ADVANCE CONCRETE

STARTING GUIDE

GRAITEC

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INTRODUCTION

This starting guide is a brief introduction to working with Advance Concrete, describing the basic Advance methodology and not meant to replace formal training.

The examples presented in this guide are generic for worldwide use and do not conform to local or specific company standards.

The **3D model** chapter describes the main Advance Concrete objects used to create a small building. The 3D model is created using a 1:1 scale. The model contains information about dimensions, objects, and attributes from which drawings are created as described in the **Drawing Creation** chapter. The **Layouts** chapter describes how to create layouts using the drawings created in the **Drawing Creation** chapter.

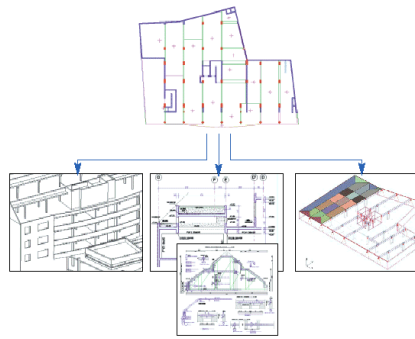
The **Reinforcement** chapter describes how the Advance Reinforcement module works.

Since not all Advance Concrete tools are described in this guide, refer to the *Help* for more details on all commands and parameters.

Advance Concrete

Advance Concrete is a leading edge concrete construction application. It provides a simple user-friendly working environment for creating 3D structural models from which drawings are created.

The three dimensional model is created using Advance Concrete intelligent objects and stored in a drawing (in DWG format). The Advance model forms the basis of the 3D construction.



Once a model is complete, Advance Concrete creates all structural and reinforcement drawings using a large selection of view production tools, dimensions, locations, symbols, and automatic layout functions. Layouts are created from the created drawings.

*All software tools described in this guide and all remarks related to the product pertain only to the Advance Concrete suite and for reading simplification only the generic name **Advance** is used.*

Where to find information?

Advance has a help system that offers step-by-step instructions for every function.

To access the help:

- **Manage** tab, **Help** panel: click

- Command line: grtchelp

STARTING ADVANCE CONCRETE

To start Advance Concrete

- Double click the **Advance Concrete** icon on the desktop.

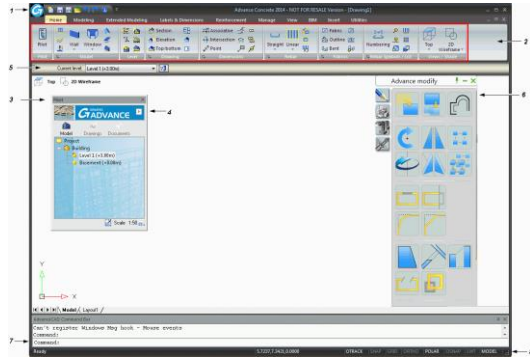
or

- On the Windows task bar, click , then select

All Programs > Graitec > Advance Concrete 2014 > Advance Concrete 2014.

ADVANCE CONCRETE USER INTERFACE

Advance Concrete provides a complete environment for modeling and detailing concrete structures.



1. Quick access toolbar

The Quick Access Toolbar provides fast access to the most frequently used tools. The set of available tools can be extended.

To add a ribbon button to the Quick Access Toolbar, right-click the ribbon button and select Add to Quick Access Toolbar.

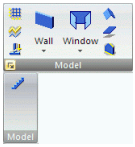
It can be placed above or below the ribbon.

2. The ribbon

The Advance Concrete ribbon contains a collection of panels grouped on tabs, according to type. For easier access, the main Advance Concrete tools are placed on the **Home** tab.

On the panels, the buttons are grouped on different rows and include large buttons for the most frequently used functionalities.

Some panels can be expanded by clicking the arrow on the bottom-left corner.



3. The Pilot

The Pilot is the starting point in the application. All different stages of the project creation are managed with the Pilot: model conception, general arrangement drawing creation, and layout creation. Click each of the three modes on the Pilot. Modes are switched from one to another without impacting the models or the drawings.

4. Fast access menu

The button in the upper Pilot area provides a menu for quick access to display controls and selection commands.

5. Smartbar

Each object (i.e., model elements, dimensions, symbols, etc.) has a properties bar called Smartbar for modifying the object attributes. The **Smartbar** is automatically activated in two instances:

When an object creation command is started, the Smartbar of that object appears. During the creation process, one or several object attributes can be modified.

When one or several objects of the same type are selected, one or several attributes can be modified. The modifications are confirmed by pressing **Enter**.

6. Tool palettes

The tool palettes contain other tools, complementary to the functionalities available on the Advance Concrete ribbon tabs.

7. Command line

Advance Concrete commands can be entered using the keyboard. Press **Enter** after each entry.

8. Status bar

The status bar displays information regarding the program status during different phases of the project. It also contains buttons that provide access to the configuration of certain parameters: snap modes, object tooltips content, current coordinate system, and working units.

