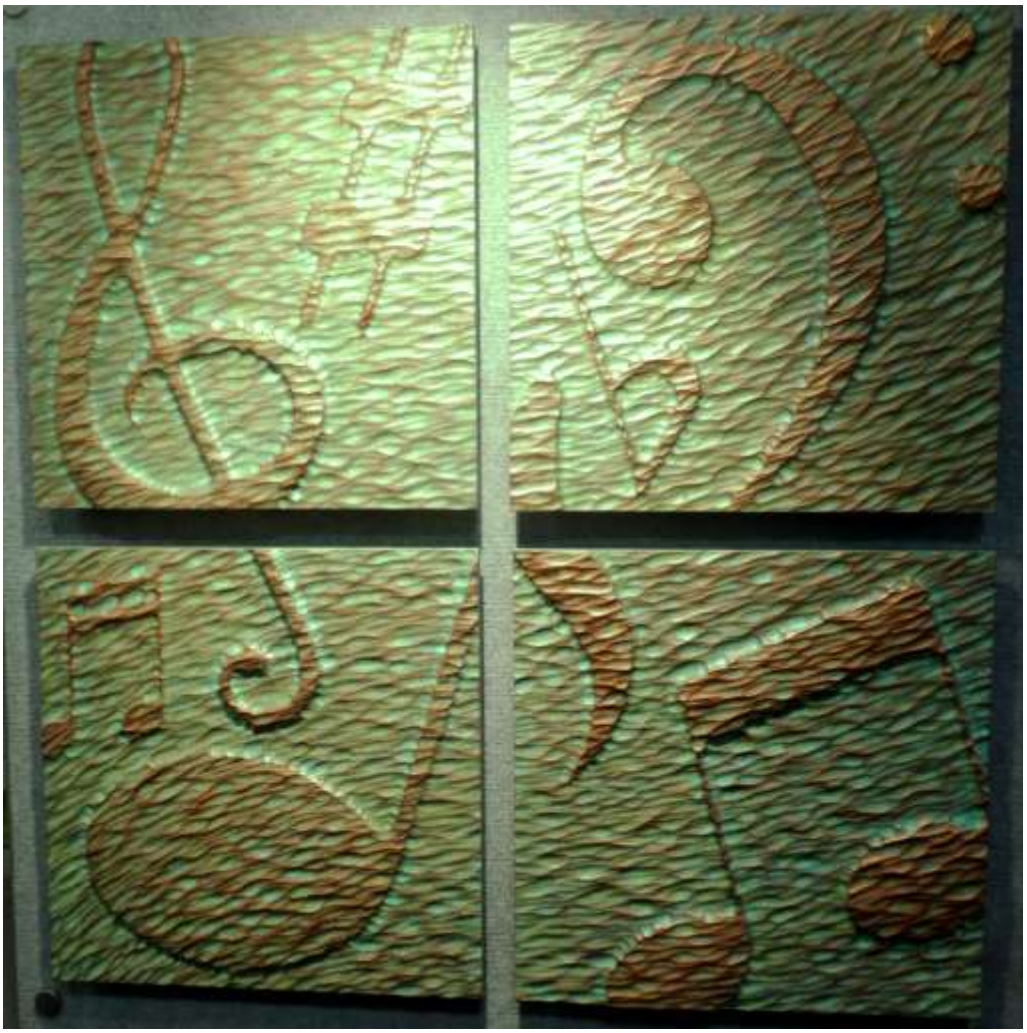
EnRoute

Musical Notes

A Tutorial for Creating a Rapid Texture design



Rapid Texture

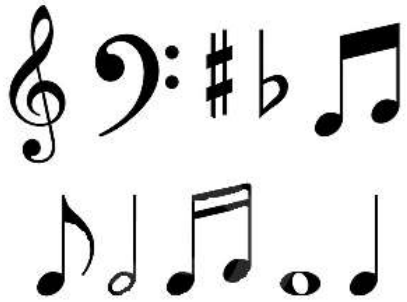
Introduction

This document provides instructions for the creation of a rapid texture design with musical notes pattern using EnRoute 4. This particular design was created to show the rapid texture tools and techniques in EnRoute. These techniques may be used with sign designs, or decorative woodworking pieces.

Step by step instructions:

Artwork

The inspiration for this design came from an image of musical notes. The idea is to create a series of panels that interact with each other.

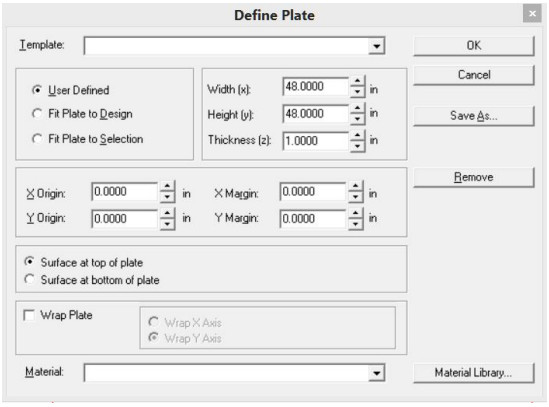


Create the Plate

The first step is to open a new EnRoute file and create the plate.

1. Click on the Define the Current Plate icon.

    Enter a plate size of 48" x 48".
2. Press OK.

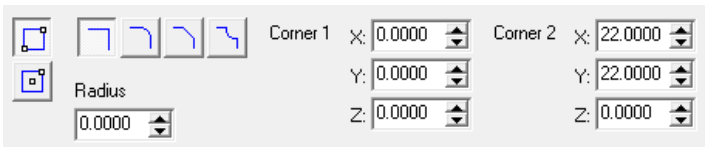


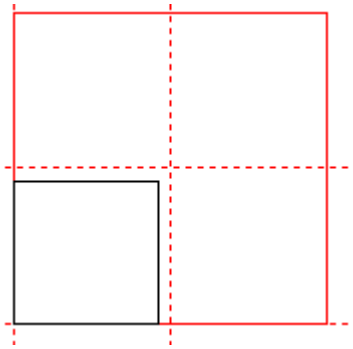
Create the panels for the finished design.

