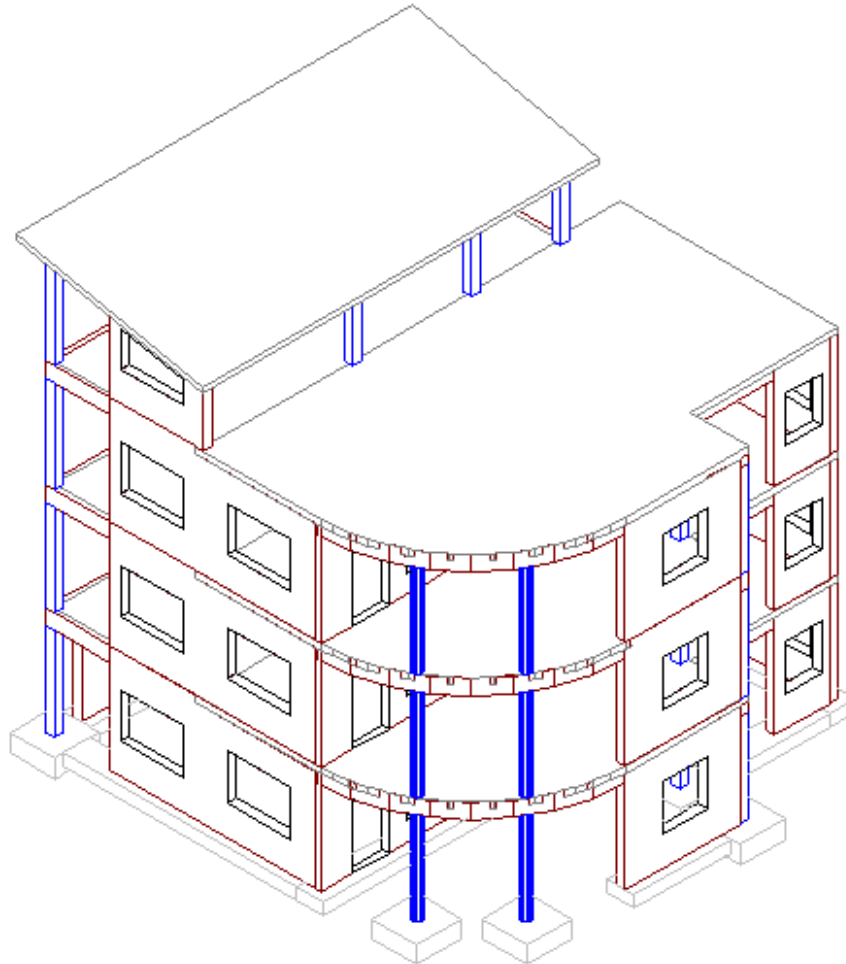



1. EXAMPLE OF APPLICATION OF THE RCAD FORMWORK DRAWINGS PROGRAM - PROJECT OF A BUILDING

The example below illustrates application of the **RCAD Formwork Drawings** program to prepare a project of a building along with appropriate drawings (foundation plan, plans of stories, vertical sections through the building, formwork drawings of single structure elements). The drawing below presents a 3D view of a defined building.




The following rules will apply while defining a model of the building:

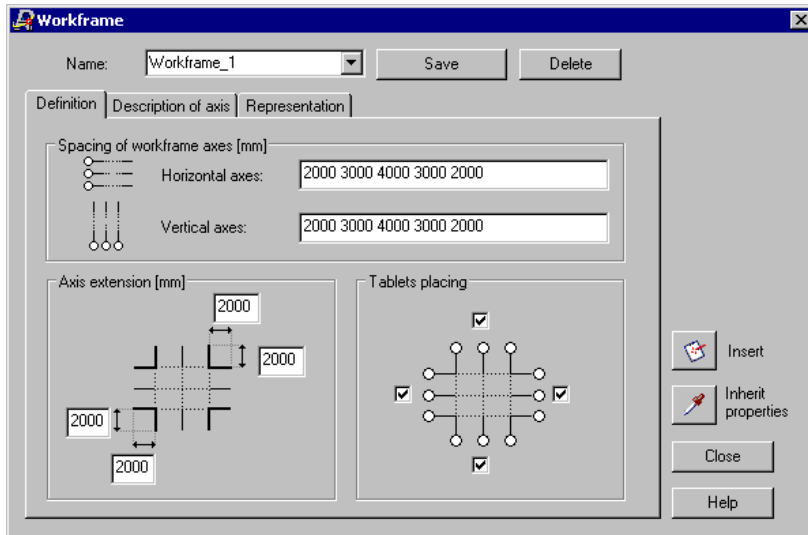
- any icon symbol denotes pressing this icon with the left mouse button,
- {x} denotes selecting the 'x' option from the dialog box,
- d indicates entering the 'd' text into the command line of the program and pressing the **Enter** key,
- **LMC** and **RMC** - abbreviations for the Left Mouse button Click and the Right Mouse button Click.

To start work in the **RCAD Formwork Drawings** program, the user should press the  icon on the computer desktop or select the *RCAD - Formwork Drawings* command from the START menu. It will run the AutoCAD © program enhanced with options for making structure model and drawings (extended menu, additional toolbar, the **Object Inspector** dialog box, etc.).

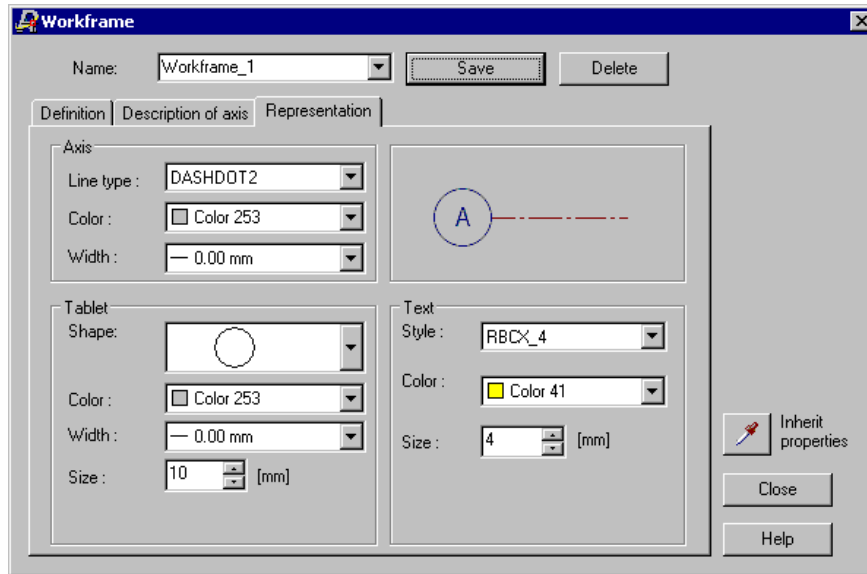




1.1 Definition of a workframe

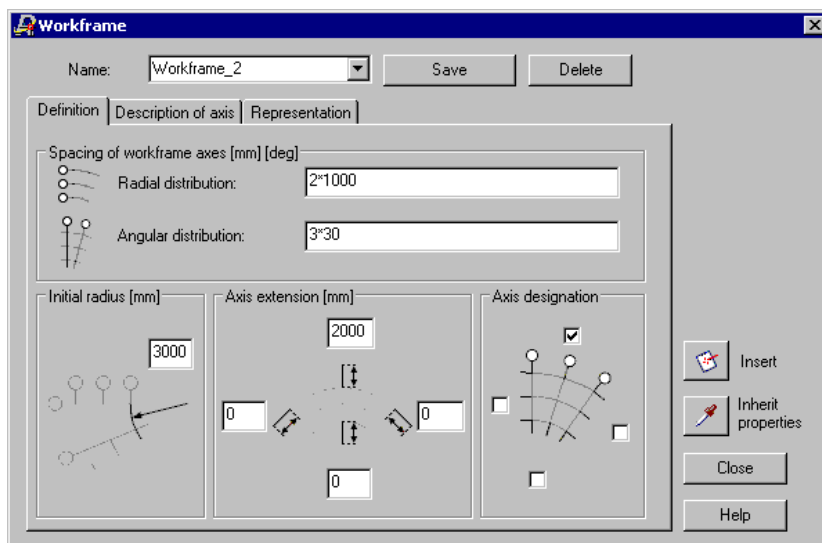
PERFORMED OPERATION	DESCRIPTION
 (Insert rectangular workframe)	The option is used to define a rectangular workframe which makes definition of a structure model on the plane easier. Opens the Workframe dialog box. <i>NOTE 1: If there is no toolbar with the appropriate icon on the screen, click RMC e.g. the top right corner of the screen (the place where there are no toolbars) and from the RBCX submenu activate the appropriate toolbar by LMC on the line including the name of this toolbar.</i> <i>NOTE 2: The option is also available in the top menu RBCX / Workframes.</i>
	Select workframe parameters as in the drawing below.



LMC on the <i>Description of axis</i> tab	Selects the numbering of horizontal axes 1,2,3... and vertical ones A,B,C...
LMC on the <i>Representation</i> tab	Select the parameters as in the drawing below.

