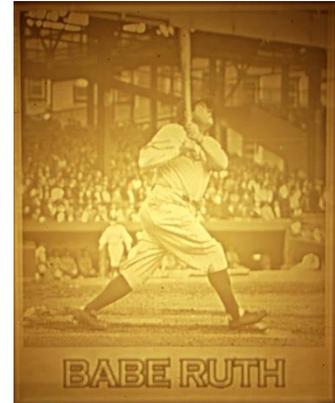


CHAPTER 2 – CARVING SIGNS AND LITHOPANES

The two most common uses for the CarveWright CNC, especially for new users, is to make signs and lithopanes. We all know what a sign is, but what is a lithopane? A lithopane is an image carved into a translucent material that can only be seen clearly when back lit with a light source. Both signs and lithopanes are easy to make with the CarveWright System and in this section we will show you how.



What's in this Section?

This section will cover using basic drawing tools, text, depth & height, bit optimization, textures, and import image. These procedures will cover Project Designer BASIC, Project Designer PRO, Centerline Text, and Conforming Vectors.

TUTORIALS

Live Laugh Love Sign – This project also covers fine tuning & optimization of your project with depth, height, feathering & draft; use of the text tool, drawing tools, regions, textures, & carving list; changing the board settings and selection of quality settings.

Spring Blooms Sign – Expanding on the “My First Carve” project using more Project Designer features, including text, regions, and textures.

Winter Snowflake – Project that continues to introduce more tools, including the basics of optimization including feather and draft.

Martian Ray Gun – Martian Ray Gun sign project reinforcing the features learned from previous tutorials.

House Number Sign – This project adds instruction in using drawing tools, grids & snap to grid; adding constraints; using Centerline Text (sold separately) and Conforming Vectors (sold separately), copy & paste, flip & rotate, creating a closed regions & staying under the rollers.

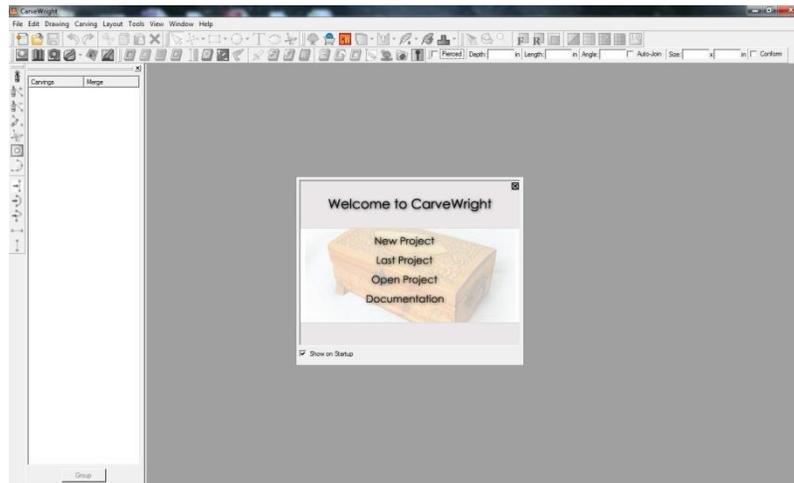
Importing Images – There are several different image file types that can be used to import logos, clipart, photographs, scanned drawings, and more. This Design Project aims to assist you in overcoming some of the basic challenges.

OVERVIEW OF TEXT TOOLS

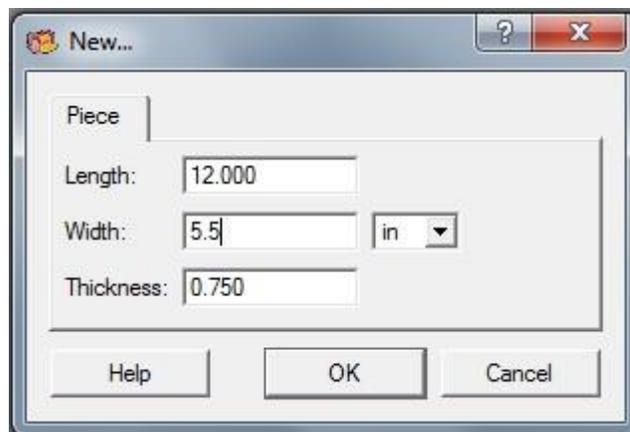
TRUE TYPE FONTS

The text tools are used to place text onto your project board. This text can be manipulated and carved using a variety of Rout modes. The Text Tool uses whatever True Type Fonts (.ttf) you have located in your font folder. The fonts are not coming from Designer. Remember one of your computers may not have the same fonts as your other computer. There are many fonts available online, but they may not all be ideal to carve and too many fonts may slow down your software.

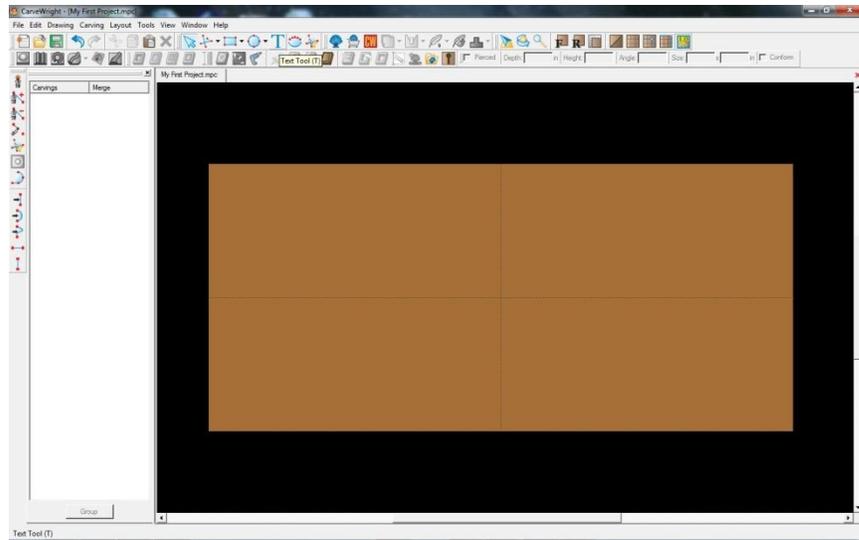
USING THE TEXT TOOL



Open Project Designer and click on New Project.

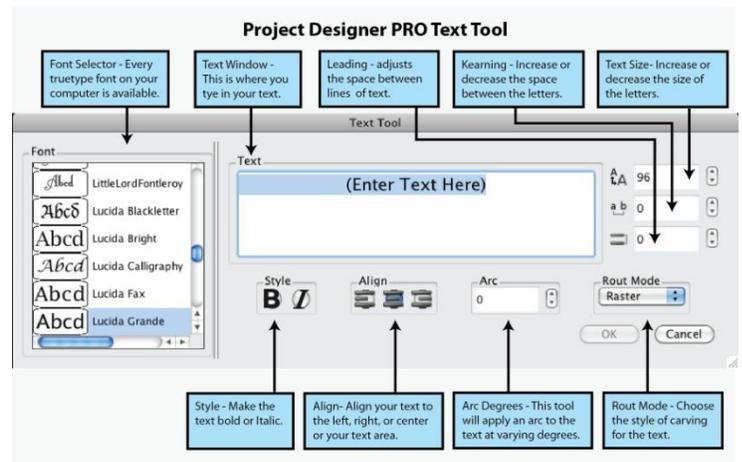
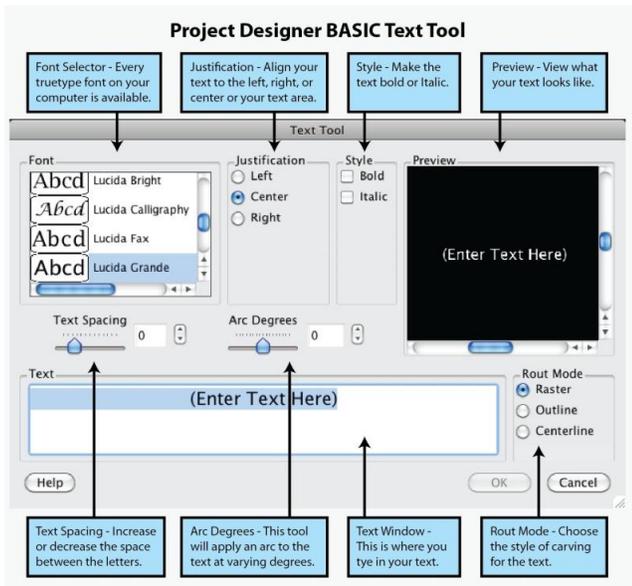


Put in the dimensions of the Project board. This needs to be the finished size of your project. Do not include the 7 inch margin required by the machine. (more on the 7 inch rule later in this lesson)



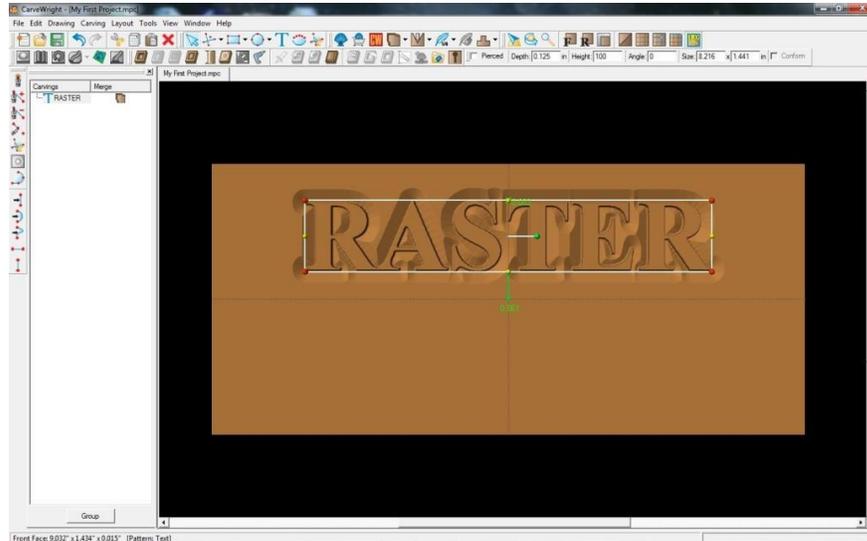
Select the Text tool from the tool bar at the top of the screen and click anywhere on the project board.

This will open the Text Tool window. This window is slightly different in Designer Basic and Designer PRO.