We decided to create four panels displayed in a square design.

1. Click on the create rectangle icon. 

2. We are creating a 22" square. Enter 0.00 in the corner 1 coordinates and 22.00 in the corner 2 coordinates.



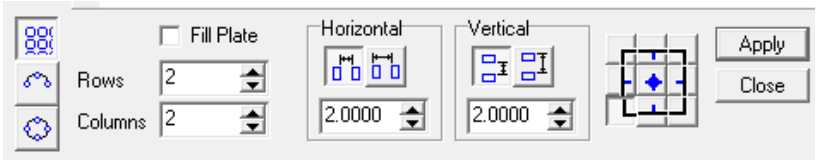


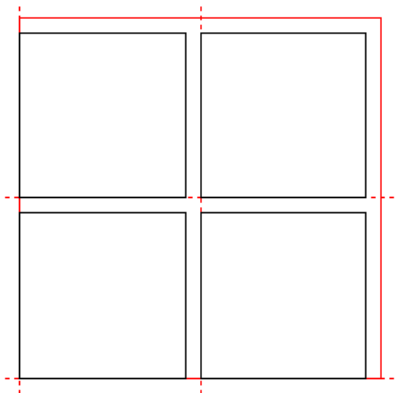
3. Click Apply. This will place one square in the plate.

Create the remaining panels with the Multicopy tool.

The Multicopy tool allows you to precisely place copies of the panel that you just created.

1. Select the square contour that you just created and click on the Multicopy icon.
2. Enter the parameters. Rows =2, Columns =2. The distance between the squares is 2". The location of the squares is bottom left.
3. Click Apply.



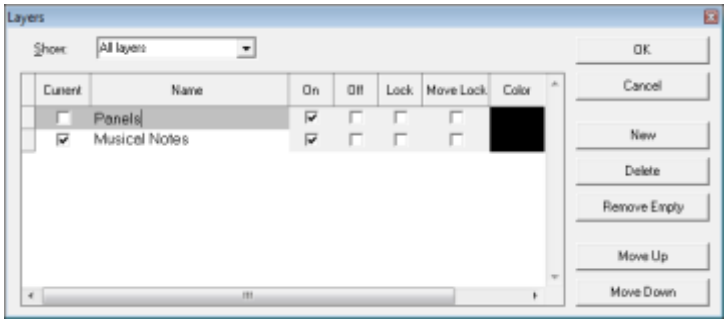


4. This will place four squares in the plate.

Import the Bitmap to EnRoute

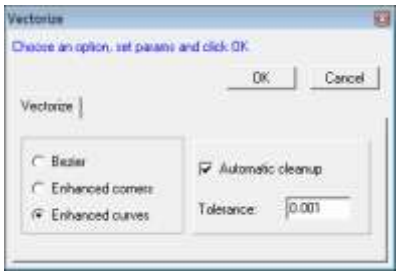
Open a new layer in your EnRoute file and Import the bitmap to the file.

1. Click on the Layers icon to add a new layer to create the contours for the musical notes.
2. Click on the new button and enter the name of the layer as musical notes (you can name your layers whatever you would like).
3. Click OK. This will create another layer for you to work in.
4. Both of the layers will be turned on. You can turn on just the musical notes layer so that you can work there.



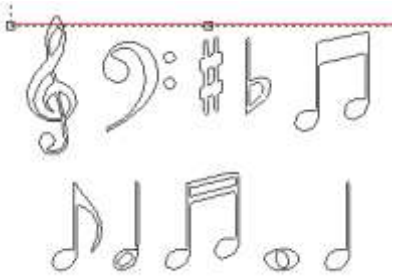
Next, use the Import command  to import the image to the workspace.

Once you have imported the image, use the vectorization tool to convert the bitmap to vectors.



1. Select the bitmap.
2. Select the Vectorization tool. 
3. Set the parameters: Enhanced curves; check Automatic cleanup and set a tolerance. In this example the tolerance was set at .001
4. Click OK.

This is an image of the vectors created from the bitmap.



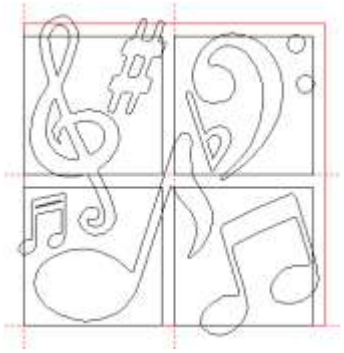
After the vectorization, there may still be some cleanup work to do. EnRoute can make the cleanup process an easy task.

1. Select the image and click on the Cleanup tool icon. 

2. Enter the cleanup tolerance and press OK. Set the tolerance to the size of the smallest features you want the software to keep. This may take a little bit of experimentation to determine what tolerance would be best for the graphic.

Changing the look of the contours

EnRoute has a selection of point editing tools available. In this design, we have chosen to use the vectorized contours as inspiration for the design. We have enlarged some of the contours across the panels and tilted some of the contours. We have also changed the shape of the contours slightly to fit our design interpretation. Use the EnRoute tools to position and change the contours to your own liking.

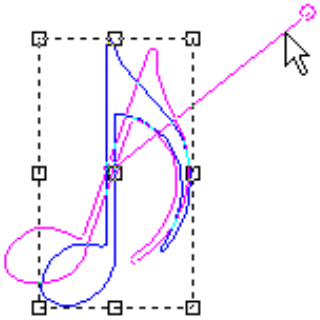


Using the Edit Contour Tools

This is an example of changes made from the original vectorized image.

