

Stair Designer




USER'S GUIDE

Stair Designer

The Stair Designer makes it easy to define and place custom stairs in your project. You can start the Stair Designer independently, from the myHouse program group, by clicking **Start** and then selecting Stair Designer. You can also start the Stair Designer from within myHouse by clicking the Stairs icon on the horizontal toolbar; then click the Stair Designer icon of the vertical toolbar at the left side of the screen.

1 Designing stairs

The program gives you the opportunity to design stairs. Click on the  icon to call the *Stair Designer*. You can manage the *Stair Designer* in such a manner that you also control the *Roof Designer*. After starting the program, the Stair Designer appears with four windows. Three of them are different view windows and in the fourth window you may see the 3D axonometric view. The treatment of windows is the same as described for the *Roof Designer*. You may edit the stairs by creating dots, lines and planes, but that would be a very complicated way of editing stairs. (This process is the same as it is written at the *Roof Designer*.) However, the program contains a very efficient *automatic Stair Designer* method which you would use in most cases. When using the top view window, click the right mouse button. A pop-up menu appears which is similar to the *Roof Designer*'s pop-up menu. By choosing the **Make stairs here** menu item, you can call the dialog boxes which help you to define the stairs.

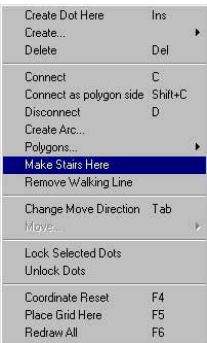



Figure 1-1. The menu where you can call the stairform dialog box

This function can be quickly accessed by pressing  on the top iconline. In the automatic stair-generating window, you may enter all the stair data such as: flight width, flight type (straight, drawn or arched), etc. the dimensions for each

step. There is a multi-window dialog box for every flight where you can define the stair balusters, the individual stair data, the stair landing, the dimensions of stair rails. You may enter several data in the different windows. To switch to different windows, click on the small tabs where their names are shown.. There are four windows of the dialog such as:

Geometry: Contains the geometric data of flights

Landings: Contains the data for landings that connect the flights

Steps and supporting: Contains the data of the individual steps of flights and the flight balusters.

Railing: Contains the data of rails ascending on flights and rails that enclose the landings

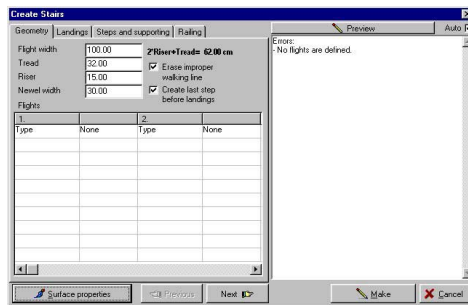


Figure 1-2. The dialog box of automatic stair-generating

When entering the data you can see the schematic top view shape of the developing stairs in the preview window. In this way, you can verify the prospective shape of the stairs. If you enter incorrect data, you will get error indications and may will be allowed to correct the data.

Let's review how to manage the dialog boxes.

Every dialog box has a common data section refering to the whole stairs. An element can be applied in the stairs several times, so this data can cover repetitive conditions: for example, in case of multiflight stairs, the length of steps refers to every flight, etc.

2 Geometry dialog-window

The data in the common data field:

Flight width: You enter the width of the flight that you will to define.

Tread: You may enter here the tread width of steps which means the W value in the formula

Riser: You may enter the riser (step height) here which means the H value in the formula

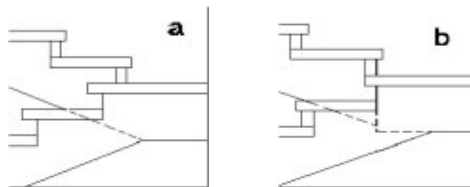
After entering the value of tread or riser, you can press Enter and these values will be assigned to all the flights. Vica versa: if you clear on of these fields and press Enter, the value of it will be calculated according to the entered flight datas. This calculation is not available when the entered flight datas result different values for the tread or riser values.