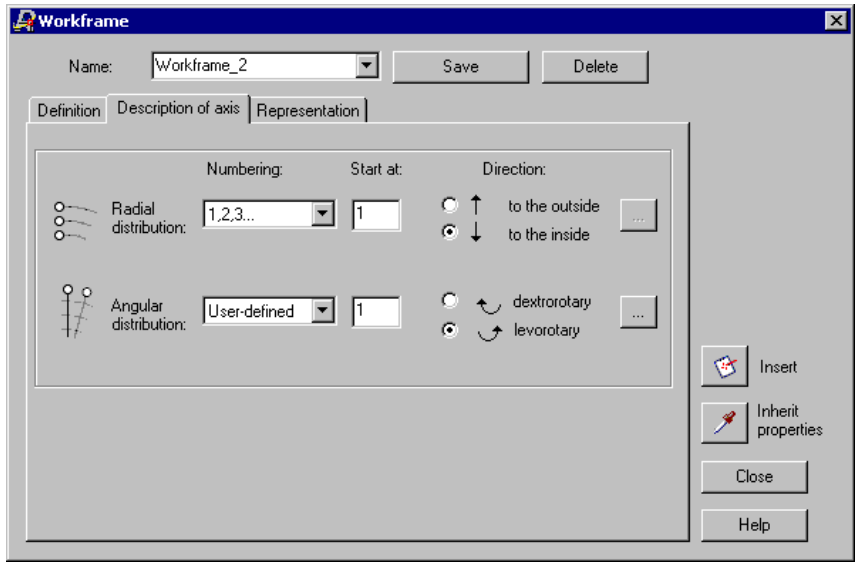



<p>Save</p>	<p>Confirms the workframe definition. <i>Note: The icon is provided in the Workframe dialog box.</i></p>
<p> (Insert)</p>	<p>Creates a workframe based on parameters defined in the dialog box. The following text will appear in the command line: <i>Indicate workframe insertion point.</i></p>
<p>LMC on any point in the graphical viewer</p>	<p>Defines the workframe insertion point. The following text will appear in the command line: <i>Define workframe orientation.</i></p>
<p>LMC on any point defining the workframe orientation in the x direction</p>	<p>Inserts the workframe (the rectangular workframe is presented in the drawing that shows all the defined workframes).</p>
<p> (Insert circular workframe)</p>	<p>The option is used to define a circular workframe which makes definition of a structure model on the plane easier. Opens the Workframe dialog box.</p>
	<p>Select workframe parameters as in the drawing below.</p>

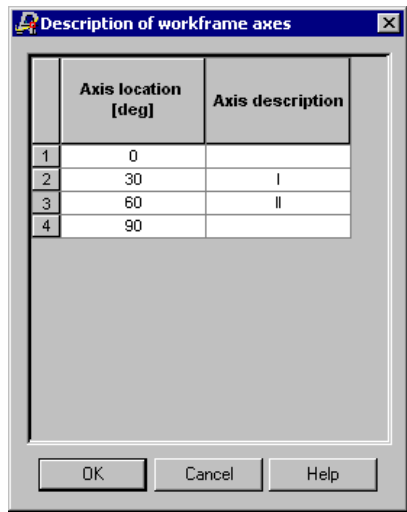





LMC on the *Description of axis* tab Select workframe parameters as in the drawing below.

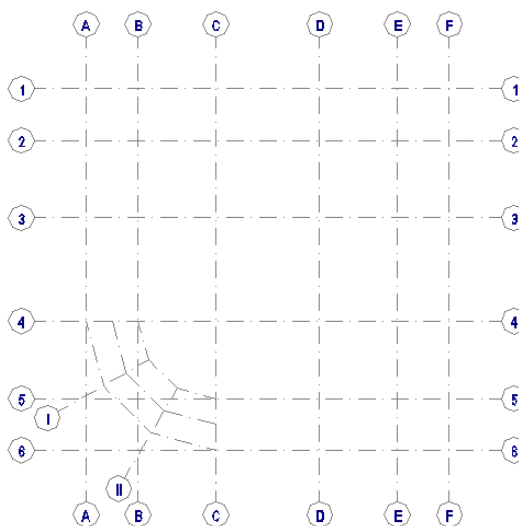


 (the icon is located in the right-hand part of the *Description of axis* tab, on the level of the *Angular distribution* option) Opens the **Description of workframe axes** dialog box as in the drawing below





OK	Closes the Description of workframe axes dialog box.
LMC on the <i>Representation</i> tab	Selects the same parameters as for the definition of Workframe_1.
Save	Confirms the workframe definition. <i>Note: the icon is provided in the Workframe dialog box.</i>
 (<i>Insert</i>)	Creates a workframe based on parameters defined in the dialog box. The following text will appear in the command line: <i>Indicate workframe insertion point.</i>

F3	Activates the OSNAP function that allows locating automatically characteristic points (this key should be pressed only then if the function is switched off).
LMC on point C-4	Defines the workframe insertion point. The following text will appear in the command line: <i>Define workframe orientation.</i>
LMC on point C-5	Inserts the workframe (the workframe view is presented in the drawing below)



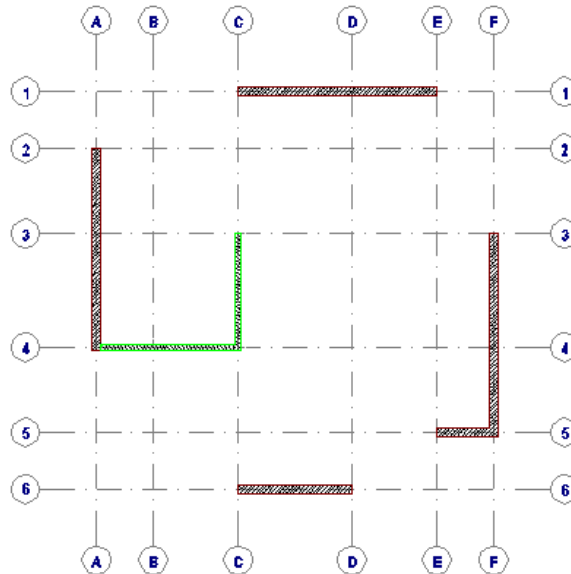
1.2 Definition of objects in the structure model

1.2.1 Definition of walls



 (Wall)	The option enables definition of walls in a structure model. Opens the Wall: definition dialog box and assumes default values of all parameters.
 (Points)	Selects the way of defining walls by defining the beginning and end points of a wall in a plan of a building story.
LMC on the following points to define walls: (A-2,A-4,C-4,C-3) Enter Define successive walls analogously: (C-1,E-1);(F-3,F-5,E-5);(C-6,D-6) (see the drawing below)	Defines walls.
Close	Closes the WALL: definition dialog box.
LMC select walls between the points (A-4,C-4) and (C-4,C-3) (marked in green in the drawing below)	Selects walls.




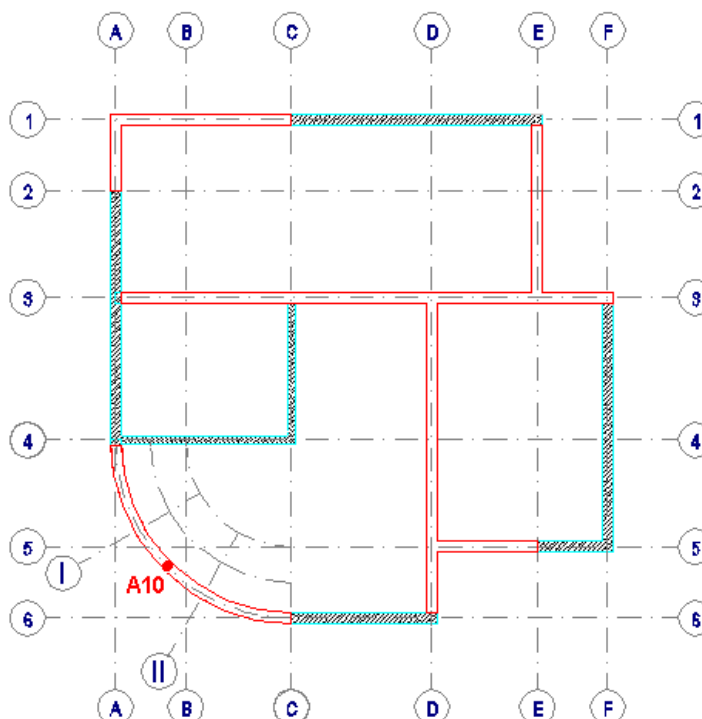
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the WALL: definition dialog box.
In the WALL: definition dialog box, on the <i>Section</i> tab, select: <i>Thickness 200</i> ; <i>Material - Brick</i> ;	Modifies parameters of selected walls.
Close	Closes the WALL: definition dialog box.





1.2.2 Definition of beams

 (Beam)	The option enables definition of beams in a structure model. Opens the BEAM: definition dialog box and assumes default values of all parameters.
 (Points)	Selects the way of defining beams by defining the beginning and end points of a beam in a plan of a building story. The following text will appear in the command line: <i>Pick the beginning point.</i>
LMC on the following points to define beams: (A-2,A-1,C-1) Enter Define successive beams analogously: (E-1,E-3);(A-3,F-3);(D-3,D-6); (D-5,E-5) in the drawing below beams are marked in red	Defines beams.




 (Arc) Note: The icon is provided in the BEAM: definition dialog box	Selects the way of defining beams by giving three successive points of an arc belonging to a beam in a plan of a building story. The following text will appear in the command line: <i>Select first point:</i>
LMC on three successive points lying on the arc (C-6,A10-center of the arc,A-4) Enter (see the drawing below)	Defines an arc-shaped beam on the external axis of the circular workframe.
Close	Closes the BEAM: definition dialog box.

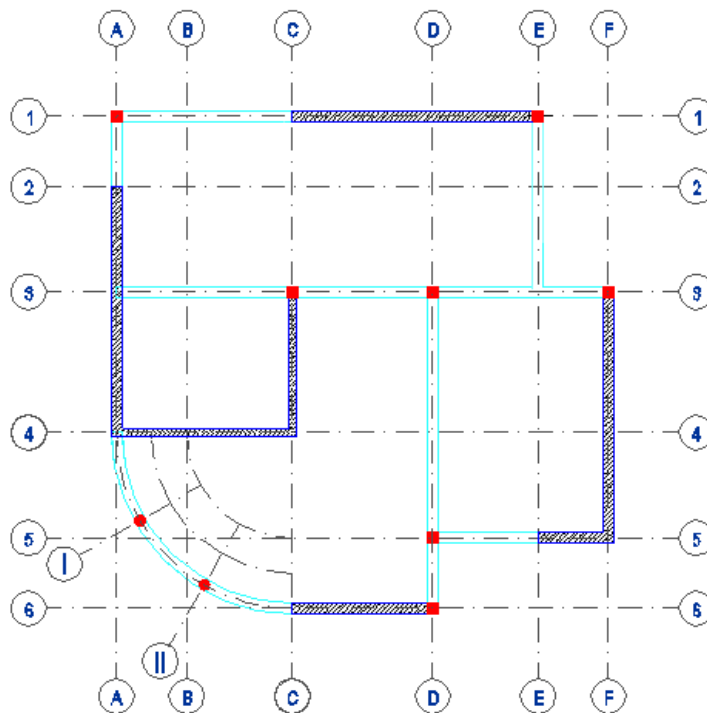


1.2.3 Definition of columns







 (Column)	The option enables definition of columns in a structure model. Opens the COLUMNS: definition dialog box and assumes default values of all parameters.
 (Insert)	Selects the way of defining columns by indicating a point in the plan of a building story. The following text will appear in the command line: <i>Pick insertion point.</i>
LMC one by one on the points: A-1,E-1,C-3,D-3,F-3,D-5,D-6, Enter	Defines columns.
In the COLUMN: definition dialog box, on the <i>Section</i> tab, in the <i>Name</i> field select the column: D30	Selects parameters of round columns.

