WarpDriver Models

These images were created using the default model parameters, and exposed using a 10"x10" zero depth toolpath centred on (X,Y)=(0,0) that was created in **V-Carve Pro 6.5** using the **Mach3** PostProcessor. One line found in the header of the Vectric G-code was deleted from the **Mach3** compatible source code before warping:

```
N22G00G20G17G90G40G49G80
N24G70G91.1      ← This is the line deleted to allow viewing with KMotionCNC
N26T1M06
```

<p style="text-align:center; color:red;">**Do not remove this line from code intended to be run on a real CNC machine controlled by Mach3!**</p>

Toolpaths are displayed using **Dynomotion's** free **KMotionCNC** program, and screenshots taken using **GreenShot** (also free). The toolpath has a set of movements parallel to the X and Y axes separated by 0.25". In each case two views are shown for positive and negative values of dZ. The full download of **WarpDriver** (also free) is from http://PaulRowntree.weebly.com.

The default models are centred on (X,Y)=(0,0), but all can be shifted to where you want it. Some models use an 'N' parameter to change the shape. The effect of 'N' is shown in the images for the Elliptical Dome model.

WarpDriver can do more than just making the curved shaped surfaces shown in these images. In some cases a bit of router work or fluting toolpaths could do this faster and easier, albeit with less flexibility. The bonus of WarpDriver is that after creating such a curved surface, you can warp _any_ G-code toolpath to match its shape, to impose text, shapes or images onto curved materials, without using true 3D design and cutting software like Vectric's Aspire.
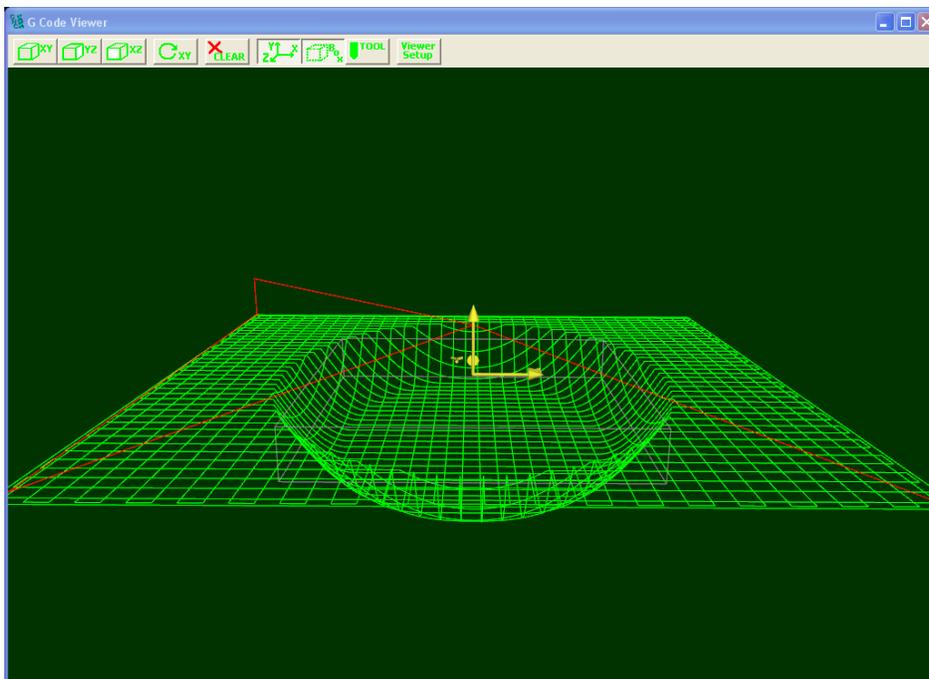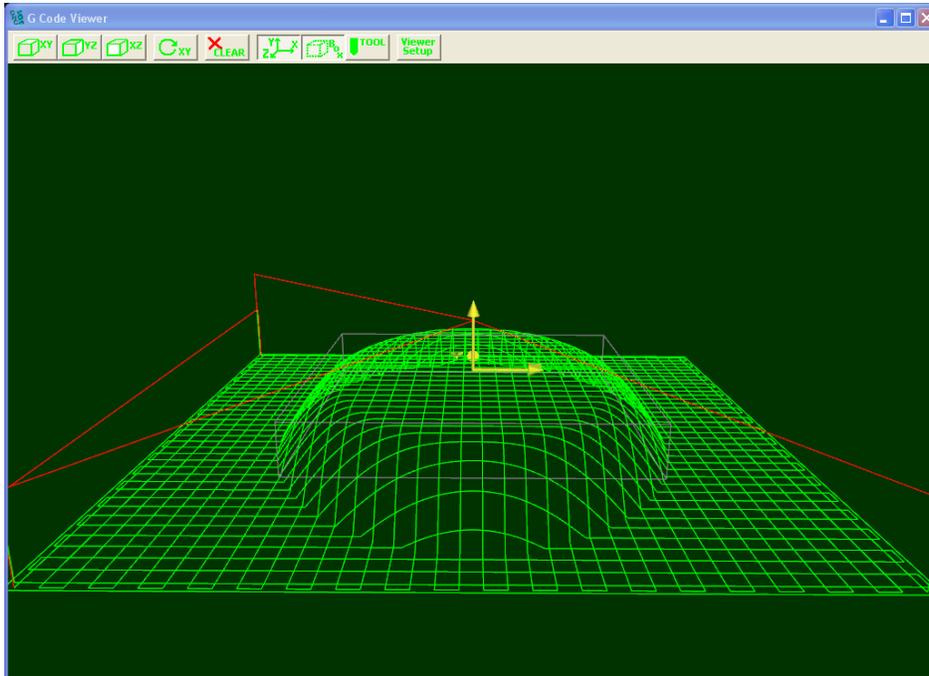
WarpDriver (version 20120102 or more recent) can also remove residual non-orthogonality of the X-Y axes of a CNC machine by X-Y warping, with or without additional warping in the Z direction.