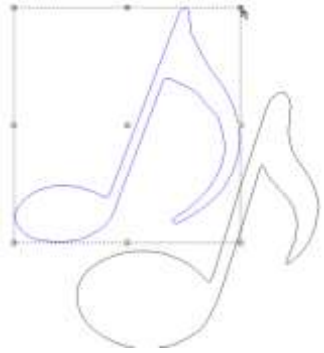
You can see that we used several tools to make adjustments to the original contour.
The rotate tool was used to rotate the note to the side.

Select the contour and then click on the Rotate icon. Next click on the center portion of the contour to place the starting point of the rotation angle, move the mouse and click to set the second point of the rotation. Move the mouse and the contour will rotate around the first point set to the position that you want. Click again to set the new position of the contour.

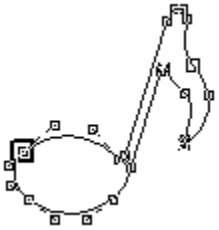


The note was then stretched to the approximate size that we wanted by clicking and dragging the handles of the bounding box. This is a quick and easy way to change the size of an object.

You may also use the scale tool to precisely scale the contour.

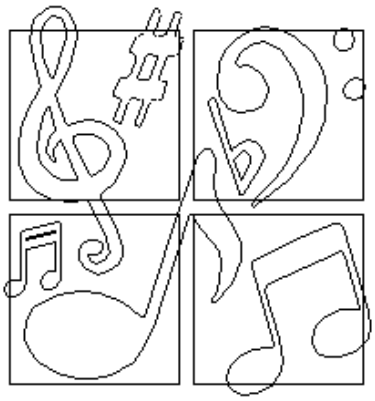


Finally the contour shape was changed slightly using the edit points tools. With this tool you can move each individual point by clicking on it and dragging it. You can also delete points by selecting them and pressing Delete to remove the point.



This image shows the changes that we made to the contours and how they were then placed in the panels. We wanted to have the contours interacting with the other panels.

Remember, it is sometimes easier and more efficient to use the bitmap images as inspiration and use the drawing tools to create your own contours.



Using the Contours to Create Reliefs

The next step is to create a relief for each of the contours. By adding dimension to the contours, the notes will be elevated from the background.

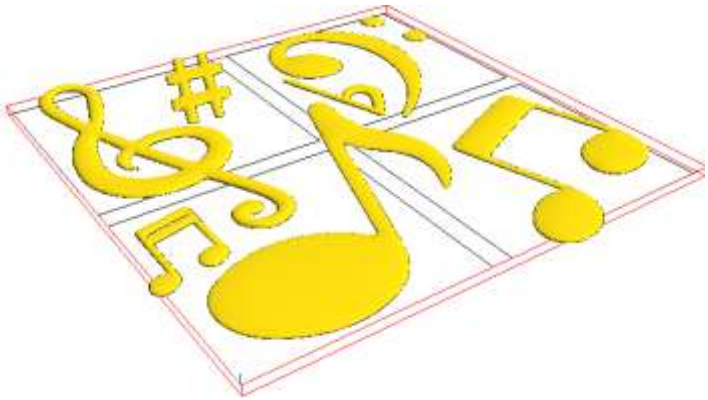
The Small Notes:

1. Select the small musical note contours.
2. Click on the Add Relief Icon. 
3. Choose the parameters: Add, Rounded, Constant Height, Height = .10, Base = .05 and Angle = 45.
4. Click Apply.

The Large Notes:

1. Select the large musical note contours.
2. Adjust the Height setting to .25. The rest of the parameters will remain the same.
3. Click Apply.

Top View



Perspective View

Creating the rapid texture

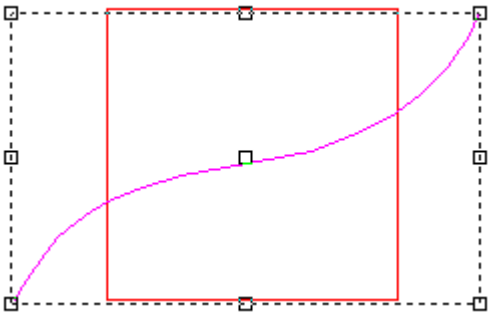
EnRoute has made the task of adding texture to panels a quick and easy process. Using the Rapid Texture tool allows you to place a consistent texture across all of the panels with just a few clicks of the mouse.

Creating the seed contour for the Rapid Texture design

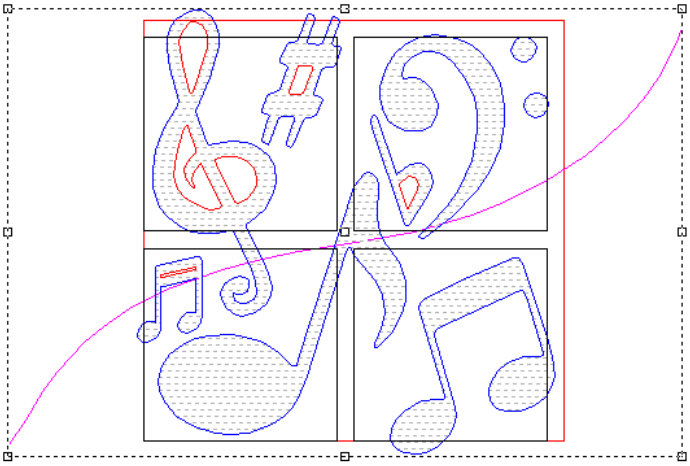
The drawing tools are used to create the "seed" contours for the rapid texture design. The 'seed contour' is the starting point for the Rapid Texture process. When the Rapid Texture contours are created, they are first created as offsets from the seed contour based on the

Offset parameter in the Rapid Texture dialog. The offsets are then distorted using the other Rapid Texture parameters, creating the finished Rapid Texture contours. Since the seed contour is the starting point, it is an important part of the design process. Seed contours can be virtually any shape desired; they can be open or closed contours; and, you may select more than one seed contour at a time. Whatever contours that are currently selected when the Rapid Texture process is started are used as the seed contours. With some experimentation you will find that even using all of the same parameters, you can change the end result of the Rapid Texture results quite dramatically simply by changing the shape and number of seed contours selected.