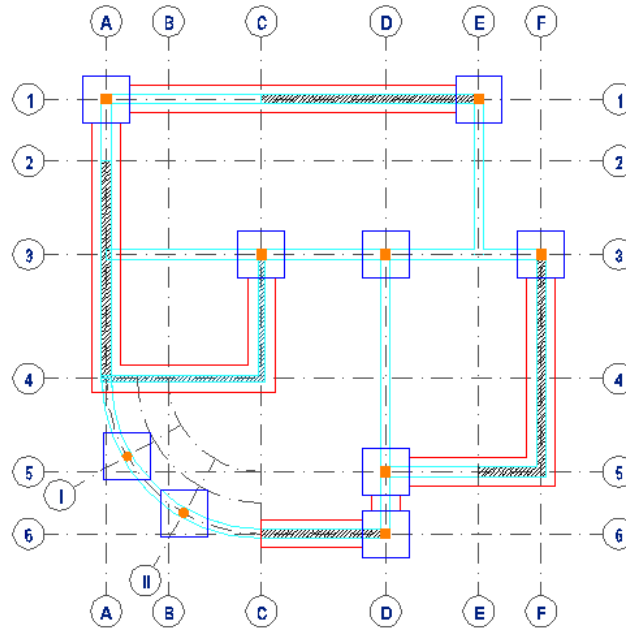


 (Insert)	Selects the way of defining columns. The following text will appear in the command line: <i>Pick insertion point.</i>
LMC on the points of intersection of the axes I and II with the external axis of the radial distribution, (see the drawing below), Enter	Defines circular columns.
Close	Closes the COLUMN: definition dialog box.
 (SW Isometric)	Selects an axonometric structure view.
LMC on the last-defined round columns	Selects objects.
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the COLUMN: definition dialog box.
LMC on the <i>Vertical Definition</i> tab and in the <i>Column upper level</i> field select: Top Story 0(+3.00)	Changes the upper level of the column.
 (on the level of the <i>Offset</i> option in the <i>Column upper level</i> field)	Selects the option for modification of a column height.
LMC on the graphical viewer indicate the lower part of the arc beam	Changes the column height.
Close	Closes the COLUMN: definition dialog box.






1.2.4 Definition of spread and continuous footings

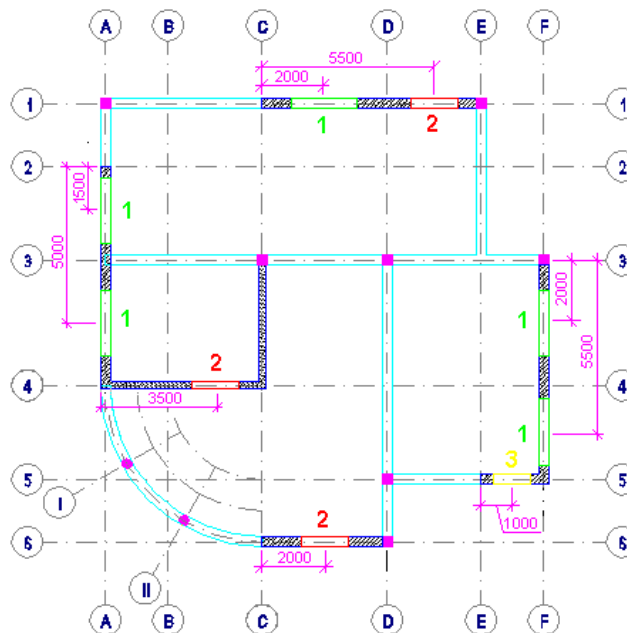
 (Top)	Sets the top view.
In the Object Inspector dialog box, on the <i>Model</i> tab, select Columns in the tree	Selects columns (the <i>Columns</i> name will be highlighted and all columns will be selected in the graphical viewer).
 (<i>Spread footing</i>)	The option enables definition of spread footings in a structure model. Opens the SPREAD FOOTING: definition dialog box.
In the opened SPREAD FOOTING: definition dialog box, on the <i>Section</i> tab, in the <i>Name</i> field select the spread footing section: R150x150x60 (leave the remaining parameters unchanged).	Selects parameters of a spread footing.
 (<i>Under column</i>)	Selects the way of defining the spread footing.
Close	Inserts defined spread footings and closes the SPREAD FOOTING: definition dialog box.
In the Object Inspector dialog box, on the <i>Model</i> tab, select Walls in the tree	Selects walls (the <i>Walls</i> name will be highlighted and all walls will be selected in the graphical viewer).
 (<i>Continuous footing</i>)	The option enables definition of continuous footings in a structure model. Opens the CONTINUOUS FOOTING: definition dialog box and assumes default values of all parameters.
 (<i>Under wall</i>)	Selects the way of defining a continuous footing under the already-defined wall.
 (<i>Points</i>)	Selects the way of defining a continuous footing by giving the beginning and end points of the continuous footing in a plan of a building story.
LMC on the points: (A-2,A-1,C-1) Enter Define a continuous footing analogously: (D-6,D-5,E-5)	Defines continuous footings.
Close	Closes the CONTINUOUS FOOTING: definition dialog box.
Esc	Switches off selection of walls.




1.2.5 Definition of windows

 (Window)	The option is used to define window openings in selected elements of a structure model. The following text will appear in the command line: <i>Select wall.</i>
LMC on the wall (C-1,E-1)	Opens the WINDOW - definition dialog box.
In the opened dialog box in the <i>Name</i> field select: R210x150 (leave the remaining parameters unchanged).	Selects window parameters.
 (Insert)	Selects the way of defining windows. The following text will appear in the command line: <i>Define opening location.</i>
R	Selects the option for inserting a window by the reference point. The following text will appear in the command line: <i>Indicate new reference point.</i> <i>Note: R indicates entering the 'R' text into the command line of the program and pressing the Enter key.</i>
LMC on point C-1	Indicates the reference point. The following text will appear in the command line: <i>Indicate new reference point.</i>
2000	Indicates a location of the window from the indicated reference point.
Enter	Inserts a defined window.



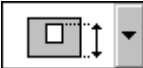

<p>In the opened WINDOW - definition dialog box in the <i>Name</i> field select: R150x150 (leave the remaining parameters unchanged).</p>	<p>Selects window parameters.</p>
<p> (Insert)</p>	<p>Selects the way of defining windows. The following text will appear in the command line: <i>Define opening location.</i></p>
<p>R</p>	<p>Selects the option for inserting a window by the reference point. The following text will appear in the command line: <i>Indicate new reference point.</i></p>
<p>LMC on point C-1</p>	<p>Indicates the reference point.</p>
<p>5500</p>	<p>Determines a location of the window from the indicated reference point.</p>
<p>Enter</p>	<p>Inserts a defined window.</p>
	<p>Analogously, insert the remaining windows presented in the drawing below. (window parameters are marked with colors: 1 - green - the window with the dimensions 210x150; 2 - red - the window with the dimensions 150x150; 3 - yellow - the window with the dimensions 120x150)</p>






1.2.6 Definition of doors


<p> (Doors)r</p>	<p>the option is used to define door openings in selected elements of a structure model. The following text will appear in the command line: <i>Select wall.</i></p>
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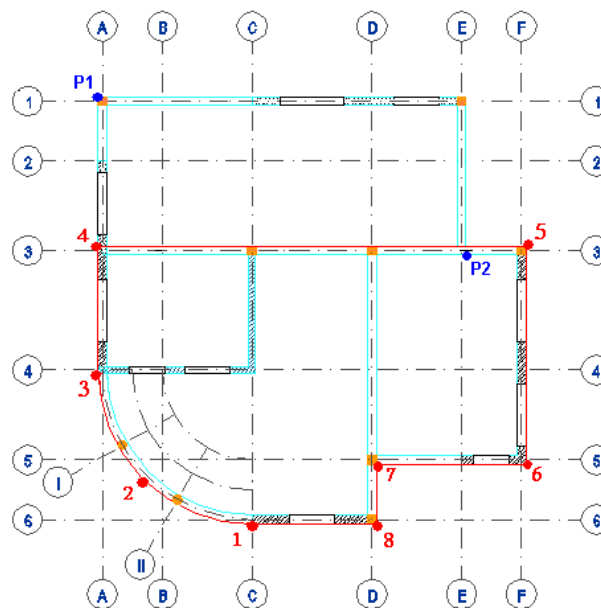


LMC indicate the wall between the following points: (A-4,C-4)	Opens the DOOR - definition dialog box and assumes default values of all parameters.
 (Insert)	The following text will appear in the command line: <i>Define opening location.</i>
R	The following text will appear in the command line: <i>Indicate new reference point.</i>
LMC on point A-4	Indicates the reference point.
1500	Determines a location of the door from the indicated reference point.
Enter, Close	Inserts a defined door and closes the DOOR - definition dialog box
 (SW Isometric)	Selects an axonometric structure view.
LMC on the window located next to the defined door	Selects the window.
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the WINDOW - definition dialog box.
In the opened dialog box, in the <i>Opening level</i> field  change: enter: 2100	Modifies the level of the window opening.
 (Inherit properties)	Assumes modified properties of a window and closes the WINDOW - definition dialog box.


