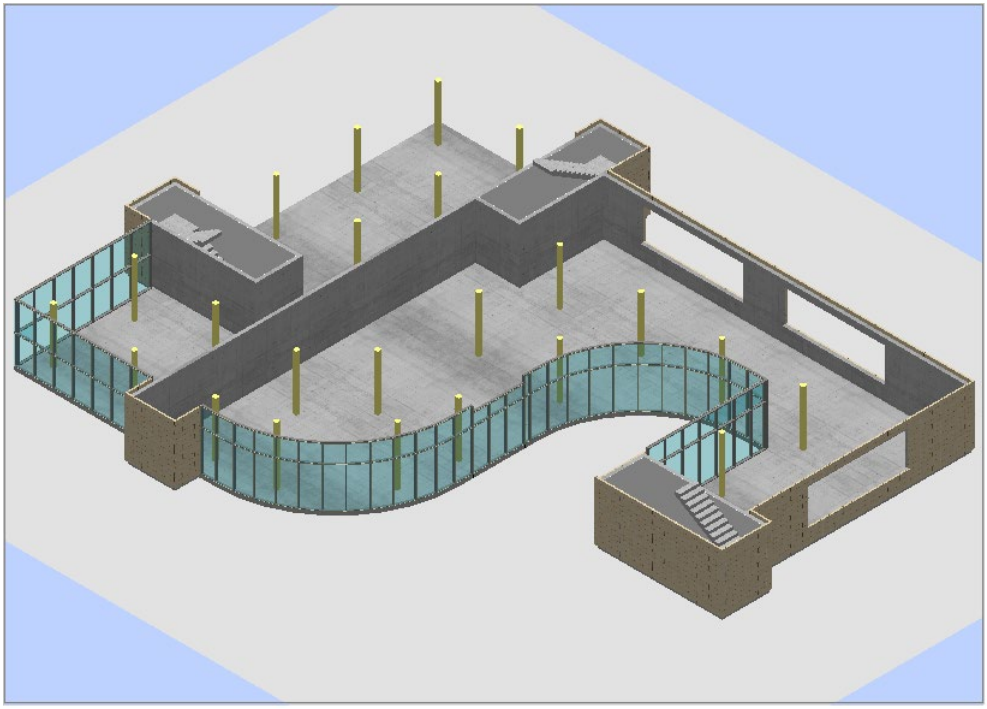


Step 3: creating a spline-shaped facade

The facade you will create consists of two components of different shape. You will use spline-shaped elements and linear elements.

This guide presents two alternative ways for creating this facade.

Objective



Alternative 1

Alternative 1 shows you how to create linear components and spline-shaped components. You will create these components in isometric view.

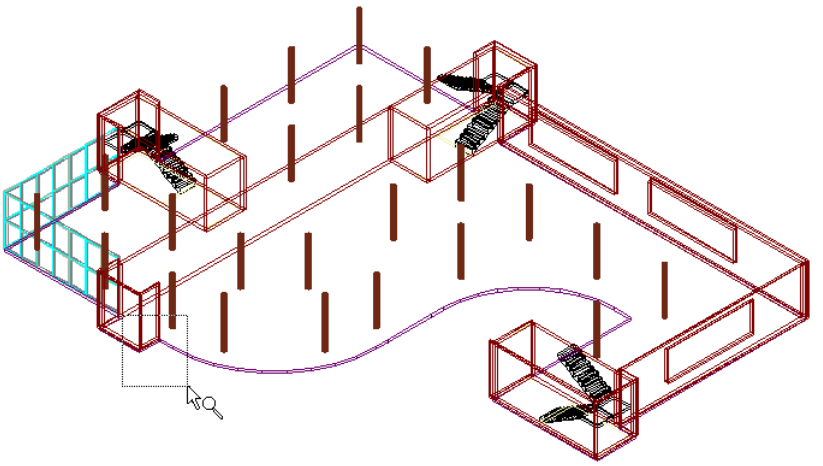
Defining subdivisions

To define new subdivisions

1 Close the animation viewport.

2 Click **standard views** in the border of the viewport and select **Front Right, Southeast Isometric View**.

3 Zoom in on the following section:



4 Click **Retrieve facade favorites** on the **Facade** context toolbar.

5 Select **001 Mullion/transom facade 50mm**.

6 Click **Subdivision settings** on the **Facade** context toolbar.

7 Open the **1. Global** tab.

8 As you do not want to use any previous settings, click **Remove subdivision** in the **Subdivision** dialog box. Repeat this until you have deleted all tabs.

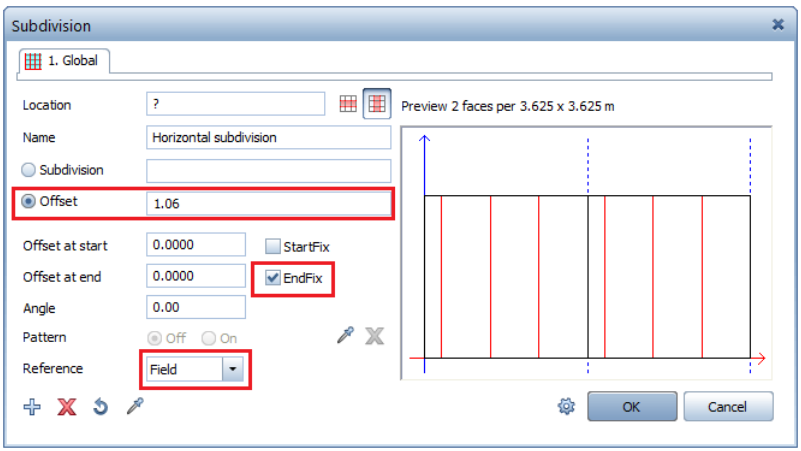
9 Click **Add subdivision** to open a new tab.

10 You used **subdivision** when you created the first facade. To create the new facade, you will use **offset**. Select this option.

11 The facade columns are spaced at 1.06 m. Enter **1.06** to define the offset.

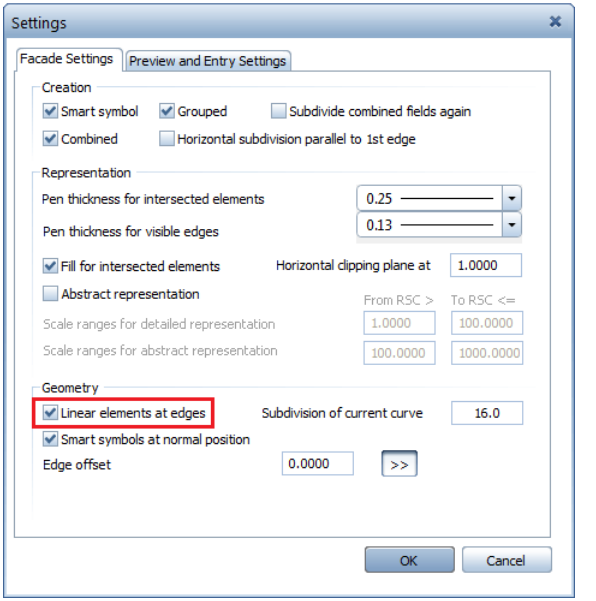
12 To define the reference for the subdivisions, select the **Field** option in the list box.

13 The end is fixed; the spline ends with a facade column. Click **EndFix**.



14 Click **OK** to close the **Subdivision** dialog box.

Note: To end a facade with a column or linear element, you can also use the **Linear elements at edges** option, which you can find in the **Settings** (**Facade** context toolbar).



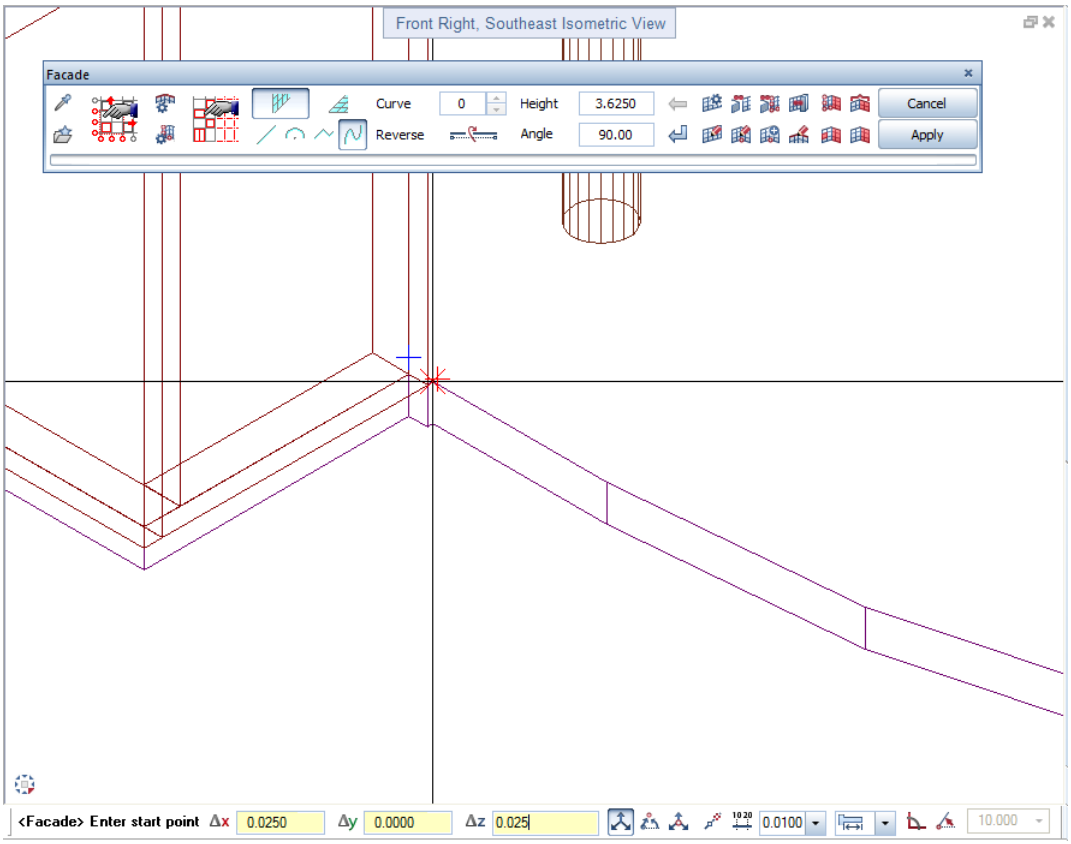
Drawing the facade

To draw the facade

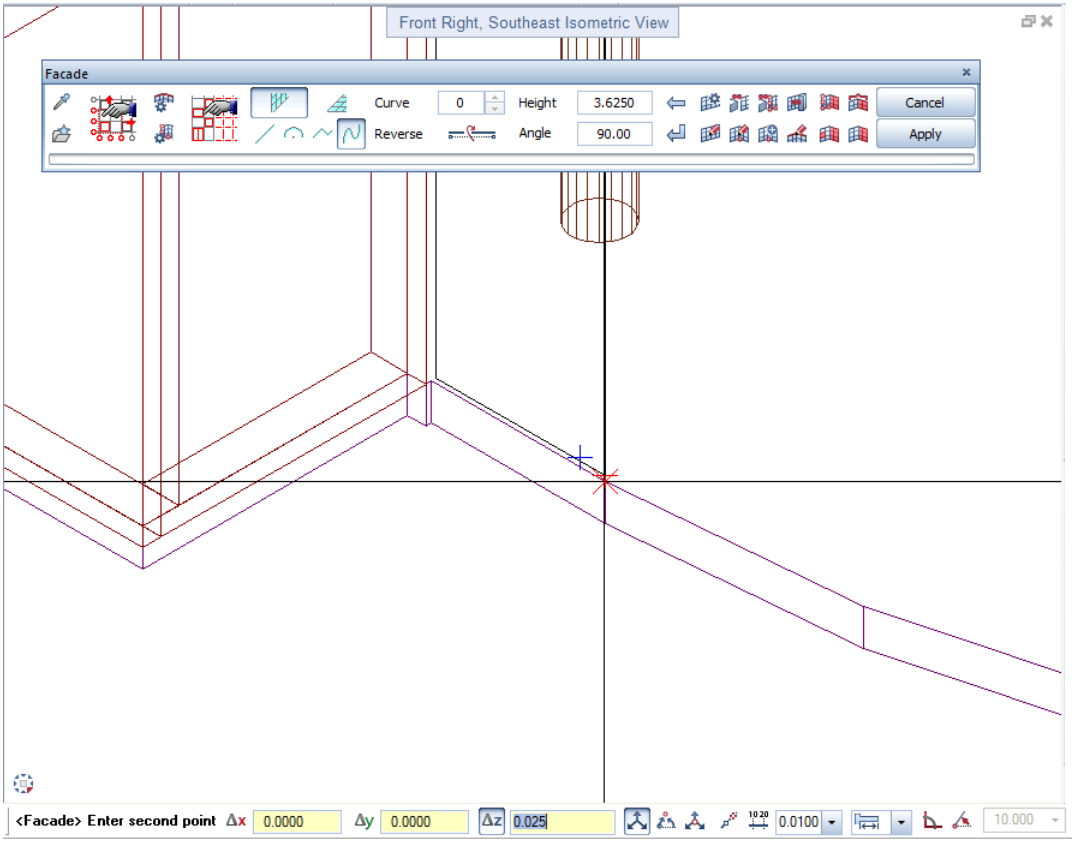
1 Go to the **Facade** context toolbar and change the **Height** to **3.625** m.

2 Click **Facade wall** and **Spline-based component**.

3 *<Facade> Enter start point*
Point to the point marked in the illustration and enter
Δx dx = 0.025 m and
Δz dz = 0.025 m in the dialog line. Select Enter to confirm.



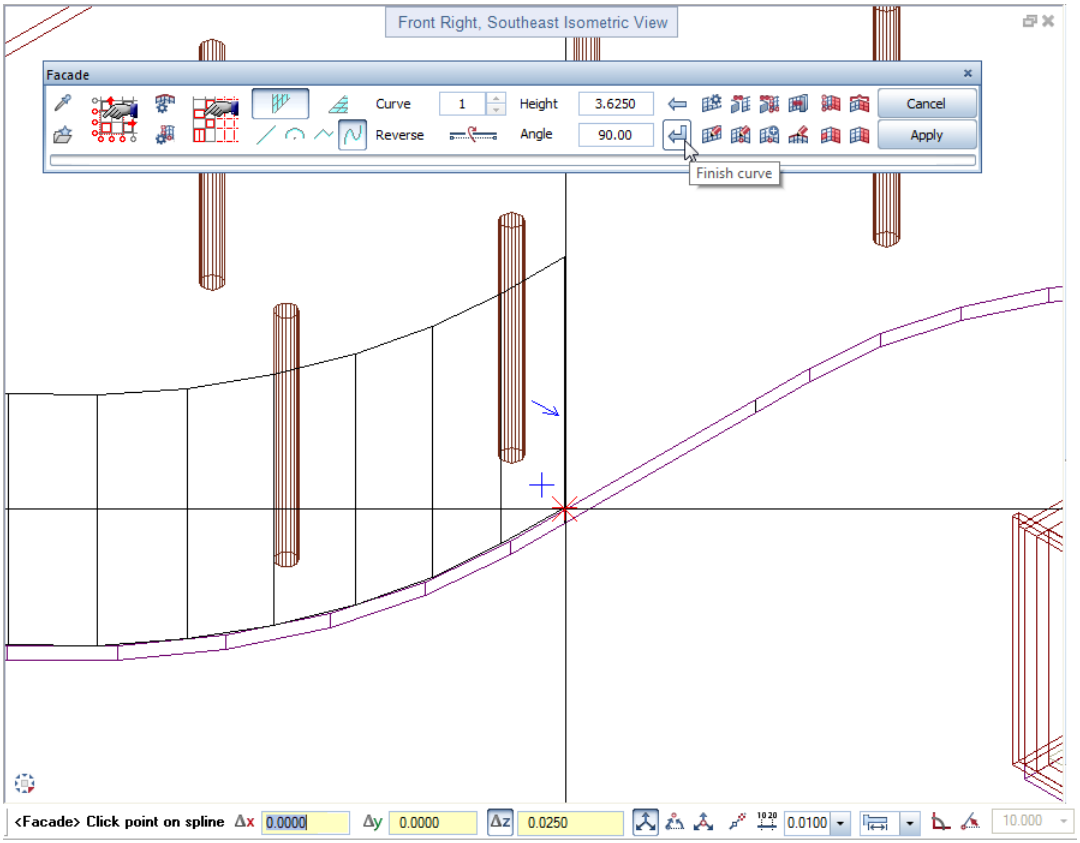
4 *<Facade> Enter second point*
Point to the first subdivision point of the spline and enter Δz dz = 0.025.
As this offset of Δz dz = 0.025 applies to the entire facade, you can define this value as a fixed value. To do this, click Δz in the dialog line.



5 Select the Enter key to confirm.

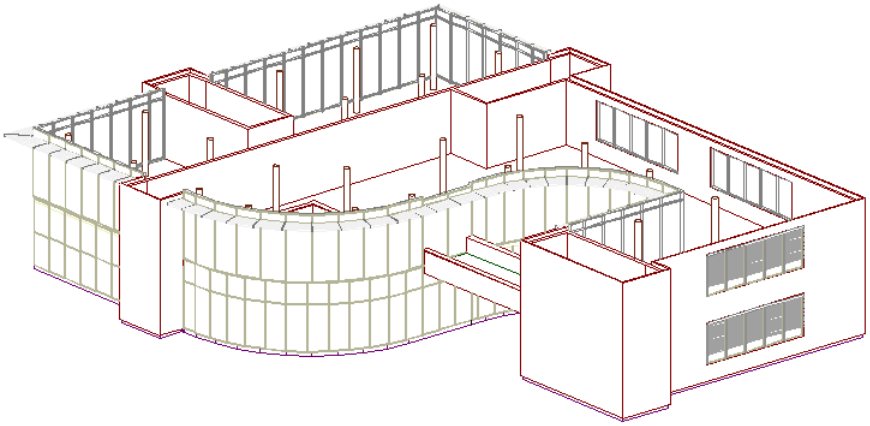
6 Point to the other subdivisions of the spline one after the other.
The offset for Δz dz = 0.025 remains fixed.
Select the Enter key to confirm each point.

7 Finish entering the spline-shaped component when you reach the black marker. To do this, click **Finish curve** on the **Facade** context toolbar:



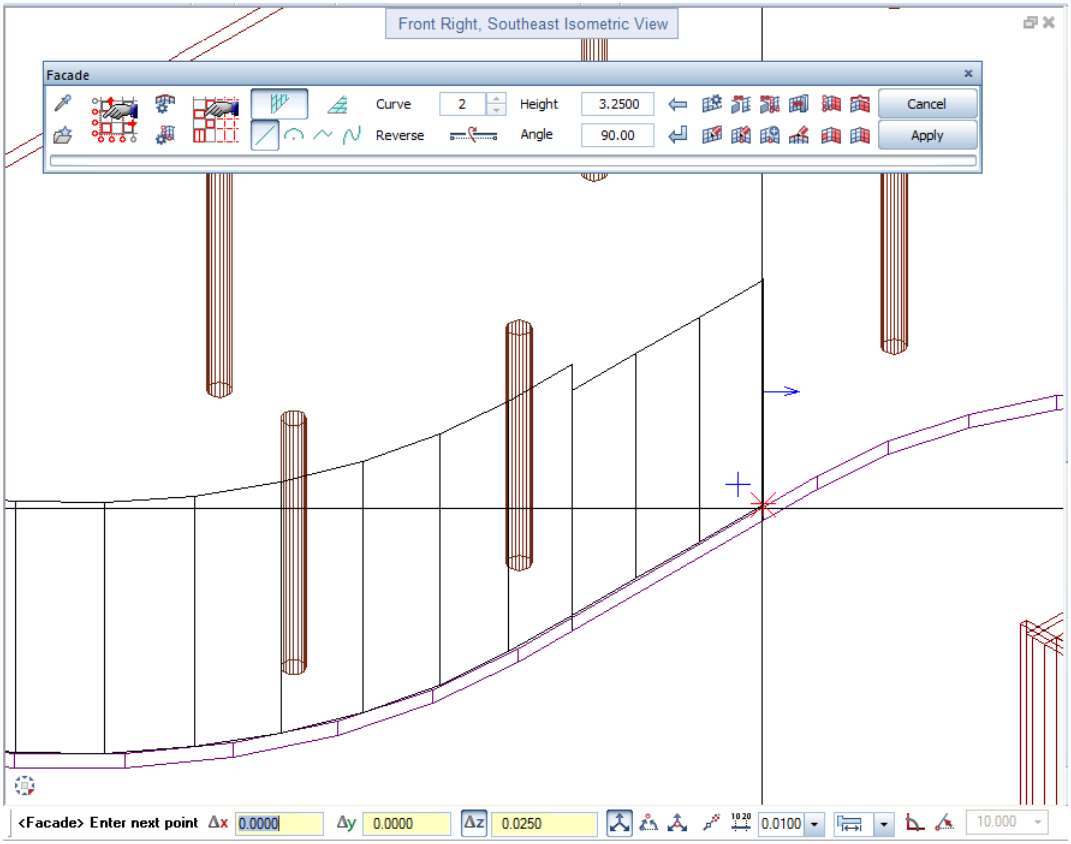
8 On the **Facade** context toolbar, click **Straight component**.

The straight component must be shorter than the spline-shaped component. The reason for this is a skyway that connects the stairway and the main building on the first upper floor.



9 Go to the **Facade** context toolbar and change the **Height** to **3.25** m.

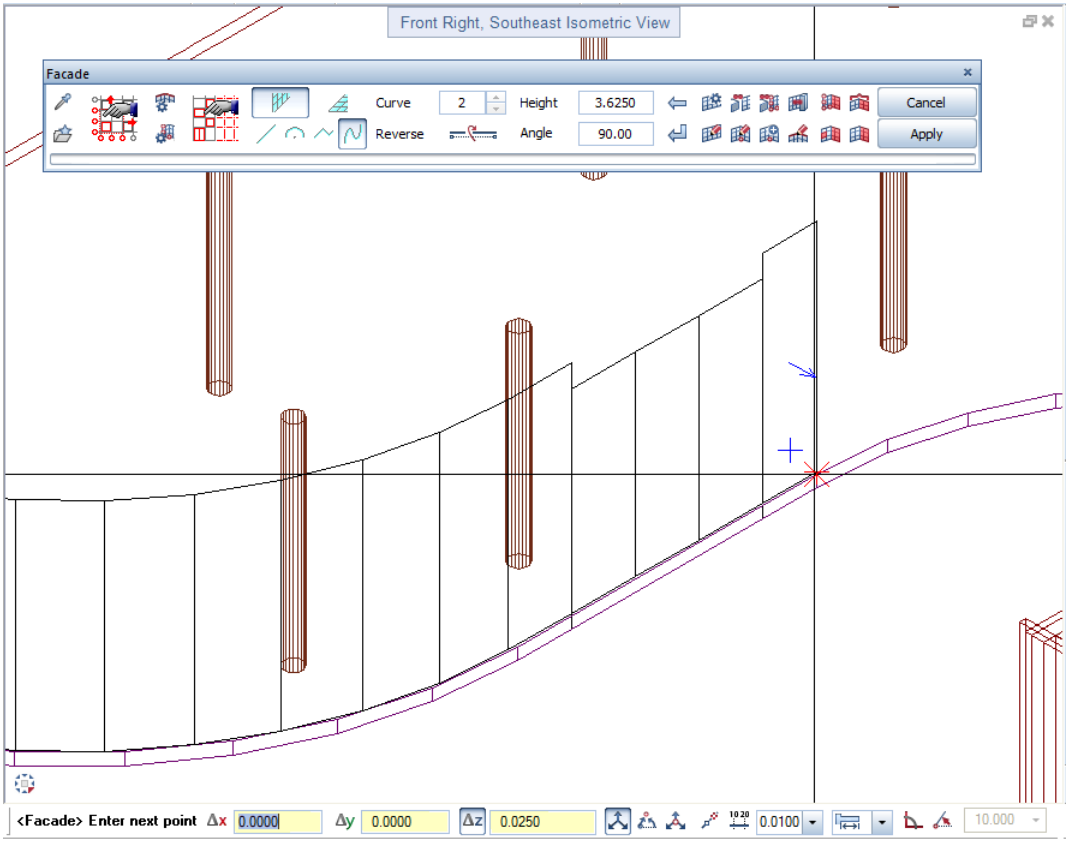
10 Point to the second black marker. The offset for Δz **dz** = **0.025** remains fixed. Select Enter to confirm.



11 Finish entering the straight component at the second black marker by clicking **Finish curve** on the **Facade** context toolbar (see following illustration).

12 On the **Facade** context toolbar, click **Spline-based component** again.

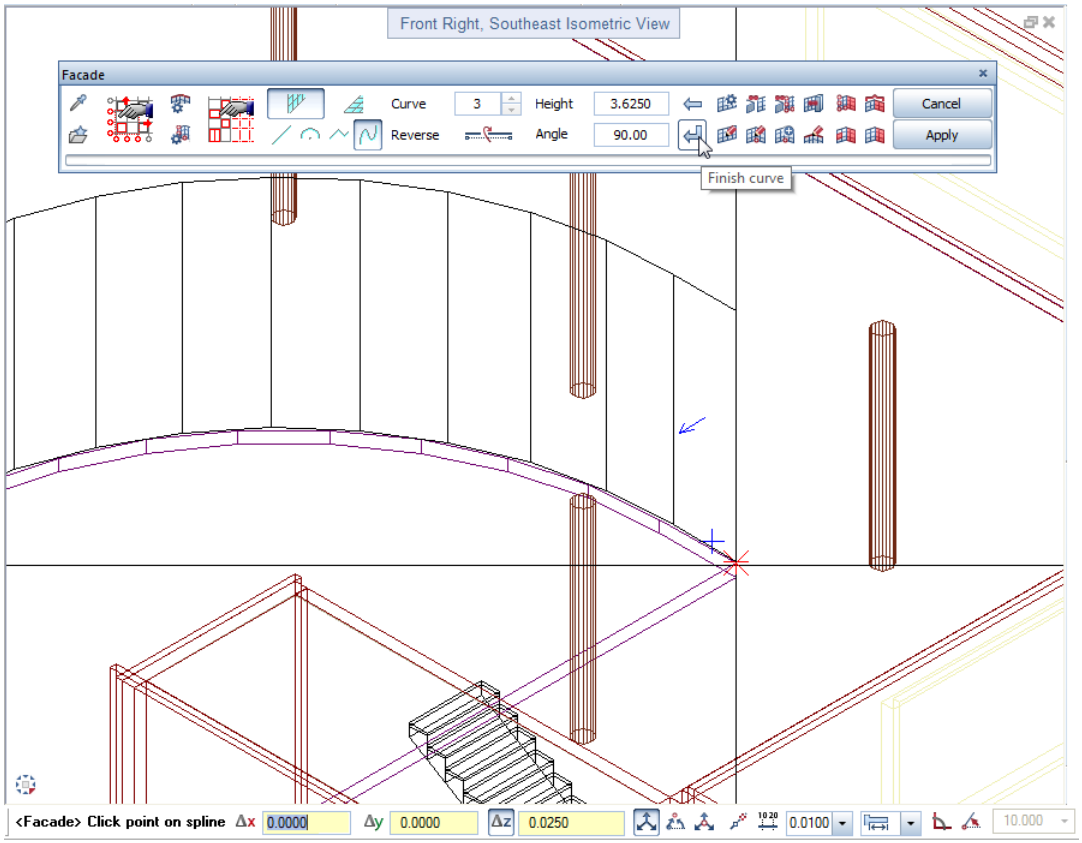
13 To continue with the spline-shaped component, you need to change the height back to the previous setting:
Enter **3.625** m for the **Height** on the **Facade** context toolbar.



14 The offset for Δz **dz** = **0.025** remains fixed. Select Enter to confirm.

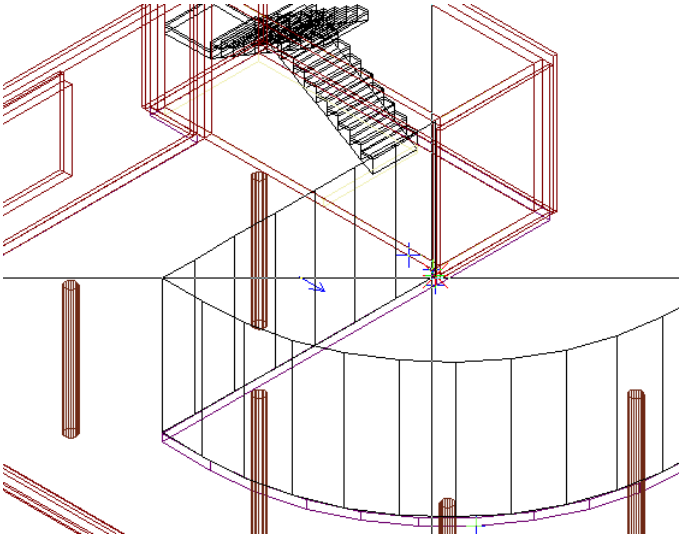
15 Use Δz **dz** = **0.025** for the offset of all the other points and select the Enter key to confirm each point.

16 Finish entering the spline-shaped component when you reach the corner of the building. To do this, click **Finish curve** on the **Facade** context toolbar (see following illustration).

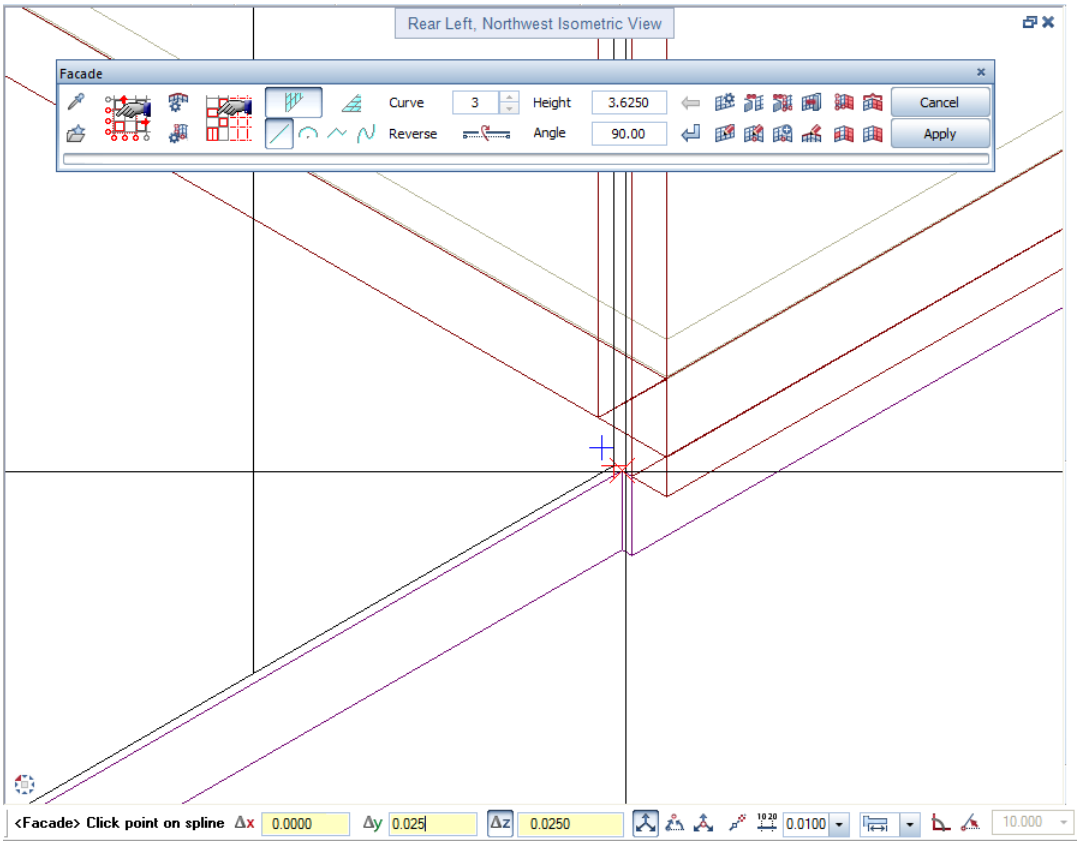


17 Switch back to **Straight component** on the **Facade** context toolbar.

18 Select a suitable isometric view and zoom in on the end point:

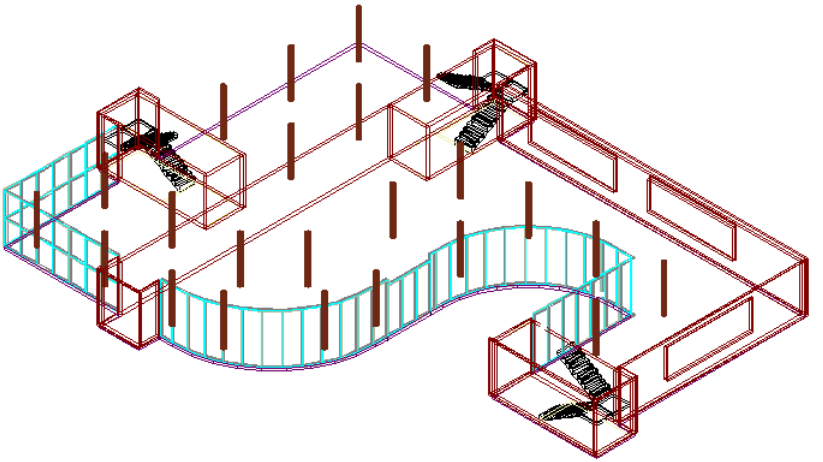


19 Point to the last point of the new facade.
To correctly join the facade with the wall and floor, enter Δy **dy** = **0.025** m in the dialog line; Δz **dz** = **0.025**.



