



# EasyArch3D Concept

## 2D and 3D PROJECT

To facilitate the work of a CAD operator, design of walls and insertion of parametric objects (Doors, Windows, Stairs, etc.) are realized in 2D view. Automatically the EasyArch plug-in generates its 3D part.

Tracing the walls you get only a bidimensional drawing, at the next step when inserting a parametric object, the program generates its 3D part.

There is also a specific command "EAM3D" in the EasyArch Utilities menu which allows to "update" 3D elements in accordance with all the modifications applied to 2D. This command is quite efficient, it regenerates a 3D model to get its correct updated visualisation, for example, when you make a copy of an opening (Doors, Windows, etc.) or when you need to modify or add a wall to your plan.

NOTE: If you need to create only a bidimensional drawing, before getting started go to the EasyArch Settings dialog box and activate the "2D only project" option.

## MEASURING UNITS

EasyArch allows the user to set the measuring units he needs. The preferences dialog offers the user the Imperial or Metric (Meters or Centimeters) measuring units as default configurations. It is also possible to configure the desired system through the scale factor.

## LAYER

The layer management is automatic, the plug-in generates a DWG file with each 2D or 3D element separately located. The preferences dialog allows to assign the colour to every single layer and this modification will be stored and applied to further new projects.

## TEXT and DIMENSION

There are different commands which allow to create elements containing the text, such as window dimensions or surface summary tables. The program uses the current style for the text and dimension styles, so the user needs to decide and choose in advance how his output data should look like. It is recommended to use Template designs for projects made with the EasyArch3D plug-in. These design templates allow the user to save text styles as well as to customize layers, dimensions, etc.

## PARAMETRIC

All EasyArch objects are parametric. This means that the user specifies the dimensions of an object at the moment of its insertion. EasyArch 3D also allows to modify the inserted objects through the "EAEDITOBJECT" command.

EasyArch 3D contains a vast library of parametric objects from various architectural elements (Doors, Windows, Stairs, Balconies, etc.) to a broad library of furnishings (Interior and Exterior). Along with the parametric library, the user can avail oneself of the iCADLib block libraries, which comprise thousands of 2D and 3D blocks, and by all means the CAD operator will have at his disposal his personal libraries of blocks handled through the standard CAD commands.

## INTEGRATED WITH CAD

All the elements designed with EasyArch are made from standard CAD objects exploited by users on a daily basis. In fact, it is also possible to modify or develop a floor plan by using such standard commands as copy, move, stretch, mirror etc. EasyArch3D also allows a free design of wall elements in 2D, where the user only needs to comply with object properties required by the program, that is objects must be Lines and the assigned Layer must be 2DWALLS. For this purpose the CAD command "Match properties" can be of great help.

ATTENTION: parametric objects created as blocks should be modified ONLY with the specific commands related to parametric objects. If such an object is exploded or modified, the program will fail to manage the 3D part in a correct way.

## BASIC FEATURES

### "Draw Walls"

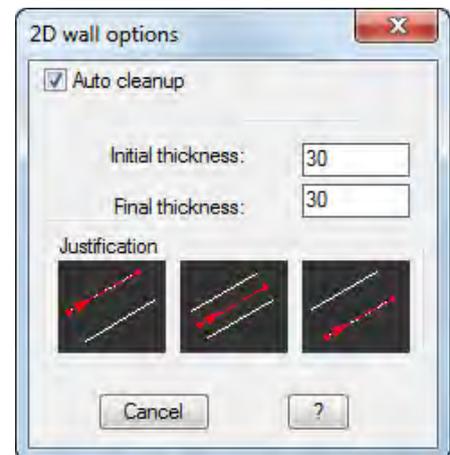
The EAWALL command serves to design double lines which represent the wall. The wall representation is first generated in 2D. The user can immediately generate a variable width wall, otherwise he can modify the floor plan with the CAD standard commands.

### "Generate Walls in 3D"

The EAM3D command creates or regenerates a 3D model of the walls at a fixed height.