Newel width: In case of several flights, you enter the newel width two flights. This value is used in two cases. When automatic type landings are generated or when drawn flights are generated and their turning is larger than 90 degrees.

2*Riser+Tread=: During editing, this stair formula changes according to your entered data.

Erasing improper “walking lines”: In case of arched and drawn flights, the constructed stair may step out of the permitted range. This will be red-colored on the screen and you can clear it off from the flights. You may remove all walking lines from the plan by choosing the **Edit/Remove walking line** menu item.

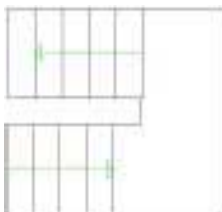
Make last step at landing's height: If this option is set the last step of the stair flight will be at the same level as the following landing, so the flight length will be one tread longer. Also in this case the program will create the stair in a way that the supporting's and the landing's bottom is always at the same height. See this on the next figure:



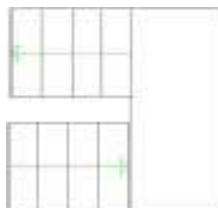
180 degree turning landings, the supporting's and the landing's bottom is at the same height at the end of the flight (a), or not (b)

If the option is disabled, the flight width equals to $(\text{risers}-1) \times \text{tread}$ and the last step is one riser below the landing. The next figure shows the possible cases regarding to this option.

a.



b.



- a.) last step is at the same level as the landing
- b.) last step is below the landing the flight length is one tread shorter

Under the common data section, you find a multi-column and multi-row data entry field. The fields are separated into two-column units. In every each two-column unit, you may enter the data of a stair-flight. In the first column, you see the type of data you have to enter, which can be different when choosing other flight-types. First, you have to choose the type of the flight. In the field marked *None*, by clicking on the right corner, a scroll-down window appears where you see the possible flight-types. The types can be:

Calculate flight length and elevation automatically: When switched on, the program automatically calculates these values according to the number of risers entered in the table.

The first step in making stairs is selecting the flight type. Click the *None* field to the right of the Type field in the table below. A small selection arrow will appear at the right side of the field. Select the flight you want from the listed types (**Straight**, **Drawn**, or **Curved**).

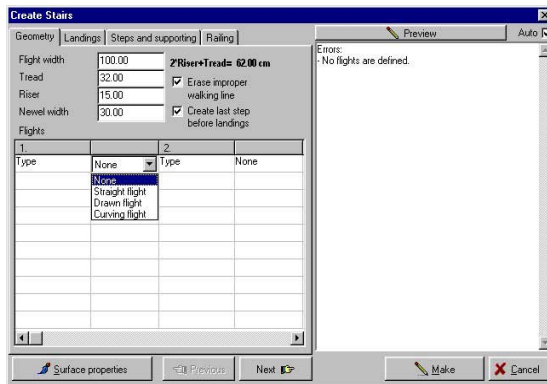


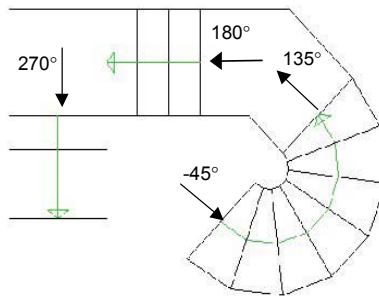
Figure 1-3. Entering the geometrical data and choosing the type of the first flight

After choosing the flight-type, the fields will be named in the first column and the required data you have to enter in the second column. Some are fields that the program can fill in by taking the data in the common fields into consideration. To execute this, delete the field and hit the **Enter** key. The common data fields are in relation with some flight data fields, so if you change any data of the common fields after hitting the **Enter** key, the program recalculates the related data fields. If you change data in other fields, then to get the values recalculated, you must first delete the values in the fields, and then hit the **Enter** key in every field. In case of incorrect data fields, you will get an error-indication. With the help of the above mentioned process, you may correct these problems.

The stairs may consist of several flights, which can be connected with landings. You may connect the different stair-types directly one after the other. You may make a landing when the directions of two sequential flights vary. In this case, the program makes a landing between the two flights.