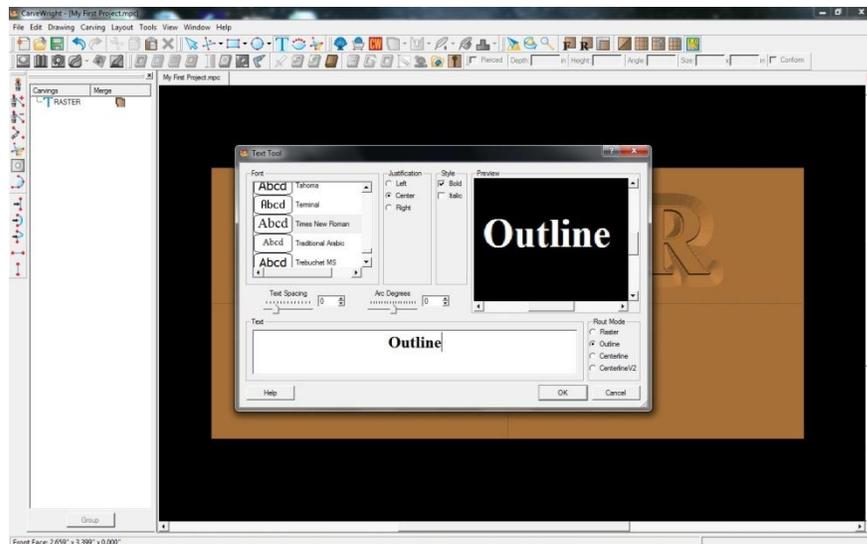
NOTE: The Centerline option under Rout Mode is only available in Demo mode, if the Centerline Text Add-On Module has not been purchased and activated.

Using this text window to type whatever is wanted to appear on the board. For this tutorial, we are going to write the word “RASTER”, choose “Times New Roman” in the font selector, select “Bold” as a style, and choose the Raster “Rout Mode”. Click “OK” to complete and then we’ll see the text displayed on the board.



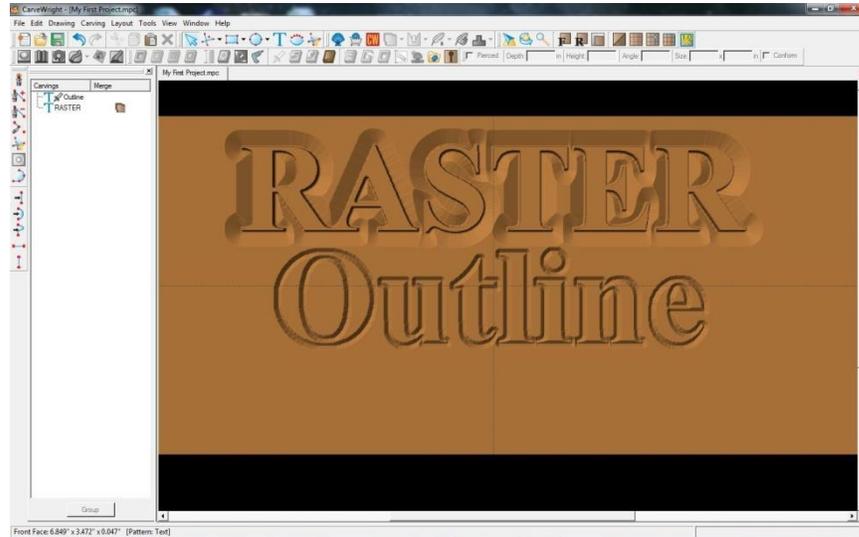
This text has all the features of a pattern and can be adjusted in size, position, and depth the same as any other pattern. Being in Raster mode, this text will be carved out as a raster, line by line, the same as the carved patterns.

Select the Text Tool again and click on the board to open it again. The Text tool will remember the font settings we used before, but this time we will write the word “OUTLINE”, and choose the outline “Rout Mode”.

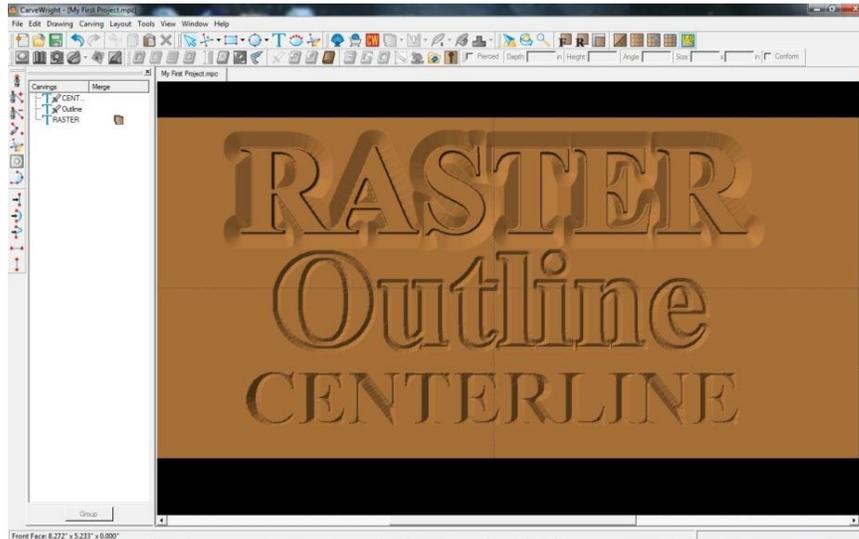


Click ok and this will display on the board.

The outlined text appears with a v-grooved outline around the text. This will be cut with a 90 degree V-bit by default as a vector function. As a vector cut, the V-bit will trace around the letters rather than carving line by line like the raster.

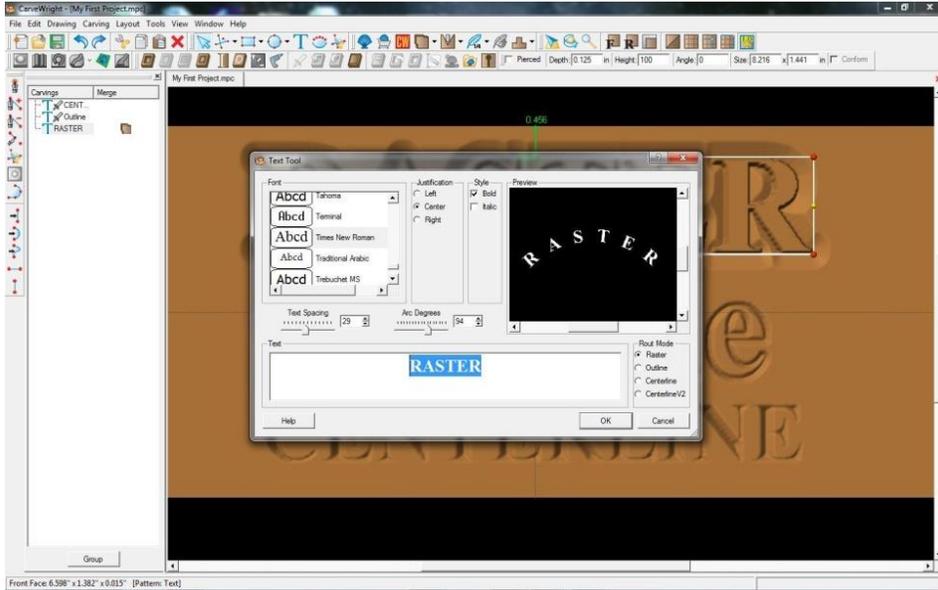


Select the Text Tool again and click on the board to open it again. Now we will write the word "CENTERLINE", choose the Centerline "Rout Mode", and click OK. If you have not purchased and activated Centerline Text, this will be working in DEMO mode and will not be able to be carved.



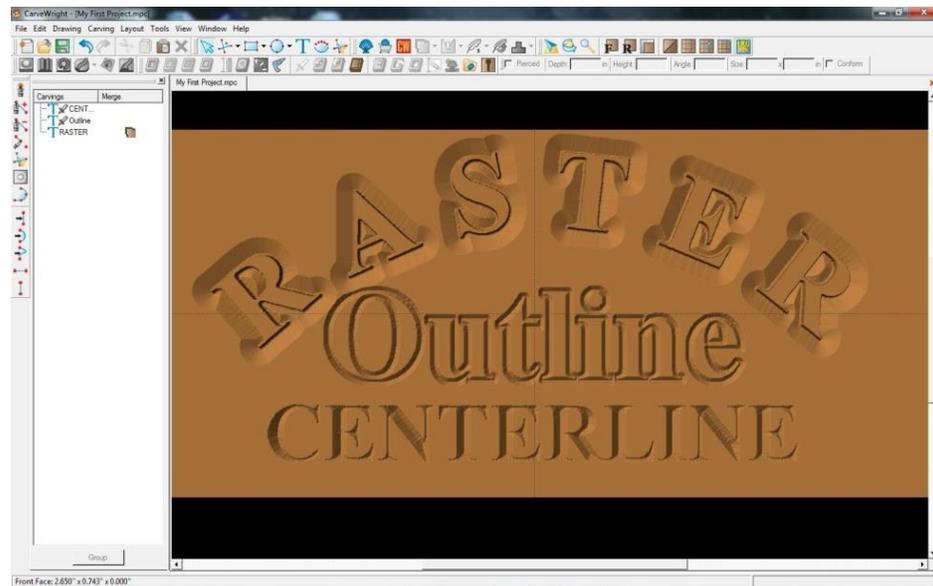
Centerline Text is an algorithm that calculates the centerline of the font and calculates the depth based on the width of those lines. It defaults to using a 90 degree v-bit and will carve the letters as a vector path. You can change this to the 60 degree v-bit using the Select Bit icon.

Since the depth of Centerline text is determined by the variations in width of the font, you cannot change the depth, except by changing the size. Centerline is applied to the top surface of the board. If you wish to use Centerline within a carved region or on any surface below the top of the board, you will need the Conforming Vectors add-on.



Now, double click on the word RASTER on your board. This will open the Text Tool window again, allowing you to make edits to this piece of text. Use the arc slider to curve the lettering, and try increasing the spacing. Click ok, again, and the edited text will display with your new settings.

Now that we are familiar with the text tools, you are ready to make a sign!



PROJECT OPTIMIZATION

When creating projects in Project Designer, there are several steps necessary for optimizing the project for carving. There are several tools used for this process, primarily they are: draft, feather, and bit optimization.

DRAFT

Draft sets an angle from the outer top edge of raised carvings out to the base of the carving. It is primarily used to reduce chip-out issues. There are 4 settings of draft to choose from for raster patterns or text.