1.2.7 Definition of slabs

 (Top)	Sets the top view.
 (Slab)	The option enables definition of floor slabs in a structure model. Opens the SLAB: definition dialog box and assumes default values of all parameters.
 (Diagonal)	Selects the way of defining the first slab by indicating a diagonal; the slab will be defined on the contour of the rectangle defined by the diagonal.
LMC one by one on the points P1 and P2 (see the drawing below)	Defines the first slab.


 (Points)	Selects the way of defining the second slab by indicating successive points determining geometry of the slab.
LMC on point 1 (see the drawing below)	Defines the second slab. The following text will appear in the command line: <i>Select next point.</i>
A (The option is also available (RMC / Arc))	Switches on the option allowing definition of a slab along the arc.
LMC one by one on the points 2,3,4,5,6,7,8 (see the drawing below) Enter	Defines successive points of the second slab.
Close	Closes the SLAB: definition dialog box.

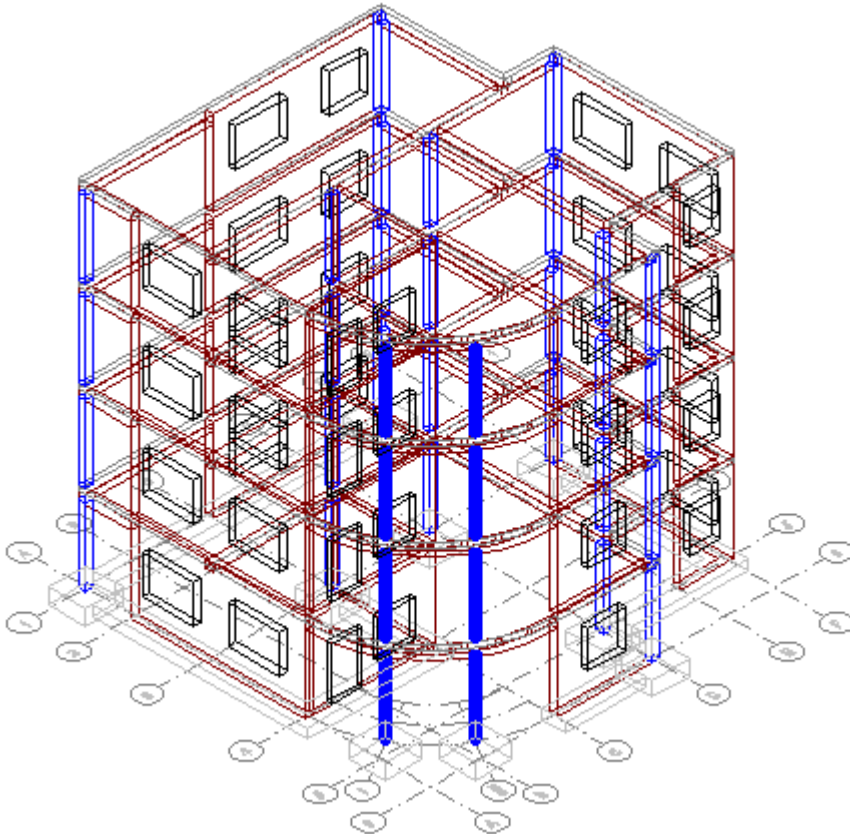


1.3 Copying of stories


 (SW Isometric)	Selects an axonometric structure view.
In the Object Inspector dialog box, on the <i>Model</i> tab, LMC in the tree highlight Ground-floor (the <i>Ground-floor</i> name will be highlighted)	Selects the story. In the lower part of the Object Inspector dialog box the following icons appear: <i>Name</i> and <i>Height [m]</i>
LMC in the field: <i>Height</i> enter 3.6	Changes the column height.
Enter	Accepts the change of the column height.





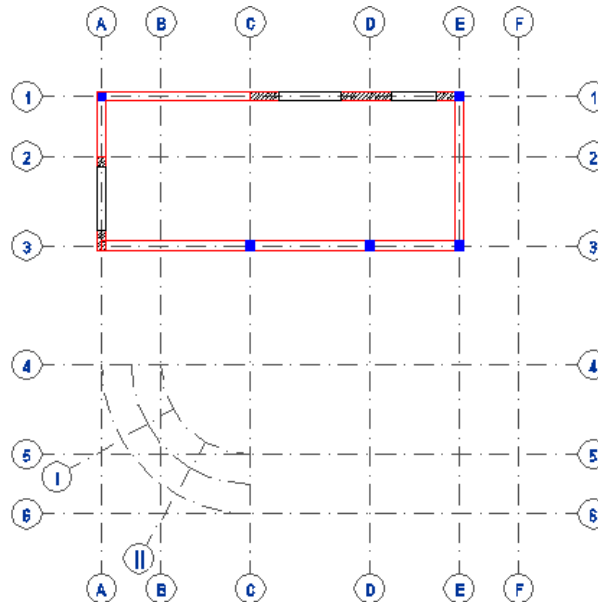
In the Object Inspector dialog box, on the <i>Model</i> tab, LMC in the tree highlight Ground-floor (the <i>Ground-floor</i> name will be highlighted)	Selects Ground-floor (all elements located on the current story will be highlighted in the graphical viewer).
RMC on the <i>Ground-floor</i> name	Opens the context menu.
<i>Copy story</i>	Selects the option from the context menu. Opens the Copy active story dialog box.
In the opened dialog box, in the <i>Copy active story</i> edit field enter: 3	Determines a number of repetitions of the current story.
OK	Closes the Copy active story dialog box.
 (<i>Show whole building</i>)	After selecting this option, a whole structure model will be presented on the screen.





1.4 Modification and definition of elements of the last story

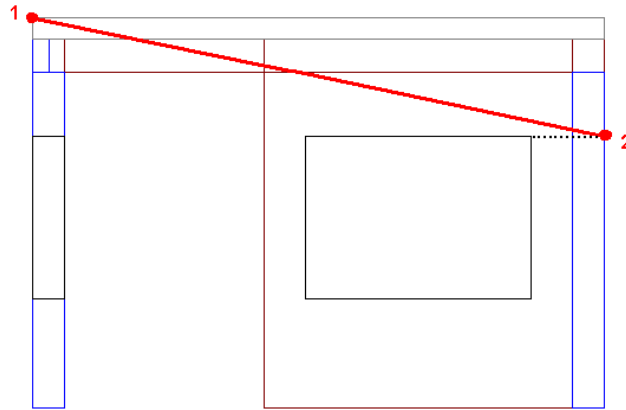
 (<i>Show active story</i>)	After selecting this option, only the active (selected) story of a building will be presented on the screen.
--	--




In the Object Inspector dialog box, on the <i>Model</i> tab, LMC in the tree highlight Story 3 (the <i>Story 3</i> name will be highlighted)	Selects the story.
RMC	Opens the context menu.
<i>Activate story</i>	Selects the option from the context menu (only the active story of a building will be presented in the graphical viewer).
 (Top)	Sets the top view.
	Using available AutoCAD © options delete and modify elements of the last story as shown in the drawing below.

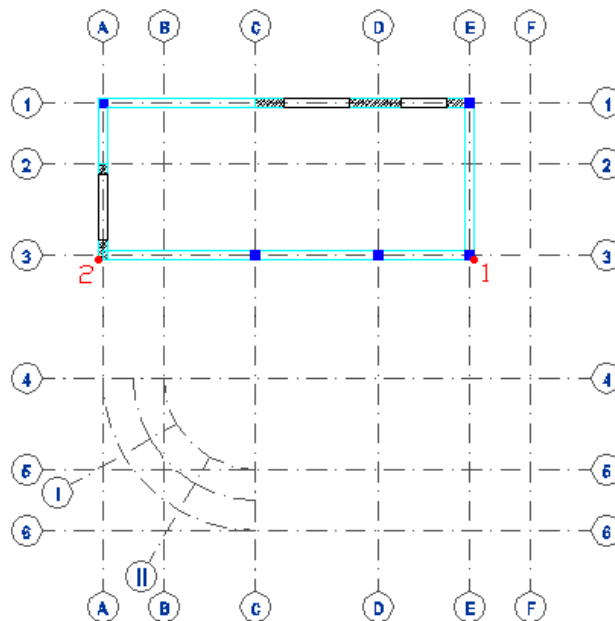




1.4.1 Definition of an inclined plane

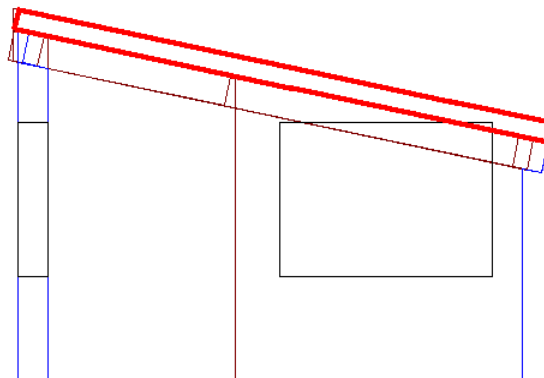
 (Left)	Sets the view from the left.
 (Polyline)	Selects the AutoCAD © option allowing definition of a polyline The following text will appear in the command line: <i>Specify start point.</i>
LMC on point 1 and next point 2 , shown in the drawing below	Defines a polyline.

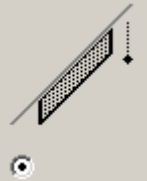


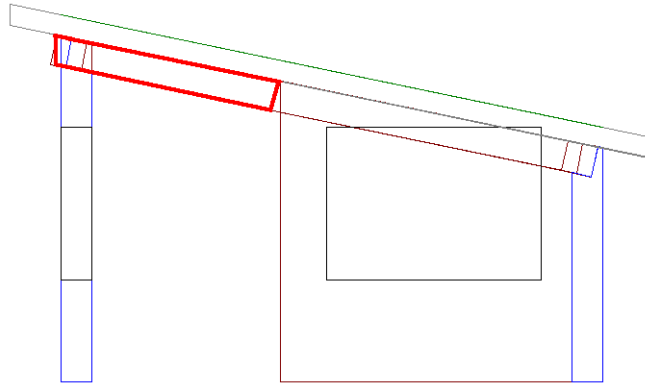
 (Definiton of planes)	The option enables defining intermediate (horizontal) planes or inclined planes on which elements of a structure model can be defined. Opens the Definition of planes dialog box.
In the opened Definition of planes dialog box, in the <i>Plane name</i> field enter Roof	Defines parameters of a plane.
	Selects an inclined plane which is determined according to geometry of a selected polyline.
 (Select)	Selects the way of defining an inclined plane. The following text will appear in the command line: <i>Select polyline.</i>
LMC on the defined polyline	Indicate the polyline. The following text will appear in the command line: <i>Select first point.</i> <i>Note: The structure view presented on the screen is changed automatically into a plan of the active story.</i>
LMC on point 1, and next point 2, shown in the drawing below	Defines a plane.