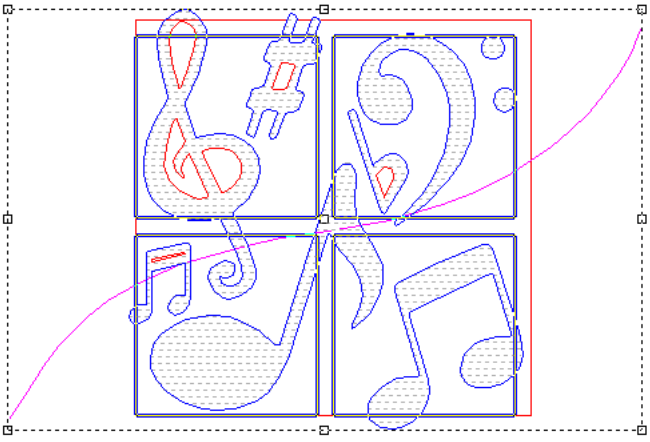
1. Create a seed contour for the Rapid Texture to follow. In this example, the seed texture is shown in pink. It is a curved contour that extends across the entire plate and beyond. Use the drawing tools to create this contour.



2. Select all of the reliefs and the seed contour.
3. Click on the Rapid Texture Icon.  This will open the Rapid Texture Dialog.



4. Select the panels.



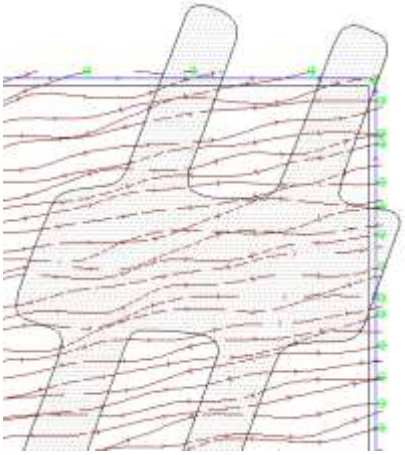
5. Enter the parameters in the dialog.
   Overlap = .25
   Wavelength = 2.00
   Horz. Amp. = .50
   Vert. Amp. = .30
   Offset = .25
   Noise = checked
   Randomize = checked

   Click Apply.

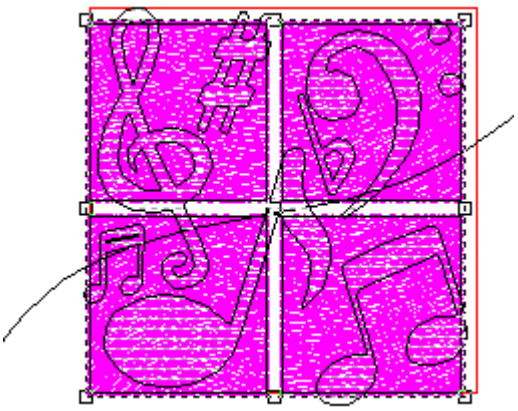
Note: In this example we have created the panel contours. By selecting them we have told EnRoute to use this as our panels. It is not necessary to enter parameters for the panel size.

6. This image shows the contours that have been created.

7. This is a close-up image of the contours that have been created. Notice that the contours continue across the reliefs that have been applied to the musical notes.



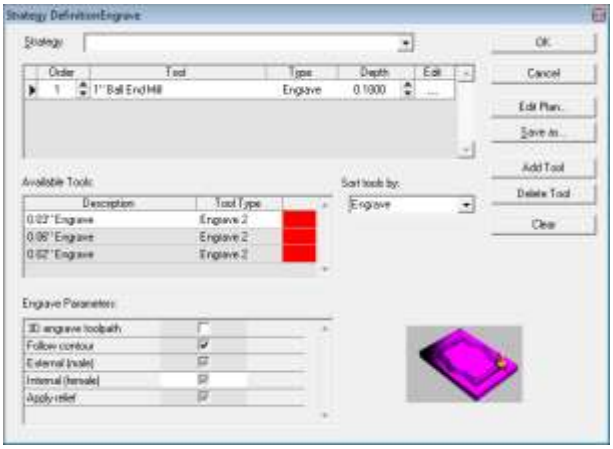
8. Select the contours so that you can apply the toolpaths. At this point the contours are grouped by panel. Click on a contour within each panel while holding down the Shift key.
9. Click on the Engrave Icon  . This will open the Engrave Dialog.



10. Enter the parameters into the Engrave Dialog.

    A 1 inch Ball End Mill is used.
    Depth = .10
    Follow contours = checked

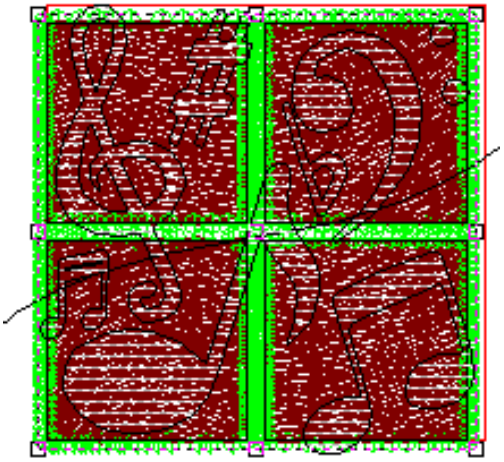
    Click OK.