Draft None Removes any Draft settings



Draft Small This sets a small angle to the outer top edge of raised carvings to reduce chip-out issues.



Draft Medium This sets a medium angle to the outer top edge of raised carvings to reduce chip-out issues.



Draft large This sets a large angle to the outer top edge of raised carvings to reduce chip-out issues.

As an example, let's create some raster text on a board and choose a font with thin lines.

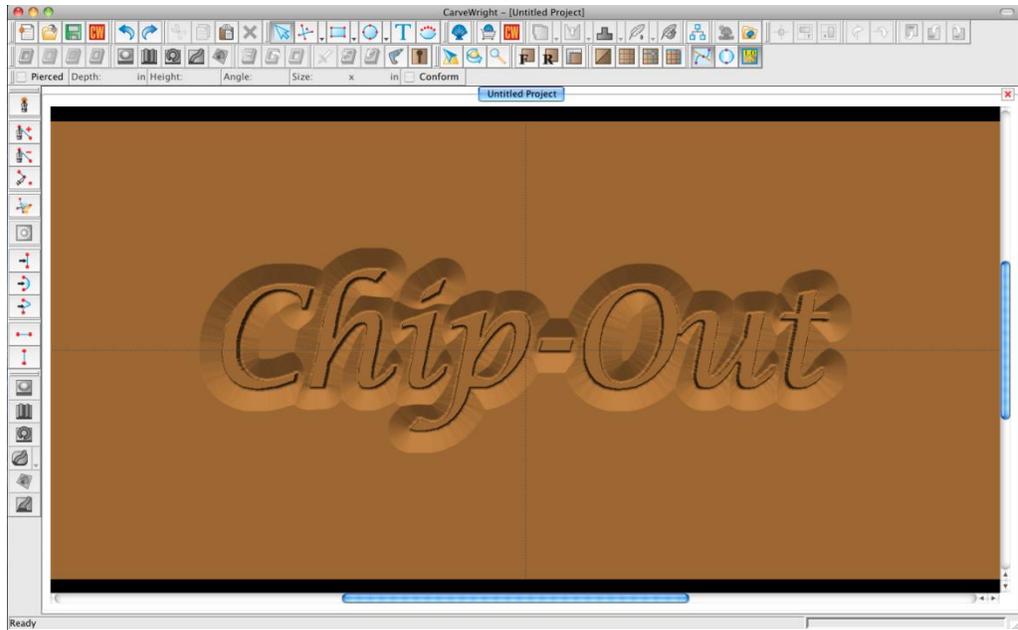
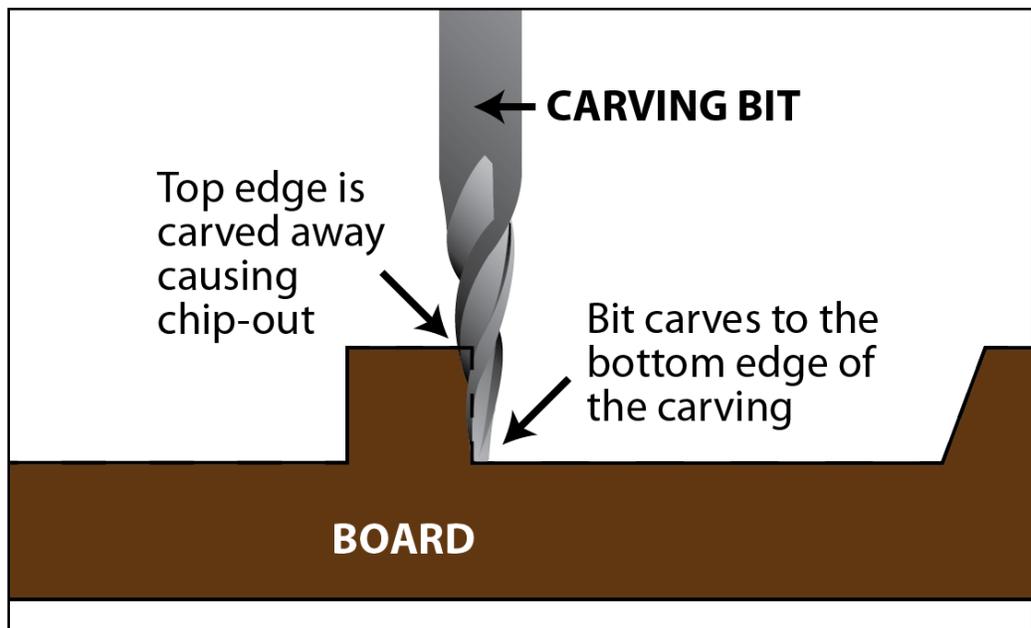


Figure 1: No Draft

By default, the text has straight edges raising up from the base of the letter to the top surface. We call these straight edges “cliffs”. The problem that can occur with these edges has to do with the taper of the carving bit that is used to carve these. This angle can carve away the top edge of the cliff when it is carving the bottom corner. (Figure 1)



Draft is used to add an angle to these outer edges to give clearance for the taper of the bit. (figure 2)

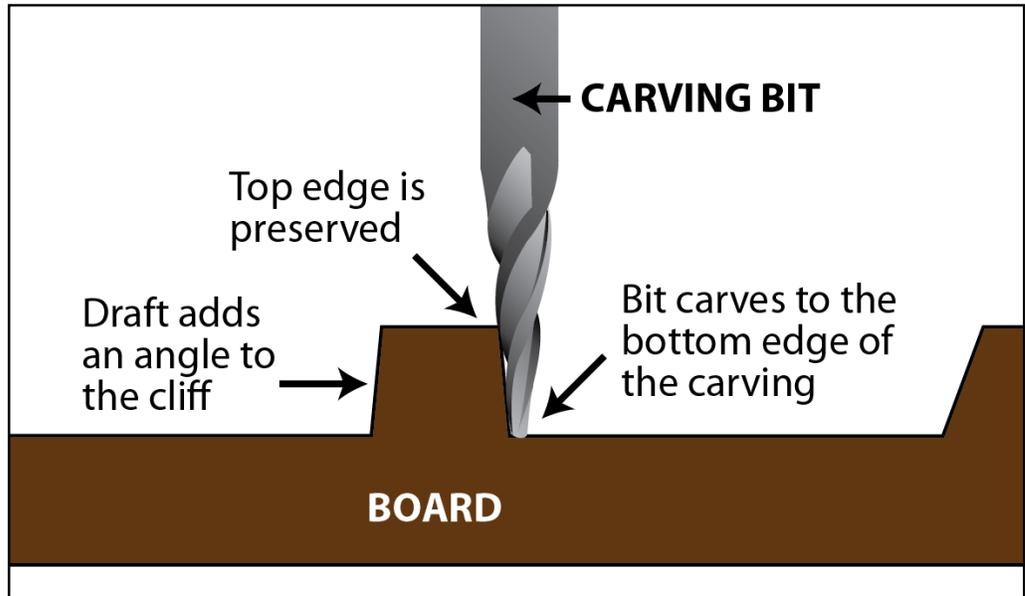
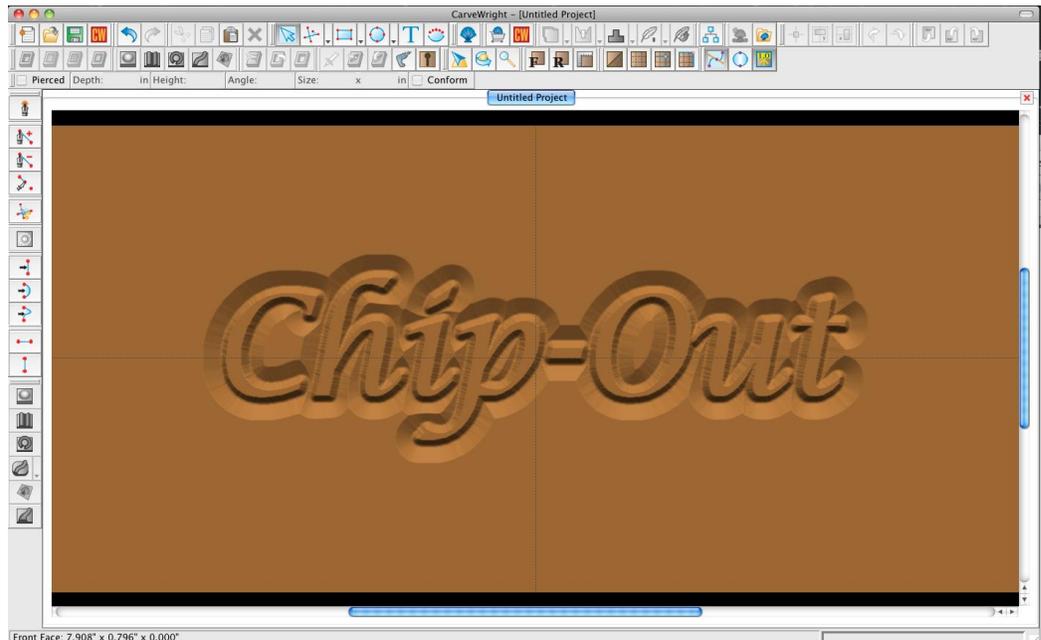


Figure 2: Draft Small

As an added benefit, the draft settings can also create a nice bevel to the outer edge that enhances the look of the design. It's not only functional, but it looks great too.



FEATHER

This sets an angle projected up and out from the base of the pattern's outer edge. Used for creating a transition from the top surface of the board to the base of the carving. There are four settings to choose from in Designer BASIC, and a custom setting in Designer PRO



Feather None Removes any feather settings.



