Allplan 2013
Associative Views

Steps to Success

Contents

Welcome!

This step-by-step guide shows you how to work with associative views and sections to create general arrangement and reinforcement drawings so that you can tap the full potential of integrated design - from building model to reinforcement.

The aim of this workbook is to guide you with five, easy-to-follow steps from building model generation to creation of general arrangement and reinforcement drawings to layout output and data exchange.

Using a small and clear project as an example, this guide describes each step in detail so that you can follow quickly and easily. As the training project also provides the finished data of each individual step, you can get started wherever you want.

The appendix shows how you can create general arrangement and reinforcement drawings using associative views and sections without referenced drawing files.

We wish you much fun and every success!

Basics

Allplan 2013 provides various approaches to creating general arrangement and reinforcement drawings. The aim is to reduce them to two methods that can be distinguished clearly: the first approach works without the model and the second, model-oriented approach is based on associative views and sections.

For whom is this guide intended?

If you have worked with the ⊞ **Shell** module until now or if you use Allplan 2013 for the first time to create general arrangement or reinforcement drawings, the following description provides useful tips.

If you have used the ⊞ **Shell** module to create reinforcement based on a 2D shell until now, you are advised to switch to the ⊞ **Associative Views** module. In addition, read the section Reinforcement using an auxiliary 3D object (on page 53).

If you have worked in 2D until now, this guide is designed to give you a quick and practical introduction to working in 3D, which offers a number of advantages.

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Installing and selecting the training object

We have prepared a training project for you so that you can get started immediately without having to make time-consuming preparations first.

Note: You can also download the training project - and any updated versions - from Allplan Connect (http://www.allplan-connect.com) on the Internet. You can find the data in the **Learn** - **Documents** area.

To install and select the training object

➲ Allplan 2013 must be installed, registered and correctly configured. After having installed Allplan, you need to start it at least once and check whether it works properly.

1 Close any applications that are running.

Note: When you are working in a network environment, check that Allplan is currently not running on any workstation.

2 Log on as the system administrator.

3 Insert the medium with the data in the appropriate drive.

4 In the **Documentation** - **Allplan 2013** - **Training project for Steps to Success – Associative Views** area, click **Start Installation >>**.

5 Follow the installation dialog.

6 To complete the installation, click **Finish**.

7 Start 📖 **Allplan 2013**, click 🔳 **New Project, Open Project** and select the training project.

8 Select 👁 **Show/Hide** (**Default** toolbar) and activate the **Color stands for pen** option.

Note: If the project is available as a zip file with the corresponding inf file, do the following:

1 Close any applications that are running and start the ⚙ **Services** application.

2 Select **Backup path** on the **Configuration** menu and specify the folder in which the training project is stored.

3 Select **Data Backup, Import, Projects** and install the training project.

4 Exit the ⚙ **Services application**.

Step 1: Building Model

All the points you need to consider when you create the building model yourself are taken into account in the training project. If you want, you can immediately move on to Step 2 (see "Step 2: General Arrangement Views" on page 23).

The format properties are assigned to the components in such a way that the floor plans are displayed in section view. This way, you can use the model data for the general arrangement drawing without having to create an additional section of the floor plan.

Objective

Organization in the building structure

You are well advised to work with the building structure to make sure that all those involved in a construction project always find their way around. This is particularly important for large-scale offices and complex projects. Double-click in the workspace with the left mouse button to get an overview of the structure of the building model.

Structure of model data

Create the structure of the model data on the left-hand side of the 📇 **Building structure** tab. Use the following structural levels:

- Building

- Story

- Construction stage

- Drawing files

Entire model data

It is a good idea to place the references of the model data in a single drawing file. This way, you can animate and analyze the entire building model quickly and easily. Use the 📇 **XRef** tool on the **Insert** menu to to place the drawing files as advanced XRefs with the following settings.

You can find the entire model data in drawing file **105** of this training project. Select it by double-clicking and press **F4** to view the entire model in animation mode.

On the **View** menu, click ▣ **Select Layer Plot Set** and select **Entire model**. Finishing surfaces are no longer displayed.

On the **Repeat** menu, click ⬛ **Select Layer Plot Set** and select **General arrangement drawing**. You can only see the unfinished structure with insulation.

Finally, select the **Reinforcement drawing** plot set. Now the insulation is not displayed either.

Note: You can use the drawing file with the referenced model data as a source drawing file for a view or section through the entire building. This approach is used in this training project.

To verify this, open the shortcut menu of the existing view in the "Derived from building structure" area and select **Source drawing files for view.**

Drawing file range

It is a good idea to use the same range of drawing file numbers for the same story in all projects and to label the drawing files so that you can easily tell them apart and see what data they contain. This is useful for large projects in particular and considerably facilitates the process of selecting drawing files.

"1000 B1_GF_S1_walls", for example, could stand for **walls** from construction **S**tage **1** on the **G**round **F**floor in **B**uilding **1.**

Layers and plot sets

Both the general arrangement data and the reinforcement data is in a single drawing file. In Allplan you have a number of options to control what is displayed without having to switch drawing files.

Layers

You can assign a layer to each element and then change the layer status by double-clicking in the workspace with the right mouse button. You can also use the ⬙ **Modify Layer Status** tool on the shortcut menu of the individual elements.

Do not change the setting of the **Auto-select layer with menu** option, which is active by default. This way, you do not need to specify the layers again the next time you activate the same tool.

plot sets

As described earlier, you can use plot sets to define the visibility of all layers in a single step.

After you have defined a new plot set on the **Plot Set** tab in the Layer dialog box, you specify which layers are visible and which hidden. You can then use these plot sets to control what is displayed - switch to the **Select Layer/Visibility** tab, open the shortcut menu and choose **Match visibility from plot set...**

If you have already defined plot sets, you can use them as a basis for additional plot sets. For example, turning the **Reinforcement, bottom layer** plot set into the **Reinforcement, top layer** plot set only takes a few mouse clicks.

To match the visibility of an existing plot set

1   Click the **Define, modify plot set...** button on the **Plot Set** tab in the **Layer** dialog box, create the **Training** plot set and select it in the list box.

2   Click **Match visibility from plot set...** on the shortcut menu and select the **Reinforcement, bottom layer** plot set in the dialog box.

3   Hide the layers of the bottom layer and show the layers of the top
    layer for **Reinforcement drawing, Bar reinforcement, Mesh
    reinforcement** and BAMTEC. You can do this quickly by clicking
    and pressing the space bar.

4   Click **OK** to confirm.

Area styles and drawing types

Use the area styles provided for the components of the building model. This way, you can create different layout types without any additional drawing files or modifications.

The way area styles are displayed changes with the drawing type.

Double-click in the workspace with the left mouse button, open the **Reinforcement of detached house, 1st upper floor, Walls** structural levels in the "Derived from building structure" area and double-click drawing file **1121**.

Zoom in on the reinforcement views and select **Reinforcement drawing** for the drawing type in the status bar.

The on-screen display changes in accordance with the **Reinforcement drawing** plot set.

Change the plot set to **General arrangement drawing** and select different drawing types. The number of elements and the way they are displayed change.

Finally, set the drawing type to **Scale definition** so that the area styles change with the scale.
Experiment with different scale settings. When finished, set the reference scale back to **1:50**.

Note: You can create additional area styles and drawing types by clicking the **Manage line styles, area styles, drawing types...** button on the **Format Definition** tab.

Textures for surfaces

Assign textures to the surfaces of the building model's components. This way, you can quickly and easily achieve realistic images for presentation purposes.

You can also use textures for associative views and sections to make them look more realistic. Open the settings for hidden line images and select the **Create bitmaps form textures, fills from colors** option in the **Surface elements** area. Note, however, that this requires more computing power with large layouts in particular.

Step 2: General Arrangement Views

As you have used the building structure to create the building model, the components of the individual stories are in separate drawing files with different default planes. To create the general arrangement drawings of the individual components, you just need to select the drawing files with the associated model data and then create the required views and sections in a new, empty drawing file using the tools in the **Associative Views** module.

This approach generates referenced drawing files as the general arrangement views are created directly from the model data of the building. As you do not need to copy the data of the floor plan, the general arrangement views are always up-to-date.

Objective

Elevation view of downstand beam, mark DB01   Section A - A

Structuring and selecting drawing files

First create the folders required for the individual components and assign the corresponding drawing files in the "Derived from building structure" area on the right.
Create separate drawing files for the general arrangement and the reinforcement of the individual components. To facilitate work in a workgroup environment, use an additional drawing file where you place an XRef of the building's model data for the current story.

This structure is already predefined in the training project.

When working across drawing files, it is essential that you select the correct drawing files. When working in a workgroup environment, you should only load the model drawing files for creating or modifying the associative views and sections in order not to interrupt the workflow of the other users.

If you consistently work with the correct drawing files, the model data of the building or reinforcement only includes references to the views and sections. Similarly, the views and sections only include references to the building model and reinforcement model.

When it comes to creating views and sections, the easiest and safest way to select the correct drawing files is to double-click the desired drawing file. This makes the drawing file clicked current and automatically closes all the other drawing files that may be open. Then open the other drawing files in edit mode.

To provide the model data for the beam

1 Click 🏗 **Open on a Project-Specific Basis**. In the **Derived from building structure** area on the right, open the **Reinforcement of detached house, 1st basement** , **Beams** structural levels and double-click drawing file **930**.

2 Double-click in the workspace with the left mouse button to access the **Open on a project-specific basis** dialog box again.

3 In the 🏗 **Building structure** area on the left, open the **1st basement** and **Ground floor** structural levels and open drawing files **900**, **903** and **1000** 📄 in edit mode.

Note: This approach ensures that only the drawing files **900**, **903** and **1000** are selected for the model data of the beam.

4 **Close** the dialog box, double-click in the workspace with the middle mouse button to zoom all elements and change the scale in the status bar to **1:50**.

5 Select the **List existing layers in open documents** option and set all the layers to 🖼 **Hidden, frozen,** with the exception of

AR_C_LB, AR_WINSU, AR_COL_C, AR_SLAB, AR_BEAM and AR_PLANE.

Note: If you are following on from step 1 and the **General arrangement** plot is still active, the layers' status is set correctly.

Defining options for views

To make sure that the associative views and sections are actually created in the current drawing file, you need to set the 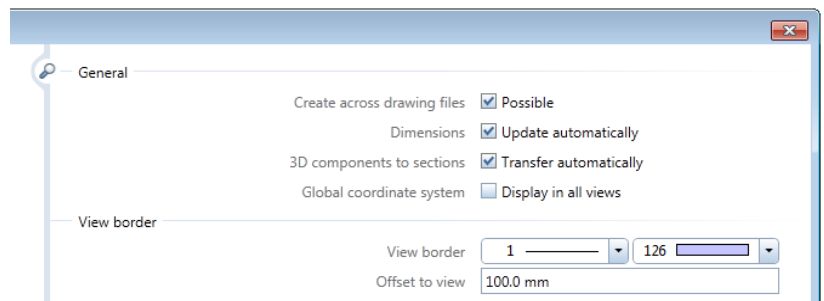options accordingly. If you then create reinforcement in existing views and sections, it is not the current setting that applies but the option that was used to create the views and sections.