Scale and Shift

This is not a shape model, and so no images can be shown. It just takes the Z coordinates of the source G-code file and multiply them by a Scale Factor, then Shifts them up or down. With some thought it can be used to take the fluting toolpaths from V-Carve Pro (which always make concave shapes) and turn them into convex shapes (Scale=-1.0, shift DOWN by the original depth of the fluting path). It can also be used to scale the output of a FreeMill run, etc.
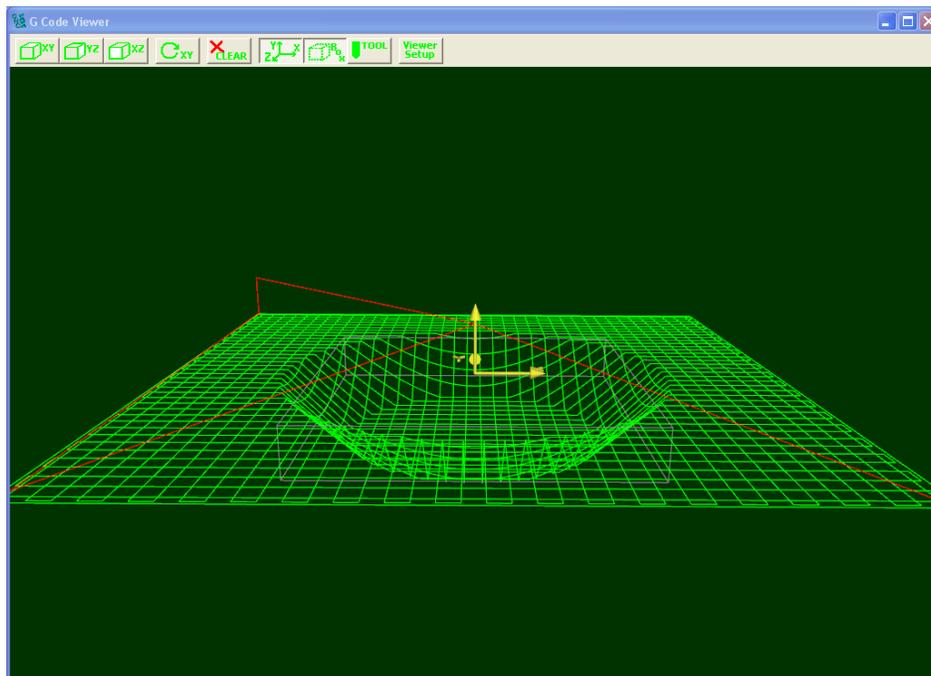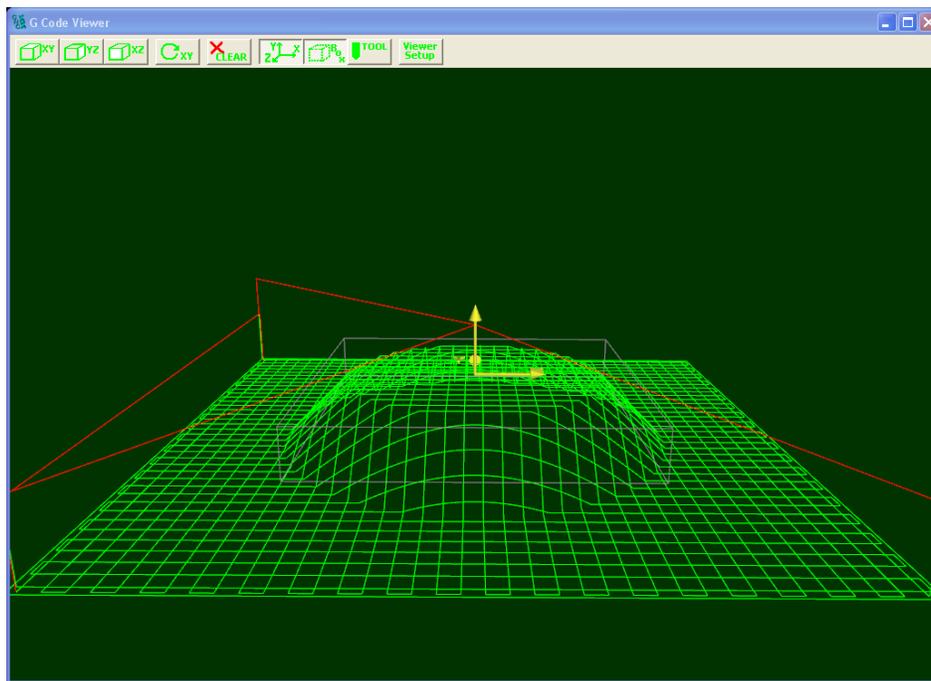
Elliptical Roundover