0 degrees stands for horizontal and 90 is for vertical direction pointing to the right and up respectively. When entering these values you have to keep in mind the following: When you enter a direction after another direction as we move forward on the stairs, if the following direction has a larger value then the stair will turn left, if it's smaller one the stair turns right.

The following figure demonstrates this.*



*only in the ARCAD program

2.1. Entering the parameters of straight flight

This is the mostly common stair type. After choosing this type you can enter the following parameters.

Number of risers: Number of stair steps. The value is interactive with a common field, so the program can calculate it after entering the other values.

Flight length: Taking the tread width and the number of risers into consideration the program calculates the length of the flight. The value is interactive with a common field, so the program can calculate it after entering the other values.

Flight elevation: The height value of the flight. The value is interactive with a common fields, so the program can calculate it after entering the other values.

Left railing,

Right railing: You can ask the program to create railings to both sides along the flights. You can enter the definition of the left and righthand side separately. The railings can be omitted <None> or its columns (balusters) can be omitted <No column> or using the parameters of the railing entered in the dialog box, the program creates <Complete> a stair railing accordingly to the definition.

Direction: You may enter the top view direction of the flight in degrees. The stairs may consist of several flights which can be connected with landings. You may connect the different stair-types directly one after the other. You may make a landing when the directions of two sequential flights vary. In this case, the program makes a landing between the two flights.

Flights	
1.	2.
Type	None
No. of risers	
Length	
Elevation	
Left Railing	
Right Railing	
Direction	

Figure 1-4. Entering the parameters of the straight flight

2.2. Entering the parameters of drawn flight

After choosing this type, you can enter the following parameters:

Number of risers: Number of stair steps. The value is interactive with a common field, so the program can calculate it after entering the other values.

Flight length: Taking the stair treads and the number of risers into consideration the program calculates the length of the flight. The value interactive with a common field, so the program can calculate it after entering the other values.

Flight elevation: The height value of the flight. The value interactive with a common field, so the program can calculate it after entering the other values.

Left railing:

Right railing: You can ask the program to create railings to both sides along the flights. You can enter the definition of the left and righthand side separately. The railings can be omitted <None> or its columns (balusters) can be omitted <No column> or using the parameters of the railing entered in the dialog box, the program creates <Complete> a stair railing accordingly to the definition.

Start direction: You can enter the value of start direction of the first step in degrees.

End direction: You can enter the value of end direction of the last step in degrees.

Sidelength 1: The length of the outer first side of the drawn flight.

Sidelength 2: The length of the outer, swiveled second side of the drawn flight.

These two values are shown with different coloured lines on the top view sketch for help.

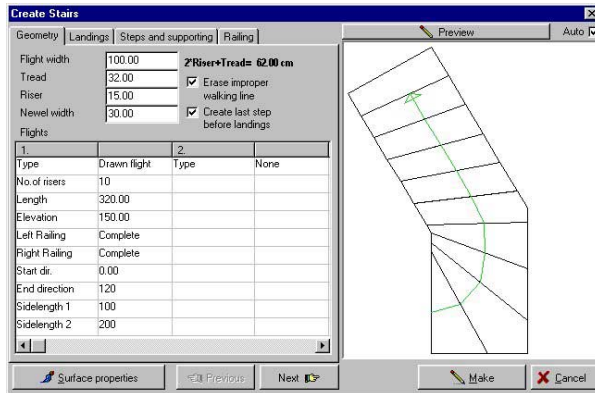


Figure 1-5. Entering the parameters of the drawn flight

2.3. Entering the parameters of curving flights (also spiral staircase)

After choosing this type, you need to enter the following parameters:

Number of risers: Number of stair steps. The value is interactive with a common field, so the program can calculate it after entering the other values.

Outer radius: This value is required. You may enter the values of the outer radius of the arc, the radius of the stair-well in the common field.

Flight elevation: The height value of the flight. The value is interactive with a common field, so the program can calculate it after entering the other values.

