

TurboCAD Pro V17.2 – Spiral Stairs

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Special Note

All of the work presented within this tutorial is based on TurboCAD Pro V17.2. Although users of previous versions are welcome to try the tutorial it cannot be stated what results will be achieved. Many changes, some subtle and others not so subtle, are made with each program revision. Although many steps and directions would be generic some may not be. The same can be said for tools between versions. Older versions may not have the same tools as Pro V17.2 and if the same tools are available the tools themselves may have been revised and hence, work in a different manner than they previously did.

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Introduction

There is no denying that a set of metal spiral stairs is very cool. What is almost as cool is the process to create the stairs in TurboCAD. Although some calculations are required the overall construction is not as complex as it might appear. Using the not so well known Transform Recorder tools makes the job even that much easier.

Within the tutorial the reader will be led through each keystroke to produce all components of the spiral stairs that are illustrated on the cover of the tutorial. The user will learn how to insert standard lighting and how to utilize render scene luminance. The reader will learn how to establish a render scene environment and the reader will learn how to render their drawing and save it in a high resolution image format.

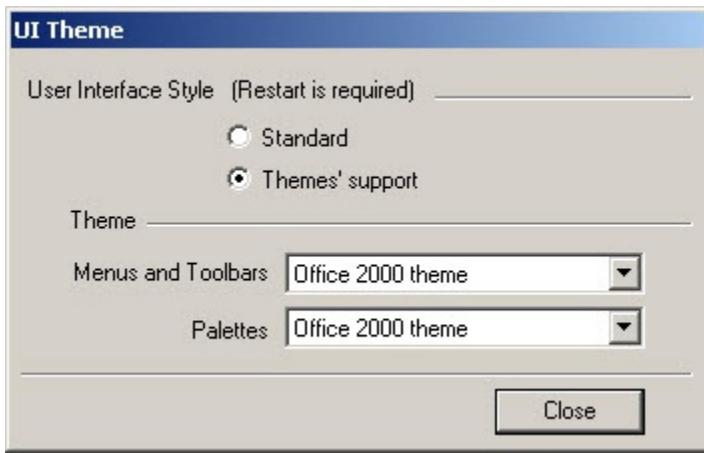
This tutorial is in no way intended to teach the fundamentals of stair design or construction but rather it is intended to teach the use of some of the tools that TurboCAD has to offer and to introduce the new user to a drawing methodology. The author feels confident that the techniques outlined within the tutorial can help lay the foundation for future successful TurboCAD drawing and illustration for even the newest user.

As with any technically advanced software, the user is generally faced with a steep learning curve. It is the hope of the author that the money and time spent working through a Textual Creations tutorial will help ease the learning and allow the reader to come away feeling confident that they made a wise decision.

This tutorial will assume that the reader has the Platinum edition of TurboCAD Pro V17.2 with its extra architectural and mechanical tools although no Platinum specific tools are used, that the author is aware of.

There are many ways to approach a project and it is likely that each person using the program would proceed in very different ways, so be open to alternative methods as experience builds. What is important is that the user becomes familiar with the objects that they wish to model and begin to look at them in a different way than they might otherwise do. What primitive shapes make up the whole? What will be required of these primitive shapes early in the drawing and how will this affect needs further along? What component or components should be started with? Many questions can only be answered through experience, but hopefully some of them will be answered by the time the beginner has worked through this tutorial. There is a great deal covered in this tutorial and the author urges the beginner to be patient, to read very carefully and to take the time necessary to do a good job. Try to enjoy the process as much as you will enjoy the final results.

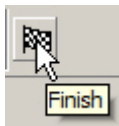
This tutorial assumes that the beginner has studied the desktop to some degree and can locate most of the tools. Since there are endless desktop configurations that can be set up in TurboCAD the author has opted to illustrate the required tools with the Office 2000 user interface, and the default toolbars in their undocked format (Office 2000 theme).



Please remember that any supplied images and files are for use within the tutorial only and may not be shared or sold to others.

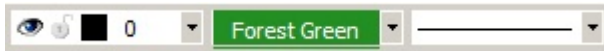
Place tutorial images in a permanent location on the hard drive.

Select **Finish** from the Inspector Bar or right mouse click local menu.

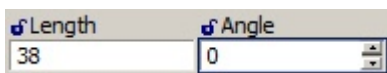


To begin creating the stair profile, select the **Line** tool from the Line toolbar.