This model has a flat elliptical top that rounds over to the surrounding areas. The 'N' parameter controls the shape of the transition, with N <1.0 giving more flat-topped 'pillbox' shapes that drop steeply to the surroundings, and N>1 giving more curved transitions to the surrounding. N=2 gives a balanced curve with equal curvature at the top and bottom.

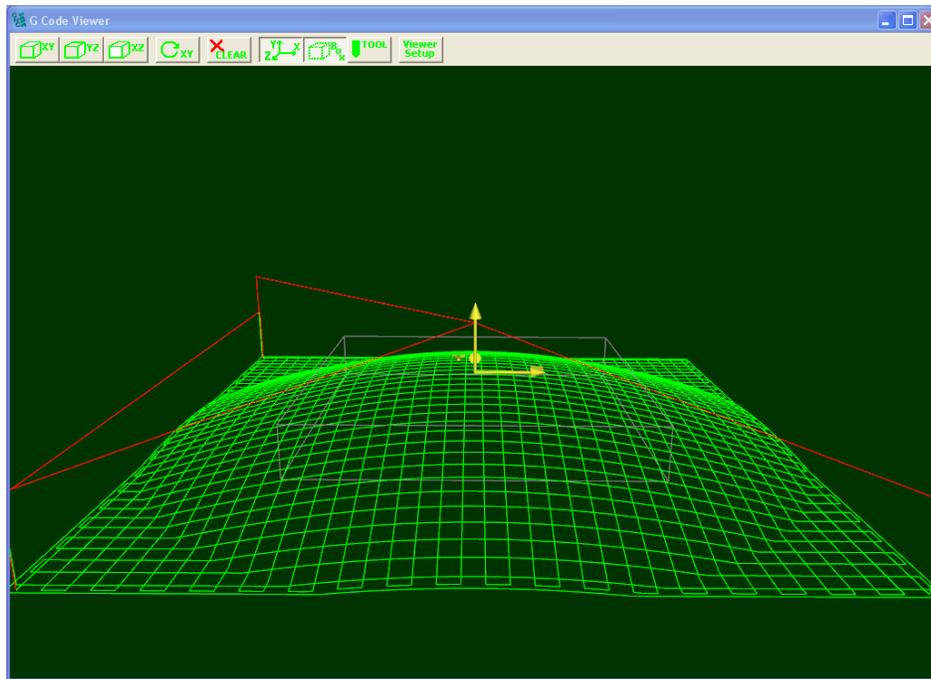# Elliptical Edgeover

This model has a flat elliptical region that slopes down to the surrounding area, with abrupt transitions at the top and bottom edges.
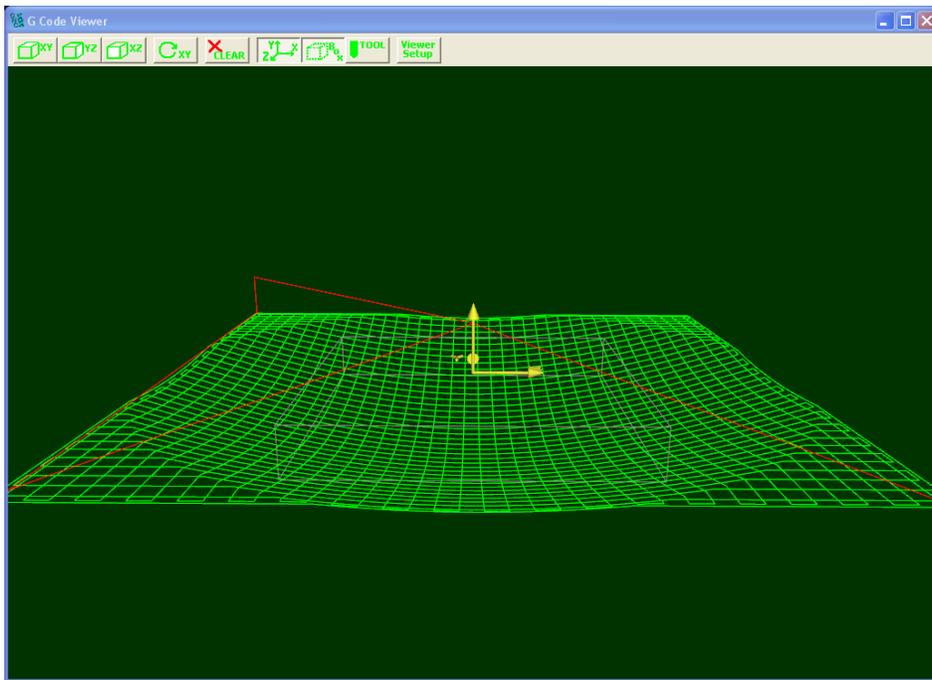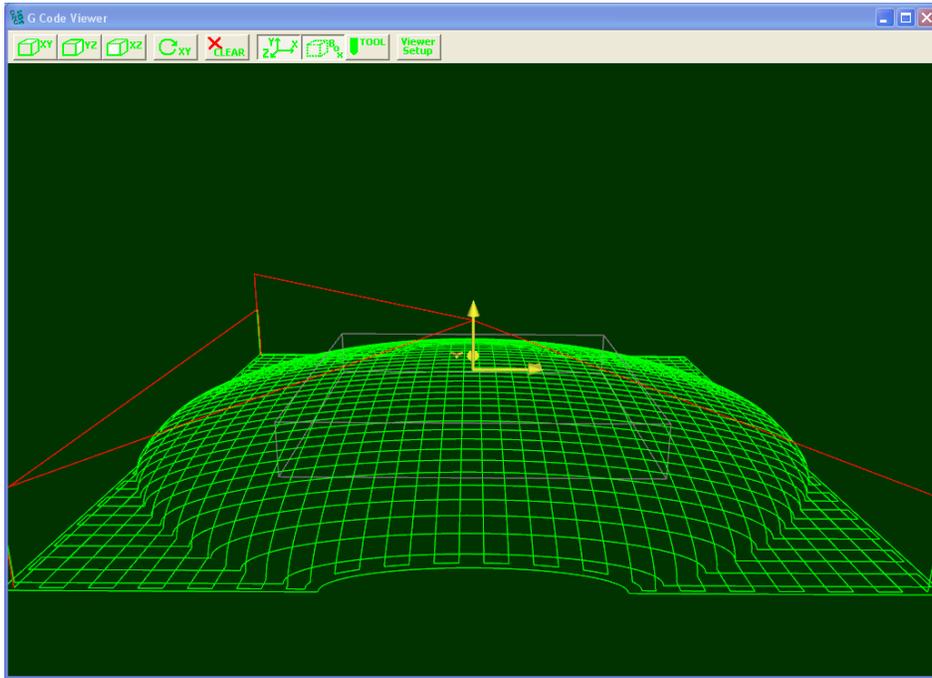
Elliptical Dome

