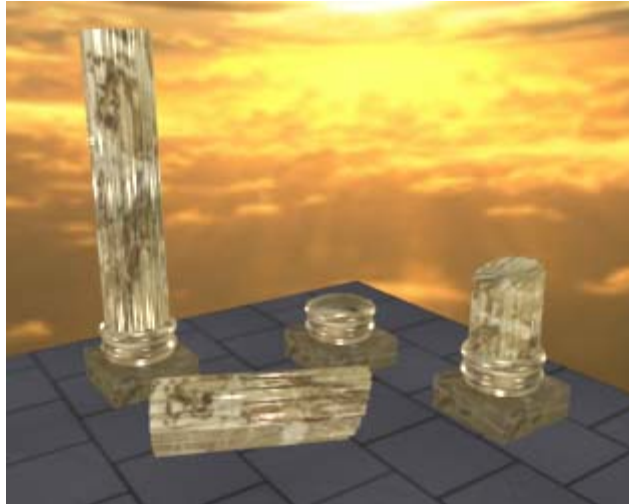


Course: 3D Design
Title: Bezier Curve Modeling – Column
Dropbox File: Column.zip
Blender: Version 2.41
Level: Beginning
Author: Neal Hirsig (nhirsig@tufts.edu)

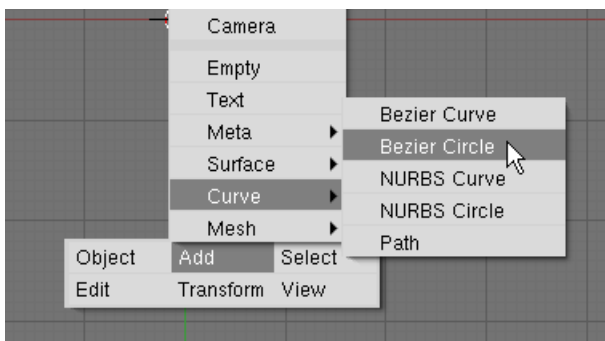
Bezier Curve Modeling – Column



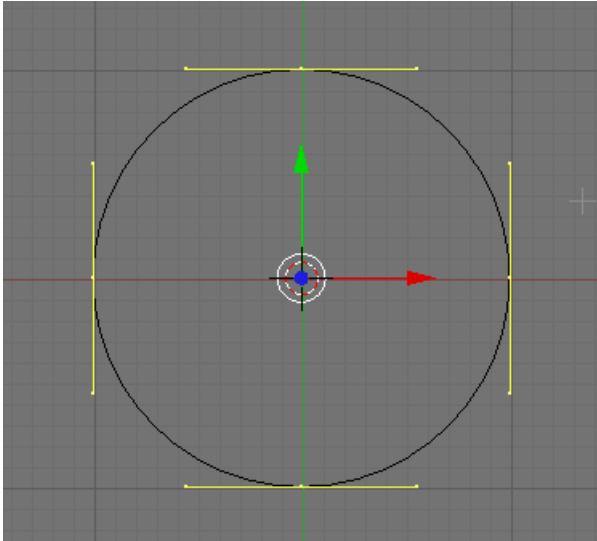
In this tutorial, we'll model a column using Blender's Bezier Curve tools.

Open MyBlender.blend (or the default if you are using MyBlender as the default Blender file). Select the default cube and delete it.

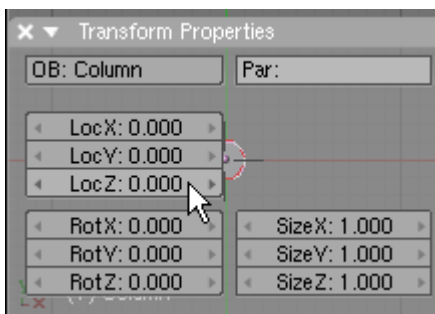
Place your 3D cursor in the center of the display. Press Space / Add / Curve / Bezier Circle.



This displays a Bezier Circle object.

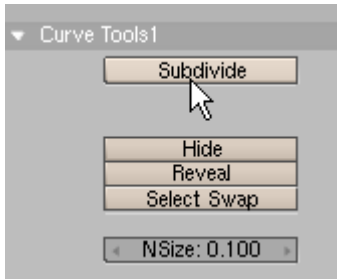


TAB out of Edit Mode. Use the Transform Properties to name this object Column. Set the LOC X, Y and Z at 0.

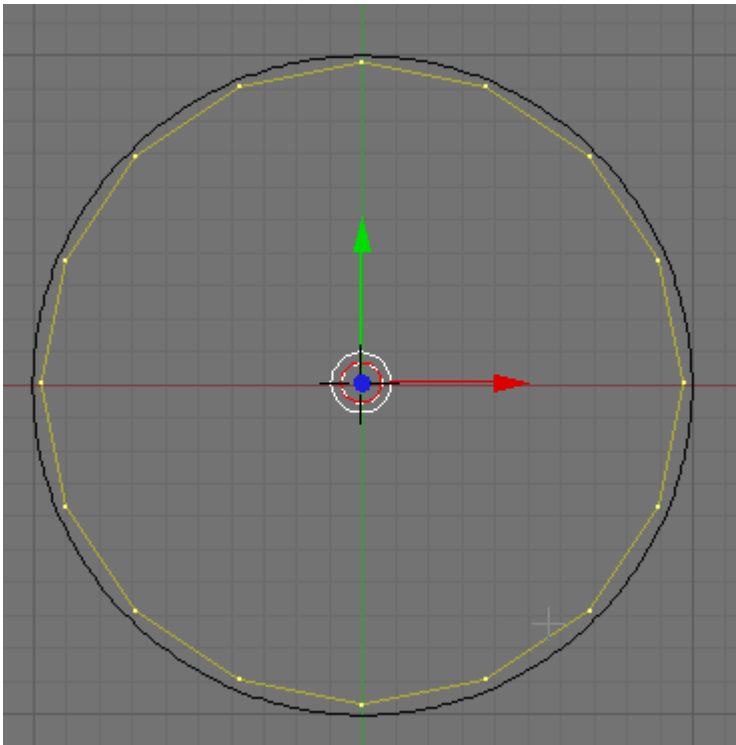


TAB back into Edit Mode and zoom in a bit. Notice that the Bezier circle has 4 vertices. Each vertex has a control handle with 2 moveable endpoints. Unfortunately, Blender does not display a distinct visual difference between the vertices and the control handle end. It is sometimes very difficult to distinguish between the two. When Blender first creates the circle the handles are in “AUTO” mode; that is a special mode to ensure they are properly places. Press the HKEY. This sets the handles to either FREE (each handle moves independently) or ALIGNED (the handles will always be in a straight line)

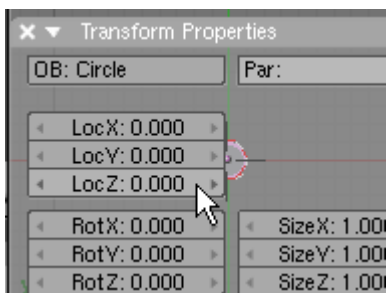
In this tutorial we will only be using the vertices and not the handles. Make sure all four of the vertices are selected (AKEY if necessary). In the Curve Tools 1 Panel Press the Subdivide button **3 Times**. This creates a total of 32 vertices (and 64 handle endpoints)



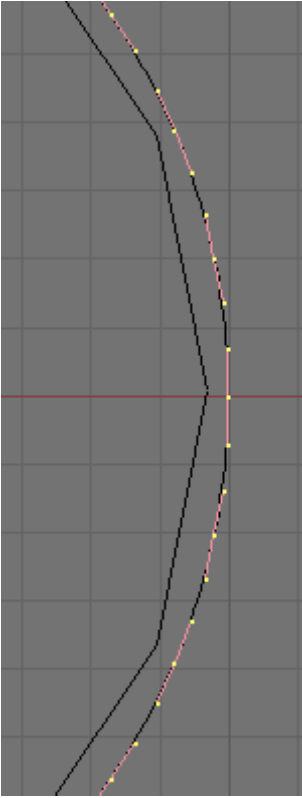
We want to select every other vertex in the circle. To help us do that **TAB out of Edit Mode**. Press the AKEY so nothing is selected. Place your 3D cursor in the center of the display. Press Space / Add / Mesh / Circle. Select 16 vertices. Scale the circle so that the vertices are just inside of the Bezier circle as shown.