20 Select Enter to confirm.

21 Finally, click **Apply** on the **Facade** context toolbar.



Defining vertical subdivisions later

Apply vertical subdivisions to all the fields of the new facade. Create this transom at a height of 2.50 m.

To create vertical subdivisions later

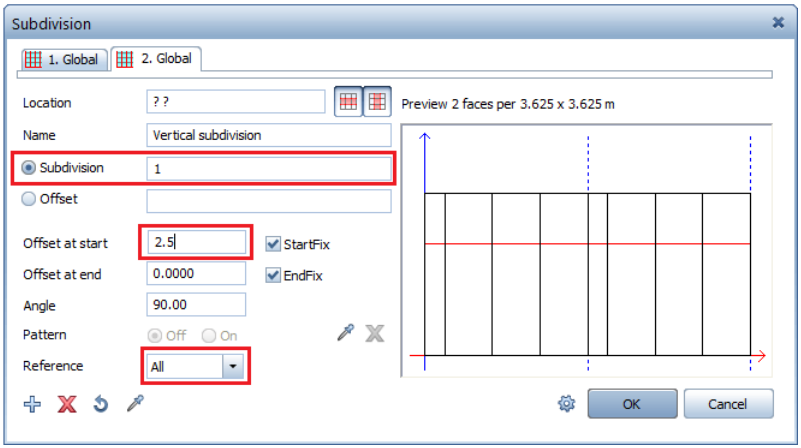
1 Click **Modify** on the **Facade** context toolbar.

2 *‹Facade› Select facade*
Click the facade you just created. The point you click is irrelevant.

3 Click **Subdivision settings** on the **Facade** context toolbar.

4 Click **Add subdivision** to open a new tab.

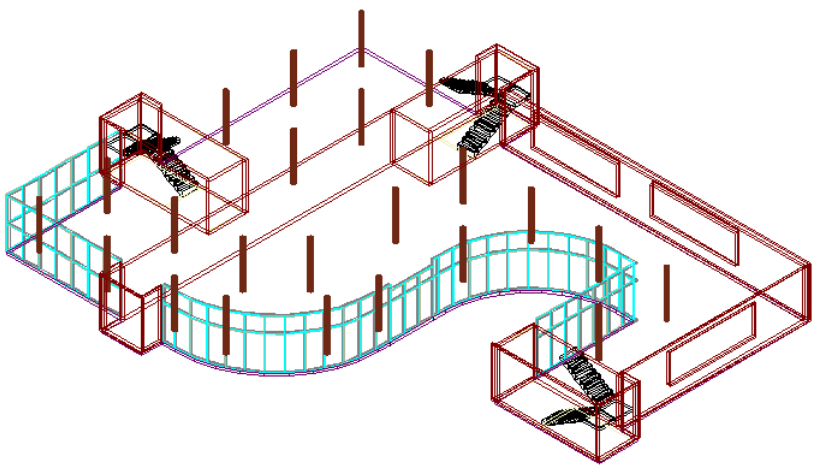
5 Define the following settings in the **Subdivision** dialog box:



6 Click **OK** to close the **Subdivision** dialog box.

7 Go to the **Facade** context toolbar and click **Apply**.

The facade has a new transom.



Alternative 2

Alternative 2 shows you how to enter the facade by means of the basic grid of the building (1.25 m x 1.25 m). You will learn how to create straight components and circular components. You will enter the points for the facade components in plan view.

Note: The next chapters build on alternative 1. If you want to try out alternative 2, use an empty drawing file.

Creating a facade with subdivisions

To create a facade with horizontal and vertical subdivisions

1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

2 Drawing file **100 GF** is still current. Open drawing file **99 Grid** in edit mode.

3 Switch to **Plan** view (viewport toolbar).

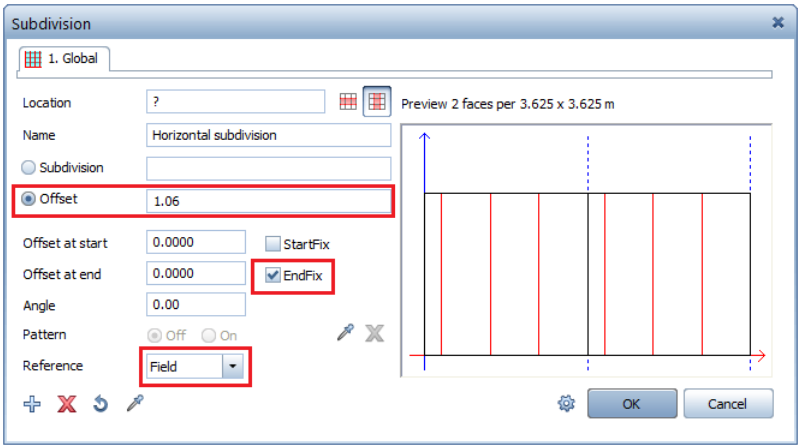
4 Click **Facade** (**Architecture** role – **Elements** task – **Opening Elements** task area).

5 Click **Subdivision settings** on the **Facade** context toolbar.

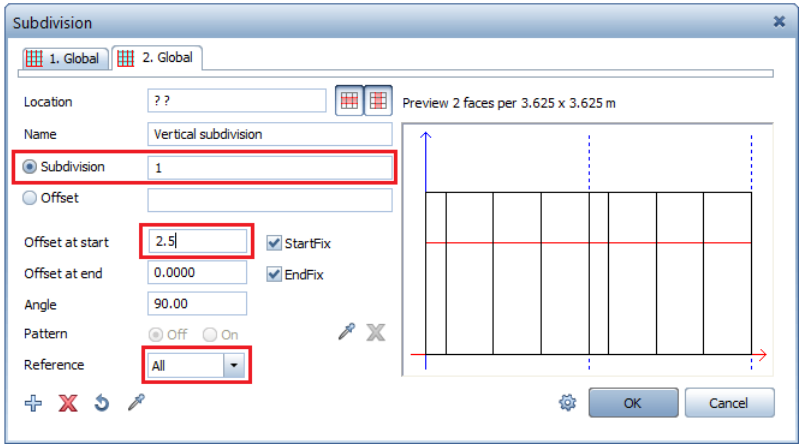
6 As you do not want to use any previous settings, click **Remove subdivision** in the **Subdivision** dialog box. Repeat this until you have deleted all tabs.

7 Click **Add subdivision** to open a new tab.

8 Make the following settings on the **1. Global** tab:



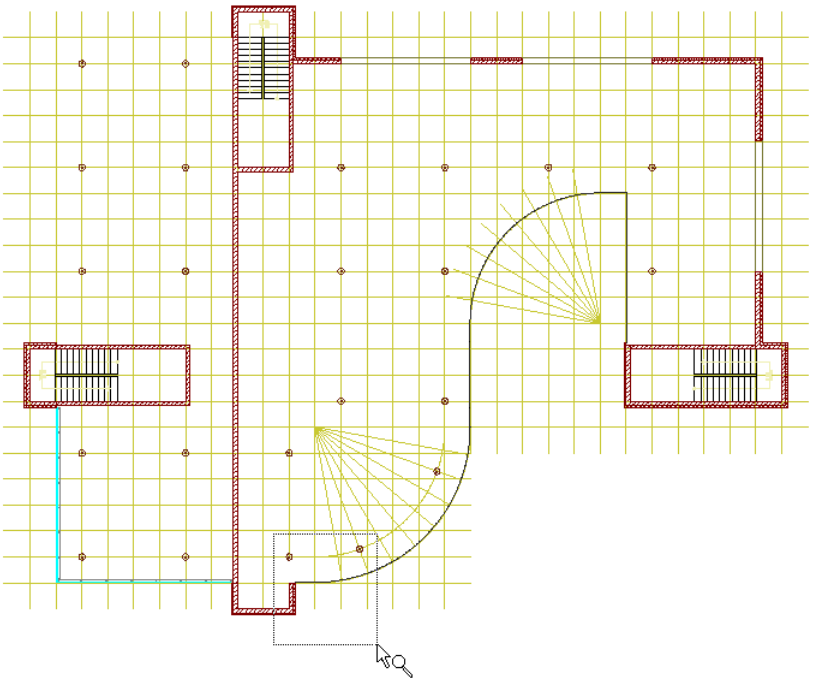
9 Click  to open a new tab. Make the following settings for the vertical subdivision of the facade:



The settings on tabs **1. Global** and **2. Global** apply to the entire facade.
Click **OK** to close the dialog box.

10 Draw the facade.

Zoom in on the following region:

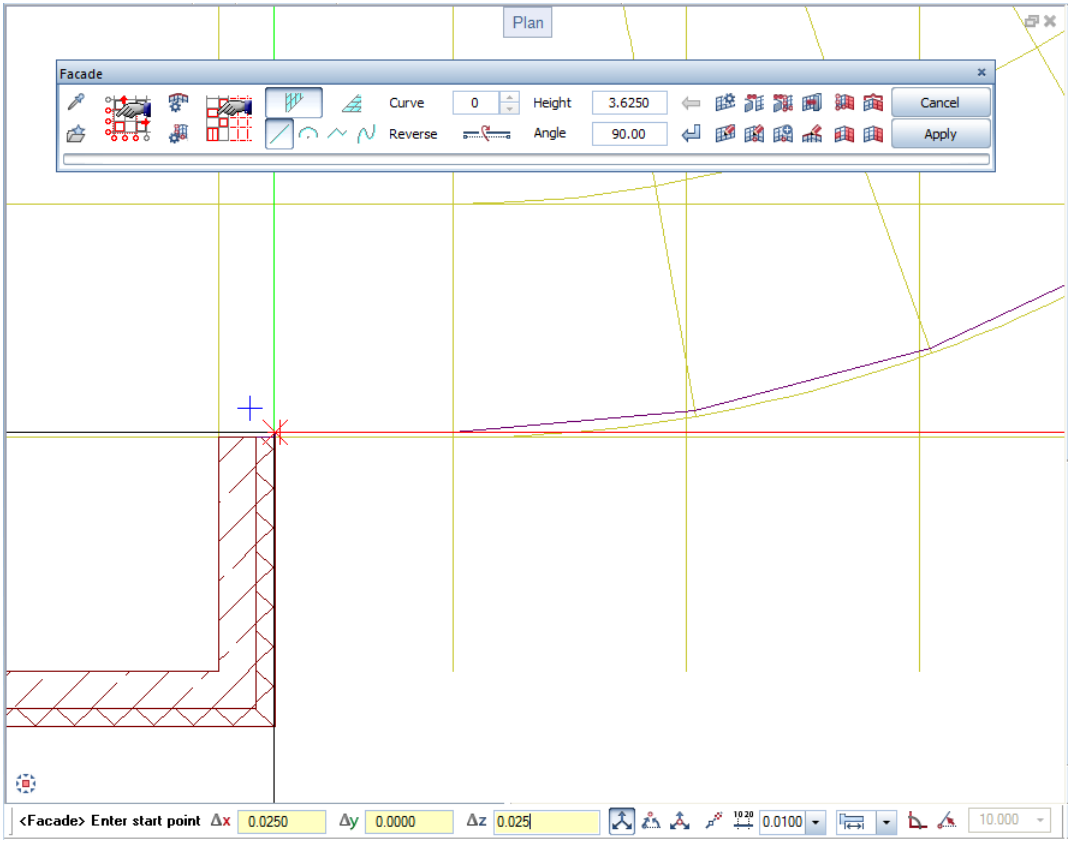


11 The **Facade** context toolbar is still open. Click **Facade wall** and **Straight component**.

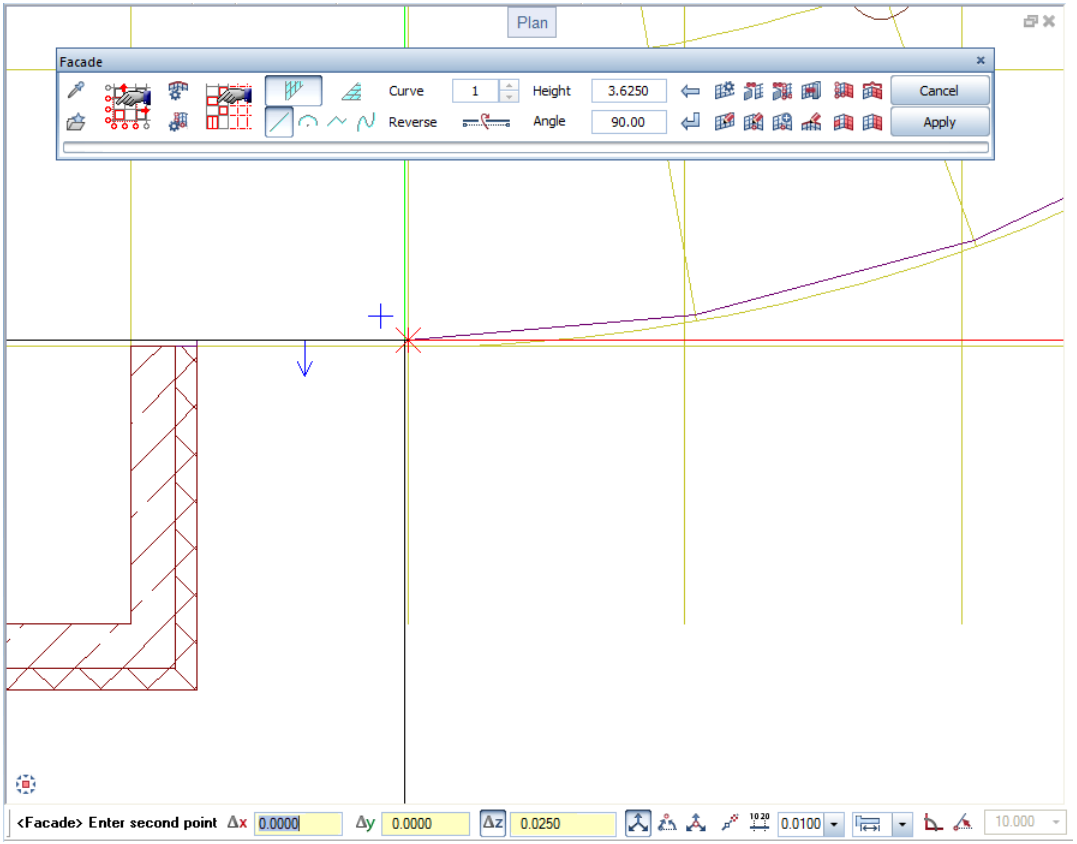
12 Enter **3.625** m for the height.

13 *<Facade> Enter start point*

Point to the point marked in the illustration and enter Δx dx = 0.025 m and
Δz dz = 0.025 m in the dialog line. Select ENTER to confirm.



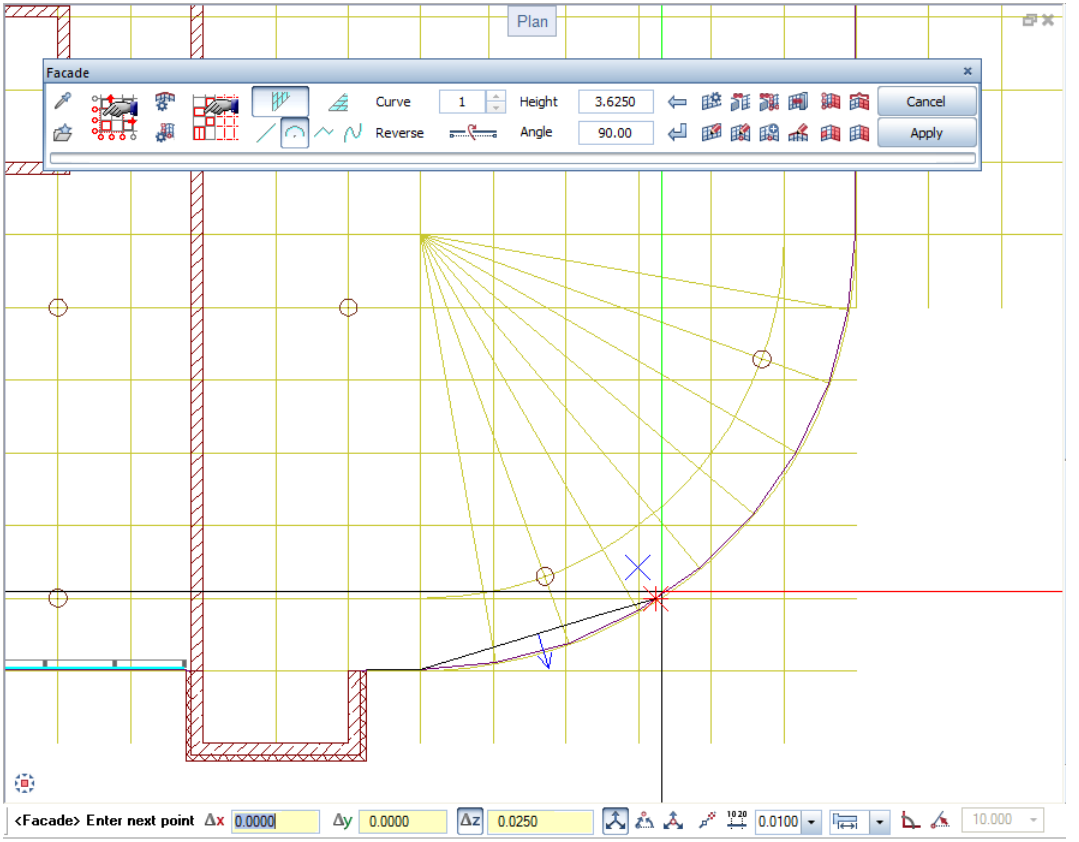
14 Point to the end of the straight line and enter Δz **dz** = **0.025** in the dialog line.
As this offset of Δz **dz** = **0.025** applies to the entire facade, you can define this value as a fixed value. To do this, click Δz in the dialog line.
Select ENTER to confirm.



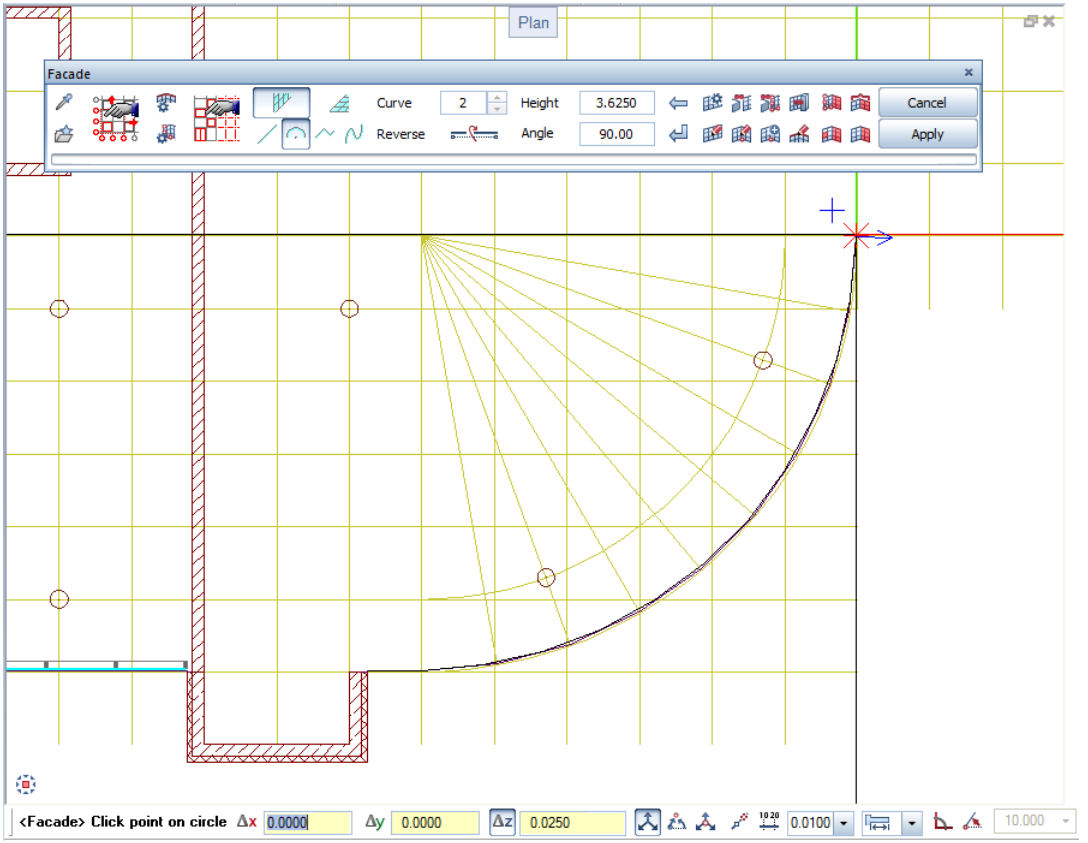
15 Finish entering the first straight component by clicking **Finish curve** on the **Facade** context toolbar.

16 The **Facade** context toolbar is still open. Click **Facade wall** and **Curved component**.

17 Point to any point of the arc. The offset for Δz dz = 0.025 remains fixed. Select ENTER to confirm.



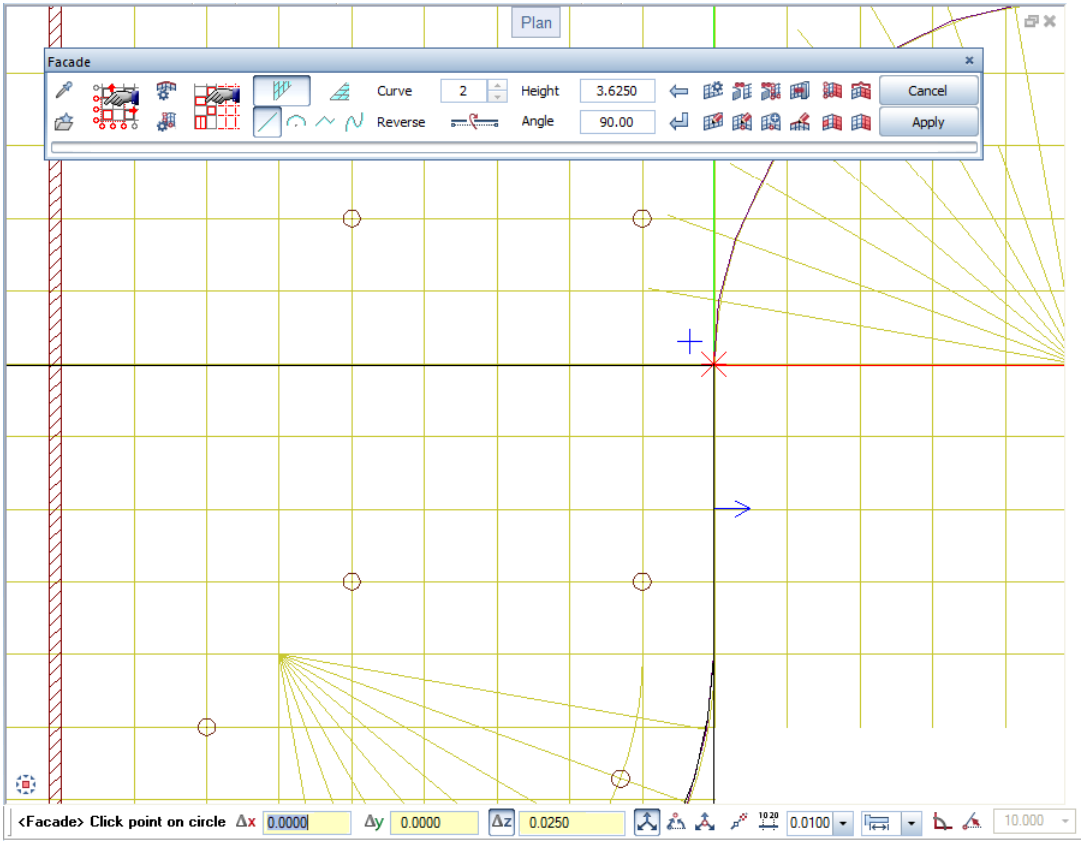
18 Point to the end of the arc. Here, too, the offset for Δz **dz** = **0.025** remains fixed. Select ENTER to confirm.



19 Finish entering the first curved component by clicking **Finish curve** on the **Facade** context toolbar.

20 The **Facade** context toolbar is still open. Click **Facade wall** and **Stralght component**.

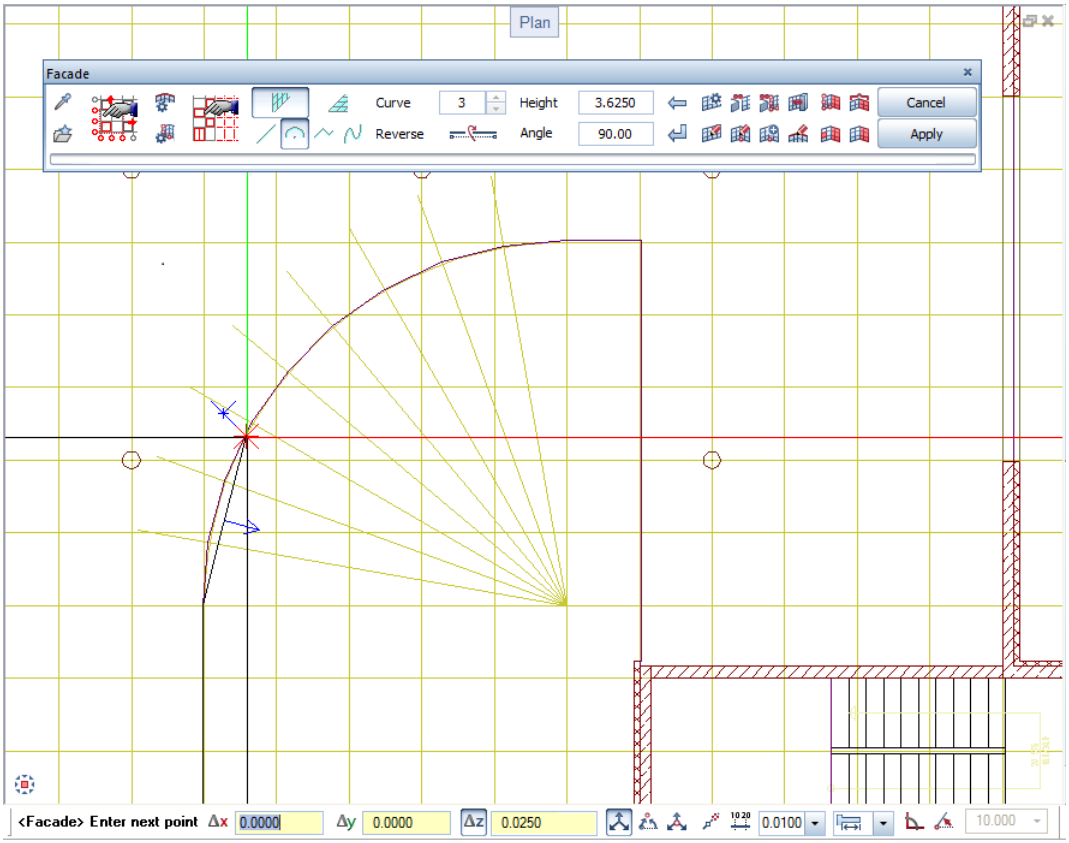
21 Point to the end of the straight line. **dz** remains fixed. Select ENTER to confirm.



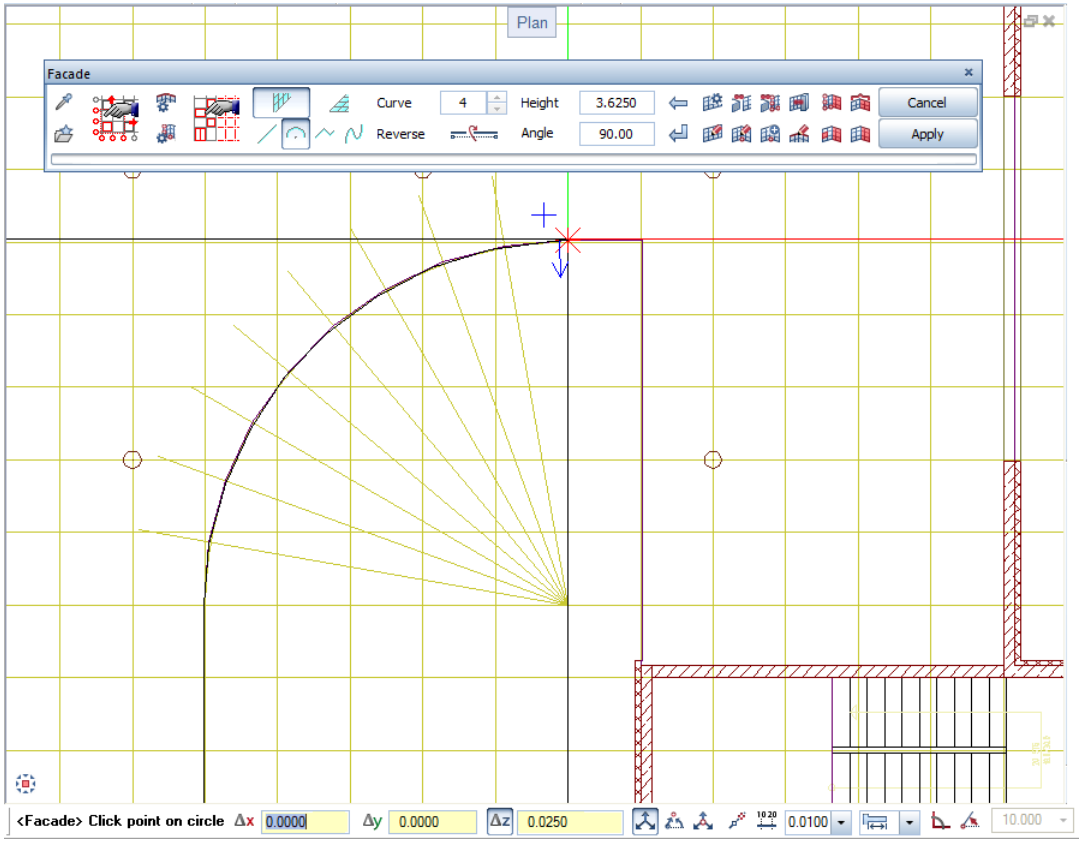
22 Finish entering the second straight component by clicking **Finish curve** on the **Facade** context toolbar.