This model has a shape with no flat top, but the curved area extends across the entire shape. The N parameter controls the shape of the dome (or dish). The first image is for N=1.
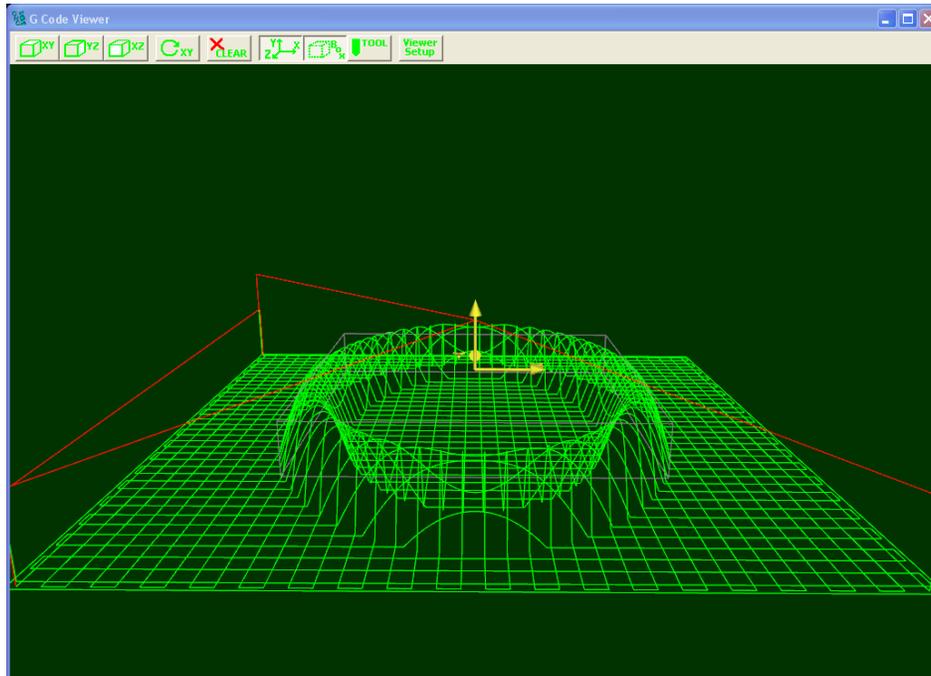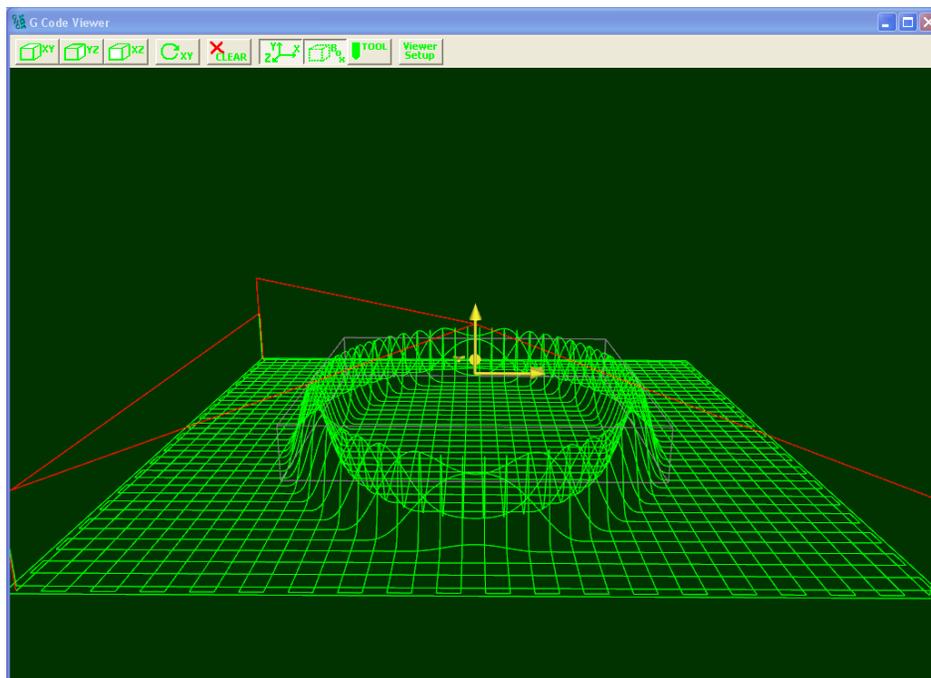
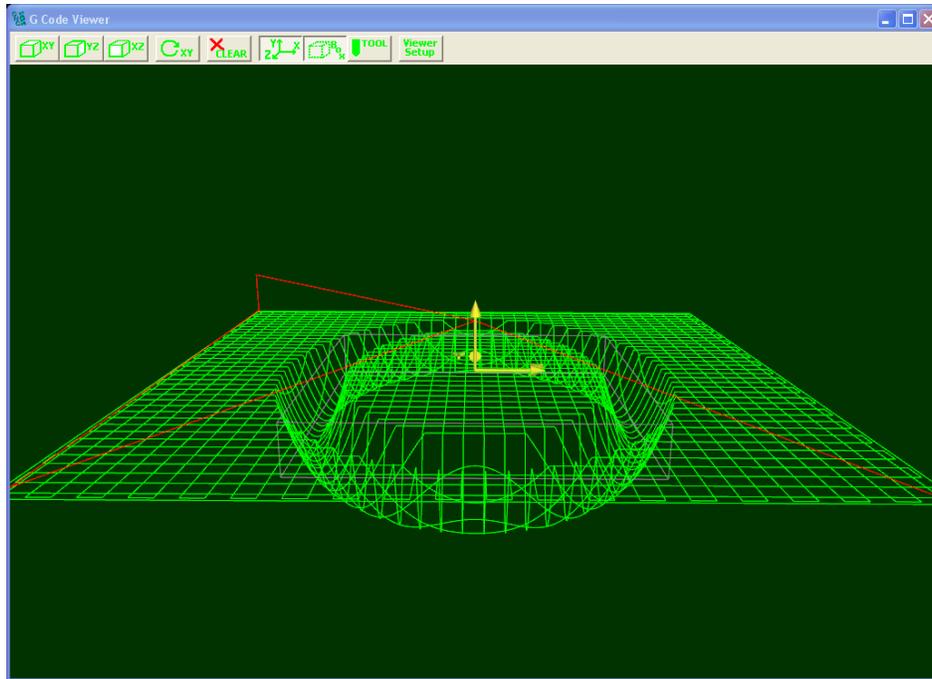