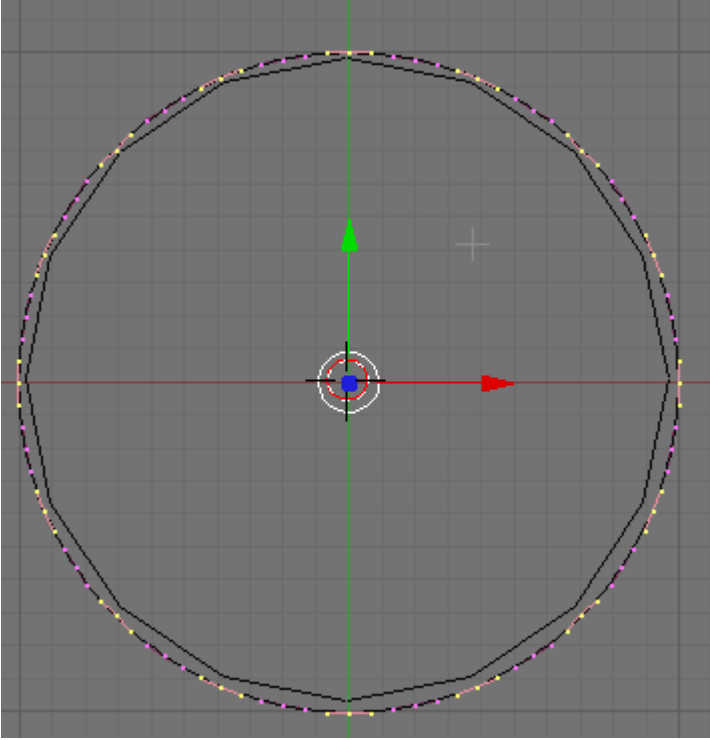
TAB out of Edit Mode. Use the Transform Properties box to set this Mesh circle at LOC X, Y and Z = 0.



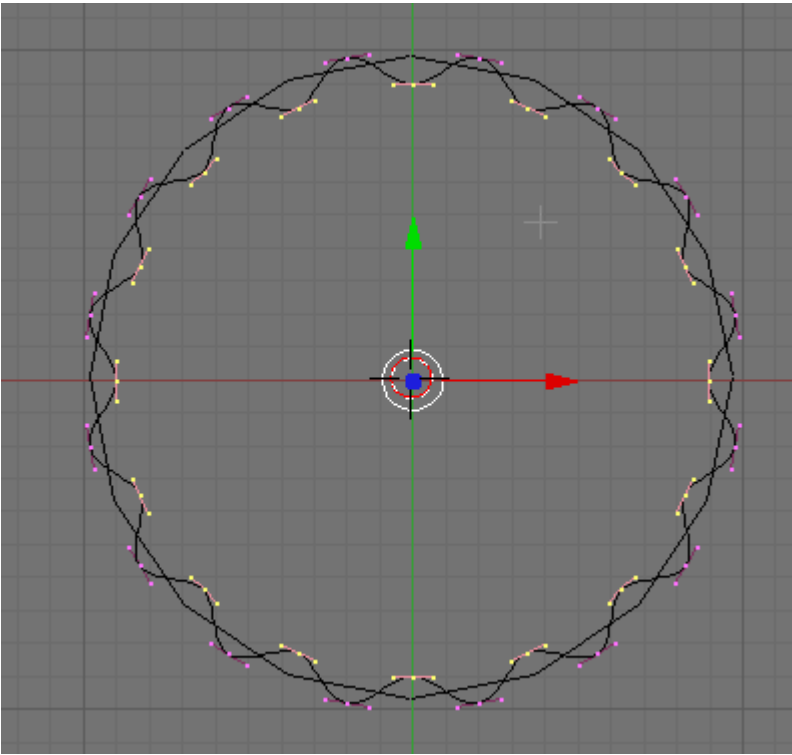
Select the column object alone. **TAB into Edit Mode**. Note that each point on the Mesh circle **points** to every second vertex on the Bezier circle.



Press the **A**KEY to deselect the vertices. Using the Mesh circle points as a guide select every other vertex on the Bezier circle (16 in all).



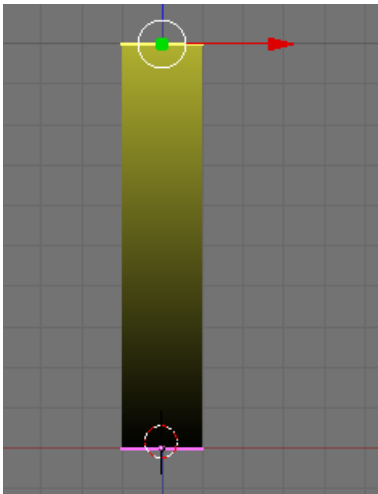
With every other vertex selected, press the SKEY and scale the vertices in just a bit as shown below.



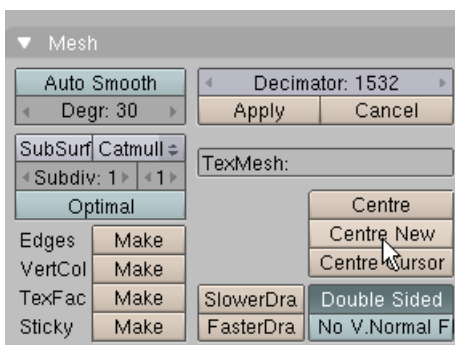
This forms the outline shape for our column. **TAB out of Edit Mode.** Select the Mesh circle and delete it as we no longer need it. Select the column object. Press ALT-C (Convert to Mesh) and convert the Bezier circle to a Mesh.



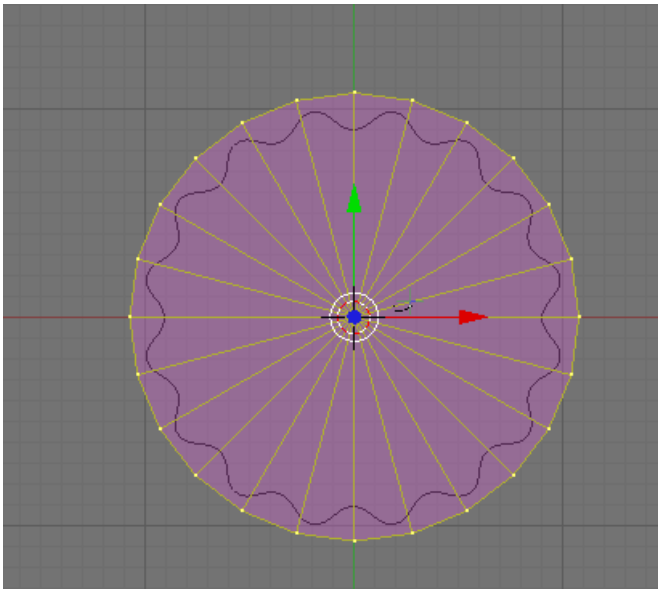
Save your file F2. Switch to Front View. **TAB back into Edit Mode.** Press the AKEY to select all of the vertices. Press the EKEY (Extrude). Select Region. Region extrude the vertices up as shown below.