If the "Create across drawing files" option is active, the following situations cause Allplan to create drawing file references, which are represented by ⬚ paper clips:

- Creating views and sections of model drawing files open in edit mode

- Creating reinforcement in loaded views and sections

- Creating model data in conjunction with loaded sections and/or loaded model data if the new components are within the section objects and the **Automatically transfer 3D components to sections** option is active

To set the required options

1   Click ✂ **Options** (**Default** toolbar) and then **Associative views**.

2   Check whether the **Create across drawing files** and **Transfer 3D components automatically to sections** options are selected. If they aren't, select them.

Creating associative sections

To create the reinforcement later, you require a view of the downstand beam and a section at midspan.

To create the front view

Tip: Click ⬒ at top left to collapse the entire tree structure.

1 On the **Format** menu, click ⬨ **Select, Set Layers** and select the **List entire layer hierarchy** option. In the ARCHITECTURE category, Design folder, set layers **DE_GEN03**, **DE_GEN04**, **DE_GEN05** and **DE_GEN06** to ⬧ **Modifiable**. In the ENGINEERING category, Shell folder, make layer **SH_GEN** ⬧ **Current** and set layer **SH_SHL** to ⬧ **Modifiable**.

Note: If you are following on from step 1 and the **General arrangement** plot is still active, all you need to do is make layer **SH_GEN** ⬧ **Current**.

2 Select the ⬓ **Views, Details** family in the **Tools** palette and click ⬓ **Create Section** in the **Create** area.

The layer set on the **Format** toolbar is used for the label. You cannot select a different layer. The layer for the view or section is taken from the 3D components. You can also specify it in the dialog boxes for hidden line images and sections.

3 *Select 3D elements of which you want to create a section:* Press and hold down the left mouse button and enclose the beam, column and exterior wall in a selection rectangle, which you open from right to left. This selects all elements that are fully bounded and intersected (⬚ **Select Elements based on Direction** is active in the **Filter Assistant**: the selection rectangle is shown as dashed lines, and the area it covers is highlighted in light green).
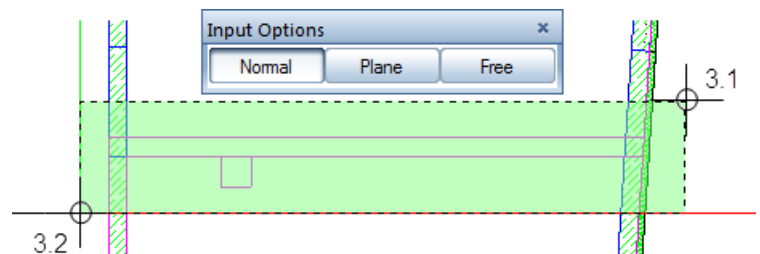

4 *Select viewing direction:* do not change the settings on the context toolbar and define the viewing direction by clicking below the circle displayed on your screen.

Tip: As the reference mode is set to **Observer**, the section is created so that horizontal component edges are parallel to the global x axis; in other words, horizontal edges are always horizontal, regardless of the viewing direction. When set to **Folded**, however, the section created is folded.

5   *From point - To point*: define the two diagonal points of the first clipping area in plan so that the entire downstand beam is included in the section. Press ESC to finish entering the polyline.

Tip: Snap to the existing points and enter exact values in the data entry boxes that are highlighted in yellow in the dialog line.

The **View and Section Properties** Context toolbar is displayed and the section is attached to the crosshairs.

6   The **Status** box is set to **Hidden**. If it isn't, click the box to switch to the hidden line image.

7   Click the **Def...** button on the **View and Section Properties**
    Context toolbar to open the **Settings for Hidden Line Images**
    dialog box. Check that the **Show visible edges** and **Display
    hidden edges** options are selected, specify the following format
    properties and click **OK** to confirm the dialog box.

- Visible edges:
  Pen **0.35** mm; do not change the line and color; layer
  DE_GEN03

- Hidden edges:
  Do not change the pen, line and color; layer **DE_GEN04**

8   Click ☑ **Section settings for associative view** beside ⁣ᵃ◀ and make the following settings in the **Section** dialog box:

- In the **Display of clipping path** area, deactivate the **Place clipping line** option.

- In the **Section display** area, select **Apply thick line around intersected components** and then **Exterior edges**.

- Select the layers **AR_SECT**, **DE_GEN05** and **DE_GEN06** for the linear elements to be displayed and click **OK** to confirm the dialog box.

9   Click [✓] **Dimension line settings for associative view**, set the **SH_SHL** layer for the dimension line elements, switch to the **Dimension Block** tab, select the styles as shown and click **OK** to confirm.

10 *To point or angle of rotation:* place the section to the right of the floor plan.

11 *From point*: define the second clipping area in the section you just created so that only the column, slab and wall connections are displayed.

12 Enter **View of downstand beam, mark DB01** for the label of the section in the dialog line and press ENTER to confirm.

13 Specify the label's parameters (text height and width: **3.5 mm**), place the label and press ESC to quit the tool.

In the next steps, you create the cross-section based on the front view.

To create the section required

1 Right-click the view border of the section you just created and select **Create Section** on the shortcut menu.

2 Select the entire section by enclosing it in a selection rectangle or by clicking the border and define the viewing direction by clicking to the right of the circle displayed on screen.
   This has the effect that the 3D elements are viewed from the right when the section is calculated.

3 To define the clipping area, click the two diagonal points at midspan in the section you just created and press ESC to finish entering the polyline.

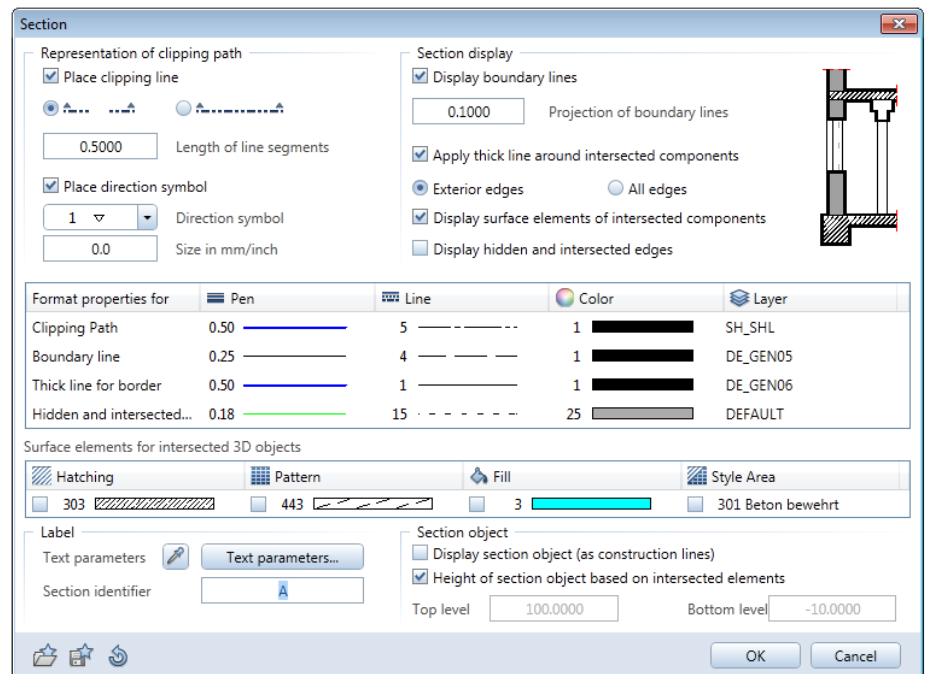   The **View and Section Properties** Context toolbar is displayed and the section is attached to the crosshairs.

4 On the **View and Section Properties** Context toolbar, click **Section settings for associative view** beside , make the following settings in the **Section** dialog box and click **OK** to confirm the dialog box.

   - In the **Display of clipping path** area, select the **Place clipping line** option and set the parameters as shown below.

   - In the **Label** area, click **Text parameters...**, set the text height to **5.0** mm and the text width to **4.0** mm. Then click **OK** to confirm the **Text Parameters** dialog box.
     Enter A for the section identifier.

Section

Representation of clipping path

☑ Place clipping line

◉ ▲.. ..▲   ○ ▲......▲

[0.5000]   Length of line segments

☑ Place direction symbol

[1 ▽][▼]   Direction symbol

[0.0]   Size in mm/inch

Section display

☑ Display boundary lines

[0.1000]   Projection of boundary lines

☑ Apply thick line around intersected components

◉ Exterior edges   ○ All edges

☑ Display surface elements of intersected components

☐ Display hidden and intersected edges

Format properties for	≡ Pen	🖾 Line	⬤ Color	🗇 Layer
Clipping Path	0.50 ————	5 —— - —— - -	1 ▬▬▬	SH_SHL
Boundary line	0.25 ————	4 —— —— ——	1 ▬▬▬	DE_GEN05
Thick line for border	0.50 ————	1 ————	1 ▬▬▬	DE_GEN06
Hidden and intersected...	0.18 ————	15 · - · - · - · -	25 ▬▬▬	DEFAULT

Surface elements for intersected 3D objects

🖾 Hatching	🖩 Pattern	⬙ Fill	🖾 Style Area
☐ 303 ⬛⬛⬛	☐ 443 〰〰	☐ 3 ▬▬▬	☐ 301 Beton bewehrt

Label

Text parameters [✎]   [Text parameters...]

Section identifier   [A]

Section object

☐ Display section object (as construction lines)

☑ Height of section object based on intersected elements

Top level [100.0000]   Bottom level [-10.0000]
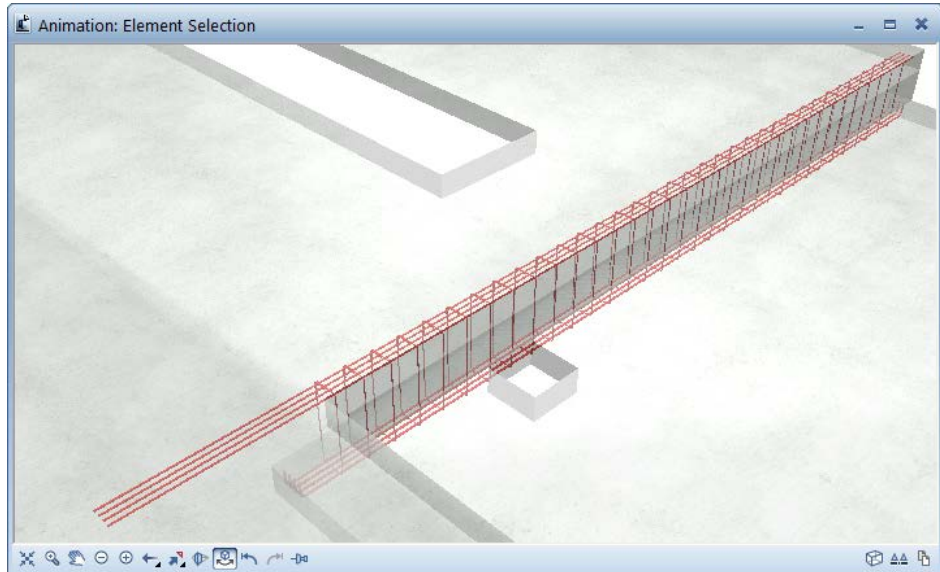
📂 📄 ↺   [OK]   [Cancel]

5   Place the section so that it is to the right of and aligned with the front view and define the clipping area in the section so that the slab connections are displayed.

