

Introduction:

Flexijet 3D makes it easy to site measure so that a 3D model can be imported into Staircon® or Compass® stair construction software. Though the procedure is relatively straight forward, there are however very specific steps in the measuring procedure that must be followed correctly.

Please note that using the “*Measure Floorplan*” command will **not** work for a successful site measure if you wish to export the file to Staircon® or Compass®!



In our example, we have a stairwell as per *fig 1*.

The Flexijet device is placed on the floor for best line of sight.

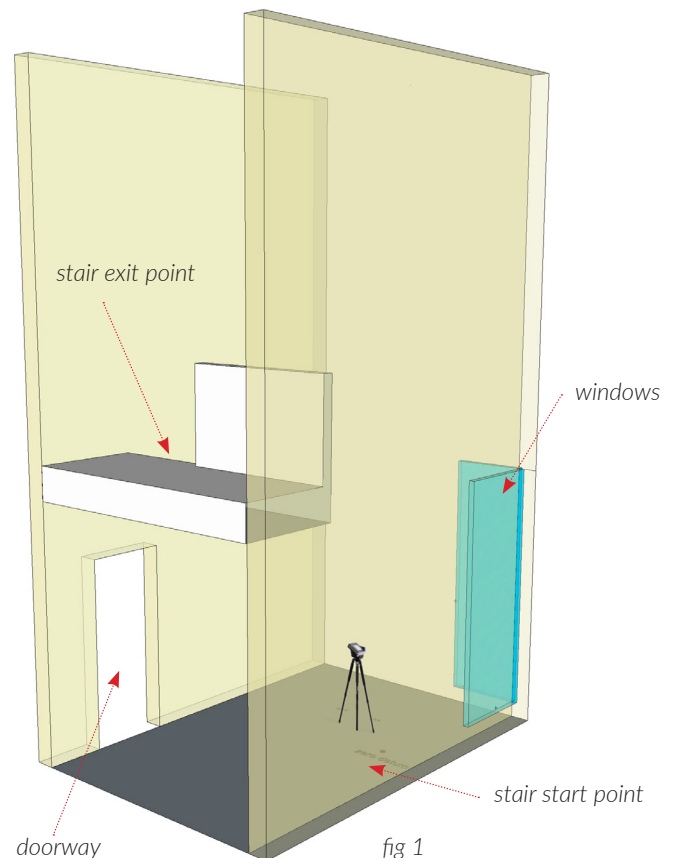
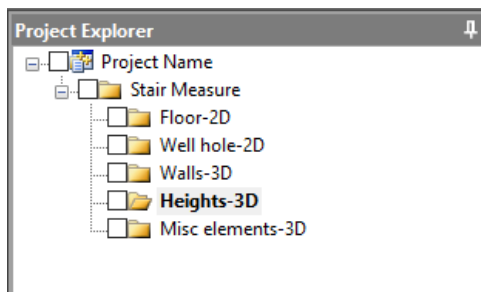
Procedure:

Step 1

Set up your Flexijet 3D so that you have clear line of site to the surfaces you wish to measure. If the site is such that you are unable to do this, then you will need to “Reference” the Flexijet 3D so that it can be relocated later.

Step 2

In your FlexiCAD file, create the following Folder structure in the *Project Explorer* window.



The names you use are not critical, though you must be consistent and place the correct measured elements in the correct folder. Also, the folder names indicate whether measurements will be performed in 2D mode (converted to horizontal planes) or 3D mode.

If you will be measuring stairs on a regular basis, then save the FlexiCAD file as a template after you have set up the folder structure. It will save you time on future measurement jobs.

Step 3

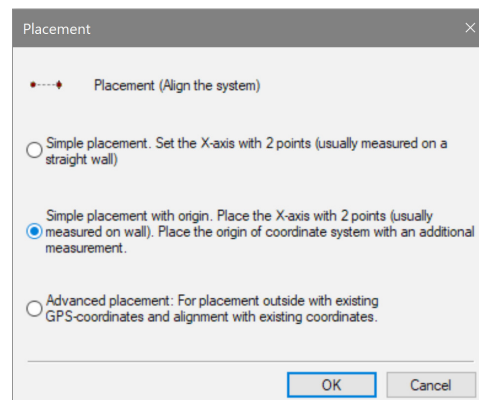
Once you are ready to proceed (the Flexijet 3D has made the connection to FlexiCAD), Auto level the Flexijet device.



Step 4

With the Align to Object command, use one of the walls to align your drawing to the x axis. You **must** use the second option (simple placement with origin).

Measure a point on the wall left, second point on the wall right (this aligns the drawing to the x-axis) and then a third point on the floor (this will place the xyz origin on the floor and will have the coordinates of 0,0,0). This last point must be placed on the floor at the approximate location of the beginning of the stairs.

**Step 5**

Select the **Floor-2D** folder and convert this to a horizontal plane to represent the floor level.

Note:

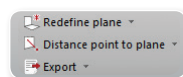
We already know the floor level from Step 4!

So instead of shooting the laser on the floor, just type 0,0,0 in the command window and presto, the folder is transformed into a horizontal plane!