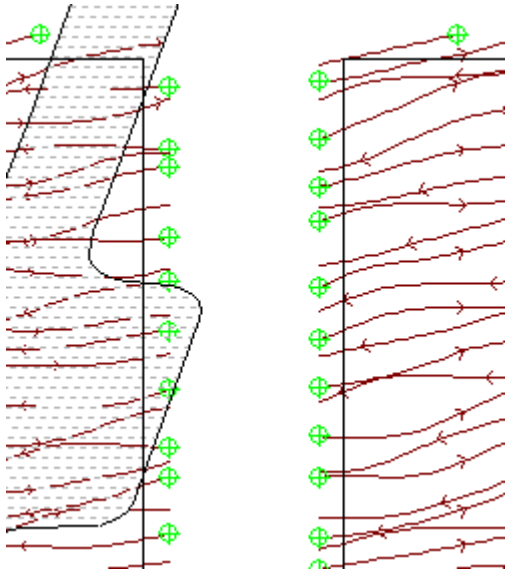
11. This image shows the toolpaths that have been applied to the contours.

12. Next it is a good idea to group the toolpaths while they are selected.

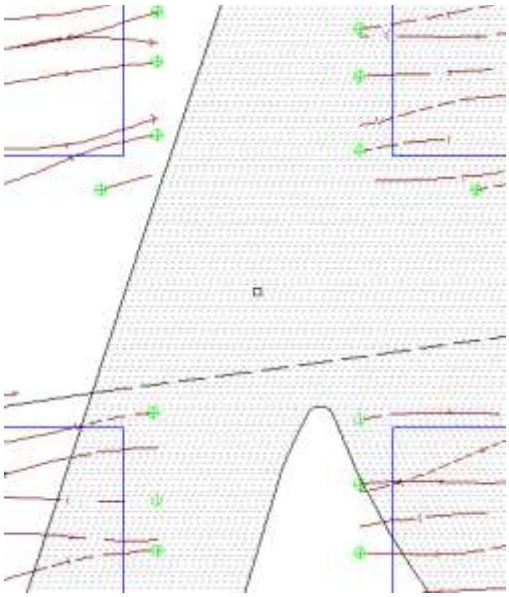
    Click on the group icon. 



13. Here is a close up view of the contours after the toolpaths have been applied. You can see that the contours and the toolpaths extend past the panel contour. This allows the tool to cut the full depth all the way to the edge of the panel.



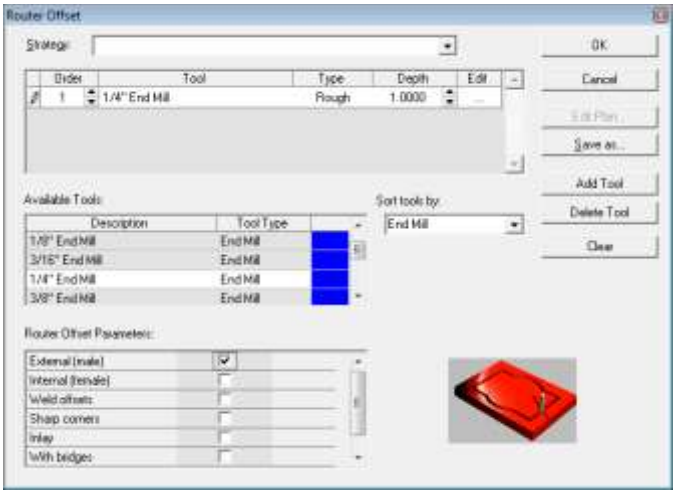
14. The next step is to apply the Routing Offset toolpaths to the panel contours. This image shows a close-up view of the center of the plate. Click on each panel contour while holding down the Shift key.



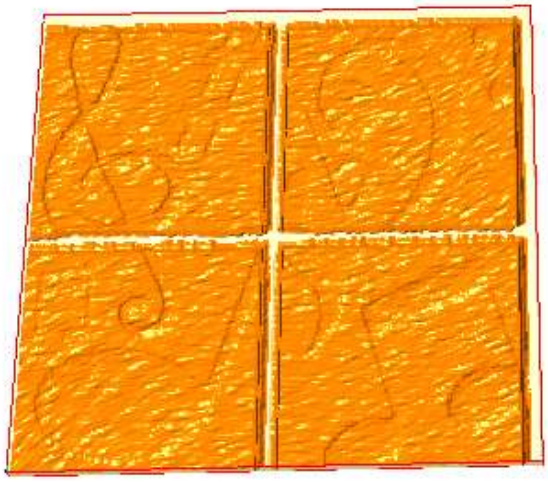
15. Click on the Routing Offset icon. 

16. The Routing Offset dialog will open.

    Enter the parameters:
    Tool = ¼ End Mill
    Depth = 1.00
    External = checked
    Click OK.

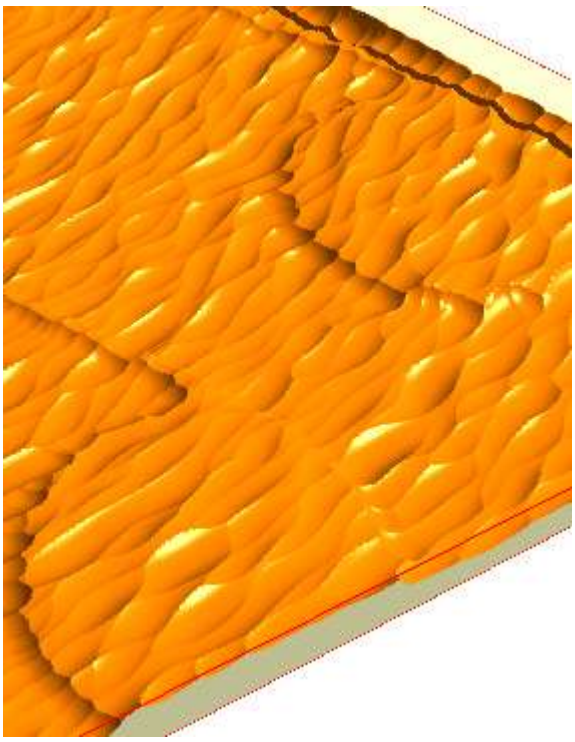


17. Use the Simulate Ortho tool to create a rendered view of the toolpaths that you have created.



18. This is a close-up view of the simulation of the toolpaths. You can see here how the Overlap parameter allows the tool to continue at the same depth past the edge of the panel.