23 The **Facade** context toolbar is still open. Click **Facade wall** and **Curved component**.

24 Point to any defined point of the arc. Select ENTER to confirm.



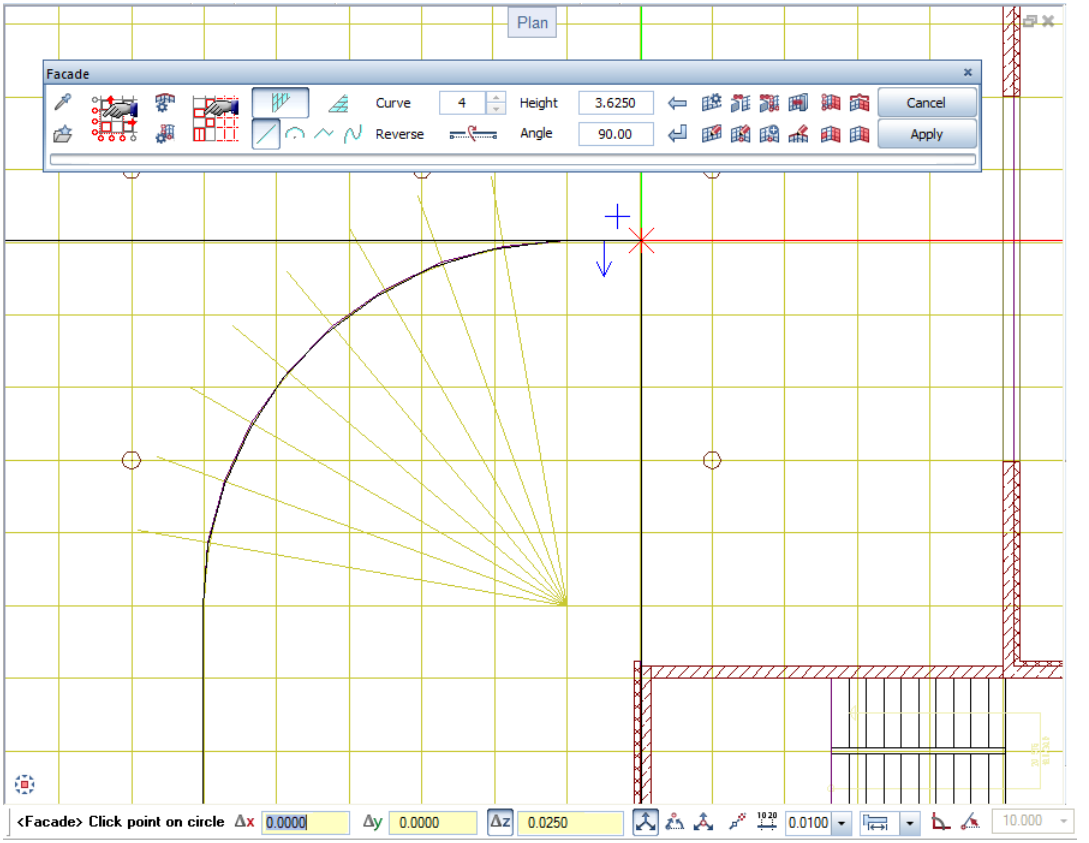
25 Point to the end of the arc. **dz** remains fixed. Select ENTER to confirm.



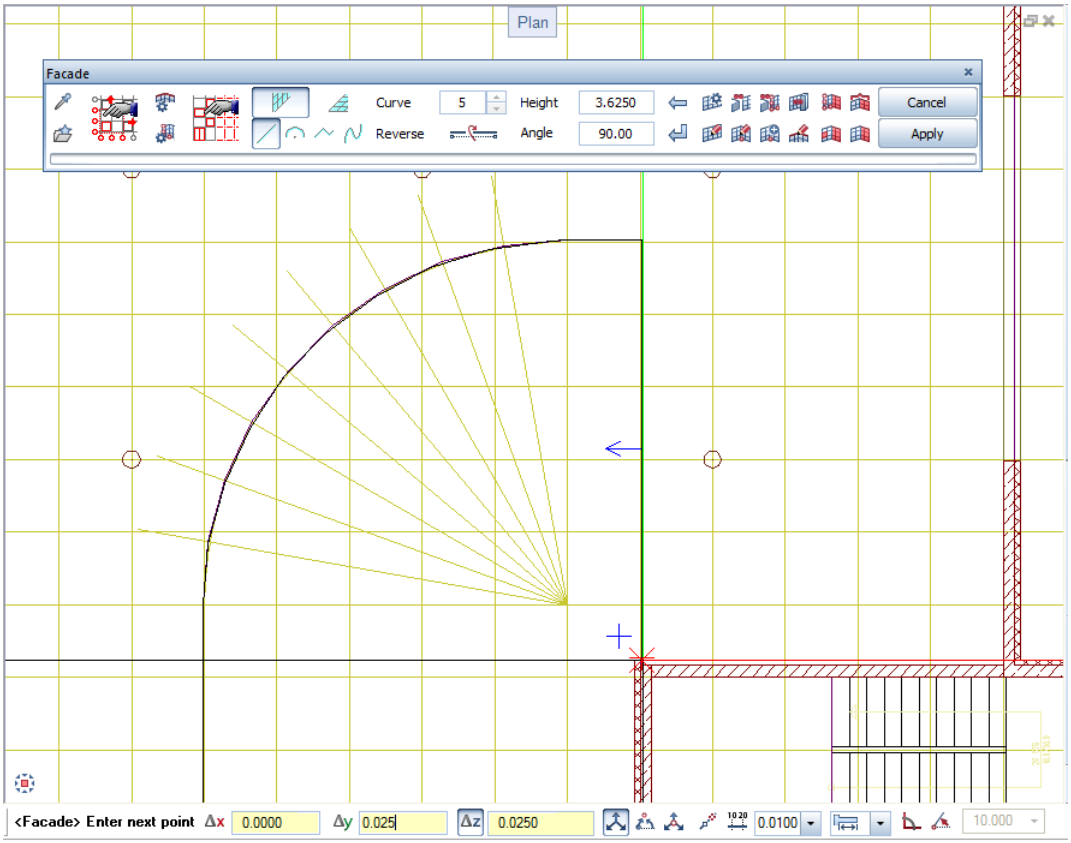
26 Finish entering the second curved component by clicking **Finish curve** on the **Facade** context toolbar.

27 The **Facade** context toolbar is still open. Click **Facade wall** and **Straight component**.

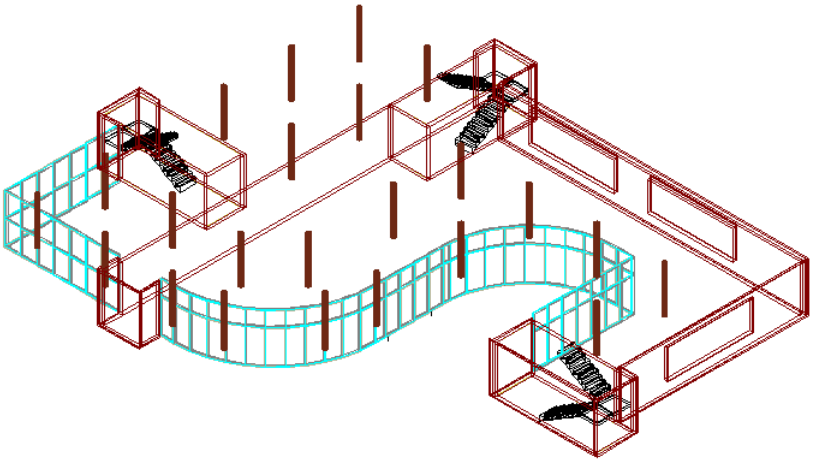
28 Point to the end of the straight line. Here, too, Δz dz remains fixed. Select ENTER to confirm.



29 Point to the last point of the new facade.
To correctly join the facade with the wall and floor, enter Δy dy = 0.025 m in the dialog line; Δz dz = 0.025.
Select ENTER to confirm.



30 Select ESC to finish entering the facade.



Adjusting the facade to the basic grid

Use **Modify** to adjust sections of the facade (curves) to the basic grid of the building.

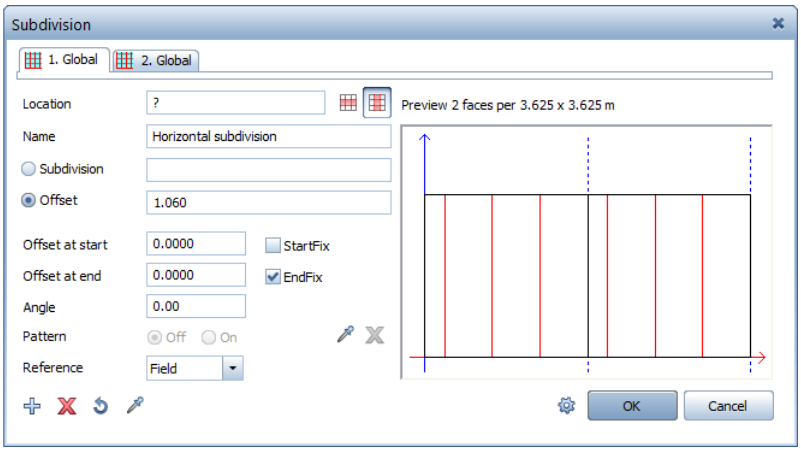
The basic grid is 1.25 m x 1.25 m.

To adjust the subdivision of the facade to the basic grid of the building

1 Click **Modify** on the **Facade** context toolbar.

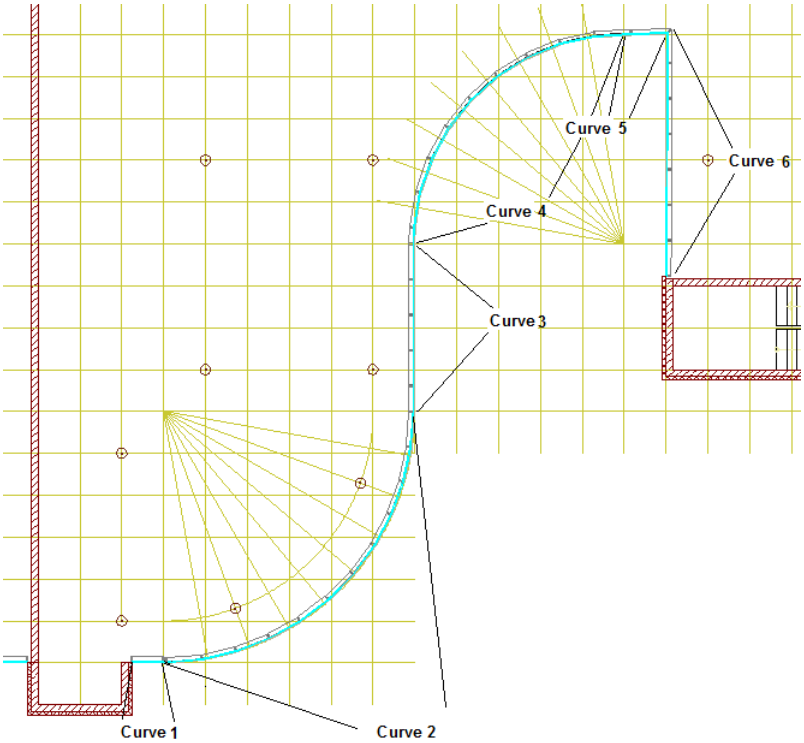
2 *<Facade> Select facade*
Click the facade you just created. The point you click is irrelevant.

3 Click **Subdivision settings** on the **Facade** context toolbar.

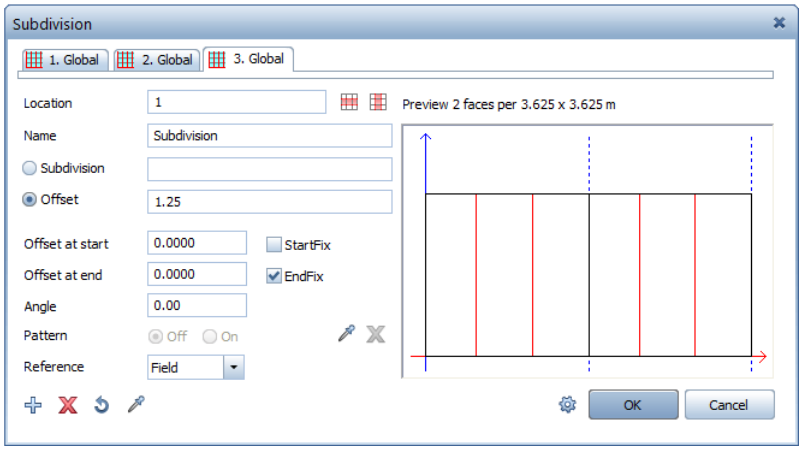


You will add six more tabs to the two existing tabs.

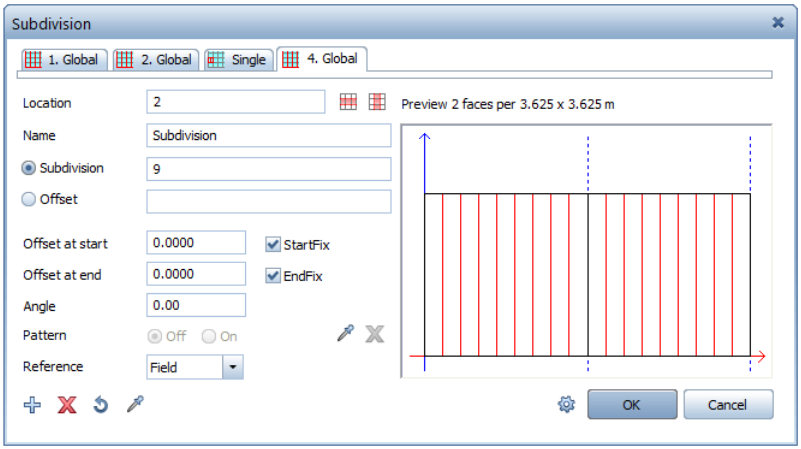
On these new tabs, you will define the settings for the individual sections (curves) of the facade.



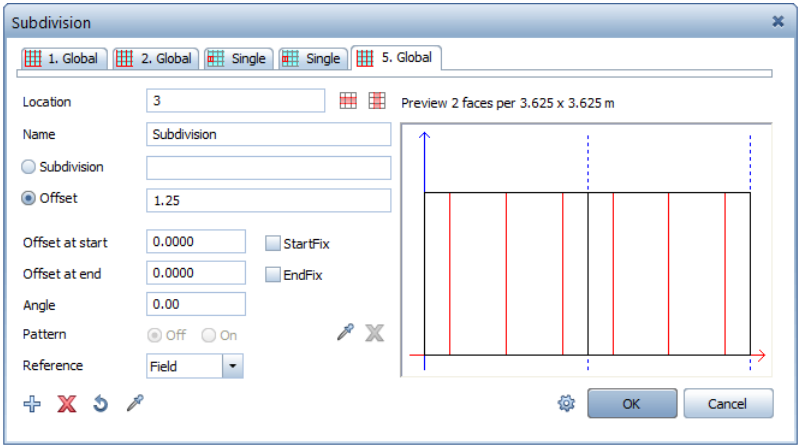
4 Click to open a new tab. Define the following settings for the first section of the facade (curve **1** = **location 1**), which consists of a straight line:



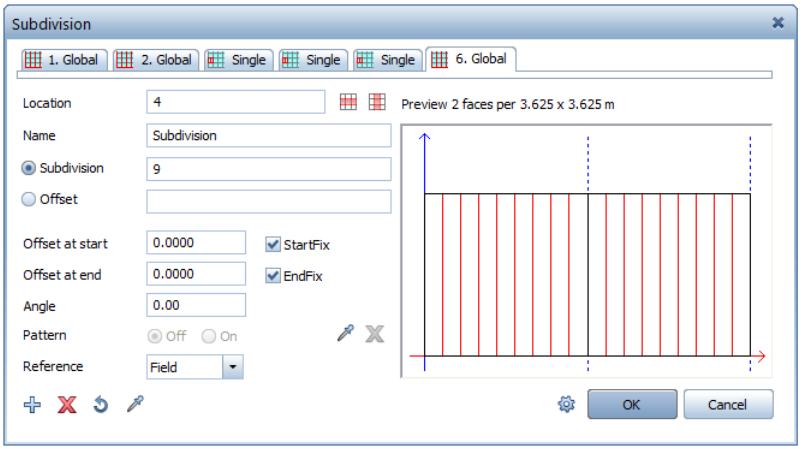
5 Click to open the fourth tab. The second curve (= **location 2**) of the facade is the first arc. Make the following settings:



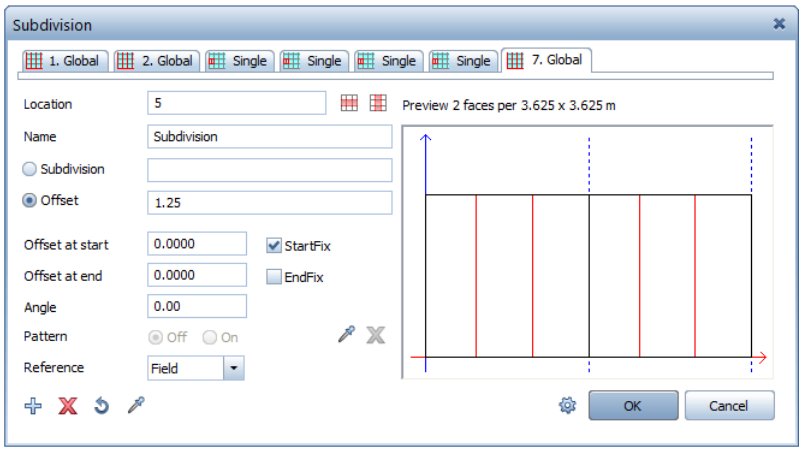
6 Click to open the fifth tab. These entries apply to the second straight line (curve 3 = **location 3**):



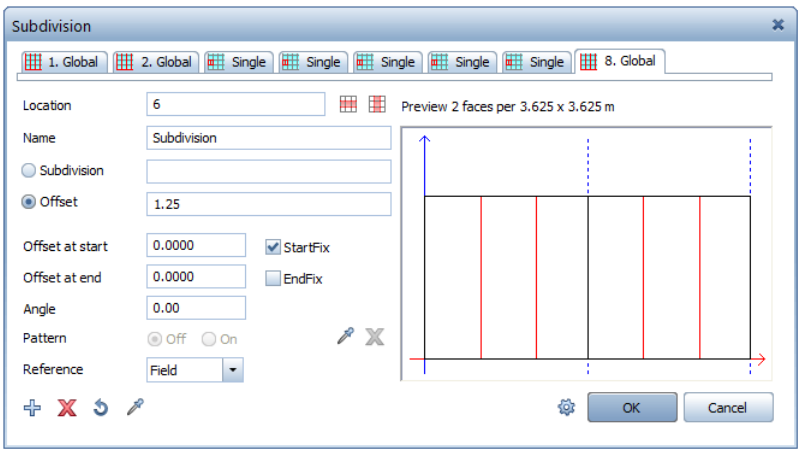
7 Click to open the sixth tab. These entries apply to the fourth curve (= **location 4**), which is the second arc:



8 Click to open the seventh tab for the fifth curve (= **location 5**). This is a straight line.



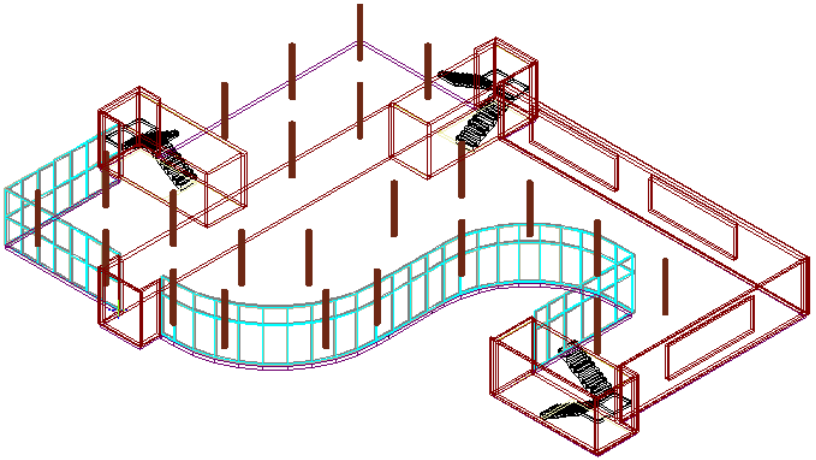
9 Click to open the eighth tab for the sixth (last) curve (= **location 6**), which is a straight line.



10 Click **OK** to close the **Subdivision** dialog box.

11 Go to the **Facade** context toolbar and click **Apply**.

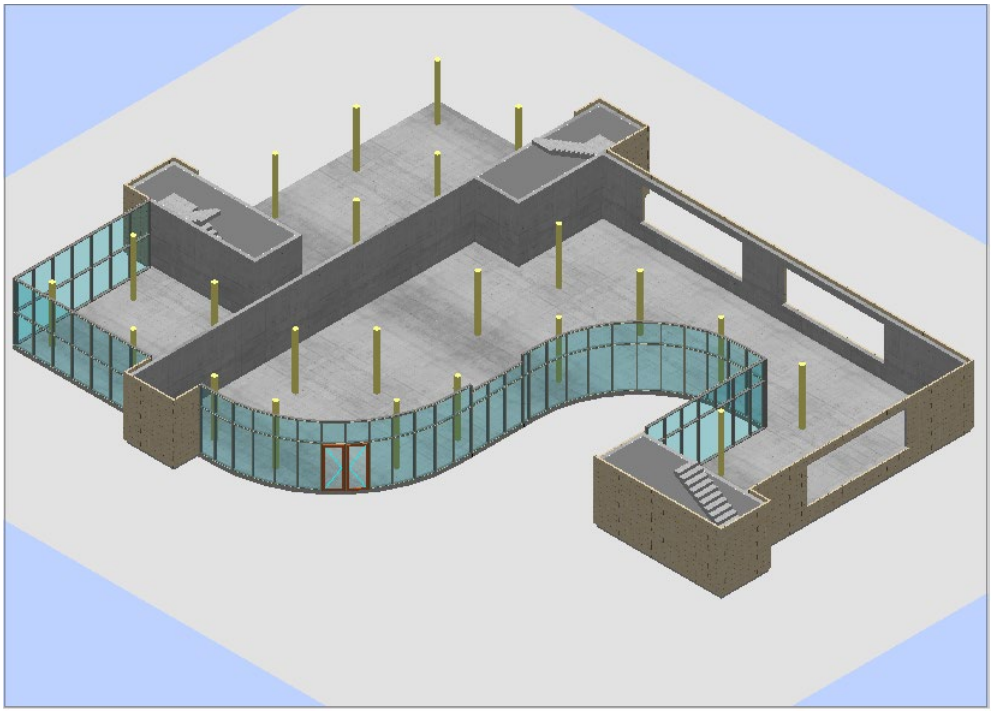
The facade has a new transom.



Finally, use the **Modify** tool to change the height of the facade section (curve 3) to 3.25 m. This is the section with the skyway on the upper floor.

Step 4: inserting opening elements

Objective



Combining fields

Go back to alternative 1 (on page 40) of the spline-shaped facade in drawing file **100 GF**.

To combine fields

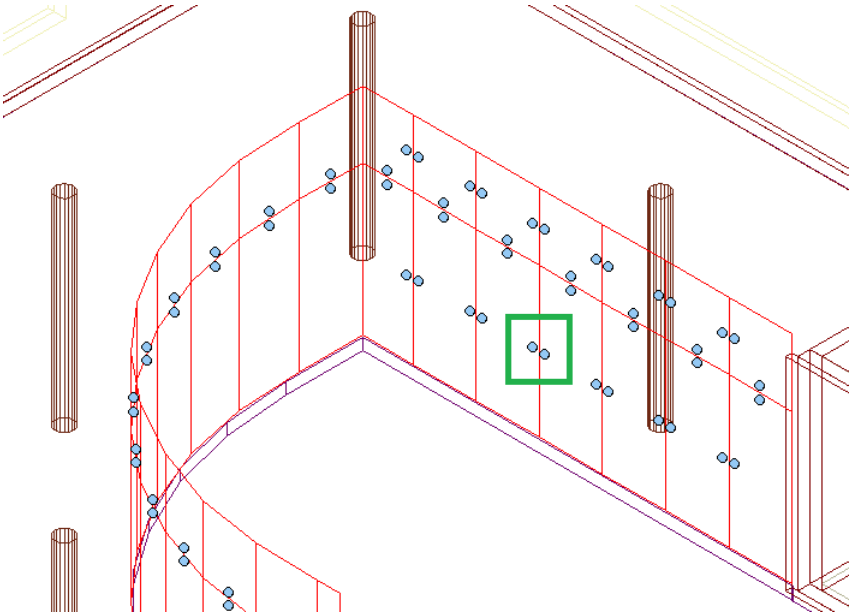
1 Zoom in on the area as shown in the illustration.

2 On the **Facade** context toolbar, click **Assign combining of fields**.

3 *<Facade> Select facade*
Click the facade. The point you click is irrelevant.

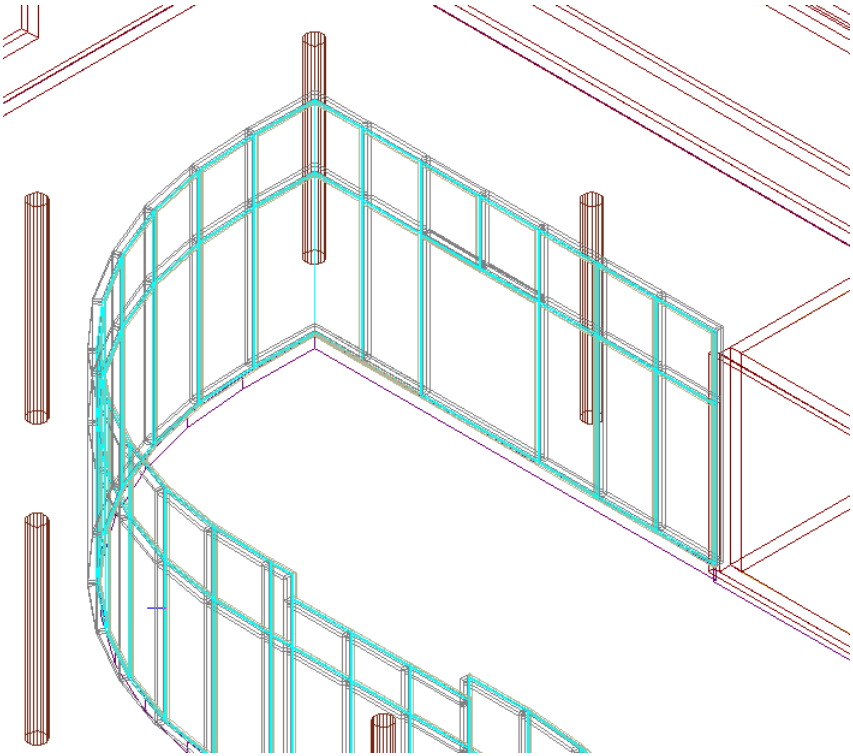
4 *<Facade> Click line of field*
The subdivisions of the facade get blue points.
These points indicate the fields that you can combine. You cannot combine subdivisions in spline-shaped components. This prevents the spline from losing its curved shape.

Click one of the points shown in the illustration.



5 Go to the **Facade** context toolbar and click **Apply**.

The facade has a large window.

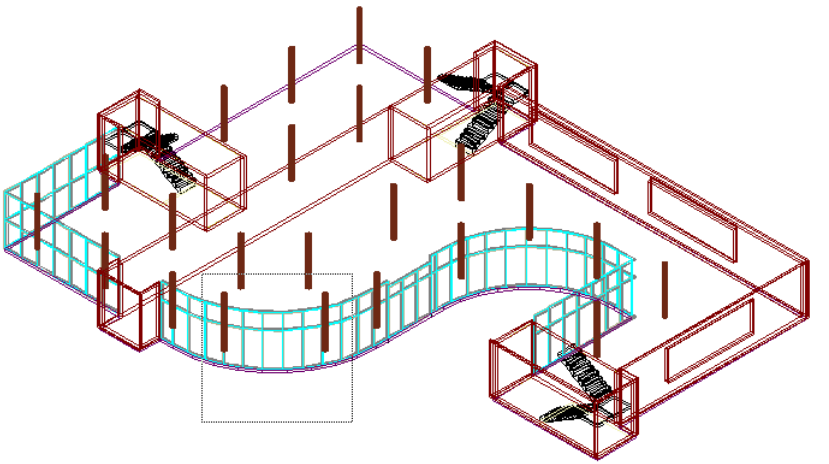


Assigning objects

The next step is to insert a front door into the spline-shaped facade.

To assign an object

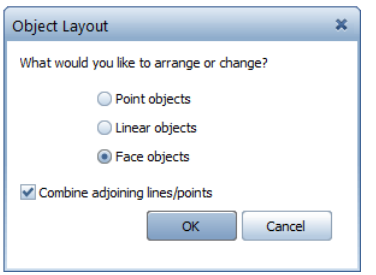
1 Zoom in on the area as shown in the illustration.



2 On the **Facade** context toolbar, click **Assign object**.

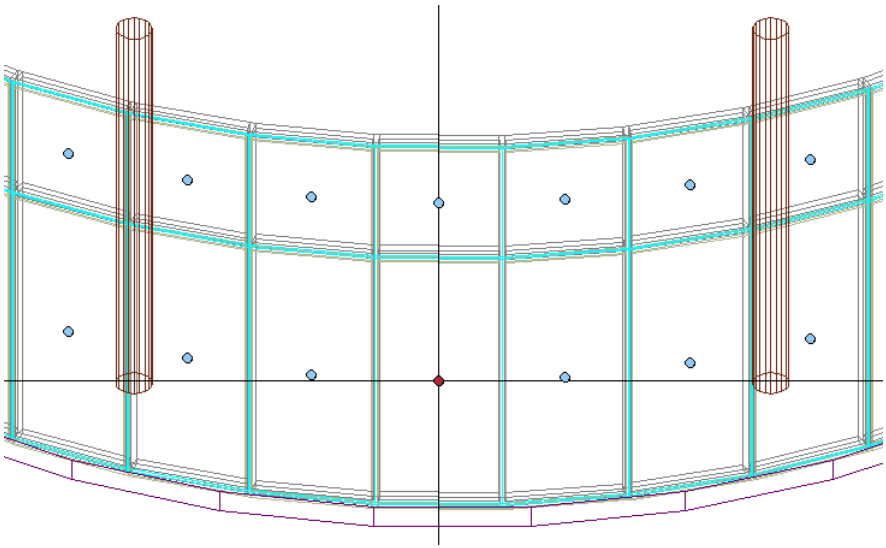
3 *‹Facade› Select facade*
Click the facade. The point you click is irrelevant.

4 Select **Face objects**.

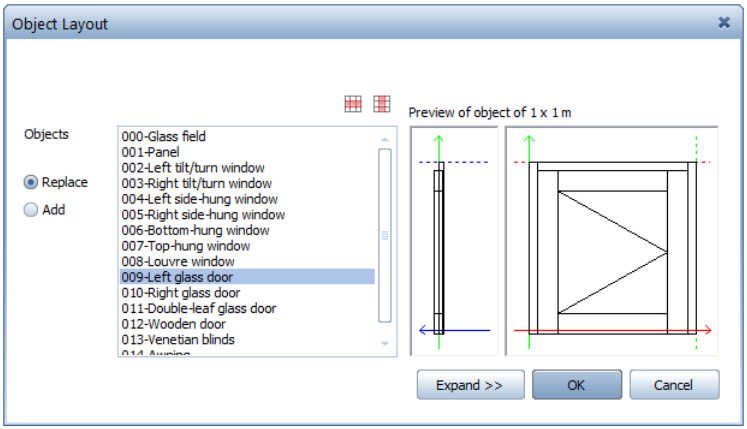


You can see blue points in the centers of the facade's subdivisions.

5 Click the point shown in the illustration.



6 The **Object Layout** dialog box opens. Select the **009 Left glass door** object and click **OK** to confirm.

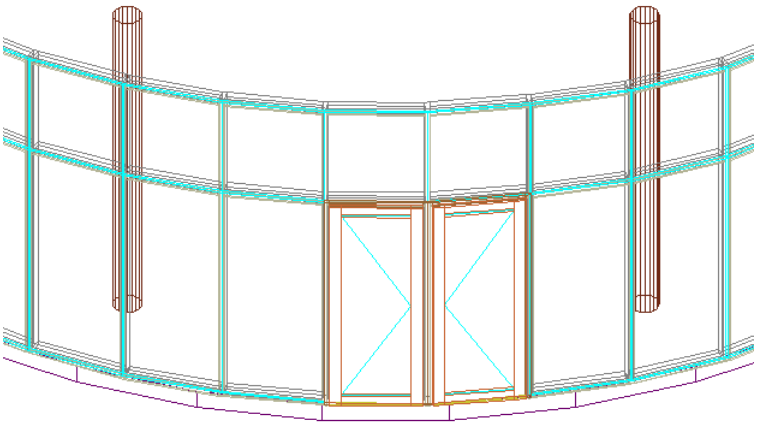


7 Go to the **Facade** context toolbar and click **Apply**.

The facade has a glass door that opens to the left.