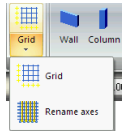
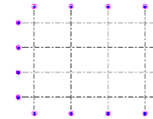
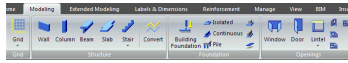
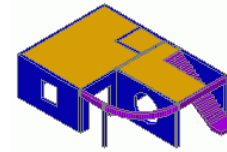
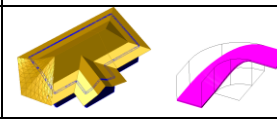
Other important tools for using Advance

- To cancel a command in Advance, press the **Esc** key.
- The current command and prompts are displayed in the command line window at the bottom of the screen. Press the **F2** key to open and close the command window.
- When the cursor hovers over a ribbon button, the button's tooltip appears.
- The **Undo** command on the **Quick access** toolbar cancels one or several commands.

- The **Match properties** command on the **Utilities** panel copies properties from one object to another. The transferred properties are selected from the given list.

3D MODEL

Advance objects are created in 3D-space using the appropriate tools.

Advance Concrete objects	Example
Auxiliary objects: Grid 	
Structural elements: walls, beams, columns, slabs, footings, etc. 	
Control surfaces: roofs and ramps	

Accessing properties

Every element has an associated detailed properties sheet on which data and attributes are modified.

To access the properties of an element:

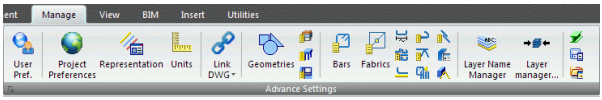
- Smartbar: Click .
- Command line: type *grtcelproperties*

Project settings

Before drawing the model, some settings can be made:

- Project information: information to display in the title blocks
- Libraries: the model materials, geometries, doors, windows, piles
- Reinforcement libraries: available steel grades and sizes, bar length rounding, available bar shapes, concrete covers, etc.
- Representation styles pertaining to the modeling, the draft and the reinforcement elements
- Project preferences: options for drawing annotations, reinforcement numbering and display options, etc.

The project setting tools are grouped on the **Advance settings** panel.



***Example 1**: Starting and saving a new project*

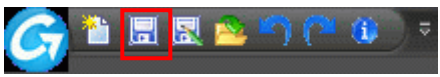
1. From the startup page, My Projects area, click **New**.

   The “Initialization of parameters” dialog box appears.

2. Make the desired settings and click **OK**.

   Advance Concrete automatically opens the folder where the templates are stored.

3. Select the template (.dwt file) and click **Open**.
4. On the **Quick access** toolbar click the **Save** button to save the drawing.



5. Enter “Project Example” and click **Save**.

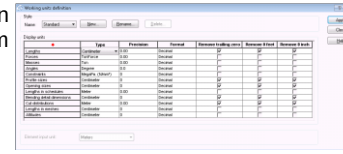
***Example 2**: Setting the project name*

1. In the Pilot, right click **Project**.
2. From the context menu, select **Properties**. The project properties dialog box appears.
3. Enter “Project Example” for the project name.
4. Click **OK**.

***Example 3**: Setting the project working units*

1. On the **Manage** tab, **Advance settings** panel, click

. The “Working Units Definition” dialog box appears.
2. Click lengths **Type** column and select **Centimeter** from the drop-down list.
3. Click **Apply**.



All the values entered on the Smartbar and all the length values for structural objects are now in centimeters.

In our project, the input values for the drawing length are in meters.

Creating a model

Advance provides all the specialized functions required for the creation of reinforced concrete structures: library of drag and drop structural elements (e.g., slabs, beams, columns, walls, foundations), openings (e.g., doors, windows, depressions, openings, niches), materials, and standard sections.

Before drawing the structural elements, set the default level height.

***Example**: Setting the building level height*

1. In the Pilot, right click **Building**.
2. Select **Properties** from the context menu.
3. Set the default level height to **250** cm.

The level height must be manually modified in the level properties; otherwise, it remains 300 cm.

4. Right click **Level 1**.
5. Set the level height to **250** cm.

Creating walls

Advance provides a tool for creating several wall types:

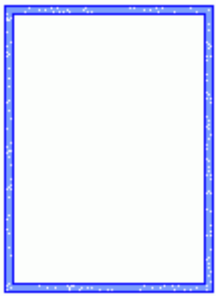
- Straight walls: using two points
- Continuous walls
- Curved walls: using three circle points or two points and a center point.

Different kinds of walls are created using the “Properties” dialog box.

***Example**: Creating straight walls*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Press **F8** to activate the Ortho mode.
3. Click the graphic area to define a starting point and input the following values:



   – Move the mouse cursor in the X-direction, enter **5** on the command line, and press **Enter**
   – Move the mouse cursor in the Y-direction, enter **3** and press **Enter**
   – Move the mouse cursor again in the Y-direction, enter **4** and press **Enter**
   – Move the mouse cursor in the -X-direction, enter **5** and press **Enter**
   – Move the mouse cursor in the -Y-direction, enter **7** and press **Enter**
4. Press **Esc** to end.

