

EasyArch

2D Architectural Plug-In
for Professionals



www.AViCAD.com

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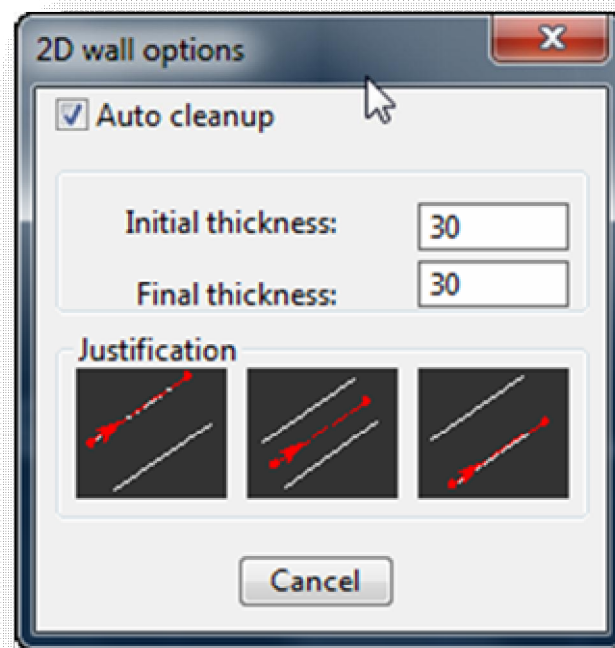
Drawing walls



This command draws double lines of a wall. In the process of drawing walls the points are indicated. These points can be found on the centerline of the double line (central) or on one of two faces (right

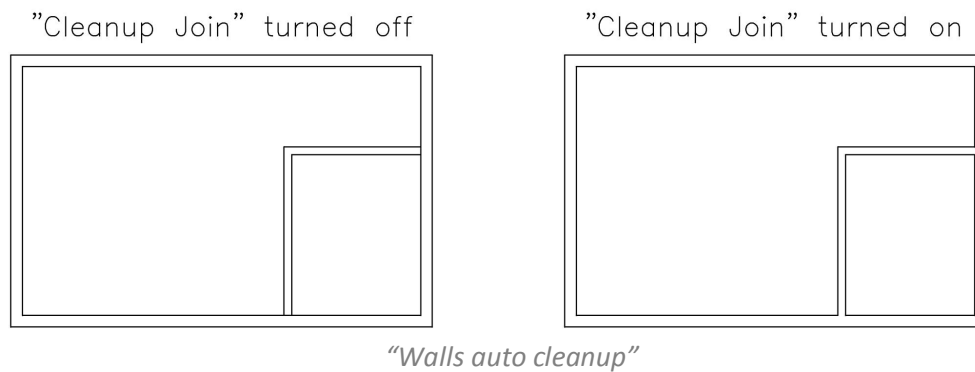
or left). You can perform this command choosing the desired wall thickness. Moreover, you may also set different thickness at the initial point and endpoint of the wall. This option is very useful when you want to draw walls with deviation from the default width. There is a subcommand allowing you to draw the curved walls with an arc section. The module offers facilitated drawing of your measured building surveys. The triangle option allows you to draw wall segments when two dimensions determining them are known.

The wall lines are automatically inserted in a specific layer, called "2DWALLS". The value can be modified through the Preferences dialog. Picking the draw walls command, the dialog comes up on screen where you may choose the current thickness of walls in your drawing and if to automatically cut lines (when possible). Once the type of the points insertion has been chosen, the dialog closes letting the command further processing.



Walls Auto Cleanup

In the following figure you can see the effect of a non-activated and activated Auto cleanup checkbox in a drawing of the internal partition wall.



NOTE: all the **EasyArch** commands, including the commands of metric and room calculations, behave identically both in the first and second cases.

Walls thickness


If you modify the initial wall thickness without modifying its final thickness, the initial thickness value will be automatically assigned to the final one. Then the command continues with the following options:

Header/Enter to select/<first point>:

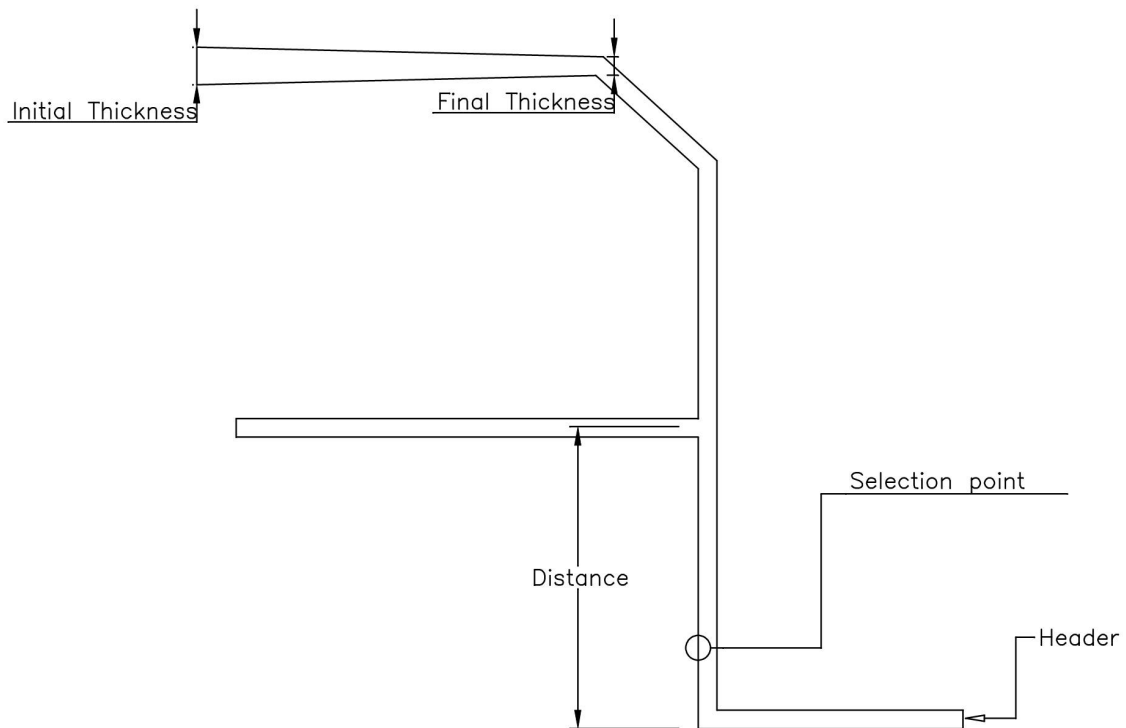
From point

(If you choose the Header option, the command creates the end cap of the wall. Therefore the initial point is requested.)

Enter to select

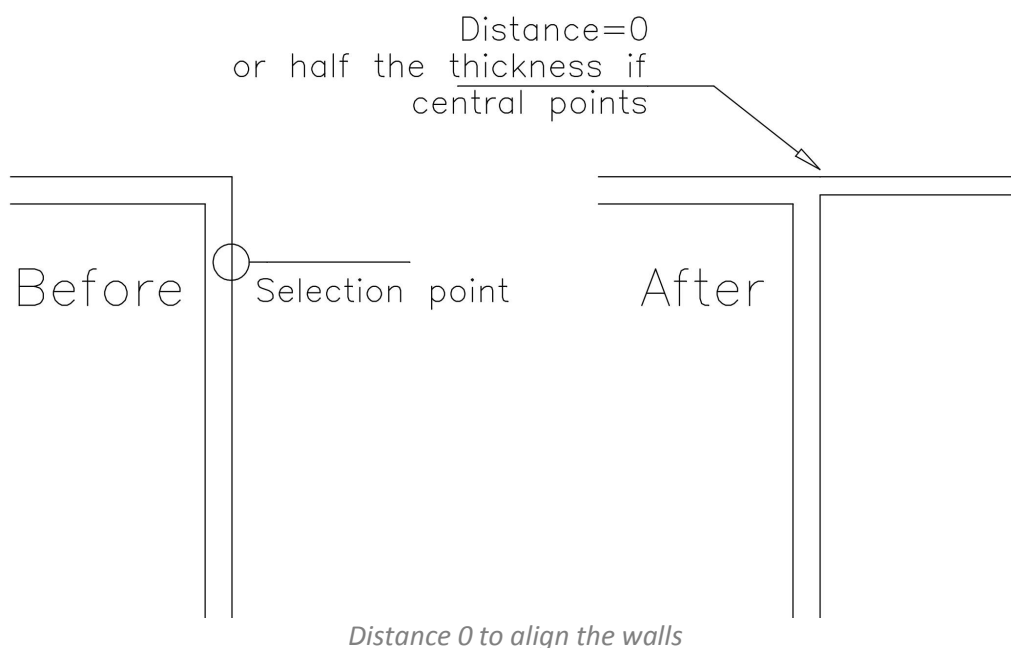
Pressing the Enter button , you are prompted to select a line. You may measure the distance from the nearest endpoint to the line selection point and decide where to start drawing the wall. Actually, the command requests for a distance, placing the origin of a dashed line onto the nearest endpoint of the selected line.

The distance can be entered numerically or by selecting a point. The command starts right from the selected line, automatically cleaning up the segment of the wall if the checkbox *"Auto cleanup"* is activated in the 2D wall options dialog box. The following figure demonstrates these first two options.



Header and Selection Options

If you pick a point close to the line of another wall on the floor plan, the wall will be connected directly to the selected wall. The command will automatically interrupt the line, again if the checkbox *"Auto cleanup"* is activated in the 2D wall options dialog box. If the selection pointer is over the two lines belonging to the floor plan, as it happens in the corners, the command will not be able to locate the line from which you want to start and you may not achieve the desired result. In case you need to start from an angle, you should follow the solution given in the next figure.



In its recursive sequence the command generates a set of walls elaborating the corners the way you want. During the guided design process when prompting for a next point the command presents a number of options.

Undo/Arc/Closing/Options/Selection/Header/Triangle/<To point>:

a point

In this case the command correctly recalculates and redraws your previous double lines together with the new double lines described by the point. If you enter a point close to another wall of the current floor plan, the command will automatically generate the junction and perform it.

Enter

The command recalculates and redraws the previous wall and exits.


Header

The command draws the end cap of the just created wall segment and exits.

Closing

The command closes the broken double lines, recalculating and eventually redrawing the previous double lines respectively adjusting them to the new ones. After that, the command exits. Please note that this option is not available if you start with the initial cap using the “Header” option.

Undo

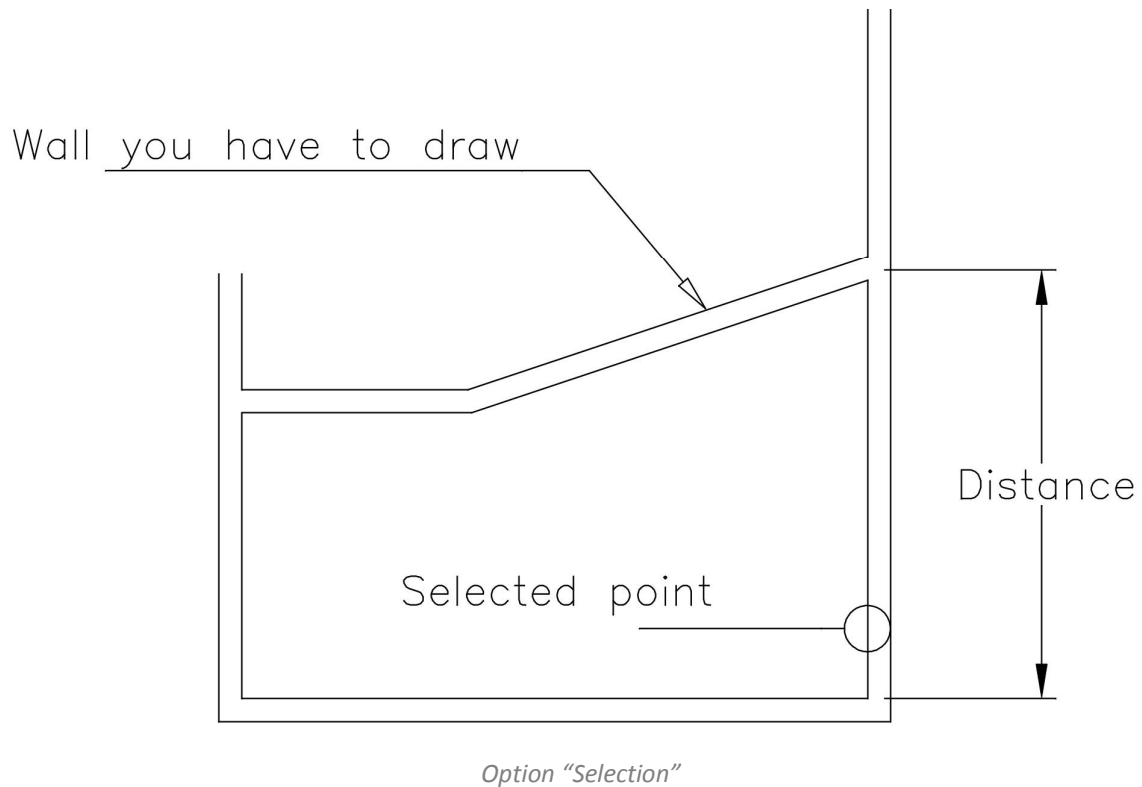
This option allows you to go back, if necessary even to the beginning of the command. Therefore in case of an error while inserting a point, we recommend you to use this command. Please note that the  button cancels all the operations performed by the command.

Options

This option allows to temporarily suspended the command to display the dialog box and allow you to change the type of alignment and the wall thickness. Once the type of alignment has been chosen, the Wall command will recommence drawing lines with the newly set values.

Selection

This option is used to connect the wall you are drawing to another already existing wall, at a certain distance from the endpoint nearest to the selected point. Once the option has been activated, **EasyArch** prompts to select a line (a face of the wall). When the wall is selected, a dashed line pops up connecting the nearest endpoint of the selected line and requests for a distance from the endpoint.



Arc

The "Arc" option allows to draw a curved wall with an arc section in the plan view. You cannot draw two curved walls one next to the other. You need to insert a straight wall, even if a small one, between these two curved walls.

The curved wall can be drawn by specifying the chord and an arrow or ray or by indicating the angle formed by the wall and the center.