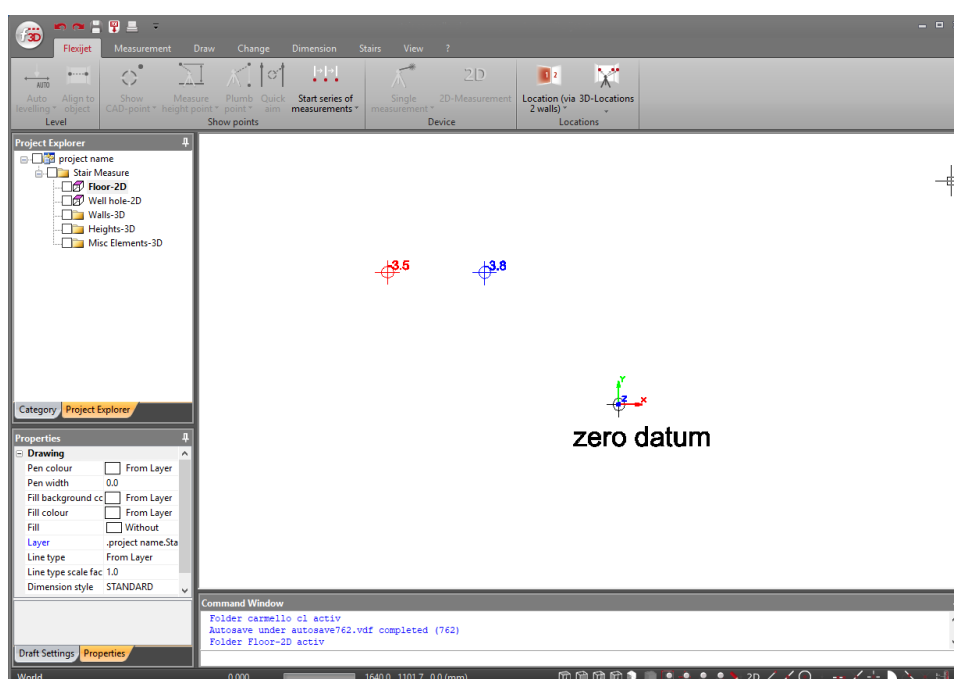
In this folder you can now place measurements of floor levels for later reference if desired.

For example:

- Show the xyz origin on your drawing.
Select the **Points** command and simply type 0,0,0.
This will place a CAD point at the xyz origin measured above at the foot of the stairs.
You can now use your text tool to label this (eg. zero datum).
- Show variations in the floor level (eg where the structural posts of your staircase will be located). Select the **Distance point to plane** command and shoot the laser at any number of locations on the floor. Press ESC to finish.



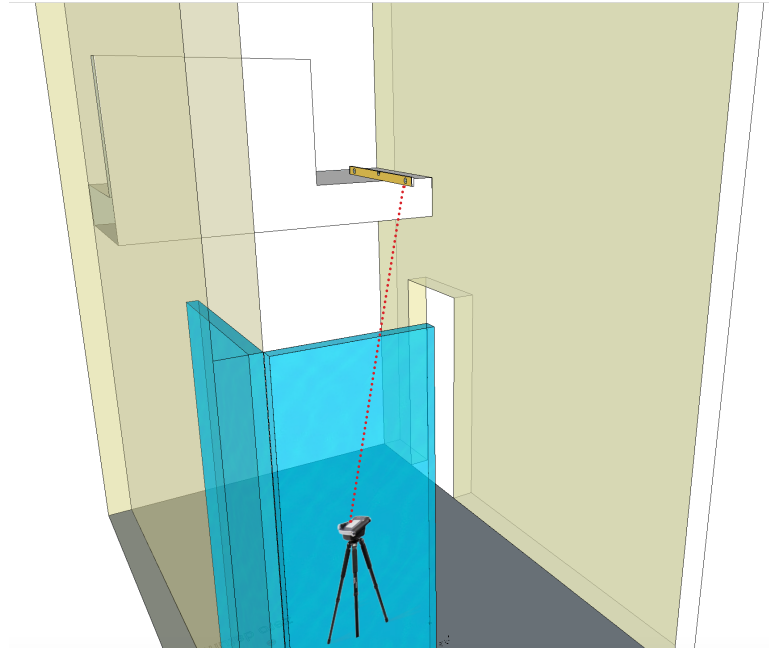
Your drawing should now look something like this:



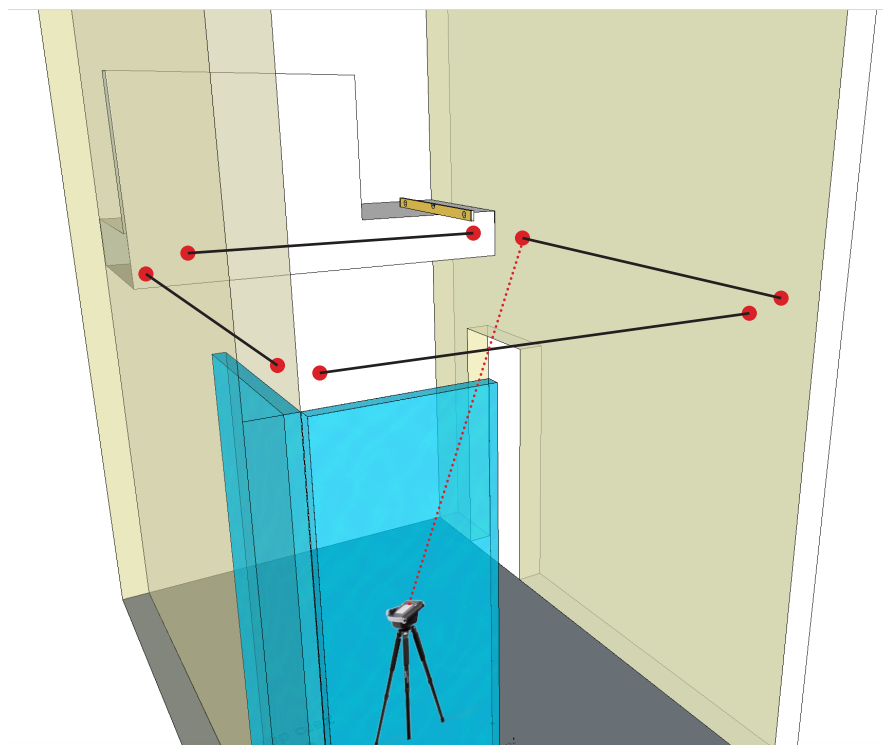
Step 6

Select the **Well hole-2D** folder. In this folder we will measure the stair well opening at the level of the exit step on the first floor. You must now convert the Well hole-2D folder into a horizontal plane at first floor level. Place a straight edge or a spirit level hanging over the first floor as shown below:

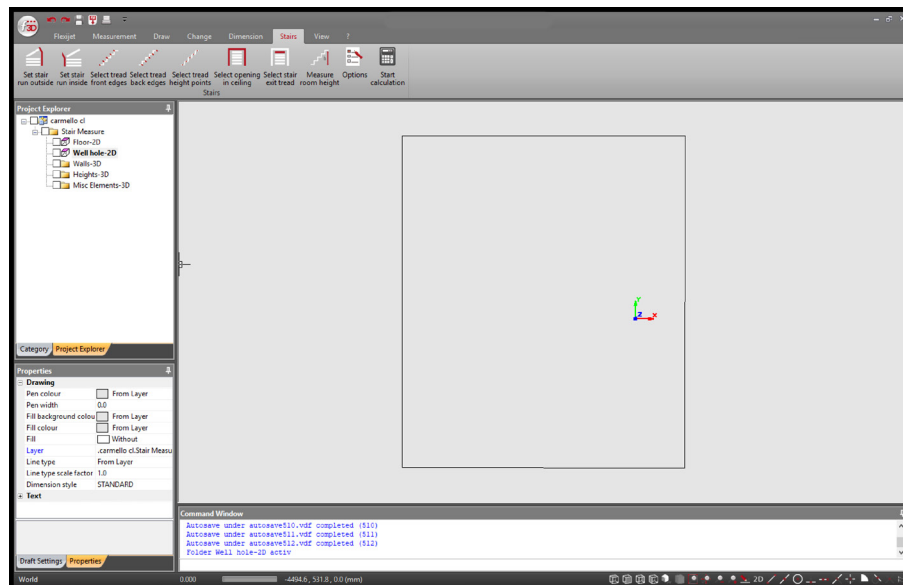
Convert the **Well hole-2D** folder to a horizontal plane by shooting the laser to the underside of the straight edge.



Select the **Multiple lines** command and measure the perimeter of the stair well (or well hole) at roughly the first floor level (shown below). Measure in a continuous direction and then press F6 to close the lines.



Your drawing should now look like this below (please note that this is a simple well hole with just 4 sides. You may have something that has more sides than this. It is important however that you measure near the level of the horizontal plane at the first floor and that the final element is closed (by using F6).



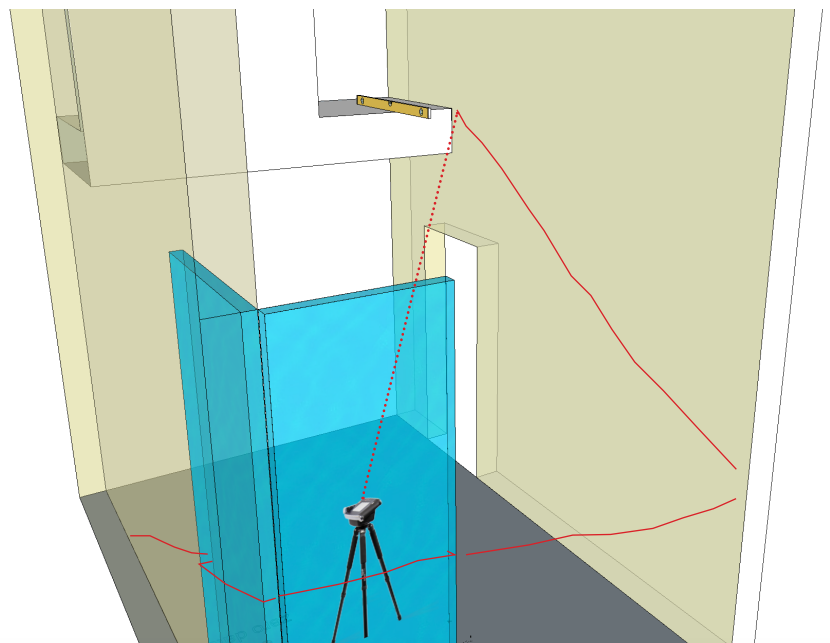
Step 7

Select the **Walls-3D** folder. Here we will measure the contour of the walls roughly where the stringer will be fixed to the wall. We will use polylines for the measurements and this must be done in a 3D folder, so leave this folder as is (do not convert to a vertical plane).

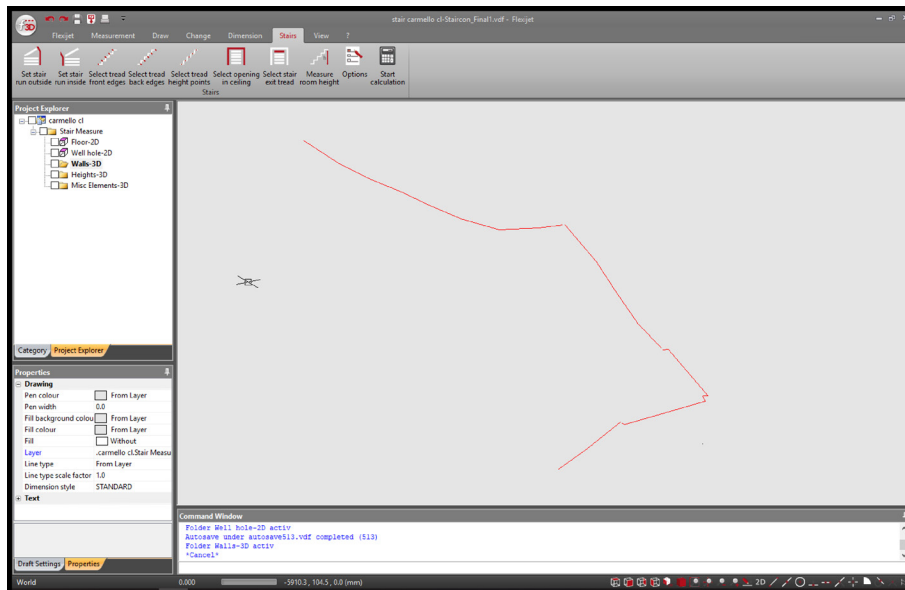
Select the **Polyline** command. Start at the wall where you expect the bottom of the stairs to be and shoot as many points as you think necessary following the climb of the stringer up the wall. When you finish the first wall, press ESC. Then select the **Polyline** command again and continue your measurements up the next wall. Repeat until you reach the first floor. **Do not** try and measure all the walls as a single continuous polyline. You must start a new polyline for each wall. Also if you have the stringer running across windows, start new polylines and measure in and out of the windows.