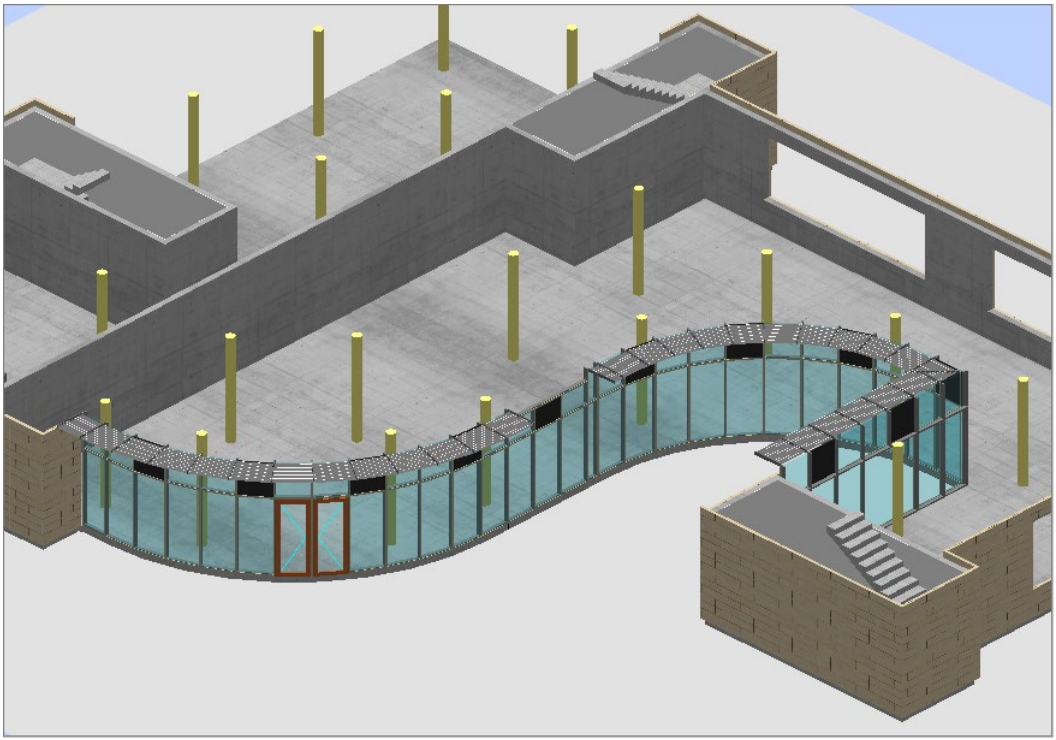
8 Insert another glass door into the facade element to the right of the glass door that you just created. You can do this yourself: Choose object 010 (right glass door). This door opens to the right.

The result should look like this:



Step 5: applying objects to the exterior

Objective



Placing surface objects regularly

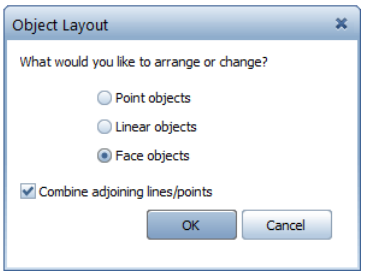
The next step is to replace every third glass field in the top row of the spline-shaped facade with a panel.

To assign face objects

1 On the **Facade** context toolbar, click **Assign object**.

2 *‹Facade› Select facade*
Click the facade. The point you click is irrelevant.

3 Select **Face objects**.



You can see blue points in the centers of the facade's subdivisions.

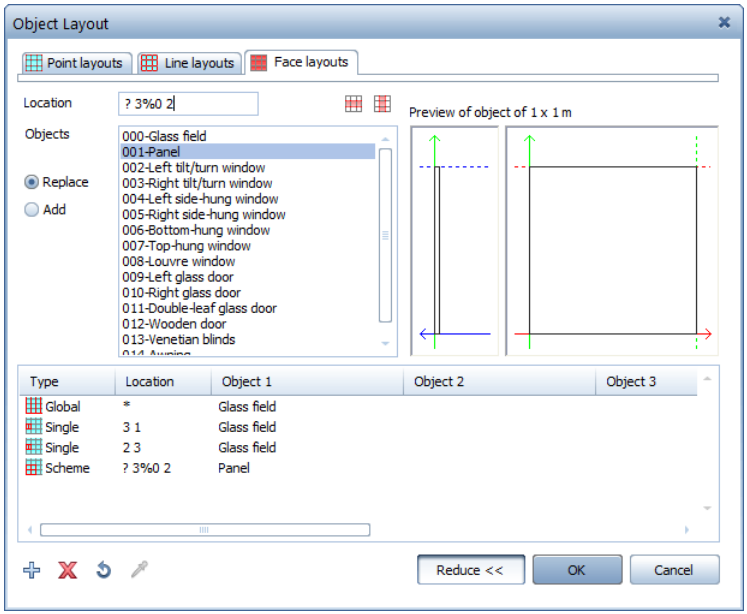
4 Click the blue point of an upper glass field.

5 Click **Replace** in the **Object Layout** dialog box.
Replace means that the selected object replaces the old object. **Add** means that you add an additional object to the existing object (for example, you add Venetian blinds to a window). Here, you can select multiple entries.

6 Select **001 Panel**.

7 Click **Expand >>**.

8 Enter the following in the **Location** box:
?space3%0space2



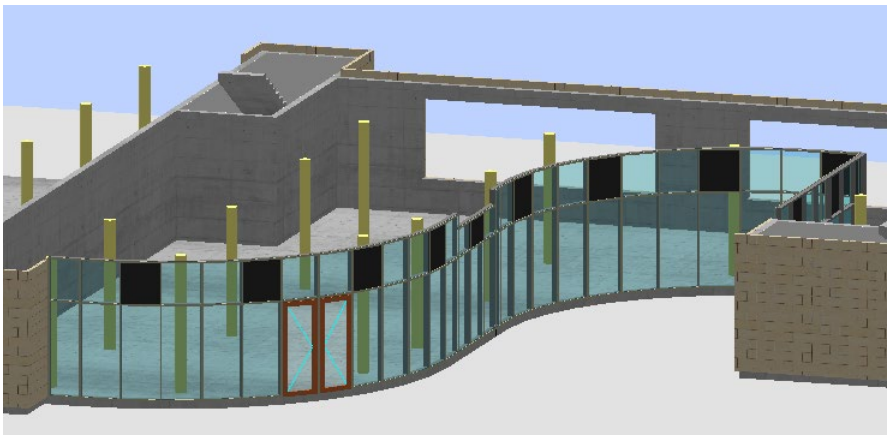
Each geometric element of the facade (point, line, face) has a location that is defined by the subdivision.
The location consists of several numbers separated by spaces; this is similar to coordinates.
In this example, you can interpret the location as follows:
? means all sections of the facade (curves)
3%0 means every third field (rest = 0)
2 means in the upper subdivision of the facade
You will learn how to graphically display locations in "Excursus: face coordinates (on page 83)".

Note: This definition repeats for each curve of the facade.

9 Click **OK** to confirm the **Object Layout** dialog box.

10 Go to the **Facade** context toolbar and click **Apply**.

The facade has panels.



Note: The settings you define with **Assign object** apply even when you select a different **Facade favorite**. Therefore, reset these settings when you have finished assigning panels to the facade. Otherwise, these settings will affect other facades, such as the one described in Step 7: placements (on page 101).

Excursus: face coordinates

When you created the spline-shaped facade, you switched between straight components and spline-based components. Allplan consecutively numbered these facade sections. You can display the numbers of the facade elements.

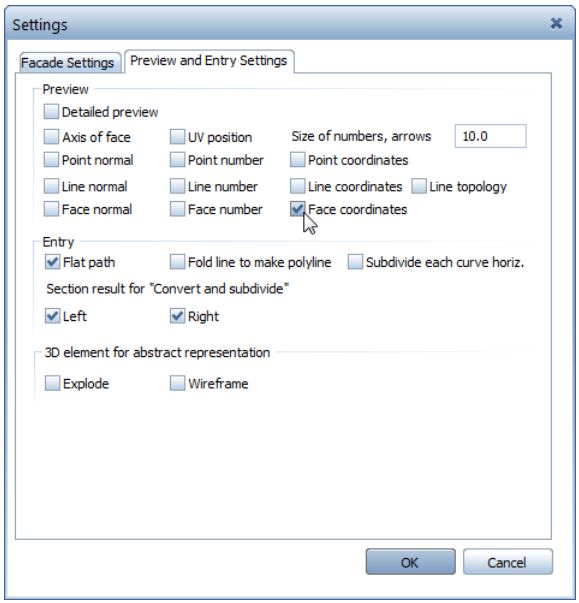
To display face coordinates

1 Click **Modify** on the **Facade** context toolbar.

2 *<Facade> Select facade*
Click the facade. The point you click is irrelevant.

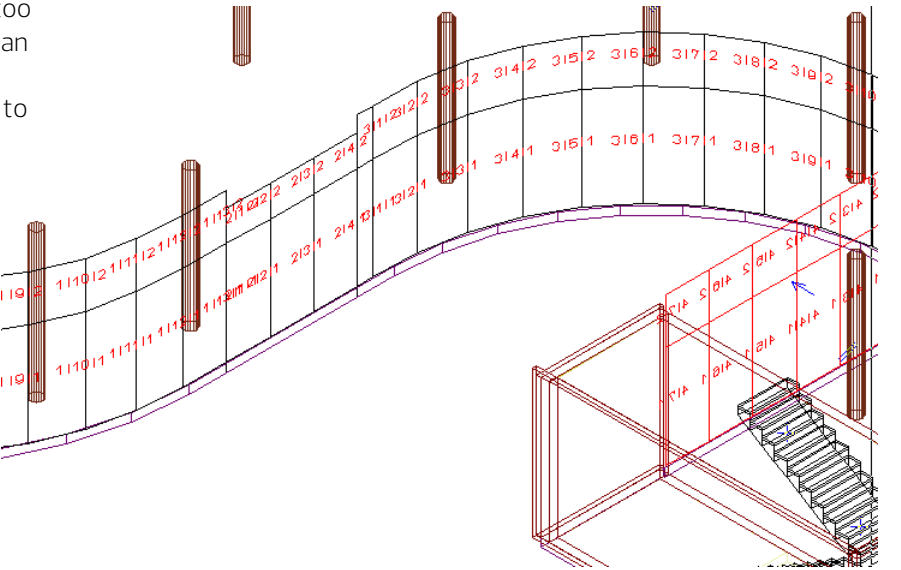
3 Click **Settings** on the **Facade** context toolbar.

4 Open the **Preview and Entry Settings** tab and select the **Face coordinates** option.



5 Click **OK** to confirm.

Tip: If the numbers are too large or too small, you can change the size in the **Settings** dialog box. Go to the **Preview** area and change the **size of numbers, arrows**.



You can find detailed information in the Allplan 2021 Help; see "Facade" – "Dialog boxes" – "Object layout dialog box".

6 Finally, click **Cancel** on the **Facade** context toolbar.

Placing linear objects regularly

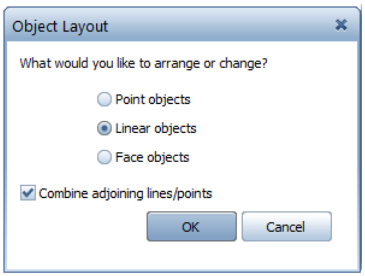
Complete the spline-shaped facade by adding sun blinds to its upper part.

To assign linear objects

1 On the **Facade** context toolbar, click **Assign object**.

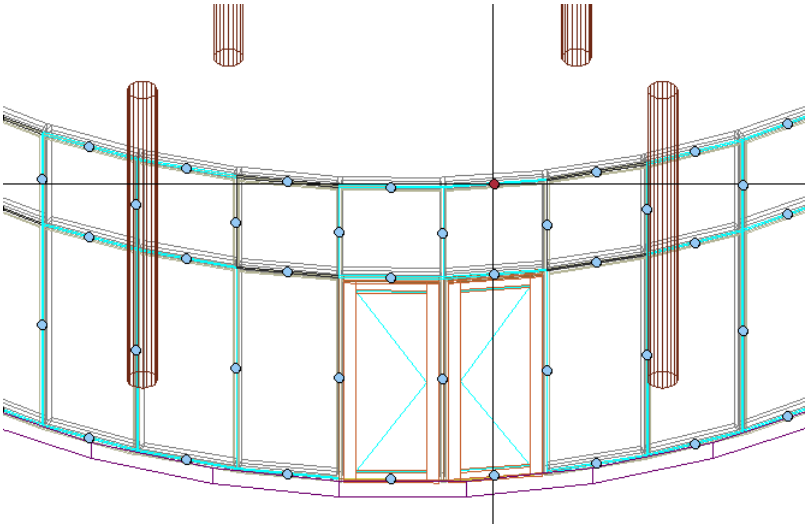
2 *<Facade> Select facade*
Click the facade. The point you click is irrelevant.

3 Select **Linear objects**.

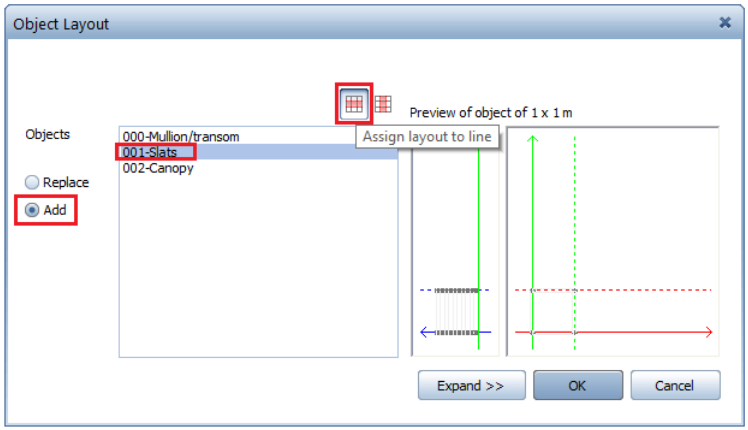


The edges of the facade elements get blue points.

4 Click the upper point of the glass field in the top row of the facade (see illustration).

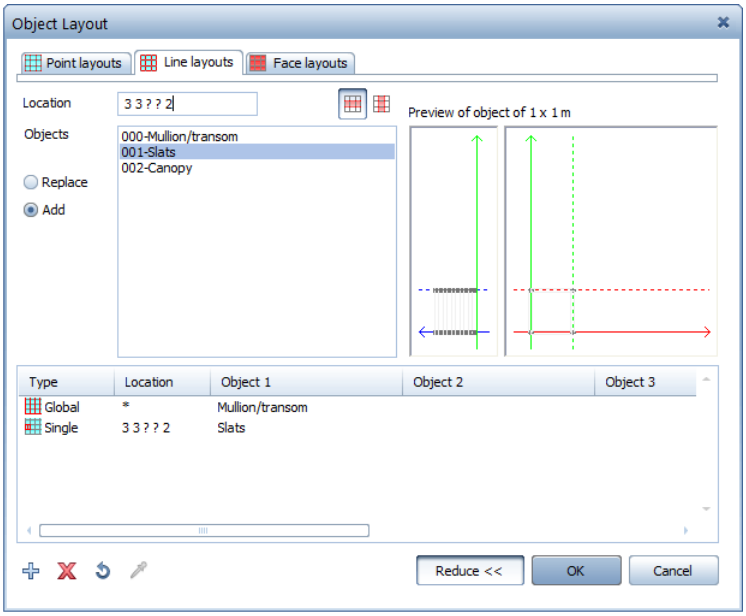


5 The **Object Layout** dialog box opens. Select **Add** and then **001 Slats**.
To assign the selected object to all the upper glass elements of the facade, select **Assign layout to line**.



6 Click **Expand >>**.

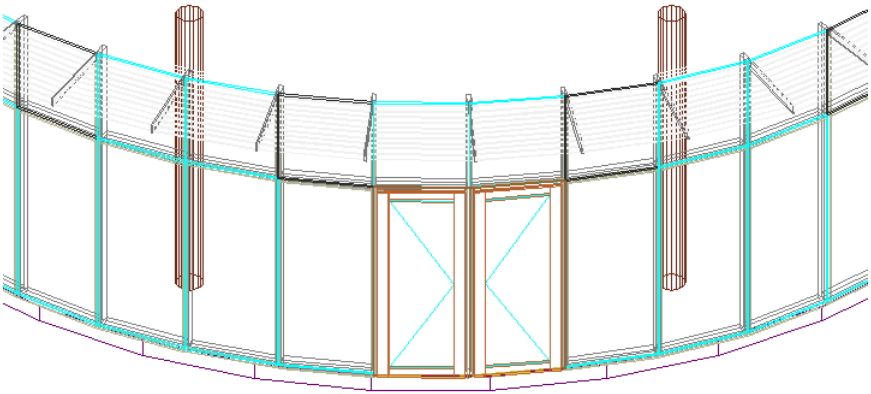
7 You want to assign sun blinds to the whole upper part of the facade.
To achieve this, enter the following in the **Location** box:
3space3space?space?space2



8 Click **OK** to confirm.

9 Go to the **Facade** context toolbar and click **Apply**.

You have assigned sun blinds to all the upper glass elements of the facade.

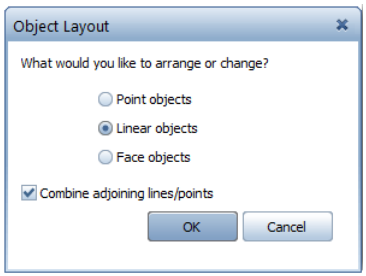


If you want, you can also add the linear object (**slats**) separately to each curve. Do the following:

1 On the **Facade** context toolbar, click **Assign object**.

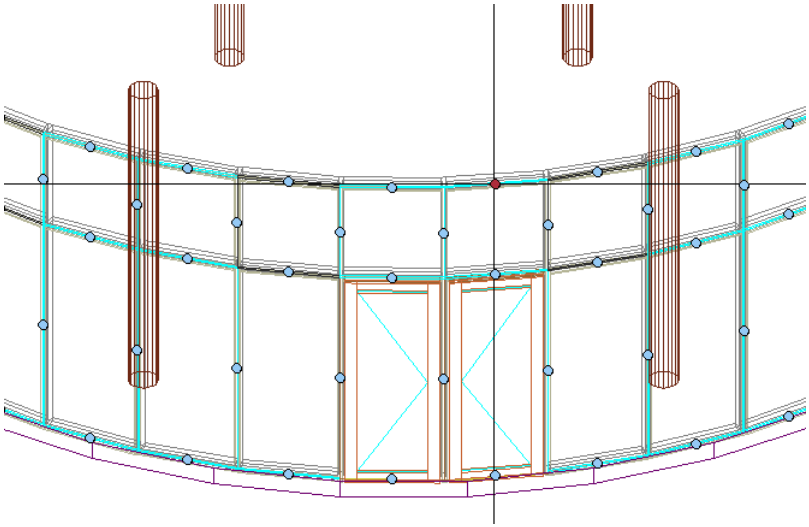
2 *‹Facade› Select facade*
Click the facade. The point you click is irrelevant.

3 Select **Linear objects**.

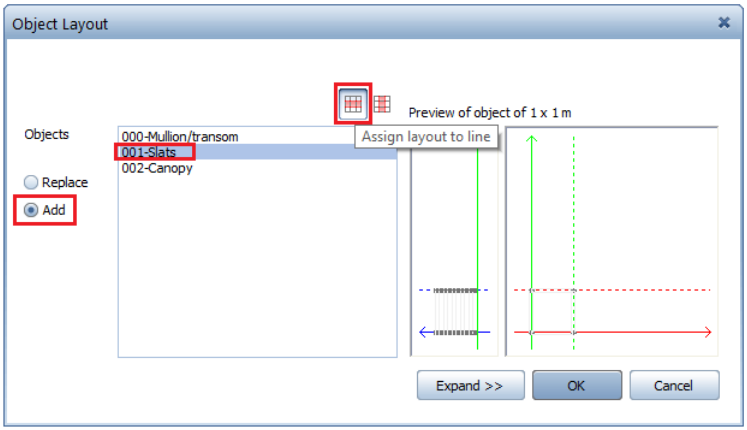


The edges of the facade elements get blue points.

4 Click the upper point of a glass field in the top row of the facade, for example in curve 1 (spline-shaped part).



5 The **Object Layout** dialog box opens. Select **Add** and then **001 Slats**.
To assign the selected object to all the upper glass elements of the facade, select **Assign layout to line**.



6 Click **OK** to confirm.

Allplan has applied blinds to the upper glass elements in the area of the first curve. They appear in the selection color.

7 Click an upper point of a glass field in the next section of the facade. Skip the region under the skyway (shorter glass elements).

8 Repeat steps 5 and 6.

As a result, the upper glass elements of the next facade section have blinds, which appear in the selection color.

9 Add blinds to all the other sections of the facade except the region under the skyway.

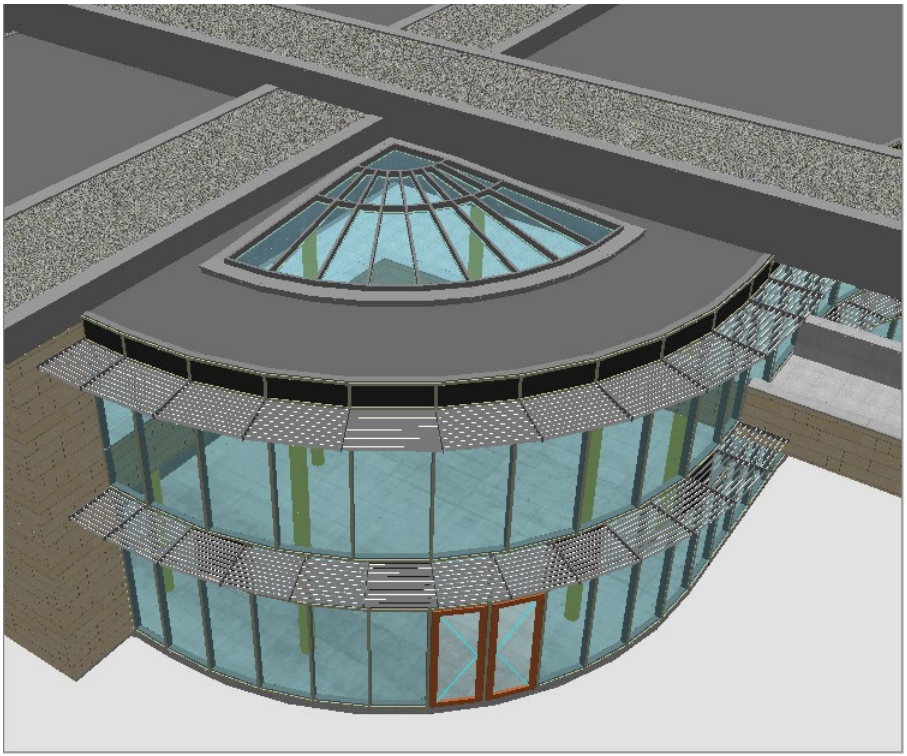
10 Finally, click **Apply** on the **Facade** context toolbar.

You have assigned sun blinds to all the upper glass elements of the facade.

You can see the result at the beginning of "Step 5: applying objects to the exterior (on page 79)".

Step 6: converting the 3D geometry into a facade

Objective



Creating a sloping glass surface as a skylight

You have the following options to work with 3D objects:

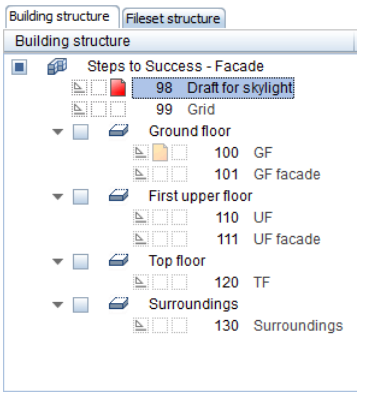
- You can convert the 3D geometry into a facade.
- You can configure and subdivide the 3D geometry.
- You can convert a facade into 3D geometry.

Note: General 3D elements with curves cannot be imported. Convert these elements into polygonal 3D solids before you import them. To do this, use **Convert Elements – General 3D element to 3D solid, 3D surface**.

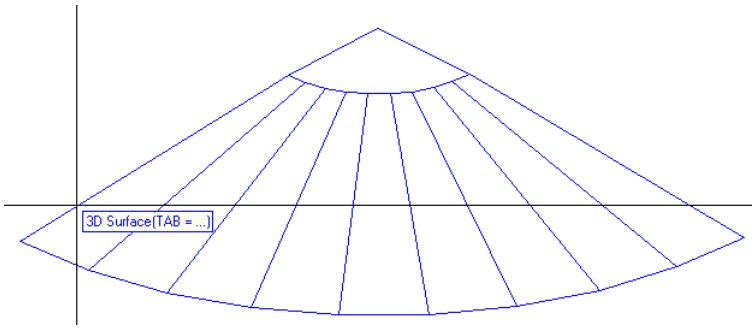
To convert a 3D geometry into a facade

1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

2 Make drawing file **98 Draft for skylight** current.
Close all the other drawing files.



This draft is a 3D surface.



3 Click **Facade**.

4 Click **Retrieve facade favorites** on the **Facade** context toolbar.

5 Select **001 Mullion/transom facade 50mmm** and click **OK** to confirm.

6 Click **Subdivision settings** on the **Facade** context toolbar.

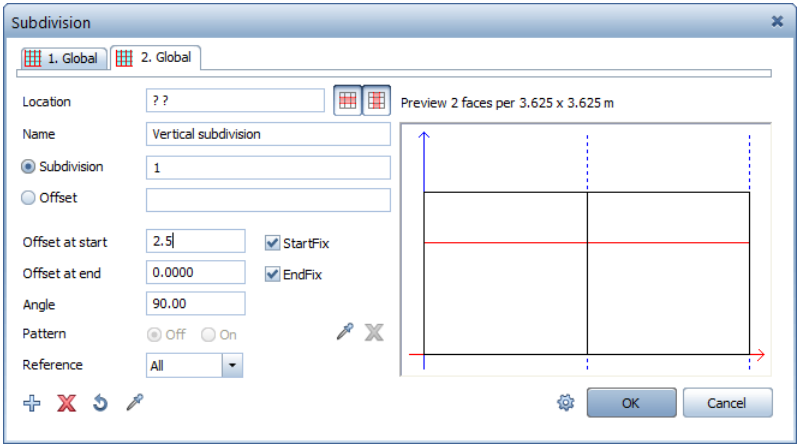
7 As you do not want to use any of the previous settings, click **Remove subdivision** in the **Subdivision** dialog box. Repeat this until you have deleted all tabs.

8 Click **Add subdivision** to open a new tab.

9 Tab **1. Global** opens. Do not make any settings for **Horizontal subdivision**.

10 Click **Add subdivision** again to open another tab.

11 Tab **2. Global** opens. Make the following settings for **Vertical subdivision**:

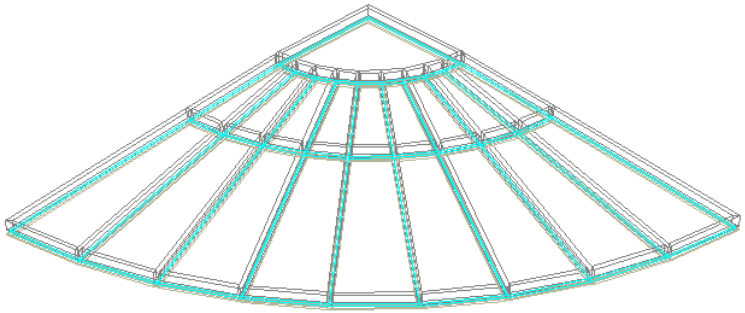


12 Click **OK** to close the **Subdivision** dialog box.

13 Click **Convert 3D object to facade** on the **Facade** context toolbar.

14 *<Facade> Select 3D object*
Click the 3D surface.

15 Go to the **Facade** context toolbar and click **Apply**.



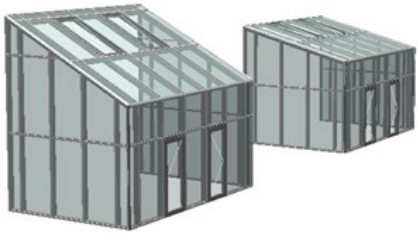
Allplan applies the selected facade favorite to the 3D object.

16 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

17 Open the drawing files of the **ground floor**, **first upper floor**, and **top floor** structural levels in edit mode.

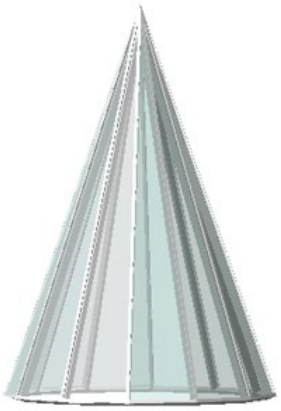
18 Select F4 to see the project in animation.

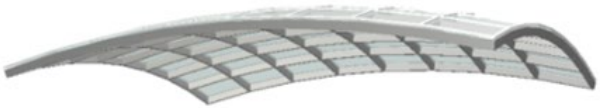
The great advantage of the **Convert 3D object to facade** tool is that you can edit 3D objects quickly and easily. Converting a 3D object into a facade only takes a few seconds. Thus, you can quickly visualize a winter garden, for example.



If you want, you can display any facade as a sloping facade at any angle and with any favorite type.

By means of the **Convert 3D object to facade** tool, you can convert 3D objects of any imaginable shape into facades.





Excursus: converting a facade into 3D geometry

Imagine the following situation: You have converted a 3D object into a facade as described.

Now, you want to change the geometry of the object by using the **Stretch Entities** tool (**Change** task area).

You cannot modify the facade directly. Instead, you must convert the facade back into a 3D object, edit the 3D object with Allplan's modification tools, and then convert the edited 3D object into a facade again.

How to do this

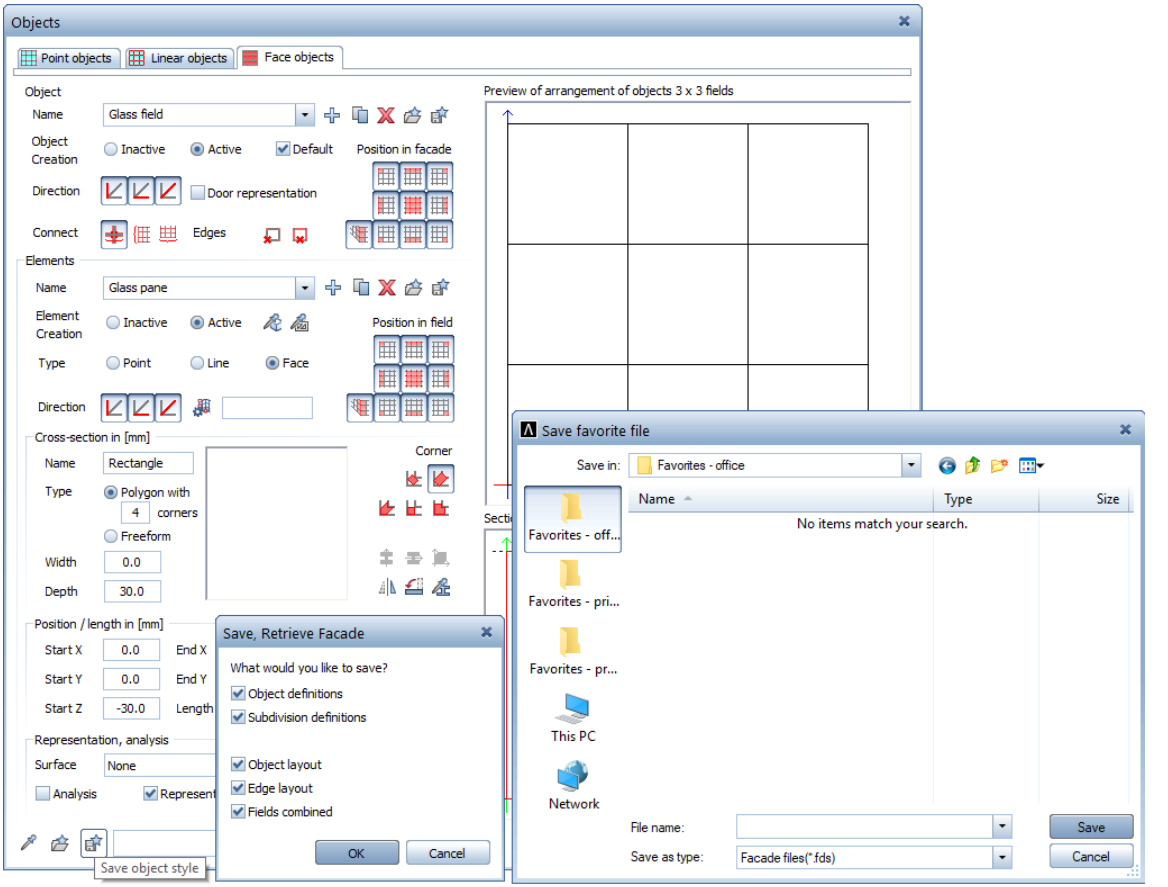
To save the properties of the facade

1 Click  **Modify** on the **Facade** context toolbar.

2 *<Facade> Select facade*
Click the facade. The point you click is irrelevant.