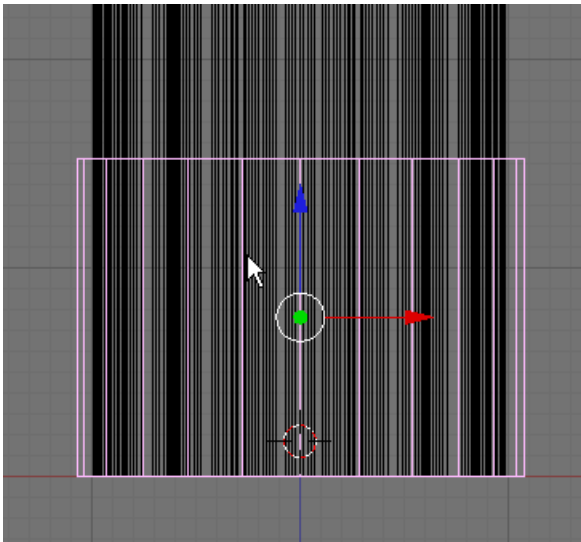
TAB out of Edit Mode. In the Mesh Panel press the Center New button to create a new object center.



Switch to Top View. Press the AKEY to deselect the Column. Place your 3D cursor in the center of the column. Press Space / Add / Mesh / Cylinder. Choose 24 Vertices. Press the SKEY (Scale) and scale the cylinder down to a bit larger than the column width.

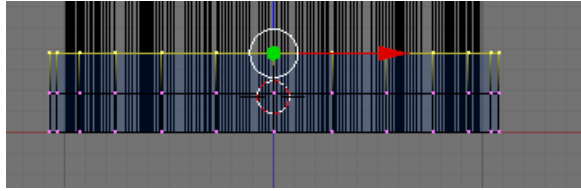


TAB out of Edit Mode. Switch to Front View. Use the Blue Transform Widget Arrow to position the Cylinder as shown below.

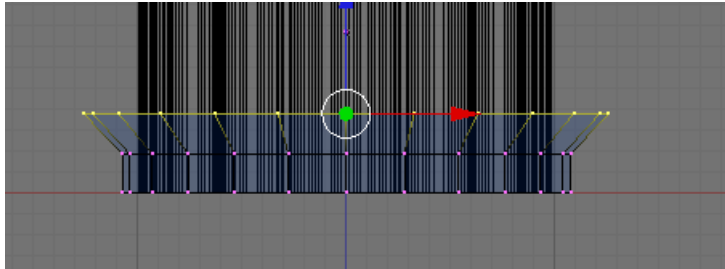


TAB to re-enter Edit Mode. Press the AKEY to deselect the vertices. Box Select (BKEY) the top vertices. Use the Blue Transform Widget Arrow to position them as shown.

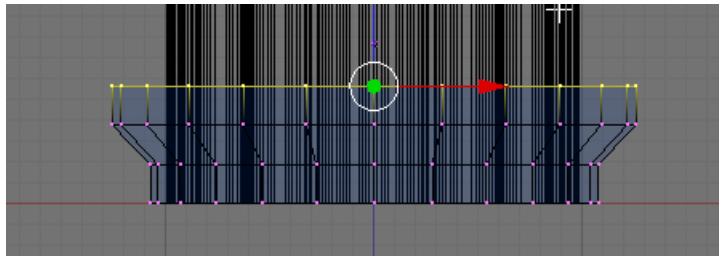




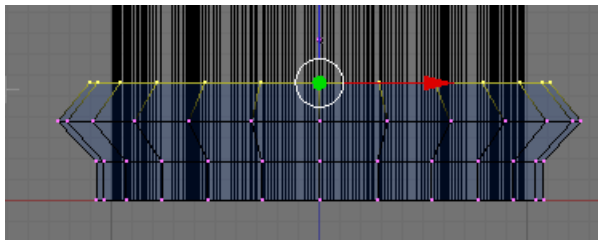
Next, Extrude Region.



Scale out.

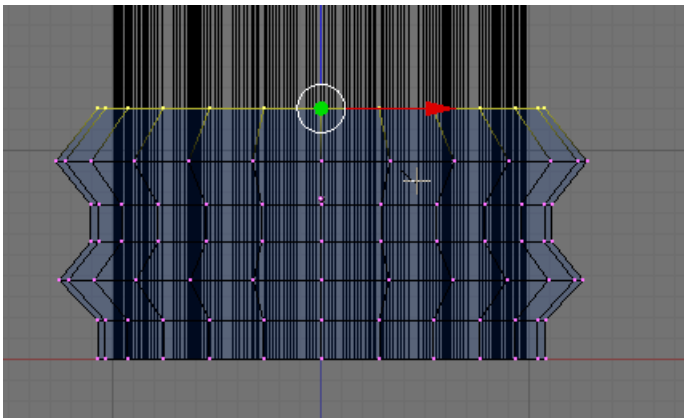


Extrude Region.

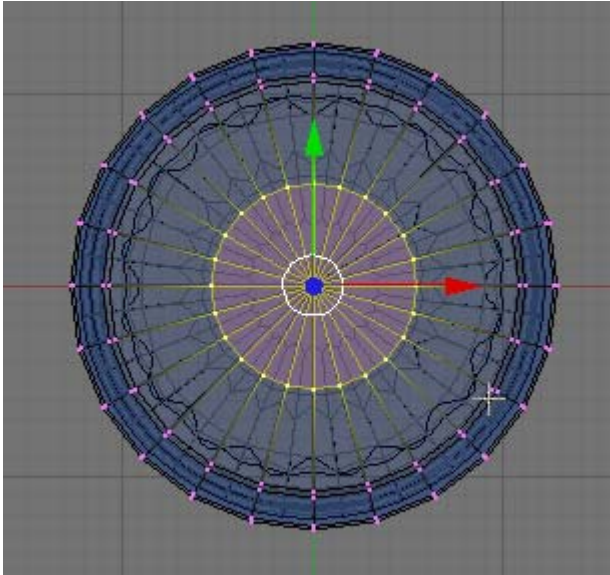


Scale in.

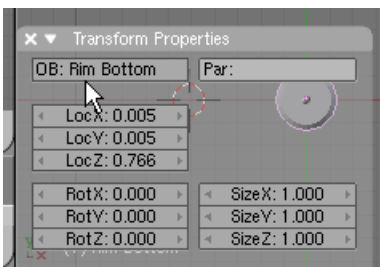
Region extrude up a bit again then using extrude/scale make another section as above.



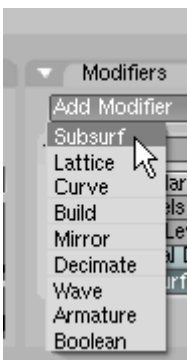
Finally, with the top set of vertices selected, switch to top view and scale them in past the outline of the column.