6   Confirm the section identifier and place it above the section.

7   If necessary, click 📲 **Move** (shortcut menu or **Edit** toolbar) to move the section.

Step 3: Reinforcement

The next step is to create part of the reinforcement in the general arrangement views of the downstand beam. Whereas the reinforcement is placed in the drawing file with the associated sections, you can find the reinforcement model in the current drawing file.

So that you can use the drawing file with the associated sections for both the general arrangement drawing and the reinforcement drawing, it is important that you place the reinforcement on layers.

Objective

Note: The **Concrete_reinforced.surf** surface (transparency: 50%) has been assigned to the concrete components so that the reinforcement is displayed in the animation of the reinforcement drawing. Alternatively, change the transparency setting of the **Concrete.surf** surface and save it as a new surface. However, this change applies to all the concrete components in the entire project.

Creating reinforcement with the 3D model

Now you create the stirrup reinforcement and the bottom and top longitudinal bars as part of the beam reinforcement.
This section does not include the reinforcement for the wall restraints, the starter bars for the slab, the web reinforcement and the reinforcement schemas.
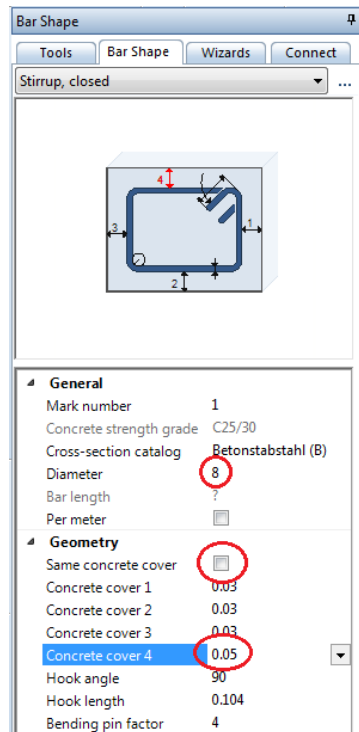
To create expanding stirrup reinforcement

➲ Open the ✕ **Options**, **Reinforcement** page, and check that the **Reinforce with 3D model** option is active.

1 Double-click in the workspace with the left mouse button and double-click drawing file **931** of the **Downstand beams** structural level.

2 Double-click in the workspace with the left mouse button again, open drawing file **930** in 📄 **edit mode** and click **Close** to quit the dialog box.
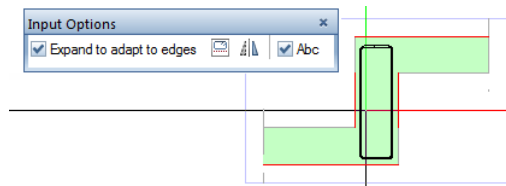
Note: If the **Automatically transfer 3D components to sections** option is selected and you are working in a workgroup environment, you need to open drawing file **930** in 📄 **reference mode** to ensure a smooth workflow.

3 Click **Zoom All** and change the scale in the status bar to **1:50**.

4 On the **View** menu, click 📥 **Select Layer Plot Set** and select **Reinforcement drawing**. Select **Reinforcement drawing** for the drawing type in the status bar.

5 Select the ⊔ **Engineering** family in the **Tools** palette.

6 Click �🔟 **Bar Shape** in the **Create** area and set the layer **BR_B**.

7 Select the **Stirrup, closed** bending shape in the list box at the top of the **Bar Shape** palette.

8   Select diameter **8** in the parameter area of the palette, clear the **Same concrete covers** check box and change the value for **Concrete cover 4** to **0.05**.
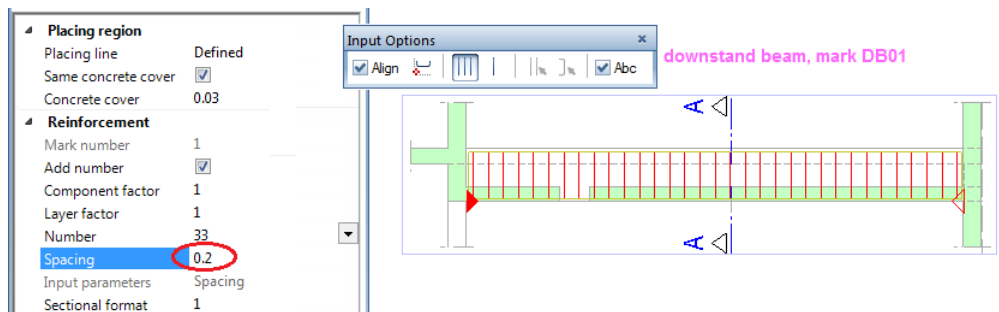

9   The **Expand to adapt to edges** and **Label** options are active in the input options. Move the crosshairs in section A-A to the component line on the left within the outline until the bending shape expands, then click in the workspace.

10 Press ESC to start the ⬚ **Label** tool and place the bar label with the mark number and diameter to the right of the bar.

The 🔧 **Place Bar Shape** tool opens automatically.

11 Define the clear opening of the downstand beam as the placing region by clicking the points at the bottom of the beam in the view. Select **Align** in the input options. The **Label** option remains active.

12 Enter **0.20** for the spacing and press ESC twice to quit the tool and to start the 🔧 **Dimension Line, Label** tool.
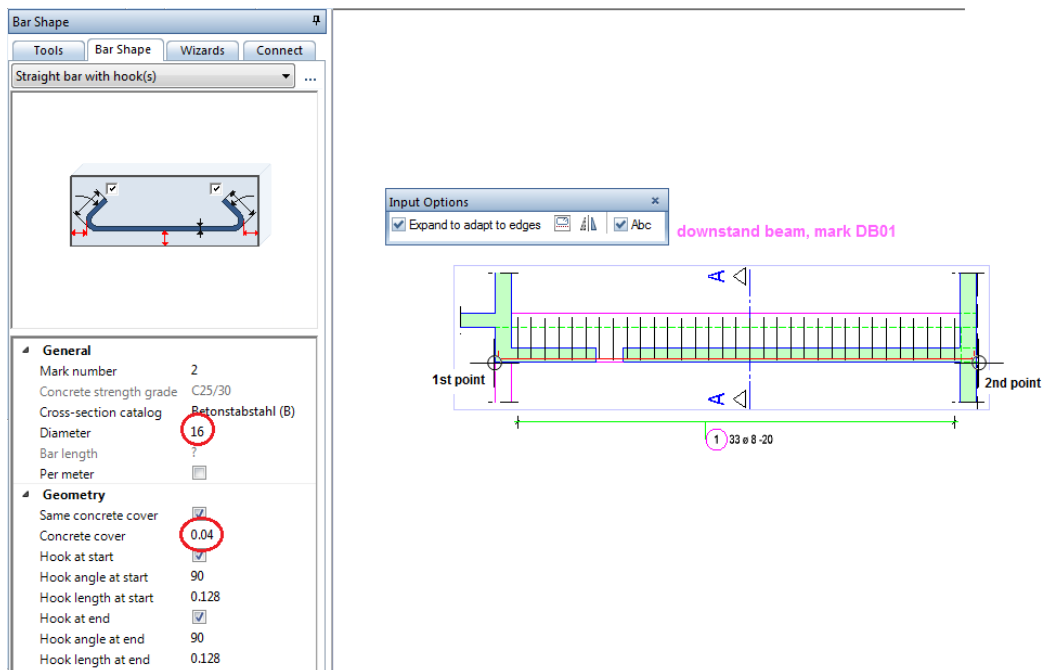

13 If necessary, set the type to **Dimension line** in the list box at the top and place the dimension line and label below the placement. Set the label parameters so that the number of pieces and the diameter are displayed.

14 Press ESC to finish creating the stirrup reinforcement.

For the bottom longitudinal reinforcement, you will place 4 bars of diameter 16 with end hooks. The top longitudinal reinforcement consists of 4 bars of diameter 12 that extend into the slab in the area of the interior column.
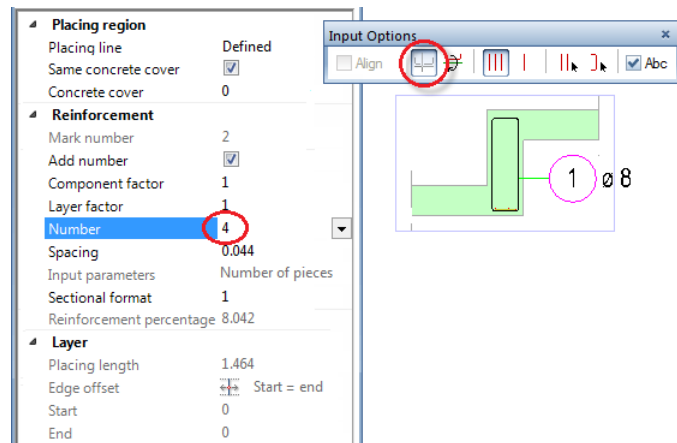
To create the bottom and top longitudinal reinforcement

1 On the **Repeat** menu, click **Bar Shape** and select the **Straight bar with hook(s)** bending shape in the list box at the top of the **Bar Shape** palette.

2 In the parameter area of the palette, select diameter **16** and change the **Concrete cover** to **0.04**.

3 Clear the **Expand to adapt to edges** check box in the input options and click the two bottom corners of the beam in the view and press ESC.
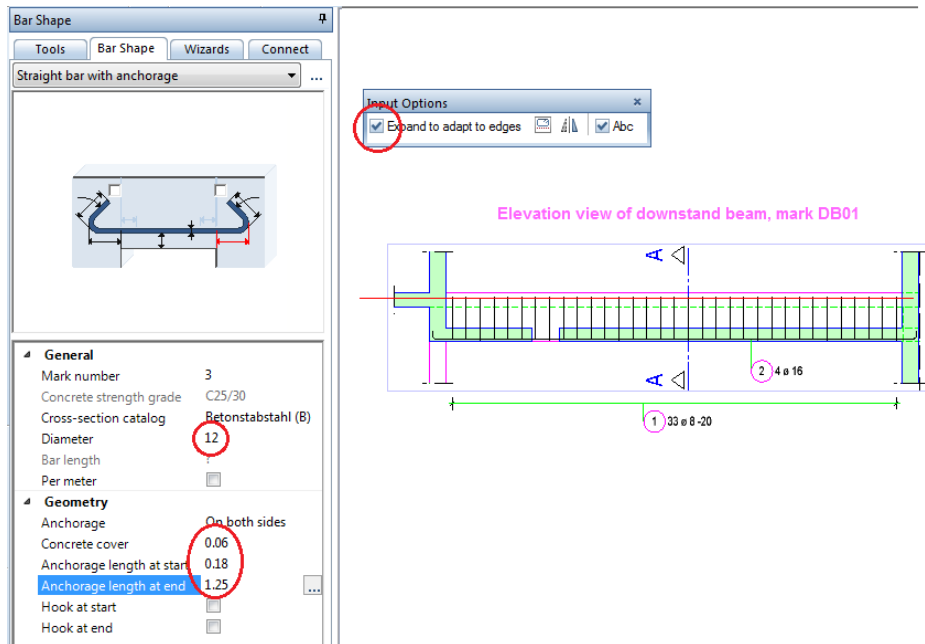

4 Place the label with the mark number, number of pieces and diameter.

5   Click ⌣ **Segment** in the input options and click the bottom stirrup leg in section A-A.

6   Enter **4** for the number of pieces and press ESC twice.

7   Select the **Fan** dimension line type and place the label with the mark number, number of pieces and diameter.

The ⬛ **Bar Shape** tool is still active.