Enclosed angle or last point: (angle or point value)

Typing the last point, the distance between two points becomes the chord and the command prompts:

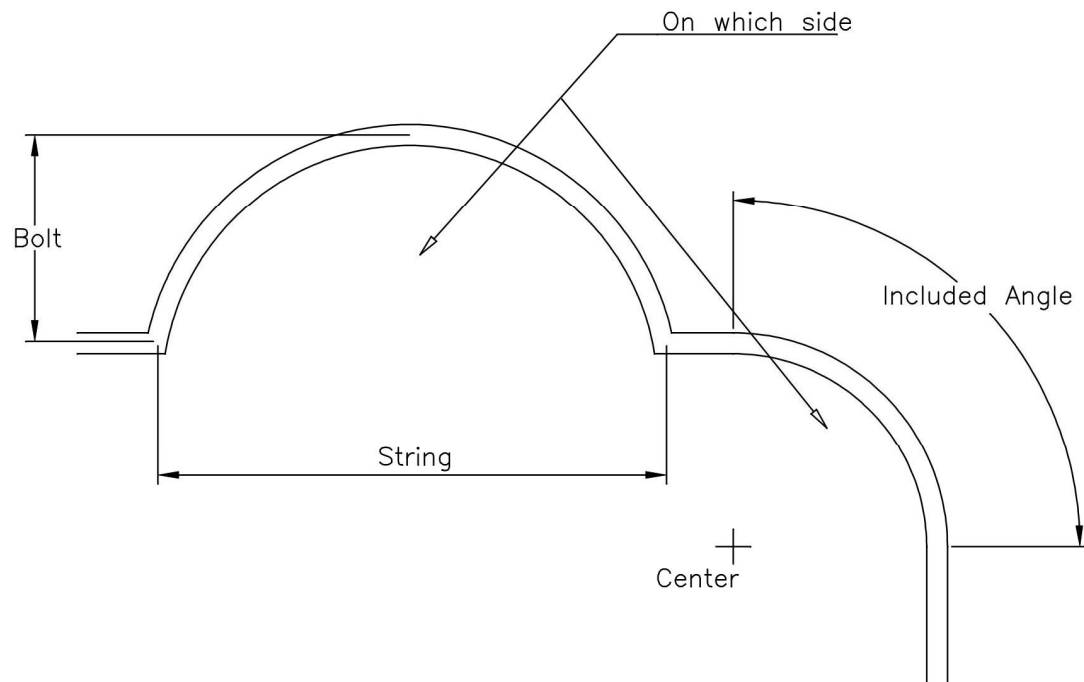
Radius/<Arrow>:

Typing a value, you indicate an arrow of an arc; if typing R, the radius of an arc is requested. Please note the allowed value of the radius is greater than or equal to one-half the chord value.

If instead of indicating a point you assign a value to an enclosed angle, then the command prompts for the center of an arc. In both cases there still remains one non-univocal definition of the curved wall. The curved wall will be designed after specifying a final point. The command prompts:

Which direction?

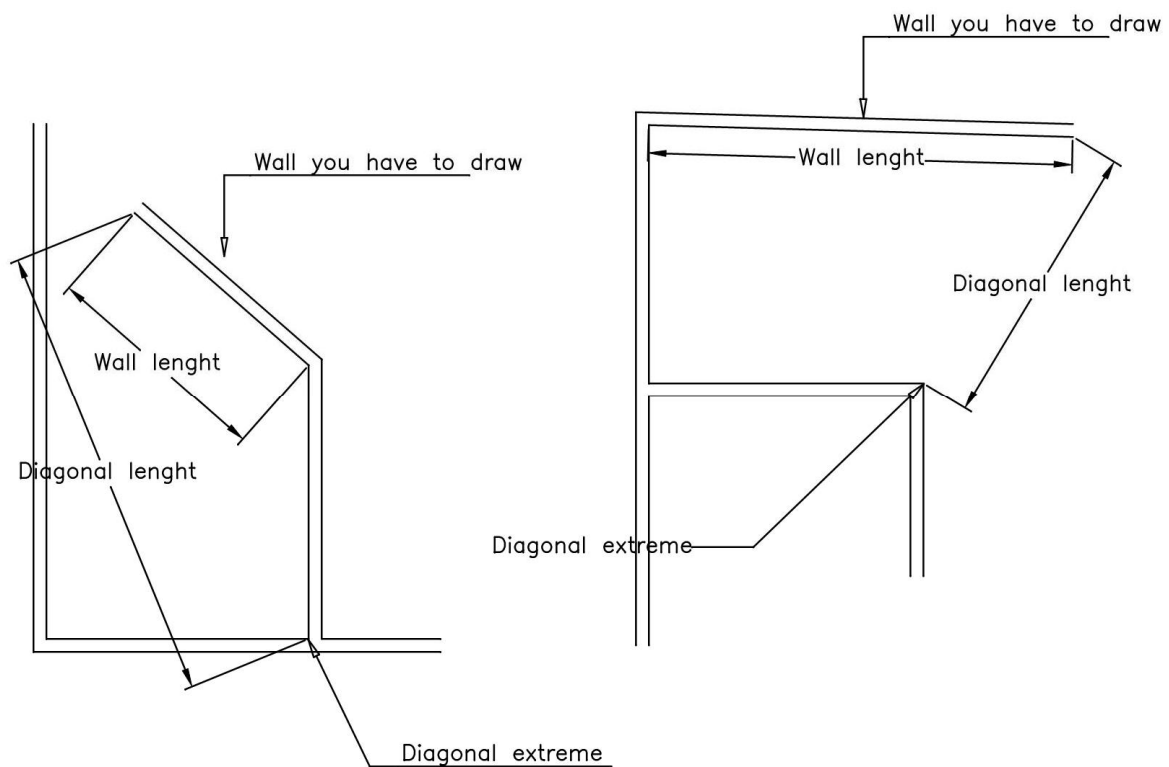
You should specify the last point. The curved wall will be drawn near the selected point .



Arc Option

Triangle

The “Triangle” option is suitable for such cases where you are given two dimensions determining the length and the position of a wall segment. The following figure illustrates two situations of the “Triangle” option usage.



“Triangle”Option

When you activate the Triangle option, the command prompts to insert data determining a new segment of the wall.

Wall length:

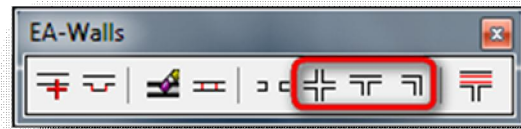
Diagonal vertex: (one can select it with ESNAP activated)

Diagonal length:

Direction:

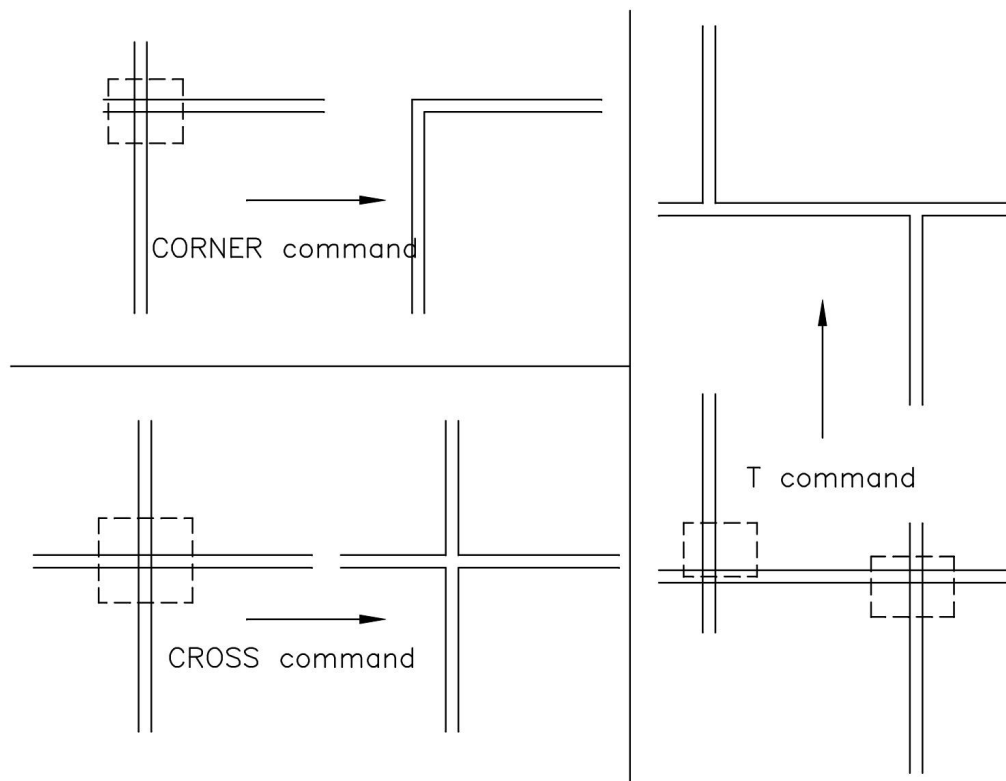
Having specified the wall length, diagonal vertex and diagonal length, we can reach two graphical solutions for the position of our new wall segment (to the left or to the right from the existing wall). Consequently, the command prompts for direction and completes the wall segment creation. Once the wall segment has been drawn, the command stands by again connecting a dashed line with the newly calculated endpoint.

Clean Angle, T *and* corner intersections



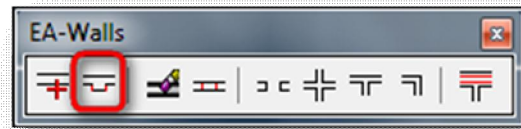
There are three commands used to speed up the finishing of walls drawing in a plan view. The Angle command allows you to trim two pairs of double lines in an angle by a single command. The T command is used to break and trim lines at a T junction of the walls in order to refine the connection between these two walls. The Crossing command is used to break lines at intersections of walls in order to refine the connection between these four walls. These three commands prompt to select four lines involved in the desired finish. The quickest selection is by using the INTERSECTION option which identifies with the help of a selection rectangle the area for modification. Only the lines of the floor level of the current floor plan are filtered from the selection.

With the T command the selection is also possible with three lines. The Angle, T and Crossing commands function only if four selected lines are two pairs of parallel lines. To connect the walls with variable thickness, you should use the AViCAD commands. In the following figure you can see how these commands work:



Clean ANGLE, T, CROSSING commands

Create niche, pilaster



This command is used for walls editing, for example, for creation of niches and projections, which indicate the presence of chimneys or other construction elements on a floor plan. The command prompts you to select a line. Attention should be paid to the point of the line selection, as the distance value requested after that refers to the line endpoint closest to the selected point.

Command: emuro

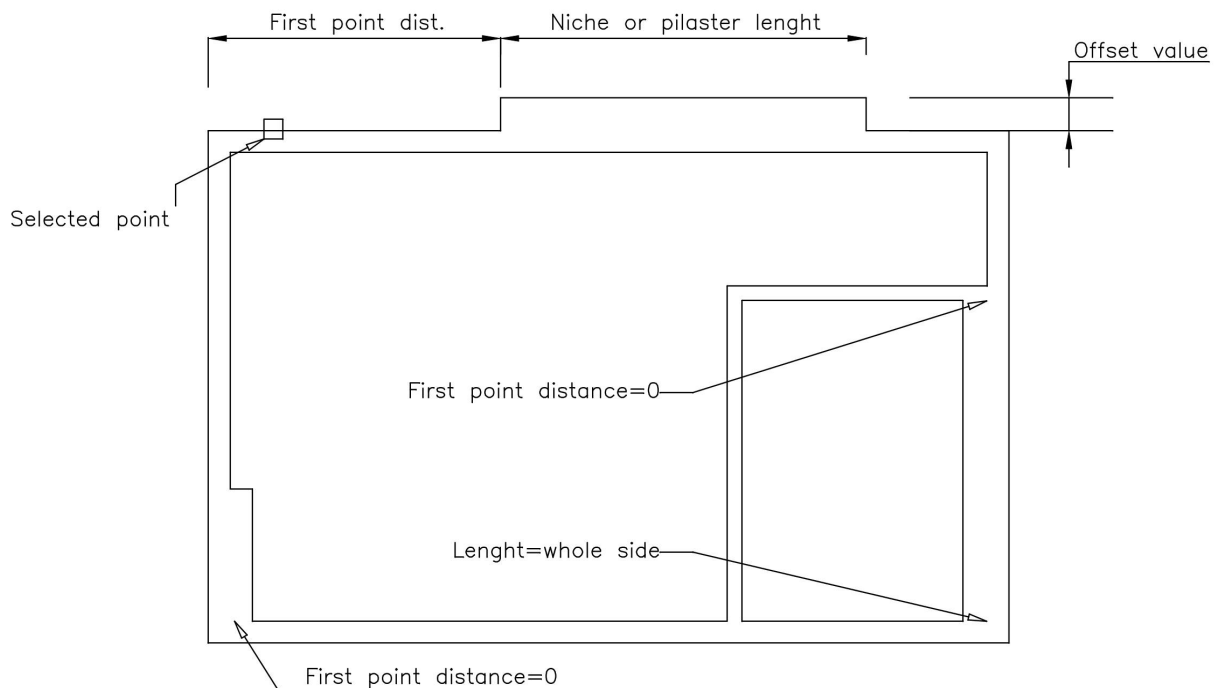
Select a line: (select a line of the wall to modify)

Polyline first point distance:

Niche or pilaster length:

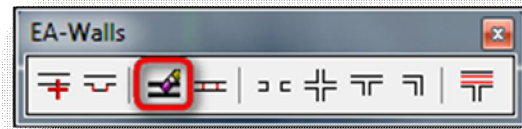
Offset value:

The following figure demonstrates this command in use along with its different possibilities.



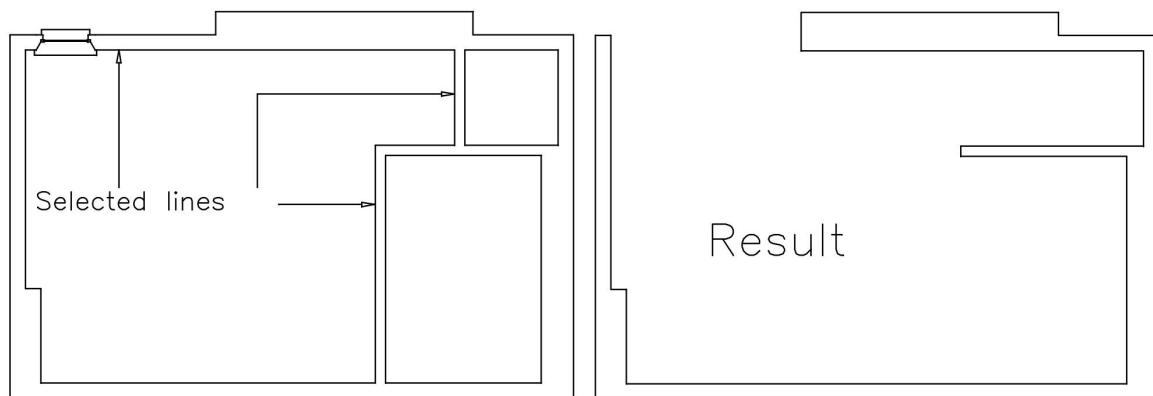
Example of use

Remove walls



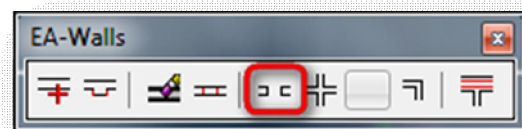
This command allows you to cancel wall segments. All openings or pilasters eventually present on this wall segment will be also cancelled. The program attempts to adjust the walls design where the segment was cancelled as far as possible. The only command request is to indicate a line of the wall containing a wall segment to be cancelled.

The following figure gives a couple of examples of this command usage:



The modifications illustrated in the example above are the consequence of selection of only three lines.

Clean openings



Clean openings is a very useful command allowing to break lines and arcs in 2D wall drawings when you deal with doors, windows, pillars and other openings. When copying or inserting openings, the breaking lines operation is performed automatically, in case the "Automatic break" checkbox is activated in the preferences dialog. However, if you need to break these lines later, the clean openings command will come to the rescue allowing automated lines break for your openings.

Object selection

Only the lines of a selected opening will be broken. The selected object must be a parametric opening.

Remove openings



This command (remove opening) is a contrary operation of the clean openings command. This command is also known as a healing function, it deletes a selected opening or pilaster and restores the lines and the wall as they were before the usage of the clean openings command.