19. You are now ready to cut your panels.



Finishing the Panels

We wanted the panels to have the look of weathered copper. In this section, we will describe in detail how we finished these panels to achieve this look.

Preparing the Panels

The material that we used is double refined MDF. This is a higher density MDF. The benefit is a smoother finish after the milling process. Below is an image of the MDF panel after the milling process. You can see that it has a relatively smooth surface. There is just a small amount of sanding to do to get this panel ready for primer.

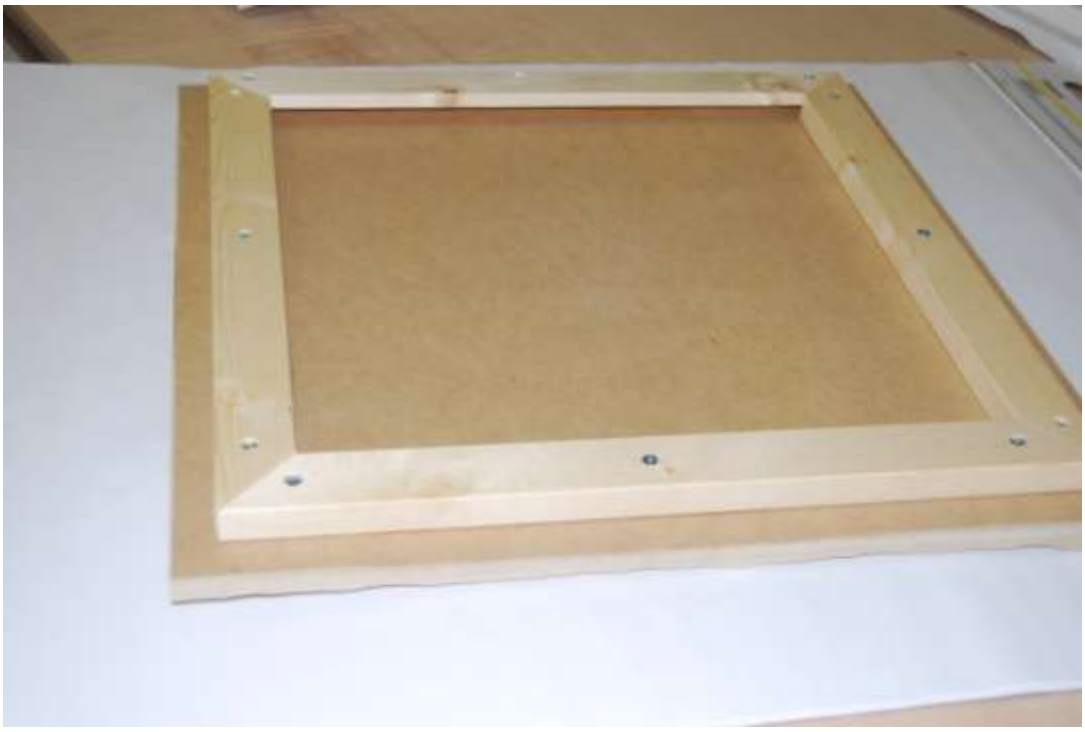
After milling the panels, we then used a Dynabrade rotary sanding tool to quickly sand the panels. This is a pneumatic air tool that spins the sanding wheels to quickly sand the uneven surface of the rapid texture panels. This makes very short work of the sanding process.

If you do not have a rotary sanding tool, a Scotch- Brite sanding pad can also be used. The panels just need a small amount of attention to remove any loose particles.

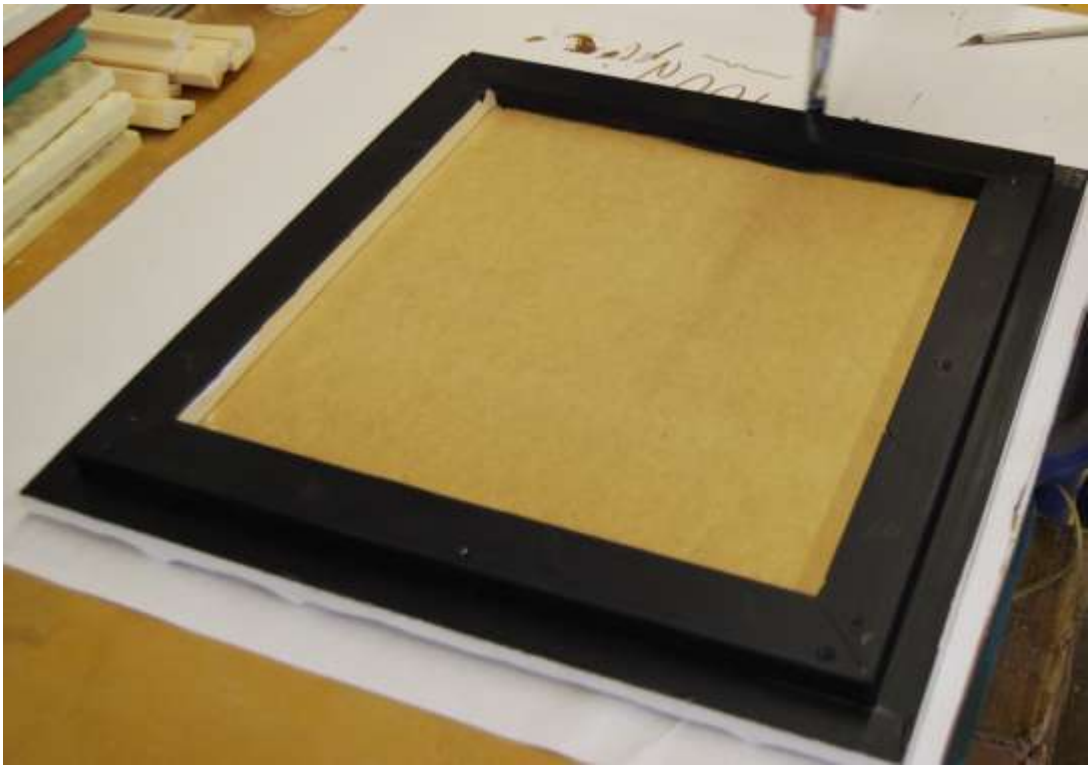
This is a closeup image of the sanded panel. You can see that it has a tight smooth surface.