See the path followed on the image right.



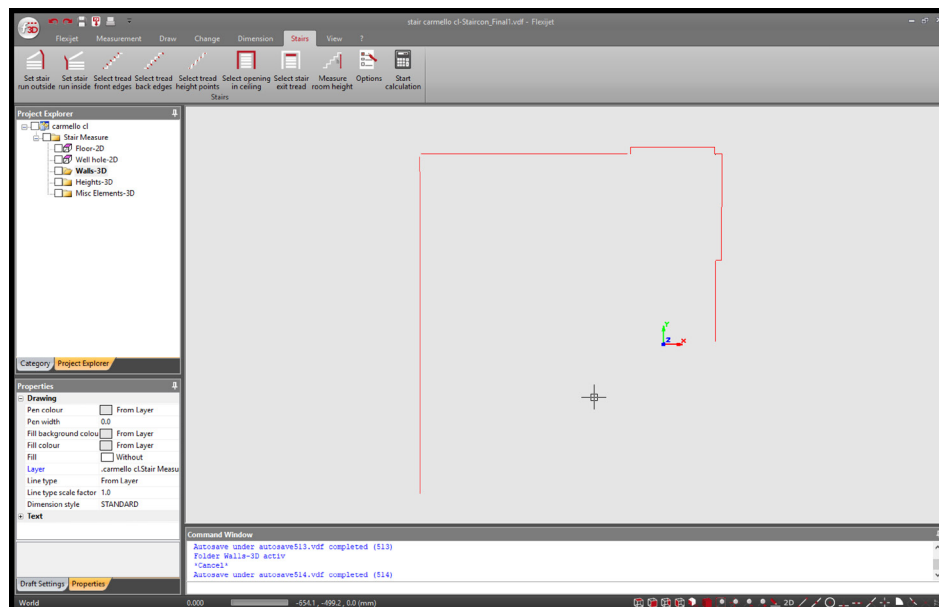
Your polyline may look strange when viewing in 3D. But it will be correct. It may look something like this:



Switch to plan view by clicking this icon at the bottom of the command window.



Your drawing will make more sense in this view and should look something like this:



Step 8

Select the **Misc elements-3D** folder. Here we will measure the location of items that may be important in the design and location of the staircase. These could be electrical fittings or electrical cables, location of doorways etc.

These measurements must be done in a 3D folder. This may seem contrary to what we normally do where we would normally measure these elements on the vertical or horizontal plane. The reason is that Staircon® or Compass® cannot handle the exported file if it contains these planes. A 3D folder will import with less problems and you will still be able to determine the location of these elements when imported into Staircon® or Compass®.

Also, do not use any saved blocks to measure these elements as these only work on planes. You will measure the location of these elements by simply using lines. Keep these drawings as simple as possible. For example for the location of a cable or a power point, I would simply put a cross hair at the centre of the element such as:

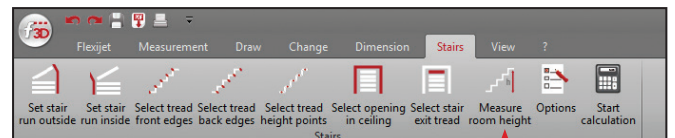
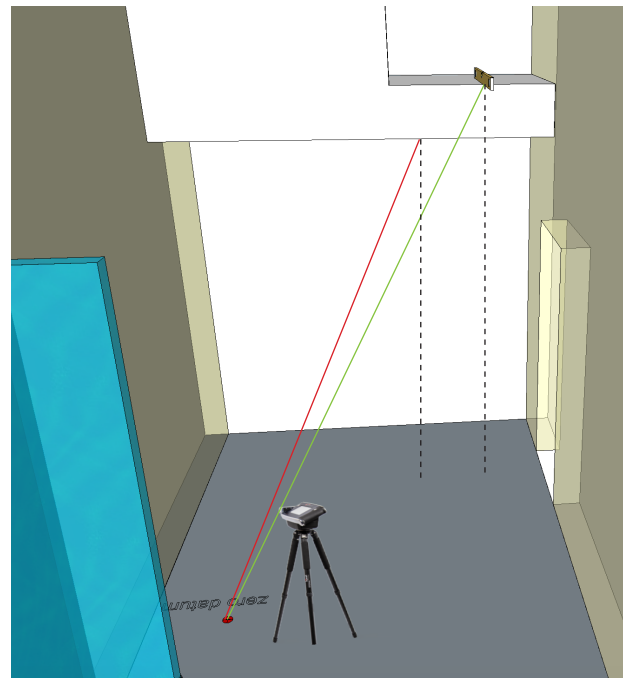


It may not look pretty, but this simplicity will reduce any problems during import.

Step 9

Select the **Heights-3D** folder in the Project Explorer window. Here we will use a special function in FlexiCAD to measure the heights of the staircase exit at the top floor.

We will measure 2 heights, the height of the top floor (green line) and the underside ceiling of the top floor (red line). Both of these are measured to our xyz origin. FlexiCAD will then calculate the exact vertical height (clear height) point as shown (black dashed lines).