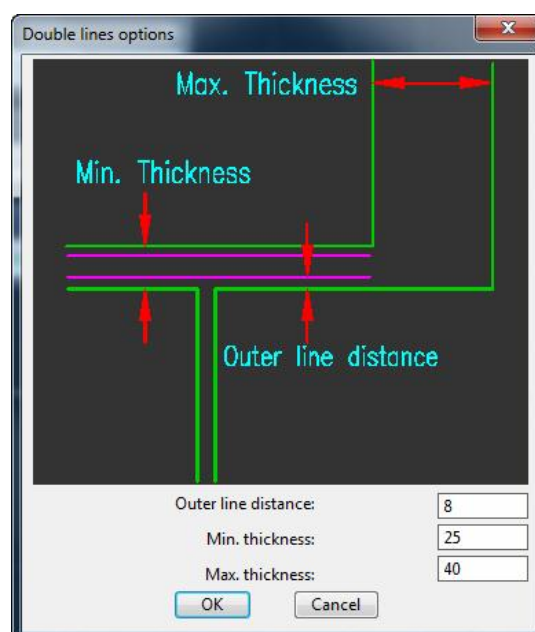
If an object is not placed on a wall, then the command simply deletes it.

Both the clean openings and remove openings commands work correctly on the walls with variable width. These commands can be also applied to curved walls, but when you deal only with openings. Dealing with pilasters the reconstruction of original lines follows the logic of the most probable configuration of lines before insertion of a pilaster. Please note that in complex cases the reconstruction of lines becomes impossible, so you will need to perform it manually with the help of the AViCAD commands.

Double lines

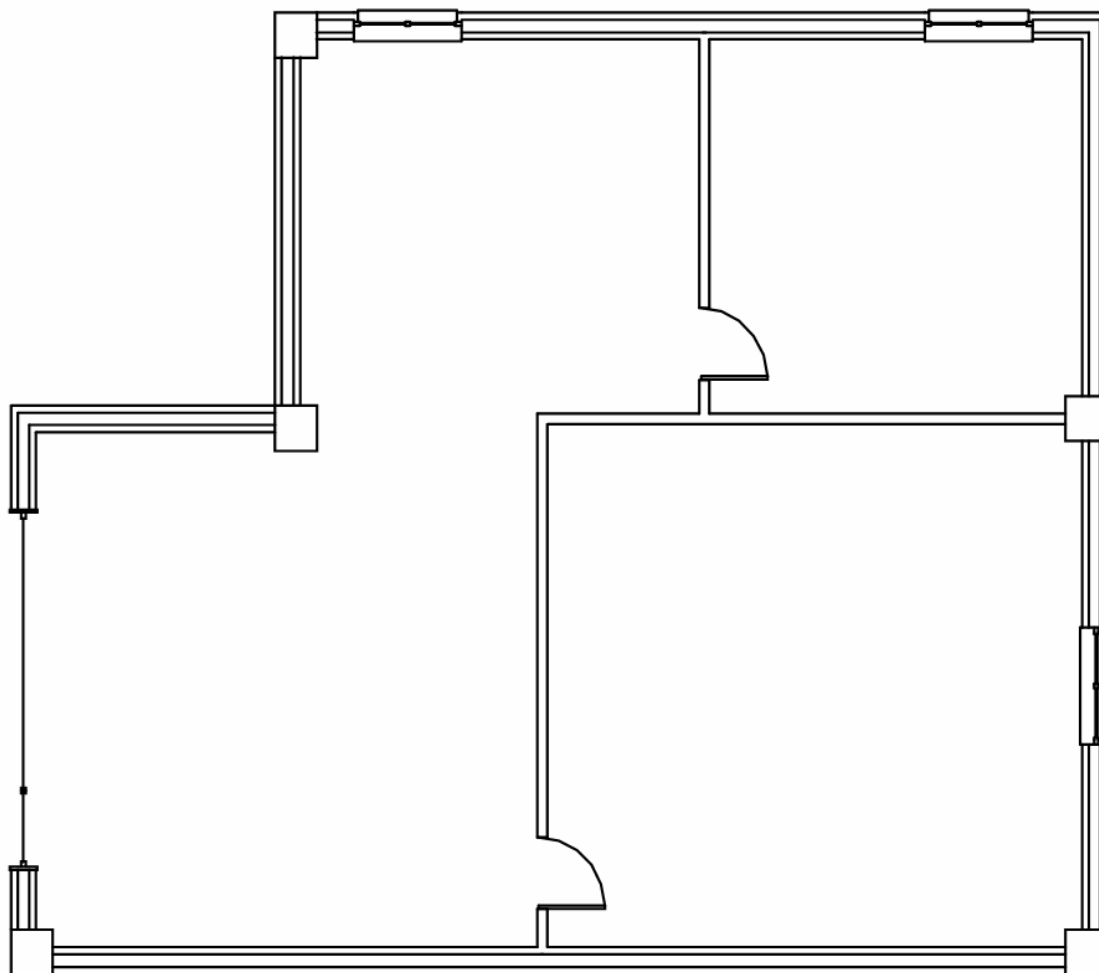


This command allows you to automatically trace interior wall lines which represent a plaster or cavity wall layer. This function becomes available thanks to the possibility to modify the distance of internal lines from those of external. The command displays the dialog box with requested parameters.



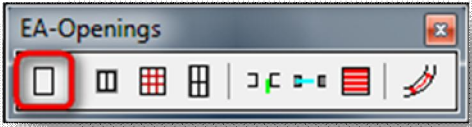
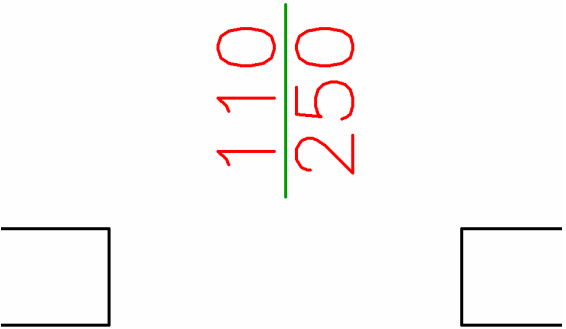
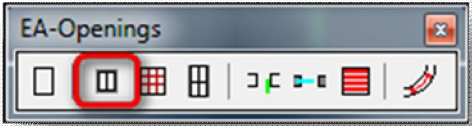
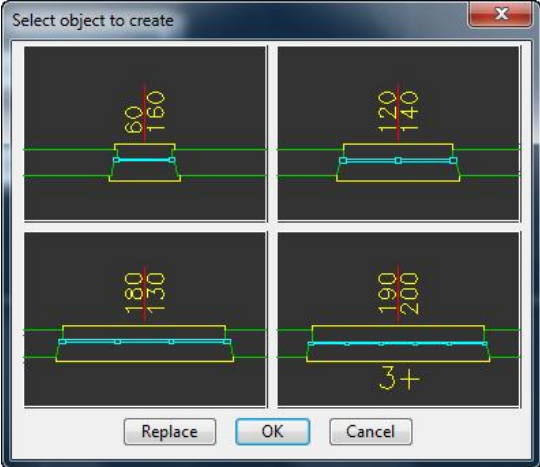
The dialog box of this command

Please note that only those walls will be considered which have greater thickness than those of the Minimum thickness value and smaller thickness than those of the Maximum thickness value. In case the Minimum thickness value is smaller than the least thick wall and the maximum thickness value is bigger than the thickest wall, then all the segments of the wall will be worked out by the command. The maximum thickness value should never be greater than the thickest wall in a drawing. Double lines are automatically broken at places of openings and pilasters insertion.

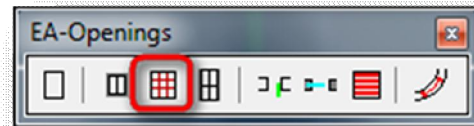


The command usage

Openings

<h2>Net opening</h2>	
<p>Command line prompts.</p> <p><i>Enter/Select inside wall face:</i></p> <p><i>Opening width<110>:</i></p> <p><i>Height<250>:</i></p> <p><i>Modify/Distance:</i></p>	
<h2>Windows</h2>	
<p>Prompts for 1-, 2- or 3-panel windows.</p> <p><i>Enter/Select inside wall face:</i></p> <p><i>Window width<120>:</i></p> <p><i>Distance opening frame – external wall<10>:</i></p> <p><i>Window height<140>:</i></p> <p><i>Angle<10>:</i></p> <p><i>Windowsill projection<5>:</i></p> <p><i>Modify/Distance:</i></p> <p>Prompts for windows with more than 3 panels.</p> <p><i>Enter/Select inside wall face:</i></p> <p><i>Window width <190>:</i></p> <p><i>Window height <200>:</i></p> <p><i>Número vetri orizzontali<5>:</i></p> <p><i>Angle <10>:</i></p> <p><i>Windowsill projection <5>:</i></p> <p><i>Modify/Distance:</i></p>	

Glass walls

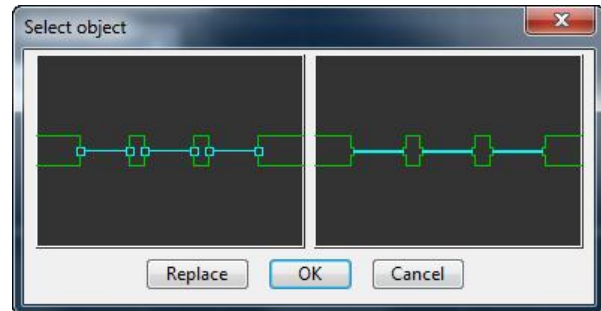


Prompts for windows with frame.

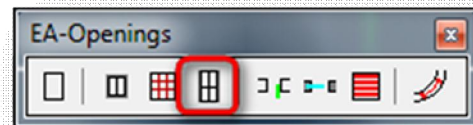
*Single window width <60>:
Distance between panes <30>:
Elements number <5>:*

Prompts for windows without frame.

*Single element width <80>:
Pane width <50>:
Elements number <5>:
Modify/Distance:*



French window

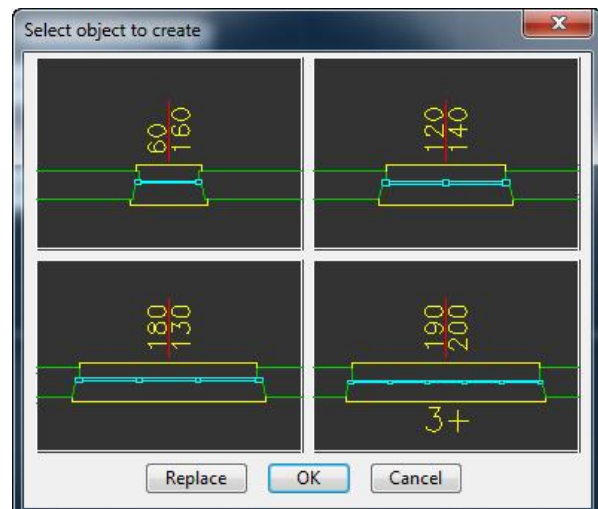


Prompts for 1-, 2- or 3- panel French windows.

*Window width <120>:
Distance opening frame – external wall <10>:
Window height <140>:
Angle <10>:
Modify/Distance:*

Prompts for French windows with more than 3 panels.

*Window width <190>:
Window height <200>:
Horiz. panes nr. <5>:
Angle <10>:
Modify/Distance:*



Swing doors

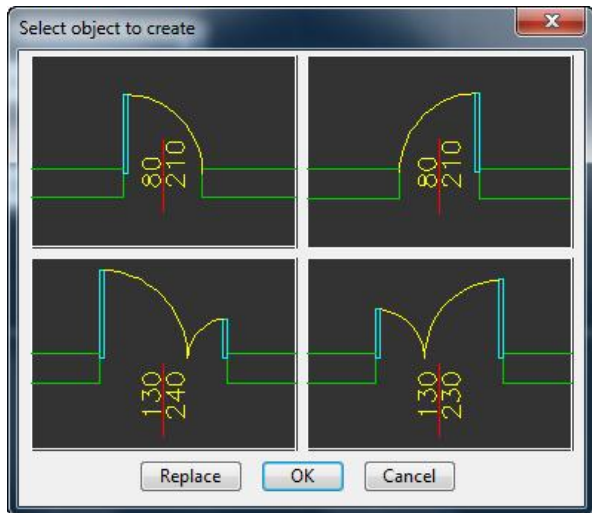


Prompts for one-panel doors.

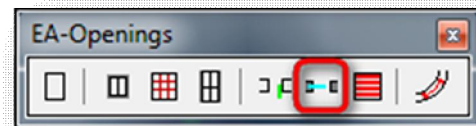
Door width <80>:
Distance hinge-wall interior side<5>:
Door height <210>:
Modify/Distance:

Prompts for two-panel doors.

Door width <130>:
Distance hinge-wall interior side <5>:
Door height <240>:
Main panel/door width <90>:
Modify/Distance:



Sliding and folding doors

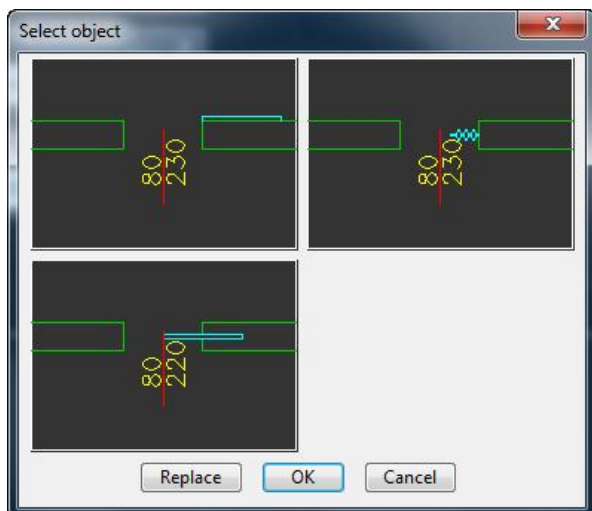


Prompts for sliding doors.

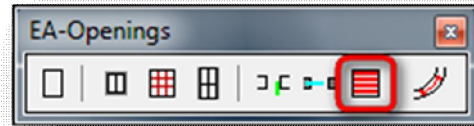
Door width <80>:
Door height <220>:
Locked part/width (0..1)<0.5>:
Modify/Distance:

Prompts for folding doors.

Door width <80>:
Door height <220>:
Modify/Distance:



Garage - Shutters



Prompts for roller shutters (1).

*Roller shutter width<190>:
Distance opening frame –wall exterior
side<5>:
Roller shutter height<230>:
Modify/Distance:*

Prompts for garage doors(2).

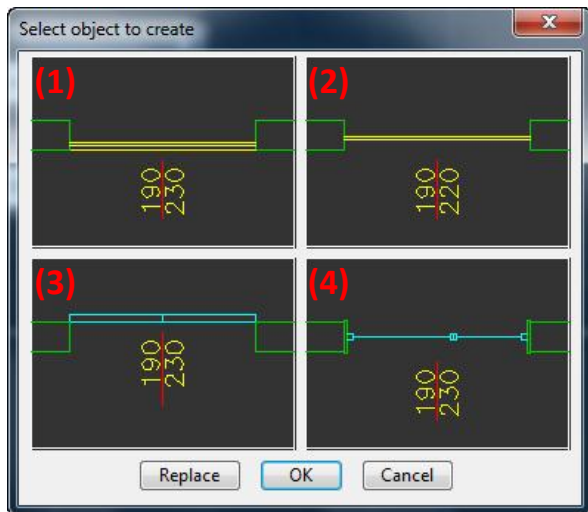
*Opening width<190>:
Distance panel –wall exterior side
<10>:
Opening height <220> :
Modify/Distance:*

Prompts for 2 sliding panels (3).