8   Select the **Straight bar with anchorage** bending shape in the **Bar Shape** palette.

9   In the parameter area of the palette, select diameter **12**, change the **Concrete cover** to **0.06** and clear the **Hook at start** and **Hook at end** check boxes.

10 Select **Expand to adapt to edges** in the input options, move the crosshairs in the view to the component line at the top within the shell until the bending shape expands, then click in the workspace.

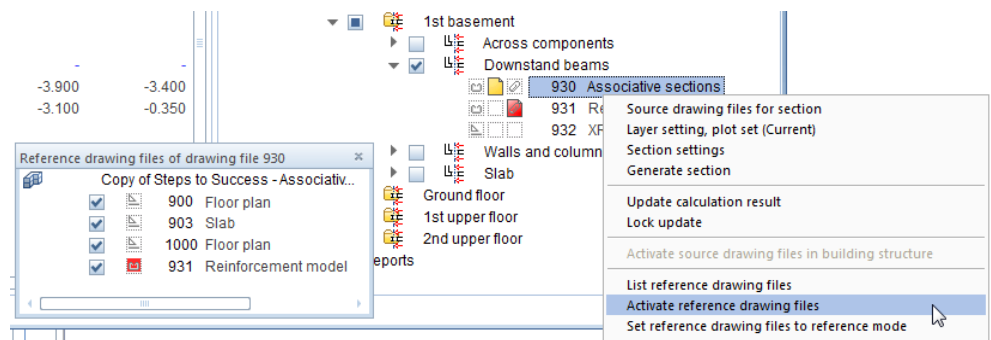11 Enter **0.18** for the **Anchorage length at start** and **1.25** for the **Anchorage length at end.**

12 Label and place the top longitudinal reinforcement as described earlier for the bottom longitudinal reinforcement.

13 Press ESC to finish creating the longitudinal reinforcement.

Selecting drawing files for modifying data

To expand and modify the existing general arrangement drawing and reinforcement, you can activate the reference drawing files.
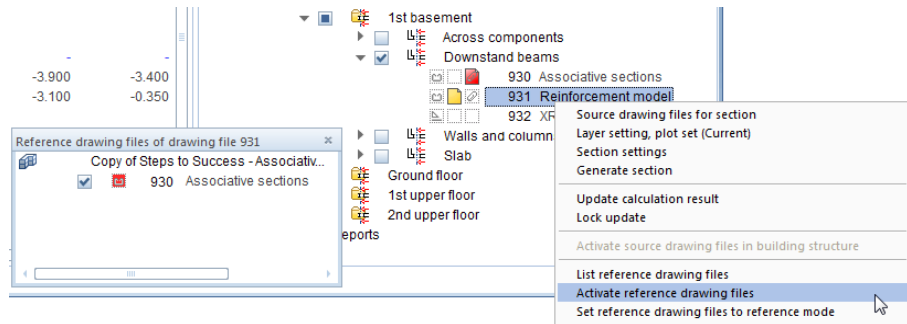
To select drawing files for modifying data

1   To change the general arrangement data in the existing views and sections or to add views and sections, open the dialog box for selecting drawing files. In the "Derived from building structure" area, right-click the drawing file with the associative views and sections: **930** in this example.

2   Select the **List reference drawing files** entry to check the existing references.

3   If they are correct, open the shortcut menu of drawing file **930** again, select the **Activate reference drawing files** entry and click **Close** to quit the dialog box.
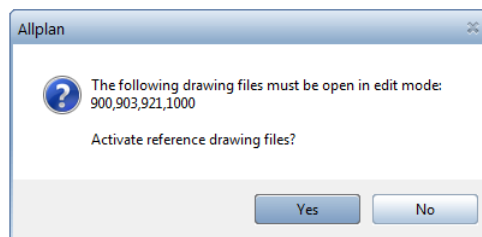

4   To change the reinforcement in the existing views and sections or to add reinforcement, open the dialog box for selecting drawing files. In the "Derived from building structure" area, right-click the drawing file with the reinforcement model: **931** in this example.

5   Here, too, check the references and activate the reference drawing
    files.
    Select **Set reference drawing files to reference mode** if the
    Automatically transfer 3D components to sections option is
    selected and you are working in a workgroup environment.

Note: If you want to modify views and sections and the drawing files
with the relevant model data are not open in edit mode, the program
will issue a message you can use to open the required drawing files
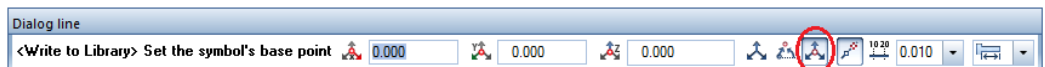in edit mode.

Matching existing reinforcement

You are certainly familiar with the following situation: a construction project includes identical components with identical or at least similar reinforcement and you need to create a separate drawing for these components. In this training project, for example, you can find the same wall beside the interior stair on each floor.

Drawing files **920** and **921** of the **Walls and columns** structural level contain the associative sections and the reinforcement model for the wall beside the interior stair in the first basement. Due to the existing references, you cannot simply copy these drawing files to drawing files of the ground floor. However, you do not need to create the general arrangement drawing and reinforcement again. You can use symbols instead. You can find the finished symbol in the symbol catalog of the training project provided.

To save data as a symbol

1 Double-click in the workspace with the left mouse button, open the **Walls and columns** structural level in the "Derived from building structure" area, open the shortcut menu of drawing file **920**, select the **Activate reference drawing files** entry and click **Close** to quit the dialog box.

2 Click ⬚ **Write to Library** on the **Default** toolbar, check that the library is set to **Symbol catalog** and the path to **Office** and click **OK** to confirm the dialog box.

3 Press CTRL+A to select **all** the data (including the hidden section objects). To set the *symbol's base point*, select the ⬚ **Global point** and enter the values ⬚ 0.00, ⬚ 0.00 and ⬚ 0.00.

Dialog line

<Write to Library> Set the symbol's base point   0.000   0.000   0.000   1020   0.010

4 Select the **Dumb symbol (not snoop-enabled)** option, specify the **Subfolder** and **Name** and press ESC to quit the tool.

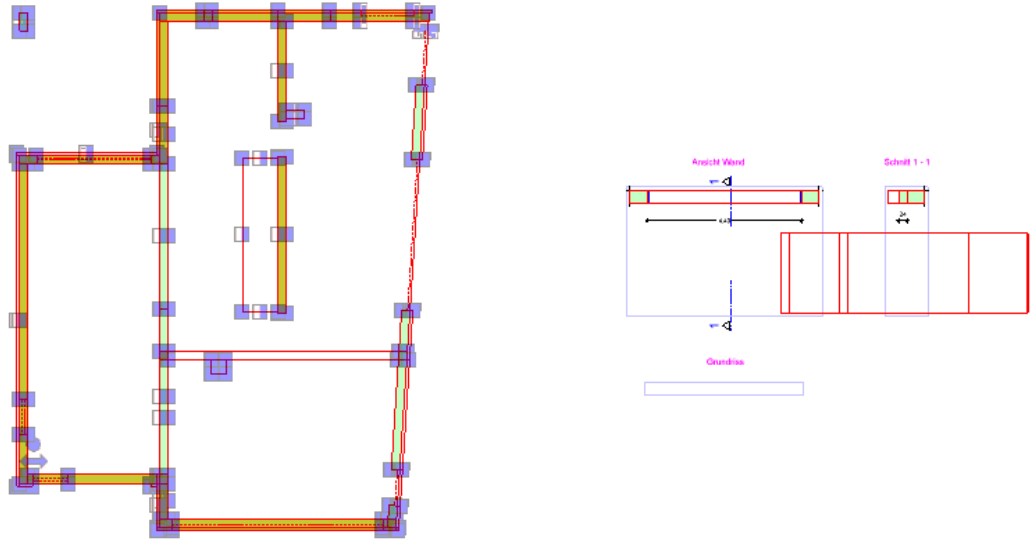## To retrieve data from the symbol catalog

1   Double-click in the workspace with the left mouse button, open the **Ground floor, Walls** structural levels in the "Derived from building structure" area and double-click drawing file **1021**.

2   Change the scale in the status bar to **1:50**, click **Get from Library** on the **Default** toolbar, check that the library is set to **Symbol catalog** and the path to **Office** and click **OK** to confirm the dialog box.

    The entries you made for **Subfolder** and **Name** open automatically.

3   Disable the **Auto-adjust to reference scale** option and click **OK** to confirm the dialog box.

4   To set the *Symbol's base point*, select the **Global point** again (**0.00**, **0.00** and **0.00**), click **OK** to confirm the message and press ESC to quit the tool.

To adjust the imported data

1   On the **View** menu, click **Select Layer Plot Set** and select **General arrangement drawing**.

2   Select the entire floor plan without having activated a tool and click **Delete** (shortcut menu or **Edit** toolbar).
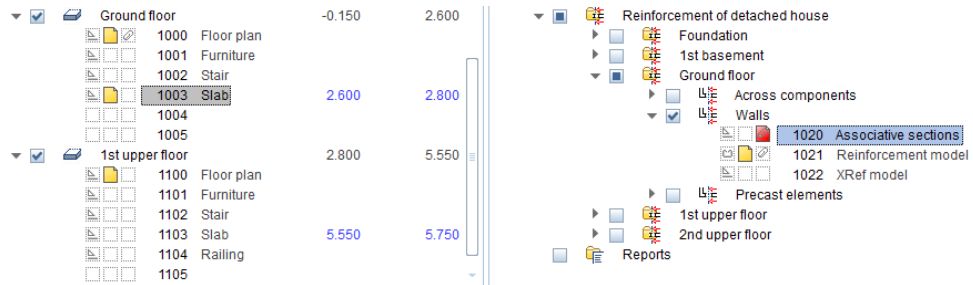
    Note: In this state (elements selected without active tool), you also have the option to filter specific elements using **Filter Step by Step** in the **Filter Assistant**. For example, you can use **Filter by Layer** to exclude the layer BR_B from the filter operation by clicking **Apply to current selection, remove**.

3   Select the **Reinforcement drawing** plot set, click ![Move icon] **Move** on the **Edit** toolbar and press CTRL+A to select all the data.

4   As the wall on the next floor is congruent, click ![Delta point icon] **Delta point** in the dialog line and move all the data by 2.95m (= story height) in the z direction.

5   Use ![Copy icon] **Copy, Move Elements between Documents** to move all the sections to drawing file **1020**.

6   Click **OK** to confirm the message announcing that a new reference has been created.

     The full schemas of the reinforcement are not moved to the drawing file with the sections but remain in the drawing file with the reinforcement model.

7 Open the dialog box for selecting drawing files. In the ![icon] **Building structure** area on the left, open the **Ground floor** and **1st upper floor** structural levels and open drawing files **1000**, **1003** and **1100** ![icon] **in edit mode.** In the "Derived from building structure" area, make drawing file **1020** ![icon] **current** and click **Close** to quit the dialog box.