Left railing:

Right railing: You can ask the program to create railings to both sides along the flights. You can enter the definition of the left and righthand side separately. The railings can be omitted <None> or its columns (balusters) can be omitted <No column> or using the parameters of the railing entered in the dialog box, the program creates <Complete> a stair railing accordingly to the definition.

Start direction: You can enter the value of start direction of the first step in degrees.

End direction: You can enter the value of end direction of the last step in degrees.

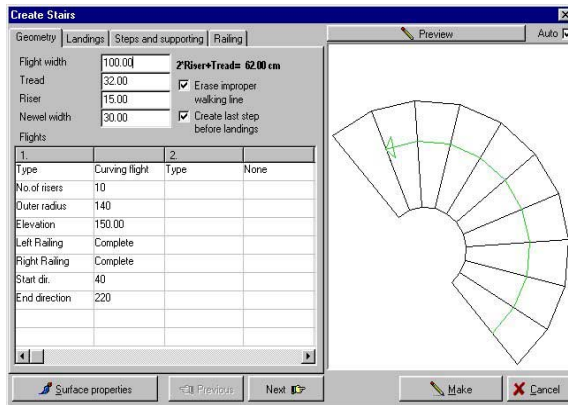


Figure 1-6. Entering the parameters of the arched flight

2.4. Entering the parameters of the multi-flight staircase

Let's review an example for several styles of three-flight staircases. Let's enter the parameters of several types of flights and follow through the process of entering the data.

The edited staircase is made up of two straight flights which are connected with a drawn flight.

Switch *off* the editing of the last stair before the landing. Enter **5** in the field of number of risers for the first flight. You may have the remaining parameters calculated by hitting the **Enter** key, field by field. After entering **6** in the field of number of risers for the second flight, and you may have the flight length and the flight elevation calculated by the program again. You enter the degree of rotation and both of the sidelengths. After entering the parameters of the second flight in the example, the preview of the stair has not appeared but you have received two error messages.

You need to have the flight length of the first flight recalculated because the length of the flight changes by attaching the subsequent flight. Clear the field of the flight length and have it recalculated by hitting the **Enter** key.

"(Tread x number of risers) is not equal to flight length" error message is fixed."

"Can't make a drawn flight with these parameters (too few risers for these sidelengths)": this error message means that keeping the entered stair step on the walking line, the program cannot construct the turning flight with the specified amount of stairs. Fix the number of stair steps. Increase its number by one. The program will now draw the preview of the first two flights after the modification. You may enter the parameters of the third flight and fix the flight length of the second flight by recalculating it. <clear and Enter>. The edited flight appears.

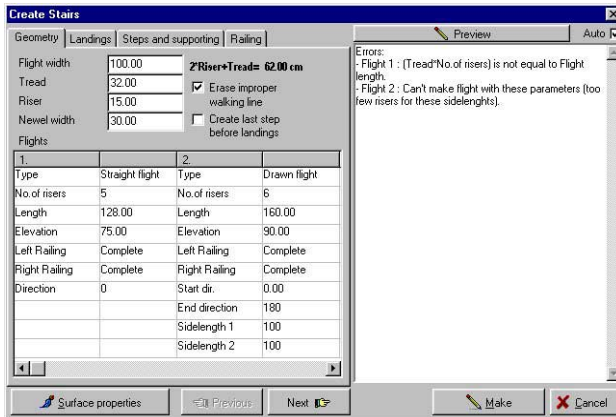


Figure 1-7. Received error message after entering the parameters of the two flights

During the editing, you can fix errors by clearing the entered values in that field which is marked as defective and hitting the Enter key to recalculate it. These error messages don't appear if the „**Calculate flight length and elevation automatically**“ option is enabled.