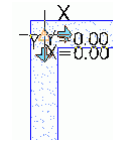
Using the UCS

AutoUCS is an efficient and easy to use tool when working with relative coordinates in the creation and modification of structural elements. It can also be used as a measuring tool.

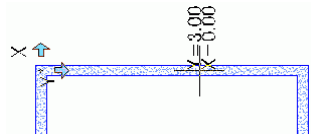
***Example**: Using the UCS to create a wall*

1. On the **Home** tab, **Model** panel, select

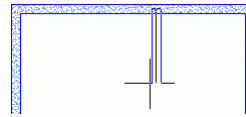
from the flyout.
2. On the **Display and selection** tool palette, click "Dynamic wedging" .
3. Click the upper corner of the wall to place the AutoUCS origin.



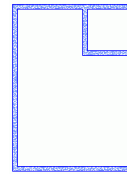
4. On the command line, enter the values 3,0 and press **Enter**. The start point of the wall is selected.



5. Move the mouse cursor in the -Y-direction, enter 2 and press **Enter**.



6. Move the mouse cursor in the X-direction, enter 2 and press **Enter**.



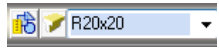
Creating columns

Using the Advance tools all types of columns are created:

- Straight columns
- Columns with slants according to a distance or an angle
- Columns with a tapered section
- Drop panel on the top of the columns

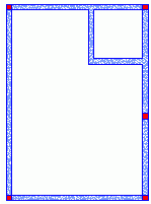
***Example**: Creating a straight column*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. On the Smartbar, enter **R20x20** to draw a column with a square-shaped section and 20 cm sides: 

3. On the Smartbar, select the central snap point from the drop-down list.
4. Press **Enter**.
5. Position the first column at the bottom right corner.
6. Click to indicate the column orientation angle.

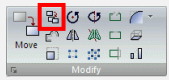
Draw as many columns as necessary using the same process.



7. Press **Esc** to finish.

Copy

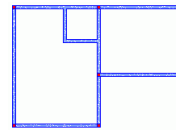
To copy an element to a new position click “Copy” on the **Modify** panel of the **Utilities** tab.



***Example**: Copying a straight wall*

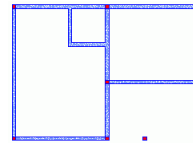
One of the previously created walls will be copied with all its properties.

1. On the **Utilities** tab, **Modify** panel, click .
2. Select the wall and press **Enter**.
3. Select the wall base point.
4. Enter @5,3 on the command line to copy the wall.
5. Enter @5,7 on the command line.



***Example**: Copying a column*

Copy the column in the bottom-right corner 2m to the right using the "Copy" tool.



Creating beams

Advance provides a tool for creating straight and curved beams. During creation, the beam attributes are modified using the Smartbar. Various section types can be selected from the section library.

***Example 1**: Creating a straight beam*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Select the beam's starting point: the center of the column in the bottom-right corner.
3. Select the beam's second point: the center of the other column.
4. Press **Enter** to end.

***Example 2**: Creating a curved beam*

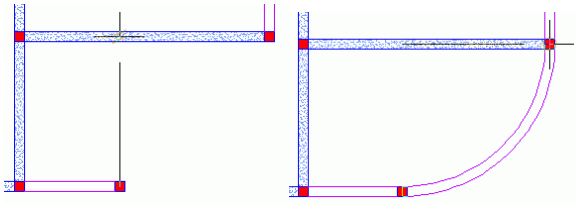
1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Click the center of the first column.
3. On the command line, type **CE** (Center) and press **Enter**.
4. Specify the center on the horizontal wall.

*To select the curve center, press the **CTRL** key and right click. Select **Perpendicular** from the context menu.*

The beam is drawn in the trigonometric direction from the start point to the end one.

5. Click the center of the second column.
6. Press **Enter**.



Creating slabs

Advance provides a tool that creates a slab in the current level. Slabs are created:

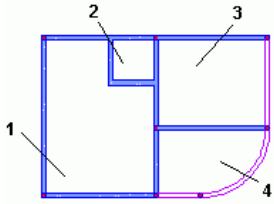
- By automatic detection
- Point by point

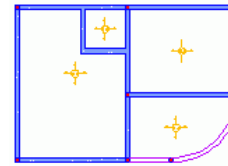
During the creation, the slab attributes are modified using the Smartbar. New slab points can be added using CAD tools.

***Example**: Creating slabs by automatic detection*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. On the command line, enter **D** (Detection) and press **Enter**.
3. Click the four areas (as shown in the figure) to create the slabs.
4. Press **Esc** to end.





Creating openings

Advance provides commands for creating all kinds of openings (e.g., doors, windows, depressions, floor openings, and niches) and all kinds of holes shapes (e.g., rectangular, circular, and polygonal).

The Opening object depends entirely on the Wall object. Thus, when moving a wall, the opening is moved with it. If a wall is deleted, the opening linked to the wall is also deleted.