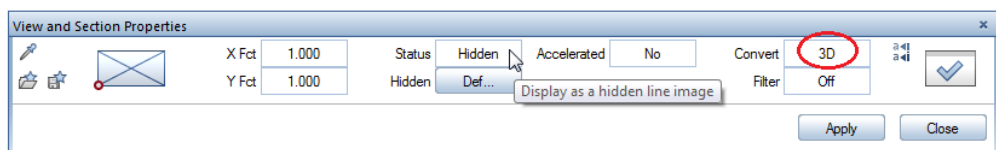|					
▼ ✓ 🖨	Ground floor	-0.150	2.600	▼ ■	Reinforcement of detached house
	1000 Floor plan			▶ ☐	Foundation
	1001 Furniture			▶ ☐	1st basement
	1002 Stair			▼ ■	Ground floor
	1003 Slab	2.600	2.800	▶ ☐	Across components
	1004			▼ ✓	Walls
	1005				1020 Associative sections
▼ ✓ 🖨	1st upper floor	2.800	5.550		1021 Reinforcement model
	1100 Floor plan				1022 XRef model
	1101 Furniture			▶ ☐	Precast elements
	1102 Stair			▶ ☐	1st upper floor
	1103 Slab	5.550	5.750	▶ ☐	2nd upper floor
	1104 Railing			☐	Reports
	1105				

8 Click the border of a section with the right mouse button, select ![icon] **Add to View** on the shortcut menu and press CTRL+A twice to add **all** model data to **all** sections.

The sections are displayed as a wireframe model.

9 Double-click the border of a section with the left mouse button.

The ![icon] **Modify View and Section Properties** tool starts automatically.

10 On the **View and Section Properties** Context toolbar, click the **Status** button to switch to the hidden line image and click in the **Convert** box to produce 3D elements.

View and Section Properties							✕
🖋	X Fct	1.000	Status	Hidden	Accelerated	No	Convert	3D
📂 📄 ⊙⊡	Y Fct	1.000	Hidden	Def...			Filter	Off	✓
					Display as a hidden line image				
							Apply	Close

11 Click **Apply** and change the status to **Hidden** and conversion to **3D** for the other two sections, too.

12 Use ![icon] **Dimension View** to dimension the sections. Make sure that the layer **SH_SHL** is set for the dimension line elements.

Managing reference drawing files

By adding the reinforcement of the staircase wall, you create additional references between the walls on the 1st upper floor and the 2nd upper floor for the purpose of this exercise. Afterwards you remove these references again.
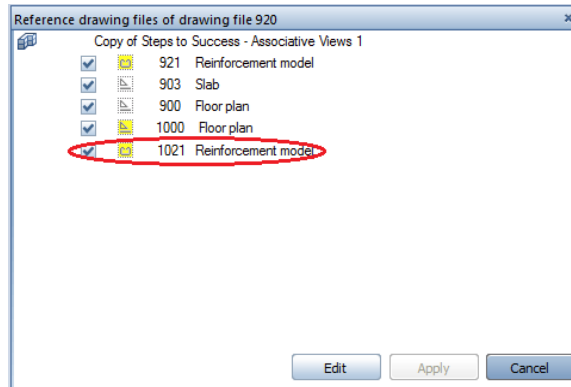
To create and delete additional references

1   Open the dialog box for selecting drawing files, select the **Walls and columns** and **1st basement** structural levels in the "Derived from building structure" area and click **Close** to quit the dialog box.

As a result, drawing file **920** is set to **current**. The other drawing files are **open in edit mode**.
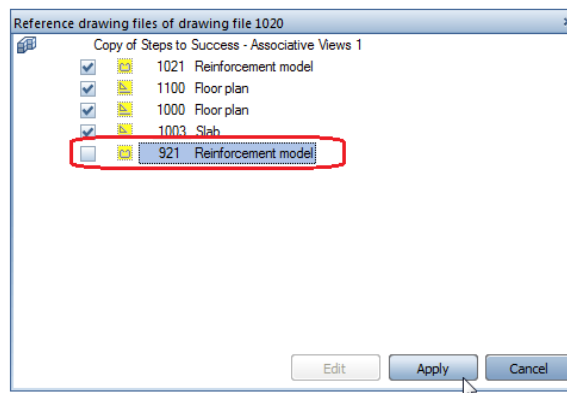

2   Select the **Add to View** tool and press CTRL+A twice to add **all** model data to **all** the sections.

3   Click the view border of a section with the right mouse button and select **Manage Reference Drawing Files** on the shortcut menu.

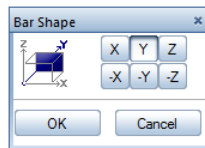Now drawing file **920** references drawing file **1021**.

4   Click **Edit** to open all reference drawing files in edit mode.

5   Clear the check box of drawing file **1021** and click **Apply**.

6   Make drawing file **1020** **current** and use the same approach to remove reference drawing file **921**.

Reinforcement using an auxiliary 3D object

In this training project, you work with a balcony with a simple, cube-like solid. However, there are times when you will find that you have to deal with complicated components, which you do not want to model in detail. In this case, you have to create the reinforcement based on a 2D general arrangement drawing.

When entering the first reinforcement element, you need to define the view in the following dialog box to make sure that the reinforcement model is created correctly in 3D.
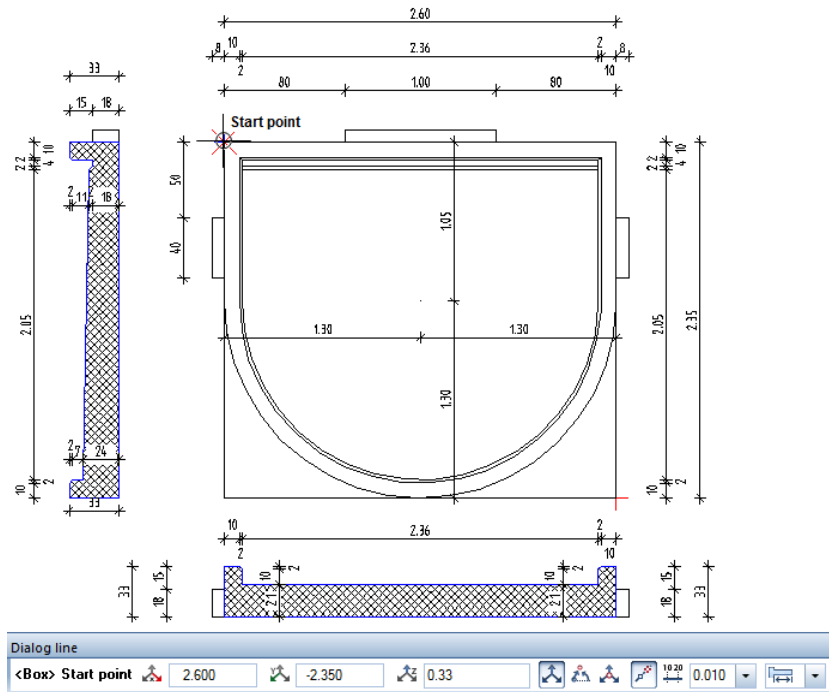

Instead of defining the view, we recommend that you place an auxiliary box of maximum extents over the 2D floor plan, create sections of this box and place these sections over the 2D sections. That's all!

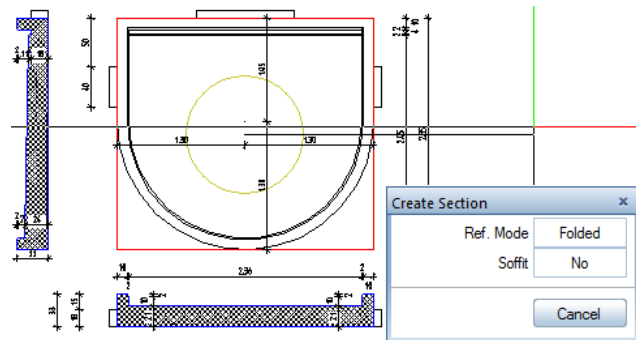## To create an auxiliary object for the 2D general arrangement drawing

1   Open the **Reinforcement of detached house**, **Ground floor**, **Precast elements** structural levels in the "Derived from building structure" area and select drawing file **1050**.

2   Select the **List existing layers in open documents** option and set all the layers in this drawing file to 🗁 **Modifiable**.

3   Select 🔲 **Box** (**Bonus Tools** family, **3D Modeling** module, **Create** area) and create a box of 2.60 x 2.35 x 0.33 m that is parallel to the coordinate planes. These values (length x width x height) are equivalent to the maximum dimensions of the precast element without Isokörbe.

- Check that the layer **AR_3D** is active.

- To define the **Start point**, click the top left corner of the precast element in plan view.

- To define the diagonal point, enter ⚒ **2.60**, ⚒ **–2.35** and ⚒ **0.33**.

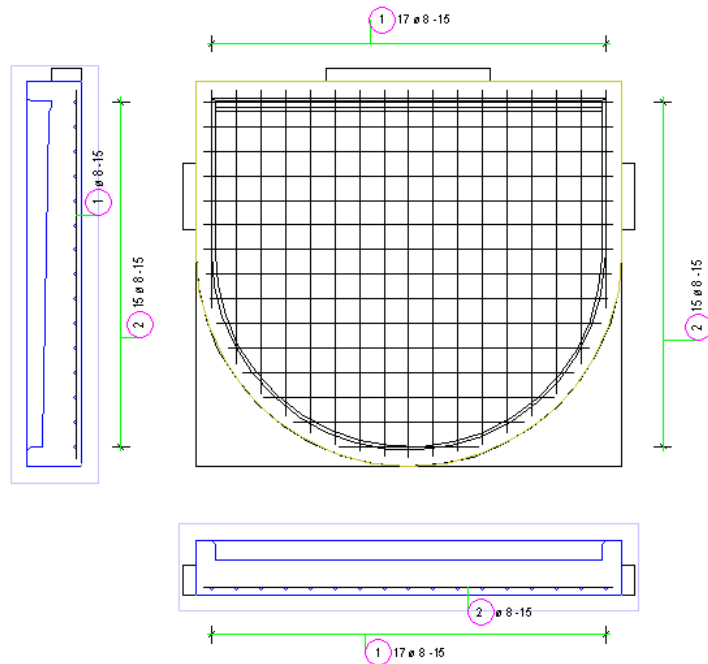- Move the box by 2.60m in the z direction.

4 On the **Repeat** menu, click 🔲 **Create Section** and click the box.

5   Change the reference mode to **Folded** and define the viewing
    direction by clicking to the right of the circle displayed on screen.

6   Define the clipping area so that it passes through the middle of
    the precast element and extends to the left.

7   Click **Dimension Line** to switch dimensioning off, click
     Section settings for associative view and deactivate the
    Place clipping line option.

8   Place the section so that this section and the 2D section are
    congruent and press ESC twice as you do not want to define a
    second clipping area and do not want to create a label either.

9   Create an additional section through the lateral Isokörbe and
    define the viewing direction from below.

10 Hide the layers **SH_SHL** (for the dimensions) and **SU_HATCH** (for the hatching) and create two-way bottom area reinforcement of diameter **8** spaced at intervals of **15**cm.