Feather 1/8 This sets the degree of feathering to 1/8"



Feather 1/4 This sets the degree of feathering to 1/4"

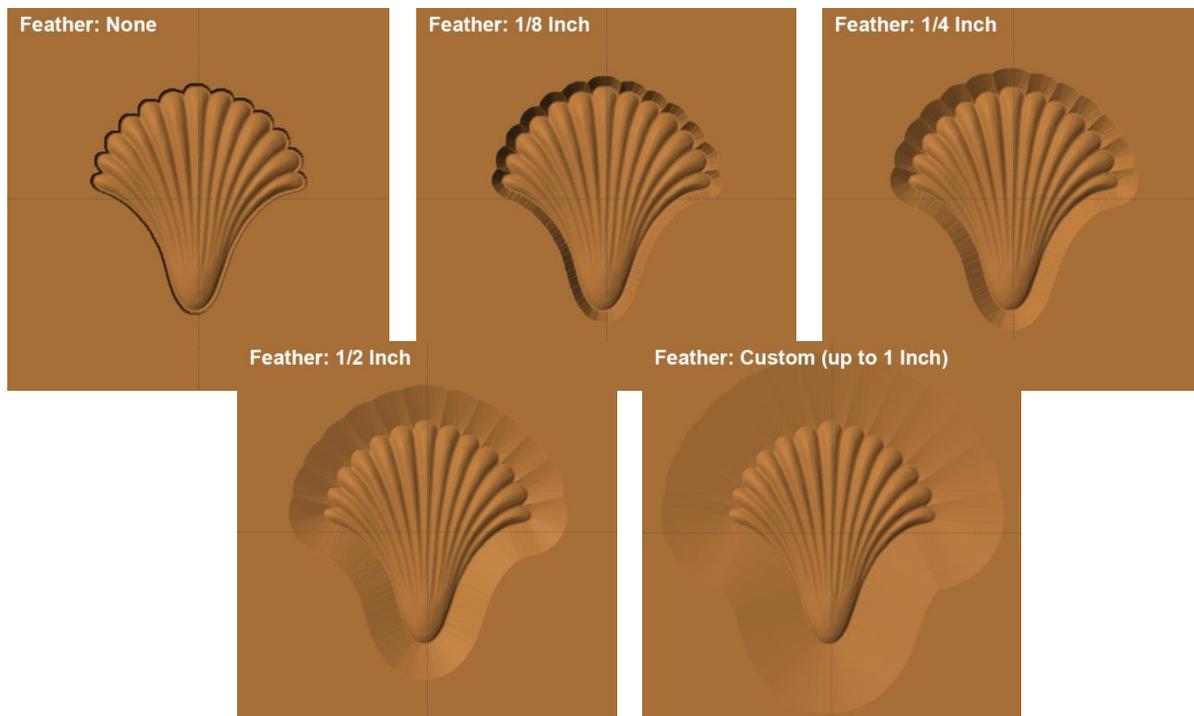


Feather 1/2 This sets the degree of feathering to 1/2"



Feather Custom (Designer PRO) This sets the degree of feathering to any dimension up to 1"

Feathering can reduce wear on the machine and bits, by creating a smoother transition around carvings, especially for deep carvings.



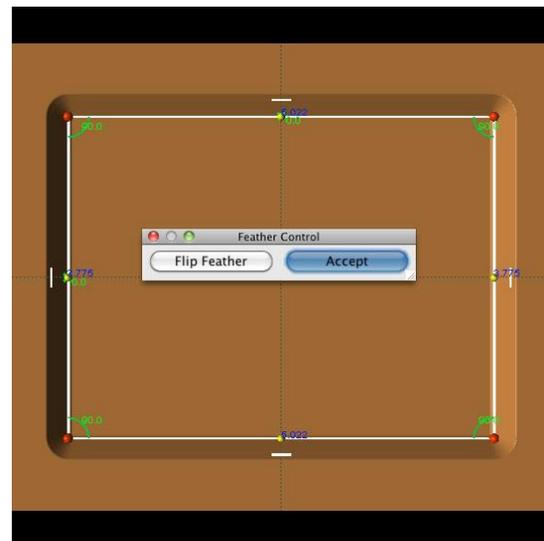
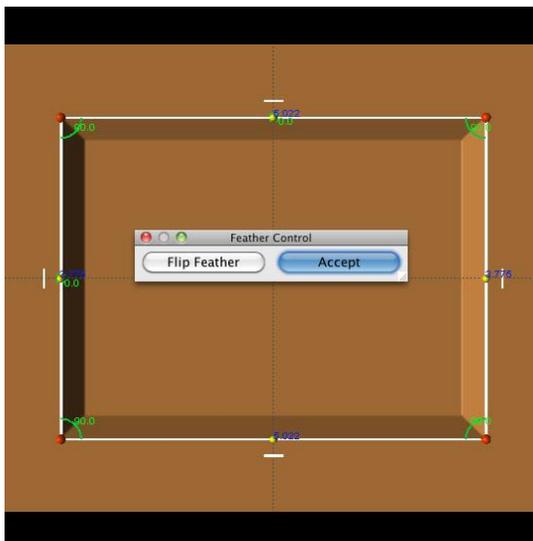


Feather . left to right = None, 1/8, 1/4, and 1/2"



Flip Feather

Carved regions, created with any of the drawing tools, can have their feathers either on the inside or outside of the line. The Flip Feather icon is only highlighted when a carved region is selected.



BIT OPTIMIZATION

Sets the limit with which the bit carves into tight areas to preserve the top level detail. There are five settings to choose from optimizing your carvings.



Bit Optimization: None Applies no bit optimization.



Bit Optimization: Low Slightly, decreases the depth of the carve in tight areas.



Bit Optimization: Medium Decreases the depth of the carve in tight areas at medium level.

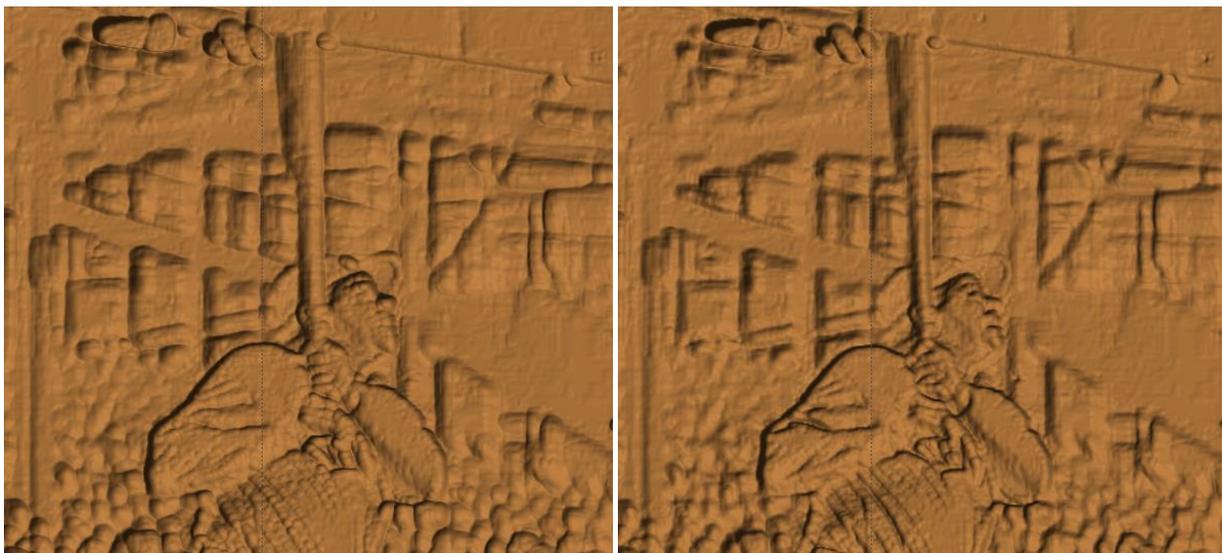


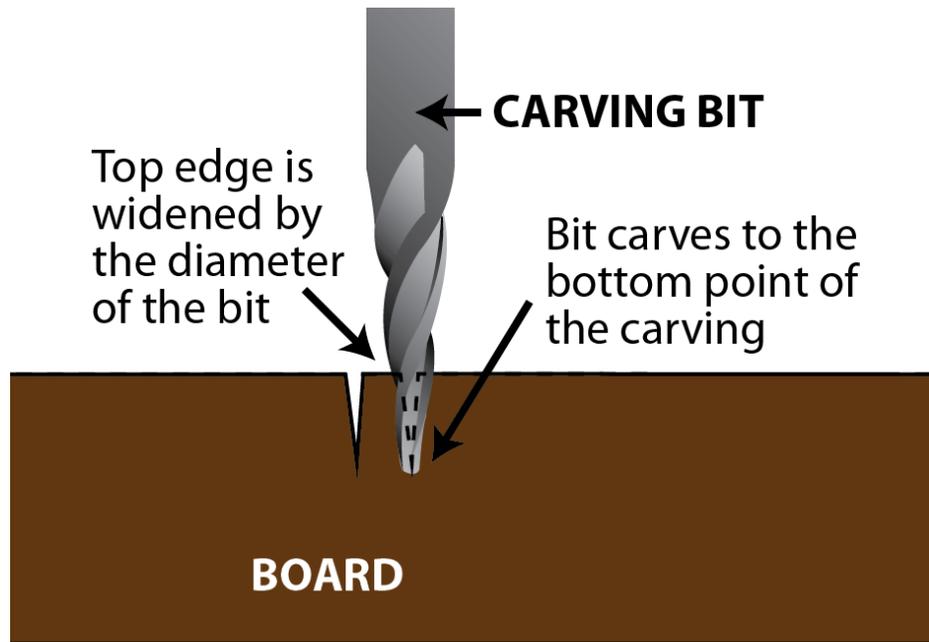
Bit Optimization: High Decreases the depth of the carve in tight areas at high level.



Bit Optimization: Best Eliminates all top level detail thinning in tight carved areas.

As an example lets import a photograph and place it on the board. Photographs are good example because of the large amount of individual pixels that can vary greatly in depth. Some of these pixels can be deep, but they are right next to high pixels, essentially creating a “hole”. When the bit goes to carve this, it will cause a widening of that hole from the diameter of the bit.





FINE TUNING

The adjustment of depth and height are essential tools for fine tuning your designs in Project Designer. These tools allow the creation of more intricate layering of patterns to create more visual interest in the design.

DEPTH

Depth is describing the lowest level, or the base, of the carving, pattern or element. Most patterns, when placed on the board, are set to be at 1/4" deep. With the depth tool, this depth can be changed to whatever depth desired within the limits of the bit.