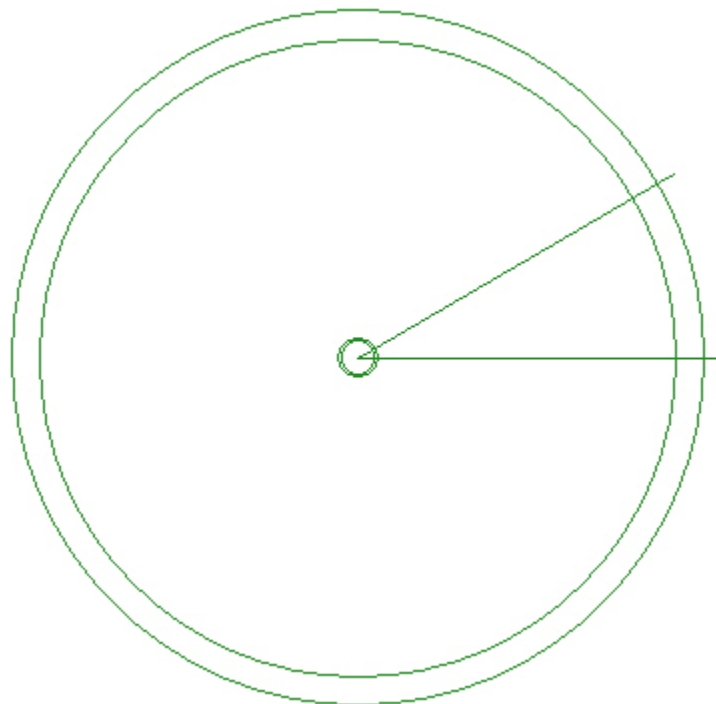
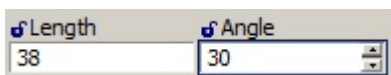
Select **Forest Green** from the color dropdown menu on the Property toolbar.



Place the cursor by the edge of a circle and **C SEKE** snap to place the first point of the line. Tab into the Inspector Bar and enter **38** in the Length field and **0** in the Angle field. Press Enter.

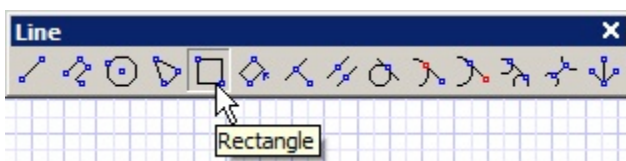


Place the cursor by the edge of a circle and **C SEKE** snap to place the first point of the next line. Tab into the Inspector Bar and enter **38** in the Length field and **30** in the Angle field. Press Enter.

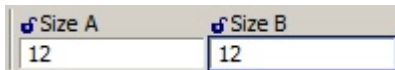


Building code, as far as the author knows, requires that the tread be a minimum of 7.5 inches deep at 12 inches away from the inside edge and 18 at the outside.

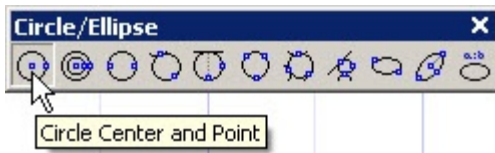
To help determine if the current design complies with this requirement, select the **Rectangle** tool from the Line toolbar.