This for N=2

This is N=0.5

Elliptical Frame

This model has a continuous border that separates the inner and outer regions which have the same height. The N parameter controls the curvature of the raised/sunken border region, with N<1 having the flatter curvature in the middle of the frame border with steep edges, and N>1 giving more pointed curvature in the middle and more gentle slopes to the inside and outside regions.
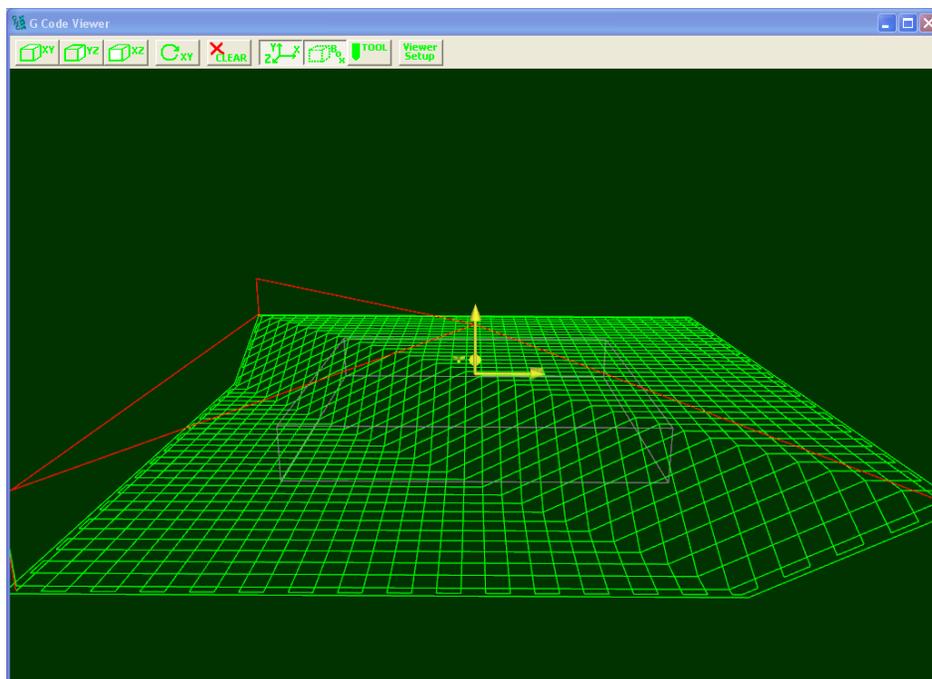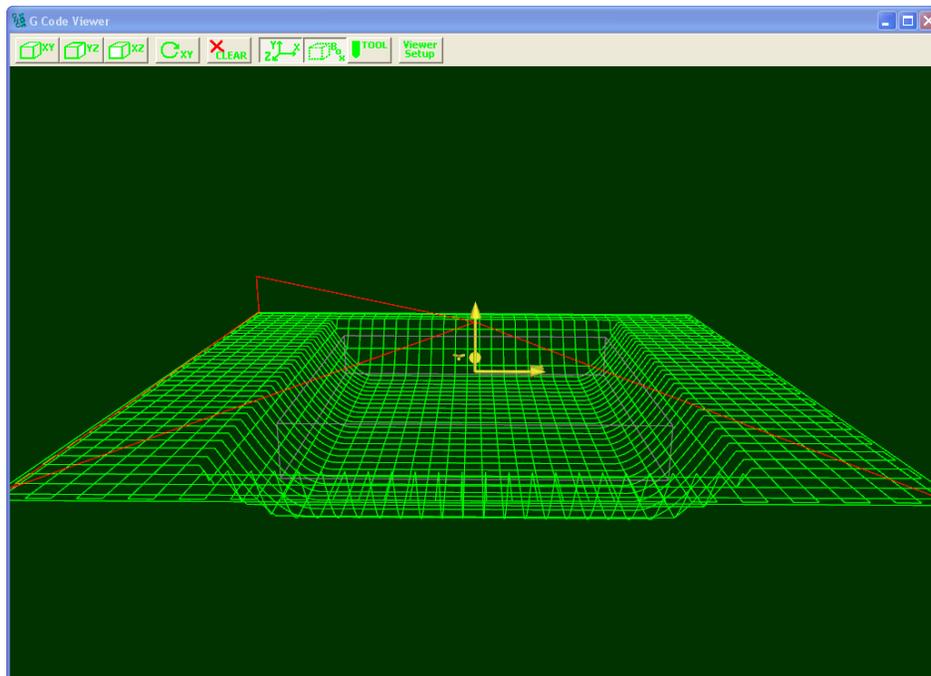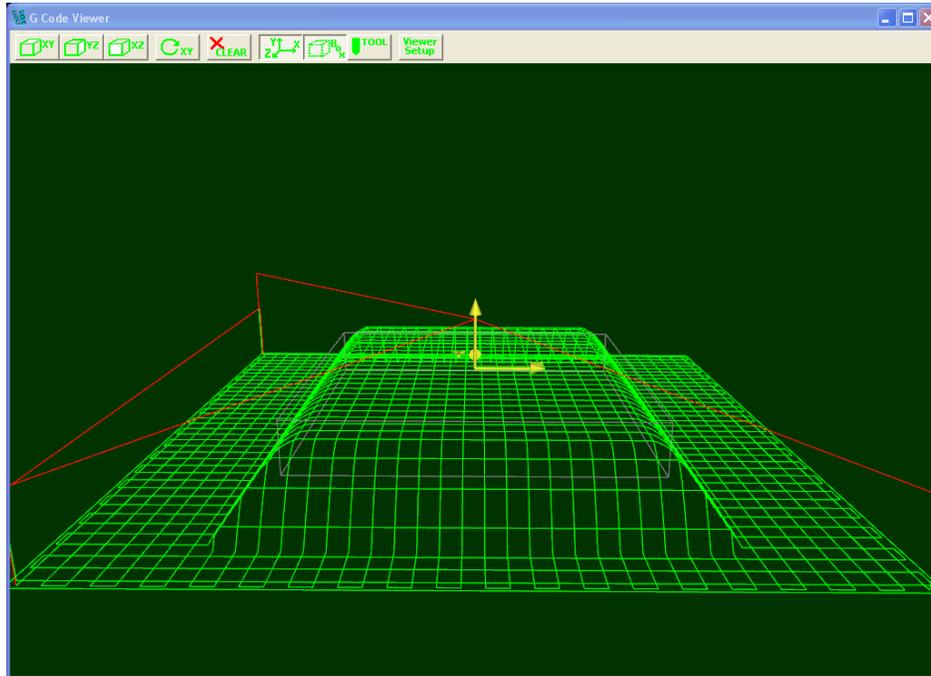