Depth: 0.250 in

Depth at .25+

Depth at .5+



Below: Depth left to right .125", .25" and .5"



HEIGHT

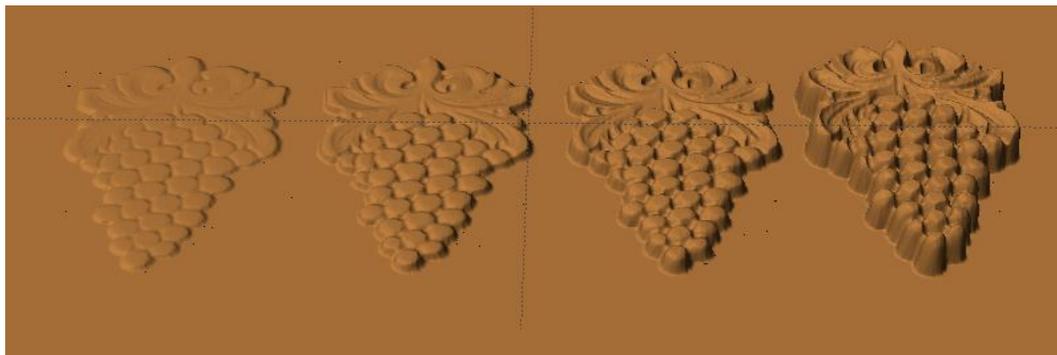
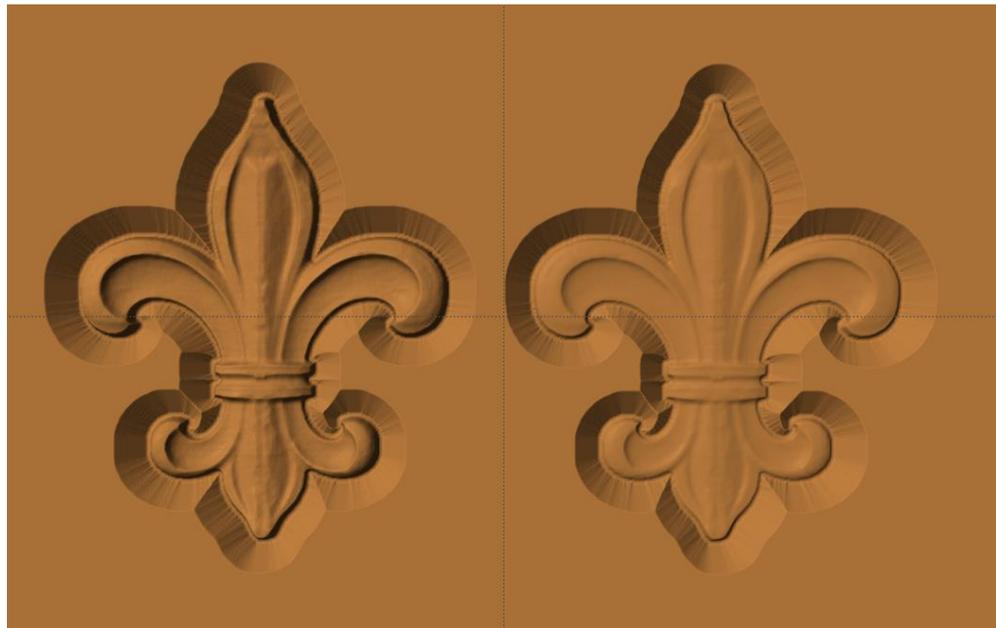
This is a relative value of the height from the deepest part of the carving to the top of the board being used. It can be set from 0-999 with 999 being no material removed from the highest point of the element. It will default to 100, which is it's original thickness.

Height: 100

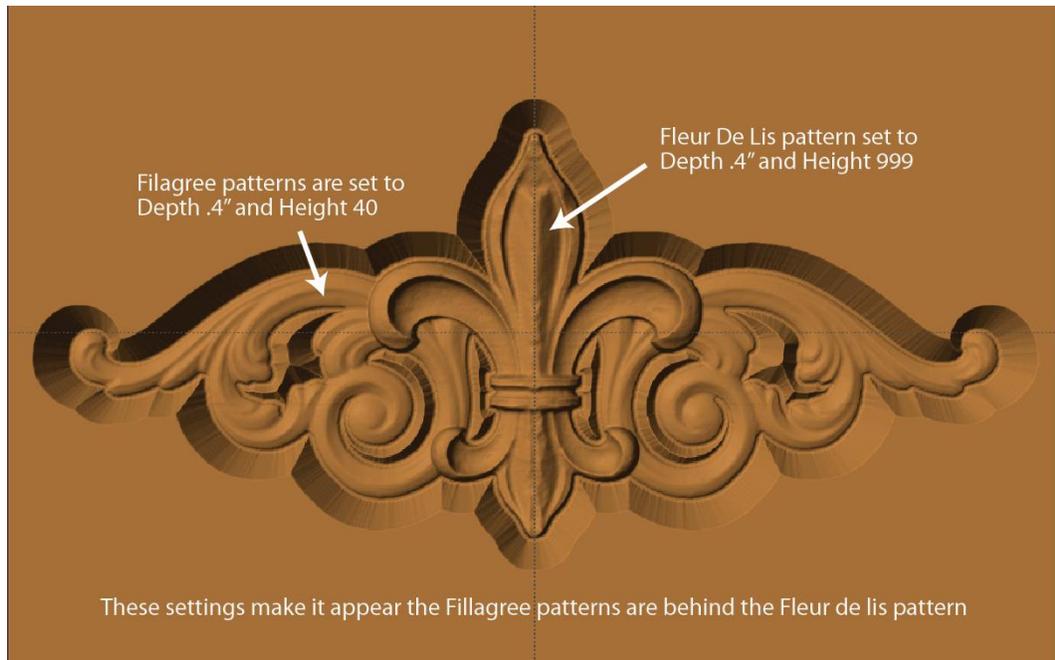
This basically means you can make a pattern taller or shallower within its set depth. The deeper the pattern is, the higher you can raise it since there is more distance to work with.

Height at 100

Height at 30



Depth for each = .5". (From left to right – height = 20, 50, 100, 999)

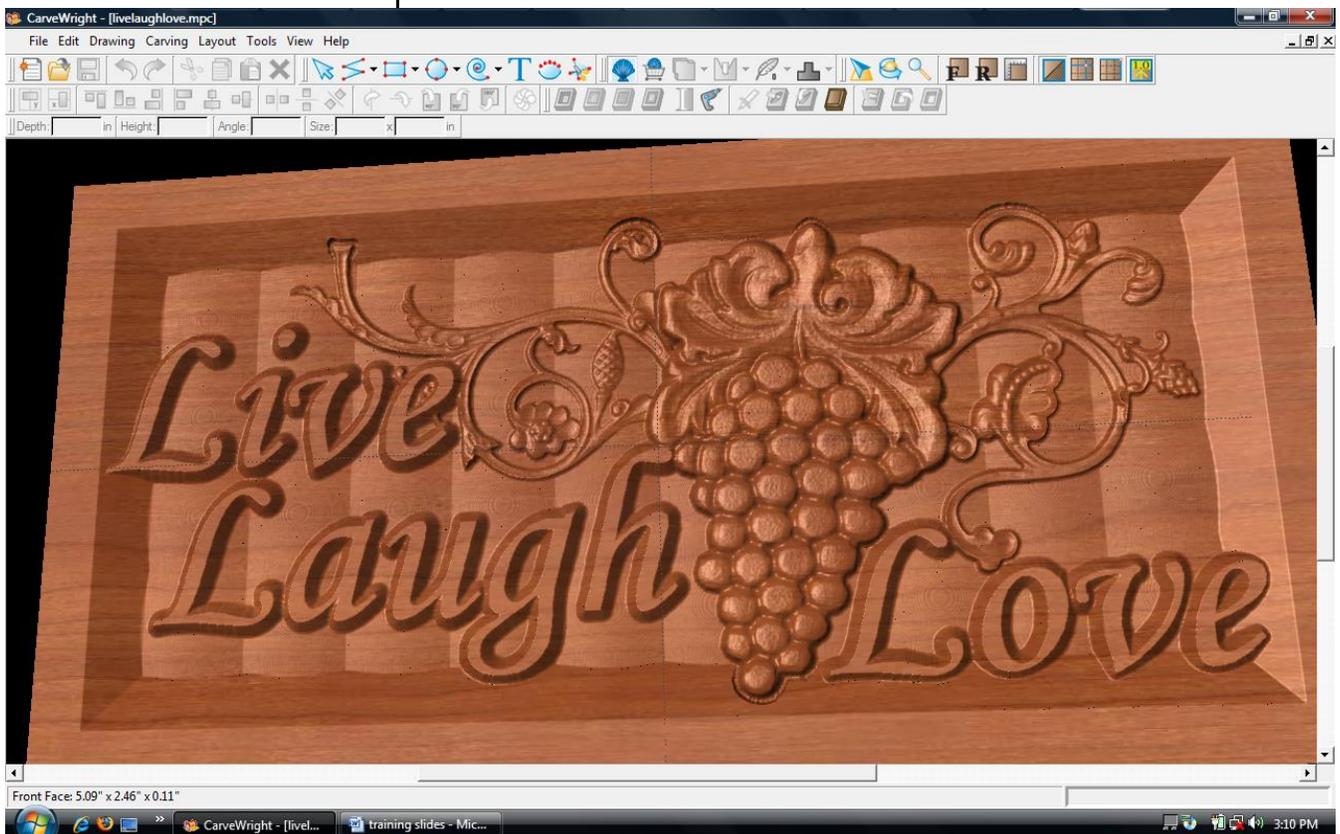


Depth and height when used together can create the effect of elements appearing to be behind or above other elements.

**LIVE LAUGH
LOVE**

This project covers the following design concepts:

- PATTERN PLACEMENT
- PATTERN MANIPULATION
- FINE TUNING
- ADJUSTING DEPTH & HEIGHT
- TEXT TOOL
- DRAWING TOOLS
- REGIONS
- TEXTURES
- CARVING OPTIMIZATION
- FEATHERING
- DRAFT
- CARVING LIST
- BOARD SETTINGS
- MANAGING DATA
- UPLOADING TO MEMORY CARD
- QUALITY SETTINGS



INSTRUCTIONS:

➤ STARTING THE SOFTWARE

Open the CarveWright Designer Software

The Welcome screen appears with project options.



Select "New Project"

Set your board piece dimensions.