***Example**: Creating a window*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Click the bottom wall.
3. Place the window in the middle of the wall using the snap modes to objects.

Opening libraries

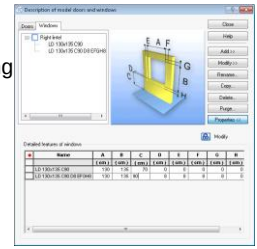
The doors and windows used in an Advance project can be modified or inserted from a library.

The library must first be imported into the model. The libraries can contain several doors and windows that are shared by different elements of the model.

Using and modifying the common library element decreases the memory space and improves Advance performance.

***Example**: Modifying a window*

1. On the **Manage** tab, **Advance settings** panel, click . The "Doors and windows library" dialog box appears.
2. Click the **Windows** tab.
3. Select the window type to modify.
4. Click **Properties**. The properties of the selected window are displayed on another panel of the window. The properties are read-only.
5. Click **Modify** .
6. In the table, modify the window opening size.
7. Click <**OK**>.



***Example**: Creating a door*

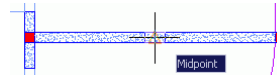
1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Click the wall.
3. On the Smartbar, select the door style (e.g., **LD 90x218 C7 J1**).
4. Click the middle of the wall to place the door.
5. Next, click inside the building to define the door opening direction.

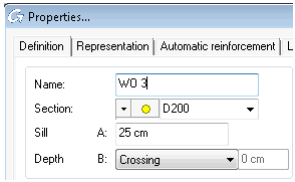
***Example**: Creating a circular wall opening*

1. On the **Home** tab, **Model** panel, select

from the flyout.
2. Click the wall.
3. Click the middle of the wall to place the opening.



The opening is created. The properties can be modified.



On the Smartbar, click .

– Click the arrow and select the circular opening .
– Enter the diameter: **200 cm**
– Enter **25 cm** for the sill.
– Close the dialog box.

Automatically creating a new level

Advance provides commands for copying an entire level as well as all its elements, which is useful when building levels are similar.

Copy level at top

Copy level below

Optionally, the created plan view can also be copied to avoid recreating all the visual elements for the level.

***Example**: Copying a level at top*

1. In the Pilot, activate the first level.
2. On the **Home** tab, **Level** panel, click .
3. Type **N** (No) and press **Enter** to confirm.

The new level appears in the Pilot.

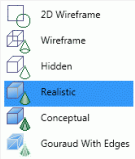
---

*Double click **Building** in the Pilot. The two levels of the 3D building are displayed in 3D.*

Shade/Cancel Shade

For a more realistic presentation of the model, use a shaded visual style.

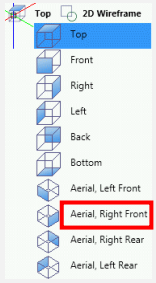
From the menus on the top-left corner of the application window select **Realistic**.

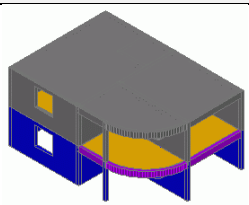


To cancel the shading, return to the **2D Wireframe** visual style.

View angle

To change the view angle, use the options from the menus on the top-left corner of the application window.





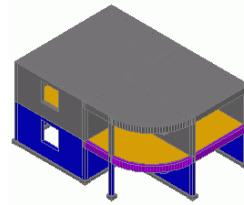
Creating foundations

Advance provides commands for creating isolated and continuous footings, beddings for isolated and continuous footings and piles, and a command for automatic foundation creation under the elements of the building's lowest level. The determination of the footing size depends only on the supporting geometry element.

***Example**: Automatically creating foundations*

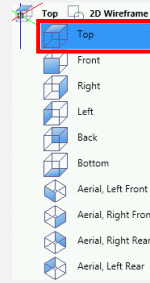
1. On the **Home** tab, **Model** panel, click .
2. Select the **Automatic determinations of footings** option.
3. Click <**OK**>.

   The foundations are automatically placed under the first level of the building.



Plan view

To display the plan view, select the corresponding option from the menus on the top-left corner of the application window.



Creating a polygonal slab opening

Before creating a stair, draw an opening in the third slab on the first level.

1. On the **Home** tab, **Model** panel, select

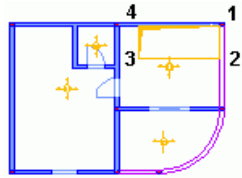
from the flyout.
2. Select the third slab.
3. Create the slab point by point, with the same procedure as for a polyline. For example, enter the following values:

   Move the mouse cursor in the -Y-direction, enter **1.5** and press **Enter**

   Move the mouse cursor in the -X-direction, enter **3.75** and press **Enter**

   Move the mouse cursor in the Y-direction, enter **1.5** and press **Enter**

   Move the mouse cursor in the X-direction, enter **3.75** and press **Enter**



4. Press **Enter** to finish.

Creating stairs

Advance includes powerful tools for creating stairs. Features include:

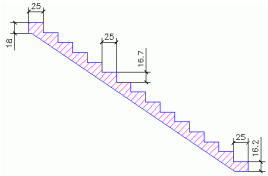
- Stairs with one and two flights
- Intermediate step slab
- Rectangular stairs or trimmed by a contour

Several finishings for the top and bottom connections can be created.