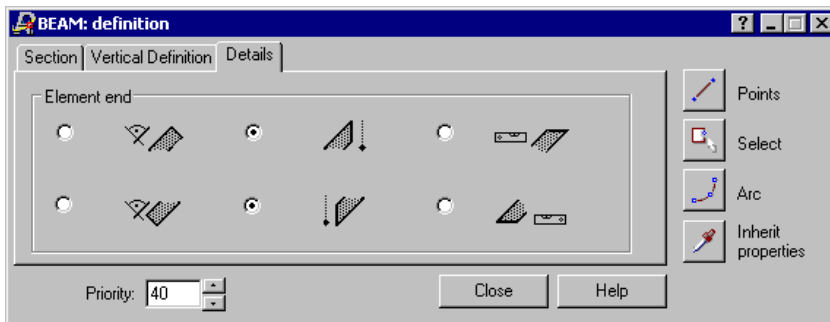
 (Left)	Sets the view from the left.
 (Attach to plane)	The option allows attaching selected structure elements to an indicated inclined plane. Geometry of structure elements is adjusted to the slope of the inclined plane. The following text will appear in the command line: <i>Select plane.</i>
LMC on the defined plane	The following text will appear in the command line: <i>Select objects.</i>
Enter	Accepts selection of all elements that will be attached to the plane.
LMC on the slab presented in red in the drawing below	Selects the slab.



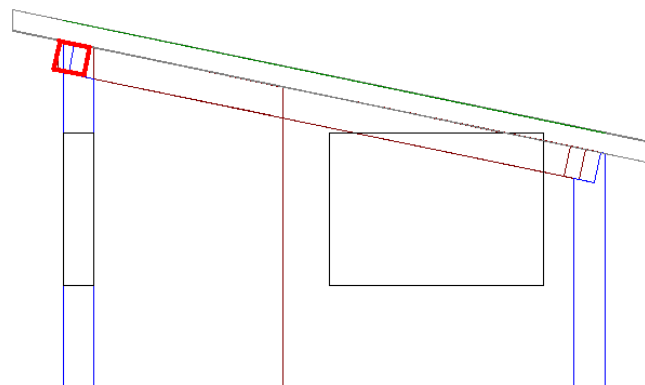
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the SLAB: definition dialog box.
In the opened SLAB: definition dialog box, on the <i>Section</i> tab, in the <i>Offset of slab edge</i> field enter: 500	Defines parameters of a slab.
LMC on the <i>Details</i> tab and select: 	Selects the end type of the slab edge (vertical).
Close	Modifies parameters of the slab and closes the SLAB: definition dialog box.
LMC on the beam presented in red in the drawing below	Selects the beam.



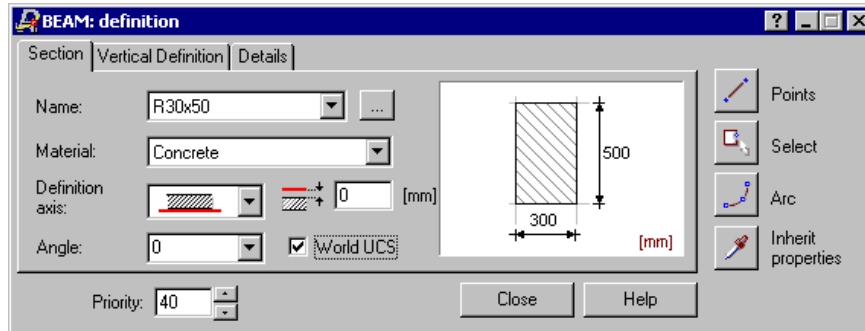
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the BEAM: definition dialog box.
LMC on the <i>Details</i> tab	Changes the tab in the dialog box. Select the parameters as in the drawing below.






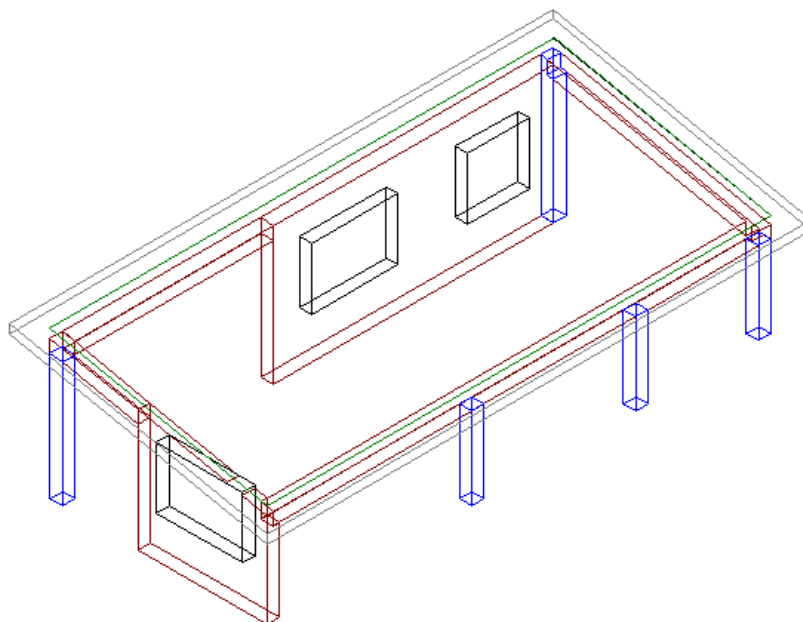
Close	Modifies parameters of the beam and closes the BEAM: definition dialog box.
Analogously, modify the beam on the axis E	
LMC on the beam presented in red in the drawing below	Selects the beam.





RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the BEAM: definition dialog box. Select the parameters as in the drawing below.

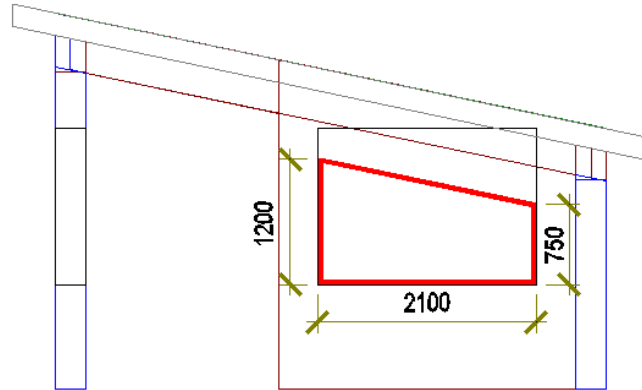






Close	Modifies parameters of the beam and closes the BEAM: definition dialog box.
 (Top)	Sets the top view.
 (Move)	Using the AutoCAD © option modify the beam position (align it to the column and the wall).
Analogously, modify the beam on the axis 3	
 (SW Isometric)	Selects an axonometric structure view.



1.4.2 Modification of a window

 (Left)	Sets the view from the left.
 (Polyline)	Using the AutoCAD © option for defining polylines create a window shape as in the drawing below (marked in red). The following text will appear in the command line: <i>Specify start point.</i>





LMC on the window	Selects the window to modify the window parameters.
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the WINDOW - definition dialog box.
In the opened WINDOW - definition dialog box, press the  icon next to the <i>Name</i> field	Opens the Window list dialog box.
 (Create view)	Selects the option used to create a new window shape. Opens the WINDOW - definition dialog box.
	Selects the option used to define a window of an arbitrary shape.
In the <i>Name</i> field enter: Window	Defines a name of the created window.
 (Select)	Selects the option used to define a shape of the cross-section by selecting a polyline. The following text will appear in the command line: <i>Select object.</i>
LMC in the graphical viewer – indicate the defined polyline	Selects the polyline.
Enter	Opens the Window definition dialog box.
OK	Accepts the window parameters and opens the Window list dialog box.



Close	Closes the Window list dialog box and opens the WINDOW - definition dialog box.
In the <i>Name</i> field select: Window	Selects the defined window.
Close	Defines the modified window and closes the WINDOW - definition dialog box.