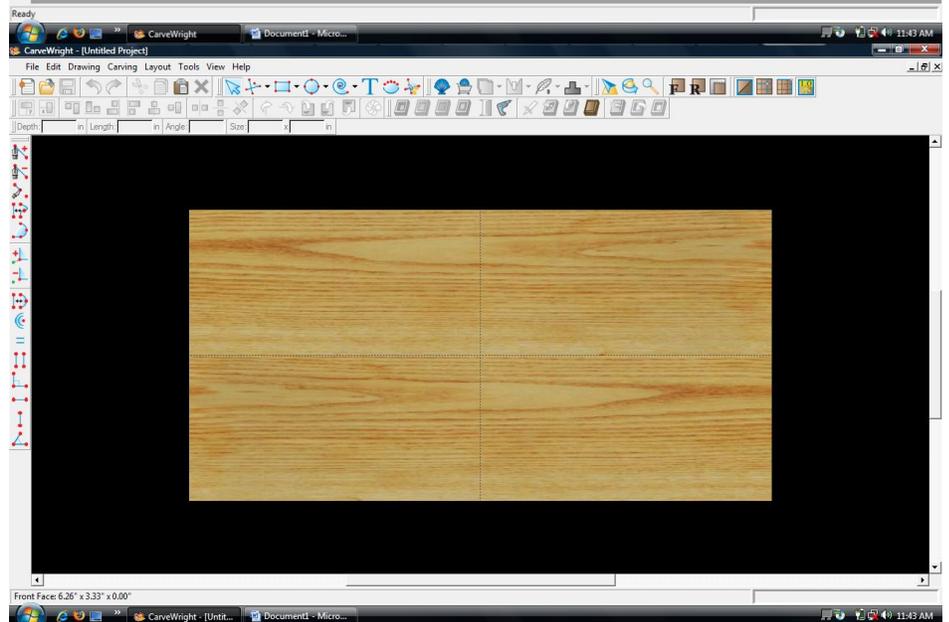
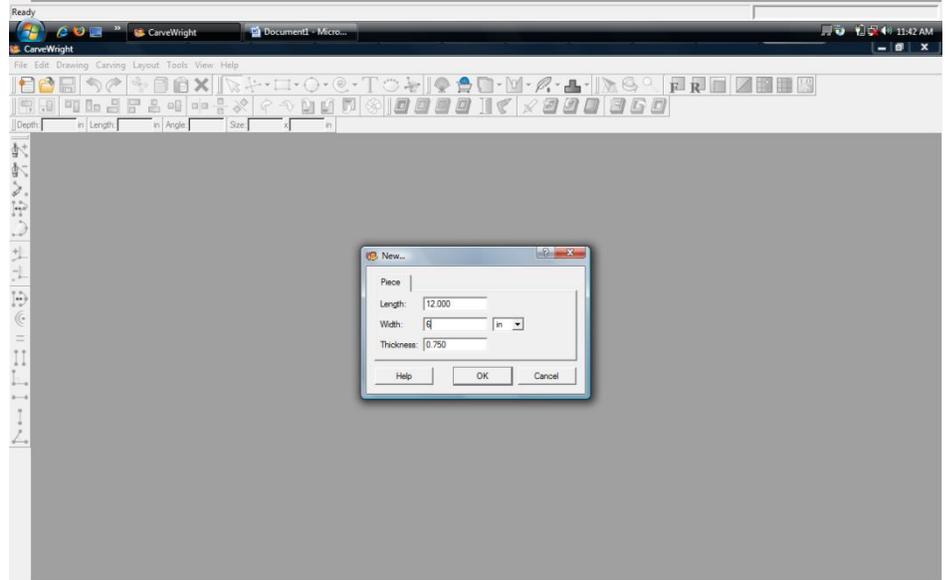
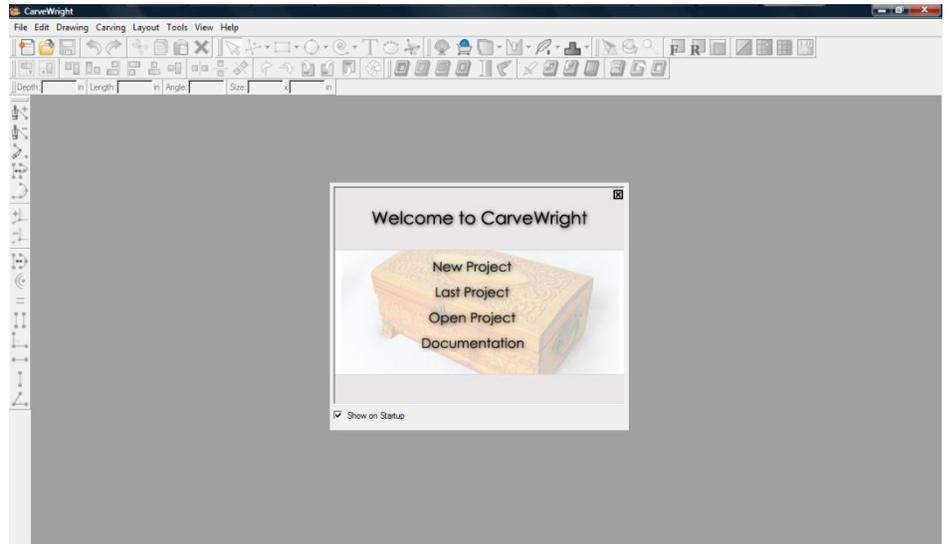
Length: 12"

Width: 6"

Thickness: .75"

Click ok

➤ MENUS, TOOLBARS OR MOUSE



➤ MANIPULATING THE WORKPIECE

Board piece will display on screen in three dimensions.



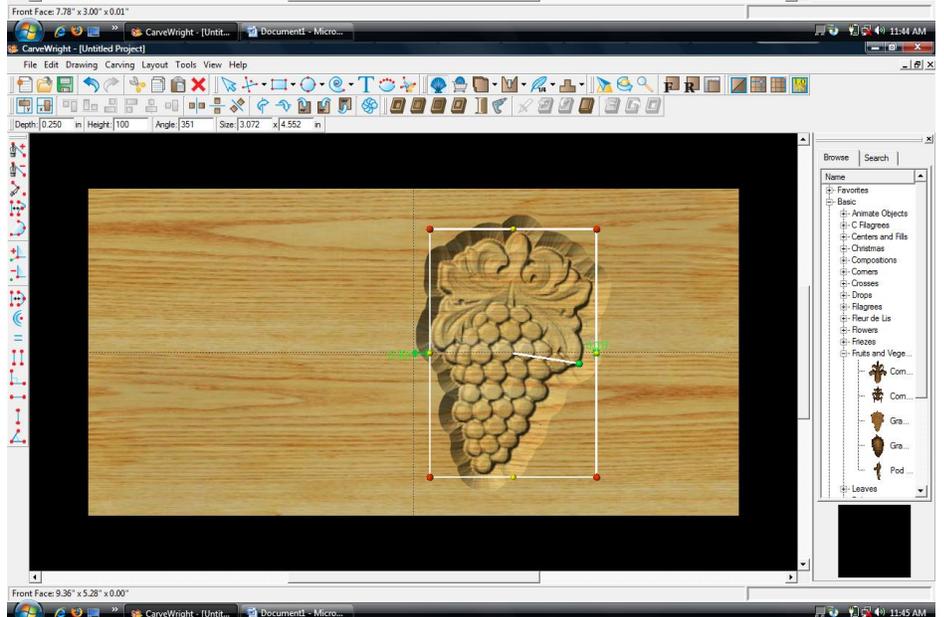
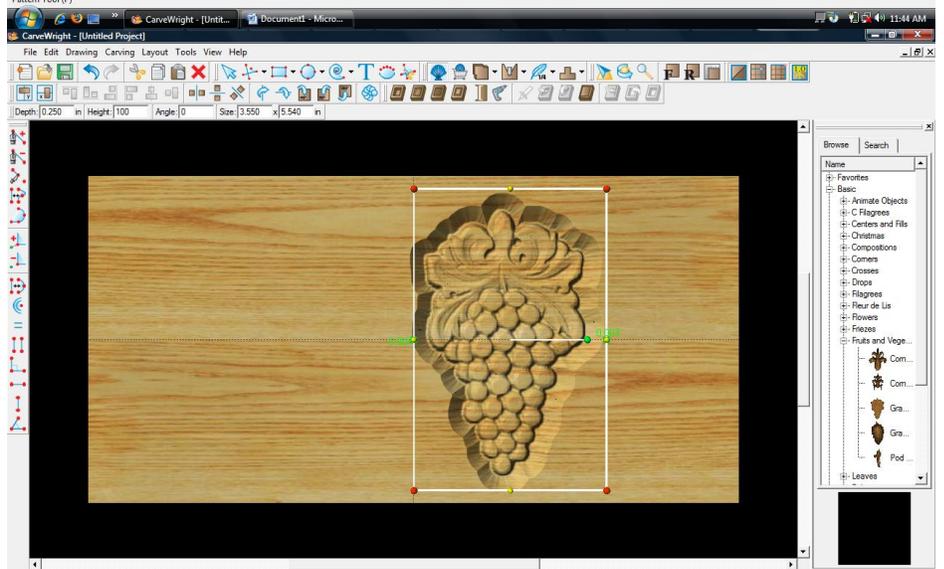
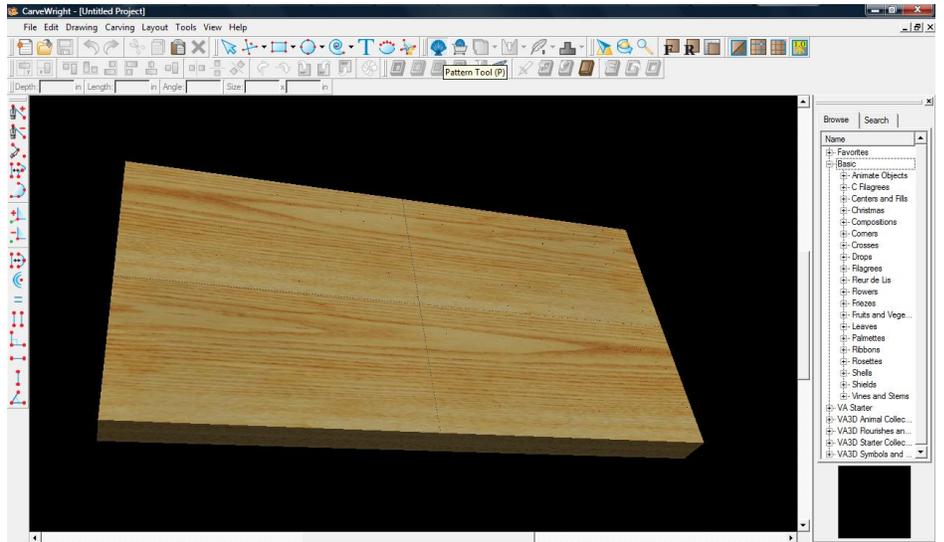
➤ PATTERN PLACEMENT

 Select the “pattern tool” to open the pattern library along the right side.

Select “Grapes01” under “Fruits and Vegetables” in the Basic Library. Click on board to place.

➤ PATTERN MANIPULATION
Use Red Nodes on the corner to Scale the pattern.

Also, use the Green Node to Rotate the pattern



➤ PATTERN PLACEMENT & MANIPULATION

Adding Additional Patterns



Select "Vine04" under "Vines and Stems" in the Basic Library. Drag and drop it onto the board.