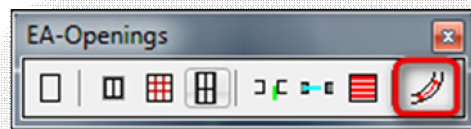
*Opening width <190>:
Door height<230>:
Locked part/width (0..1)<0>:
Modify/Distance:*

Prompts for main entrance with door (4).

*Opening frame width <190>:
Door width<100>:
Door height<230>:
Modify/Distance:*



Curved openings



Prompts for net opening.

Opening (internal chord)<100>:

Opening height<200>:

Angle normal to the opening:

Prompts for window only glass.

Opening (internal chord)<120>:

Opening height <120>:

Panes nr.<3>:

Distance pane – external wall <10>:

Angle normal to the opening:

Prompts for window with frame.

Opening (internal chord)<130>:

Opening height <130>:

Horiz. panes nr.<3>:

Distance pane – external wall <10>:

Angle normal to the opening:

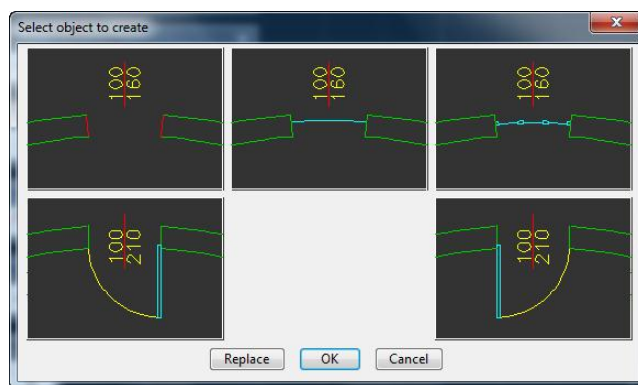
Prompts for doors.

Opening (internal chord)<130>:

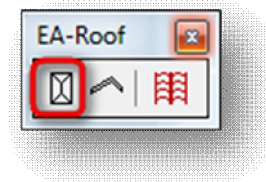
Door height<230>:

Distance hinge – internal wall<5>:

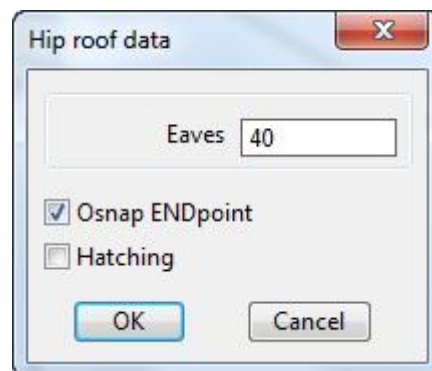
Angle normal to the opening:



Hip roofs



The TPAD command allows you to draw a hip roof. The command is fully automated, that means that it automatically calculates the outline of pitches and draws without intervention of an operator. The dialog box with a number of options presented below:



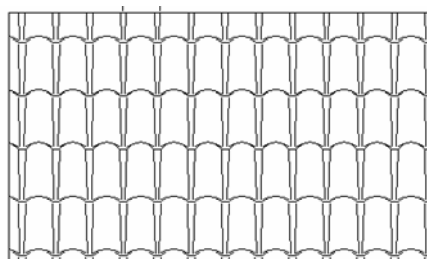
Dialog box for construction of a hip-roof

Outside cornice, the eaves

The eaves of a specified size are projected out of the vertices indicated on a drawing.

Hatching

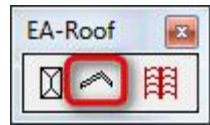
If the "Hatching" checkbox is activated, the TPAD command also performs hatching of roof pitches. In this case you can vary the model and the angle of rotation of hatches. The precise value of rotation can vary from one model to another. All hatch dimensions created by **EasyArch** are managed by the dialog box of the ADDPREF command.



Sample of roof hatching

NOTE: It takes a certain period of time for the program to find a solution for the roof covering. The time depends exponentially on the number of vertices. The program accepts up to 20 vertices (consequently, up to 20 pitches).

Single-pitch roofs



The command offers the following prompts:

Command: t3d

Undo/Invisible/Point nr. 1:

Undo/Invisible/Point nr. 2:

Undo/Invisible/Point nr. 3:

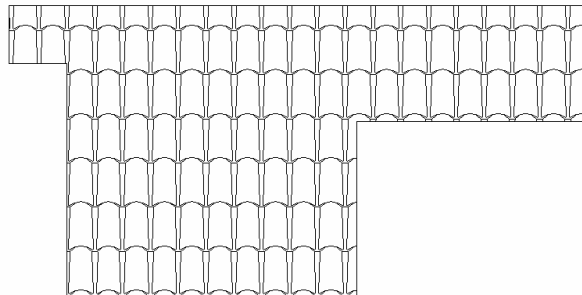
.....

Undo/Invisible/Point nr.6: 

The command prompts to select the vertices of the pitch outline. A null response terminates input of the outer outline. Note that a number of vertices less than three makes no sense. It is possible to specify unlimited number of vertices. Typing "Undo", you cancel the last point entered, typing "Invisible" you communicate to **EasyArch** that the section that goes from the next point to the one following it must have invisible edges.

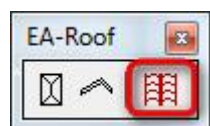
Object/Edge/Invisible/Point nr. 1: 

The command prompts to specify internal openings. It can be done by selecting relative parametric objects, by selecting the drawn outlines consisting of lines, arcs or circles, or you can specify the outline points exactly as you did it for the outer outline. A null response terminates input of the internal outline.



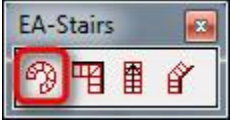
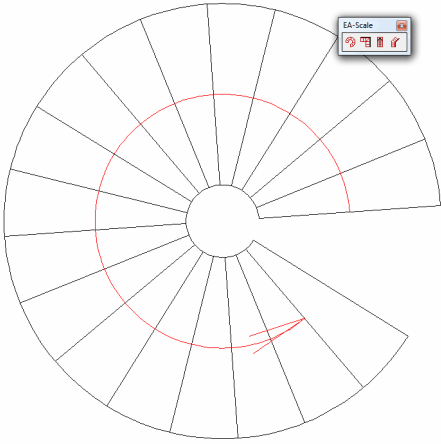
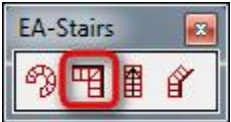
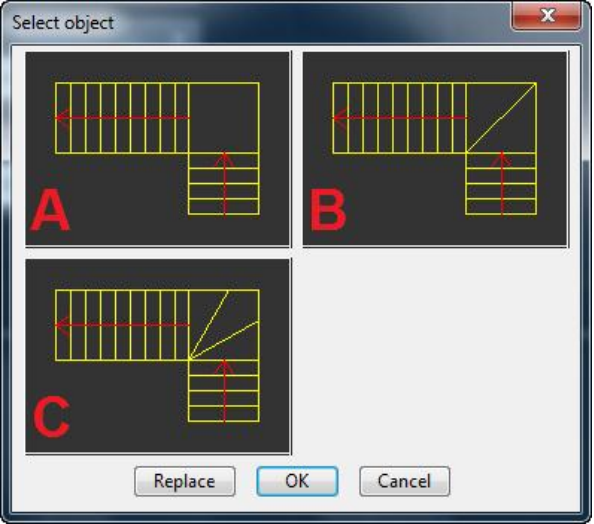
Sample of a hatched pitch

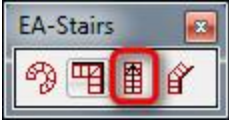
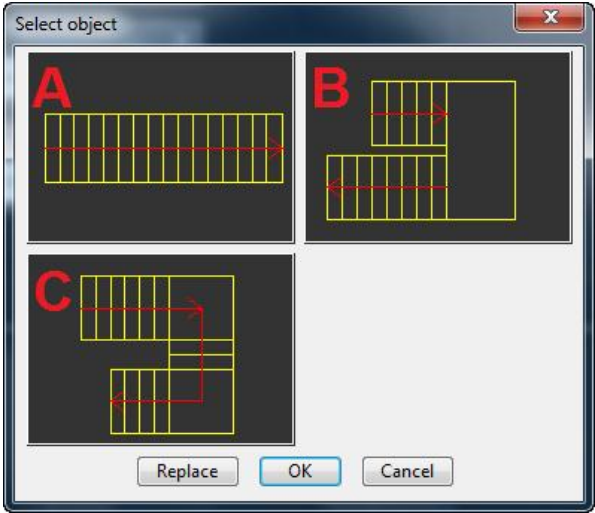
Hatching of existing pitches

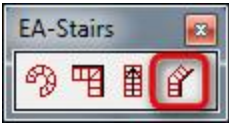
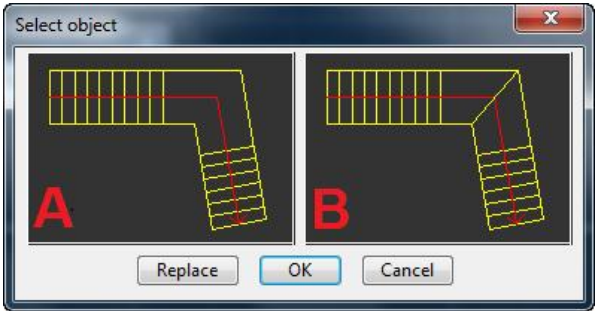


This command performs automated hatching of existing pitches created by the appropriate command.

Stairs

<h2>Spiral-Helical</h2>	
<p>Command line prompts.</p> <p><i>Rises number<18>:</i> <i>Tread angle<18>:</i> <i>External radius<240>:</i> <i>Internal radius<40>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i> <i>Enter/<Insertion point>:</i></p>	
<h2>Corner step</h2> <p>A) Landing B) 1-step landing C) 2-step landing</p> <p>Command line prompts.</p> <p><i>First flight rises nr. <5>:</i> <i>Second flight rises nr. <8>:</i> <i>Stair width <120>:</i> <i>Tread<20>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i> <i>Enter/<Insertion point>:</i></p>	 

<h2 style="text-align: center;">Flights</h2>	
<p>Prompts for Type “A”.</p> <p><i>Rises number <17>:</i> <i>Tread< <20>:</i> <i>Flight width <90>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i></p> <p>Prompts for Type “B” (2 flights).</p> <p><i>First flight rises nr. <6>:</i> <i>Second flight rises nr. <9>:</i> <i>Stairs width <140>:</i> <i>Flight width <65>:</i> <i>Landing length <70>:</i> <i>Tread <15>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i></p> <p>Prompts for Type “C” (3 flights).</p> <p><i>First flight rises nr.<7>:</i> <i>Second flight rises nr.<3>:</i> <i>Third flight rises nr.<5>:</i> <i>Width <65>:</i> <i>Tread <15>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i></p>	 <p>A) 1 flight</p> <p>B) 2 flights 180° and a landing</p> <p>C) 3 flights 180° with 2 landings</p>


<h2 style="text-align: center;">Variable angle flights</h2>	
<p>Command line prompts.</p> <p><i>First flight rises nr. <10>:</i> <i>Second flight rises nr. <7>:</i> <i>Tread <15>:</i> <i>Stairs width <100>:</i> <i>Landing lenght 1 <100>:</i> <i>Angle <100>:</i> <i>Landing lenght 2 <100>:</i> <i>Modify/Insertion point:</i> <i>Rotation angle <0.0>:</i> <i>Enter/<Insertion point>:</i></p>	 <p>A) Simple landing</p> <p>B) One-step landing</p>


Parametric object insertion

Prompts for object parameters

Once a value has been assigned to an object parameter, it will be stored and proposed later even in successive AViCAD sessions. This value, let's call it "standard", is modified each time a new value is assigned to the parameter. The standard value is always proposed in angle brackets as in the following sample:

Width <0.9>:

The default value can be accepted by pressing .

If the parameters you want to assign to a new object are equal to the parameters of an object inserted previously, instead of pressing  a number of times equal to the number of parameters, just type "U" (default) when prompted for a parameter value.

Another useful option is reading of parameters from an existing object in the drawing. Suppose you want to insert a window with the same parameters of the window already existing in the drawing. Just type ">" when the program prompts for a value of the first parameter. Obviously, the selected object must be of the same type.

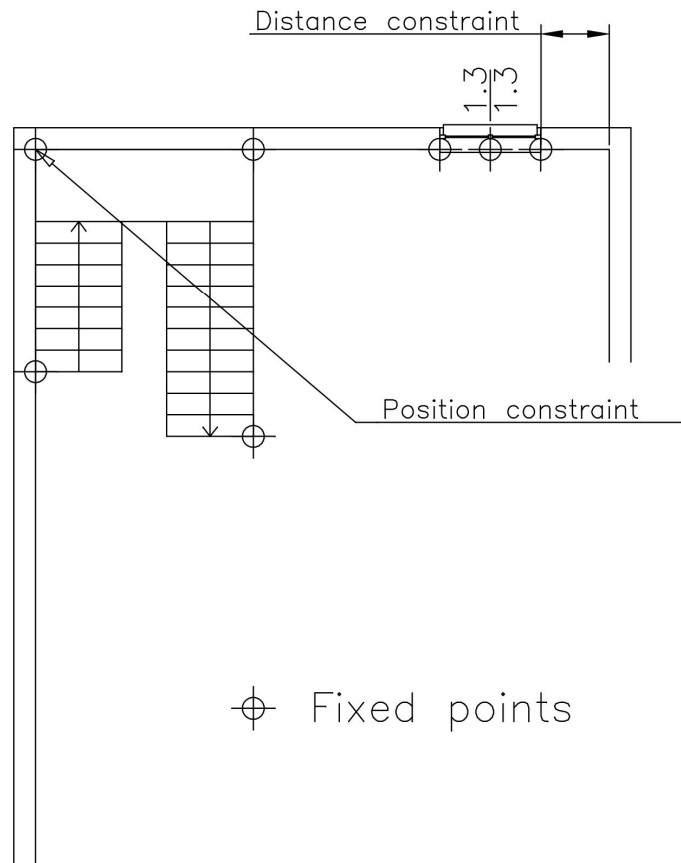
Insertion point, angle and fixed points

Once you have assigned values to all the parameters, **EasyArch** can drag in the drawing along with a moving cursor a preview image, which facilitates selection of the insertion point.

Option Modify

A very useful feature when positioning an object is the insertion point choice. The Modify option allows you to choose which point of the set of fixed points of an object must become the insertion point. The set of fixed points depends on the type of an object and is determined by the author of this parametric object. One can find fixed points of an object by using the Modify option repeatedly until you return to the first fixed point. When the fixed point is being modified, the cursor moves over the preview image with the crosshair matching the selected fixed point.


A very important aspect of the fixed point, which justifies its name, is that once inserted it becomes a property of an object. Then any object modification will keep this fixed point unchanged. If, for example, in the following figure we choose as fixed points the top left point for the stairs and the right side for the window, any modification of these two objects will not change the position of the selected point.



Insertion in Angle-Point mode

The mode of inserting an object by requesting first the insertion point and then the angle of rotation sometimes can be uncomfortable and often requires to displace objects after insertion. In fact, the sequence Point-Angle is useful in very few cases; generally, having a dragging preview image, it could be more comfortable to work in the reverse mode, Angle-Point. The **EasyArch** parametric system allows you to decide which of these two modes to adopt; and this choice is made with the sole use of the cursor in the phase of insertion.