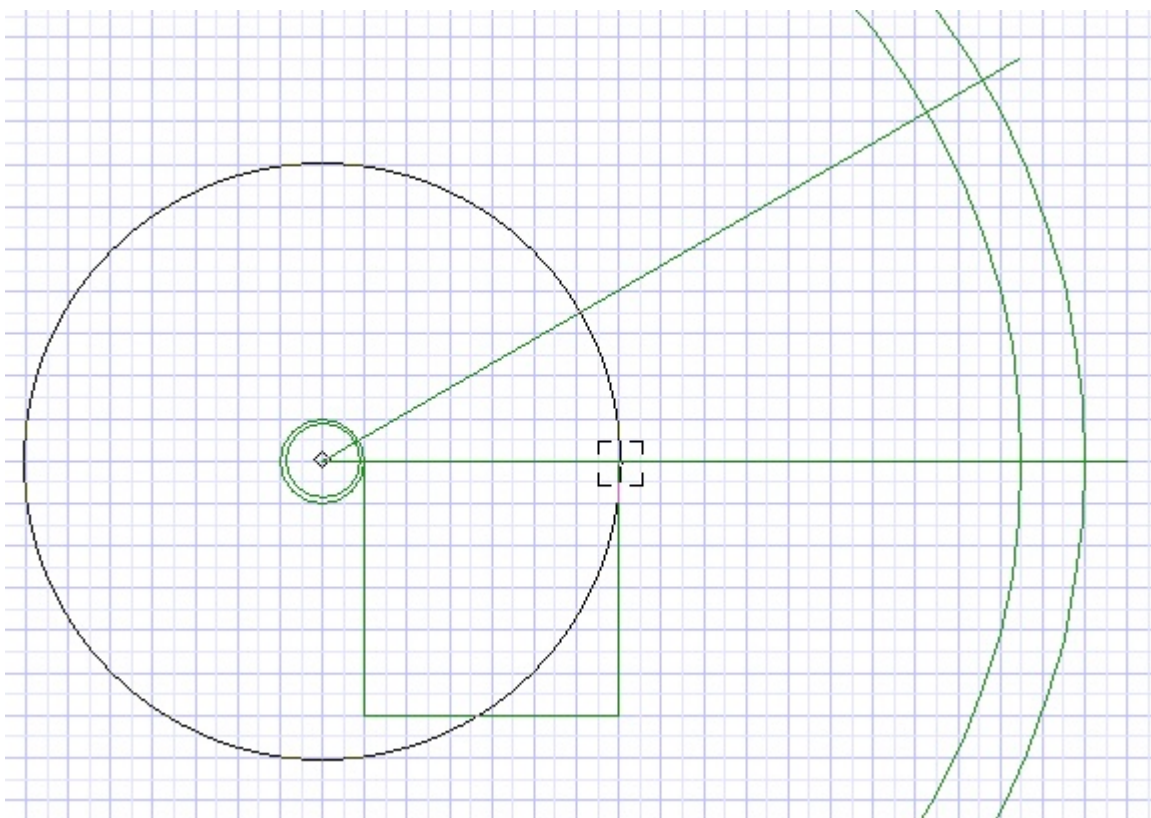
Q SEKE snap the right quadrant point of the 4 inch circle to place the first point of the rectangle. Move the cursor in a right downwardly direction for a short distance and then Tab into the Inspector Bar and enter 12 in the Size A field and 12 in the Size Y field. Press Enter.



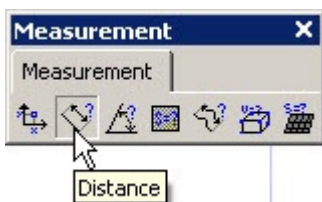
Select the Circle Center & Point tool from the Circle/Ellipse toolbar.



Place the cursor by the edge of a circle and C SEKE snap to place the first point of the circle. Move the cursor to the upper right corner of the rectangle and V SEKE snap to define the diameter of the circle. In progress below.



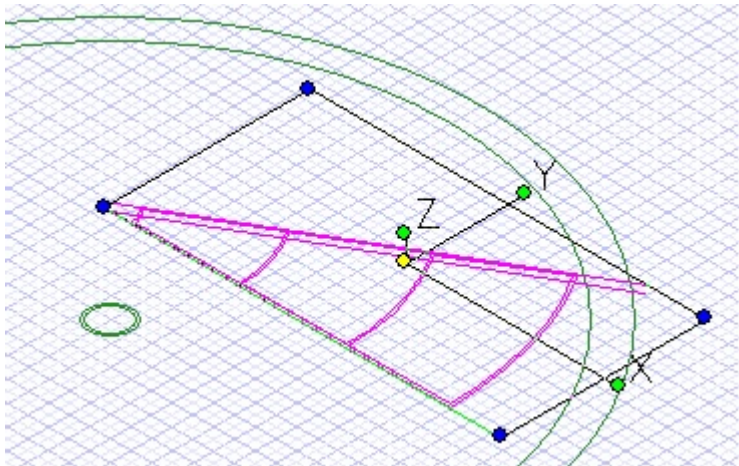
Select the Distance tool from the Measurement toolbar. The Measurement Info palette opens automatically.



Using two I SEKE snaps determine the distance as indicated in the picture below.

Tab into the Inspector Bar and enter (or paste (Ctrl + V) if copied) 9.114583333333333 in the Delta Z field. Press Enter.