11 For layout output, all you need to do is hide the layer **AR_3D** of the auxiliary box. This produces the desired reinforcement drawing.
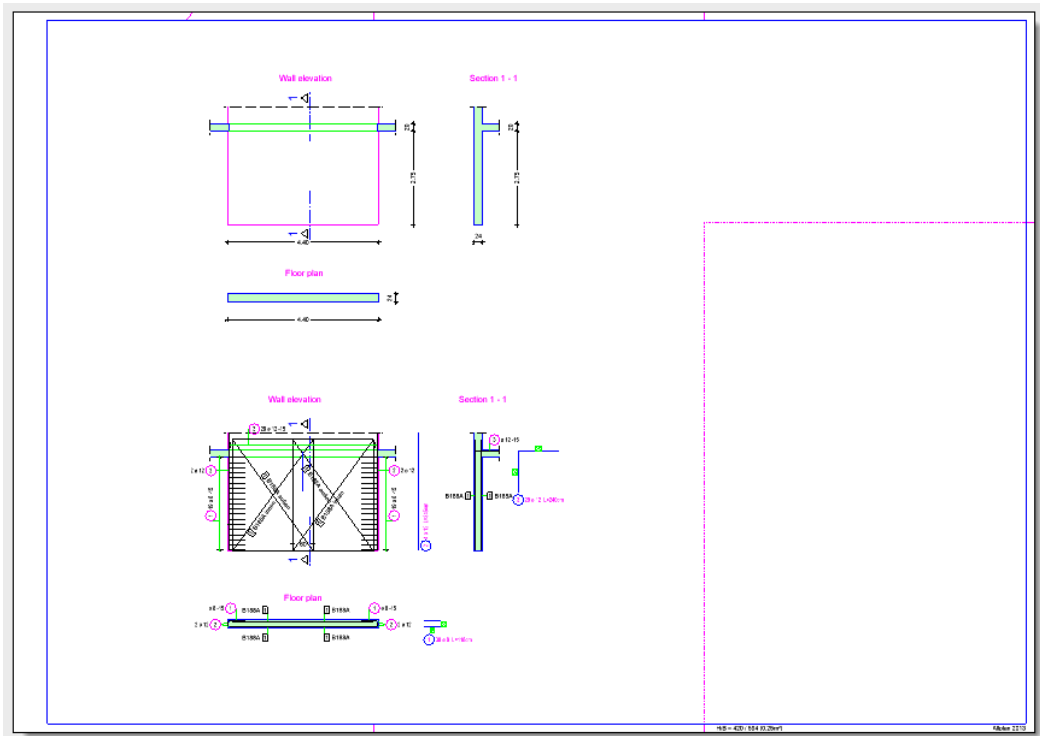
Step 4: Layout Output

This section shows you how to create a layout for the interior wall in the 1st basement. As you are working across drawing files, full schemas are always created in the drawing file with the reinforcement model. Consequently, the reinforcement drawing also includes the reinforcement model although it is not required for the layout.

Therefore, you need to cut the drawing files after you have placed them so that the model data is no longer included in the layout.

Note: If you have created all the data in one drawing file, you need to proceed as described in order to create general arrangement and reinforcement drawings as there is also the building model.
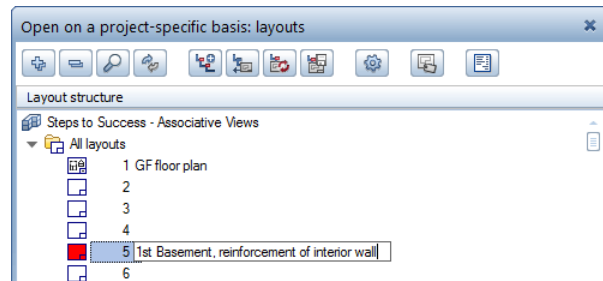
Objective

Assembling layouts

Start by specifying the page format and border for the layout and then select the layout elements.

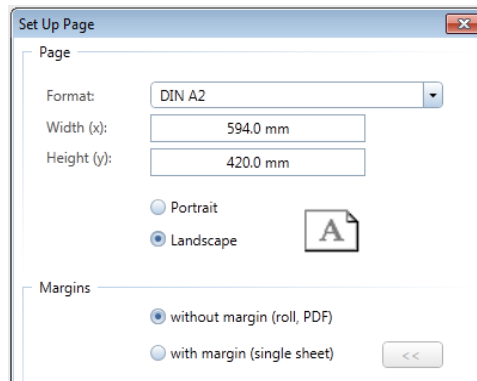## To define the page format and the border

1   Click ⊞ **Layout Editor** (**Default** toolbar).

2   Click ⊞ **Open on a Project-Specific Basis** (**Default** toolbar).

3   Select layout **5**, press the F2 key and enter **Reinforcement of interior wall, 1st basement** for the name of the layout and click **Close** to confirm the dialog box.

Tip: The first time you click this button, the **Open on a project-specific basis: layouts** dialog box opens automatically.
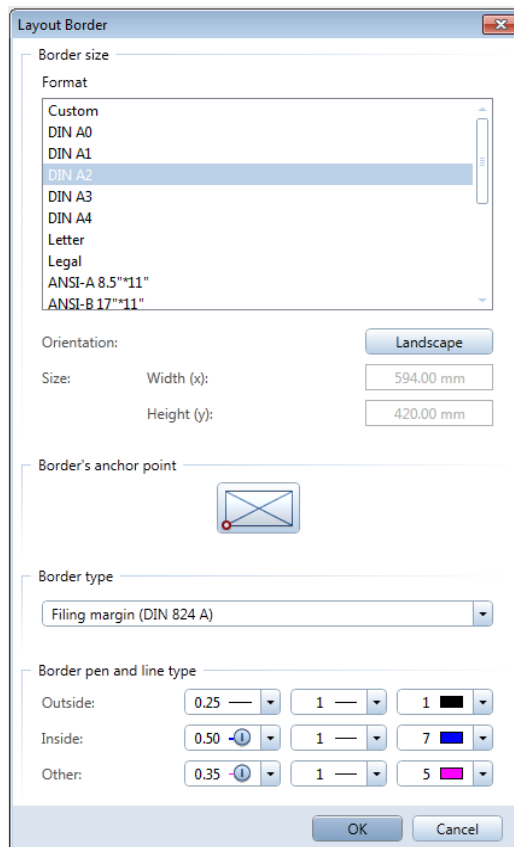

4   Click ⊞ **Set Up Page** in the **Tools** palette, **Create** area.

5   Define the format and its orientation in the **Page** area, specify the type and, if necessary, size of the **Margins** and click **OK** to confirm.

Tip: Using the setting you make for the margins, Allplan always places the page so that its bottom left corner coincides with the bottom left corner of the printable area of the printer you have specified in the ⊞ **Plot Layouts** tool.
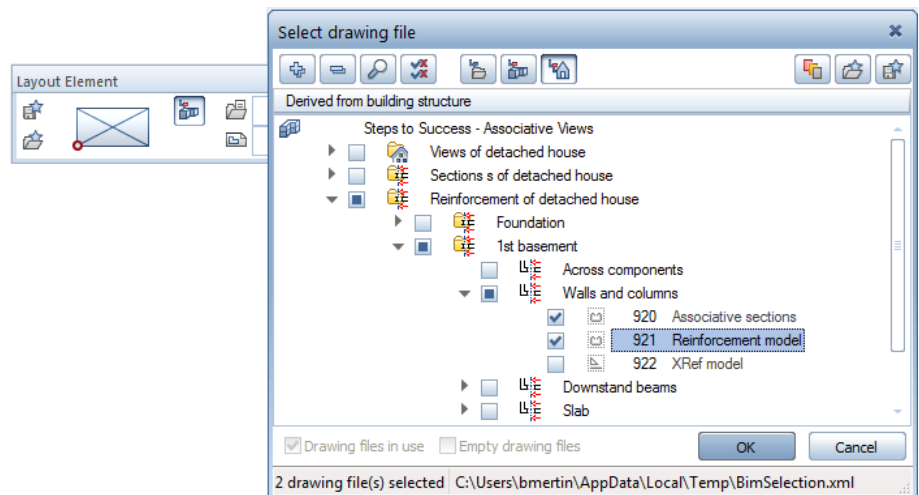
Set Up Page

Page

Format: DIN A2

Width (x): 594.0 mm

Height (y): 420.0 mm

○ Portrait

◉ Landscape

Margins

◉ without margin (roll, PDF)

○ with margin (single sheet)   <<

6 Click ⊡ **Layout Border** in the **Tools** palette, **Create** area, set the
following parameters and click **OK** to confirm the dialog box.

Layout Border

Border size

Format

Custom
DIN A0
DIN A1
DIN A2
DIN A3
DIN A4
Letter
Legal
ANSI-A 8.5"*11"
ANSI-B 17"*11"

Orientation: Landscape

Size: Width (x):   594.00 mm

             Height (y):   420.00 mm

Border's anchor point

Border type

Filing margin (DIN 824 A)

Border pen and line type

Outside: 0.25 —— ▾   1 —— ▾   1 ■ ▾

Inside: 0.50 ⊸① ▾   1 —— ▾   7 ■ ▾

Other: 0.35 ⊸① ▾   1 —— ▾   5 ■ ▾

OK   Cancel

7   Place the border at the bottom left corner of the page and press
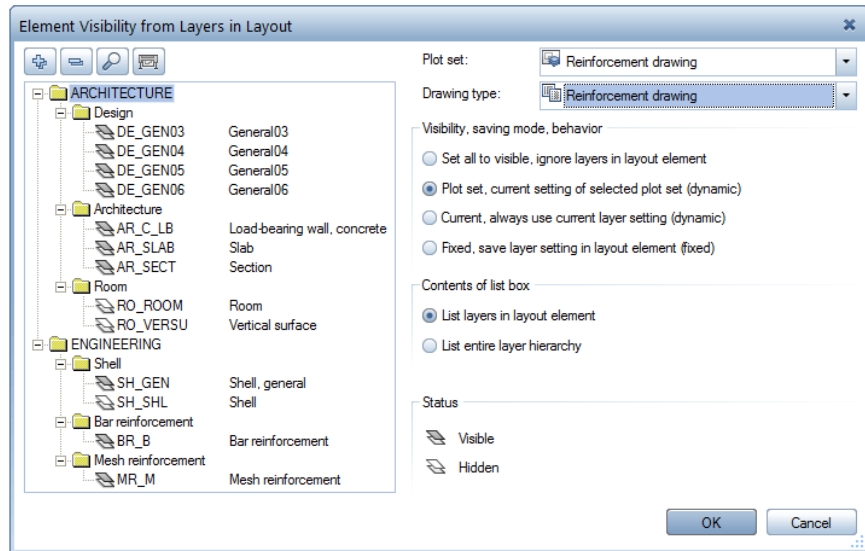   ESC to quit the tool.

To place layout elements

1   Click ⬚ **Layout Element** in the **Tools** palette, **Create** area.

2   Click ⬚ **Building structure** on the **Layout Element** Context
    toolbar and click ⬚ **Derived from building structure** in the
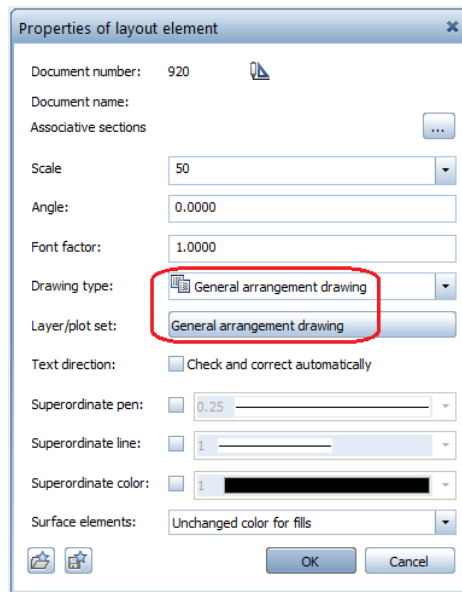   **Select drawing file** dialog box.