Rotate and scale to fit with other pattern.

*****IMPORTANT*****

Notice how the patterns overlap. The stem of the vine is surfacing through the grape pattern.

➤ FINE TUNING

To fix this we will adjust the depth and height.

➤ ADJUSTING DEPTH

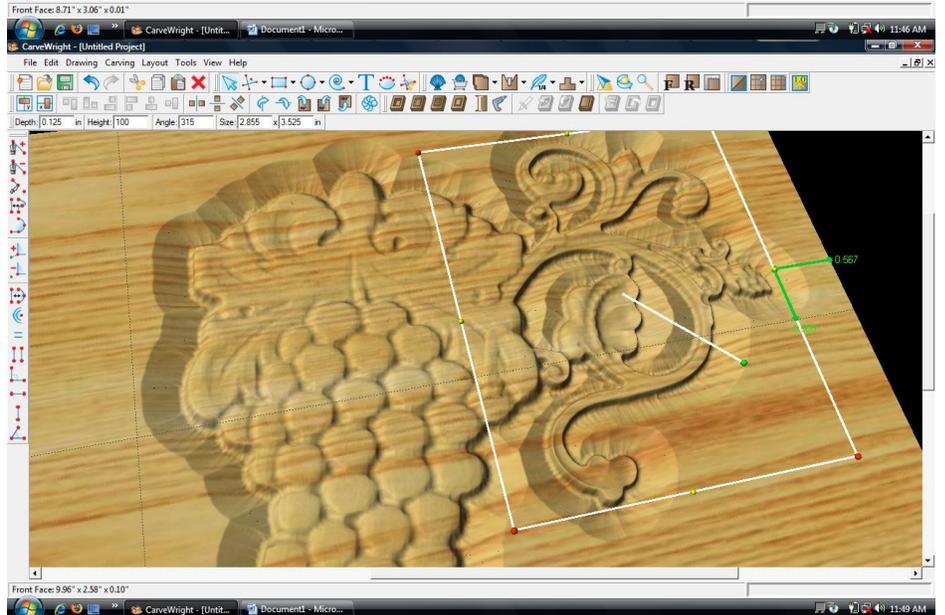
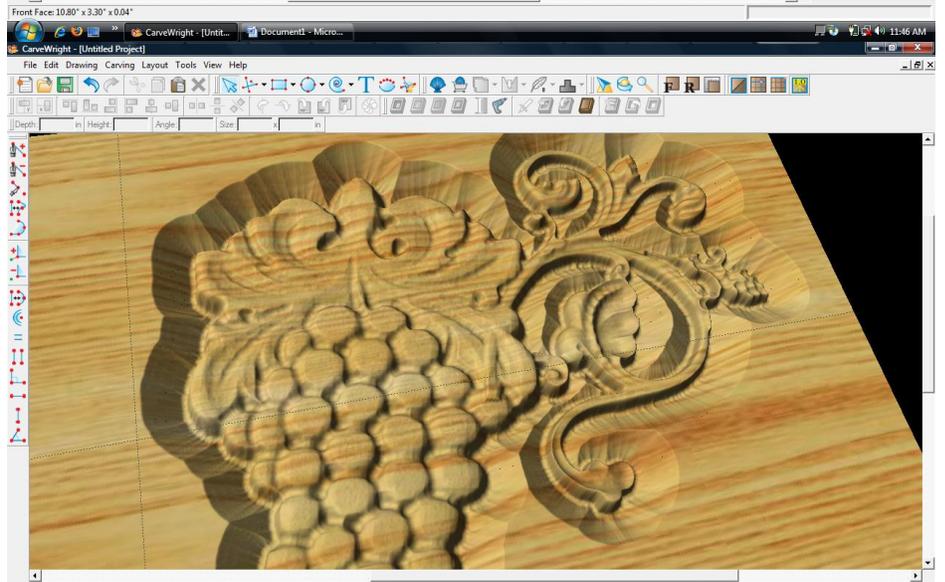
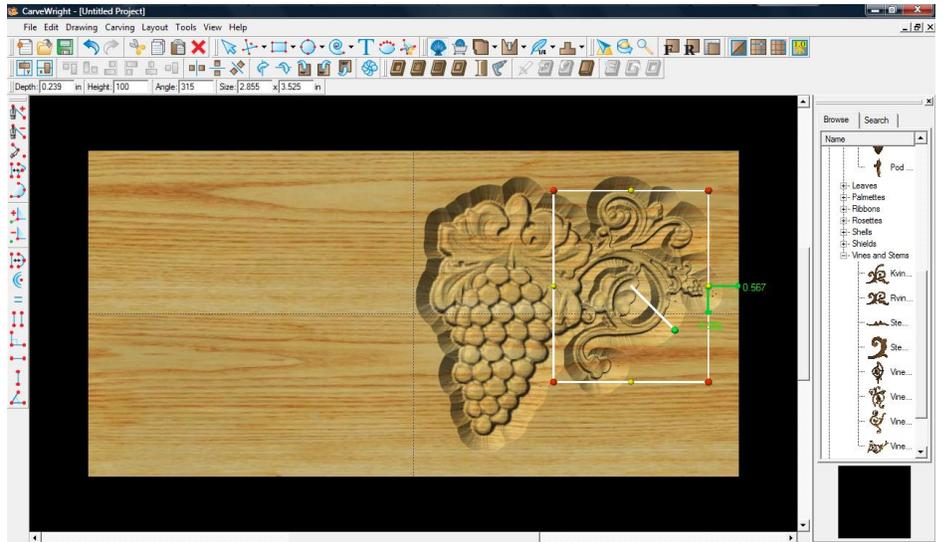
Select grapes and change depth to ".125" or "1/8" inch.

Change the vine depth to ".125 or 1/8" inch. This shallows the entire design for faster carving, but does not fix the overlap.

➤ ADJUSTING HEIGHT

Select the vine pattern and adjust the Height to "30". This lowers the overall thickness of the pattern.

Notice the stem is gone.



➤ BOARD SETTINGS

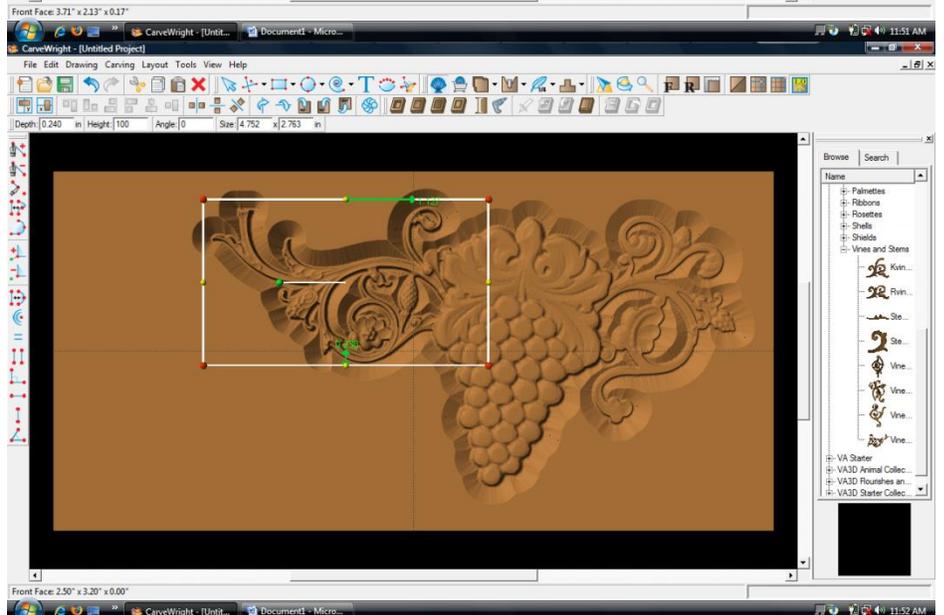
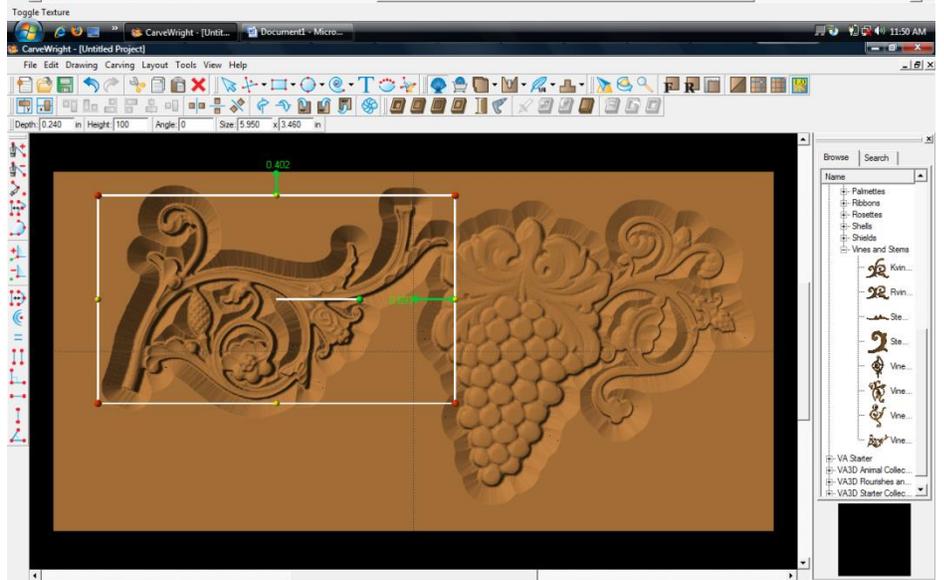
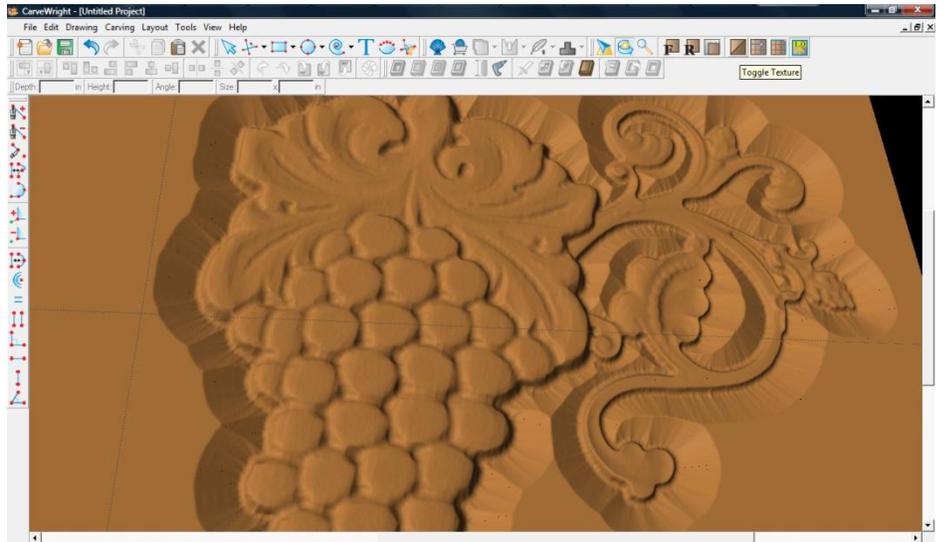
 Use "Toggle Texture" to remove wood grain for better viewing.