Delta X	Delta Y	Delta Z
0 in	0 in	9.114583333333333

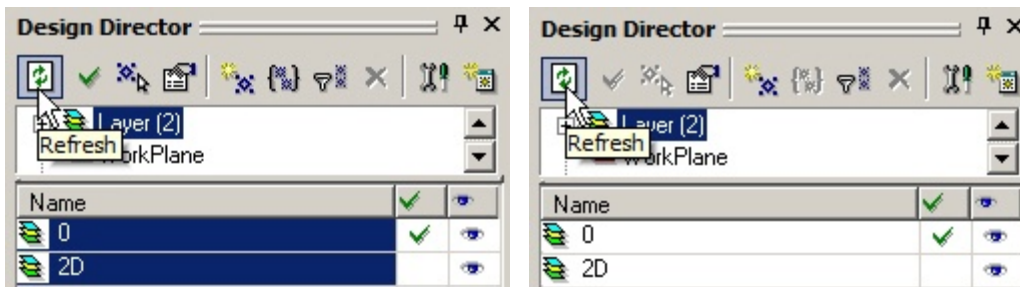


Stair – 2D to 3D

It is now time to start turning the 2D profiles into 3D constructs.

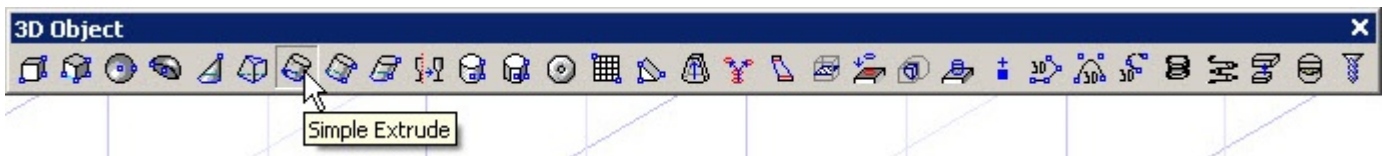
Press Esc to deselect the selection.

Select Refresh at the top of the Design Director to deselect any layer names, otherwise they will be turned off, en masse, when the 2D layer is turned off.



Turn off the 2D layer.

Select the Simple Extrude tool from the 3D Objects toolbar.



Select the Use Compound Profile option.



Press and hold the Shift key down. Select the four Blue profiles, beginning with the outside profile, as the object to extrude. Release the Shift key. Tab into the Inspector Bar and enter -1.5 in the Height field. Press Enter.

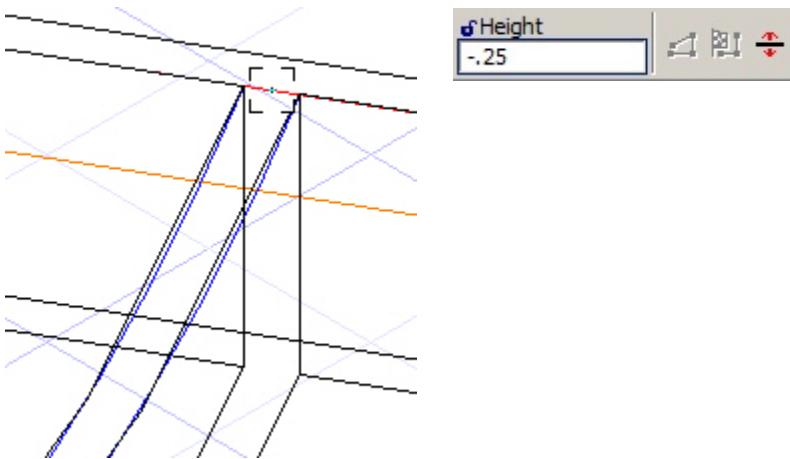


Turn on the 2D layer.

Disengage the Use Compound Profile option.



Select the Red profile as the object to extrude. Tab into the Inspector Bar and enter -.25 in the Height field. Press Enter.

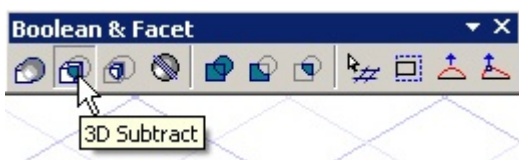


Turn off the 2D layer.

Press Ctrl + K to open the Select by Colors dialogue. Select Blue and click OK.

Assign the selection to the 2D layer.

Select the 3D Subtract tool from the Boolean & Facet toolbar.



Select the Don't remove the subtrahend option.



Select the main stair frame as the object to subtract from and then select the last extrusion (insert) as the object to subtract. In progress below.