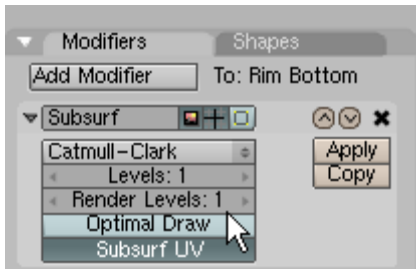
TAB out of Edit Mode. In the Transform Properties Panel name this object Rim Bottom



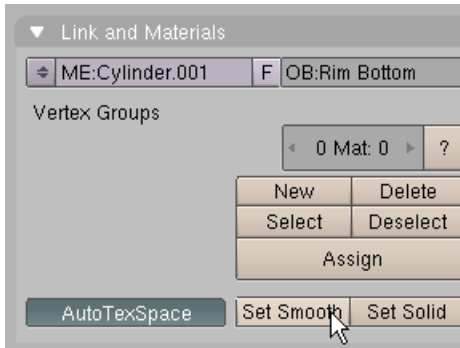
In the Modifier Panel Press the Add New button and select the SubSurf modifier from the dropdown list.



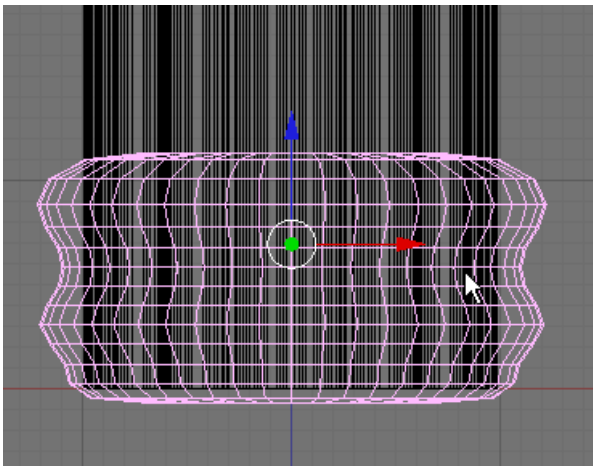
In the SubSurf controls set the Levels at 1 and the Render Levels at 1.



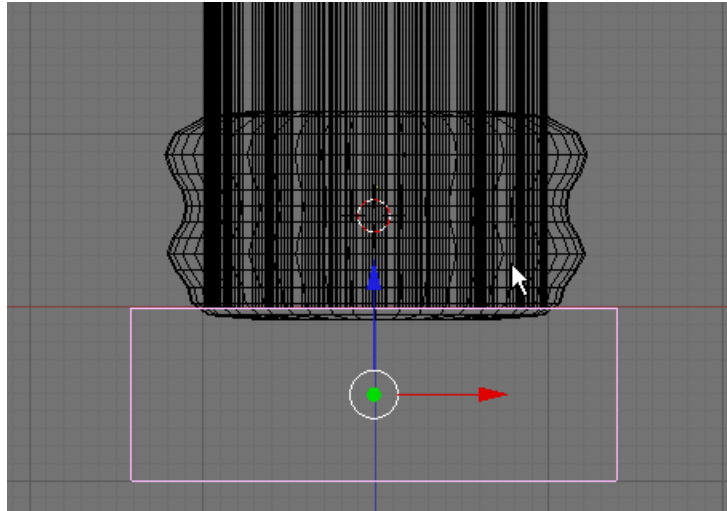
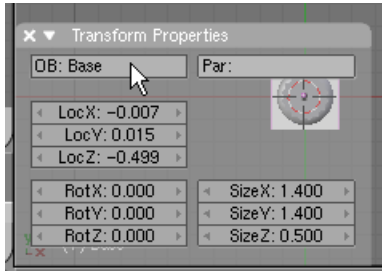
In the Link and Materials Panel press the Set Smooth button.



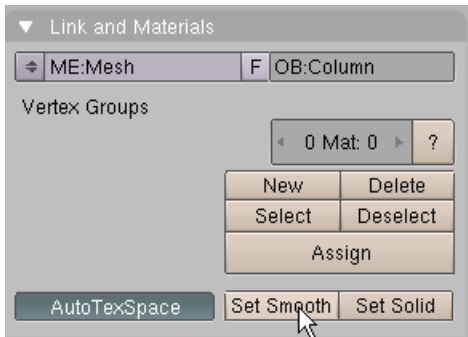
You may have to reposition the Rim Bottom object so it covers the bottom of the column



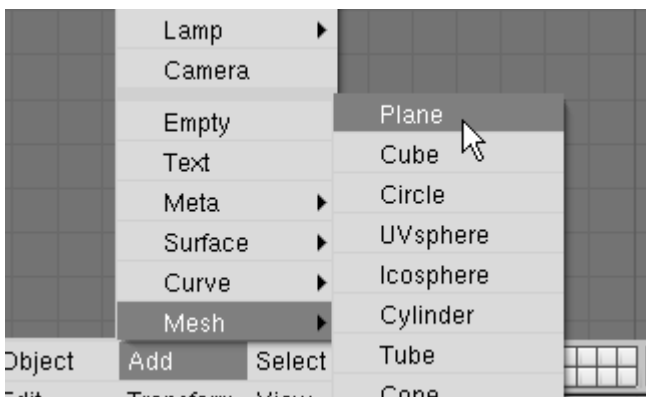
Switch to top view. Press the AKEY to deselect the Rim. Place your cursor in the center of the column and press Space / Add / Mesh / Cube. **Tab out of Edit Mode.** Switch to Front View. In the Transform Properties Panel name this object Base and set the SIZE X to 1.4, SIZE Y to 1.4 and SIZE Z to .5. Use the Blue Transform Widget to position the Base object as shown.



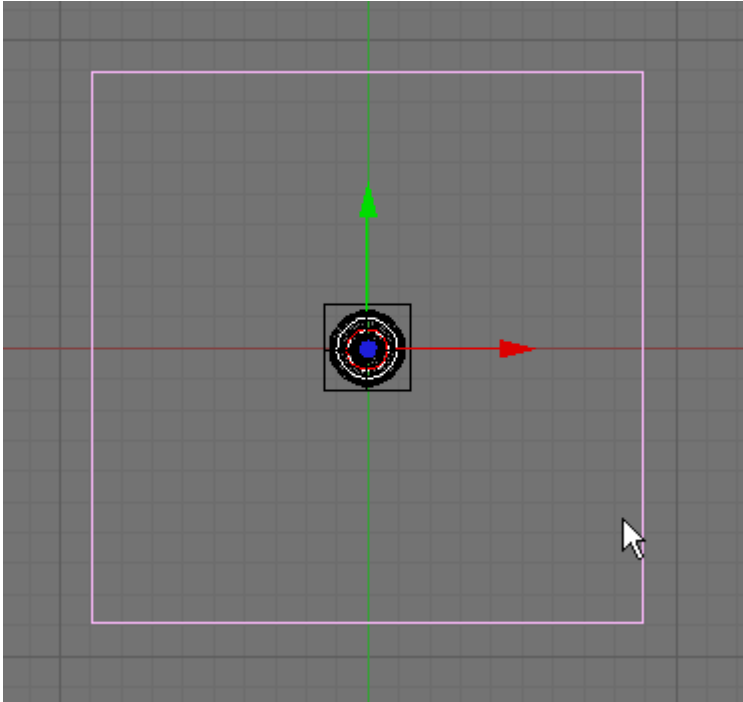
Select the column object. In the Link and Materials Panel press the Set Smooth button.