Specific stairs are available on the main manufacturers web sites and can be added to the drawings or models.

***Example**: Creating a stair with one flight*

1. On the **Home** tab, **Model** panel, click and select on the additional panel. The “Properties” dialog box opens.
2. In the **Properties** dialog box, set the stair parameters: the step number, the step height and width, etc.



Step number: **14**

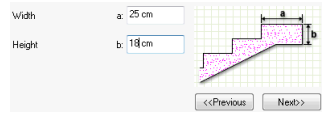
Height: **16.7 cm**

Width: **25 cm**

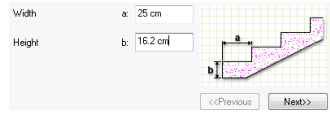
Height top step: **16.7 cm**

Height bottom step: **16.7 cm**

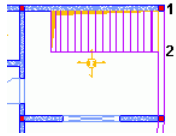
3. On the **Upper anchor** tab, use the **Next** and **Previous** buttons to select the desired top anchor stair.



4. On the **Lower anchor** tab, use the **Next** and **Previous** buttons to select the desired bottom anchor stair.



5. Click <**OK**>.
6. Place the stairs by clicking the two points defining the width.



7. Press **Enter** to finish.

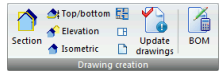
The stair upper level must be defined relative to the lower level.

8. Select the stair and double click it to access the stair properties.
9. On the **Definition** tab, select **In relation to lower level** in the "Upper level" drop-down list.
10. Enter **0** cm in the **Value** field.

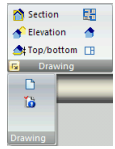
DRAWING CREATION

Advance provides a large selection of view creation tools. Once the model is complete, the creation of the construction drawing can begin. Sections, elevations, isometric views, total or partial cuts can be automatically created.

The tools for creating drawings and views are grouped on the **Drawing creation** panel of the **Modeling** tab.



Additionally, the tools can be accessed from the **Drawing** panel of the **Home** tab.



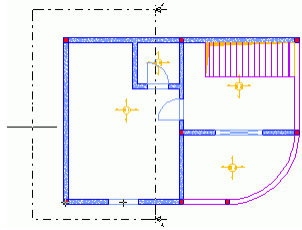
Before starting a project it is necessary to carefully plan how it will be handled. Advance Concrete provides two behaviors:

- The three dimensional model and the created drawings are stored in a single .dwg file.
- The three dimensional model is stored in a drawing (in DWG format). All the drawings and layouts created from the model are saved in separate .dwg files.

***Note**: The example used in this guide is handled using the "external drawings" behavior (default setting).*

***Example 1**: Creating a cut*

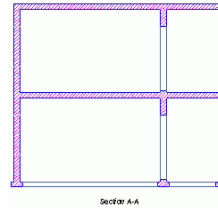
1. On the **Home** tab, **Drawing creation** panel, click .
2. Draw the cutting plane. To define it, draw a vertical line across the building and press **Enter**.
3. Move the mouse to define the cut depth. Include the entire left part of the building.



Next, calculate the cut:

4. In the Pilot, click to enter the Drawings mode. Section A-A appears. A red mark indicates that the view is not updated.

Double click **Section A-A** to calculate the section.

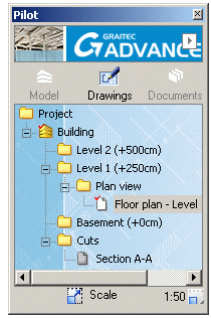


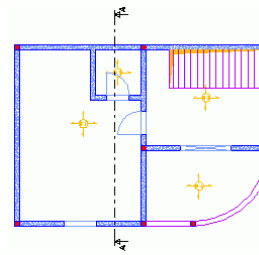
***Example 2**: Creating a plan view*

For every level, a corresponding plan view can be created. This association is automatically managed by Advance. The plan view is different from the level as it is just a model representation. All the necessary annotations, dimensions and other visual elements can be added. New entities cannot be created but the existing entities can be modified. Every modification made in the plan view affects the model.

1. In the Pilot, click **Model** to enter the Model mode.
2. Double click **Building** to activate it.
3. On the **Home** tab, **Drawing creation** panel, click .
4. In the “Select level” dialog box, click the first level.
5. Click <**OK**>.

The plan view is created.





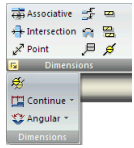
Dimensions

Advance provides tools for creating all dimensions types.