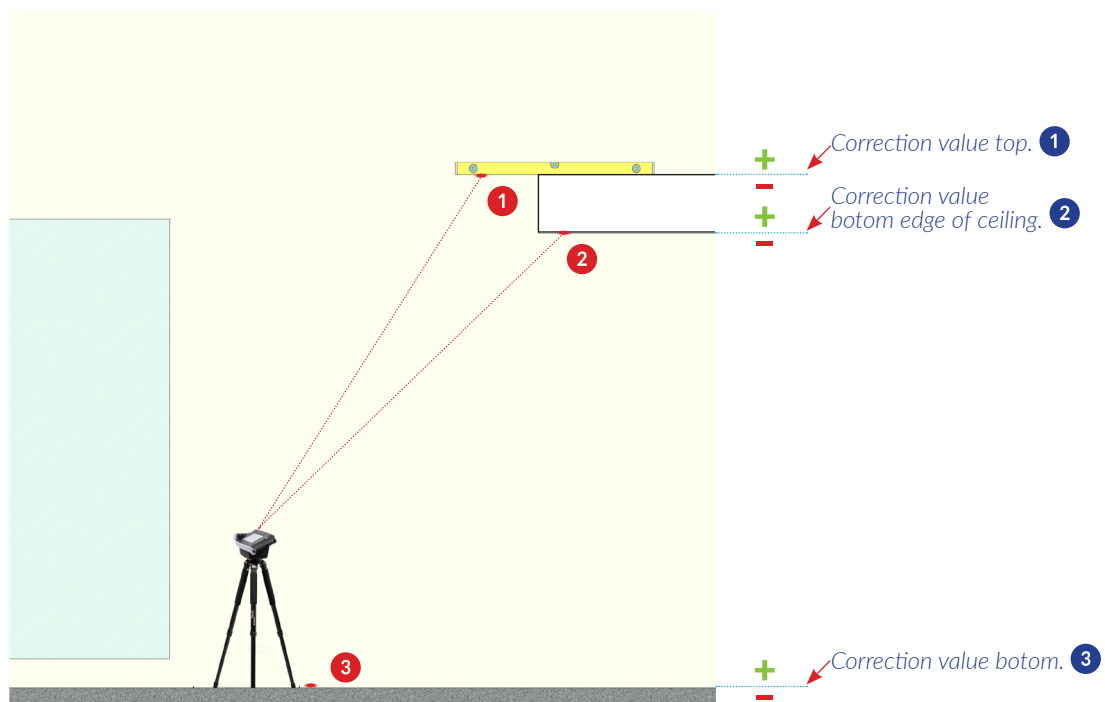
Select the **Stair** tab in FlexiCAD and then select the

Measure room height command.

FlexiCAD will then ask you to respond to the following 3 questions:

- **Enter correction value top: <0.0>**
To allow for a floor finish (tiles, carpet etc) enter a value in mm here, then press **Enter**. (See ①)
- **Enter corection value for the bottom edge of the ceiling: <0.0>**
To allow for an unfinished ceiling under the first floor (eg plasterboard), enter a value in mm here, then press **Enter**. (See ②)
- **Enter the correction value bottom: <0.0>**
To allow for an unfinished floor (eg tiles, floorboards etc), enter a value in mm here, then press **Enter**. (See ③)

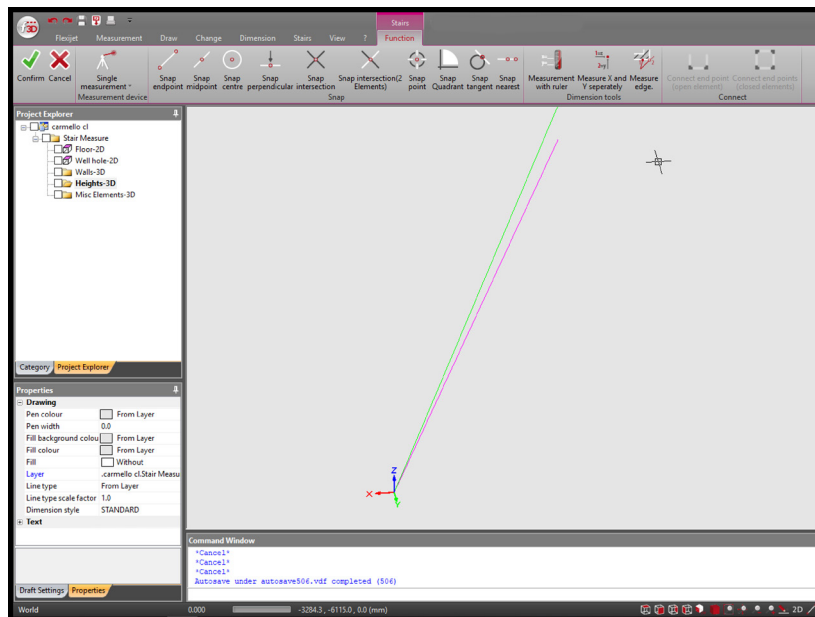
The <0.0> signifies that the default value is zero. Simply press **Enter** to accept the default value.