3   Select drawing files **920** and **921** and click **OK** to confirm the
    dialog box.

4   Click in the **Layer/plot set** box and select **Reinforcement
    drawing** for the drawing type and the **Plot set, current setting of
    selected plot set (dynamic)** and **List layers in layout element**
    settings.

5 Select the **Reinforcement drawing** plot set and click **OK** to confirm the dialog box.

6 Place the selected drawing files in the layout so that the model data is outside the layout border. If necessary, use ⊞ **Move** (**Edit** toolbar) to move the layout element.

7 Press ESC to finish selecting layout elements.

8 ▢ **Copy** (**Edit** toolbar) the drawing files and place them so that they are below and aligned with the layout elements you have already placed.

9 Press ESC to finish copying and double-click within one of the original drawing files with the left mouse button.

10 Select **General arrangement drawing** for both the drawing type and the plot set and click **OK** to confirm the dialog box.

Properties of layout element		✖
Document number:	920	
Document name:		
Associative sections		...
Scale	50	▾
Angle:	0.0000	
Font factor:	1.0000	
Drawing type:	General arrangement drawing	▾
Layer/plot set:	General arrangement drawing	
Text direction:	☐ Check and correct automatically	
Superordinate pen:	☐ 0.25	▾
Superordinate line:	☐ 1	▾
Superordinate color:	☐ 1	▾
Surface elements:	Unchanged color for fills	▾
	OK	Cancel

11 Change the drawing type and the plot set for the second original drawing file, too.

Layout without model data

Elements that are outside the layout border are not included in printouts. However, these elements appear in the print preview. You can use layout sections or layout windows to hide the model data.

To create a layout section

1 Select the ⬛ **Crop Layout** module in the **Tools** palette and click ⬛ **Convert Layout Section** in the **Create** area.

2 Select layout **6** and set the **Scale** and **Ref LS** (reference layout scale) to **50**.

Convert Layout Section to Layout						×
Lay #	2	F Fctr	Layout	Angle	0.00	
Scale	50	Ref LS	50	Layout section	static	

3 Click an element of the layout border.

Allplan issues a message to point out that the section has been created.

Note: To create sections of smaller areas of the layout, use ⬛ **Layout Border** to place a layout border of the size you require and click it. This way, you can also cut large layouts into smaller "sub-layouts".

4 Click ⬛ **Load Layout Section or Layout** in the **Tools** palette, **Change** area.

5 Click **LayNam** in the input options and select layout **6**.

6 Move the entire layout so that the bottom left corner of the layout border coincides with the bottom left corner of the page.

7 Click ⬛ **Load Original Layout** in the **Tools** palette, **Change** area.

To create layout windows

1   Select the ⊞ **Plot Layout** module in the **Tools** palette and click
    ⊞ **Layout Window** in the **Create** area.

2   Click **... of layout elements already placed.**
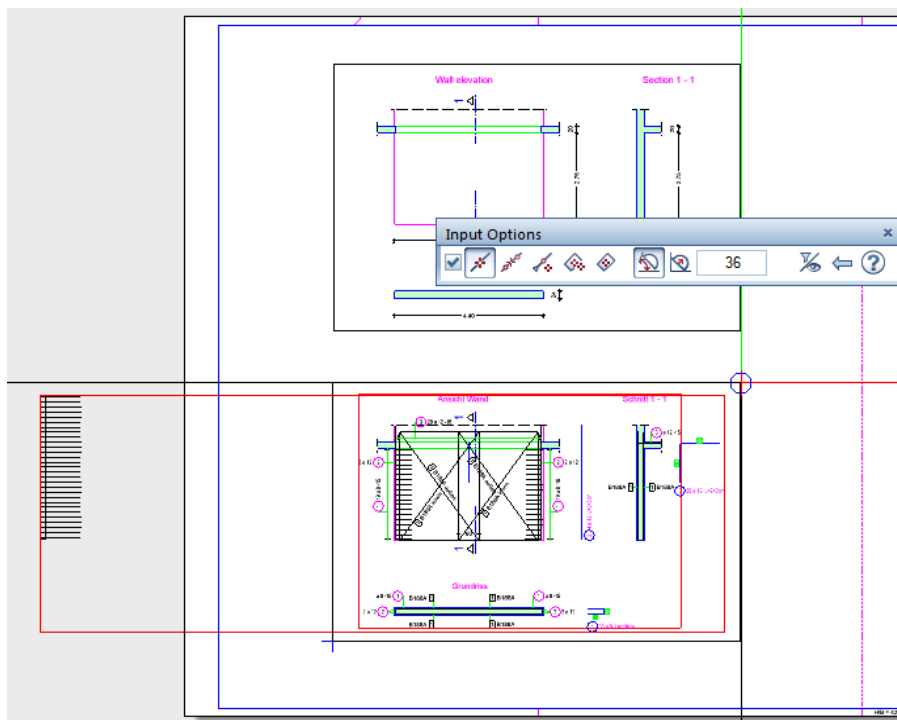

3   Select the layout elements at the top (general arrangement
    drawing).

    Note: You need to create two separate layout windows from the
    general arrangement drawing and the reinforcement drawing as
    all the elements in layout windows are placed so that they are
    congruent.

4   To define the size of the layout window, click two diagonal
    points (at bottom left and top right) so that the reinforcement
    model is outside the layout window.

5　Repeat this procedure for the layout element at the bottom (reinforcement drawing).

6　Press ESC twice to finish entering the layout window and to quit the tool.

Step 5: Data Exchange

You can exchange data both in document edit mode and in layout edit mode. Export options must be set accordingly. When importing data, you need to make sure that you set the correct layout scale.

DWG export of drawing files

You do not need to export the model data unless it is part of the general arrangement and reinforcement drawings. To be able to select the associative views and sections only, you need to change the settings in the options for the interfaces.

Click ⚒ **Options** (**Default** toolbar) and then **Import and export**. Select the **Export part** check box.

Basically, the elements displayed on screen should be the elements you want to transfer. In the **Transfer mode** area of the configuration settings, specify that the **Currently visible data** is to be transferred as **2D** elements.

To transfer the data of the associative views and sections, you need to load all the associated drawing files. Proceed as follows:

1 In the "Derived from building structure" area, click the drawing file with the associative views and sections with the right mouse button and select **Set reference drawing files to reference mode** on the shortcut menu in order not to interrupt the workflow of the other users.

2 On the **File** menu, select **Export, Export AutoCAD Data...** and confirm the following prompts by clicking **Yes**.

3 Activate the associative views and sections, specify export options and export the data.

DWG export of layouts

When exporting layouts, make sure that all the layers that are visible in the layout elements have the status ⬗ **Modifiable**. Otherwise, you get layers without access rights when importing.
In the **Transfer mode** area (**General Settings** tab) of the configuration settings, specify that the **Currently visible data** is to be transferred as **2D** elements. Open the **Advanced Settings** tab and select the **Layouts / XRef files** option in the **Explode compounds** area.

Appendix: Working without References

If a current building model is irrelevant, you can work without references. To create the general arrangement and reinforcement drawings of the individual components, you first copy the required area of the floor plan to a new, empty drawing file, convert the data and then create the necessary sections using the **Associative Views** module.

Using this approach, you create a version of the general arrangement and reinforcement data and make sure that the building model is not changed inadvertently.

Organization in the building structure

Leave all the settings for the building model as they are (on the left-hand side of the building structure) and make the following changes in the "Derived from building structure" area on the right: Create a drawing file for each folder required. All the data of the corresponding component is created in this drawing file.

You can find the necessary structure for the first and second upper floors in the training project provided.

Defining options for views

To prevent inadvertent references from being created, you need to set the options accordingly

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To set the options

1   Click ⚒ **Options** and then **Associative views.**

2   Switch off the **Create across drawing files** option and confirm the message that appears. As a result, references are not created when you copy or move data.

Note: Although you can no longer switch off this option in future Allplan versions, drawing file references are not created as long as all data is in one drawing file.

Copying and converting the floor plan

As the model data is copied, the workflow is not interrupted even if you are working in a workgroup environment. Before you create the final layout, it is a good idea to check the building data and to update it, if necessary.

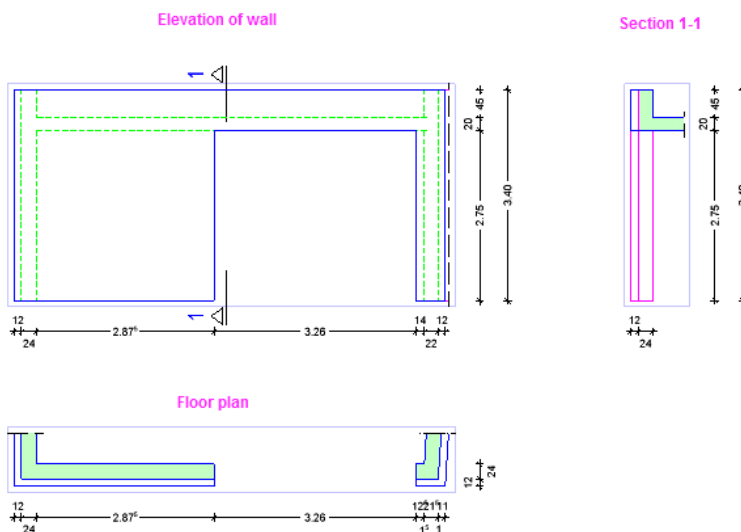## To copy and convert model data for the exterior wall

1   Double-click in the workspace with the left mouse button, open the **1st upper floor** structural level in the ⬛ **Building structure** area on the left and double-click drawing file **1100**.

2   Double-click in the workspace with the left mouse button again, select the **2nd upper floor** structural level and open the drawing files **1103** and **1200** 📁 **in edit mode**.

3   **Close** the dialog box and select the **General arrangement drawing** layer plot set.

4   Select the 🏠 **Architecture** family in the **Tools** palette, click 🖼 **Copy, Convert Elements Across Drawing Files** in the **Create** area and select the **Architecture to 3D Solids** conversion mode.

Conversion Mode	
Architecture to 2D	
Architecture to 3D solids	

OK   Cancel

5   In the **Enter Destination Drawing File** dialog box, click 🏠 **Derived from building structure**, select drawing file **1120** and click **OK** to confirm the dialog box.

6   *Select elements you want to copy and convert* Using the left mouse button, enclose the exterior wall at bottom right in a selection rectangle, which you open from right to left. Make sure that the slab above the balcony is not selected (🔲 **Select Elements based on Direction** is selected in the **Filter Assistant**; the selection rectangle is shown as dashed lines, and the area it covers is highlighted in light green).

7 Double-click drawing file **1120** and change the scale in the status bar to **1:50**.

8 Select **SH_GEN** for the current layer. Open the 🗗 **Create Section** tool and create a section of the lower exterior wall. Set the reference mode to **Observer** and define the viewing direction from below.