- Coordinate dimensions – displays the X and Y coordinates of the selected point.
- Level dimensions – places a symbol and an altitude on a number of points placed on a straight line. One of the points is considered as the altitudes origin and the associated altitude to this point can be changed. The other altitudes are calculated from the origin.
- Arc dimensions – dimensions the circle arc length or a curved object.
- Intersection dimension – takes into account the intersections with standard graphic objects, model objects, as well as reinforcement elements and model contours.
- Associative dimension – automatically displays a certain number of preliminary defined dimensions for a given object. These dimensions apply to the object and its children (e.g., openings) and they can be entirely defined according the selected elements.
- Point by point dimension – creates a linear dimension starting from points.

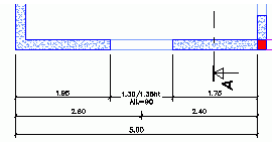
All the necessary tools for creating dimensions are grouped on the **Dimensions** panel of the **Labels & Dimensions** tab.

Additionally, the most used dimensioning tools can be accessed from the **Drawing** panel of the **Home** tab.



***Example**: Creating an associative dimension*

1. In the Pilot, double click **Floor plan - Level 1(+250cm)**. The plan view of the first level is displayed.
2. On the **Home** tab, **Dimensions** panel, click Associative.
3. Click the bottom wall.
4. Press **Enter**.
5. Click the drawing to position the dimension.



Layouts

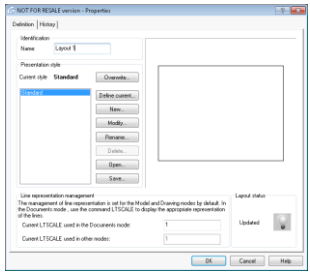
Advance automatically creates layouts based on drawings. Title blocks and frames can be inserted in the layout.

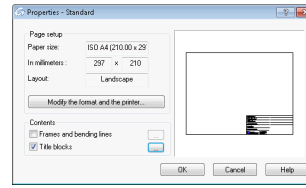
Note: *Layouts are defined in the Documents mode.*

***Example 1**: Creating a layout with title block*

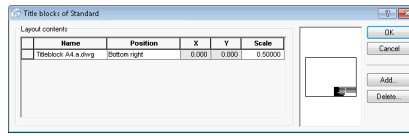
A layout is created using the views created in the previous examples. The views are placed on the layout plan by dragging them from the Pilot.

1. In the Pilot, click **Documents** to enter the Documents mode.
2. In the Pilot, right click the **Layout** folder and select **Create layout** from the context menu. The layout properties dialog box appears.
3. Click **Modify** to add a title block or to modify the formatting.





4. In the properties dialog box, check **Title blocks**.
5. Click .
6. In the “Title block” dialog box, click **Add**.
7. Browse and select a title block from the Advance folder tree (e.g., C:\Documents and Settings\All Users\Application Data\Graitec\AdvanceConcrete\2010\Support\Sample\Document\TitleBlock A4.a.dwg).

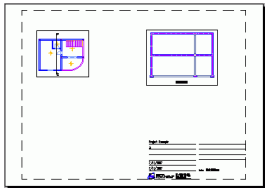


8. Click <**OK**>.
9. In the properties dialog box, click <**OK**>.

***Example 2**: Placing the drawings on the layout*

1. In the Pilot, click **Drawings** to enter the Drawings mode.
2. Right click **Floor plan – Level 1 (+250cm)** and select **Place on the layout** from the context menu.
3. Move the mouse and place the view onto the layout. The scale can be modified on the Smartbar.

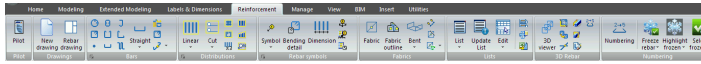
Repeat the same procedure for the **Section A-A**.



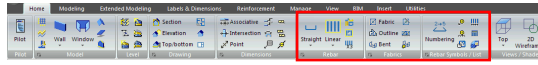
REINFORCEMENT

Advance provides a reinforcement module. Using the tools of this module reinforcement plans are drawn, reinforcement elements and distributions are created and material lists are generated.

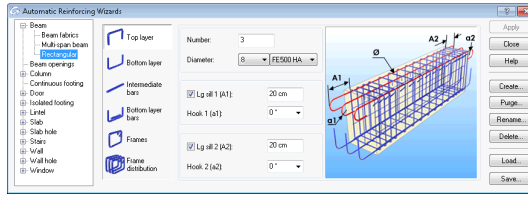
The **Reinforcement** tab contains the necessary tools for reinforcement.



Additionally, the most used reinforcement tools are grouped in several panels of the **Home** tab.



For certain structural objects, a reinforcement type is automatically assigned during object creation using the Automatic Reinforcement Wizard. These reinforcement styles are entirely customizable.



Reinforcement drawing

The basic plan for creating the reinforcement drawing is automatically created from a selected structural element. According to the selected view arrangement type, Advance creates the cuts and elevations.

***Example**: Creating the reinforcement drawing for a wall with a window opening*

Activate the second level of the building.

1. On the **Home** tab, **Drawing** panel, click .

***Note**: This command is accessible only in the Model mode.*

2. Select the bottom wall and press **Enter** to confirm. The first dialog box of the reinforcement view creation wizard appears.