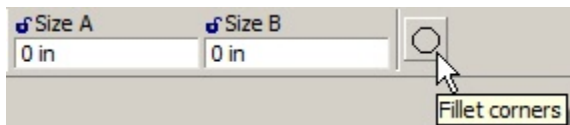
Zoom in on the top of the right baluster.

Select Auto Workplane by Face from the Workplane toolbar.



Select the Rectangle tool from the Line toolbar.

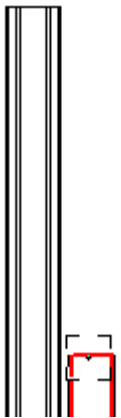
Select the Fillet Corners option.



Tab into the Inspector Bar and enter 1/16 in the Radius F field. Press Enter.



Place the cursor near the middle of the upper line, making sure that the nearer face is highlighted, and M SEKE snap to place the first point of the rectangle.

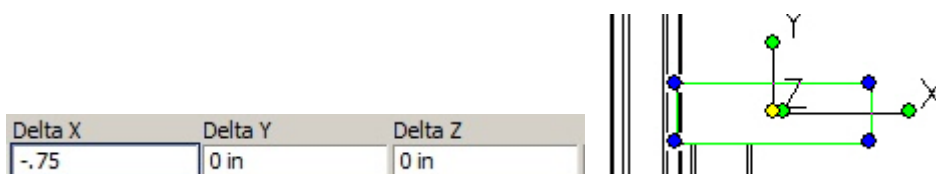


Move the cursor in a right upwardly direction for a short distance and then Tab into the Inspector Bar and enter 3.25 in the Size A field and 1 in the Size B field. Press Enter.

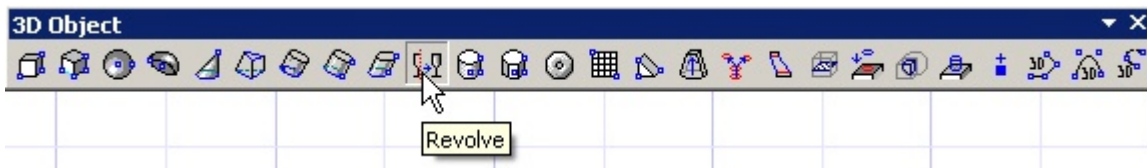


Press the Space Bar to exit the tool.

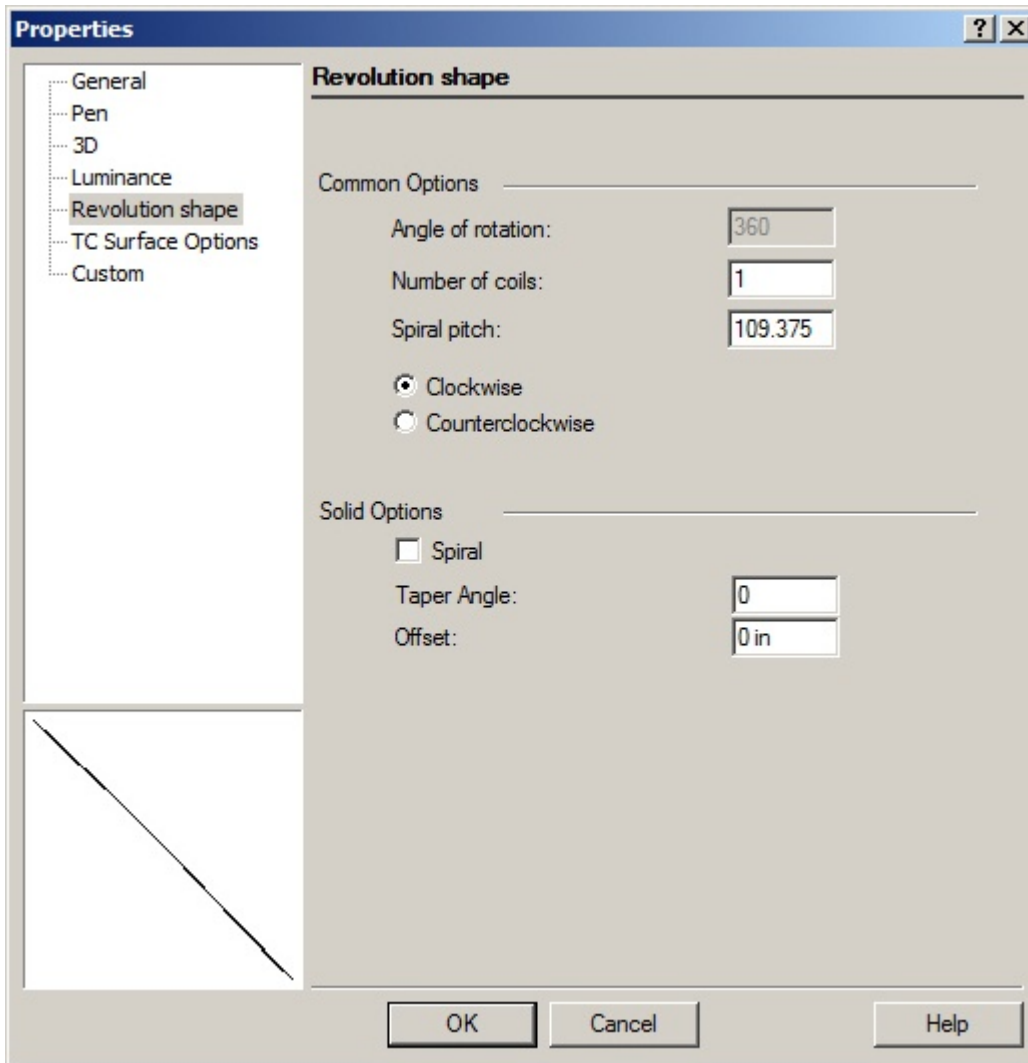
Select the rectangle. Tab into the Inspector Bar and enter -.75 in the Delta X field. Press Enter.