When the angle of insertion has been indicated, **EasyArch** will prompt for an insertion point.

Moving the cursor, the rotated preview image moves with the cursor. If you respond by pressing  at this prompt, the object will be inserted using the insertion point indicated at first and the chosen angle. If you type another point, this point will become the insertion point and in this way you get the inversion of the sequence Point-Angle.

UCS

The insertion works correctly regardless the type of the current UCS, that is it always generates objects in the World Coordinate Systems (WCS). This method seems to be the most useful in architectural design.

Automatic generation of layers and relative colours

The insertion of an object automatically generates all layers specified in the object file, in case they are not yet defined in the drawing. The command generates layers with the AViCAD Standard colour and linetype (colour 7, Linetype CONTINUOUS). If you want to automatically generate layers with

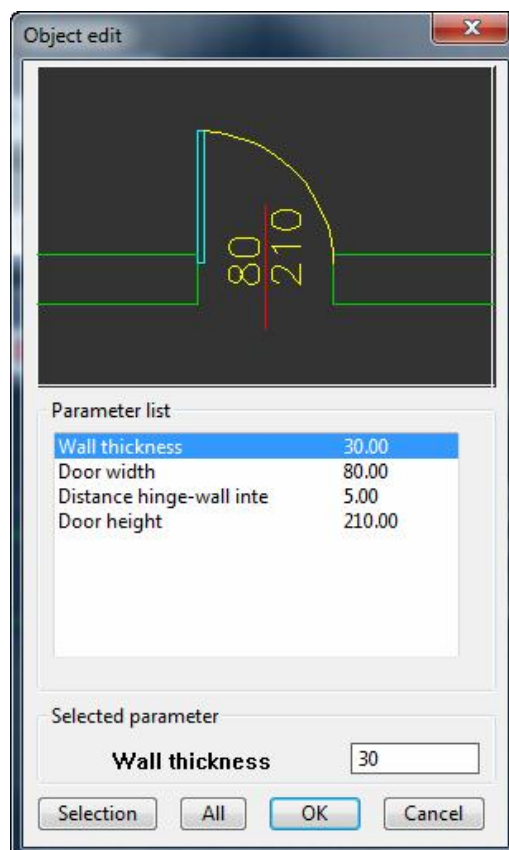
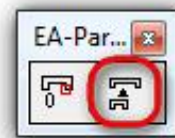
non-standard colours, you should specify them in the **EasyArch** preferences dialog. The dialog contains the list of all layers which are generated when inserting parametric objects. Each line contains the name of the layer and the number of AViCAD's colour to be assigned to this layer.

Block Layer


Apart from placing single objects on different layers, **EasyArch** also places entire blocks on a separate layer, so called the block layer. This method permits very efficient design management.

Parametric objects modification

This command allows dynamic editing of the parametric object parameters and its subsequent regeneration. In the field of architectural design characterized by activities often full of attempts, adjustments, variations, etc. this command can save you a lot of time. In fact the editing operation is as simple as powerful. You just select an object, and you immediately see a dialog box pop up with the current values of the parameters of this object. The parameter list is accompanied by an image illustrating these parameters. You simply edit necessary parameters and the object will be immediately regenerated. There are different editing options: you can modify the selected object, edit all or only some objects. Once you have selected an object or one of the objects to be modified, the following dialog box appears:





Dialog box to edit a parametric object

The parameter list consists of three columns. The first column contains the description of parameters. The second column displays the current values of single parameters of a selected object and the third one - new values. Initially, the third column is empty. It is possible to select a parameter in order to bring its description and a value to be modified in the edit box situated immediately after the parameter list. On indicating a new value, you need simply press  (Enter) to store this value, transferring it into the third column.

Once you have finished the modification of parameters, you can proceed in a number of ways.

OK

The OK button allows you to edit only the selected object. After having modified the object parameters, you often have to reposition the object. Because of object modifications, especially considerable ones, the object cannot be placed any more in the old insertion point. The parametric system allows you to reposition the modified object, choosing if necessary a different fixed point. Once the object is regenerated, **EasyArch** prompts, as it does for a new insertion, for a new insertion point and the angle of insertion, anticipating the new position with an image of the object size. If you respond by pressing , the position remains the old one. Indicating a new position, the object is being relocated accordingly.

In case of modification of an opening on the walls (doors, windows, etc.), the program regenerates the opening but does not display anything before selecting a new line where to place this opening. The line can be part of the same wall or may belong to a different wall. Again if you simply press , you only modify the parameters, without causing any displacement. The parametric objects modification allows to close an opening on one wall and open the opening on another. The elements of coverage have the similar behaviour: when editing a dormer window, you can then move it to another pitch.

Selection

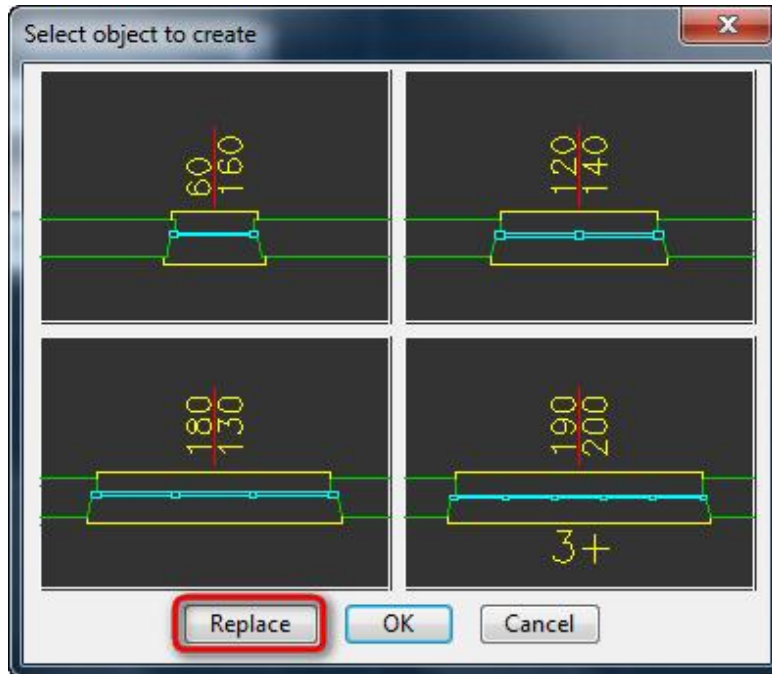
Pressing "Selection", you are prompted to select all the objects to be modified. The selected objects are then modified. In this case you cannot move objects, they are modified keeping the fixed point firm.

All

Pressing "All", the program scans the whole drawing, editing all the objects of a selected type applying the following search criterion. It considers only objects of the same type that have the values of the parameters to be modified equal to those found in the left column. Some data for the drawing regeneration are taken from the master file of definitions. This requires that the master file is available in the **EasyArch** path, otherwise it won't be possible to regenerate the object. Furthermore, if the file has been modified, the regeneration will consider the new definition. Particular attention should be paid when modifying the master file, as far as the number of prompted parameters to be indicated by the user is concerned. If you change the number and the meaning of the parameters assigned by the user, the object could be regenerated not properly.

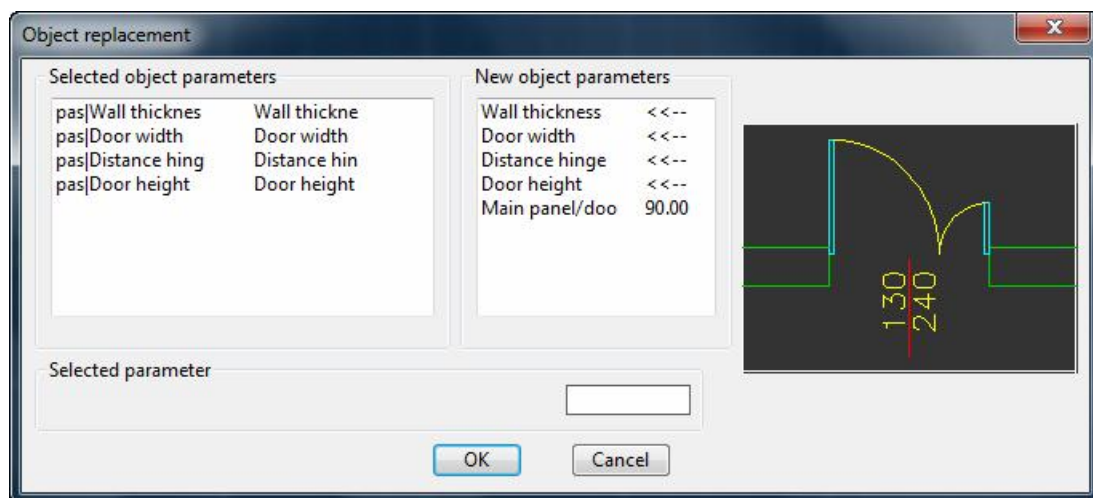
Objects replacement

You can see the Replace button in the object selection dialog box which appears when you want to create an object.



The button for object replacement

If you select an object and exit pressing this button, **EasyArch** understands that we do not want to insert a new object, but we want to replace one or more objects already existing in your drawing with this object. In fact, the next prompt is to pick all the objects that we want to replace with the selected one. Once you have picked the desired objects in the drawing, **EasyArch** displays the following dialog box. This dialog allows to manage various types of parameters, eventual association among them, and manual assignment of values.



Dialog box of object replacement

The left panel of the object replacement dialog presents: the left column with the parameters description of objects picked in the drawing (to be replaced), the right column with the parameters description of a new object to which the values of the selected object parameters will be assigned. Note that the automatic association is based on similar descriptions. Furthermore, if as in the example in the figure below we have selected two or more doors and each has a different width, then each replacement will take its original value. If in the right column we get a hyphen instead of a parameter, that means there could not be found any automatic association for this parameter on the left. The new object probably does not have this parameter.

The right panel of the object replacement dialog presents the parameters description of a new object. On the right you can have either an explicit value manually assigned in the edit box below or the symbol <<-- which indicates that the parameter is associated and the value is taken from the objects that are going to be replaced.

From the above discussion you can deduce that this is a very useful feature when you deal with homogenous objects replacing, for example, a scale with a different type of the scale, a window with another type of the window etc.. In this type of replacement almost all the parameters are already associated automatically and manual intervention is very limited. When you need to substitute non-homogeneous objects, the manual work of association and values assignment may be less productive than when you simply delete an old object and insert the new one. It is hard to think of replacing a staircase with a bookshelf and a window with a chair, even if **EasyArch** will work properly even in this case.

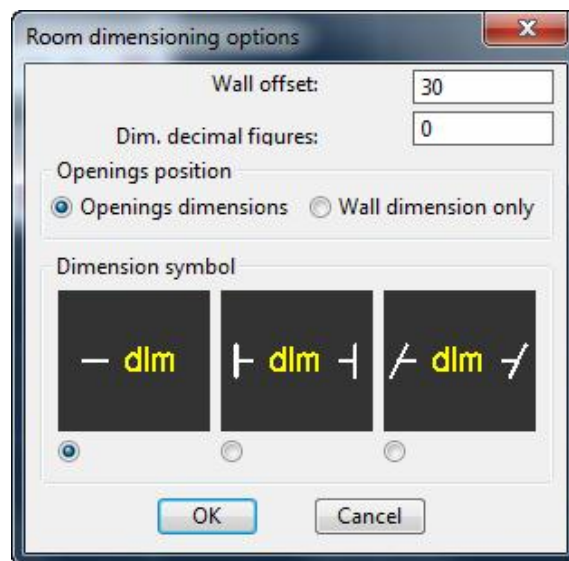
Dimensioning system

The Dimension commands allow you to measure different views of your project. Dimensioning of interiors in a plan view is almost thoroughly automated. The external dimensioning is based on the QE command. Thanks to a number of its options this command allows to solve dimension issues in the plan view as well as in other views. The external dimension commands use the current Dimension Style. The AViCAD DDIM command allows you to choose and modify the current dimension style.

Internal spaces dimensioning



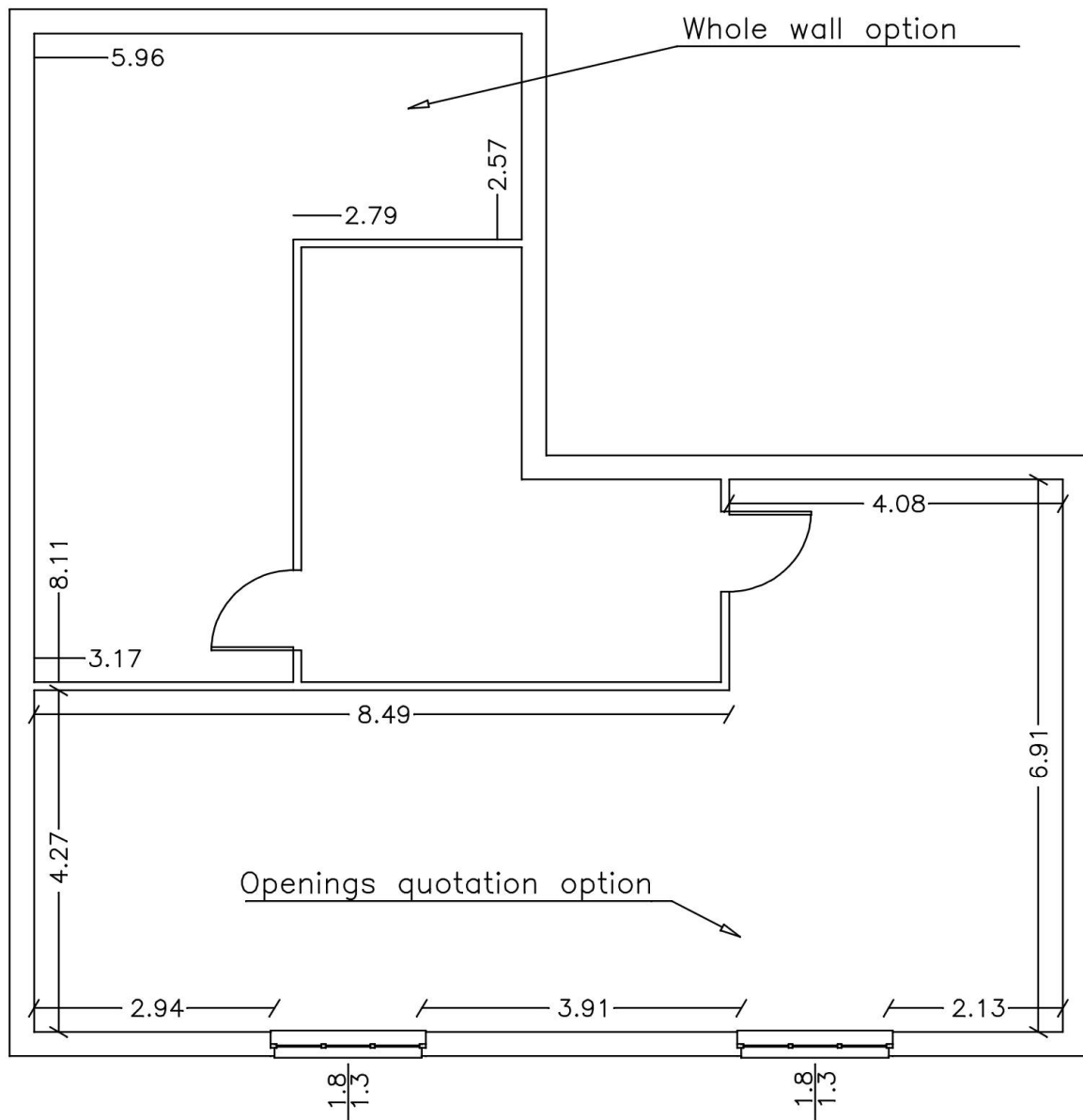
The QI command (Room dimensioning) allows to dimension internal spaces. The command draws a line at a certain distance off the walls with a dimension symbol and the dimension text.