3. On the right side of the dialog box select the arrangement of the views calculated by Advance: the number of views and the type of views. A graphic representation is displayed on the right side.
4. Click **Next**.
5. Click the viewport to modify. The picture changes accordingly. Next, the parameters can be modified on the right side of the window.

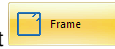
   In the following steps, various parameters modify the edge styles for the visible and hidden objects, reinforcement representation styles, display of symbols, axes and symbol scale, and title parameters. Keep the default parameters and click **Next**.
6. By clicking **Finish**, the views are automatically created and the reinforcement drawing appears in the Pilot in Drawings mode.

Next the reinforcement can be drawn.

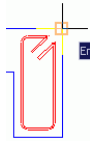
Creating the reinforcement

Next, the necessary bars are added on the drawing.

***Example 1**: Creating a rectangular bar on the window lintel cut*

1. On the **Home** tab, **Rebar** panel, select 

from the flyout.
2. Place the frame by clicking two points of the lintel diagonal.
3. Click a third point to position the hook of the rectangular frame.



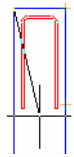
The frame is created.

***Example 2**: Creating a U bar*

1. On the **Home** tab, **Rebar** panel, select

from the flyout.
2. Place a U bar by clicking two points of the U base.
3. Input the U direction in the wall and the desired U length value.

The U bar is created.



Similar, place a U bar on the window top view

Next, distributions are created around the window opening based on the three previously created bars.

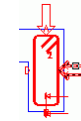
***Example3**: Creating a linear distribution*

A distribution is created based on the rectangular frame.

1. On the **Home** tab, **Rebar** panel, select

from the flyout.
2. Click the frame.

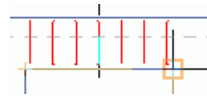
   The Sideview tool automatically appears as two arrows. This tool sets the distribution bar direction.



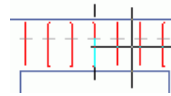
3. Select the horizontal arrow to place this side of the rectangular frame on the wall elevation.

Zoom in on the window lintel on the wall elevation

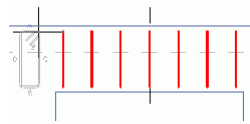
4. Click the lower left corner of the lintel, and then the lower right corner.



5. Next, click the lintel to specify the distribution bar direction.

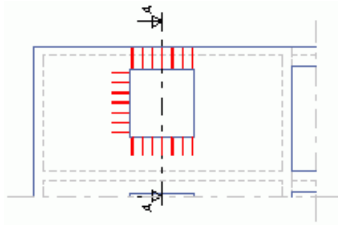


6. Using the gray rectangular frame, set the bar position in the distribution.



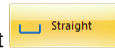
Similarly, place a U bar distribution on the window top view.

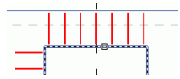
Create a distribution with the U bar on the window sill.



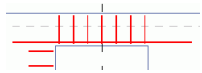
***Example 4**: Creating a straight bar*

Zoom in on the window lintel on the wall elevation. First, the lower bar of the window lintel will be defined. Zoom in on the window lintel on the wall elevation.

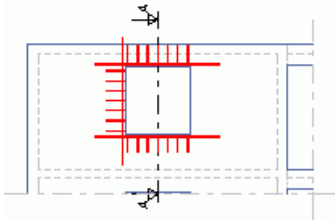
1. On the **Home** tab, **Rebar** panel, select 

from the flyout.
2. On the **Smartbar**, select anchor for bar extremities 1 and 2.
3. On the command line, type **li** (line) and press **Enter**.
4. Click the lower lintel edge. 
5. Click inside the lintel to place the lower bar.

The bar is defined.



Repeat the process to place a bar in the window sill and another one on the side of the window.

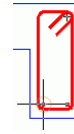


***Example 5**: Creating a free distribution*

Next, a distribution is created based on the straight bars. Zoom in on the elevation on the lower bar of the window lintel.

1. On the **Home** tab, **Rebar** panel, select

from the flyout.
2. Click the bar on the lower lintel side. A point bar is hooked on the cross center of the mouse cursor.
3. Create a distribution of two point bars around the rectangular frame from the lintel section.

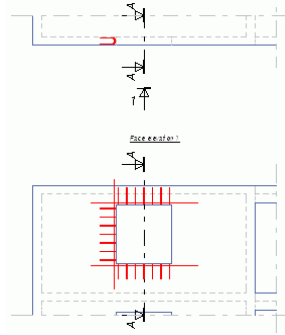


***Note**: To facilitate the placement of these two point bars, activate the snap point "center" on the snap object.*

Click the horizontal bar of the sill on the elevation.

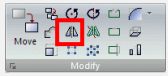
Repeat the process to create the distribution inside the U bar of the window sill and a distribution inside the U bar on the left side of the window (top view).

Next, using symmetry, place the bars on the other side of the window. Zoom in so that the elevation and the top view are visible on the screen.