Creating the frames for the panels

We added a frame on the back of the panels to create a finished look and to help the panels stand out from the wall. 1" x 2" pine was used to create the frame. The pieces were mitered and then applied with glue and screws.



We painted the back side of the panels with two coats of black paint.



Painting the Panels

We used a seven step process to create the look of the copper patina.

1. Apply Primer
2. Apply two coats of Sophisticated Finishes Copper paint.
3. Apply a dark green glaze.
4. Apply a medium green glaze.
5. Apply a turquoise glaze.
6. Apply a golden yellow glaze.
7. Add highlights to the copper.

Applying the Primer

The primer that was used is the Coastal Enterprises FSC88 Water base primer. This type of primer is very thick. Very little sanding is required because we use this thick primer to create additional texture in the finishing of the panels. Two coats of primer are used.

1. Brush on the first coat of primer. The idea is to get a thin base coat. The MDF material is very absorbent. This first coat will soak into the surface. When it dries it will allow you to add additional coats to add texture to the panel. Try to keep the coat somewhat smooth and consistent. You can place a fan to blow across the tops of the panels to help them to dry more quickly. Add the second coat of primer as soon as the first coat is dry to the touch.

2. Apply the second coat of primer with a 1 inch brush. Use the thick consistency to

create a texture by holding the brush upright and making small sweeping motions. Allow this coat to dry thoroughly. We allowed the panels to sit overnight. The panels need to be totally dry before we go on to the next step of adding the metallic paint and the glazes.

The image below shows a close up of the texture of the panel. Notice that it is not a smooth finish. The texture is created using the primer and the brushing motion.

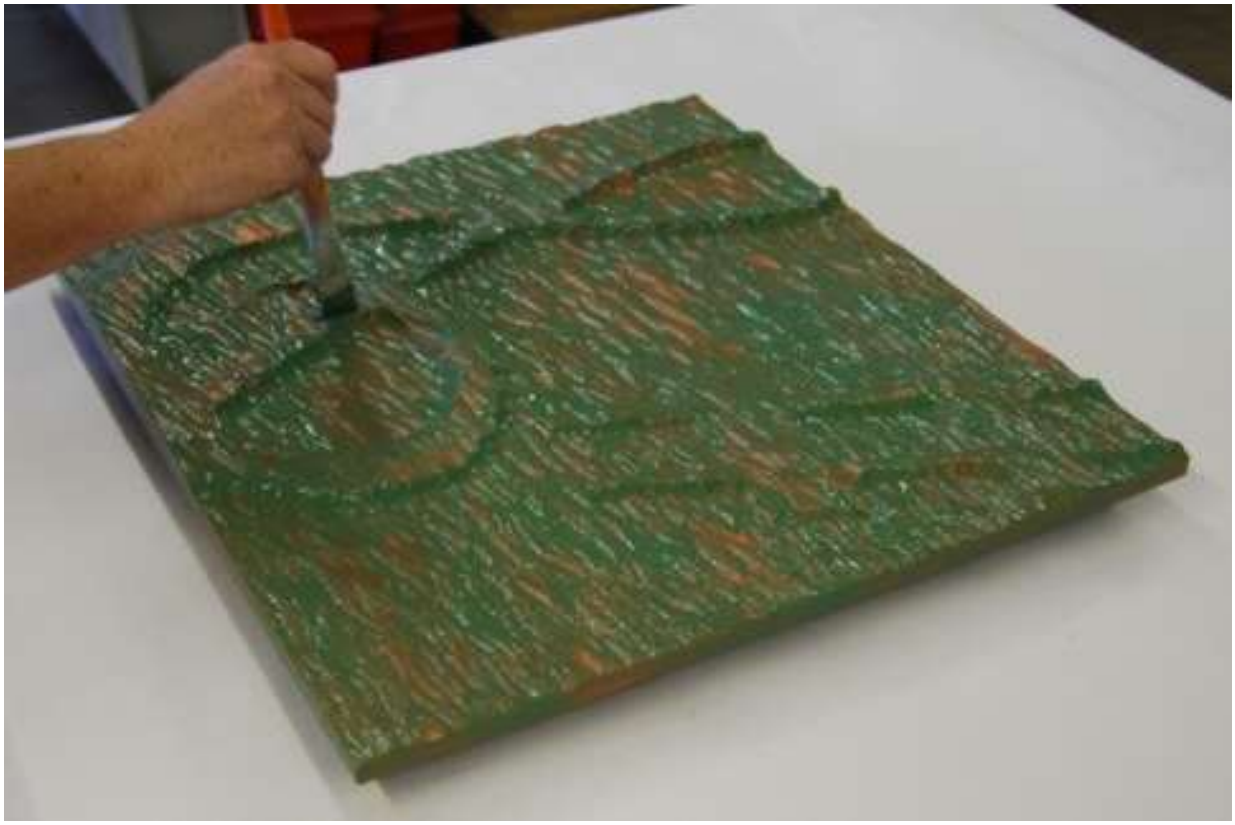
3. Inspect the panel for any areas where there may be imperfections that you would like

to sand to create a smoother look. The edges can sometime benefit from a light sanding to smooth the finish, but most of the panel should be ready for paint with little to no sanding required.