Dialog box of the QI command

You can determine at what distance from the wall to draw the dimension symbol and text. It is possible to choose if to measure only the length of the wall or even to dimension the openings on the walls; you can also get the distance between various openings on the same wall. Furthermore, there are three images at your disposal representing the type of the dimension symbol. You can choose the desired one by activating the appropriate button. You can also set the number of digits after the decimal point. The dimension text height is set in the dialog box of the ADDPREF command in "Scale factors...". Once the dialog has been closed by pressing the OK button, just type some point within a room you want to dimension and the command will automatically create a dimension for it. Finally, you are prompted to select the dimensions considered to be excessive or that may create confusion in the drawing. These dimensions will be deleted.

The following figure is an example of the room dimensioning.



Interior dimensioning

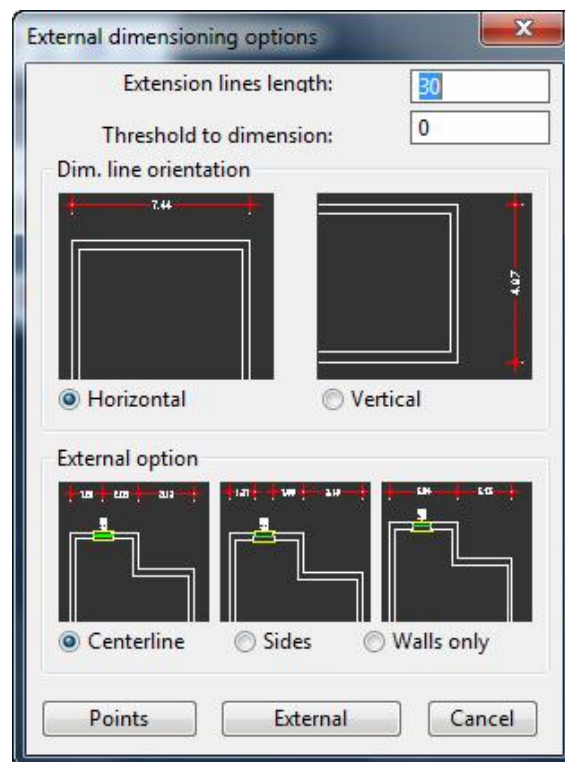
Dimensions created with this command are anonymous blocks generated from parametric objects definitions. The lines and the text belong to two different layers. The lines will go to the 2DDIMENSIONS_L layer, the text will go to the 2DDIMENSIONS_T layer. The whole block dimension goes to the layer with a name consisting of INTERNALD.

NOTE: This command doesn't allow to dimension a curved wall in a room.

External dimensioning



The QE command generates real AViCAD dimensions (DIM entities). Dimensions are created using the style currently set. You can choose the dimension type by selecting it from the dialog box.



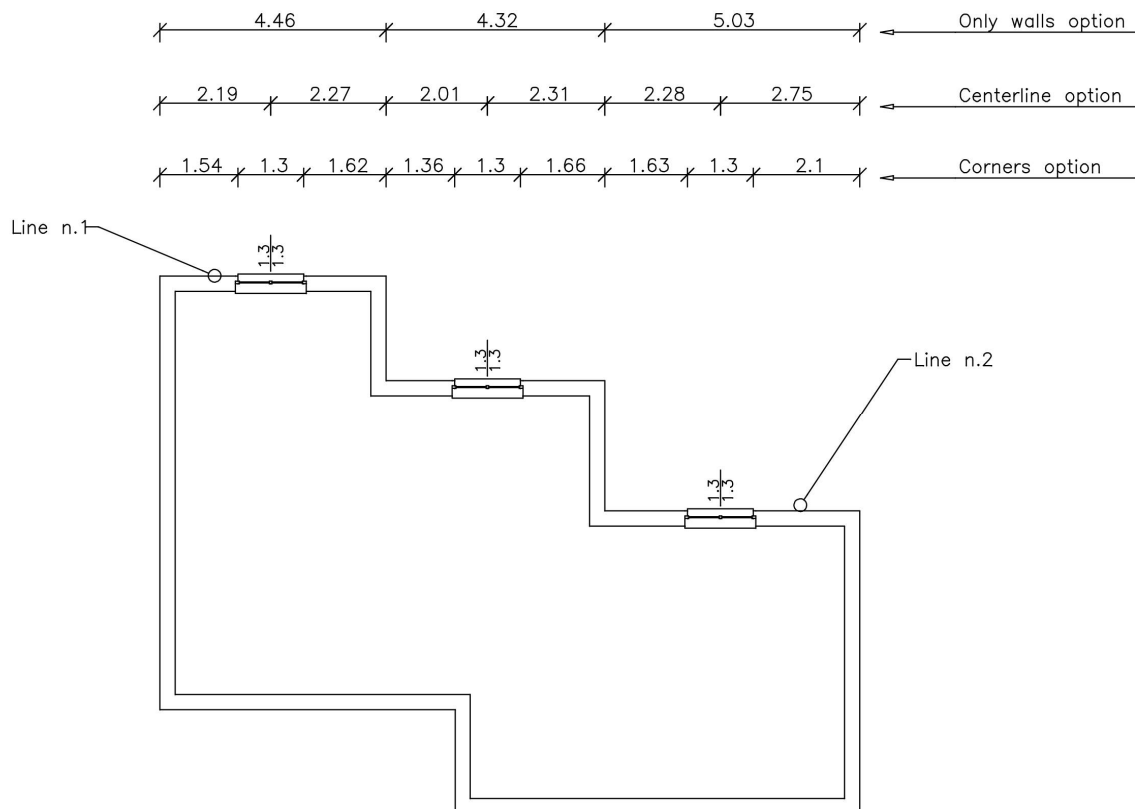
Dialog box of the QE command

It is possible to define "Extension lines length" and "Dimension line orientation." The "Threshold to dimension" option represents a value below which no dimensions are generated. If the value is set to zero, then everything will be dimensioned.

When you deal with plan dimensioning, you can choose "External ". In this case you can decide how the command should behave in the presence of openings. In particular, you can choose whether to dimension the position of the openings, and consequently whether to dimension it with reference to the Centerline or the Sides of the openings. Please note that the command functions quite differently if you choose the "Points" button rather than the "External" button.

External option

The "External" option allows you to automatically dimension a number of curtain walls looking on the same side. Regarding the openings, the command functions the way it as specified in the external option dialog box.



the External option of the QE command

Command: QE

Select first face line: Line 1

Select last face line: Line 2

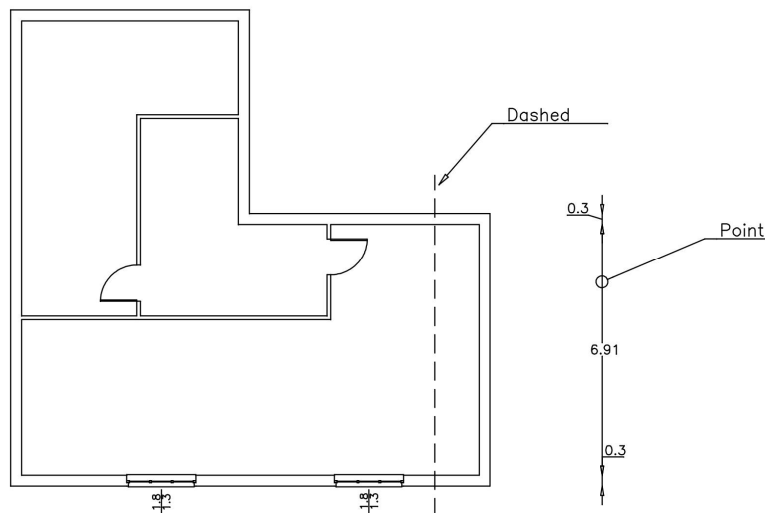
Point on dim. line: Point

Select first face line:

Points option

If you exit the External dimensioning dialog by activating the "Points" button, the "External option" type will not have effect on the dimensioning of openings. The command will proceed prompting for creation of a broken line intersecting a set of lines. It is not necessary that lines are distributed in the same floor plan this time.

The "points" button allows to specify a broken line that cuts lines to your liking. The command creates a horizontal or vertical continuous dimension line picking as dimension points the projections of the created vertical or horizontal intersections. The path of a broken line is free. You can pass on the lines several times, you can draw segments of a broken line without any intersection, you can make a broken line as long as you wish. The command ends by prompting for a point through which the dimension line should pass.




Option Points of the QE command


Command: QE

Point nr. 1: Broken Line Point

Point nr. 2: Broken Line Point

Point nr. 3: 

Point on dim. line: Point

Point nr. 1: 

The layer to insert the created objects is called 2DOUTDIM.

Move opening text



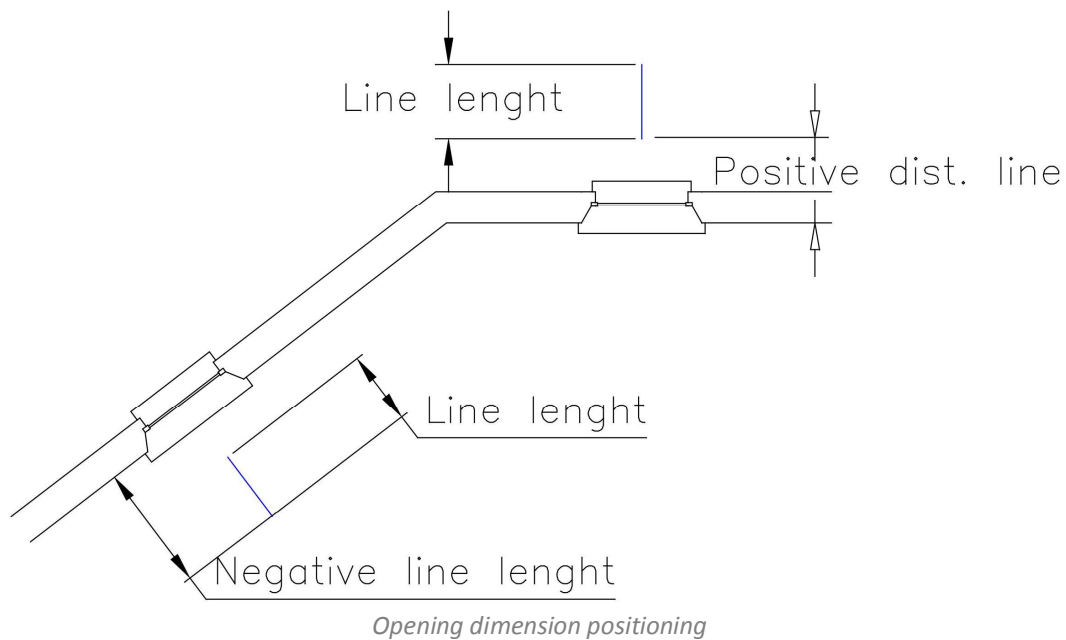
This command can be very useful when you need to change the position of the dimension text for an opening. For example, when you need to move the dimension text of an opening inside as otherwise it is illegible, then this command will allow you to move the dimension text along the centreline. Please note that the new position will become an object property, that means further object modifications won't change this dimension text.

Command : *squota*

Select opening with dimension:

New distance for dimension text:

The command prompts ask to select an opening and the new distance between the ordinate of the opening origin and the ordinate of the dimension text insertion point. The next figure is a good illustration of how works the assigned distance.

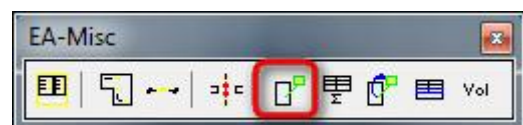


As you can see, the dimension text moves in the direction of the centerline, the point of origin is in the intersection between the inner line of the room and the centerline. If the distance is negative, then the texts moves inwards; if the distance is positive, the dimension text moves outwards. Generally it is sufficient to indicate a point in the drawing with guidance of the preview image.

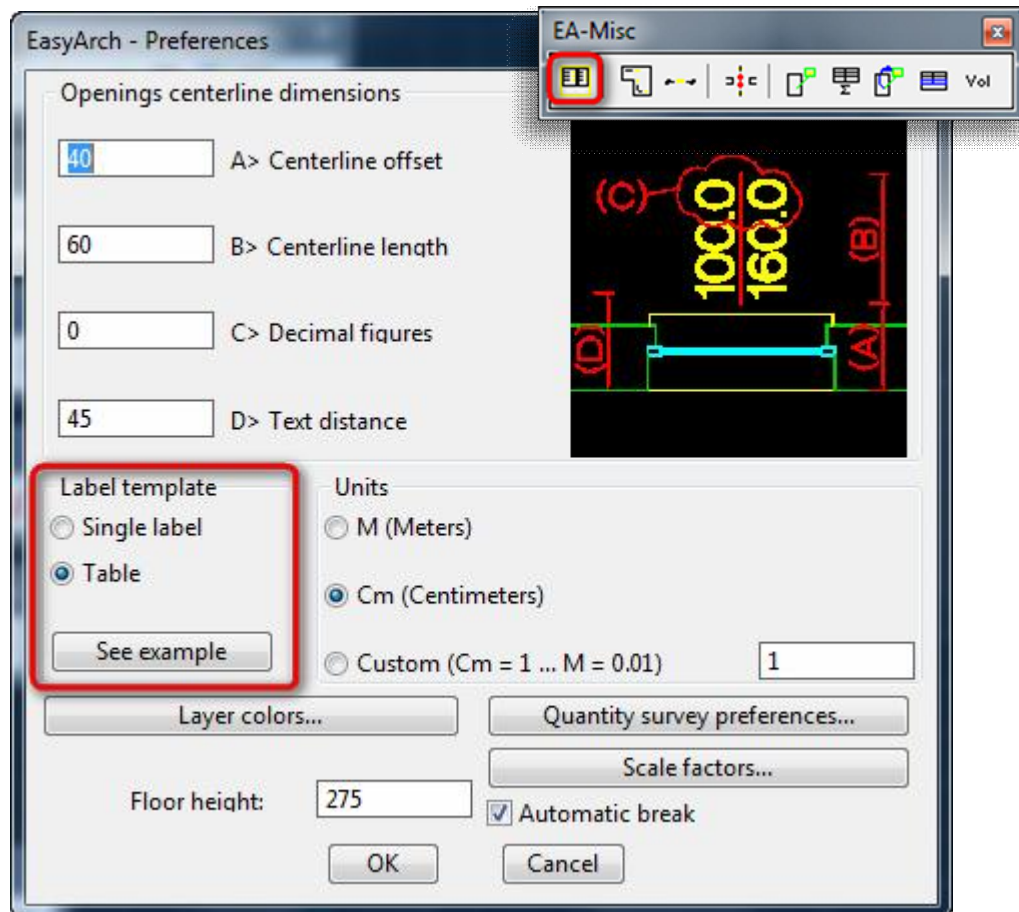
Rooms labels and calculations

While drawing floor plans of a building, you can control your project data. For example, you can always have under control the total area of a floor plan. It is possible to calculate the size of rooms and arrange the data in the tables. The data are calculated by rooms, the tables are designed to hold in some cases the overall values of a floor plan or a registered unit. As an alternative to complete tables, it is possible to insert only room labels with associated characteristics. The **EasyArch** module is provided with predefined label templates.