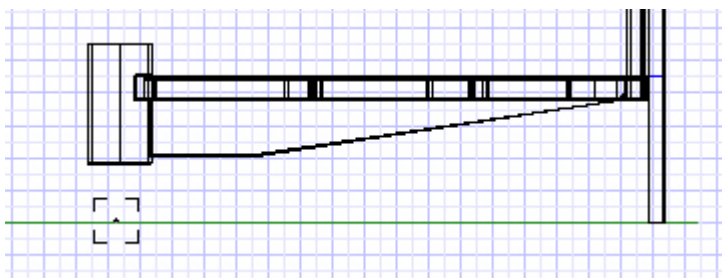
Select the Revolve tool from the 3D Object toolbar.



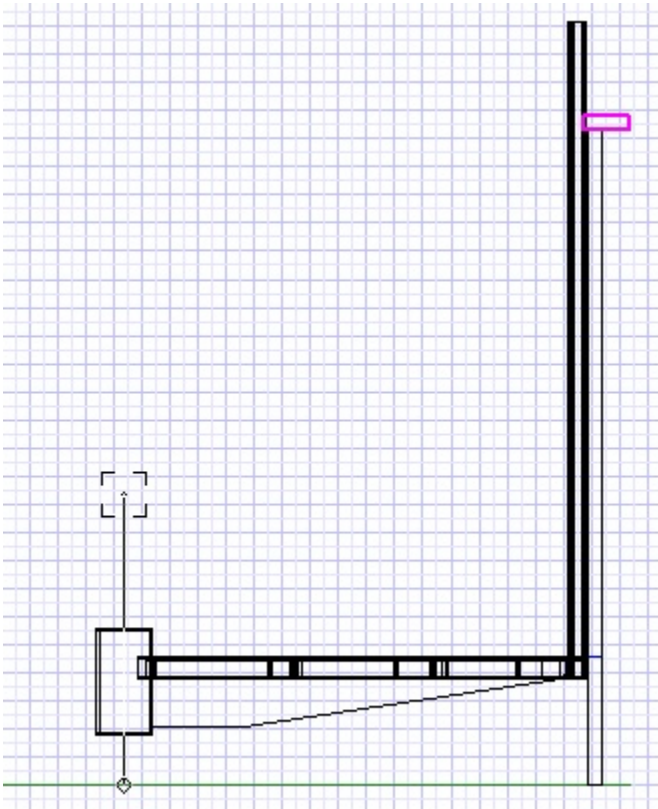
Right mouse click on the Revolve tool icon to open the Properties dialogue. Under the Revolution shape tab, enter a Spiral pitch of 109.375. Click OK.



Select the handrail profile as the object to revolve and note how the workplane (reflected by the grid) has aligned with the profile. C SEKE snap the edge of the lower Forest Green circle to define the first point of the revolution axis.