3 Click  **Object definitions** on the **Facade** context toolbar.

4 The **Objects** dialog box opens. Click **Save object style** and save all the properties of the facade in a file. Enter `Export.fds` for the file name, for example.



5 Click **Cancel** in the **Objects** dialog box.

6 On the **Facade** context toolbar, click **Cancel**.

To convert the facade into a 3D object

1 On the **Facade** context toolbar, click **Convert facade to 3D object**.

2 *<Facade> Select facade*
Click the facade. The point you click is irrelevant.

3 Go to the **Facade** context toolbar and click **Apply**.

This converts the facade into a 3D object.

To edit the 3D object with modification tools

- Change the 3D object to suit your needs. You can use all modification tools in Allplan (**Stretch Entities**, for example).

To convert the 3D object back into a facade

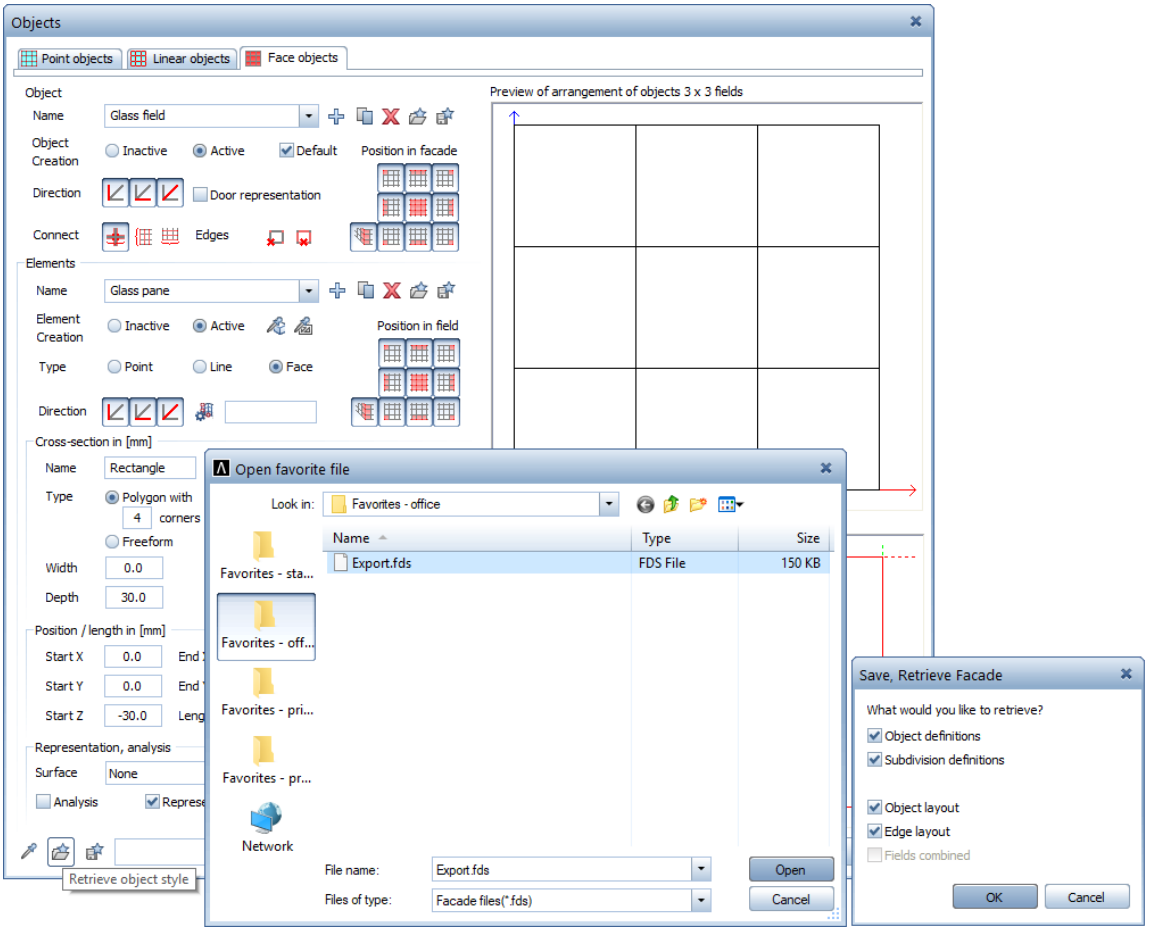
1 Click **Facade**.

2 Click **Convert 3D object to facade** on the **Facade** context toolbar.

3 *<Facade> Select 3D object*
Click the modified 3D object. The point you click is irrelevant.

4 Click **Object definitions** on the **Facade** context toolbar.

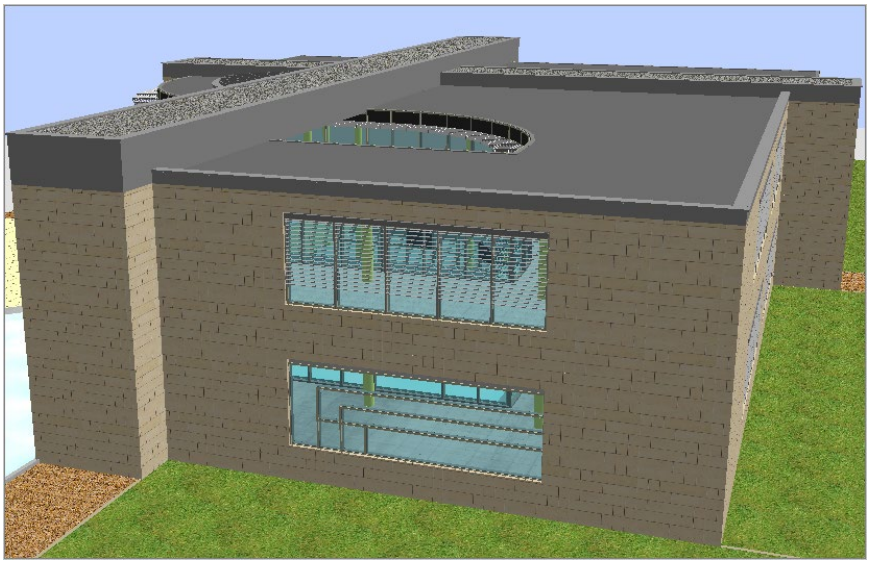
5 The **Objects** dialog box opens. Click **Retrieve object style** and load all the properties of the facade you saved to the `Export.fds` file.



6 Go to the **Facade** context toolbar and click **Apply**.

Step 7: placements

Objective

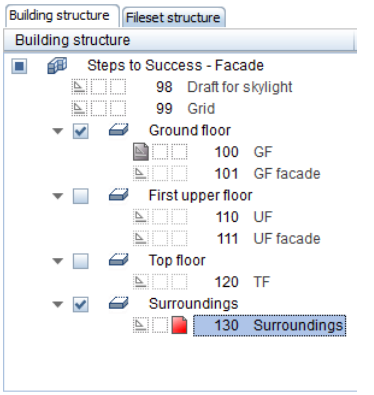


Creating facade surfaces for panels

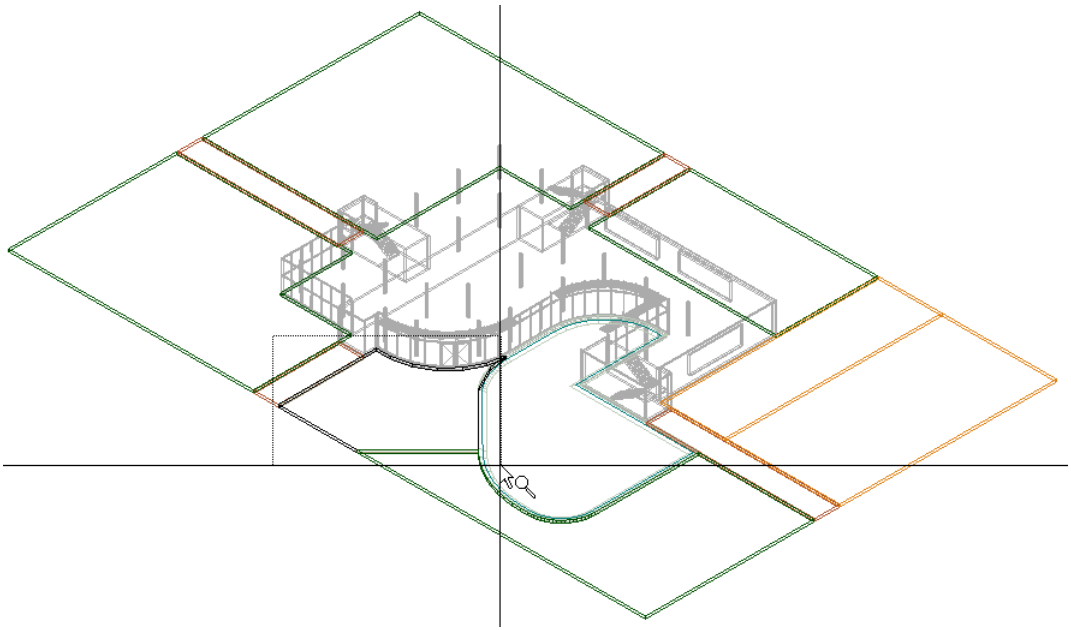
To place panels

1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

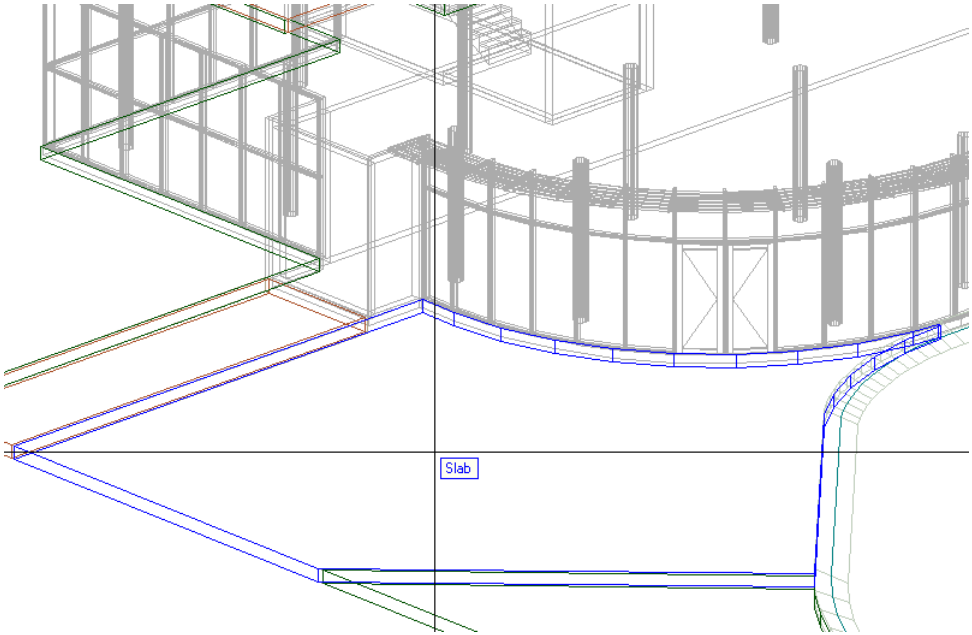
2 Make drawing file **130 Surroundings** current and open drawing file **100 GF** in reference mode. Close all the other drawing files.



3 Zoom in on the area in front of the front door.



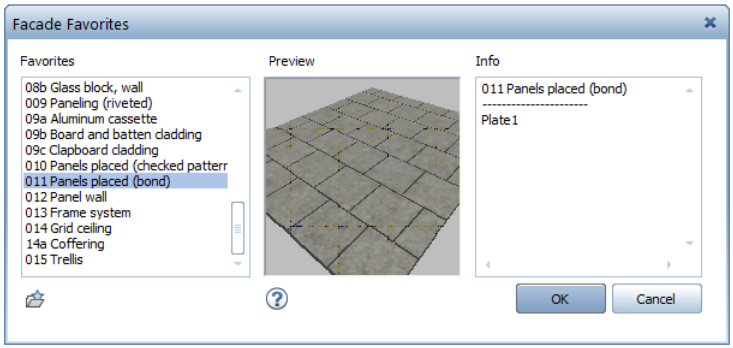
4 Point into this area because you want to place the panels in front of the front door.



5 Click **Facade**.

6 Click **Retrieve facade favorites** on the **Facade** context toolbar.

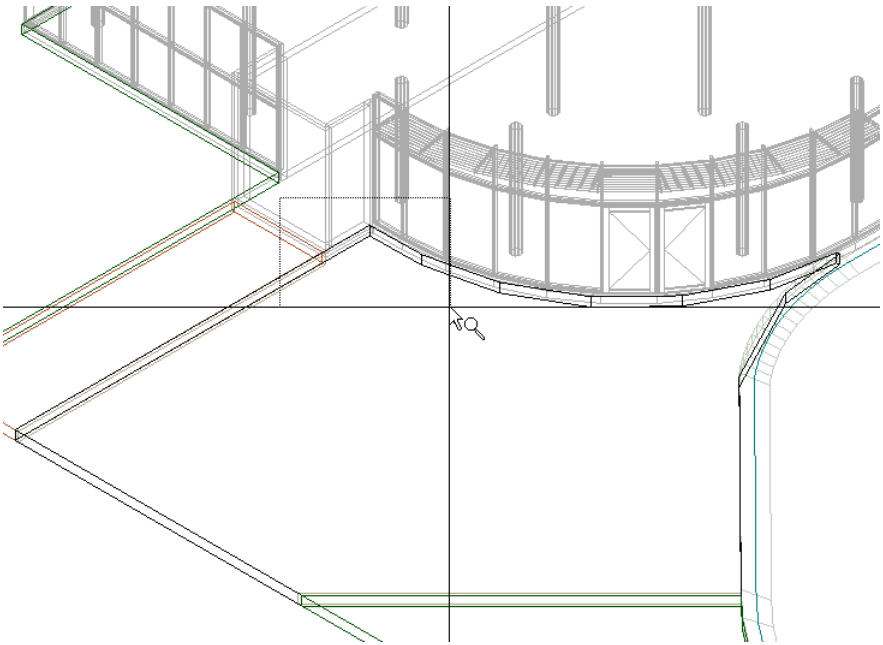
7 Select favorite **011 Panels placed (bond)**:



8 Click **OK** to close the **Facade Favorites** dialog box.

9 The **Facade** context toolbar is still open. Click **Facade face** and **Straight component**.

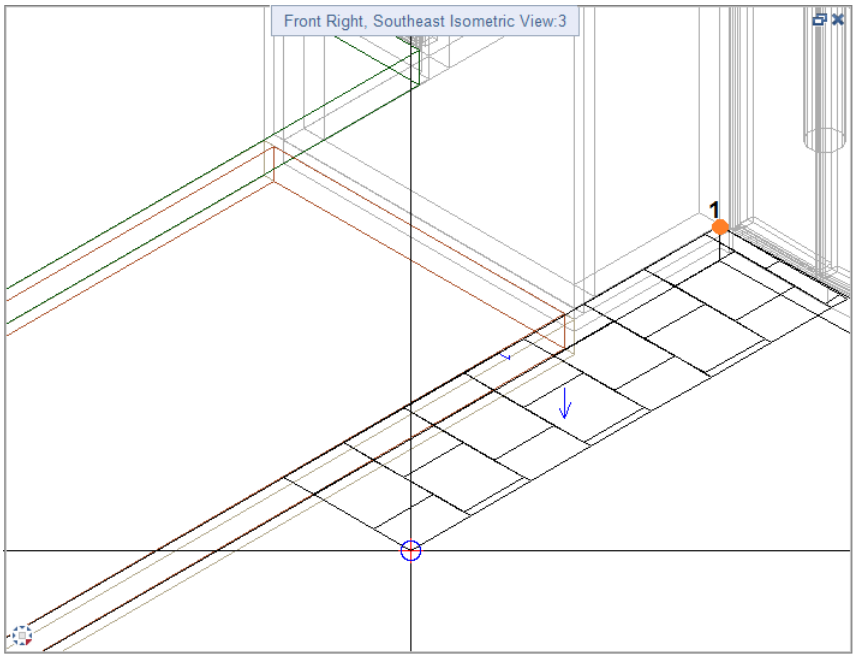
10 Zoom in on the area as shown:



11 Start placing the panels.

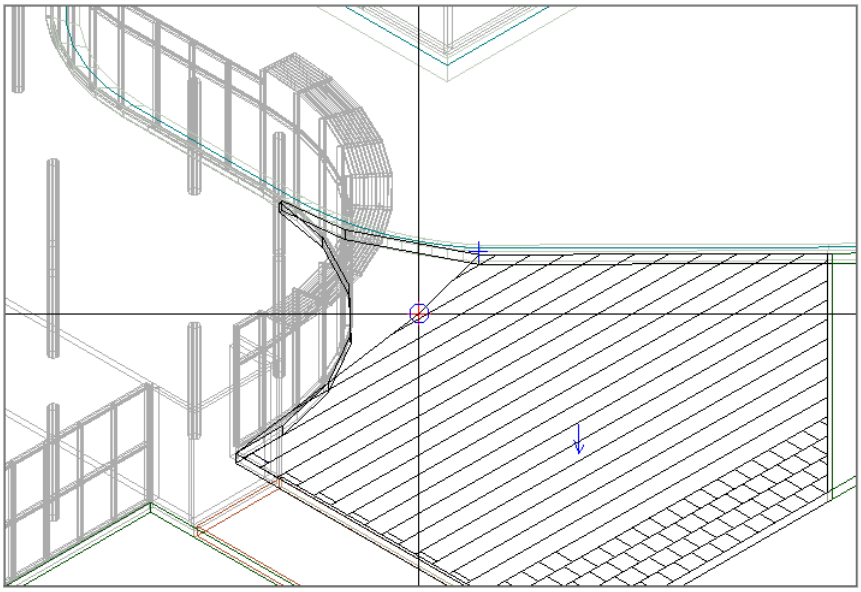
Check the direction of extension. If it is not correct, click to change it. The blue arrow must point downward.

12 Click the first drop-in point.
To identify the other drop-in points, use the corners of the slab element.



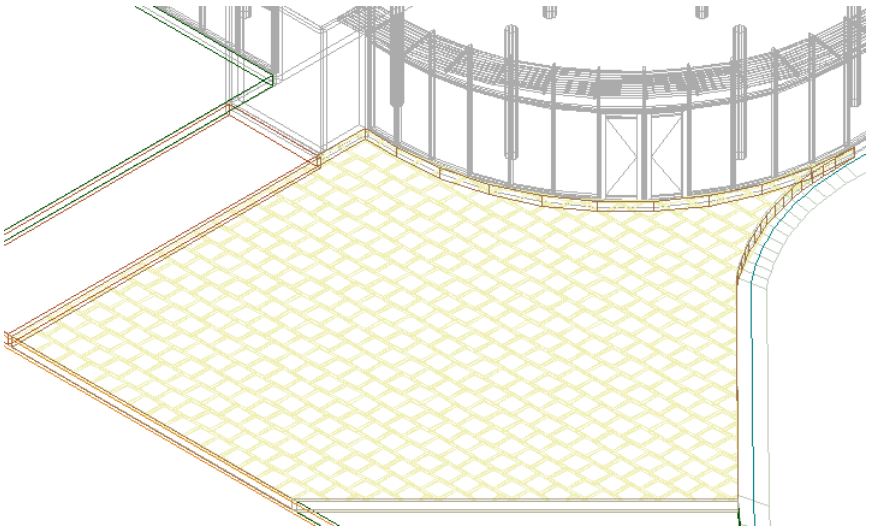
13 Zoom in on the required areas to place the panels along the corners of the slab.

14 On the **Facade** context toolbar, switch to **Spline-based component**.



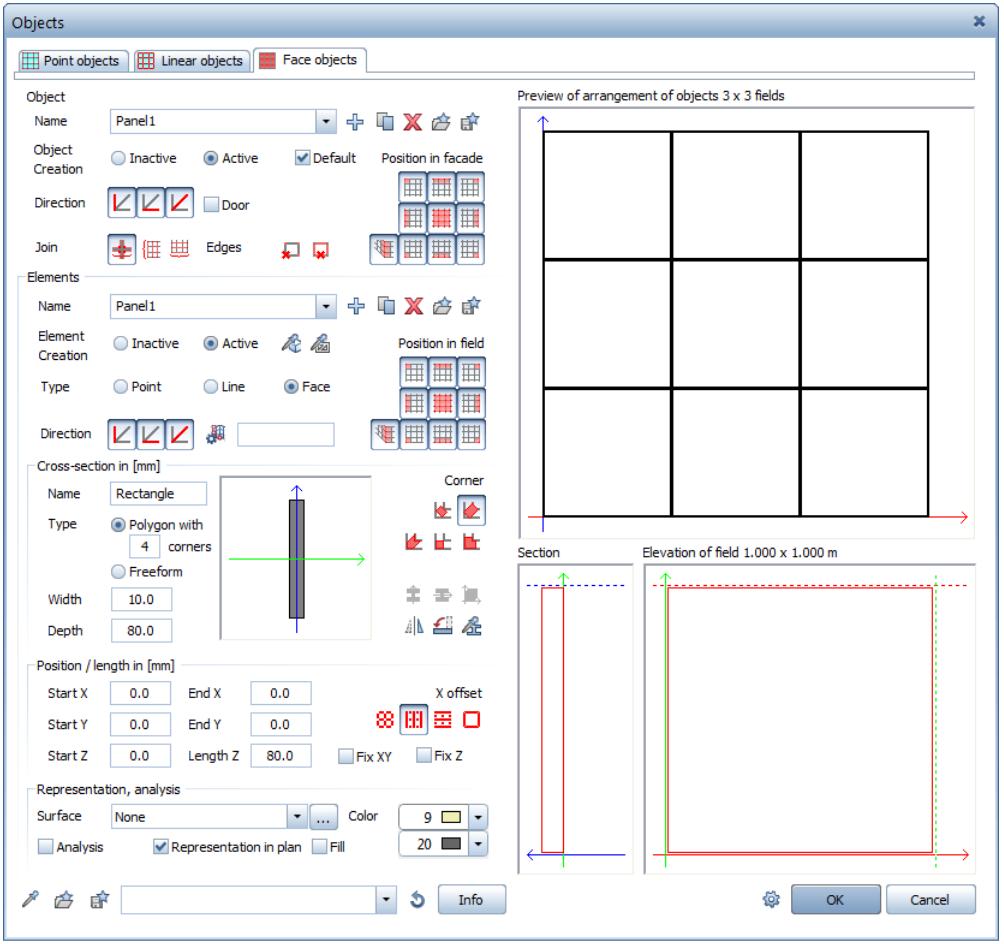
15 Click the spline points of the slab.

16 To finish placing panels, click the first point again and select ESC.

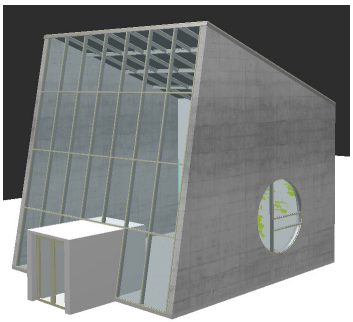


17 Delete the slab below the panels placed. Check the result in animation.

Note: To modify the panels placed, click **Modify** on the **Facade** context toolbar, select the panels, and click **Object definitions**.
The **Objects** dialog box opens. You can modify the shape, size, color, ... of the panels on the **Face objects** tab.



Creating facade surfaces for windows



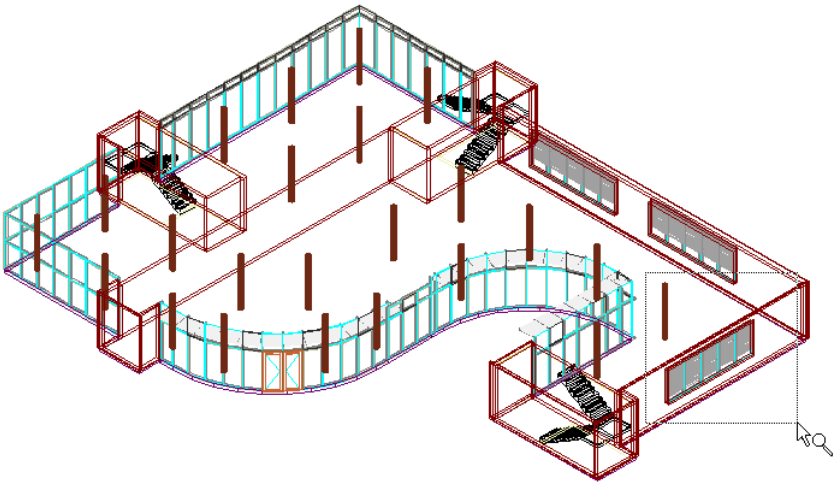
You can insert windows simply by clicking defined points, regardless of the shape of the opening. Thus, you can create window surfaces of circular, polygonal, and planar shape. There is no limit to creativity! Inserting a window only takes a few mouse clicks. You do not need any complex drafts. Just enter the parameters; Allplan automatically creates the window. You can use all the favorites to design the windows.

To create a facade surface as a window

1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

2 Make drawing file **101 GF facade** current and open drawing file **100 GF** in edit mode. Close all the other drawing files.

3 Zoom in on the area as shown:



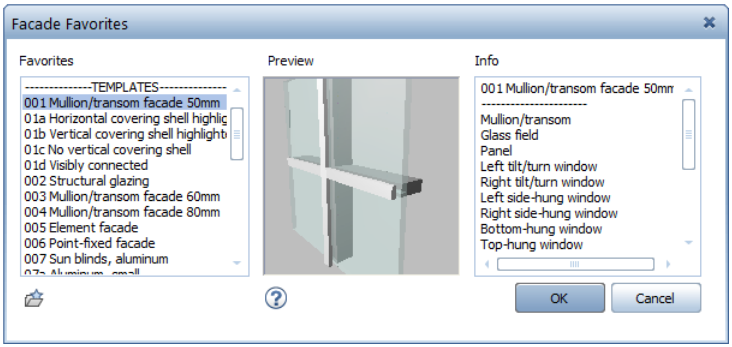
4 Delete the existing window element group.

The window opening remains unchanged.

5 Click **Facade**.

6 Click **Retrieve facade favorites** on the **Facade** context toolbar.

7 Select the **001 Mullion-transom facade, 50mm** favorite in the dialog box:



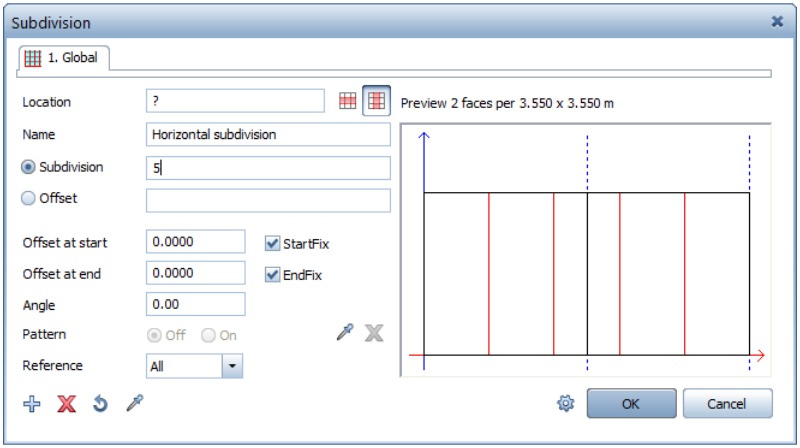
8 Click **Subdivision settings** on the **Facade** context toolbar.

9 Open the **1. Global** tab.

10 As you do not want to use any of the previous settings, click **Remove subdivision** in the **Subdivision** dialog box until you have deleted all tabs.

11 Click **Add subdivision** to open a new tab.

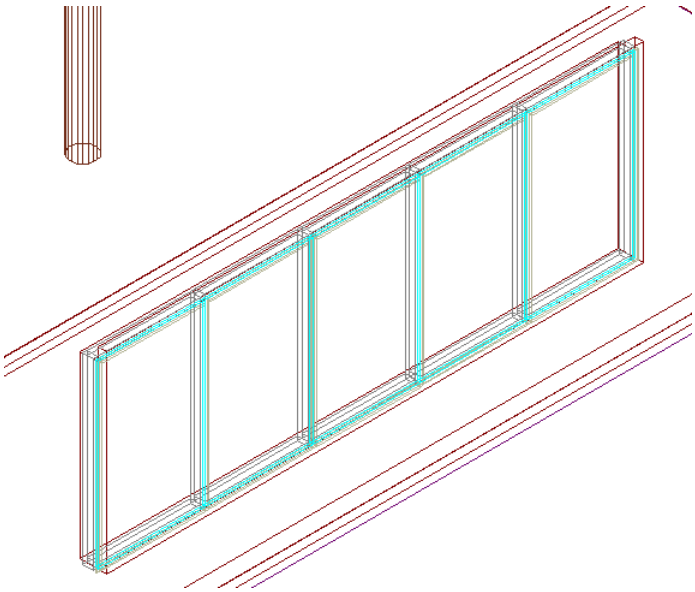
12 Define the following settings and click **OK** to confirm:



13 The **Facade** context toolbar is still open. Click **Facade face** and **Straight component**.

14 Click the four corners of the window opening.

15 Go to the **Facade** context toolbar and click **Apply**.



To create a facade surface based on a pattern

1 Draw a rectangular **Fill** (**Quick Access** task area) in Allplan.

2 Use **Split Surface Elements, Archit. Elements** (on the shortcut menu of the fill) to cut the fill so that you get the required pattern.

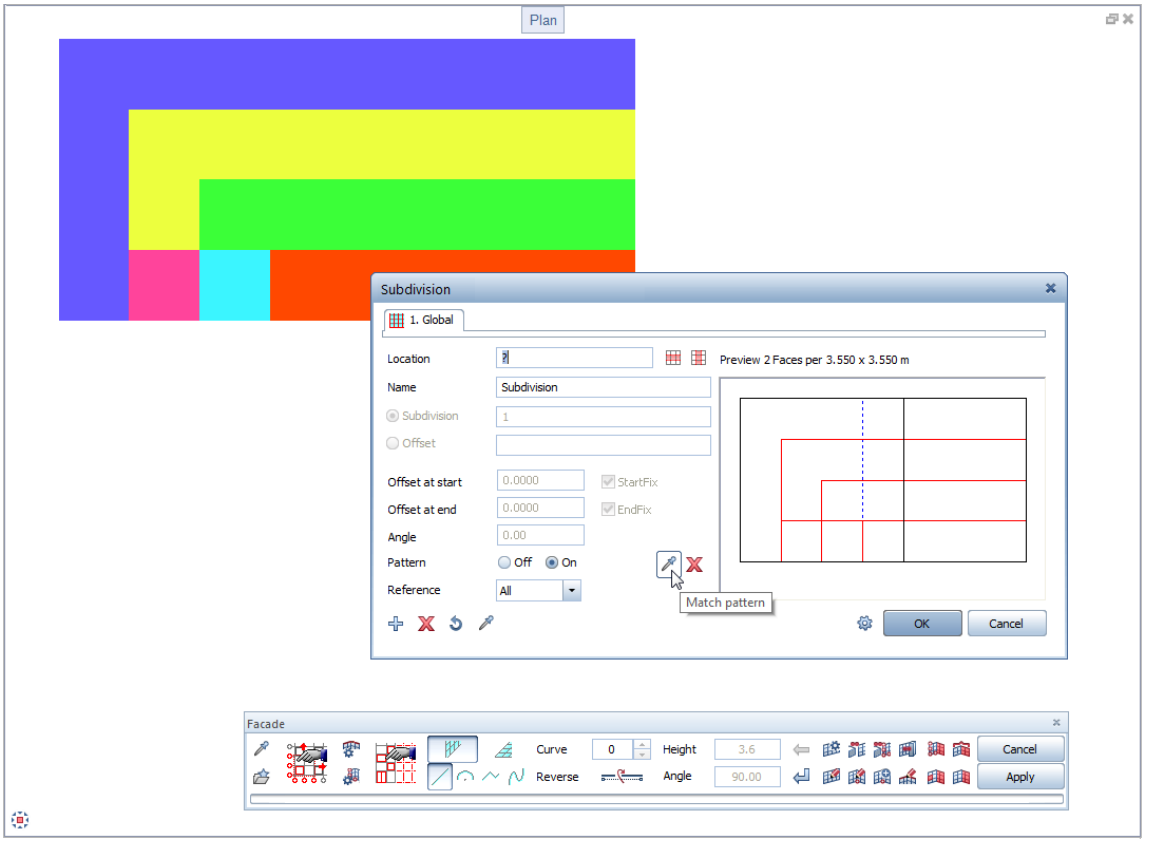
3 Delete the existing window element group.