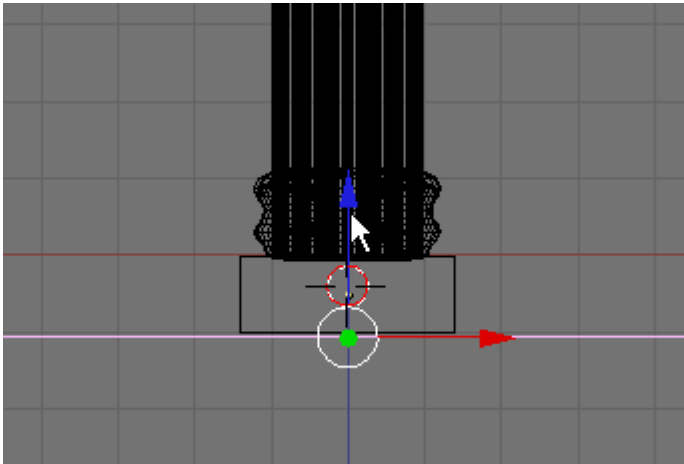
Switch to top view. Press the AKEY to deselect any objects. Place your 3D cursor in the center of the column. Press Space / Add / Mesh / Plane.



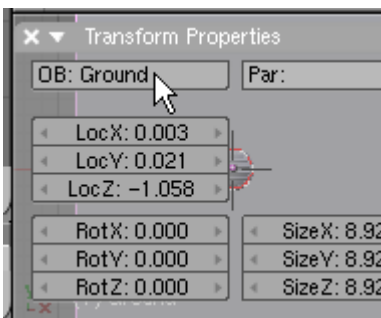
TAB to Exit Edit Mode. Press the SKEY (Scale) and scale the Plane as shown below.



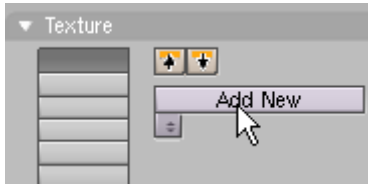
Switch to Front View and move the Plane down to the bottom of the Base object.



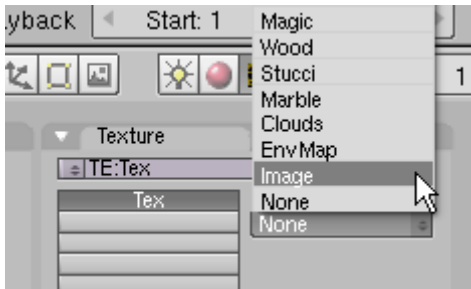
In the Transform Properties Panel name this object Ground



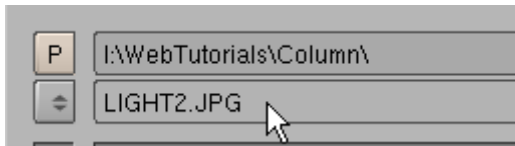
Save your file F2. Select the Column object alone. Press F5 (Shading). In the Materials Panel press Add New. In the Texture Panel press the Add New button.



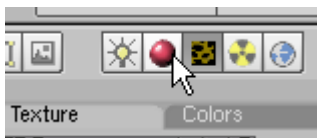
Press F6 (Texture). In the Texture Panel use the Texture Type dropdown box to select Image.



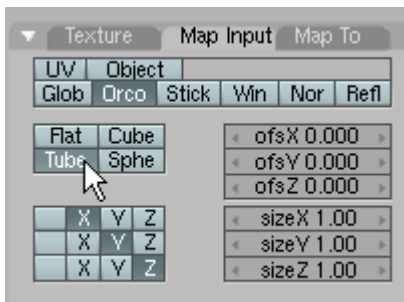
In the Image Panel press the Load Image button. Select the Light2.jpg image file. This file is located in the Column.zip file.



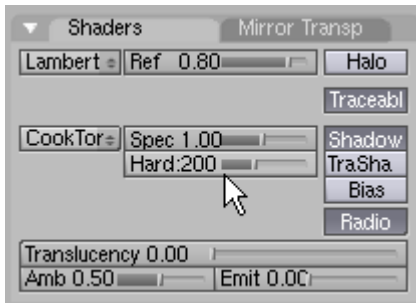
Press the Material Buttons icon to return to the material panel. (Or press F5)



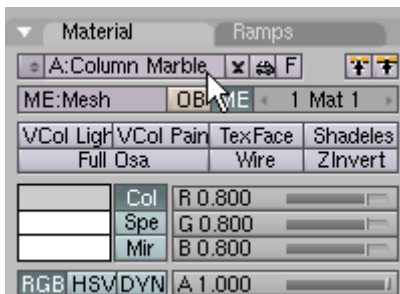
Select the Map Input tab on the right and in the Map To Panel choose Tube for the Mapping Type.



Select the Shaders Tab. In the Shaders Panel set the Specular to 1 and the Hardness to 200.



In the Materials Panel name this material Column Marble.

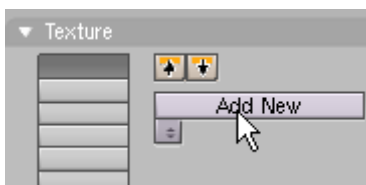


Select the Rim object. In the Materials panel use the dropdown box to the left of the Add New button to select the Column Marble material.

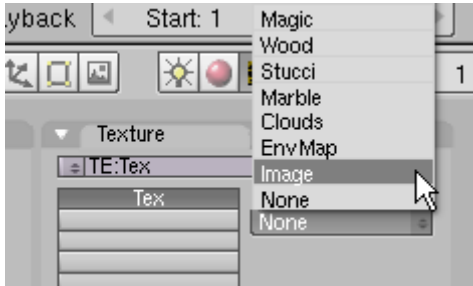


This applies the Column Marble material to the Rim object with all of the same settings.

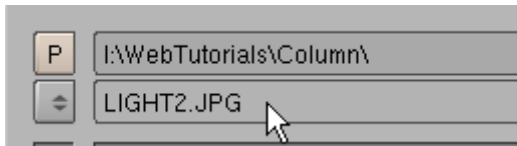
Select the Base object. In the Material Panel press Add New. In the Texture Panel press the Add New button.



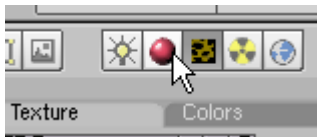
Press F6 (Texture). In the Texture Panel use the Texture Type dropdown box to select Image.



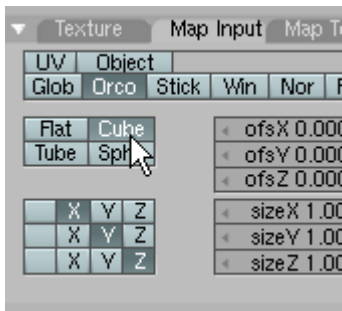
In the Image Panel press the Load Image button. Select the Light2.jpg image file. This file is located in the Column.zip file.



Press the Material Buttons icon to return to the material panel. (Or press F5)

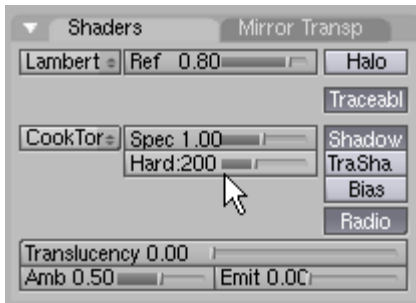


Select the Map Input tab on the right and in the Map To Panel choose Box for the Mapping Type.



NOTE: Because the mapping type is different for the Base than for the column and the rim objects we had to create a new material.