Rooms area calculation



This command allows to define rooms with eventual insertion of room labels and table updates in case this label template supports tables. The calculation procedure is automated, you simply pick a point within a room to calculate. In many respects the behaviour of the command depends on the label template in use.

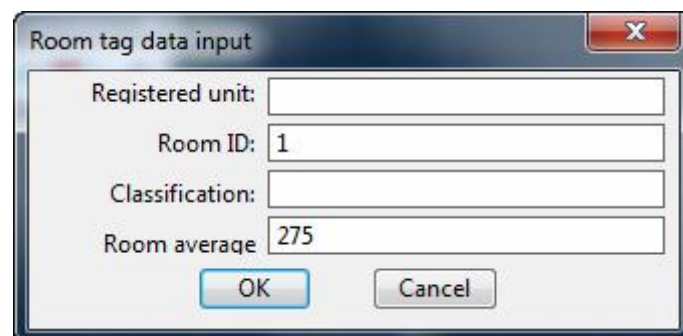


EasyArch preferences dialog box

The label template can be modified by choosing the name in the Label template section of the **EasyArch** Preferences dialog. Further on all the label templates present in the package will be described. The command instantly displays a dialog box to collect non- calculable room data. An example of non-calculable data is the room classification. The dialog box depends on the label template associated with it.

Template “Label with a Table”

The dialog box will be the following.



Dialog box of the “Table” label template

This label template provides a related to it table. The table reflects values of a registered unit. If you don't have yet this table, before inserting the label in the drawing, the command prompt will ask you to place the associated table in the drawing by indicating a point.

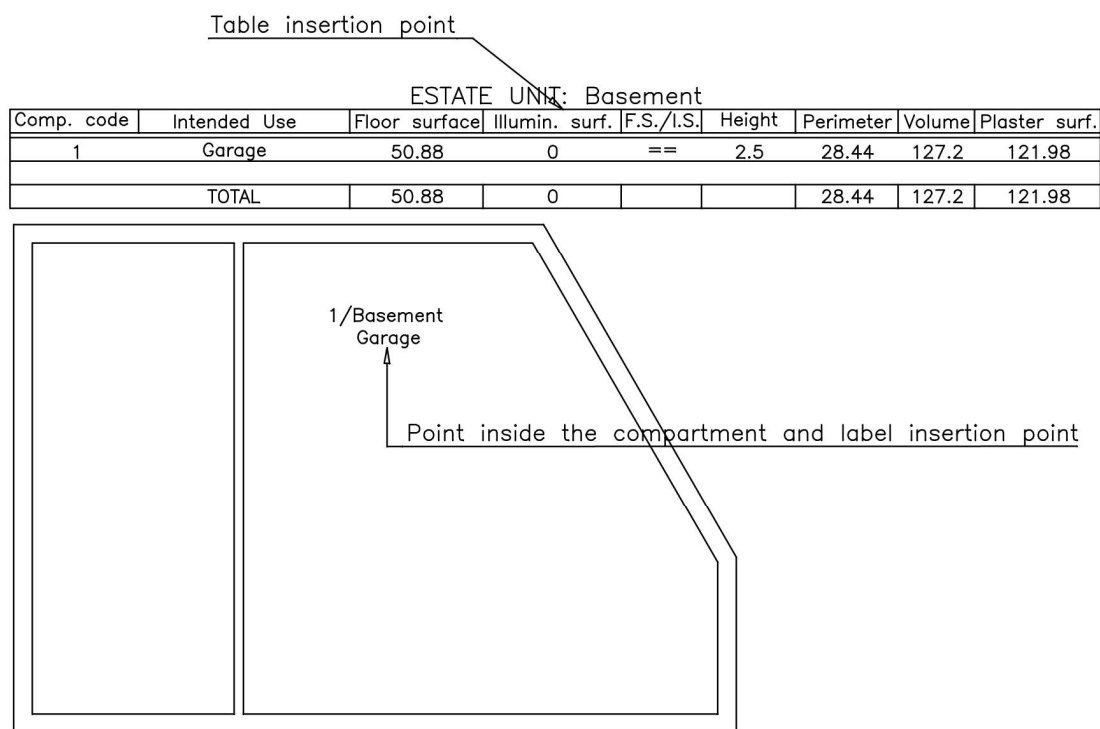



Table associated with the "Table " label template

Command: unitamb

Number of rows in the table: 2

Table insertion point: Point

Room inside point: Point

Enter/Room tag insertion point: 

When later you define other rooms in the same table, in this situation it is the "Basement" table, the command instantly prompts for a point inside the room. Moreover, some boxes already contain the data, the standard data generated according to the previously entered values.

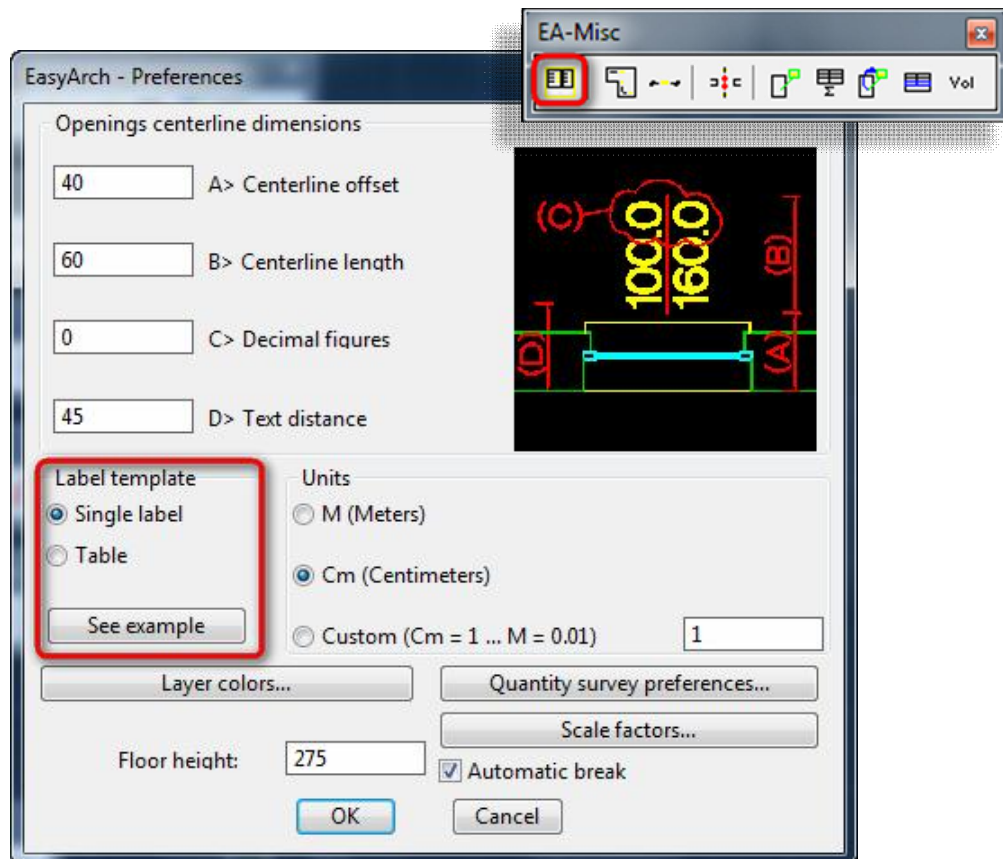
Such data of the table as the room ID, classification and the room average height are entered in the "Room tag data input" dialog. The other data are calculated. When entering the numerical size information in the dialog box, e.g. the room average height, you should observe the units of measurement used in the drawing. The calculation accuracy is guaranteed on condition of meeting the following requirement. As for the openings, you should use only parametric objects of the library provided with this program. You can either break lines or not, it is irrelevant for the command.

NOTE: Objects must not be exploded.

Illuminating area calculation is based on the input data of openings. It is worth mentioning plaster area calculation apart. It is calculated using the formula: <perimeter * height + ceiling area>. The openings on the wall are subtracted from this calculation. The actual subtraction depends on the data set up in the Quantity survey preferences dialog.

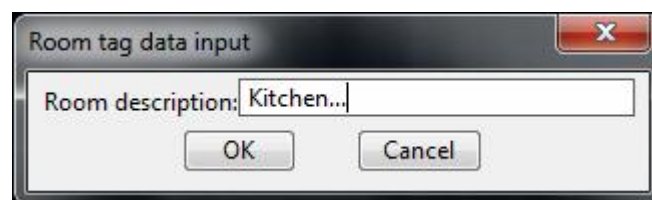
The values in the edit boxes that influence plaster area calculation are the Threshold to subtract openings and the amount Not to subtract. Room openings are evaluated according to their opening area. If an opening you come across along the perimeter has its area larger than the Threshold to subtract value, then the opening area minus the Not to subtract value is subtracted from the plaster area value.

The “Single label” template



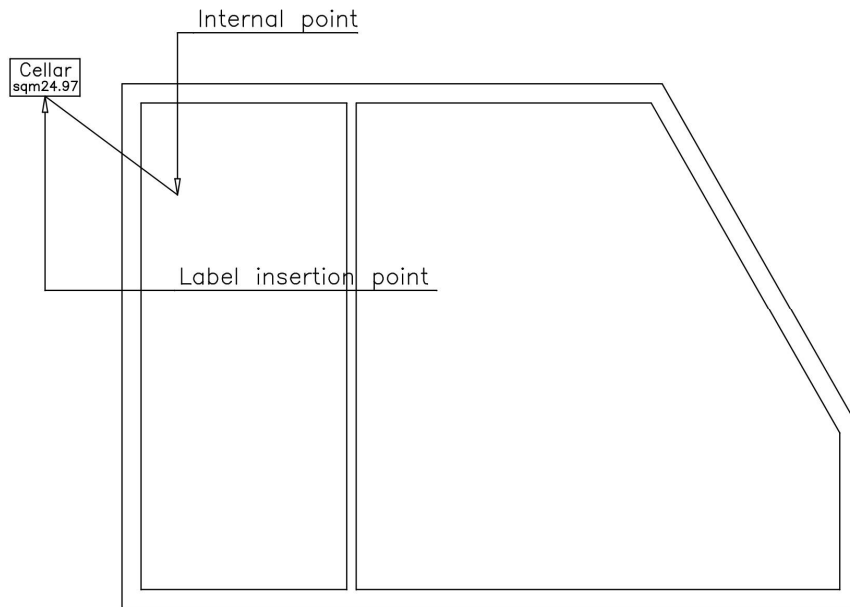
EasyArch preferences dialog box

If you use the “Single label” template, the table is not created. There will be generated only a label to be inserted in a room. Choosing this template, the program involves the following dialog box:



Dialog box for the “Single label” template

Once the dialog is closed, the program prompts for an internal point and the insertion point to place your label. The insertion point of the label can also be chosen outside the room.



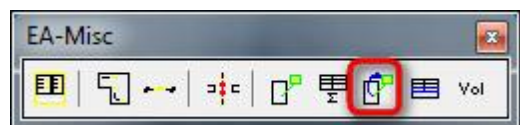
Label of the "Single label" template

Rooms Table Total



This command allows to calculate the total of the rooms table. The sum is estimated by selecting the table. You can repeat this command as many times as you want. Before recalculating the total, the command cancels the previous total sum to substitute it with the new one.

Re-calculate modified rooms




This command has two options. You can re-calculate all the rooms. In this case the command doesn't give you any prompt but directly proceeds to recalculation of all the rooms data of the current floor plan. If you use the label template with a table, then each recalculation update will lead to the update of table lines related to this label.

In case you need to update only one or a few rooms, just select a label you want to modify. The command will invoke the dialog box to modify the room data. Once all necessary modifications have been introduced, the command allows to shift the label position. If you don't want to change its position, just press . After having updated the label data and eventually the table, the re-calculate rooms command prompts to select another room label. Pressing , you will just complete the command.

Please remember that the Table Total is not recalculated automatically, that is why it is necessary to use the table total command selecting the required tables.

Edit rooms table



This command changes the number of lines of the rooms table. This command is required each time you increase or decrease the number of rooms of a registered unit. When you have selected a room, the command prompt asks for a new number of lines and a new position for a table. If you don't want to change its position, just press  when you are prompted for a new table position.

Floor volume

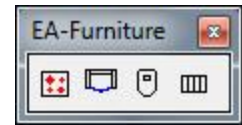


This command allows to instantly calculate the floor volume and area. The command prompts to select a line or an arc of the external perimeter.

The command displays a message in which the area and volume of the selected floor plan are indicated. For volume calculation it is used the constant floor height set in the **EasyArch** - Preferences dialog box.

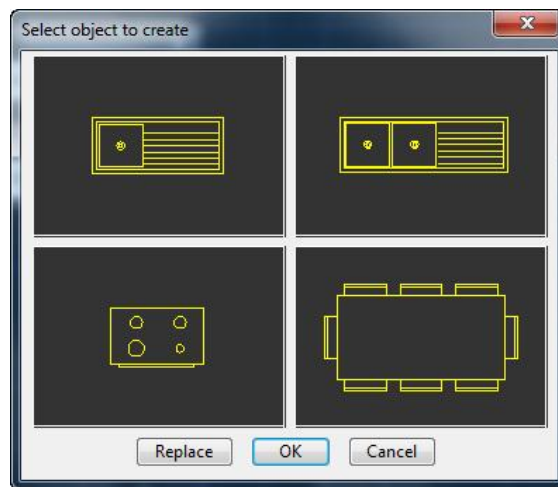
The conditions necessary for a successful command execution are similar to those of rooms data calculation. It is necessary to have a closed perimeter formed by arcs, lines and **EasyArch** parametric openings.

Parameterized objects libraries



Kitchen elements

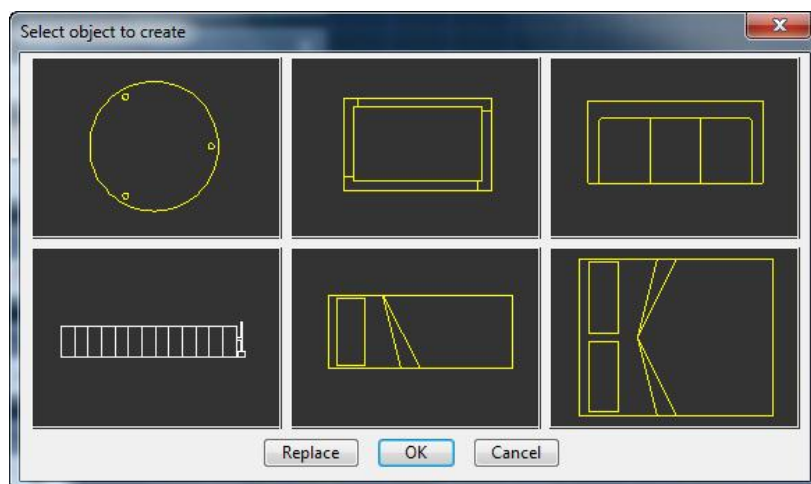
The following elements are at your disposal: a Single Bowl Sink, a Double Bowl Sink, a Cooker, a table with chairs. The table creation provides for automatic insertion of the number of chairs corresponding to the table size.