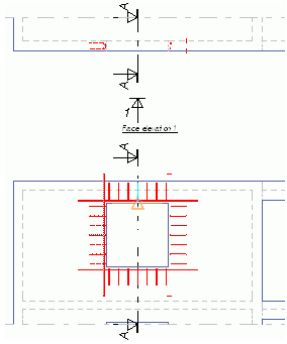


Mirror

To place the bars on the other side of the window, click the **Mirror** button on the **Modify** panel of the **Utilities** tab.



1. Click **Mirror**.
2. Select the bars to copy:
   On the top view: the U bar and the two point bars
   On the elevation:
   - The vertical bar on the left side of the window
   - The distribution on the left side of the window
3. Press **Enter**.
4. Define the symmetry axis by clicking the middle of the lower window edge and the middle of the upper window edge.

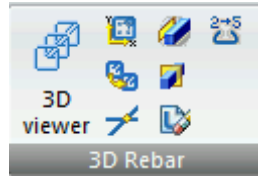


3D viewer

In Advance, although the reinforcement elements are drawn in 2D, they can be materialized in 3D with the 3D viewer.

Using the information from the 2D drawings, the viewer easily recreates the reinforcement cages. It works on bars, meshes and bent meshes. The 3D reinforcement cage can be stored as a drawing and printed.

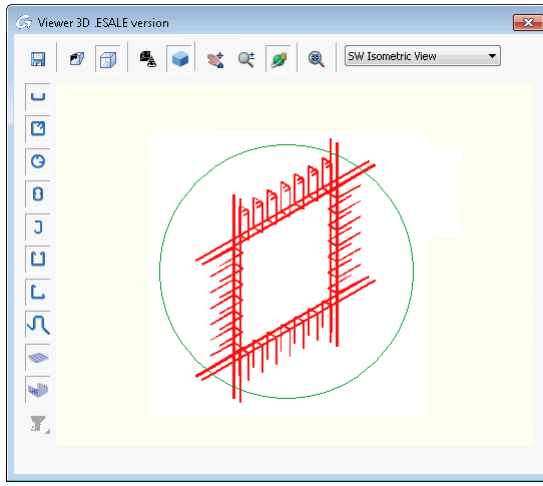
The **3D Rebar** panel of the **Reinforcement** tab contains tools for viewing the 3D reinforcement cages.



***Example**: Viewing the reinforcement using the 3D viewer*

1. On the **Reinforcement** tab, **3D rebar** panel, click
.
2. Include the three views of the reinforcement drawing within a selection window and press **Enter**.

The wall reinforcement is displayed in 3D.



Placing the reinforcement symbols

Symbols are combinations of annotations and graphic elements. They contain a certain number of object attributes. They are updated as the objects are modified. Deleting the objects deletes the corresponding symbols.

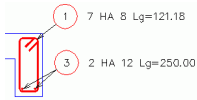
The symbols are placed one by one on the reinforcement elements: bars, simple or bent meshes, and bars and bent meshes distributions.

***Example**: Placing a bar symbol*

This example shows the placing of a bar reference mark on the wall cut. Zoom in on the lintel section.

1. On the **Home** tab, **Rebar symbols/List** panel, click .
2. Click the rectangular frame and place the reference mark nearby.

Repeat the process to place a reference mark on the two point bars.



Repeat the process to place the reference marks for the sill reinforcement.

Distribution dimensions

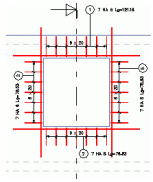
Advance provides a command for creating dimensions on the linear or variable distributions.

***Example**: Dimensioning a linear distribution*

Zoom in on the window lintel elevation.

1. On the **Home** tab, **Rebar symbols/List** panel, click .
2. Click the rectangular frame distribution.
3. Place the dimension line.
4. Click the position for the reference mark.

Repeat the process to place the dimensions for the four distributions of the window.



Lists

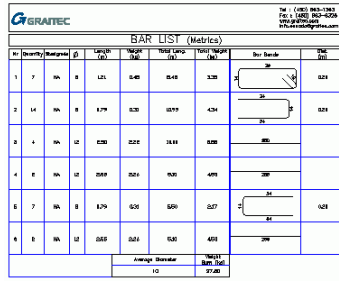
Advance provides a command for creating lists on layouts. Lists are created based on templates and are associated to structural element types (i.e., beams, columns, etc.) and to reinforcement element types (i.e., bars, meshes, etc.). Different list and schedule templates are available according to the international markets.

Custom list templates can also be created using the List generator.

The lists are automatically updated.

***Example**: Creating a bar list*

1. On the **Home** tab, **Rebar symbols/List** panel, click .
2. From the dialog box, select **All bars** .
3. Include within a selection window the bars to list.
4. Press **Enter**.
5. The list is hooked to the mouse cursor.
6. On the **Smartbar**, select a template and a scale of **0.5**.
7. Place the list on the reinforcement drawing.



This small exercise was a very simple introduction to Advance Concrete. With time, your familiarity, speed, and understanding of the power and versatility of Advance Concrete will improve as you use the software on real projects.

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