1.5 Formwork drawings

1.5.1 Foundation plan

In the Object Inspector dialog box, on the <i>Model</i> tab, select Building in the tree (the <i>Building</i> name will be highlighted)	Selects the building model.
RMC the <i>Building</i> name	Opens the context menu.
<i>Automatic positioning</i>	The option enables assigning positions automatically to defined structure elements. Opens the Automatic positioning dialog box and assumes default parameters.
Run	Starts the operation of assigning positions automatically. Positioning is performed automatically for all selected structure elements.
 (<i>Create plan of foundations</i>)	Creates a drawing of the foundation plan presented on a new edition layout (<i>Edition Layout</i>) at the bottom of the screen. The generated drawing (<i>Foundation plan 1</i>) is placed in the tree on the <i>Positions</i> tab in the Object Inspector dialog box.
In the Object Inspector dialog box, on the <i>Positions</i> tab, in the tree double-click LMC the item: <i>Foundation plan 1</i>	It activates the drawing of the foundation plan and presents it in the graphical viewer. In the lower part of the Object Inspector dialog box the following icons appear: <i>Name</i> and <i>Scale</i> .
LMC double-click in the <i>Scale</i> field, and next, enter: 1:50	Changes the scale of the drawing.
Enter	Accepts the change of the drawing scale.
 (<i>Element description</i>)	The option enables describing elements of the building structure. The following text will appear in the command line: <i>Indicate objects</i> . NOTE: <i>Structure elements can be described in created drawings (plans of stories or foundations and in sections).</i>

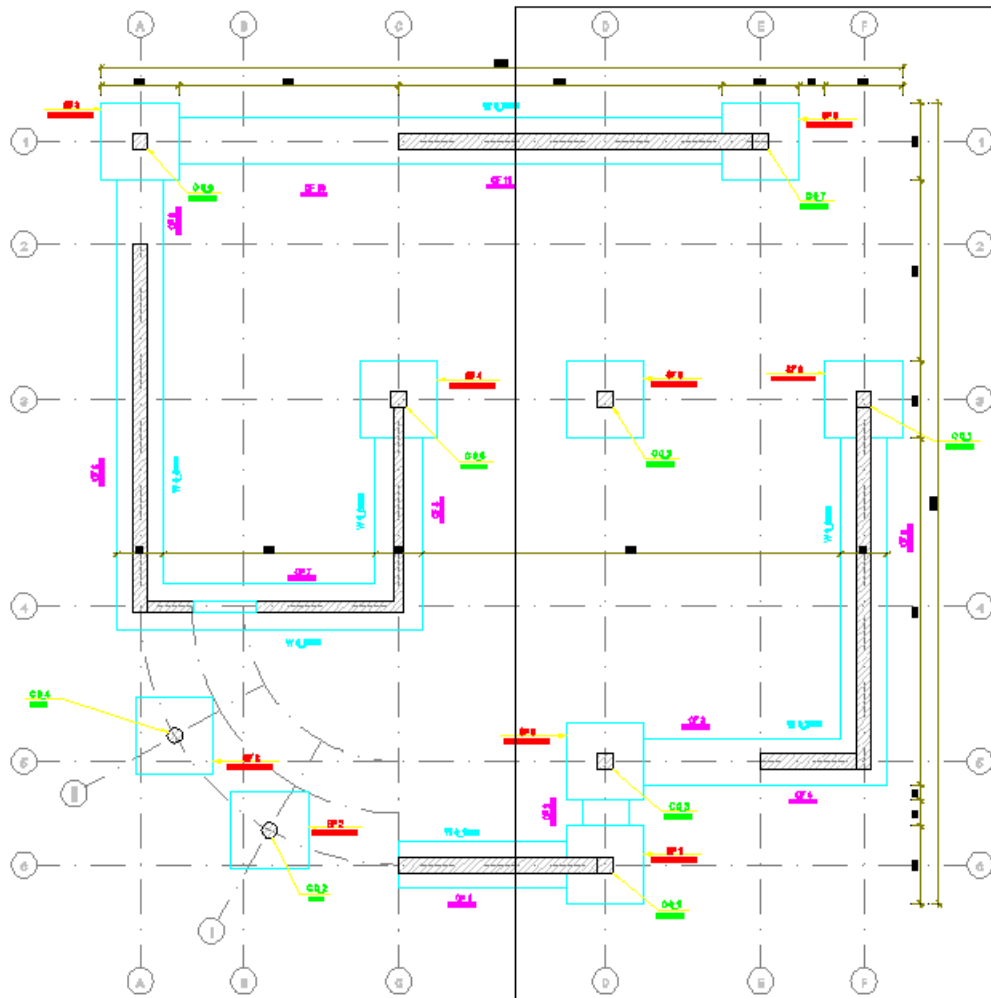


In the graphical viewer LMC select with the window all the elements included in the foundation plan	Selects (window selection) structure elements.
Enter	Accepts selection of all structure elements.
LMC indicate a location of the description (1 or 2 points) in a selected place in the drawing (see the drawing below)	Defines a location of the description.
Enter	Accepts the location of the description.
Analogously, indicate locations of the description for successive elements	Describes different types of elements (the program on its own recognizes different elements – columns, beams, spread footings, etc. - and describes them automatically).
 (Insert group dimension line)	The option is used to draw dimension lines for structure elements presented in created plans or sections of a designed object. The following text will appear in the command line: <i>Select objects:</i>
LMC indicate the elements SF3,W_07,SF6 (positioned on axis 1) and SF6 (on axis 3)	Selects structure elements.
Enter	Accepts the selection of structure elements. The following text will appear in the command line: <i>First point:</i>
LMC indicate two points of the dimension line thus defining its orientation, and then determine its location (see the drawing below)	Draws the dimension line for the indicated elements. The program will automatically recognize selected elements and appropriately group dimension lines. <i>NOTE: Created dimension lines may be modified using two options provided in the menu of the RCAD Formwork Drawings program: Add division point and Delete division point.</i>
 (Insert group dimension line)	The option is used to draw dimension lines for structure elements presented in created plans or sections of a designed object. The following text will appear in the command line: <i>Select objects:</i>
LMC select (window selection) structure elements (the window marked in black in the drawing below)	Selects (window selection) structure elements.
Enter	Accepts the selection of structure elements. The following text will appear in the command line: <i>First point:</i>
LMC indicate two points of the dimension line thus defining its orientation, and then determine its location (see the drawing below)	Draws the dimension line for the indicated elements. The program will automatically recognize selected elements and appropriately group dimension lines.




 (Insert simple dimension line)	<p>The option is used to draw dimension lines for single structure elements presented in created plans or sections of a designed object.</p>
<p>LMC indicate elements to be dimensioned - intersect elements with an auxiliary line, e.g. defining its beginning point 1 and end point 2 (see the drawing below)</p>	<p>Selects structure elements.</p>
<p>Enter</p>	<p>Accepts the selection of structure elements. The following text will appear in the command line: <i>Indicate position of a dimension line:</i></p>
<p>LMC indicate the position of a dimension line (see the drawing below)</p>	<p>Draws the dimension line for the indicated elements. The program will automatically recognize selected elements and appropriately group dimension lines.</p>
<p>LMC the drawn dimension line</p>	<p>Selects the dimension line.</p>
<p>RMC</p>	<p>Opens the context menu.</p>
<p><i>Modify</i></p>	<p>Selects the option from the context menu. Opens the Dimension line dialog box.</p>
<p>In the opened Dimension line dialog box, on the <i>RCAD elements</i> tab switch off: <i>Wall</i> and <i>Structural axis</i> (an option is switched off, if the <input checked="" type="checkbox"/> symbol disappears)</p>	<p>Modifies dimension lines.</p>
<p>Enter</p>	<p>Accepts modification of a dimension line and closes the Dimension line dialog box.</p>
<p>A plan of successive stories can be created using the  (<i>Create plan of story</i>) icon acting analogously as while creating the foundation plan</p>	<p>Creates a drawing of the story plan (e.g. <i>Ground-floor-Plan (+3.60m)</i> which is placed in the tree on the <i>Positions</i> tab in the Object Inspector dialog box.</p>



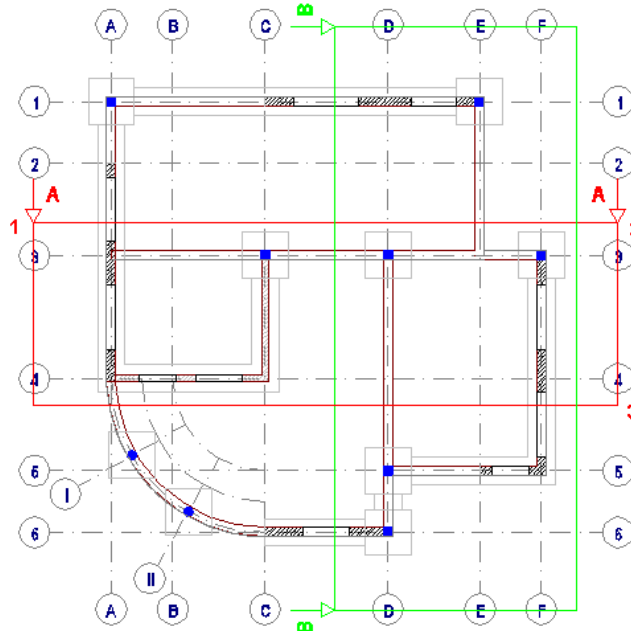
Foundation plan 1





1.5.2 Vertical section

<p>LMC move to the Model tab located at the bottom of the graphical viewer</p>	<p>Changes the appearance of the graphical viewer.</p>
<p> (Show whole building)</p>	<p>After selecting this option, a whole structure model will be presented on the screen.</p>
<p> (Top)</p>	<p>Sets the top view.</p>
<p> (Create vertical section)</p>	<p>The option enables creating a vertical section of a structure model. The following text will appear in the command line: <i>Enter first point.</i></p>
<p>LMC indicate points 1, and next 2 of the section A-A (marked in red in the drawing below)</p>	<p>Determines points that define an intersection line for the vertical section.</p>
<p>Enter</p>	<p>Accepts the defined points. The following text will appear in the command line: <i>Define section depth.</i></p>

<p>LMC indicate point 3 to define the section depth</p>	<p>Determines the section depth and creates the section presented in Edition Layout. The created vertical section (<i>Section A-A</i>) is placed in the tree on the <i>Positions</i> tab in the Object Inspector dialog box.</p>
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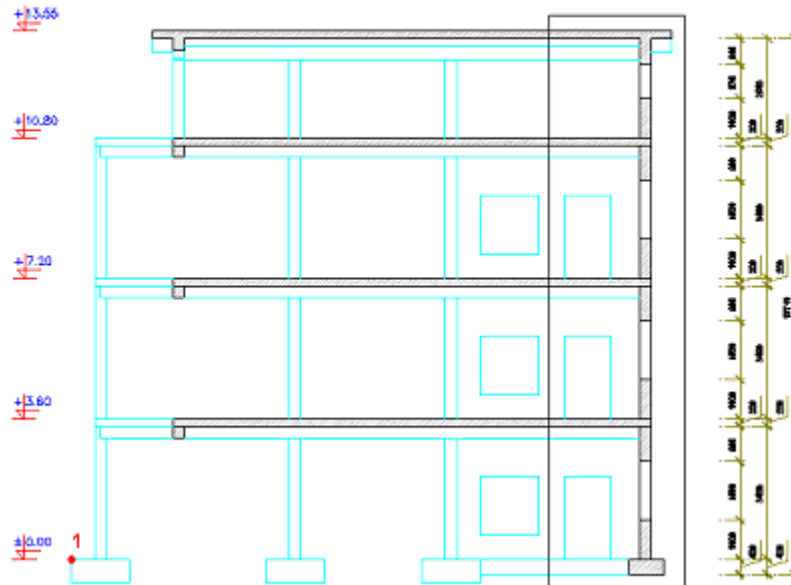