Dialog box for kitchen elements insertion

Living room – bedroom elements

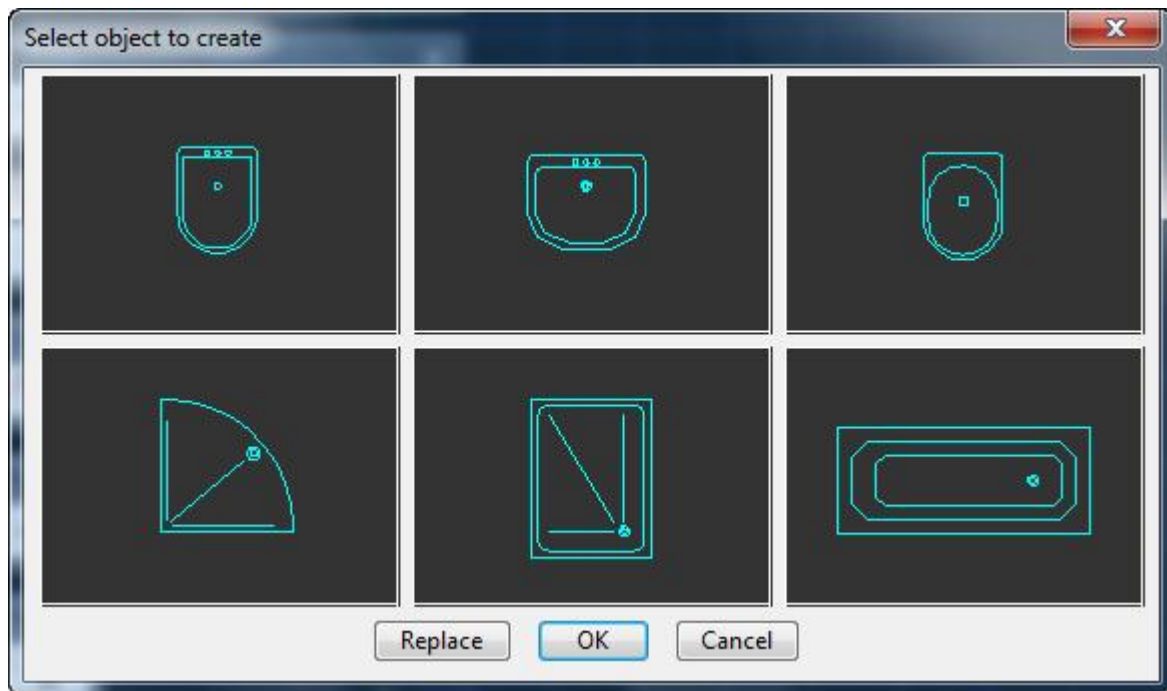
The following elements are at your disposal: a Round Table, a Rectangular Table, a Sofa, a Heater, a Single Bed, a Double Bed.



Dialog box for furniture insertion

Bathroom Elements

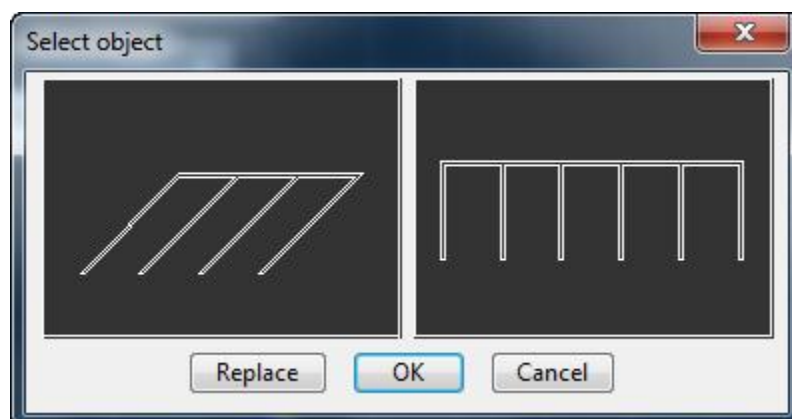
The following elements are at your disposal: a Bidet, a Sink, a Toilet Bowl, a Round Shower, a Corner Shower, a Bathtub.



Dialog box for bathroom elements insertion

Parking Areas Elements

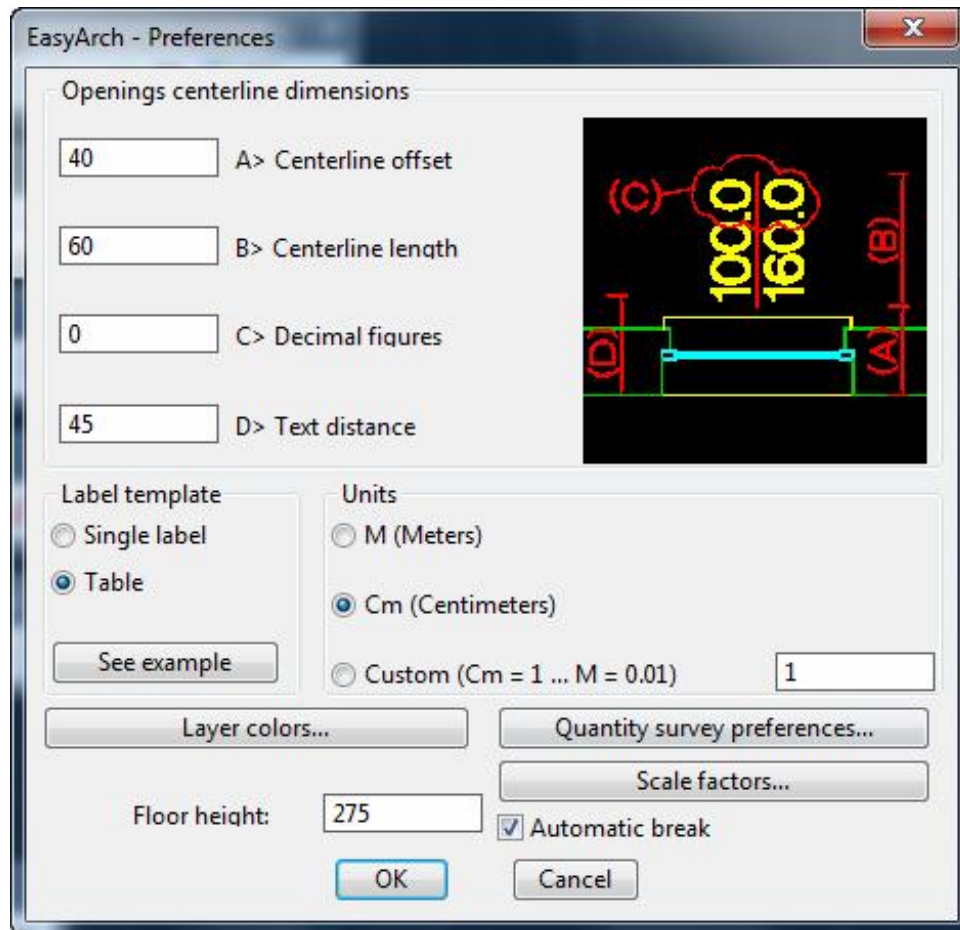
The following elements are at your disposal: diagonal line parking area or perpendicular line parking subdivision.



Dialog box for parking lines insertion

EasyArch Preferences Dialog

This dialog is used to modify parameters related to the **EasyArch** general behaviour. Once the ADDPREF command is chosen, the program invokes the dialog box which allows to display and edit the current values.



EasyArch preferences dialog

Please note that edited parameters won't influence already existing objects, but only those that will be created after this modification. Different preferences values editable in this dialog were already referred to in various parts of this manual. Below you will find their complete description.

Openings centerline dimensions

This section is used to configure the standard size and position for opening dimensions.

Label Template

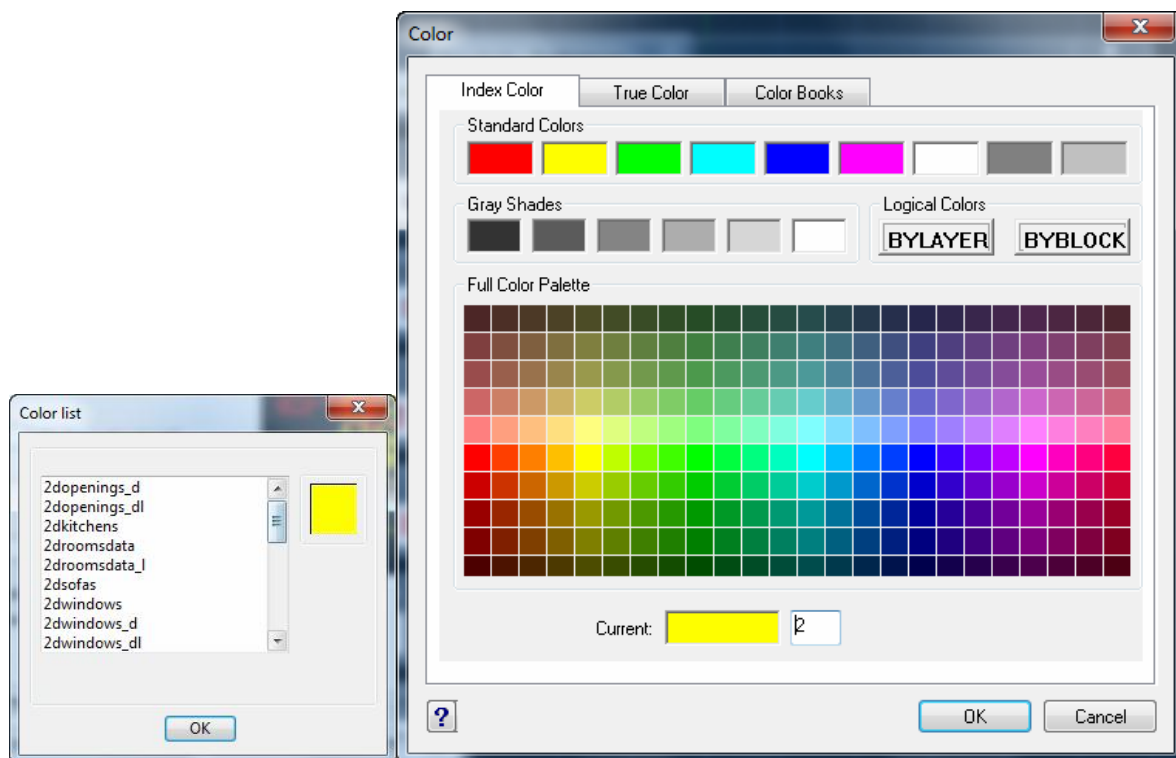
Please refer to the UNITAMB command in the Rooms labels and calculations section.

Units

This setting automatically handles all the default values and standard data provided when inserting a parametric object. The Custom option allows you to configure **EasyArch** to draw in the units of measure different from the two given standard units. For example, you can set inches, feet, decimetres etc. The user simply needs to enter a ratio that exists between the desired units and centimeters. The Units section allows to set and modify the drawing units.

Layer colours...

Each element generated by **EasyArch** is automatically placed on an appropriate layer. This dialog box will allow you to modify the default colour for new objects.



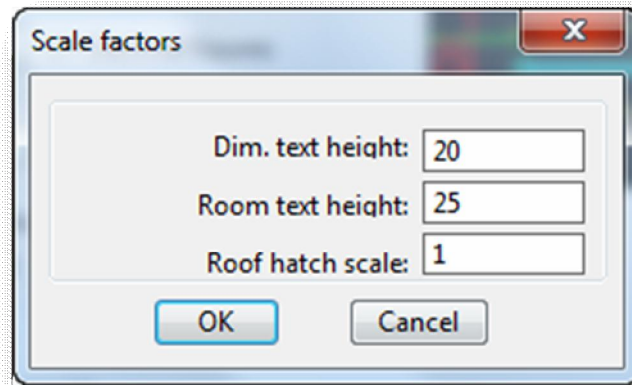
Layer colours dialog

Selecting a layer you want to modify in the list on the left and clicking on the colour box on the right, the program invokes the AViCAD standard colour definition dialog.

NOTE: The objects already existing in the drawing will NOT be modified or updated. To modify the colour of objects already existing in a drawing, you need to change the colour assigned to the layer from the Layer dialog or edit objects directly from the properties dialog.

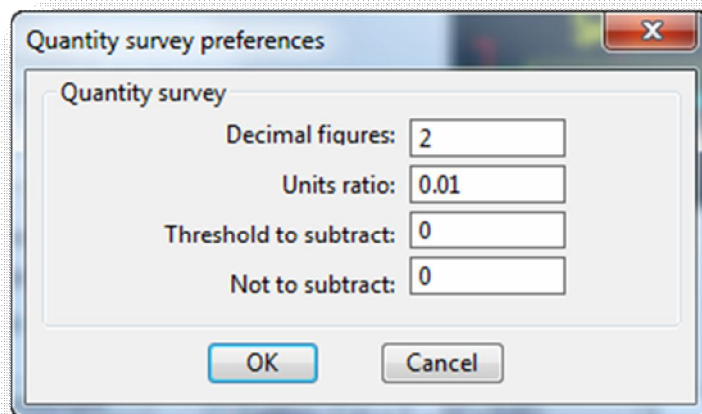
Scale factors

The scale factors dialog box allows you to modify the default values of the dimension text height for openings, of the room text height for labels, and of the roof (tiles) hatch scale factors.



Scale factors dialog

Quantity survey preferences...



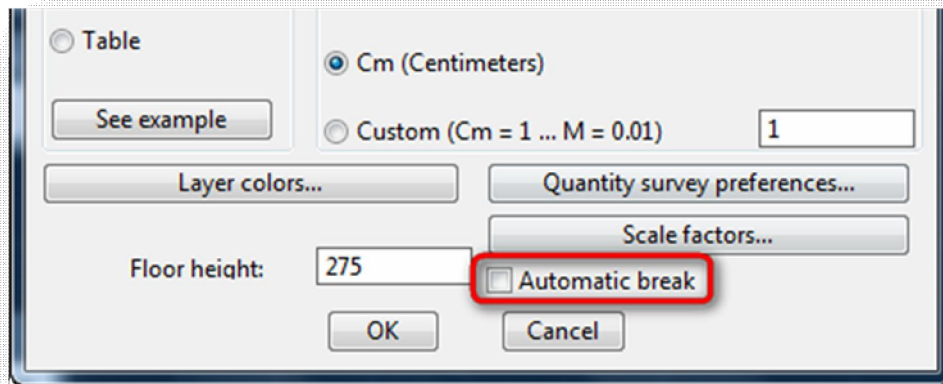
Quantity survey preferences dialog

The data editable in this dialog influence mainly the UNITAMB command.

Decimal figures	represent the precision of the data in tables and labels generated by the UNITAMB command.	2
Units ratio	If you prefer working graphically with one unit of measurement and prefer displaying your calculations in another unit of measurement, you will need to define here the ratio between the first and the second units. This parameter influences also dimensions created by the QI command.	0.01
Threshold to subtract	The minimum area which any opening must have in order to be deducted from the plaster area calculation, paint area calculation etc.	0
Not to subtract	The area of an opening that must not be deducted. It is true in case the opening area is greater than the minimum deductible opening.	0

Automatic break

You can configure **EasyArch** not to break walls when inserting openings . By default the Automatic break option is activated.



Preferences dialog: Walls break for openings setting