   • Define the first clipping area in the floor plan so that the bottom end of the section is within the thermal insulation.

   • Place the section beside the floor plan. Press ESC as you do not want to define another clipping area and place the label.

9 Create two more sections: one through the wall and one of the floor plan.

Using changed model data

The manner in which you can use changed model data depends on the data in the view and sections.

Scenario 1: At least one view or section only contains general arrangement data.

To make sure that deleting the model data does not result in empty section objects, which would cause the sections to be deleted, you need to assign a new layer to the entire floor plan. After this you can copy the changed model data and delete the original floor plan.

To use changed model data for the general arrangement drawing

➲ Drawing file **1120** is open. The **General arrangement drawing** plot set is selected.

1 Click ✏ **Modify Format Properties** on the **Edit** toolbar, set the layer **DE_CLINE** and assign it to all the elements of the floor plan.

As the selected layer has the status 🗞 **Hidden, frozen**, the entire floor plan is hidden.

2 Select drawing files **1100, 1103** and **1200** on the left-hand side of the 🏛 **Building structure** and use 📋 **Copy, Convert Elements Across Drawing Files** to copy and convert the model data for the exterior wall to drawing file **1120**. Proceed as described earlier in the section "Copying and converting the floor plan".
Click **Yes** to confirm the message pointing out that the selected drawing file is in use.

3 Switch back to drawing file **1120**.

4 Click one of the two view borders with the right mouse button and select 🏠 **Convert View to Section** on the shortcut menu.

5 Press CTRL+A twice to add **all** model data to **all** the sections.

Note: If **Automatically transfer 3D components to sections** is active in the **Associative Views** options, the copied model data is automatically added to the associative sections.

6   Select the **List existing layers in open documents** option and set the layer **DE_CLINE** to 🔖 **Modifiable**.

7   Click ✖ **Delete** (shortcut menu or **Edit** toolbar), open the 🔖 **Layer filter,** specify the layer **DE_CLINE** as the filter criterion and select the entire floor plan.
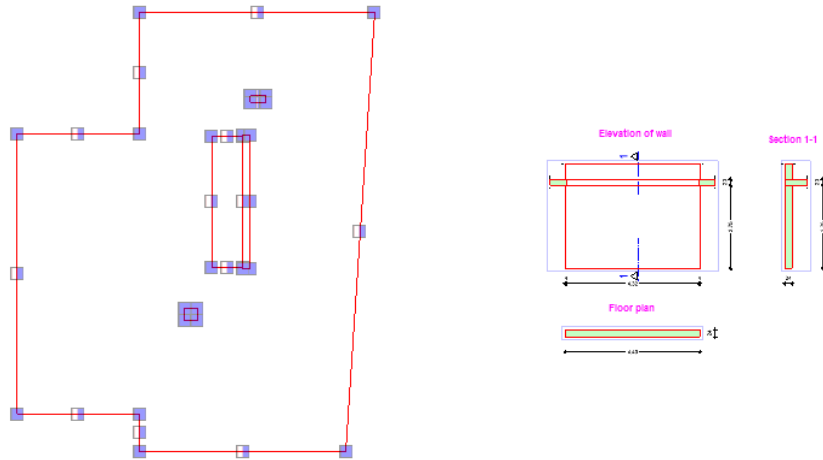
Scenario 2: In addition, all the views and sections contain reinforcement data.

If reinforcement elements can also be found in each section, you can delete the model data of the building (not the reinforcement model) without producing empty section objects, which would cause the sections to be deleted.

You can find the reinforced wall beside the interior stair on the first upper floor in drawing file **1121** in the training project.

To use the changed general arrangement data for the reinforcement drawing

1   Open drawing file **1121** and close all the other drawing files. Check the reinforcement displayed by selecting the **Reinforcement drawing** plot set.

2   Select the **General arrangement drawing** plot set and delete the model data of the building in the floor plan as described in step 3 (see "Using changed model data" on page **75**).
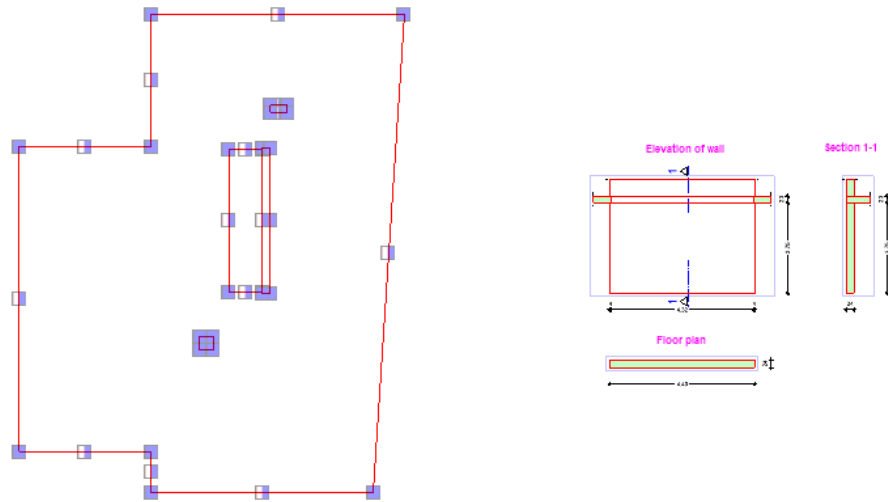
3   Select drawing files **1100, 1103** and **1200** on the left-hand side of the **Building structure** and use **Copy, Convert Elements Across Drawing Files** to copy and convert the model data for the interior wall to drawing file **1121**. Proceed as described earlier in the section "Copying and converting the floor plan".
Click **Yes** to confirm the message pointing out that the selected drawing file is in use.

4   Switch back to drawing file **1121**.

5   Select the **All layers visible** plot set, open the **Add to View** tool and press CTRL+A twice to add **all** model data to **all** the sections.

6   Use the **Modify View and Section Properties** tool to change the status to Hidden and conversion to 3D. Repeat this for all sections.

7   If necessary, use **Dimension View** to dimension the sections.

8   On the **Repeat** menu, click **Select Layer Plot Set** and select **Reinforcement drawing**.
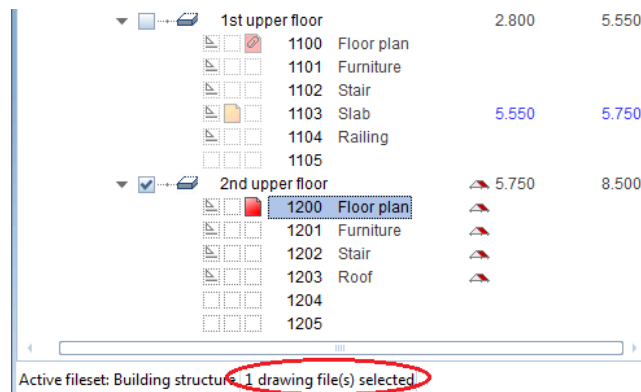
Reusability

The necessary steps for matching existing reinforcement are similar to those for using changed model data for the reinforcement drawing.

To use the wall reinforcement of the 1st upper floor for the second upper floor

➲ Drawing file **1121** is still open and all other drawing files are closed. The **Reinforcement drawing** plot set is selected.

1 Use **Copy, Move Elements between Documents** to copy the entire contents of the drawing file to drawing file **1221**.

2 Double-click in the workspace with the left mouse button, open the **Reinforcement of detached house**, **2nd upper floor, Walls** structural levels in the "Derived from building structure" area and double-click drawing file **1221**.

3 Press CTRL+A without having activated a tool, click **Move** (shortcut menu or **Edit** toolbar) and move the entire floor plan with the model data of the building and the reinforcement model so that the reinforcement model is placed correctly for the component to be reinforced. In this example, the wall is congruent on the next floor. Therefore, the floor plan needs to be moved by 2.95m (= story height) in the z direction.

4 Select the **General arrangement drawing** plot set and delete the model data of the building in the floor plan as described earlier.
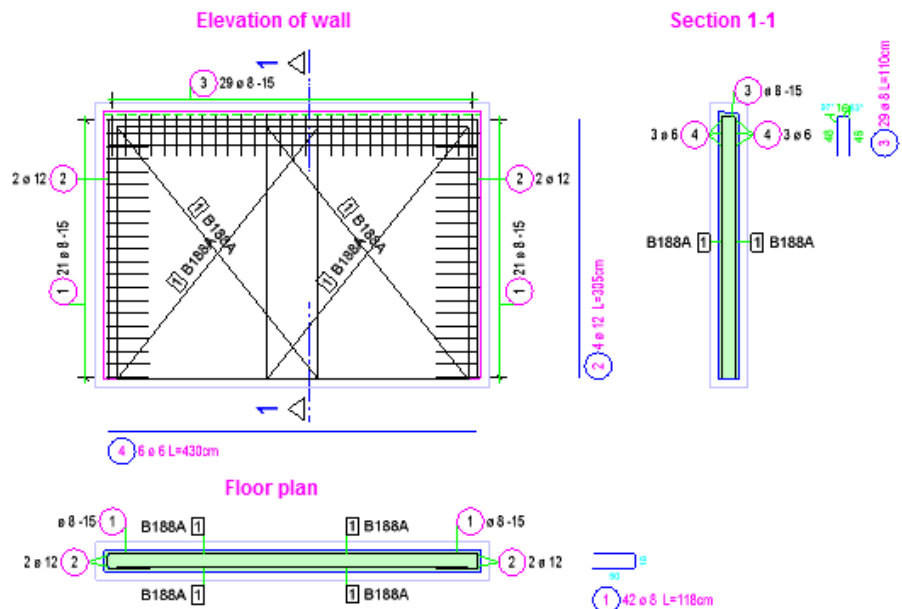
5　Select drawing file **1200** in the **2nd upper floor** structural level in the 🏛 **Building structure** area on the left.

6　Use 📋 **Copy, Convert Elements Across Drawing Files** to copy and convert the model data for the wall beside the interior stair to drawing file **1221**.
Click **Yes** to confirm the message pointing out that the selected drawing file is in use.

7　Switch back to drawing file **1221**. Select the **All layers visible** plot set and add the model data to the sections as described earlier.

8   Change the status to **Hidden** and conversion to **3D.**

9   If necessary, use 🏠 **Dimension View** to dimension the sections and select the **Reinforcement drawing** plot set.

10 Delete the L-shaped bar, use ✏️ **Stretch Entities** to shorten the meshes by 30cm and the longitudinal bars by 40 cm, use the **Properties palette** to enlarge the placing regions of the stirrups, use 🔧 **Bar Shape** to create a new open stirrup at the top as well as additional cross bars and rearrange the reinforcement

The result might look like this:

Data exchange

When working without references, you can export drawing files in the same way as described in step 5 (see "Step 5: Data Exchange" on page 67). As the model data and the views and sections are in a single drawing file, you do not need to select additional drawing files.

So that you can select only the associative views and sections, it is essential that the corresponding setting is selected in the ✖ **Options**.

If you have created a section of the floor plan and the imported data is to be placed at the correct offset to the building model, move the section of the floor plan and all the associated sections by fixed x/y values, which are based on the building model. Then enter these values (make sure that you use the opposite sign) for the additional offset of the export file.

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