<p> (Insert group dimension line)</p>	<p>The option is used to draw dimension lines for structure elements presented in created plans or sections of a designed object. The following text will appear in the command line: <i>Select objects:</i></p>
<p>LMC select (window selection) structure elements (the window marked in black in the drawing below)</p>	<p>Selects (window selection) structure elements.</p>
<p>Enter</p>	<p>Accepts the selection of structure elements. The following text will appear in the command line: <i>First point:</i></p>
<p>LMC indicate two points of the dimension line thus defining its orientation, and then determine its location (see the drawing below)</p>	<p>Draws the dimension line for the selected elements. The program will automatically recognize selected elements and appropriately group dimension lines.</p>
<p> (Insert elevation mark)</p>	<p>The option is used to insert an elevation mark in a selected place in a drawing. The following text will appear in the command line: <i>Select first point:</i></p>
<p>At the level of point 1 LMC on the target point (see the drawing below) defining a location of the elevation mark</p>	<p>Determines the location of the first elevation mark.</p>
<p>LMC on the points defining levels of successive stories</p>	<p>Determines locations of successive elevation marks.</p>






Enter	Inserts an elevation mark.
LMC move to the Model tab located at the bottom of the graphical viewer	Changes the appearance of the graphical viewer.
Create analogously the section B-B (marked in green in the drawing above)	


Section A - A



1.5.3 3D view

LMC move to the Model tab located at the bottom of the graphical viewer	Changes the appearance of the graphical viewer.
 (SW Isometric)	Selects an axonometric structure view.
 (Create 3D view)	The option is used to create automatically a three-dimensional view of a structure model. Creates a 3D view presented on <i>Edition Layout</i> . The created 3D view (<i>View 1</i>) is placed in the tree on the <i>Positions</i> tab in the Object Inspector dialog box.
LMC move to the Model tab located at the bottom of the graphical viewer	Changes the appearance of the graphical viewer.
Analogously, create <i>View 2</i>  (NW Isometric)	

1.5.4 Preparing a printout

RMC the <i>Edition Layout</i> tab at the bottom of the graphical viewer	Opens the context menu.
<i>From template...</i>	Selects the option from the context menu. Opens the Select Template From File dialog box.
<i>A1 RoboBAT 033.dwt</i> Open	Selects the template from the list of available templates (from the <i>RCAD 7.1 / Cfg</i> folder), closes the Select Template From File dialog box.
OK in the opened Insert Layout(s) dialog box	Closes the Insert Layout(s) dialog box. On the bar at the bottom of the screen there appears an additional tab (<i>A1 RoboBAT</i>).
LMC on the <i>A1 RoboBAT</i> tab at the bottom of the graphical viewer	Opens the printout layout.
In the Object Inspector dialog box, on the <i>Positions</i> tab, LMC the drawing named: <i>Foundation plan 1</i>	Selects the drawing named <i>Foundation plan 1</i> .
RMC	Opens the context menu.
<i>Add to current Printout</i>	After selecting this option the view named <i>Foundation plan 1</i> appears in the template.
LMC on a target location of the printout (see the drawing below)	Places the drawing in the template <i>A1 RoboBAT</i> .
	Analogously, move the remaining drawings (compare the drawing below).
 (Summary - Elements)	After running this option, the element summary table is inserted in a drawing. The following text will appear in the command line: <i>Table range...<All></i> : <i>NOTE: The table may be added only to a created template (generated drawing); it cannot be inserted to a structure model or to the edition layout.</i>
Enter	Accepts the table range. The following text will appear in the command line: <i>Define point of table insertion:</i>
LMC on a target location of the printout (see the drawing below)	Places the table in the template <i>A1 RoboBAT</i> .
LMC the table in the graphical viewer	Selects the table.
RMC	Opens the context menu.
<i>Modify</i>	Selects the option from the context menu. Opens the Modification of selected table dialog box.





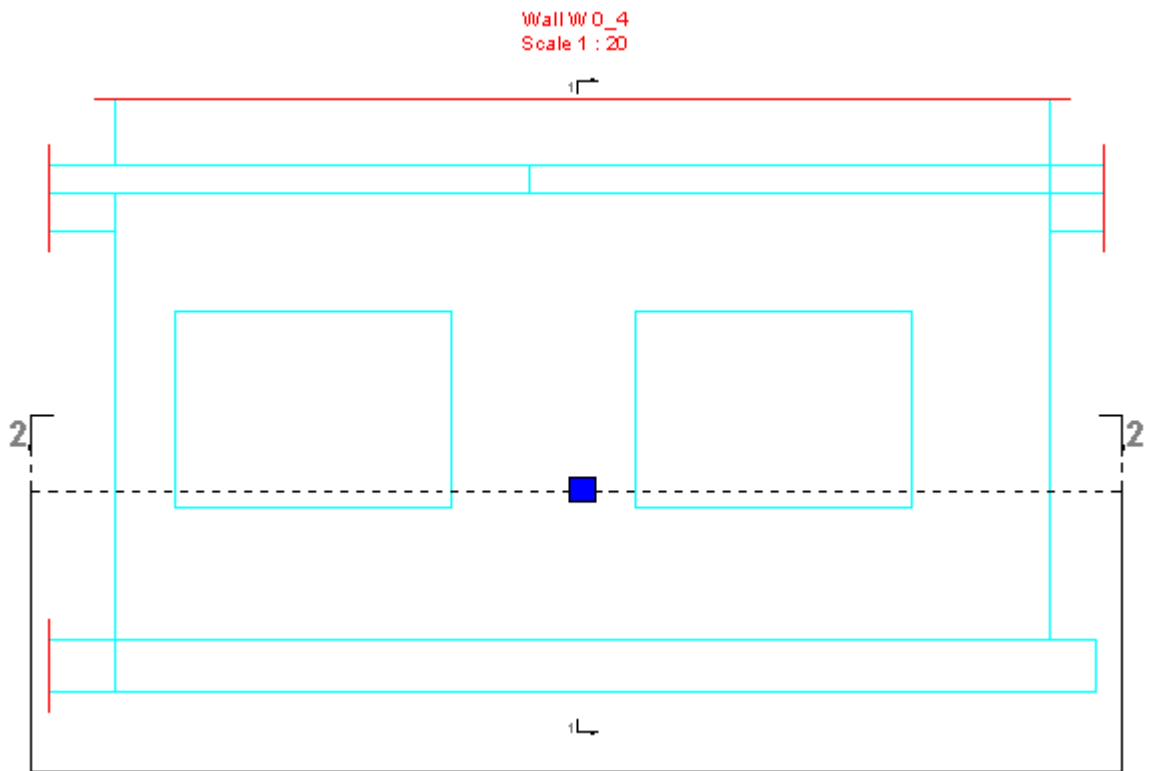
LMC the <i>Table: components and layout</i> tab	Changes the tab in the dialog box.
LMC the <i>Components</i> option (the left-hand side of the dialog box), and next switch off the <i>Ratio</i> option (the option is switched off, if the <input checked="" type="checkbox"/> symbol disappears)	Modifies the table by selection of table components.
LMC the <i>Summaries</i> option, and next, switch off the options <i>By stories</i> and <i>By material types</i>	Modifies the table by selection of table components.
>>	Modifies the table (the right-hand part of the dialog box presents the defined table layout).
OK	Modifies the table and closes the <i>Modification of selected table</i> dialog box.