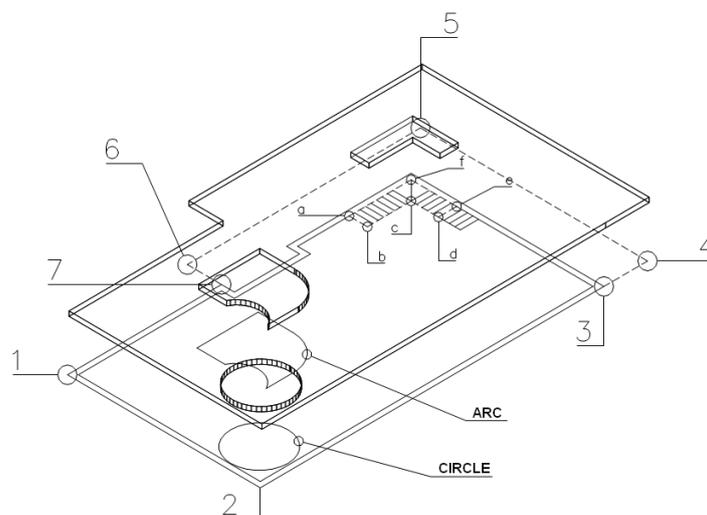
### "3D Walls with a variable height"

The EAST3D command allows to generate walls of a variable height.



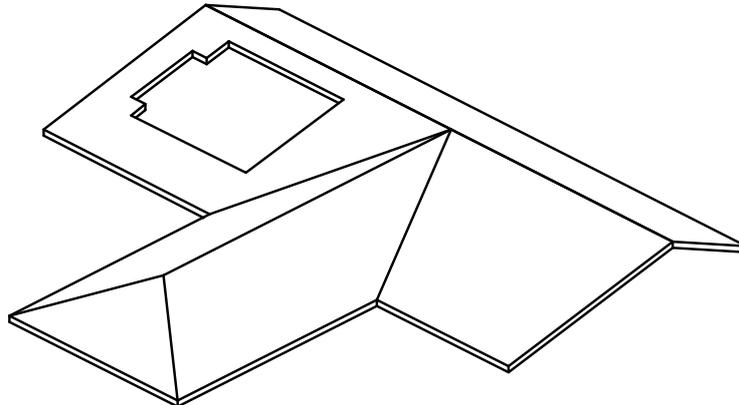
### "Floors"

The EAFLOOR command allows to create floors and to manage floor openings if such available.



## "Hip Roof"

The standard hip roof is generated automatically through the EAHIPROOF command.



*In this figure a hip roof was first created, then it was edited by adding an opening to one of its pitches*

## "Single Pitch Roof or Complex roof shapes"

One of the most innovative and versatile commands is the EA3DROOF command, which allows to create not only a single pitch roof, but also to generate a roof with more pitches of individual design. Generating a roof with more pitches using this command, the user needs to specify each single pitch.

## "Parametric objects - openings/doors/windows"

There is no specific command, you access the parametric objects library simply through the menu and insert the selected object in an easy and intuitive way. Pick an object and select the wall where to insert it. The dialog will appear prompting to specify distances and measures. Finally, place the object along the selected wall.

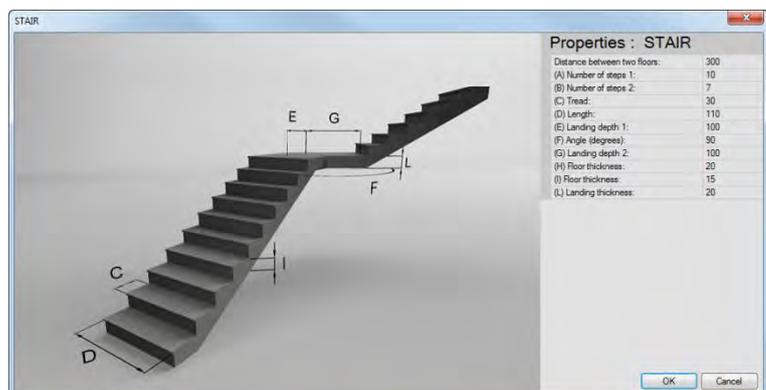


## "Parametric objects- stairs/balconies/decoration"

The way of insertion is similar to the one described above. Once the object is selected, the dialog comes up prompting to specify distances and measures. Finally, the use needs to place and rotate the object in the drawing.

## "Edit parametric objects"

The EAEDITOBJECT command allows to modify parametric object properties dynamically and then to regenerate the object. Select an object, the dialog box appears right away with the current values of the object properties. The list of properties is also accompanied by an image illustrating these properties.

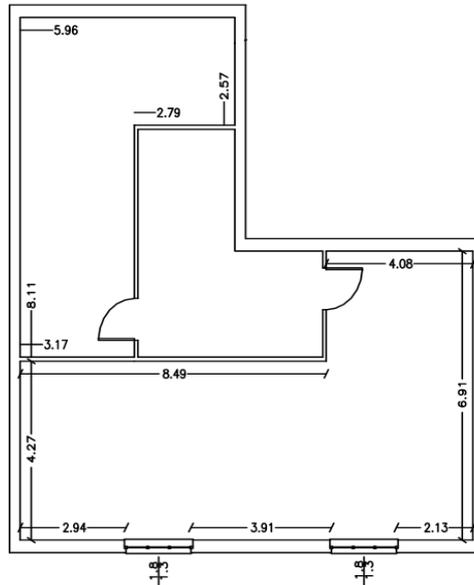


## "2D and 3D Visualization"

The EAVIEW command allows to switch the view from the layers containing objects in 2D representation to the layers with objects in 3D representation.