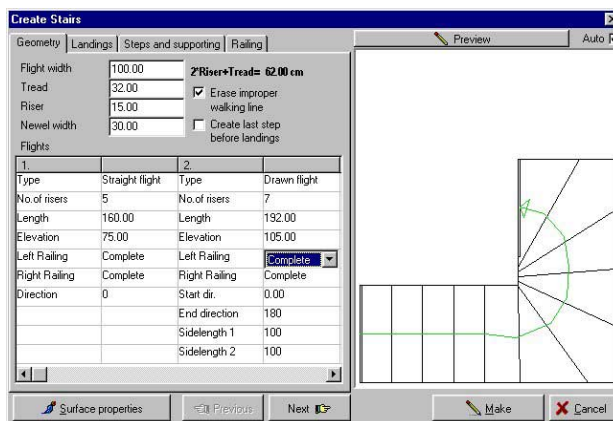


Figure 1-8. The preview of the two fixed flights

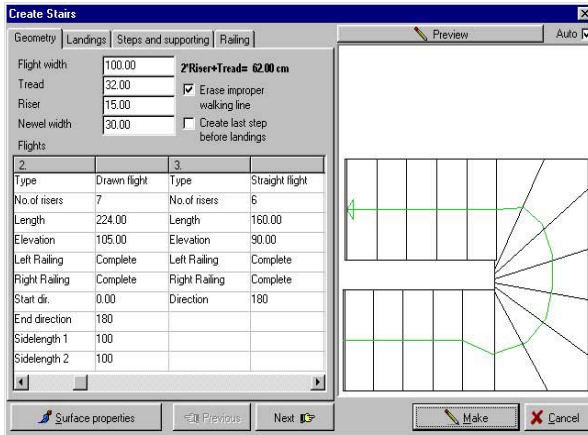


Figure 1-9. The preview of the three-flight staircase

2.5. Entering the parameters of the landings

The landings connect the rotated flights. Taking the entered width of the newel into consideration, the program automatically builds in a landing between them. You may choose its type by choosing it from the type field.

You may choose from the following three types:

Type: **Auto**

Simple You may enter the width of A and B, these sizes are shown on the top view sketch in different colours.

Curved landing You may enter the outer radius or rather the arch of the inner edge

Left railing,

Right railing: You can ask the program to create railings to both sides along the flights. You can enter the definition of the left and right hand side separately. The railings are omissible /None/ or its columns are omissible /No column/ or considering the parameters of the railing entered in the dialog box the program creates /Complete/ a stair railing accordingly to the definition.

Width of landings: You may enter the width of landings in this field. This value is valid on every landing.

Build supporting under landings: You tell that whether you wish a support under landings or not.

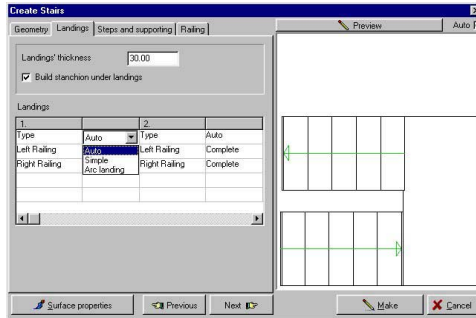


Figure 1-10. Entering the parameters of the auto and curved landing between two straight flights

2.6. Entering the parameters of steps and supportings

You may enter the parameters of the supports under the flights and landings or instead you may enter the parameters of the steps in this dialog box.

Let's see the fields:

Width of tread: You may enter the width of the tread in this field for the three-dimensional image.

Width of front plane: You may enter the width of the front plane in this field for the three-dimensional image.

Nosing: You may enter the value of the overhang nosing in this field for the three-dimensional image.

Thickness of connecting slab: You may enter the thickness of the slabs that virtually connect to the start and the end of the stairs.

Lower end type: You may choose the type from the figure.

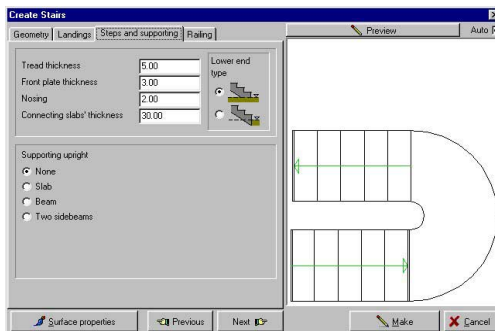


Figure 1-11. Entering the parameters of the steps and supporting

For entering the parameters of the supporting , you need to select the type of the supporting first.