The window opening remains unchanged.

4 Click **Facade**.

5 Click **Subdivision settings** on the **Facade** context toolbar.

6 Click **Match pattern** to transfer the pattern into the **Subdivision** dialog box. Open the **Reference** drop-down list and select **All**.



Notes:

As soon as you have loaded a pattern, you can select **off, on** to turn pattern-based subdivision on or off.

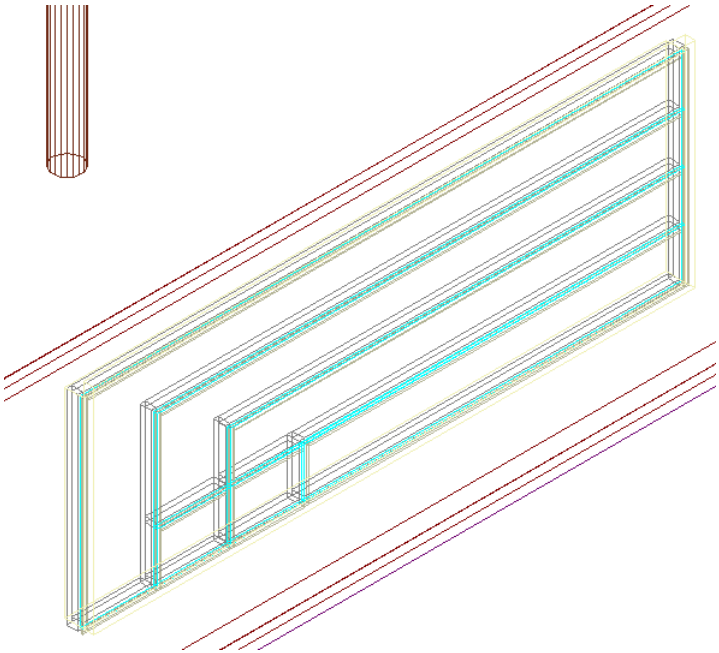
By clicking , you can delete the pattern again.

7 Click **OK** to close the **Subdivision** dialog box.

8 The **Facade** context toolbar is still open. Click **Facade face** and **Straight component**.

9 Click the four corners of the window opening.

10 Go to the **Facade** context toolbar and click **Apply**.



11 Select the relevant drawing files and look at the result in animation (see the second illustration at the beginning of "Step 7: placements (on page 101)").

You have reached the end of this "Steps to Success" guide, giving insights into how to work with facades in **Allplan 2021**. In particular, you have learned how to create and modify 3D facades with the tools in Allplan 2021.

If you feel like trying out these things yourself, you can now design your own facade based on the example in the following appendix. You will use point objects, linear objects, and face objects to create a straight facade. Finally, you will save the result as a favorite.

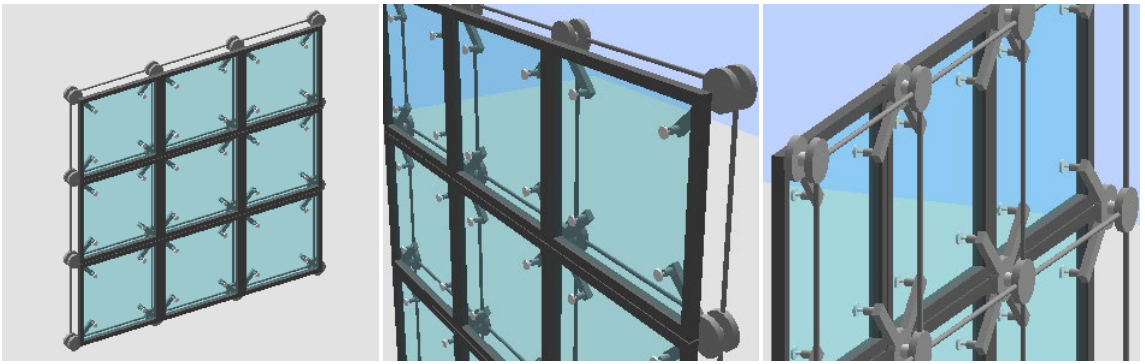
Appendix: designing your own facade

The **Facade** tool in Allplan 2021 has a modular structure. Thus, you can model a 3D facade quickly and easily within a few minutes.

To do this, you can use predefined favorites. You can modify these favorites at any time because Allplan creates the components parametrically in real time. Consequently, you can customize everything quickly and individually.

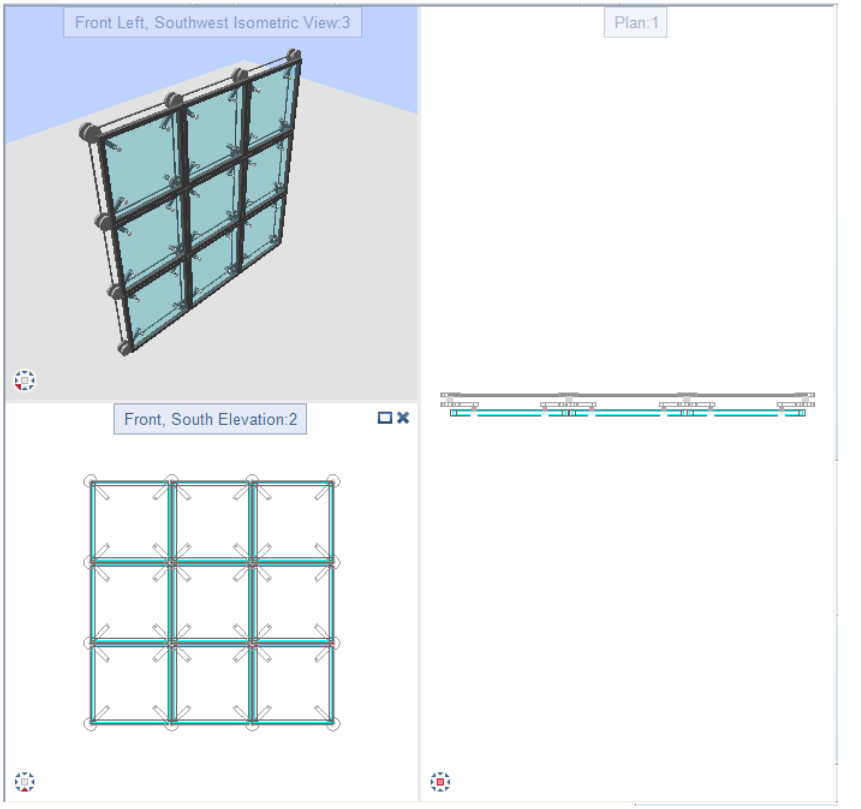
However, you can also create your own facade types by means of predefined objects. You can then visualize and save the results as favorites. With Allplan 2021's **Facade** tool, you can design almost any facade shape. There is no limit to creativity!

Based on an example, this appendix shows you how to use **Object definitions** to create a **straight facade** from point objects, linear objects, and face objects. In addition, you will learn how to save the resulting facade as a favorite and analyze it in a report.



Objective

The aim of this exercise is a facade that you design yourself by means of the **Facade** tool. The result will look like this:



Getting ready

The **Steps to Success – Facade** project is still open in Allplan 2021.

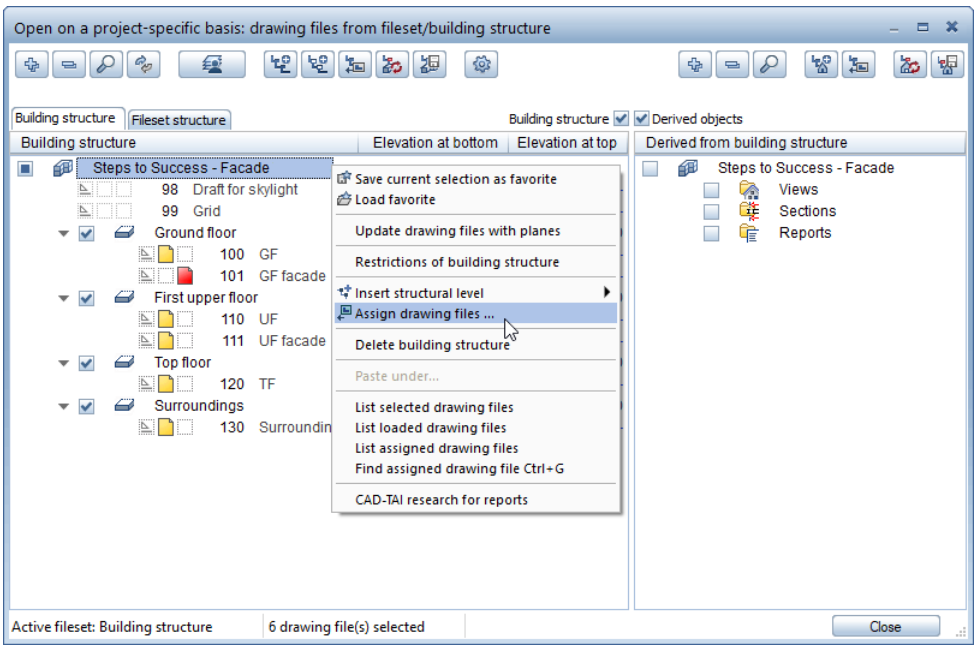
If it isn't, start Allplan and open this project.

To assign the drawing file for the facade

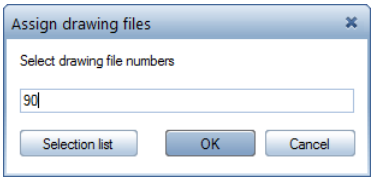
1 Click **Open on a Project-Specific Basis...** on the Quick Access Toolbar.

2 Select the **Steps to Success – Facade** project node and open the shortcut menu.

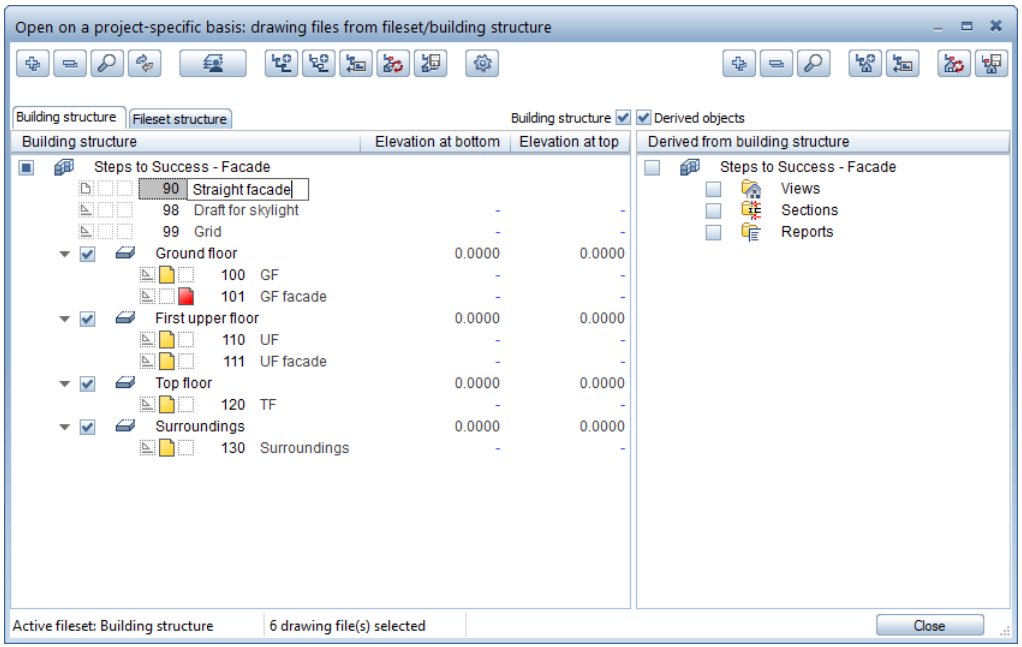
3 Click **Assign drawing files**.



4 The **Assign drawing files** dialog box opens. Select drawing file **90** and click **OK** to confirm.



5 Enter **Straight facade** for the name of drawing file **90**.



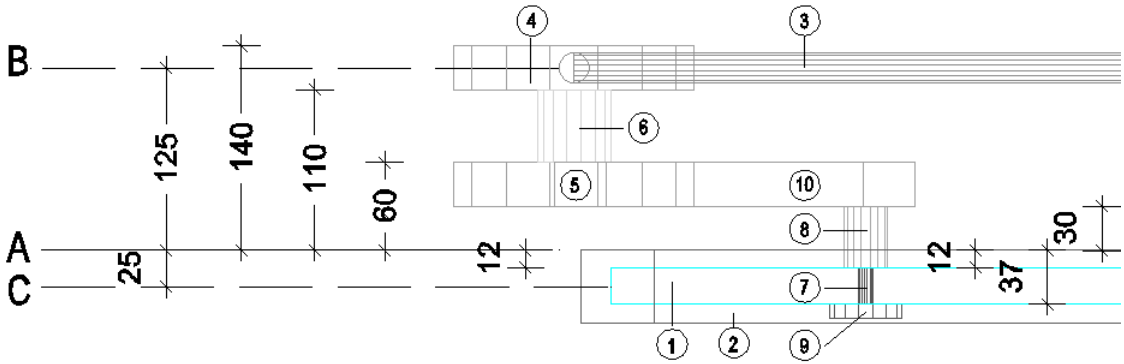
6 Make drawing file **90** current. Close all the other drawing files.

Important explanations

Start z-values relative to path (reference line)

Before you start creating a facade, you need to decide where to place its reference line (path). Based on this reference line, you define all the z-values of all the facade elements. In other words, this line defines the positions of all the elements that you will design.

The following illustration shows all the elements of the facade in plan and their positions relative to the reference line.



A = reference line
B = center line of frame
C = center line of frame of glass pane

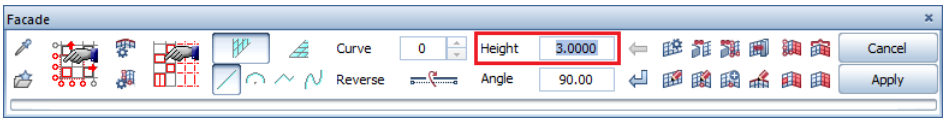
Components of the facade in the sequence in which you will create them:
1 – glass pane
2 – frame of glass pane
3 – frame
4 – holder part 1 rear
5 – holder part 1 front
6 – holder part 1 middle
7 – bolt part 1
8 – bolt part 2
9 – bolt part 3
10 – connecting element

Creating face objects

Start by creating face objects. In other words, you define the **glass** object with two elements, **glass pane** and **frame**.

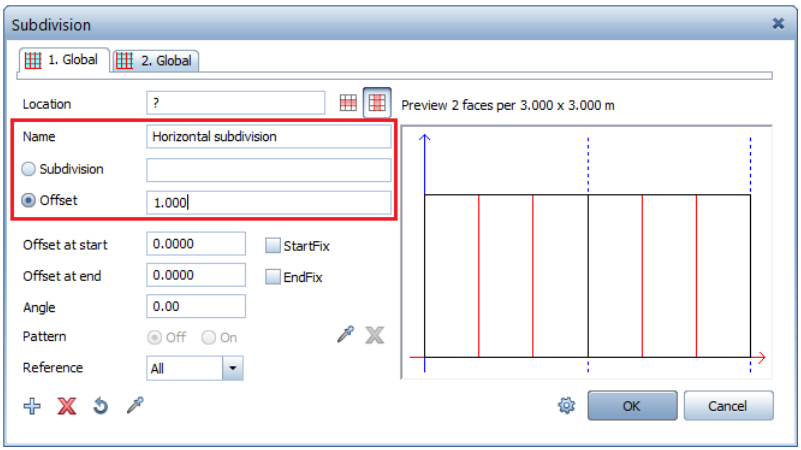
To create a face object

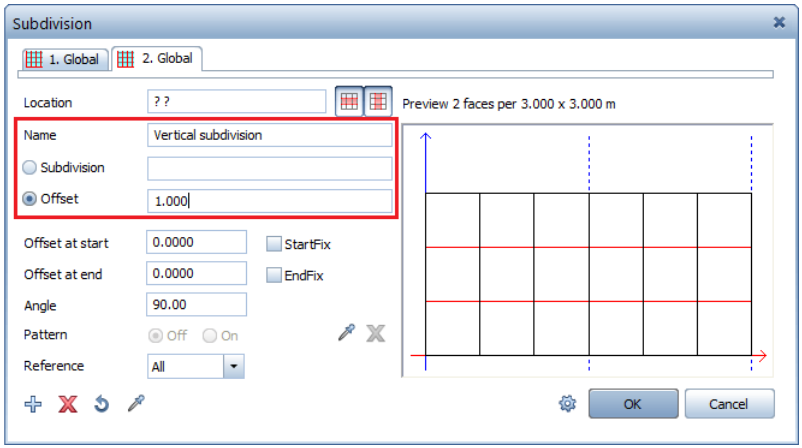
1 Click **Facade** (**Architecture** role – **Elements** task – **Opening Elements** task area).



2 On the **Facade** context toolbar, enter **Height = 3 m**.

3 On the **Facade** context toolbar, click **Subdivision settings** and enter **Offset = 1 m** for both the horizontal subdivision and the vertical subdivision of the facade.





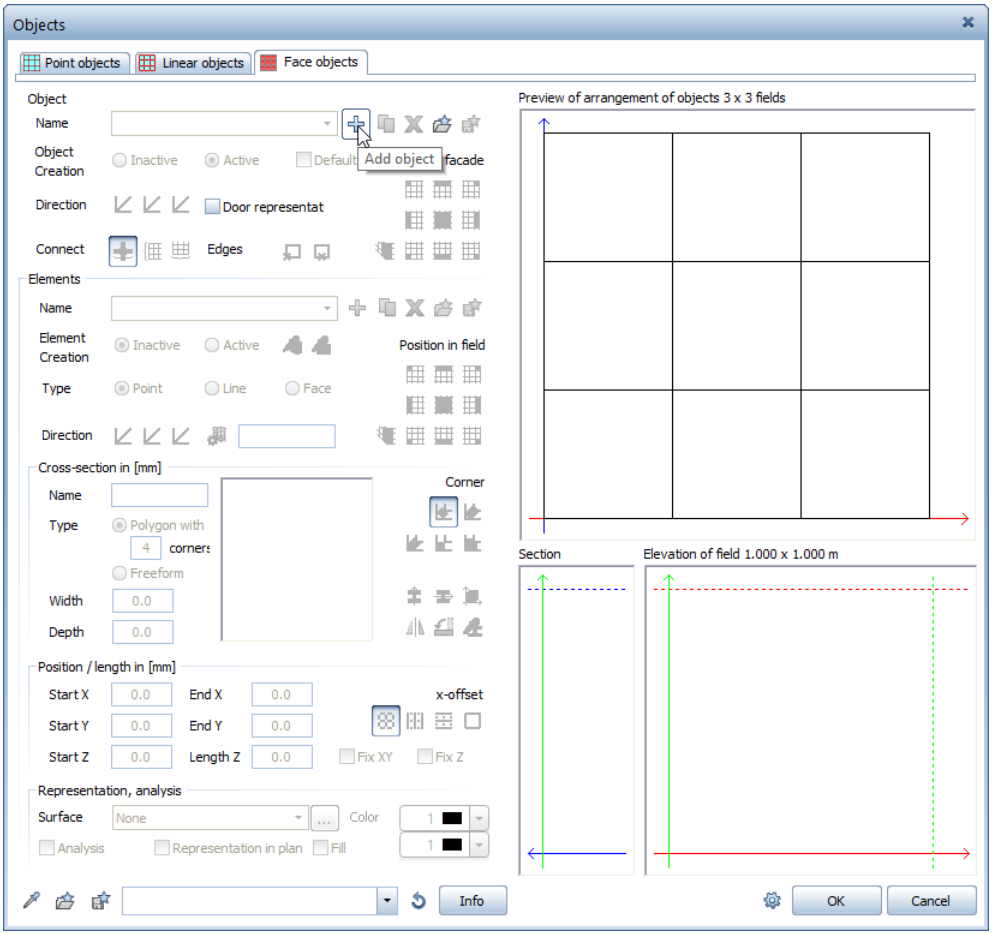
4 Click **OK** to confirm.

5 Click **Object definitions** on the **Facade** context toolbar.

6 Open the **Face objects** tab.

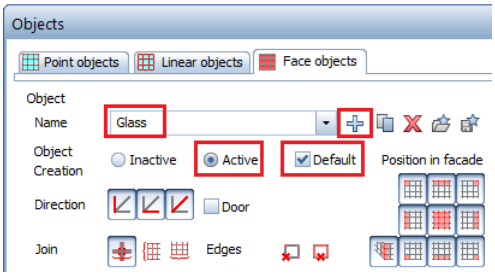
7 You want to create new objects. Therefore, click **Delete object style** at the bottom of the dialog box, deleting any entries from the three tabs.

8 Click **Add object** in the area at the top of the **Face objects** tab.



9 Enter **Glass** for the name of the object.

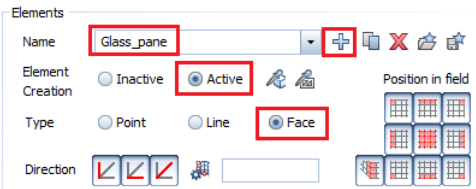
10 Switch **Object creation** to **Active** and select the **Standard** option. By selecting this option, you place the object at all the locations of the facade.



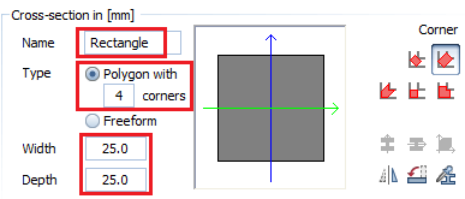
11 In the **Elements** area, click **Add element**.

12 Enter **Glass_pane** for the name of the element.

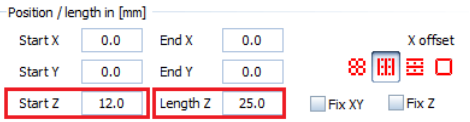
13 Switch **Element creation** to **Active**. Select **Face** for the type.



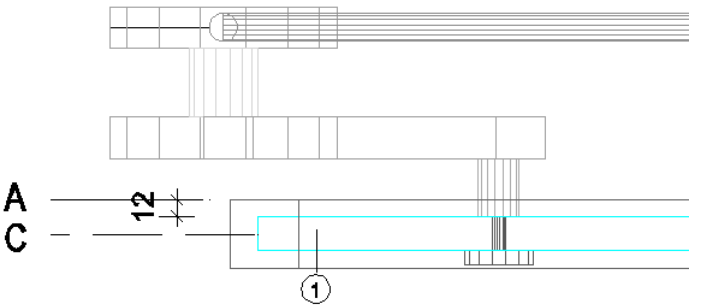
14 Make the following settings in the **Cross-section in (mm)** area:



15 In the **Position / length in (mm)** area, enter **12 mm** for **Start Z** and **25 mm** for **Length Z** (= thickness of glass pane).

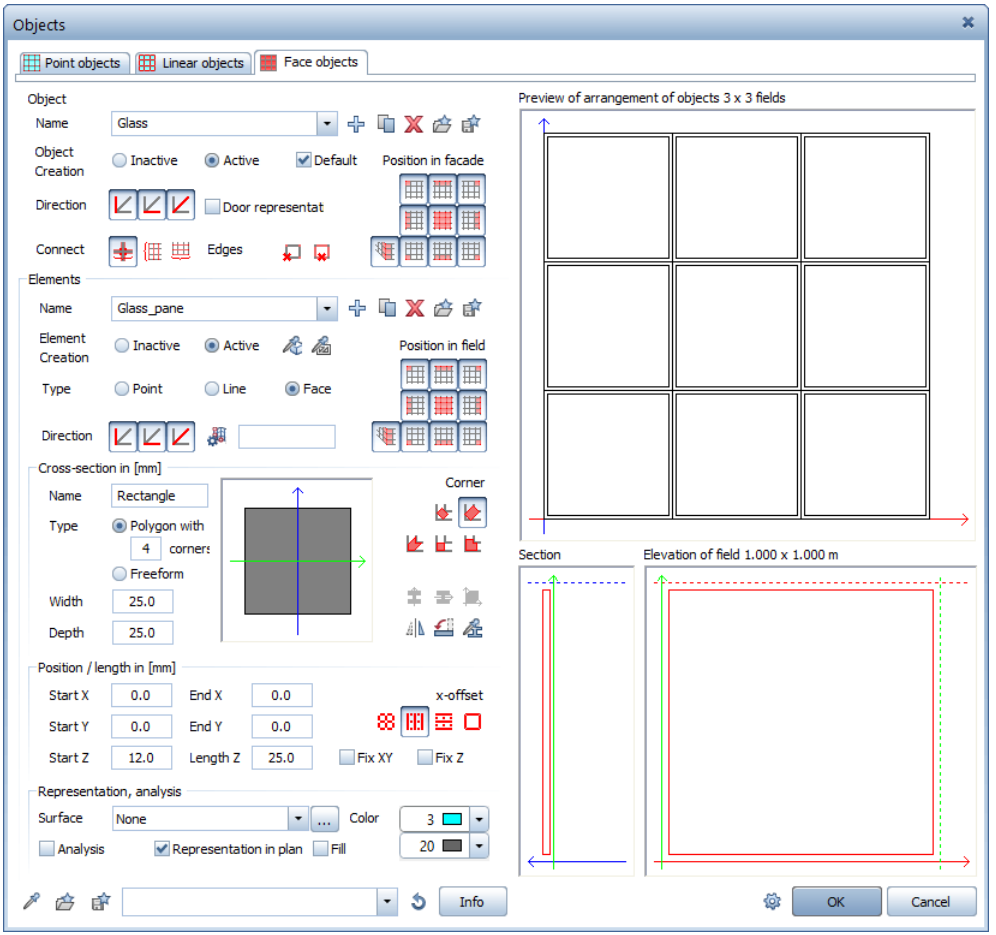


The following illustration helps explain the **Start Z** value:
A = reference line (path)
1 = glass pane



16 In the **Representation, analysis** area, select color **3** and select **Representation in plan**.

17 The **Face objects** tab of the **Objects** dialog box should now look like this:



18 The next step is to create the second element of the **glass** object, the **frame**.
To do this, click **Add element** in the **Elements** area.

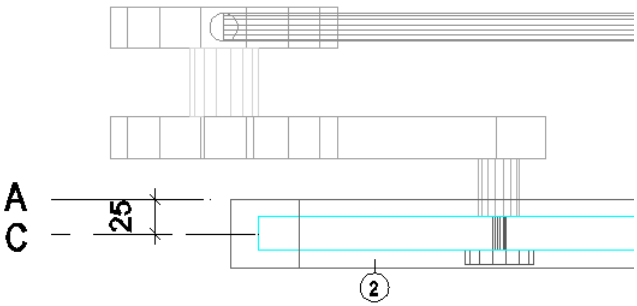
19 Enter **Frame** for the name of the element.

20 Switch **Element creation** to **Active**. Select **Line** for the type.

21 In the **Cross-section in (mm)** area, enter **50 mm** for the **Width** and **50 mm** for the **Depth**.

22 Make the following settings in the **Position / length in (mm)** area:
Start X = 5 mm
Start Y = 5 mm
Start Z = 25 mm
Select **Do not use x-offset automatically**.

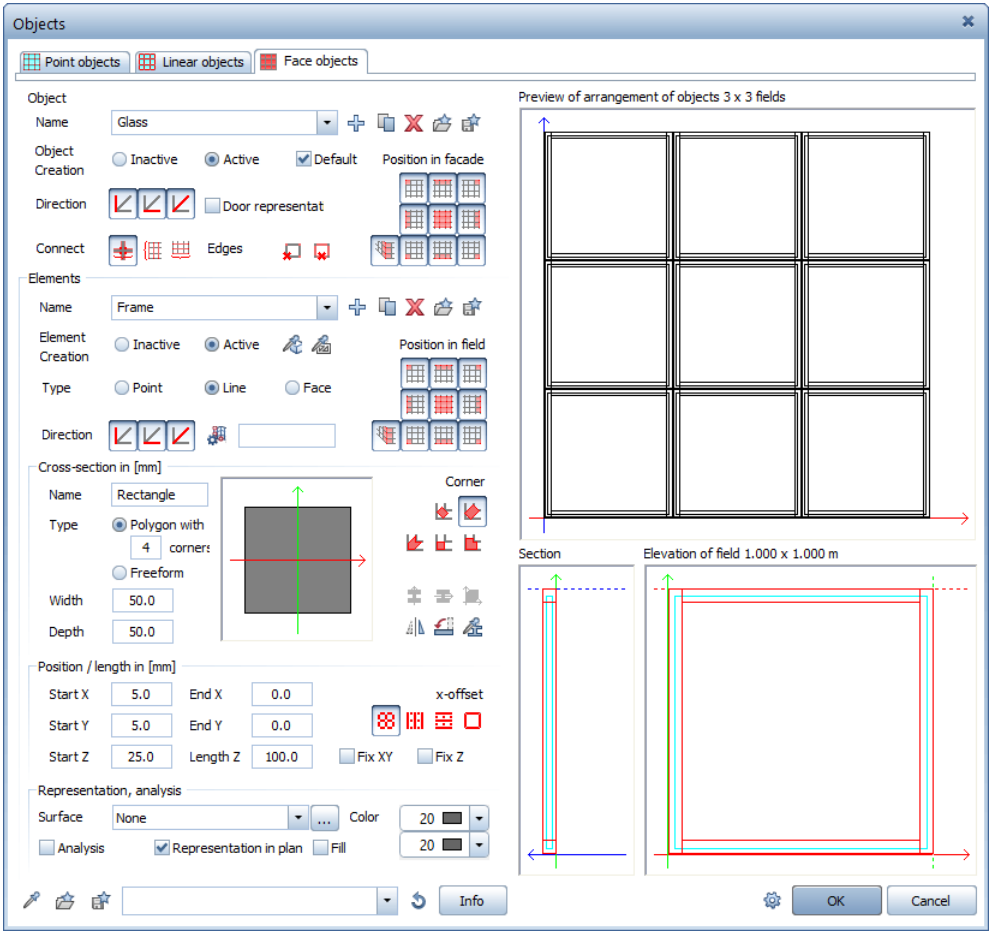
When you create linear elements, the **Start Z** value defines the position of the element's center line:



A = reference line (path)
C = center line of frame of glass pane
2 = frame of glass pane

23 In the **Representation, analysis** area, select color **20** and select **Representation in plan**.

24 After you have made all the settings for the **Frame** element, the **Face objects** tab of the **Objects** dialog box should look like this:

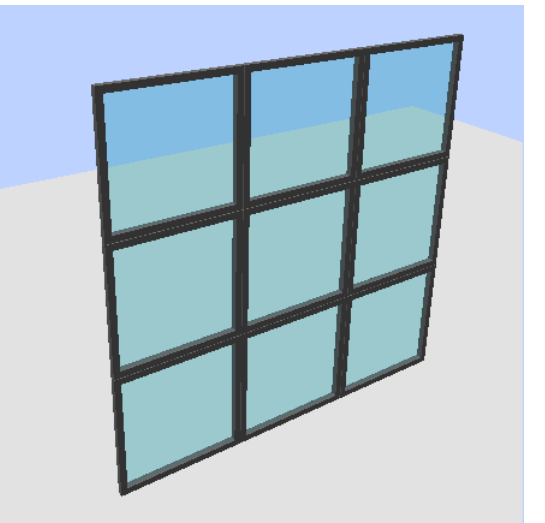


This completes the definition of the face objects.

25 Click **OK** to close the **Objects** dialog box.

26 Select **Facade wall** and **Straight component** (**Facade** context toolbar) and draw a straight wall that is **3 m** long.

27 Select F4 to see the intermediate result in animation.



What if the facade is not visible in plan view?

What if the facade is visible only in **elevation** and **isometric** view but not in **plan** view?

The reason for this is usually the **horizontal clipping plane** in the **Settings**. The default setting is **1 m** above the path of the facade. Consequently, plan view shows all elements that are intersected by the plane or that are below the plane.

In our example, however, there are no elements at a height of 1 m.

To solve this problem, change the height of the **horizontal clipping plane** to **0.8 m**.