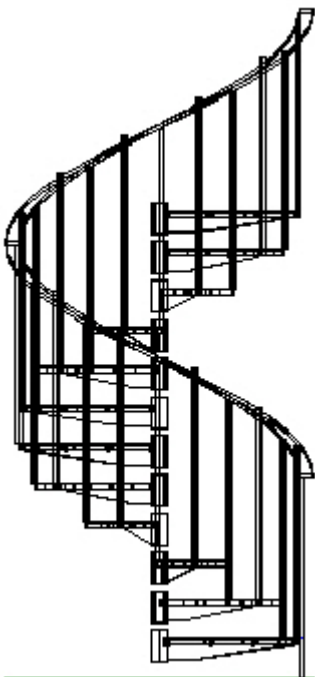


Press and hold the Shift key down. Move the cursor in an upwardly direction for a short distance and then left mouse click to define the second point of the revolution axis. Release the Shift key. In progress below.



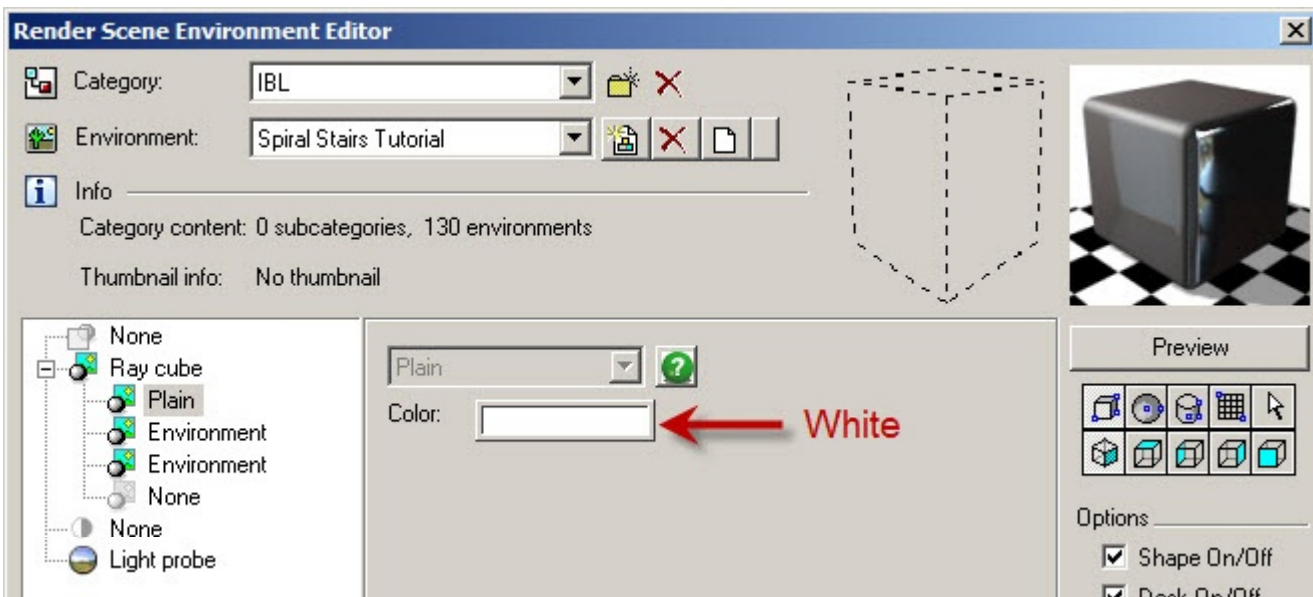
Press the Space Bar to exit the tool.

Turn on the Stairs layer.