On completion of the above entries, follow the following instructions from FlexiCAD:

- **Measuring point at the top (top edge of unfinished or finished floor at the last step).**
Aim the laser to the underside of the straight edge or spirit level that you previously placed overhanging the top floor ①.
- **Measuring point at the top (lower edge of ceiling).**
Aim the laser to the underside of the ceiling surface under the top floor ②.
- **Measuring point at the bottom (unfinished or finished floor at the starting step).**
As we have already determined this at the beginning of procedure when we used the **Align to Object** command, enter the value of the xyz origin in the command window... which is 0,0,0 then press **Enter**. Do not attempt to shoot the laser for this command! ③

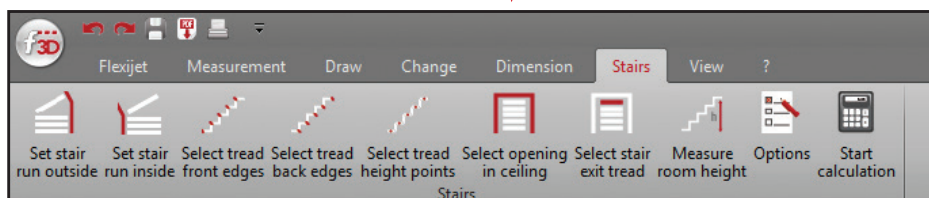
Your drawing in this folder should now look something like this:



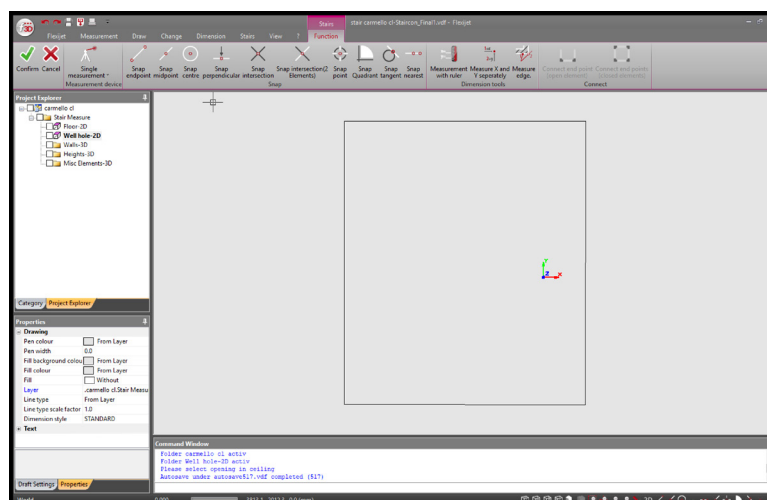
Step 10

All the required measurements are now complete, and all that is now required is to define the final elements so that the file is ready for export.

- Select the **Well hole-2D** folder. In the **Stairs** tab, click on the **Select opening in ceiling** command.



- FlexiCAD will then ask you to **Please select opening in ceiling**. Click on one of the lines drawn in the **Well hole-2D** folder.



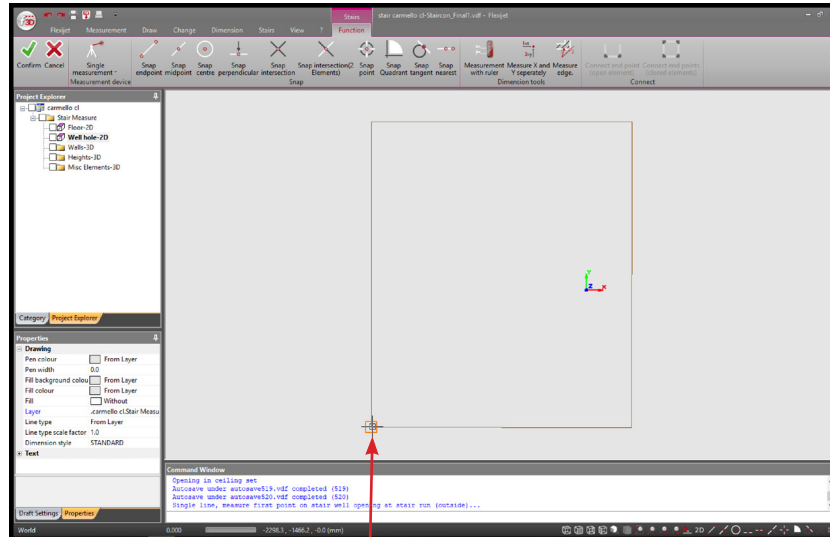
- FlexiCAD will then confirm that **Opening in ceiling set**.

Step 11

With the **Well hole-2D** folder still selected, you must now click on **Select stair exit tread** command in the **Stairs** tab. You must now draw a line on the position where the stair exit tread is located. Follow the following instructions in the command window:

- **Single line, measure first point on stair well opening at stair run (outside)...**

Click on the corner next to the wall and on the exit tread. See image below.

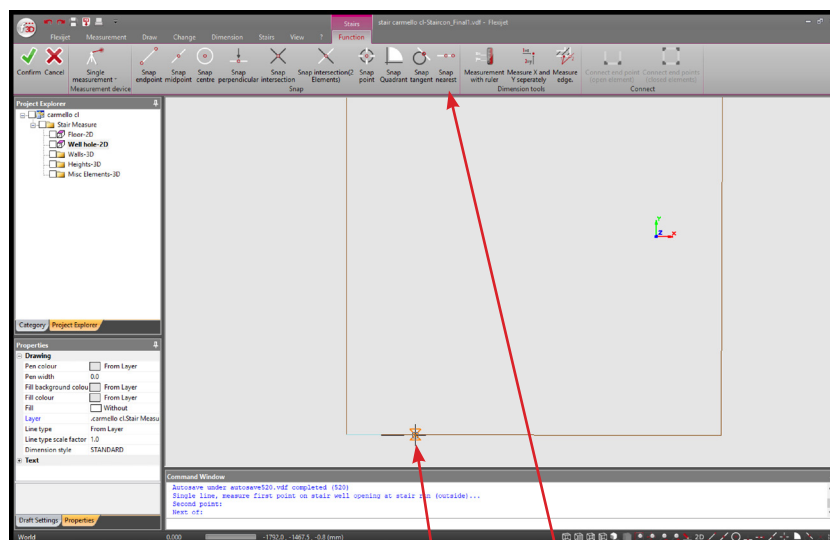


Click here to start. Do not start anywhere else!

The start point must be next to the outer wall and at the exit point of the stairs. Use 'Snap endpoint' to click accurately.