## "Automatic Internal Dimensions"

The EAINTERNALDIMENSIONS command allows an automatic measurement of internal area. The command draws the dimension symbol with the dimension text aligned and slightly distanced from the wall.

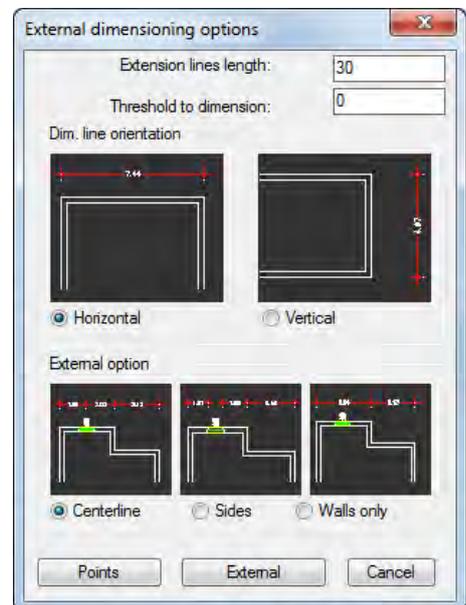


## " Automatic External Dimensions "

The EAEXTERNALDIMENSIONS command generates dimensions as if you were dimensioning in progeCAD (DIM objects). The style applied is the one currently set.

## "Room tags and calculation"

The EAROOMSAREA command allows to define different rooms of the floor plan by inserting relative tags to these rooms and creating corresponding tables.



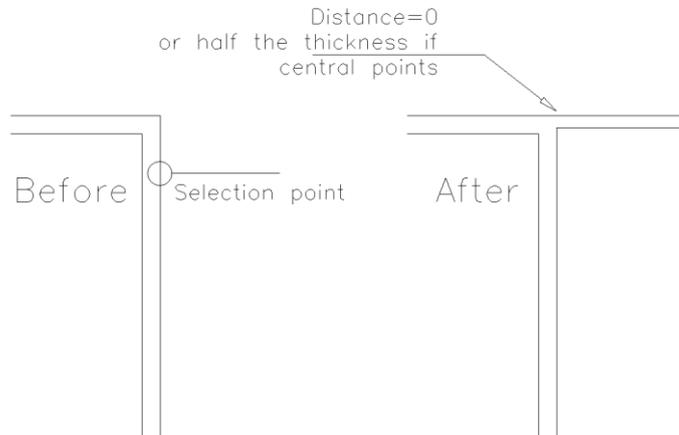
## "Preferences"

The EAPREFERENCES command invokes a dialog box which allows to display and modify all values.

# HOW TO...

## START FROM A WALL

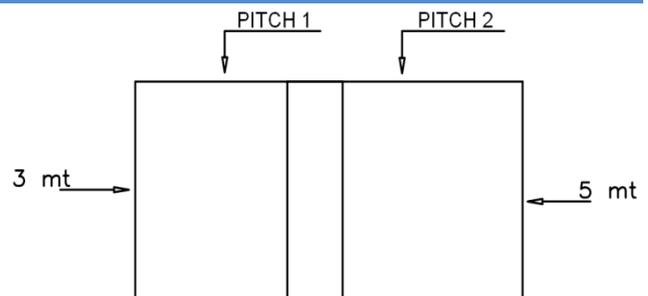
If you need to continue the wall from the corner, take a look at the figure below for the tips:



Here it was used the "Enter to select" option and Distance "0" for alignment

## CREATE A DOUBLE-PITCHED ROOF

In the project illustrated in this figure we know the value of the pitch slope, that is of 30%. Besides, we suppose to know the dimension of the eaves projection. The project representation in the plan view also displays the overlap of the second pitch over the first pitch.