N=3

Plane 1

This model makes a straight transition from the upper and lower areas, with slopes defined in the X and Y directions. This is possibly useful for making flat beveled edges on the backs of guitars etc. dZ can only be positive for this model. To define the plane you need any point (X,Y,Z) on it and the two slopes.
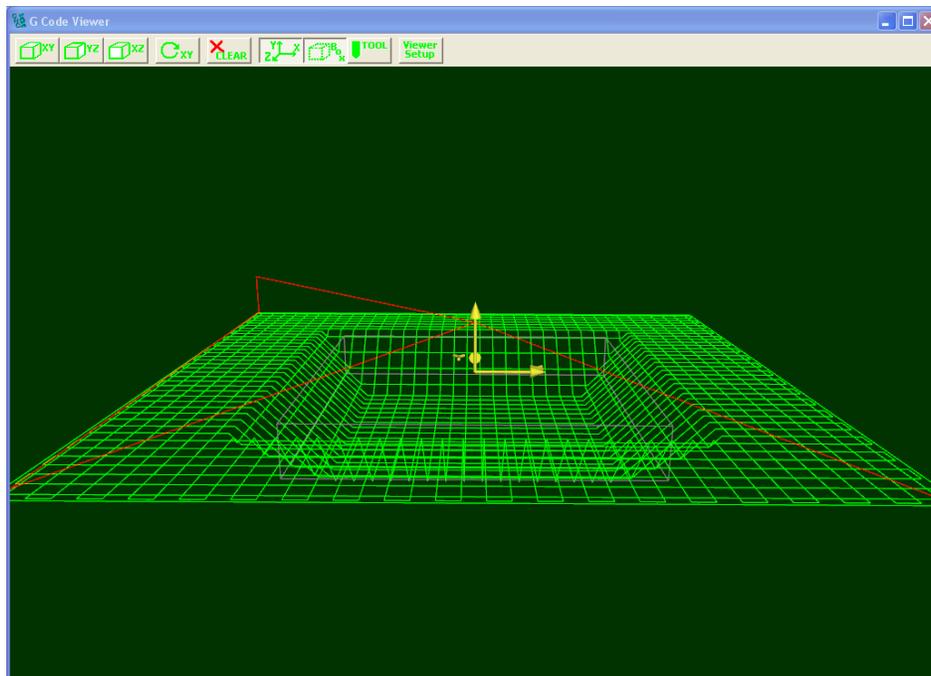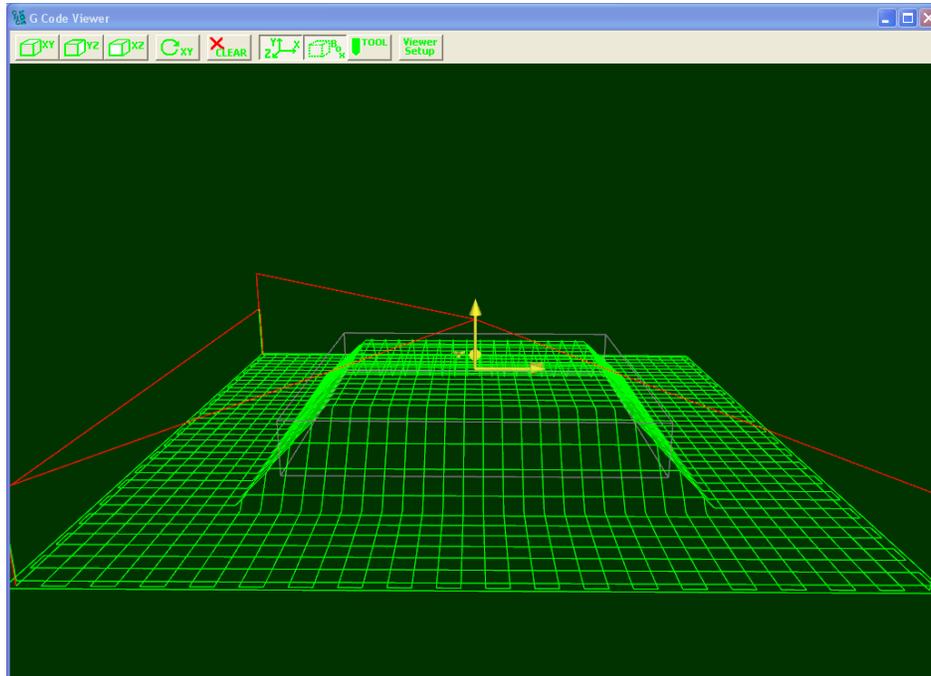
Rectangular Roundover

This is like the Elliptical Roundover except that the centre area is a rectangle. N controls the shape of the transition region.

Rectangular Edgeover

This is like the Elliptical Edgeover except for the rectangular inner region. The N parameter controls the shape of the border.

Rectangular Frame

This is like the Elliptical Frame except that the inner region is rectangular. The N parameter controls the shape of the border.