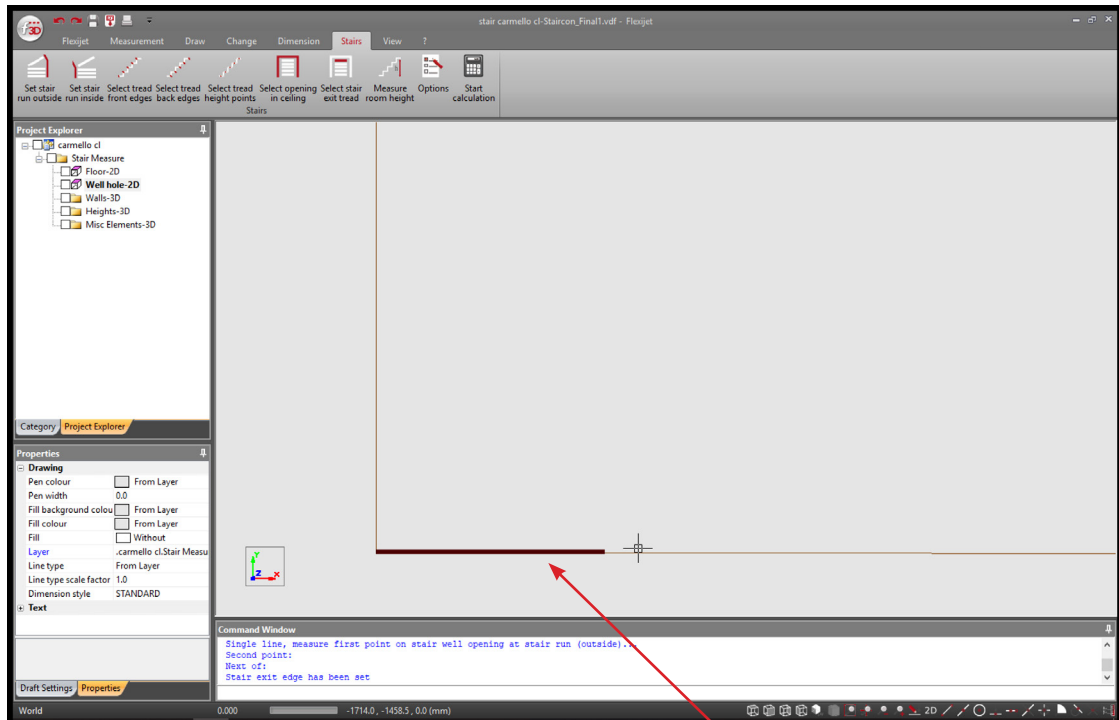
- **Second point.**

Click a second point to create the exit tread line. Use 'Snap nearest' to ensure that you snap on the line. Please note that the length of the line is of little importance, so the length can be anything. It is more important to get the position correct.



Click here for the second point.

Use 'Snap nearest' to click accurately.

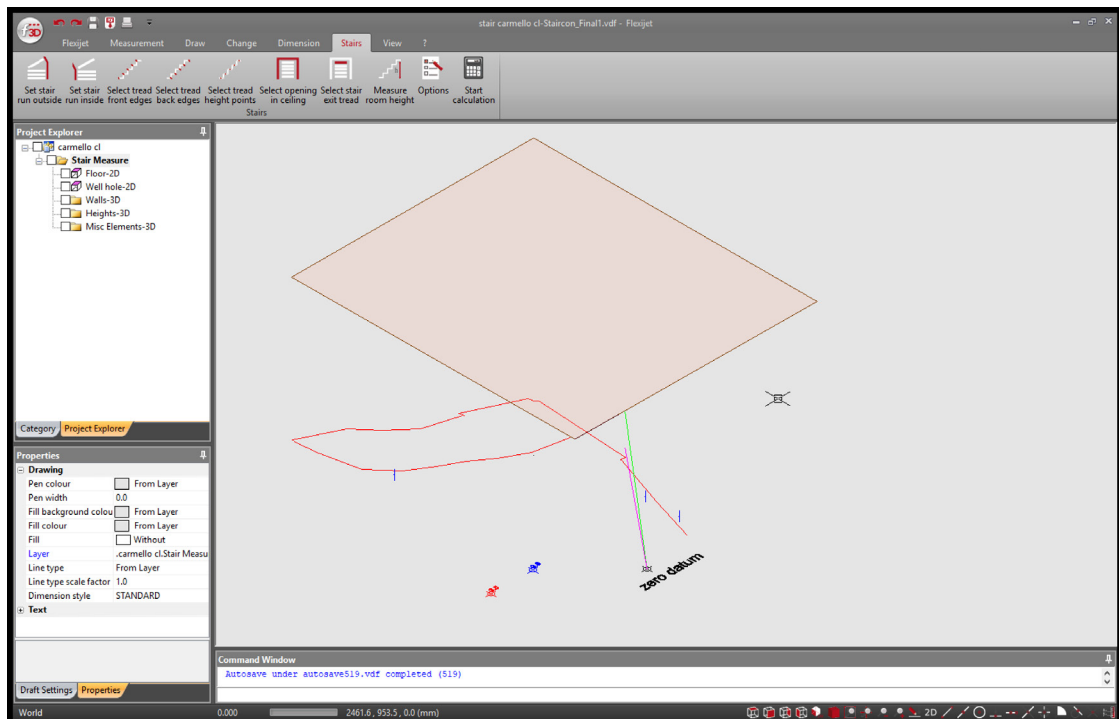


- *Stair exit edge has been set.*

This command will be shown on the successful completion of the command. The drawn line will be shown as a thick brown line.