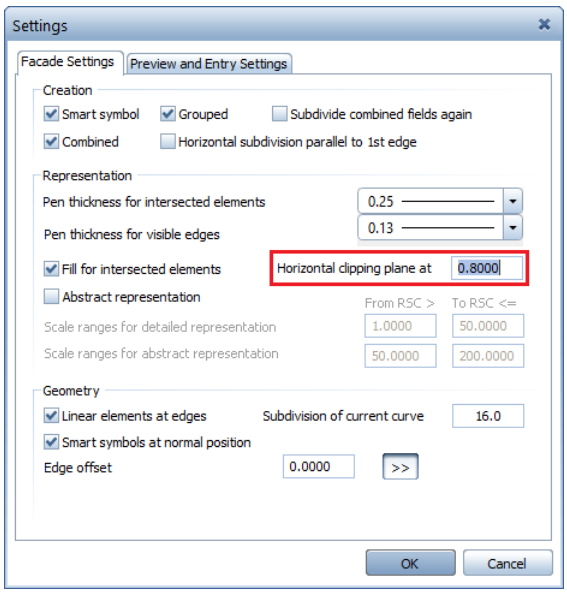
To change the height of the horizontal clipping plane

1 Click **Facade** (**Architecture** role – **Elements** task – **Opening Elements** task area).

2 As you want to apply this change to the existing facade, click **Modify** on the **Facade** context toolbar.

3 *<Facade> Select facade*
Click the facade you just created. The point you click is irrelevant.

4 Click **Settings** and enter **0.8** for the horizontal clipping plane.



5 Click **OK** to close the **Settings** dialog box.

6 Go to the **Facade** context toolbar and click **Apply**.

Allplan intersects the facade at a height of 0.8 m above the path. As a result, the facade is now visible in plan view, too.

Creating linear objects

The second step is to create the frame of the facade.

To create a linear object

1 Click **Facade**.

2 As you want to continue to work with the existing facade, click **Modify** on the **Facade** context toolbar.

3 *‹Facade› Select facade*
Click the facade you just created. The point you click is irrelevant.

4 On the **Facade** context toolbar, click **Object definitions** and select the **Linear objects** tab.

5 Click **Add object** at the top.

6 Enter **Frame** for the name of the object.

7 Switch **Object creation** to **Active** and select the **Standard** option.

8 In the **Elements** area, click **Add element**.

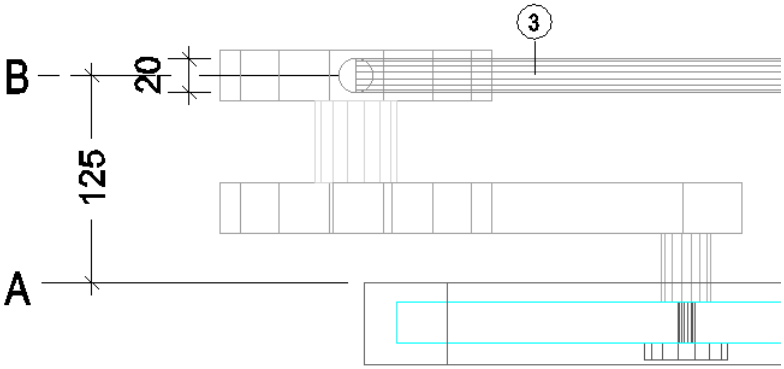
9 Enter **Frame** for the name of the element.

10 Switch **Element creation** to **Active**. Select **Line** for the type.

11 Make the following entries in the **Cross-section in (mm)** area:
Name: **Circle**
Type: Polygon with **16** corners
Width = **20 mm**
Depth = **20 mm**

12 Make the following settings in the **Position / length in (mm)** area:
Start X = **0 mm**
Start Y = **0 mm**
Start Z = **-125 mm**
Select **Do not use x-offset automatically**.

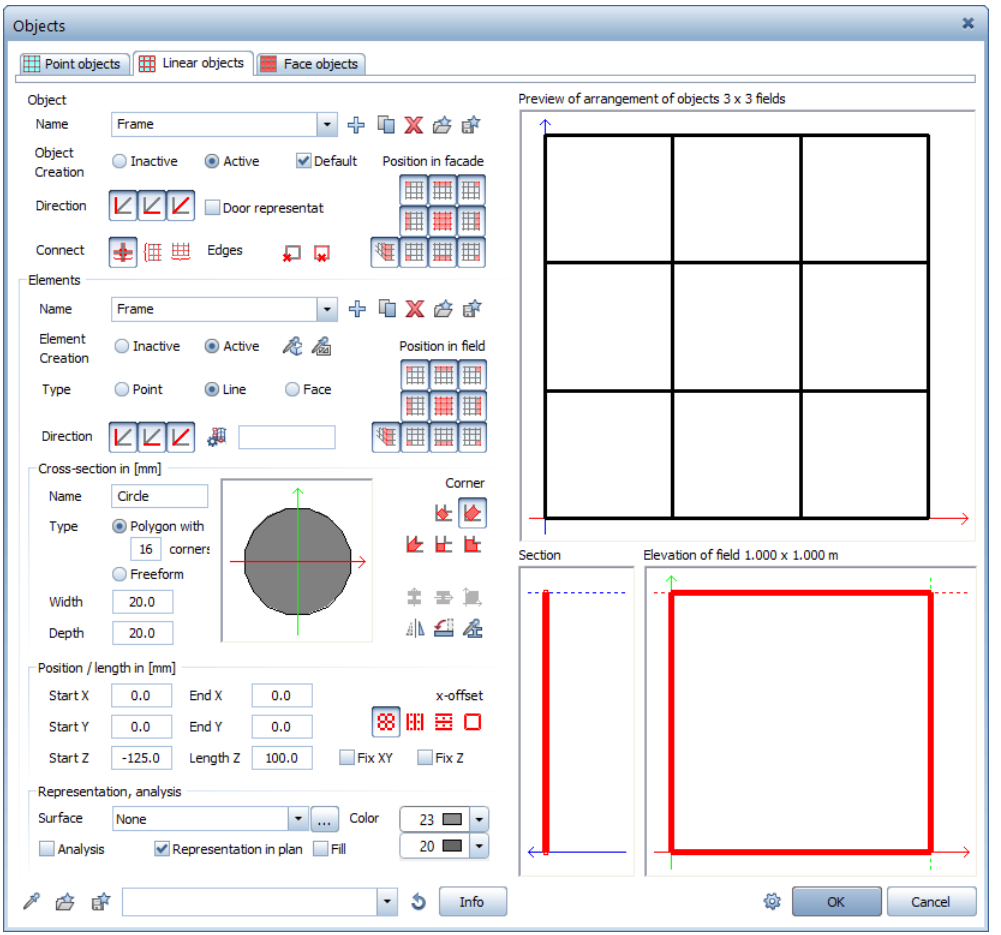
When you create linear elements, the **Start Z** value defines the position of the element's center line:



A = reference line (path)
B = center line of frame
3 = frame

13 In the **Representation, analysis** area, select color **23** and select **Representation in plan**.

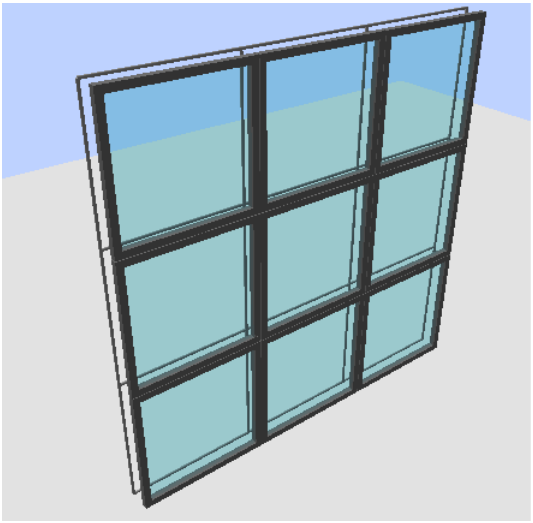
14 The dialog box should now look like this:



15 Click **OK** to close the **Objects** dialog box.

16 Go to the **Facade** context toolbar and click **Apply**.

17 Select F4 to see the intermediate result in animation.



Creating point objects

In this section, you design holders to connect the glass elements with the frame. These holders consist of several components (holder, bolt, connecting element), which you create as point elements.

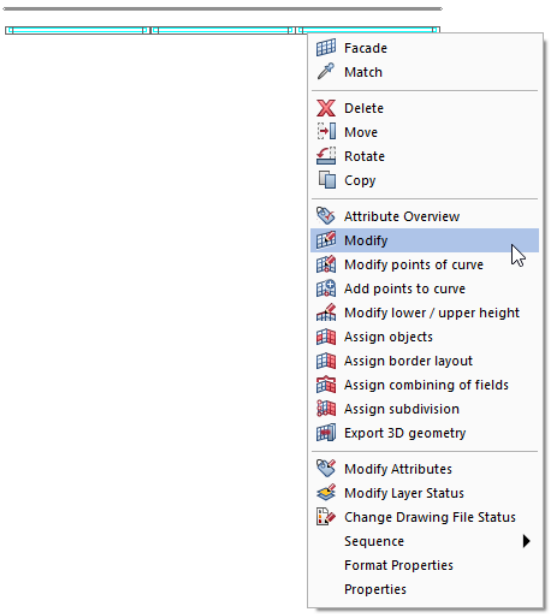
To create a point object

1 If the **Facade** tool is no longer open, click it (**Repeat** drop-down list on the **Quick Access Toolbar**).

2 Click **Modify** on the **Facade** context toolbar.

3 *‹Facade› Select facade*
Select the facade.

Tip: You can directly switch to **Modify** when you select the **Facade** tool. How to do this? Open the shortcut menu of the facade and click **Modify**.



4 Click **Object definitions** and select the **Point objects** tab.

5 Click **Add object** at the top and enter **Holder** for its name.

6 Switch **Object creation** to **Active** and select the **Standard** option.

7 In the **Elements** area, click **Add element**.

8 Enter **Part1_rear** for the name of the element.

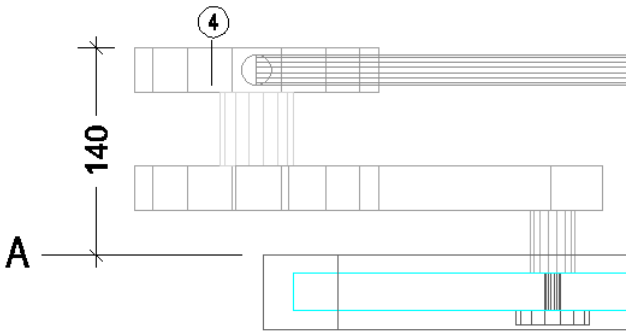
Note: Element names must not include spaces.

9 Switch **Element creation** to **Active**. Select **Point** for the type.

10 Make the following entries in the **Cross-section in (mm)** area:
Name: **Circle**
Type: Polygon with **16** corners
Width = **165 mm**
Depth = **165 mm**

11 Make the following settings in the **Position / length in (mm)** area:
Start X = **0 mm**
Start Y = **0 mm**
Start Z = **-140 mm**
Length Z (= depth of element) = **30 mm**

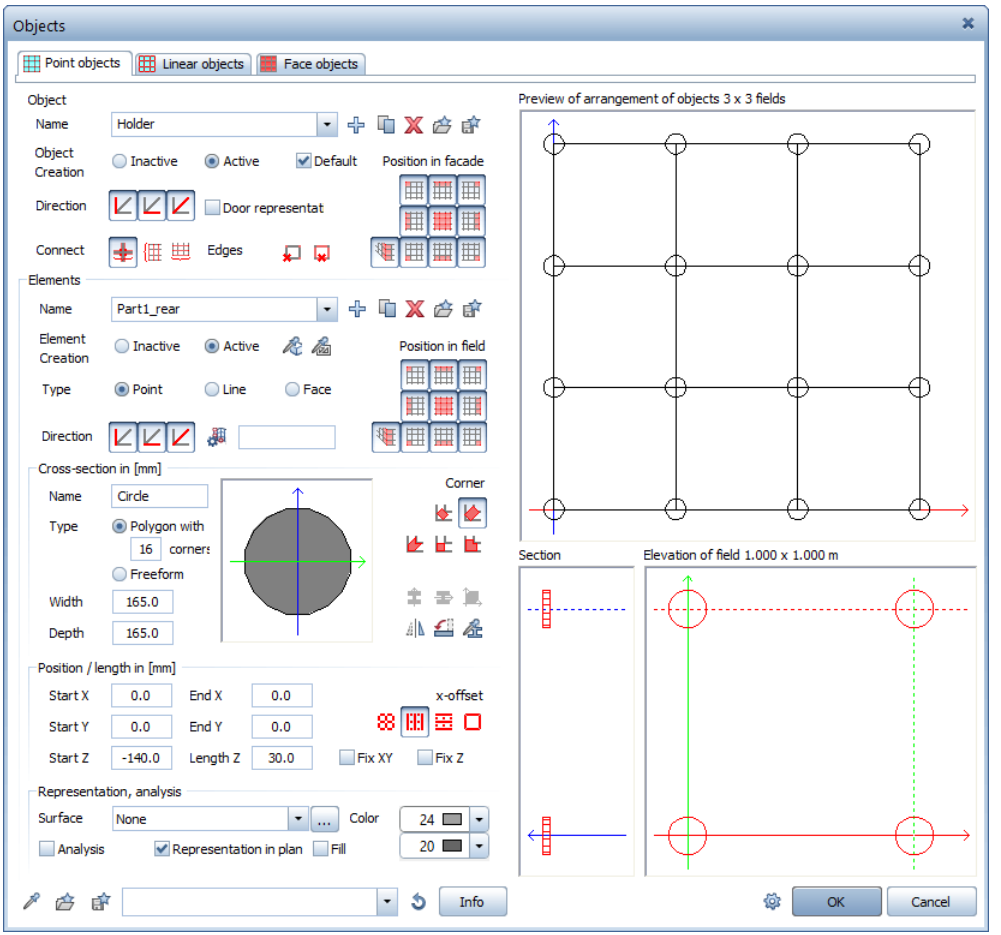
The **Start Z** value is **140 mm** from the reference line in the negative direction:



A = reference line (path)
4 = holder, Part1_rear

12 In the **Representation, analysis** area, select color **24** and select **Representation in plan**.

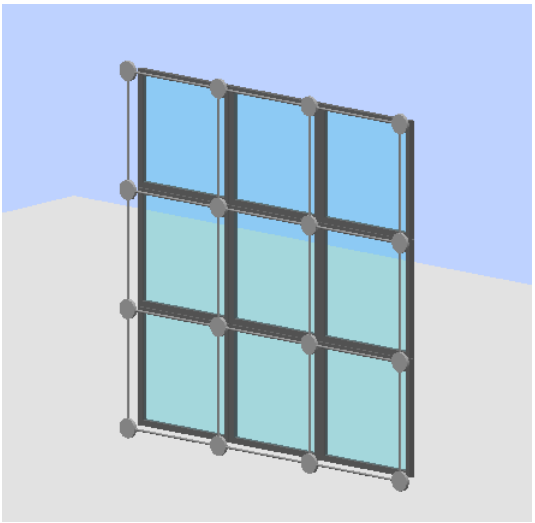
13 The dialog box should now look like this:



14 Click **OK** to close the **Objects** dialog box.

15 Go to the **Facade** context toolbar and click **Apply**.

16 Select F4 to see the intermediate result in animation.



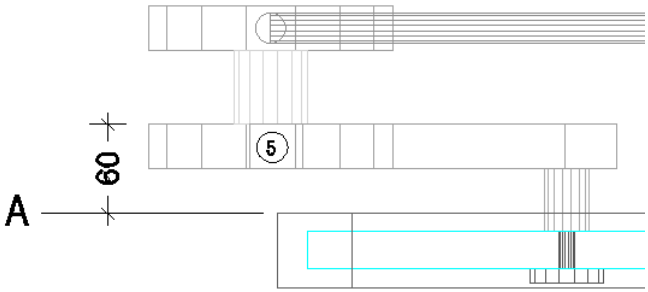
17 On the **Facade** context toolbar, click **Modify** and select the facade by clicking it. Select **Object definitions** and open the **Point objects** tab.

18 To avoid entering all the settings from scratch, click **Copy element** in the **Elements** area.

19 Enter **Part1_front** for the name of the element.

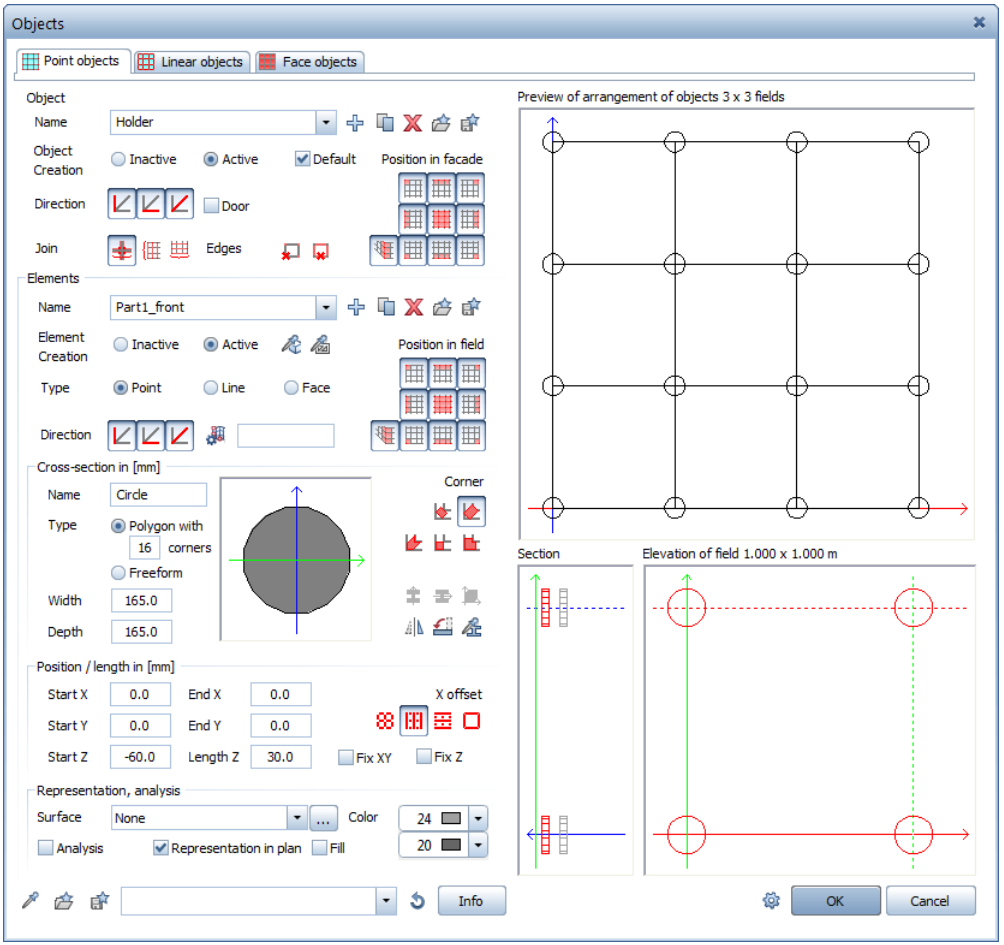
20 In the **Position / length in (mm)** area, change the **Start Z** coordinate to
Start Z = **-60 mm**.

The **Start Z** value is **60 mm** from the reference line in the negative direction:



A = reference line (path)
5 = holder, Part1_front

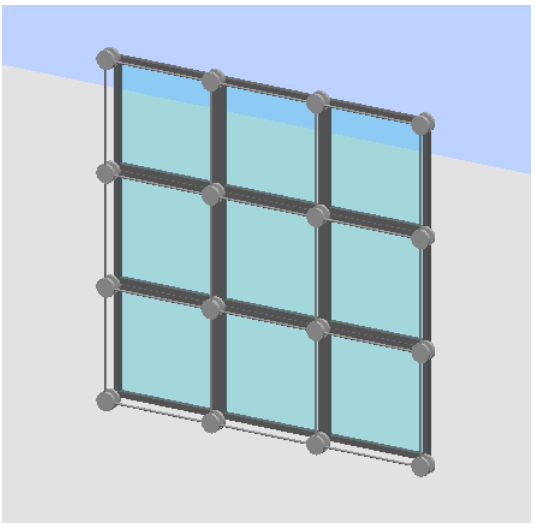
Do not change the other settings.



21 Click **OK** to close the **Objects** dialog box.

22 Go to the **Facade** context toolbar and click **Apply**.

23 Select F4 to see the intermediate result in animation.



24 On the **Facade** context toolbar, click **Modify** again and select the facade by clicking it. Select **Object definitions** and open the **Point objects** tab.

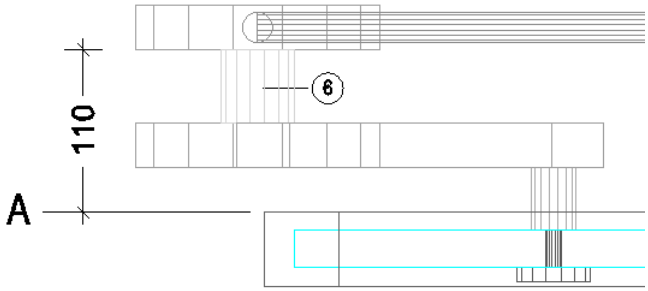
25 In the **Elements** area, click **Copy element** again.

26 Enter **Part1_middle** for the name of the element.

27 Change the following values in the **Cross-section in (mm)** area:
Width = **50 mm**
Depth = **50 mm**

28 In the **Position / length in (mm)** area, change the following coordinates:
Start Z = **-110 mm**
Length = 50 mm.

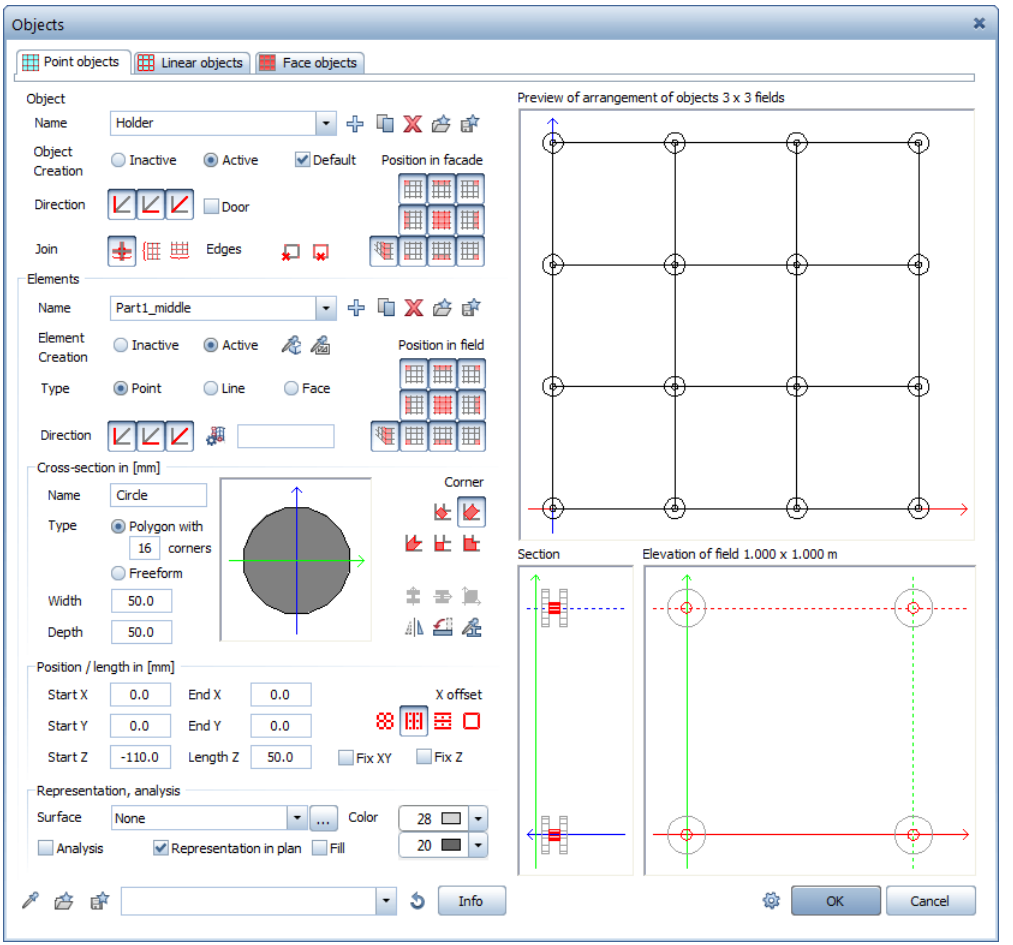
The **Start Z** value is **110 mm** from the reference line in the negative direction:



A = reference line (path)
6 = holder, Part1_middle

29 In the **Representation, analysis** area, select color **28**.

Do not change the other settings.



30 Click **OK** to close the **Objects** dialog box.

31 Go to the **Facade** context toolbar and click **Apply**.

32 Select F4 to see the intermediate result in animation.

Creating point elements – bolt element

The next step is to create another point element – a bolt. This bolt consists of three individual elements.

To create the bolt

1 On the **Facade** context toolbar, click **Modify** and select the facade by clicking it. Select **Object definitions** and open the **Point objects** tab.

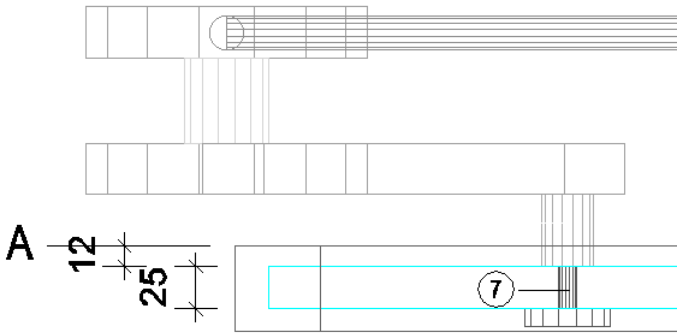
2 Do not change the settings at the top of the **Point objects** tab because you are still designing components of the **Holder** object.

3 In the **Elements** area, click **Copy element** and enter **Bolt_part1** for the name of the new element.

4 Change the following values in the **Cross-section in (mm)** area:
Width = **10 mm**
Depth = **10 mm**

5 In the **Position / length in (mm)** area, change the following coordinates:
Start X = **200 mm**
Start Y = **200 mm**
Start Z = **12 mm**
Length Z (= depth of element) = **25 mm**

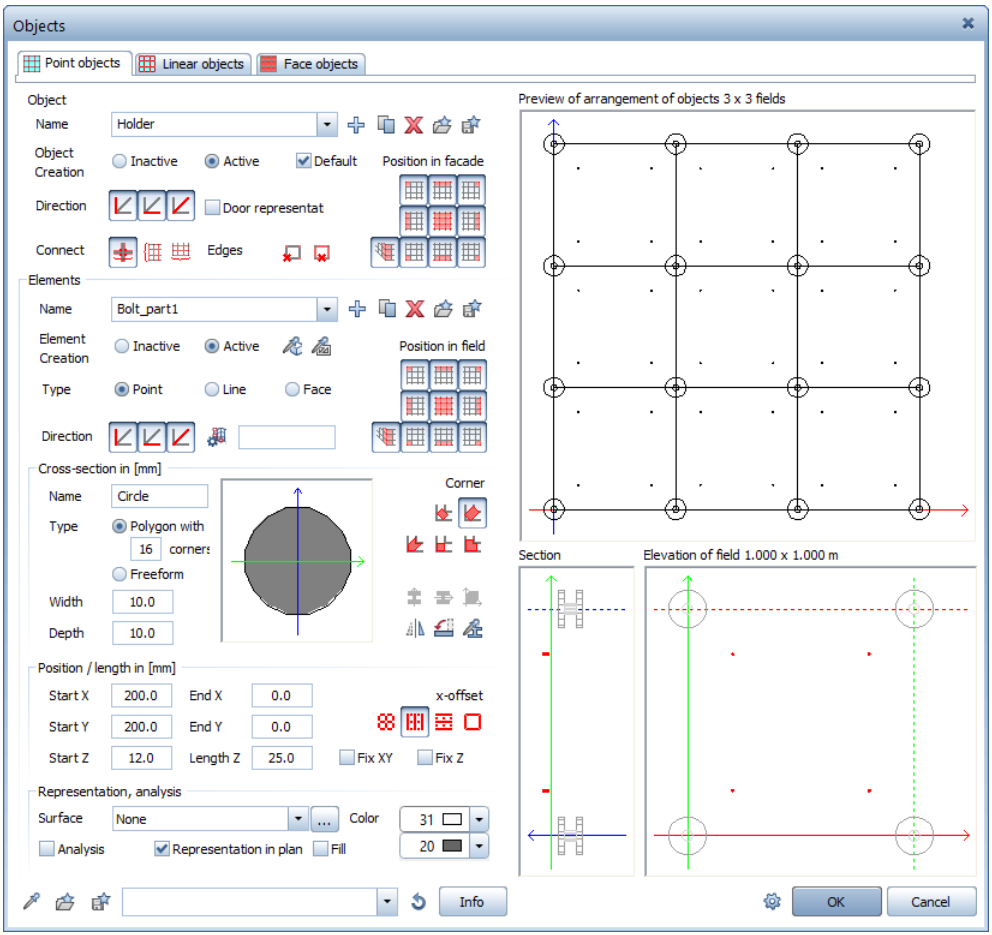
The **Start Z** value is **12 mm** from the reference line:



A = reference line (path)
7 = bolt_part1

6 In the **Representation, analysis** area, select color **31**.

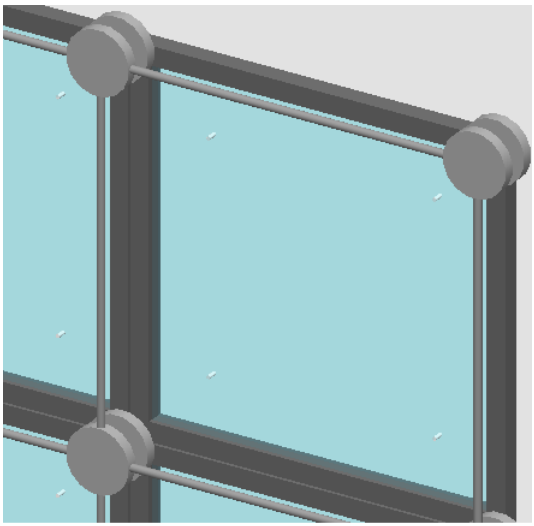
Do not change the other settings.



7 Click **OK** to close the **Objects** dialog box.

8 Go to the **Facade** context toolbar and click **Apply**.

9 Select F4 to see the intermediate result in animation.



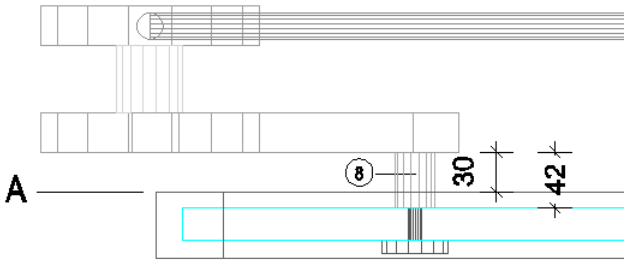
10 To design the second part of the bolt, select **Modify** on the **Facade** context toolbar again. Select the facade by clicking it.
Select **Object definitions** and open the **Point objects** tab.

11 In the **Elements** area, select the **Bolt_part1** element, click **Copy element** and enter **Bolt_part2** for the name of the new element.