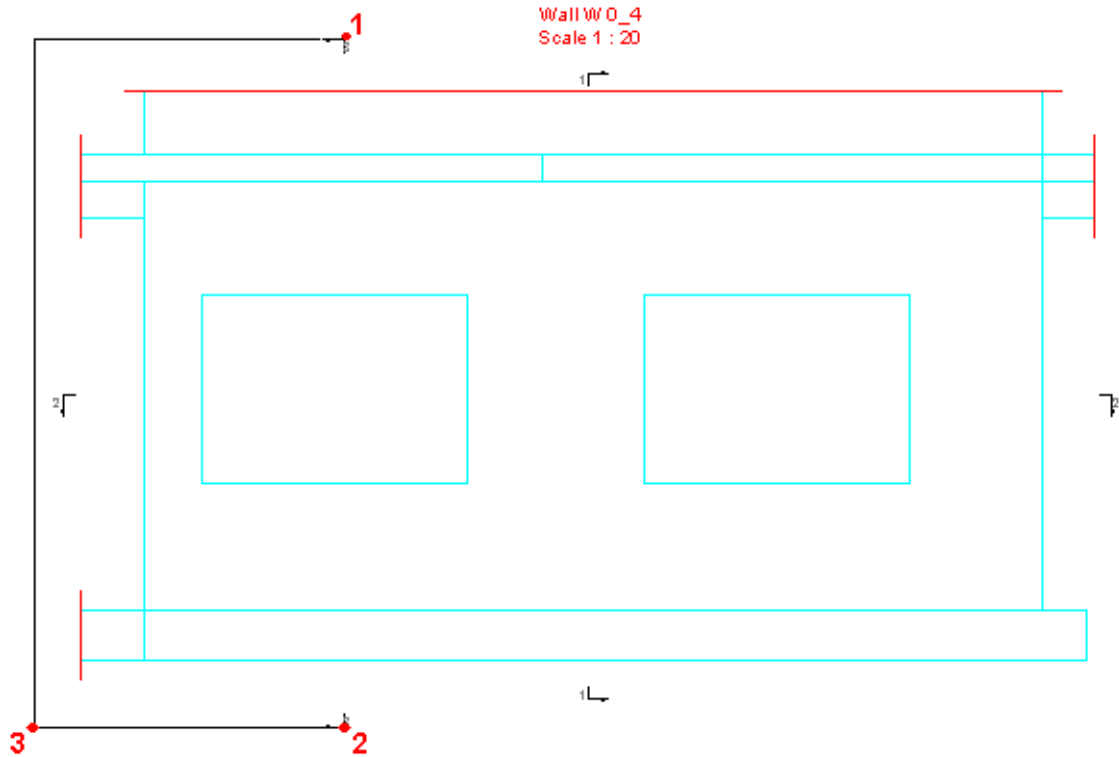
1.6 Integration with RCAD Reinforcement

1.6.1 Generation of formwork drawings

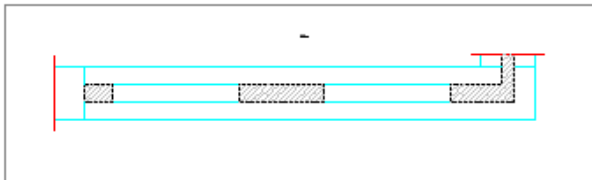
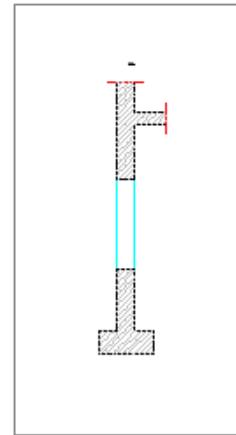
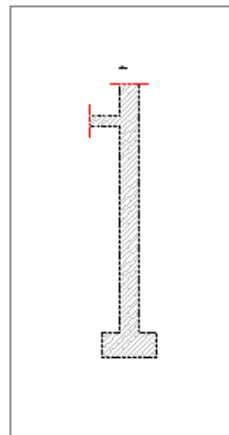
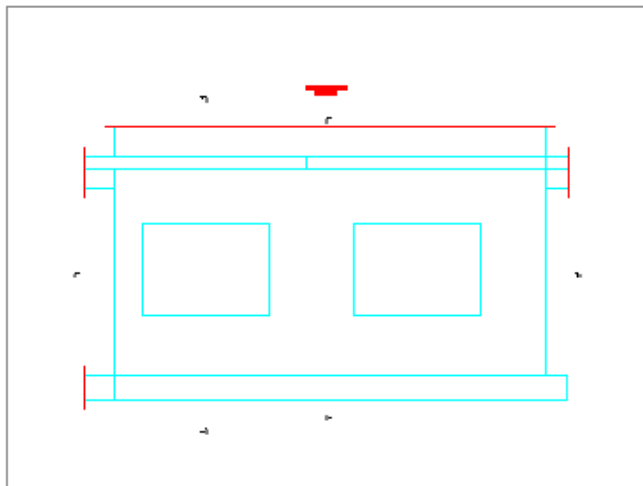
In the Object Inspector dialog box, on the Positions tab, select W 0_4 in the tree (the <i>W 0_4</i> name will be highlighted)	Selects the structure element (wall) named <i>W 0_4</i> .
RMC the <i>W 0_4</i> name	Opens the context menu.
<i>Export formwork drawings to RCAD Reinforcement</i>	The option is used to run automatically the RCAD Reinforcement program and to create in it a formwork drawing of a selected element (position). Opens the Formwork drawing wizard dialog box.
In the left-hand part of the Formwork drawing wizard dialog box LMC indicate the position:  <i>W 0_4</i>	Indicates the drawing position.
In the <i>New file</i> edit field enter the file name: (e.g. <i>Formwork_drawing</i>)	Specifies a name of the file where a formwork drawing will be generated.
Next >>	Changes the appearance of the Formwork drawing wizard dialog box and assumes default values (layout, scale and drawing type)
Generate	Closes the Formwork drawing wizard dialog box and automatically creates a formwork drawing of a selected structure element in the RCAD Reinforcement program. <i>NOTE: In the RCAD Reinforcement program an additional toolbar Formwork drawings appears; it allows modifying graphical parameters of a formwork drawing and creating sections at an arbitrary place selected by the user.</i>
LMC indicate an insertion point in the drawing	Determines the location of a formwork drawing of a selected structure element.
In the Object Inspector dialog box, on the Positions tab, double-click W 0_4 Front view in the tree (the <i>W 0_4 Front view</i> name will be highlighted)	Presents the position <i>W 0_4 Front view</i> in the graphical viewer using the maximal possible zoom.
LMC indicates the symbol of section 2	The section symbol will be highlighted.
LMC click the middle grip  , LMC again click the target location (see the drawing below) defining the section depth	Modifies the section depth and updates the drawing <i>W_04 Section 2-2</i> automatically.




 (Create section)	The option is used to define a section at the place indicated by the user. The following text will appear in the command line: <i>Select objects:</i>
LMC the wall in the graphical viewer	Selects objects.
Enter	Accepts selection of the object. The following text will appear in the command line: <i>Pick first section point.</i>
LMC point 1, and next point 2, (see the drawing below)	Determines successive points defining the section. The following text will appear in the command line: <i>Define section depth/direction:</i>
LMC point 3	Defines the section depth. The following text will appear in the command line: <i>Pick section insertion point.</i>





<p>LMC indicate an insertion point of the section</p>	<p>Determines a location of the section in the drawing.</p>
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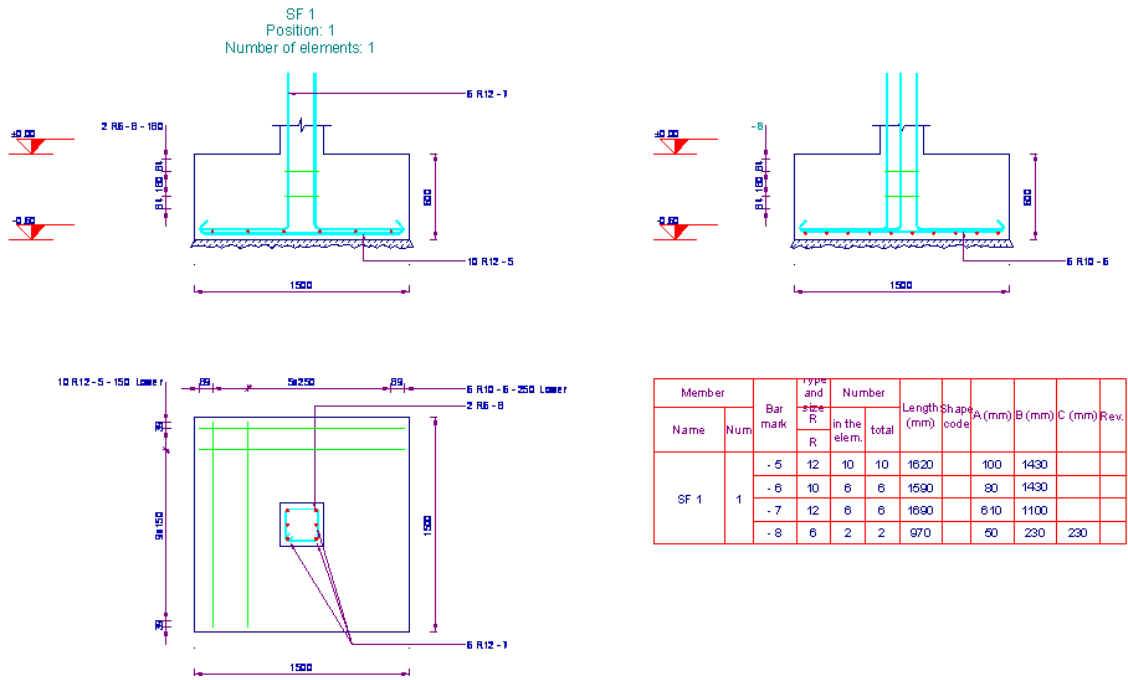
<p>In a similar way formwork drawings can be created for an arbitrary number of appropriate structure elements.</p>	
<p>LMC Window in the main menu and select the name of the initial file in RCAD Formwork Drawings</p>	<p>Returns to the initial file in the RCAD Formwork Drawings program. <i>NOTE: On the Positions tab in the RCAD Formwork Drawings program positions are marked with the icon  which means that for a given position there is a formwork drawing created in the RCAD Reinforcement program; double-clicking this icon automatically runs the RCAD Reinforcement program and opens the formwork drawing of the given position.</i></p>

1.6.2 Generation of reinforcement for elements

<p>In the Object Inspector dialog box, on the <i>Positions</i> tab, select SF 1 in the tree (the <i>SF 1</i> name will be highlighted)</p>	<p>Selects the structure element (spread footing) named <i>SF 1</i>.</p>
<p>RMC the <i>SF 1</i> name</p>	<p>Opens the context menu.</p>
<p><i>Automatic reinforcement</i></p>	<p>The option is used to create automatically a reinforcement drawing for a selected element (position). Opens the Formwork drawing wizard dialog box.</p>
<p>In the left-hand part of the Formwork drawing wizard dialog box LMC indicate:  SF 1</p>	<p>Indicates the drawing position.</p>
<p>In the right-hand part of the Formwork drawing wizard dialog box LMC indicate the created file:  Formwork_drawing.dwg</p>	<p>Indicates the file where a formwork drawing with reinforcement will be generated:</p>
<p>Next >></p>	<p>Opens the Spread footing - GEOMETRY dialog box.</p>
<p>Next ></p>	<p>Changes the appearance of the Spread footing - GEOMETRY dialog box and assumes default parameters.</p>
<p>Insert</p>	<p>Inserts a formwork drawing with reinforcement. The following text will appear in the command line: <i>Position number</i>.</p>
<p>Enter</p>	<p>Accepts the number of the reinforcement position. The RCAD Reinforcement macro appropriate for a chosen structure element type runs. The following text will appear in the command line: <i>Specify second point...</i></p>



LMC indicate an insertion point of the macro
 Determines the location of the **RCAD Reinforcement** macro for a selected structure element type (a drawing of a spread footing with reinforcement) in the drawing.



In a similar way formwork drawings can be created for other structure elements.

NOTE: Not for all structure elements reinforcement drawings can be created automatically. For a given element to be reinforced automatically, it has to fulfill appropriate geometrical conditions included in macros in the **RCAD Reinforcement** program.