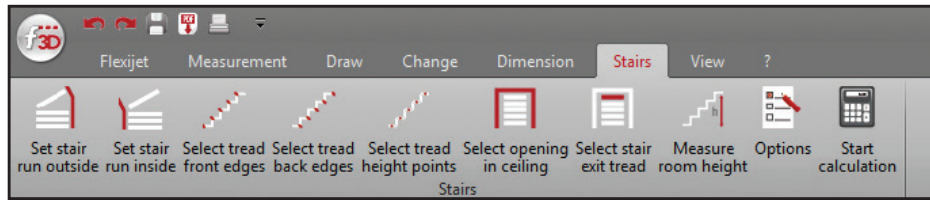
Step 12

Click on the Stair Measure folder so that all the measurements are now visible.

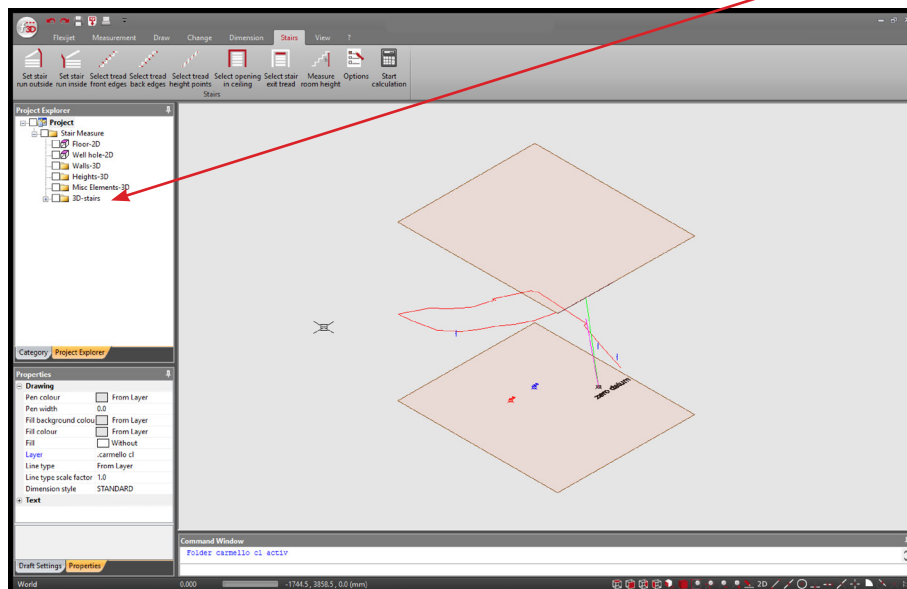


Step 13

Click on *Start calculation*.



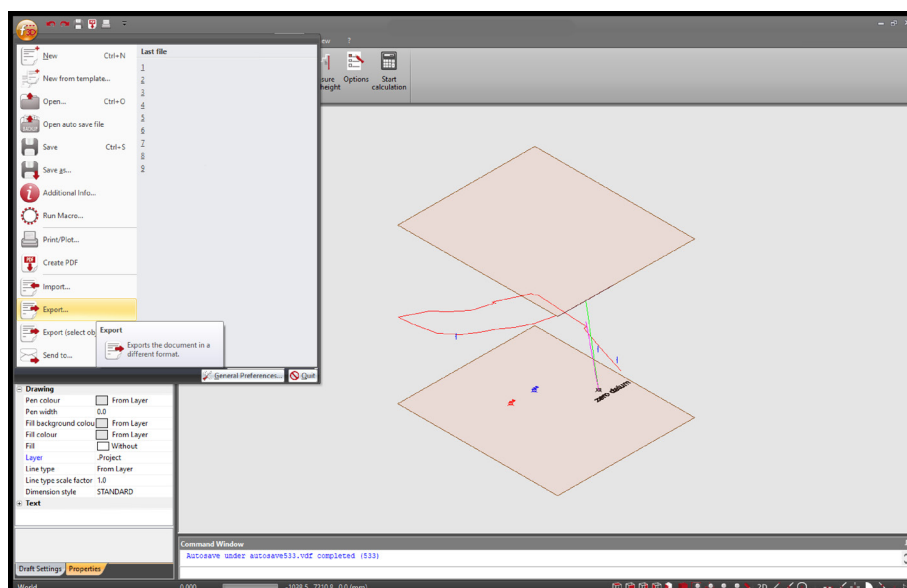
A new folder is now created in the *Project Explorer* window called *3D-stairs*.



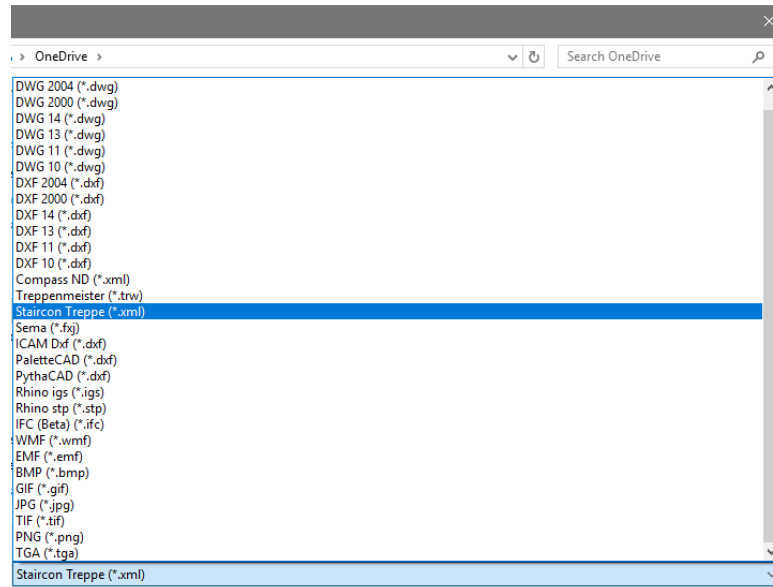
All the measurements are now complete and the file is now ready for export.

Step 14

- Select *Export* from the *FlexiCAD Start* menu.



- Select Staircon Treppe (*.xml) to export the file for Staircon®.



OR

- Select Compass ND (*.xml) to export the file for Compass®.

FINISH