The following types are available:

Slab

Beam

Edgebeam

Thickness of Slab: You may enter the thickness of the supporting in this field. If you enter 0 then the flight and the landing – if you chose it – will be supported up to the floor.

Tread side-hangout: You may enter the side-hangout (overhang) of the tread. You can see the effect of this function in the 3D view.

When you use the beam supporting you need to enter new parameters. These are as follows:

Number of beams: You may enter the number of the beams for supportings in this field.

Distance between beams: When you use multibeam supporting you can enter the value of the distance between them. In case of one beam, it is positioned in the middle.

When you use the edge-beam supporting, you need to enter new parameters instead of the above mentioned two fields. These are as follows.

Beam height above steps: you may enter the height of the beam along the steps as shown in the 3D view.

High beams in landings: you may turn *on/off* the edge-beam elevation along the landings.

If you entered 0 beam-height, the supporting will be constructed down to the floor.

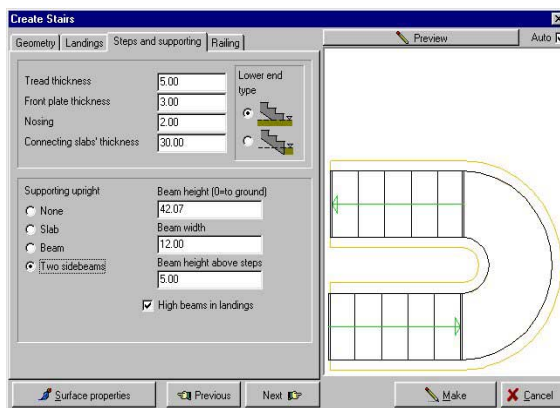


Figure 1-12. Entering the edge-beam supporting

2.7. Entering the parameters of railing

The railing goes on the flight and the program can generate it in three types.

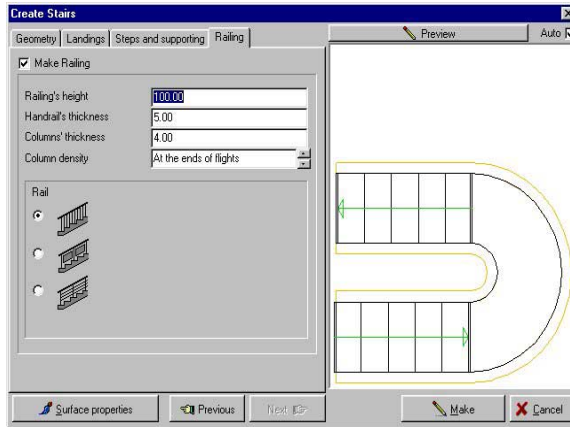


Figure 1-13. The dialog box of the railing

You may enter the following parameters:

Railings' height:

Handrails' thickness:

Columns' thickness: These parameters modify the appearance of the rail.

Column density: Using the small arrow you can change the density (spacing) of the columns.

Type of rail: You may choose it graphically. For the second type, you need to enter the measure of the spacing between the plates and the columns. And for the third type you need to enter the number, the thickness of the slats and the distance between the slats. Clicking on the **Make** icon, the stair will be produced and the stair will appear in every view. It is possible to modify this stair, if necessary in rare cases, by changing the dots, and saving or transmitting it to the floorplan by clicking on the * returning icon.

Content

Stair Designer	3
1 Designing stairs	3
2 Geometry dialog-window	4
2.1 Entering the parameters of straight flight	7
2.2 Entering the parameters of drawn flight	8
2.3 Entering the parameters of curving flights (also spiral staircase)	9
2.4 Entering the parameters of the multi-flight staircase	10
2.5 Entering the parameters of the landings	12
2.6 Entering the parameters of steps and supportings	13
2.7 Entering the parameters of railing	15