Even in this case you should place the line of the first pitch at the elevation of 3m and that of the second pitch at the elevation of 5m. Check the "Inclination" option in the EA3DROOF command dialog and type "30" as a "Pitch tilt (>0 %)" value. This command prompts will be the following:

Command: **EA3DROOF**

Undo/Invisible/Point nr. 1: **Point 1**

Undo / Invisible / Point nr. 2: **Point 2**

Undo / Invisible / Point nr. 3: **Point 3**

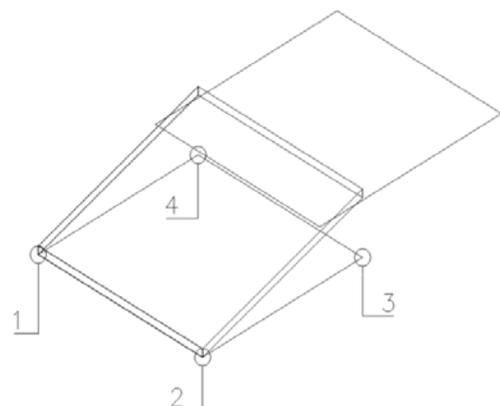
Undo / Invisible / Point nr. 4: **Point 4**

Undo / Invisible / Point nr. 5:

Object/Edge/ Invisible / Point nr. 1:

Gutter first point/Enter to use the first two points:

Undo/Invisible/ Point nr. 1:



Select the first two points with the object snap, the side and dimension of the eaves projection as well as the inclination and in this way you will fully define the position of the pitch. What is left to do is just to repeat the same operation for the second pitch.

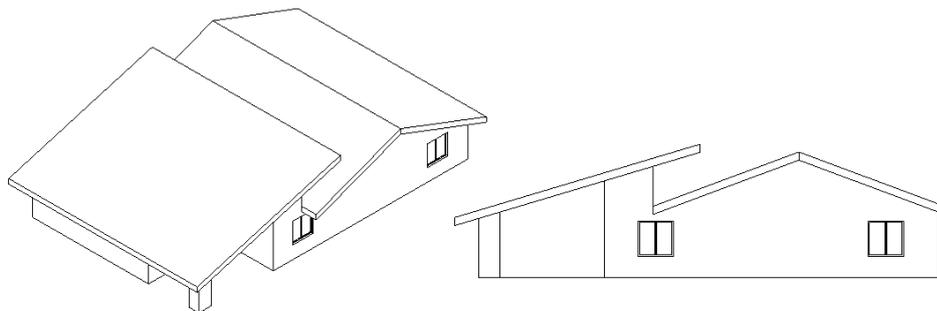
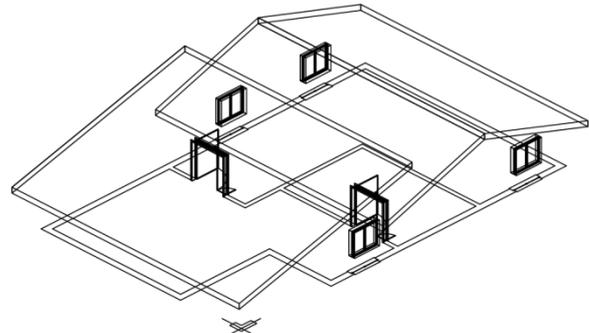
The eaves projection side must be located at the fixed z elevation. The z elevation of the first point is intended as the eaves projection elevation.

**Note on UCS and EA3DROOF command**

This command, designed to facilitate roof drawing, functions correctly only if the current UCS is set to GLOBAL. If the current UCS is not set to global, you may not achieve the desired results.

**GENERATE WALLS OF VARIABLE HEIGHT**

Use the EAST3D command with the AUTO option. Once you have defined all the pitches drawn with the EA3DROOF, EAHIPROOF and EAFLOOR commands along with the layout of walls drawn with the EAWALL command, the EasyArch plug-in will automatically generate all the walls at a variable height and adjust them according to the disposition of the pitches. The wall layout can contain windows, doors and other openings that can be freely positioned. Polygons that stand for columns in a drawing are also taken into account. Take a look at the picture below to see how it works in practice.



*The figure illustrates the result obtained with the EAST3D Auto command.*

**MULTIPLE FLOORS MANAGEMENT**

The program does NOT have the multiple floors functionality. It is recommended to create all single floor plans side by side in your drawing and then compose a full 3D model by putting one floor plan over another.

ATTENTION, taking into consideration the way 3D elements are constructed, it is necessary to:

01. create a copy of the original drawing with all the floor plans
02. open this copy and activate its 3D visualisation
03. activate the SPLFRAME variable by typing on the command line: SPLFRAME <enter> 1 <enter>
04. create a block out of each single floor (a block for a floor, the last block can contain the roof)
05. place the blocks one over another, so as to form a complete model
06. deactivate the SPLFRAME variable by typing on the command line: SPLFRAME <enter> 0 <enter>

NOTE: You may need to regenerate your drawing after the modification of the SPLFRAME variable. Naturally, it is a workaround, so in case you have to modify some floor plan, you must repeat the procedure described above for a modified floor plan.