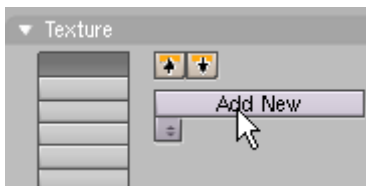
Select the Shaders Tab. In the Shaders Panel set the Specular to 1 and the Hardness to 200.



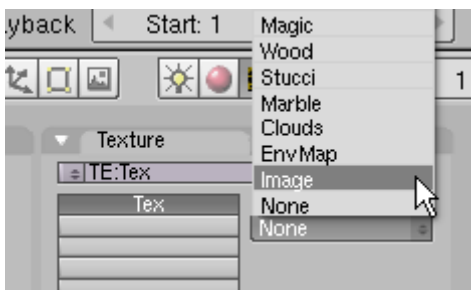
In the Materials Panel name this material Base Marble.



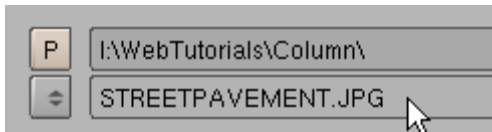
Select the Ground object. In the Material Panel press Add New. In the Texture Panel press the Add New button.



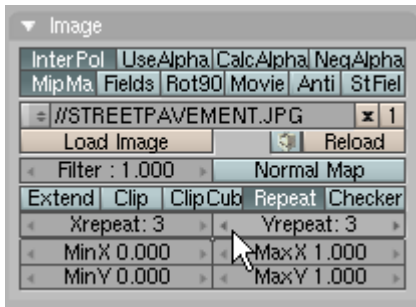
Press F6 (Texture). In the Texture Panel use the Texture Type dropdown box to select Image.



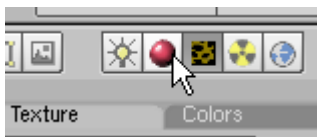
In the Image Panel press the Load Image button. Select the Streetpavement.jpg image file. This file is located in the Column.zip file.



In the Image Panel set the Xrepeat and the Yrepeat to 3.



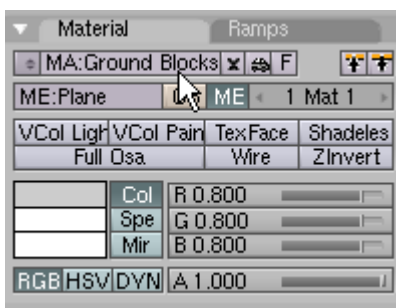
Press the Material Buttons icon to return to the material panel. (Or press F5)



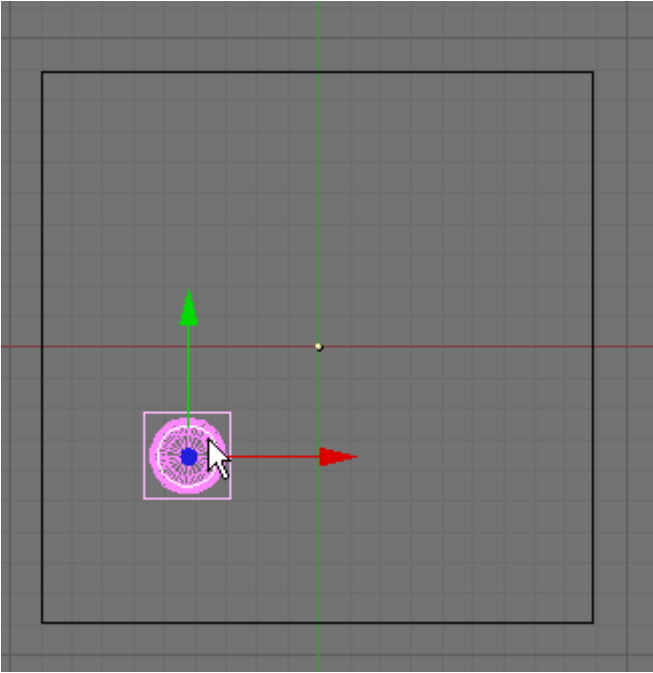
By default the Mapping for this texture is set to Flat. Select the Shaders Tab. In the Shaders Panel set the Specular to 0 and the Hardness to 1 **and the REF to 1.**



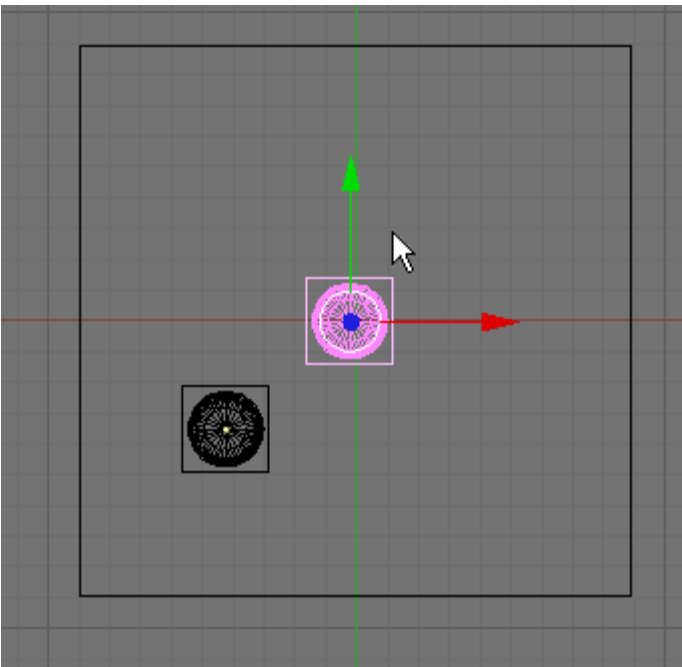
In the Materials Panel name this material Ground Blocks.



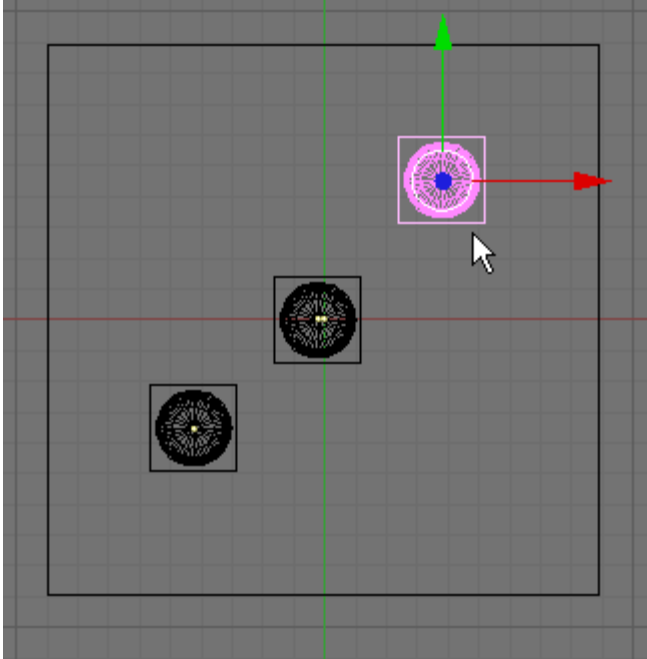
In the Front View select the Column, Rim and Base objects. Switch to Top View. Press the GKEY (Grab) and move the objects as shown below.