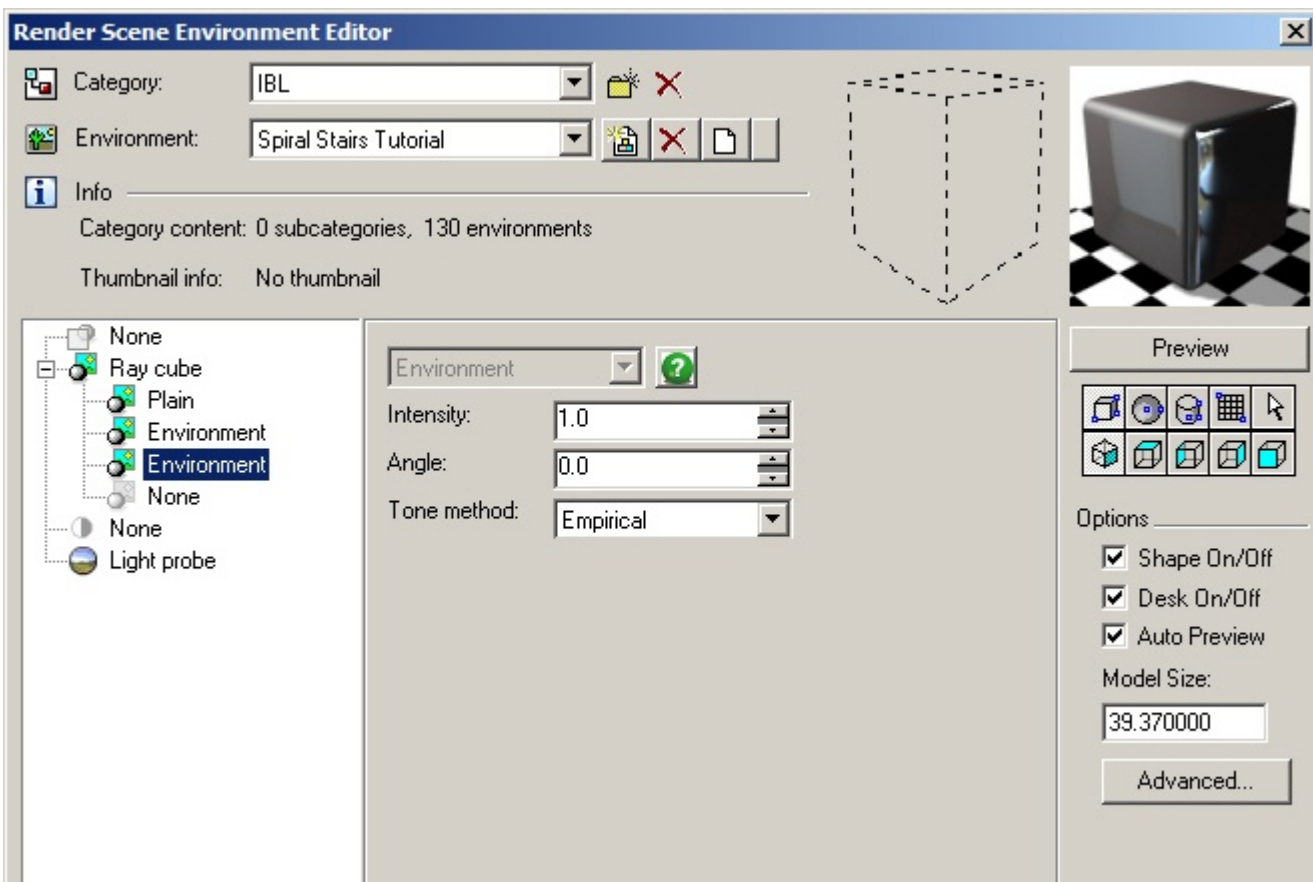


Switch to Isometric SE view.

Select Plain. Left mouse click on the color box to open the color menu and then select White.



Left mouse click each of the **two** Environment tabs and ensure settings all three settings are as indicated in the picture below. This setup will reflect the light probe from the two sides, but it will not be visible as an image in the background since plain is set for that shader. The last shader is required to be set to None, otherwise the hdr background is reflected in the wrapped mask of the tread inserts holes.



Click OK to exit the Render Scene Environment Editor and click OK to exit the Drawing Setup dialogue.

Allow the scene to re-render (2 minutes, 9 seconds on the author's off the shelf Acer).



Saving the Rendered Image

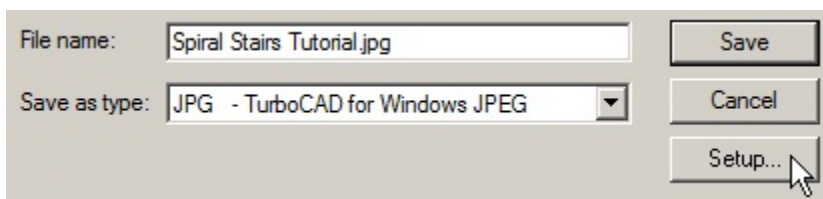
This render will now be saved.

With the desired view now fully rendered on screen select **Save As** from the **File** menu at the top of the TurboCAD desktop.

Under the **Save As** dialogue, select the desired **Save in** location from the dropdown menu at the top of the dialogue.

Select **JPG – TurboCAD for Windows JPEG** from the **Save as type** dropdown menu.

Enter the file name **Spiral Stairs Tutorial.jpg**. Select **Setup**.



Adjust the setting to match those in the image below. Click **OK**.