4. Apply the Sophisticated Finishes Copper Metallic Surfacer to the panels with a brush. Two coats are needed to get a rich looking finish. Allow the panels to dry thoroughly over night so that when you apply and remove the glazes you do not remove the copper finish during this process.

5. To create the glazes we mixed Behr Faux Glaze to semi Gloss Latex Acrylic Paints. You don't need a lot of the paint mixture to cover these panels, so work with small quantities of the mixture so that you do not have a lot of waste. Refer to the glaze directions for the proper proportions of glaze to paint.

6. Apply a dark green glaze. We used a color called Jungle Green. It is a darker forest green color. Paint the glaze over the entire surface being sure to cover the surface completely. There is no need to be neat during this process; you are just getting the glaze to cover the surface.

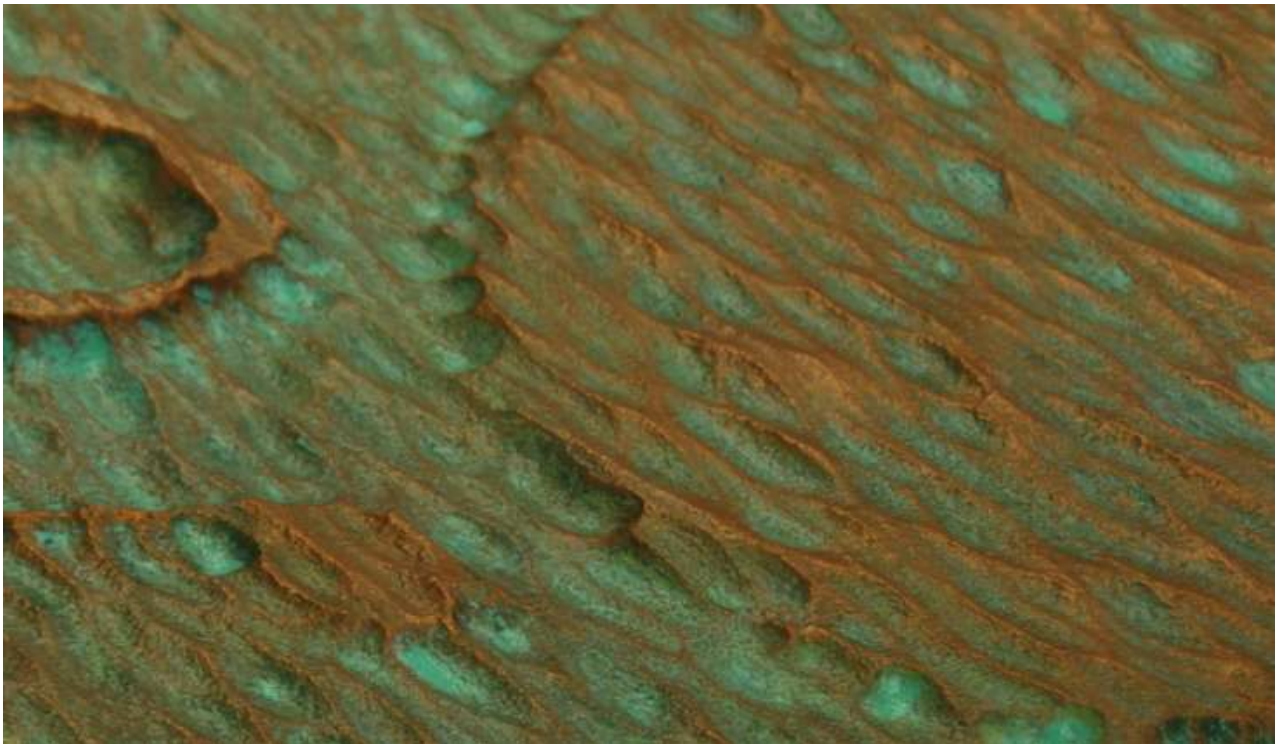


7. Using paper towel or soft cloth, wipe the glaze from the surface of the panel. The idea is to remove the glaze from most of the panel only allowing the glaze to stay in the areas around the raised surfaces and the deeper areas of the texture. Below is a closer view of the panel after wiping the glaze.
   Repeat this technique with the next 3 colors of glaze.

8. The next color that is applied is a medium color green color called Nature's Abundance. The paint is mixed with the glaze, applied with a brush and wiped away with the cloth. This adds the next dimension to the color of the patina.

9. Now we apply a color called Forest Fern. This is sort of a turquoise blue/green color. Mix it with the glaze, brush it on and then wipe it away with the cloth.

10. At this point, the colors are starting to develop that copper patina color. This close up shot gives you an idea of how much of the glaze has built up on the panel.



11. The final glaze that is applied is a golden yellow color called Yarrow Point. Mix the glaze, brush it on to the panel and wipe it off with the cloth.

12. The last step to our process of creating the copper patina look is to use a dry brush technique to highlight the raised areas of the panels with the copper metallic color. Place a small amount of copper paint onto a scrap board or a piece of paper. Load a small amount of paint onto the brush. Brush most of the paint off of the brush onto a scrap paper.

13. Hold the brush at a flat angle to the panel and lightly brush across the surface of the panel at the high points. This will highlight the raised areas to give it the look as if it were polished.

14. Shown here is a close up view of the panel after we have finished all of the steps listed above. We did a lot of experimentation and feel that this procedure gives us a nice copper patina look.

This is another image of the entire panel after it is finished.