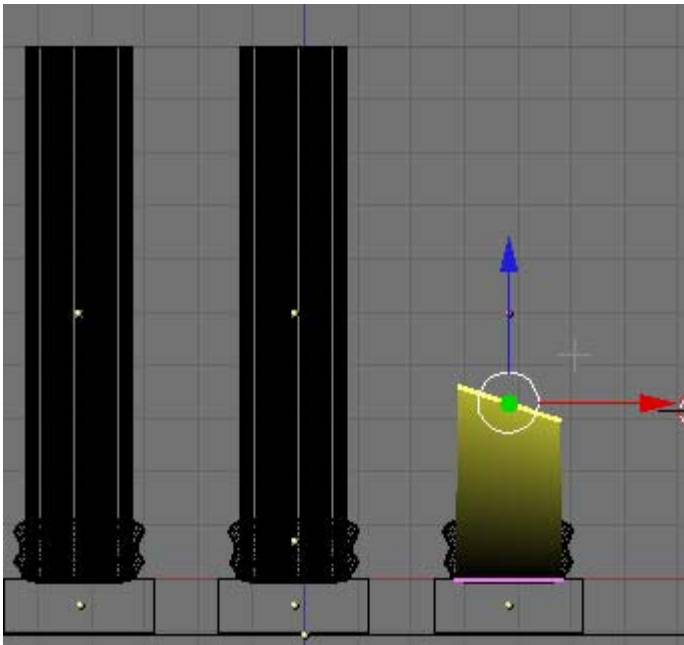
Press SHIFT-D (Duplicate) and move the duplicate column, rim and base as shown below.



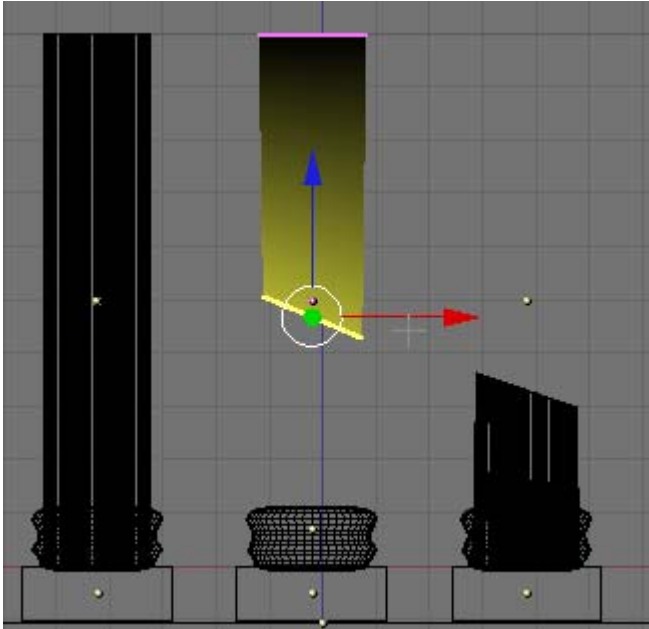
Press SHIFT-D (Duplicate) again and move the third column, rim and bas as shown below.



Switch to Front View. Select the right column alone. **TAB to Edit Mode**. Move the top vertices down and rotate them a bit as shown.

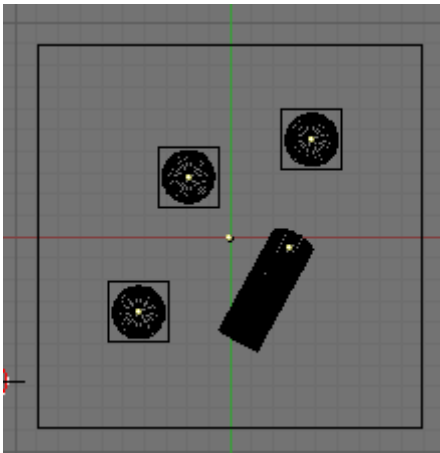


TAB out of Edit Mode. Select the middle column alone. **TAB to Edit Mode**. Press the **A**KEY to deselect the vertices. Select and move the bottom vertices up and rotate them a bit as shown.

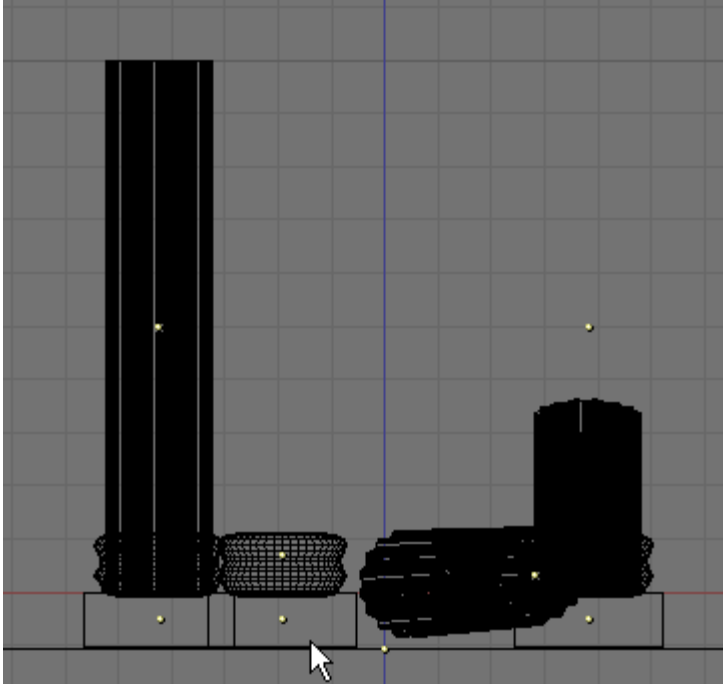


TAB out of Edit Mode. Using the Grab, Rotate and delete functions re-arrange the objects to create a scene similar to the following:

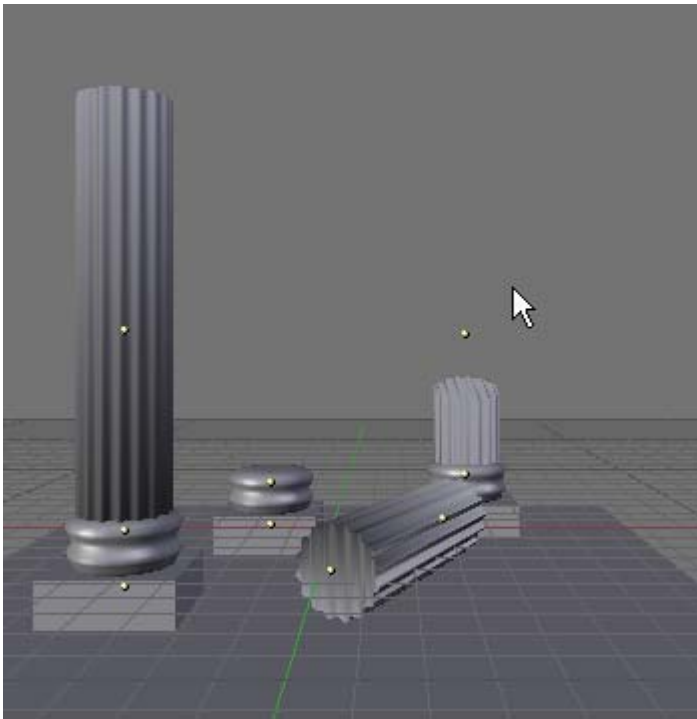
Top:



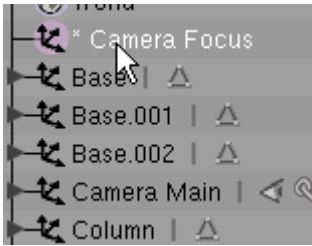
Front:



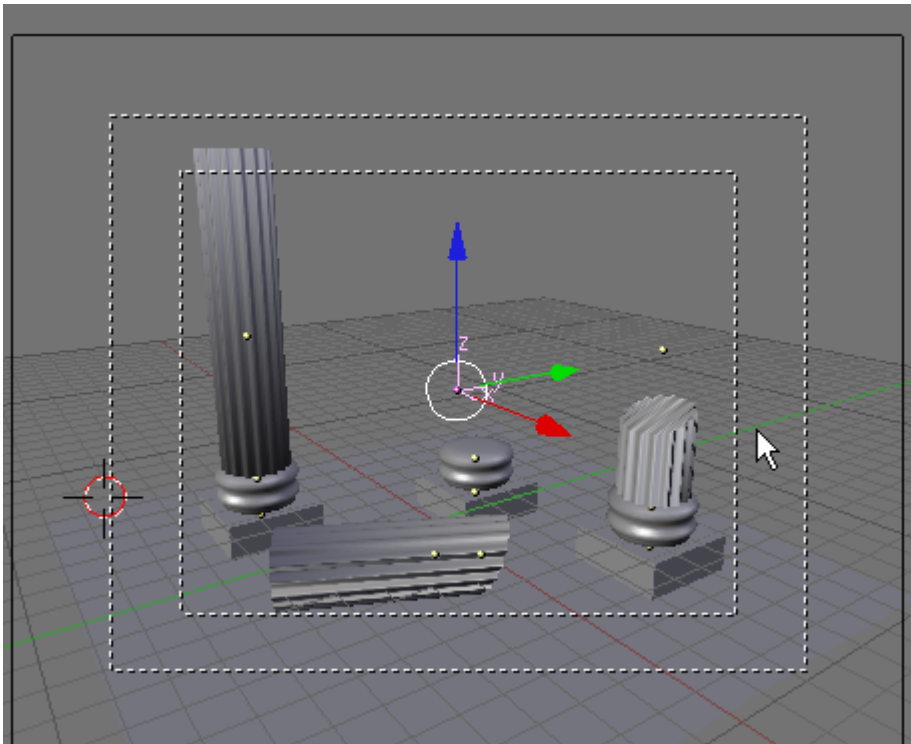
Perspective



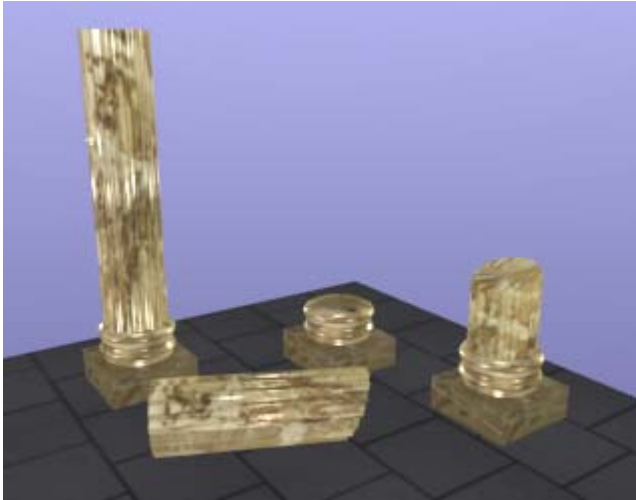
Add Layer 10 to the scene. This layer contains the Camera and the Camera focus object. Select the Camera Focus object from the Outliner Window.



Place the focus in the center of your scene about mid-column height. Select the Camera object and move it to create a camera view similar to the following:



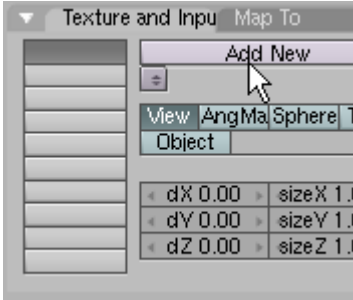
Add layer 20 to the scene. This layer contains the lighting set-up. Press F10 (scene). **Save your file CTRL-W.** Render F12.



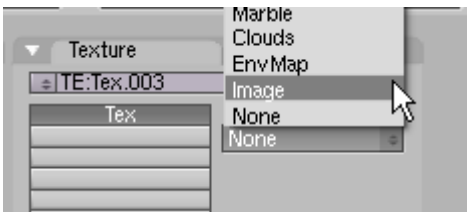
We will add a background image to this scene. Press F5 (Shading) Now press the World button icon from the sub-context menu buttons.



In the Texture and Input Panel on the far right press the Add New button.



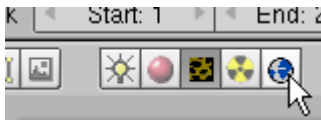
Press F6 (Textures) and in the Texture Type dropdown box choose Image.



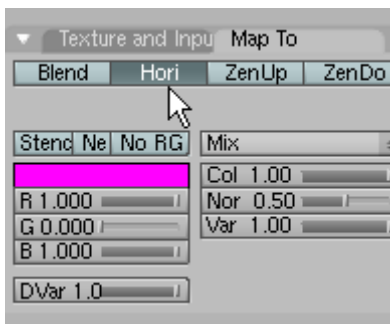
In the Image Panel press the Load Image button. Select the Sunset90.jpg image file. This file is located in the Column.zip file.



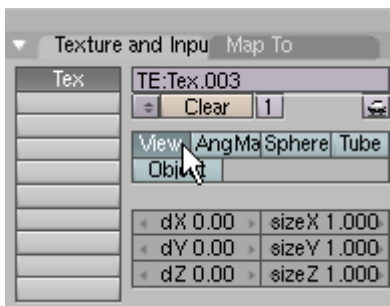
Return to the World buttons Panel by pressing the World Buttons icon in the sub-context menu.



In the MAP To Panel make sure only the HORIZon button is activated.



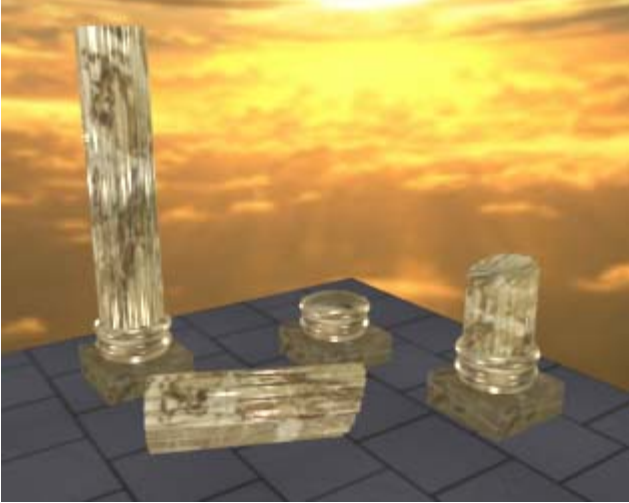
In the Textures and Input Panel make sure that the View button is active.



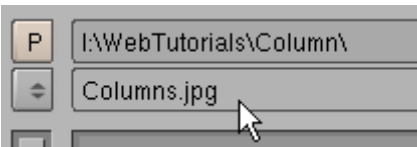
In the Preview Panel make sure none of the buttons (Real, Blend, Paper) are active.



Press F10 (Scene) Render F12.



You can save your rendering as an image file by pressing F3. Select the directory you want the image saved and name the file (you must add the .jpg file extension). Press Save JPEG when finished.



A finished copy of this tutorial file named ColumnComplete.blend is located in the Column.zip file.