12 Change the following values in the **Cross-section in (mm)** area:
Width = 30 mm
Depth = 30 mm

13 In the **Position / length in (mm)** area, change the following coordinates:
Start Z = **-30 mm**
Length Z (= depth of element) = **42 mm**

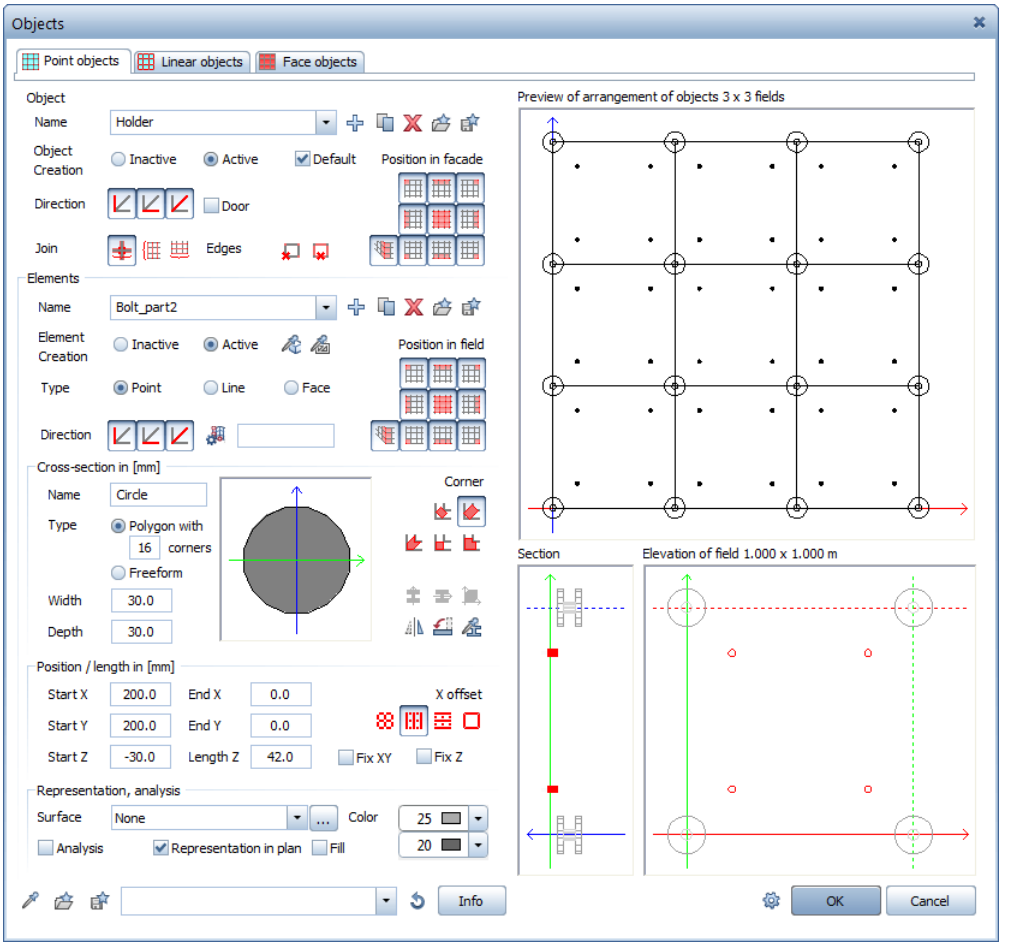
The **Start Z** value is **30 mm** from the reference line in the negative direction:



A = reference line (path)
8 = bolt_part2

14 In the **Representation, analysis** area, select color **25**.

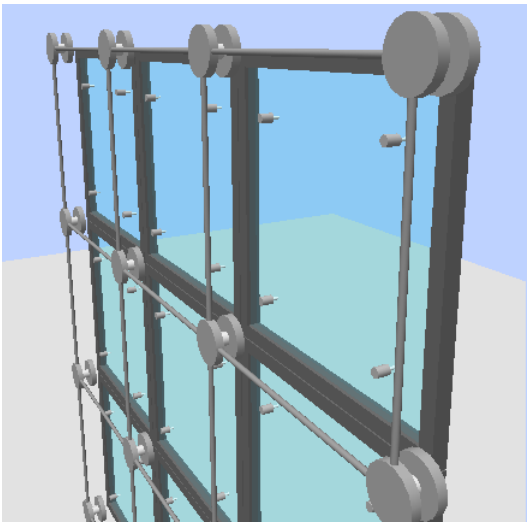
Do not change the other settings.



15 Click **OK** to close the **Objects** dialog box.

16 Go to the **Facade** context toolbar and click **Apply**.

17 Select F4 to see the intermediate result in animation.



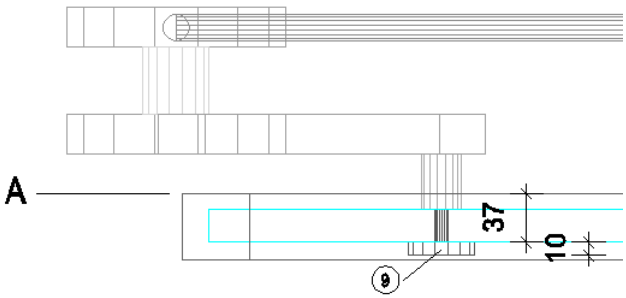
18 Design the third part of the bolt.
Open the **Point objects** tab again (select **Modify**, click the facade and select **Object definitions**).

19 In the **Elements** area, select the **Bolt_part2** element, click **Copy element** and enter **Bolt_part3** for the name of the new element.

20 Change the following values in the **Cross-section in (mm)** area:
Width = 50 mm
Depth = 50 mm

21 In the **Position / length in (mm)** area, change the following coordinates:
Start Z = **37 mm**
Length Z (= depth of element) = **10 mm**

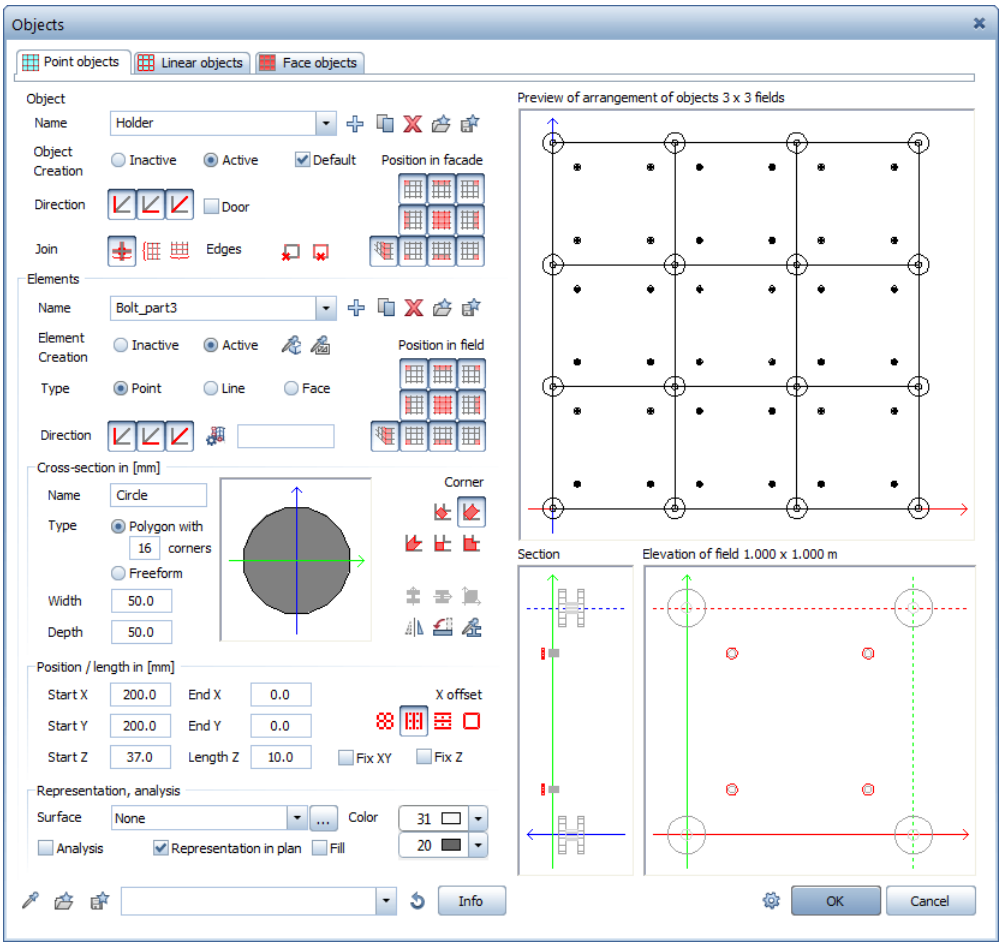
The **Start Z** value is **37 mm** from the reference line:



A = reference line (path)
9 = bolt_part3

22 In the **Representation, analysis** area, select color **31**.

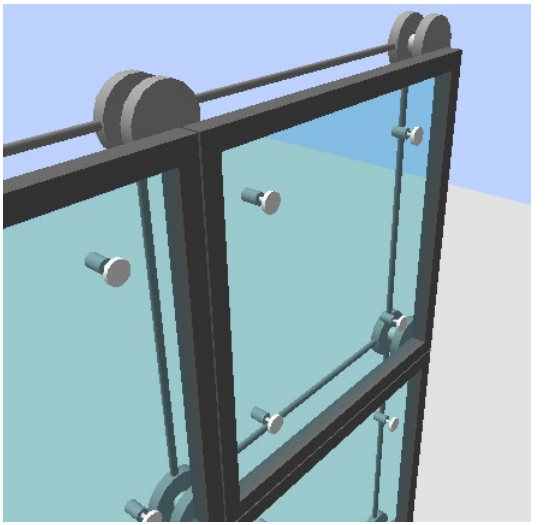
Do not change the other settings.



23 Click **OK** to close the **Objects** dialog box.

24 Go to the **Facade** context toolbar and click **Apply**.

25 Select F4 to see the intermediate result in animation.



Creating point elements – connecting element

Finally, create the elements that connect the circular holders with the bolts.

To create the connecting elements

1 On the **Facade** context toolbar, click **Modify** and select the facade by clicking it. Select **Object definitions** and open the **Point objects** tab.

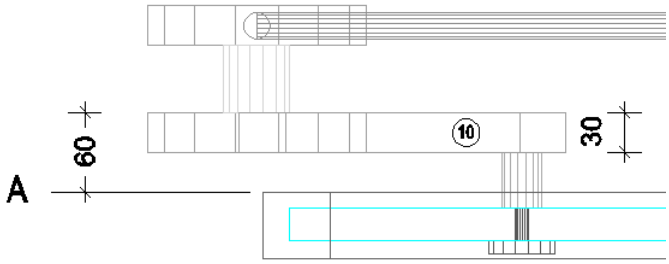
2 Do not change the settings at the top of the **Point objects** tab, as you are still designing components of the **Holder** object.

3 In the **Elements** area, click **Add element** and enter **Connector** for the name of the new element.

4 This element is a rectangle with four corners.
Enter the following values in the **Cross-section in (mm)** area:
Width = **300 mm**
Depth = **50 mm**

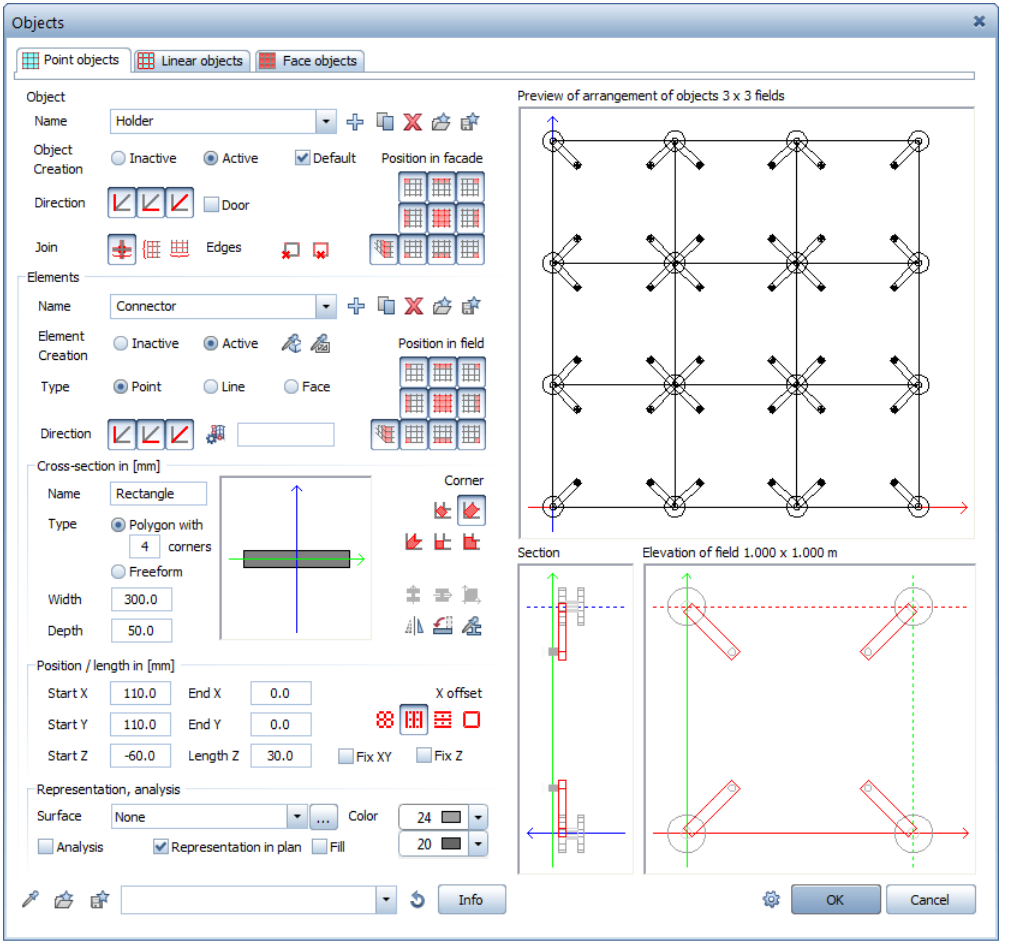
5 In the **Position / length in (mm)** area, change the following coordinates:
Start X = **110 mm**
Start Y = **110 mm**
Start Z = **-60 mm**
Length Z (= depth of element) = **30 mm**

The **Start Z** value is **60 mm** from the reference line in the negative direction:

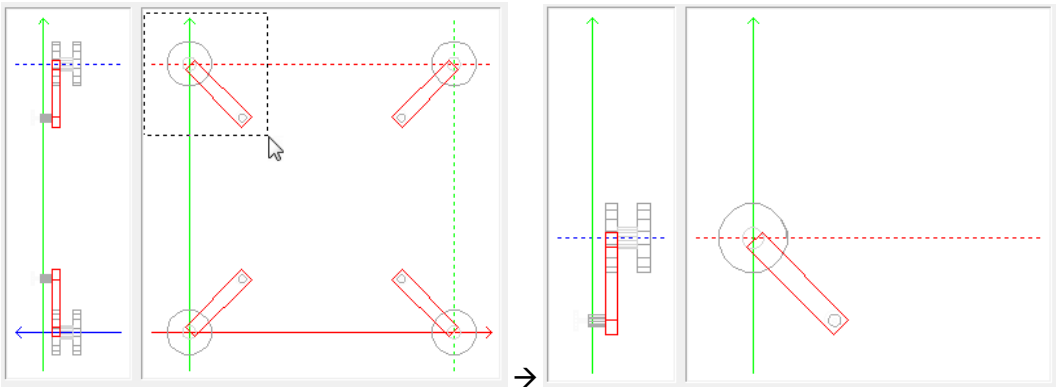


A = reference line (path)
10 = connecting element

6 In the **Representation, analysis** area, select color **24** and select **Representation in plan**.



Note: To zoom in on a detail in the preview, use the right mouse button to open a selection rectangle around the area you want to view in detail.

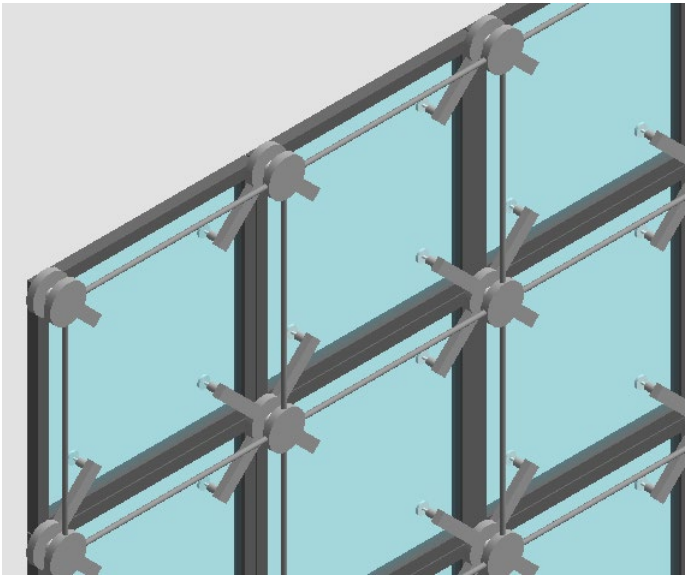


To display the full preview again, double-click the middle mouse button.

7 Click **OK** to close the **Objects** dialog box.

8 Go to the **Facade** context toolbar and click **Apply**.

9 Select F4 to see the final result in animation.



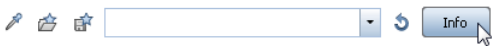
Saving the facade as a favorite

The facade is complete. Save the facade as a favorite for use in future projects.

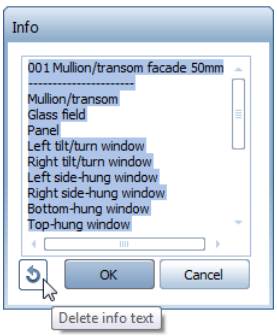
To save the facade as a favorite

1 On the **Facade** context toolbar, click **Modify** and select the facade by clicking it. Select **Object definitions** and open the **Point objects** tab.

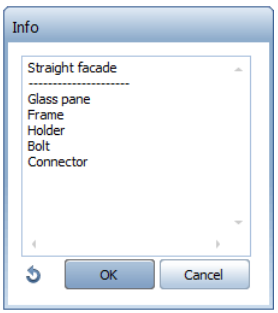
2 Click the **Info** button in the lower border of the dialog box.



3 You can click **Delete info text** to delete the text from the **Info** dialog box.

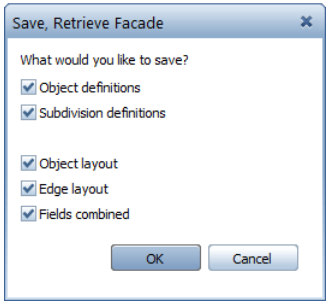


4 Enter the following:



5 Click **OK** to confirm.

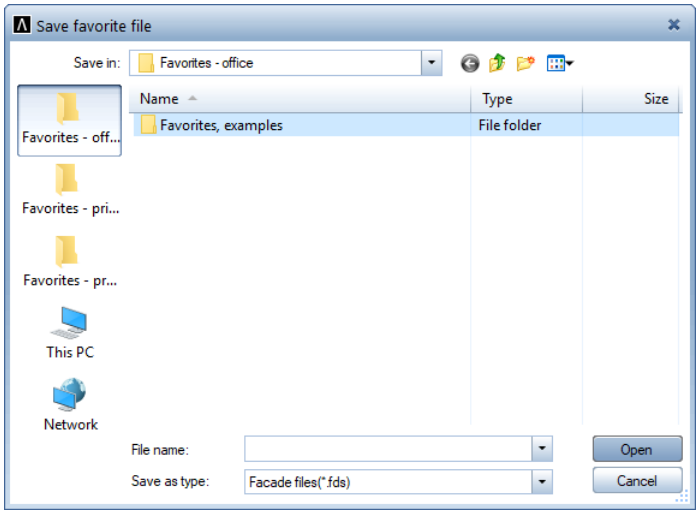
6 Click **Save object style** in the lower border of the dialog box.



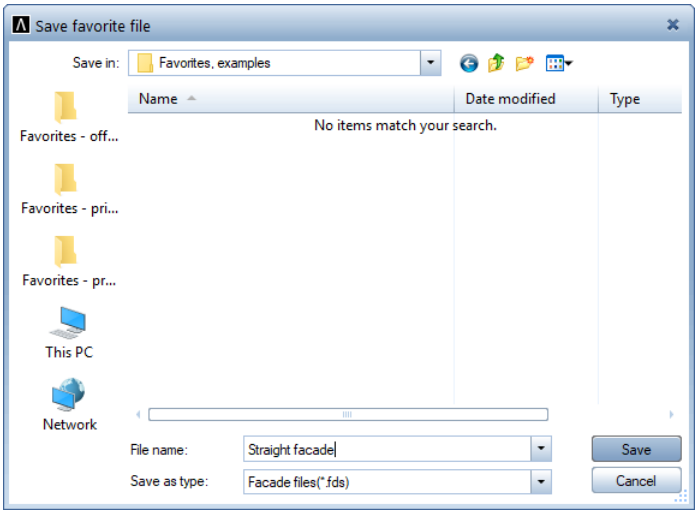
7 Check that all options are selected and click **OK** to confirm.

The `Favorites - office` folder opens.

8 Create a subfolder and name it **Favorites, examples**.



9 Open the new folder, enter **Straight facade** for the name of the favorite file, and click **Save**.

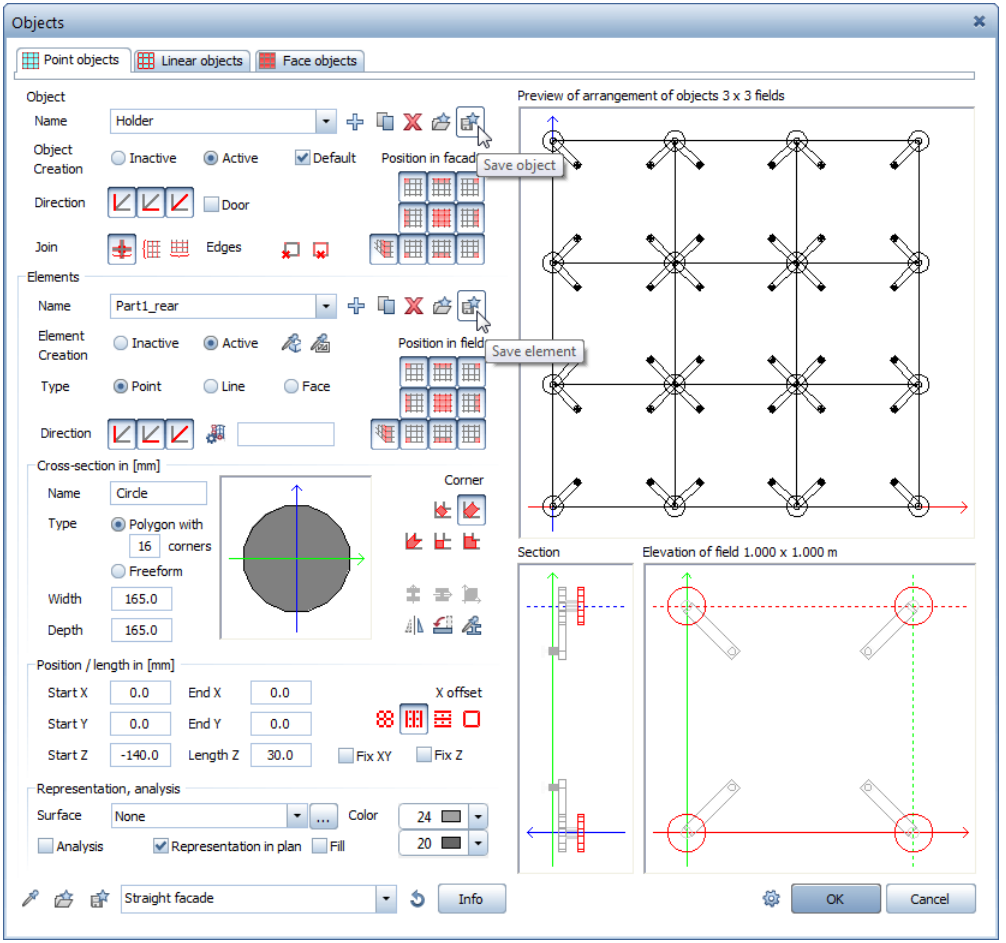


Allplan saves the entire facade to a file with the extension `*.fds`.

You can see the **Point objects** tab again. The new **Straight facade** favorite is entered in the drop-down list to the left of the **Info** button.

To load this favorite, click **Retrieve object style**, open the **Favorites, examples** folder, and select the **Straight facade** file.

10 In addition to the entire facade, you can also save individual objects and elements of the facade as favorites in the **Objects** dialog box.
You can find these tools next to the name of the object or element.

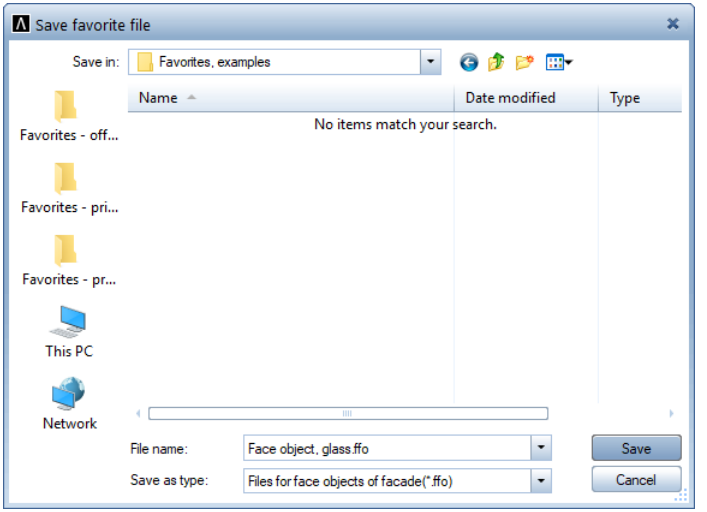


11 For example, you can save the **Glass** object.
To do this, open the **Face objects** tab.

12 Click **Save object**.

13 The **Save favorite file** dialog box opens. Select the **Favorites, examples** folder.

14 Enter **Face object, glass** for the name and click **Save**.



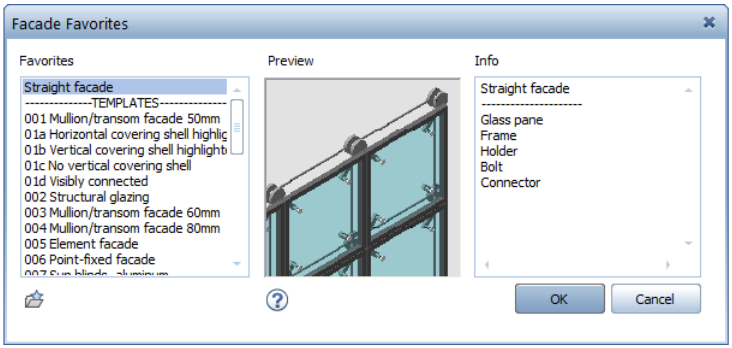
Allplan saves the object as a file with the extension `*.ffo` (files for face objects of facades).

When you save elements as favorites, Allplan creates a file with the extension `*.ffe` (files for face elements of facades).

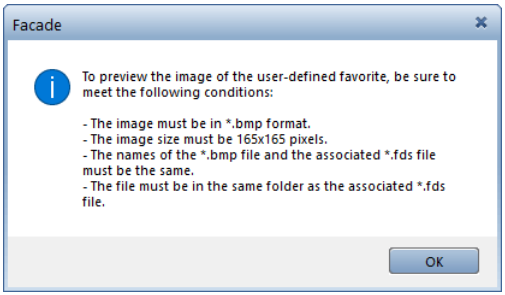
15 To load the object favorite or element favorite, click **Retrieve object** or **Retrieve element**, open the **Favorites, examples** folder, and select the object file or element file you want to open.

Retrieving facades saved as favorites

To select the facade saved as a favorite, you can use the **Retrieve facade favorites** tool on the **Facade** context toolbar. The **Information** area displays the text entered.



To get a **preview** of the favorite, you must create a bitmap. Click to learn how to do this.



Now you know how to create a straight facade. Of course, you can also design you own facades as circular components, spline-based components, or polyline-based components.

Analyses with reports

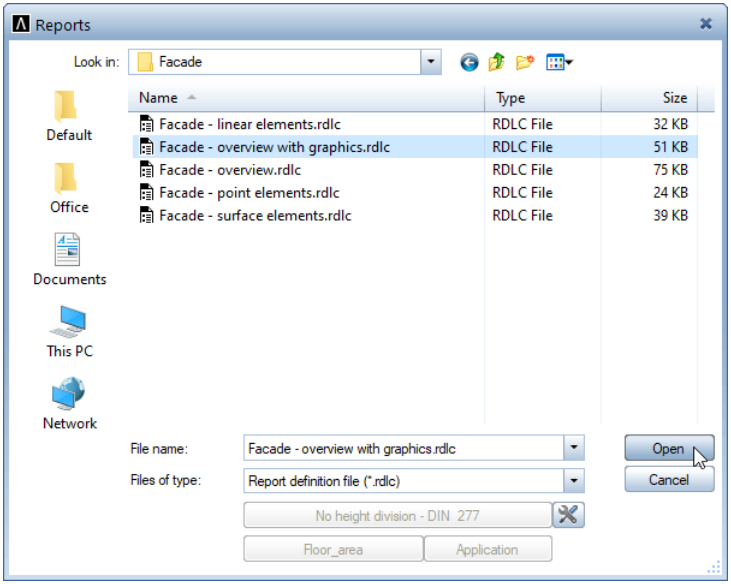
Finally, you will analyze your own facade by means of the **Reports** tool.
By using the **Reports** tool, you can generate reports of architectural elements, objects, 3D solids with architectural attributes, and engineering components. You can view reports on the screen, place them in the document, or send them to the printer. In addition, you can save reports as PDF files, Excel files, or Word files.

To analyze your own facade in a report

➲ Drawing file **90 Straight facade** is current. All the other drawing files are closed.

1 Click **Reports** (**Annotations** task area).

2 In the **Reports** dialog box, open the **Reports – Eng – Facade** folders.
Select the **Facade – overview with graphics.rdlc** file.

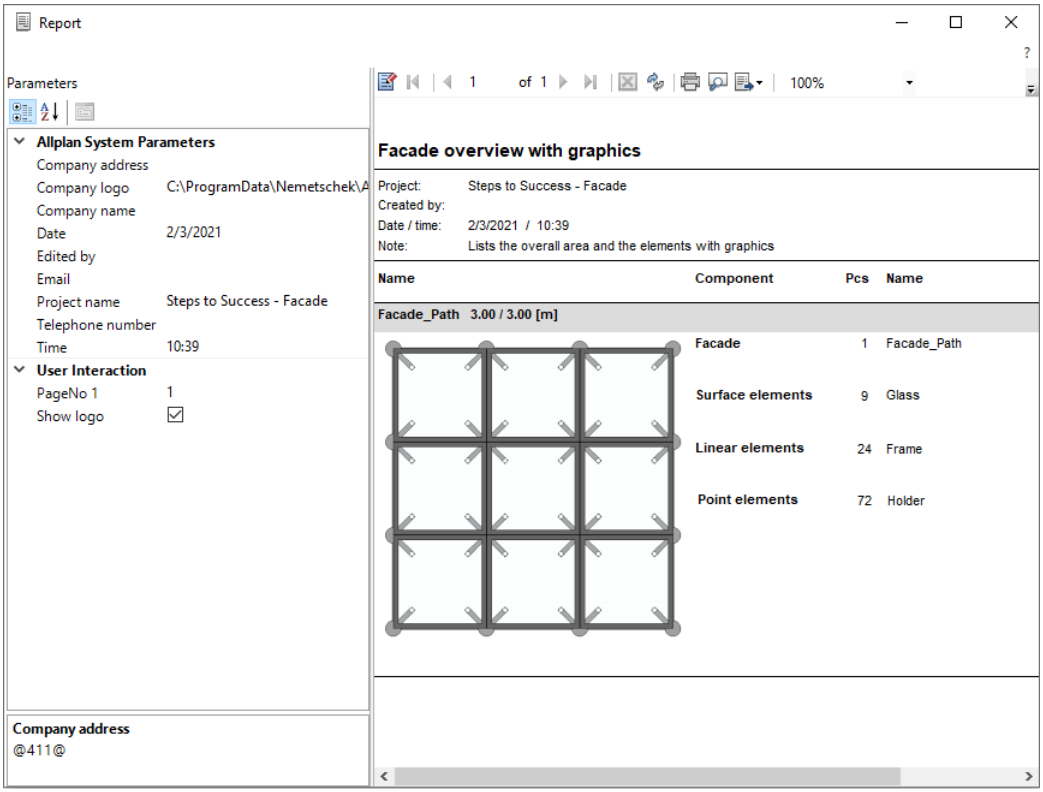


Note: The **Facade** folder (**Reports – Eng**) contains more reports for analyzing facade elements (surface elements, linear elements, point elements).

3 Click **Open**.

4 Click **All** in the input options.

You can see the report in the **Report** dialog box on the screen.



As mentioned before, you can output, print, or save the report in various ways. By means of **Layout Designer**, you can change the way the report looks and save the resulting report as a new template in RDLC format.

5 Close the report.

You have reached the end of this step-by-step guide, giving insights into how to work with the **Facade** tool. We hope you had no problems following the steps and you are satisfied with the result.

Index