 Select "Vine06" from "Vines and Stems" in the Pattern Library and place onto board.

Use the right-click button on the mouse to bring up menu of available options for that pattern.

 Select "Flip & Rotate" - "Rotate Horizontally".

Scale pattern down and overlap with grapes.



- FINE TUNING
- ADJUSTING DEPTH & HEIGHT

Like other patterns, change the Depth to “.125” or “1/8” inch.

Change the Height to “30” to match other vine pattern.

✓ TEXT TOOL

T

Next, select the “Text Tool” and click on board.

Text dialog box will appear.

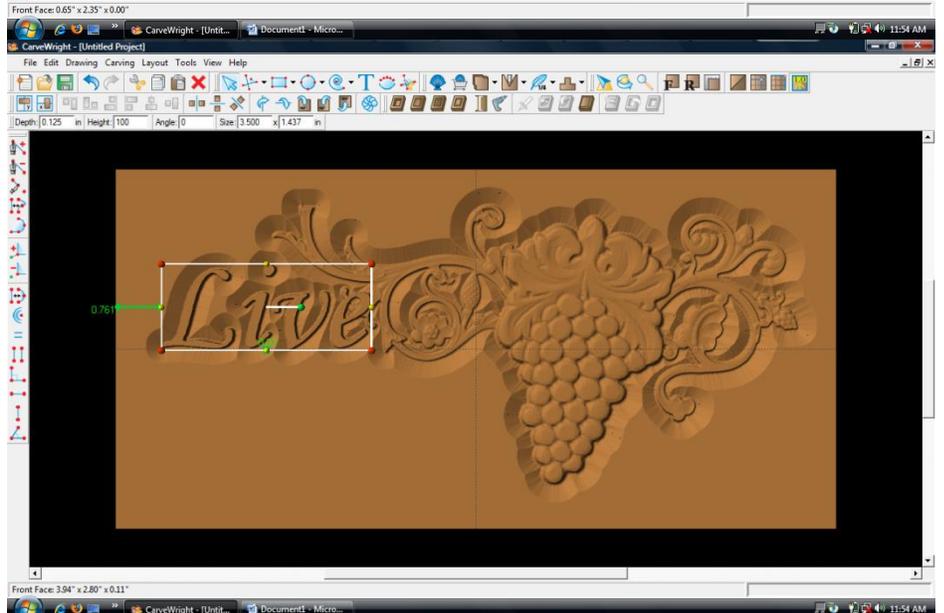
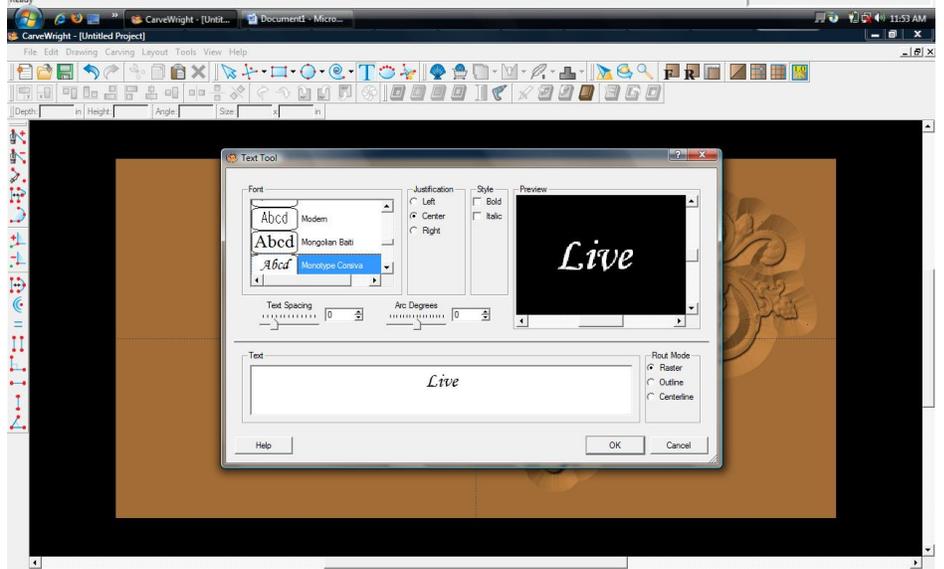
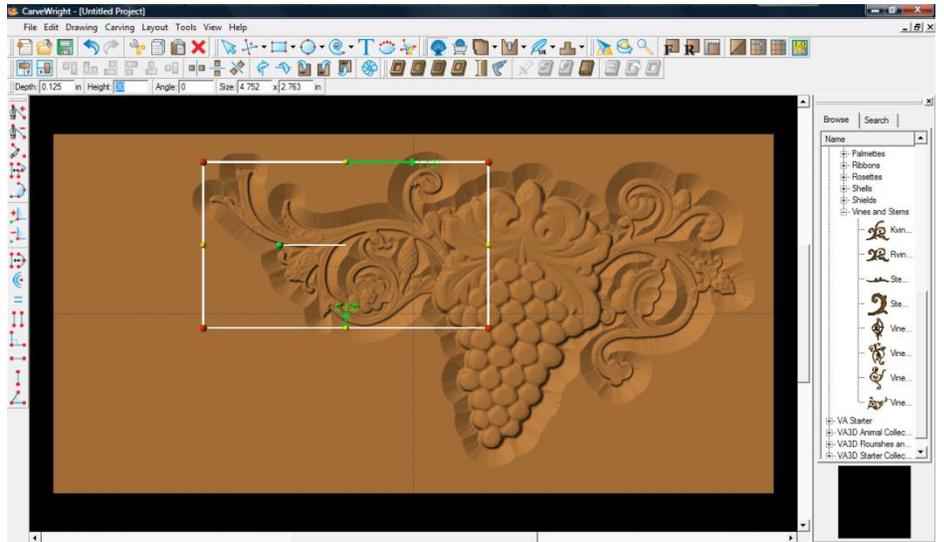
Select from any of the true type fonts that you have on your computer.

Type the word “Live”

Select “Raster” from one of the available Rout Modes.

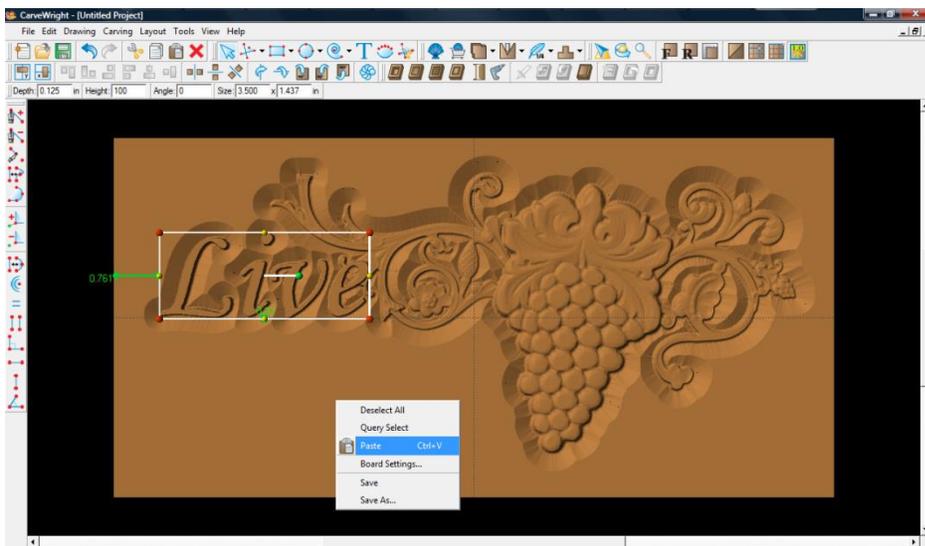
Notice the other options available from “Text Tool”.

Manipulate the size and placement of the word, just as you would a pattern by scaling up and overlapping with the vine.

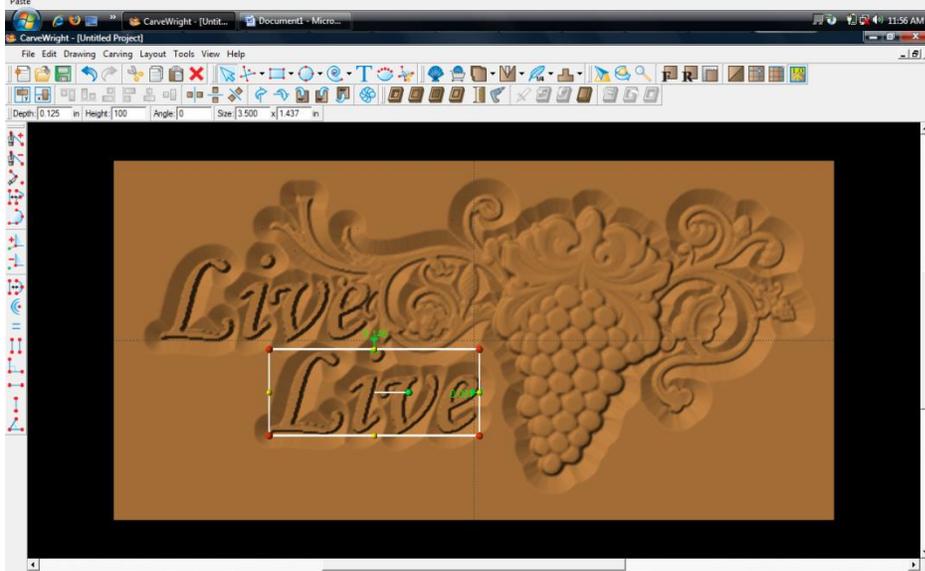




Right Click on “Live” and select “Copy”.



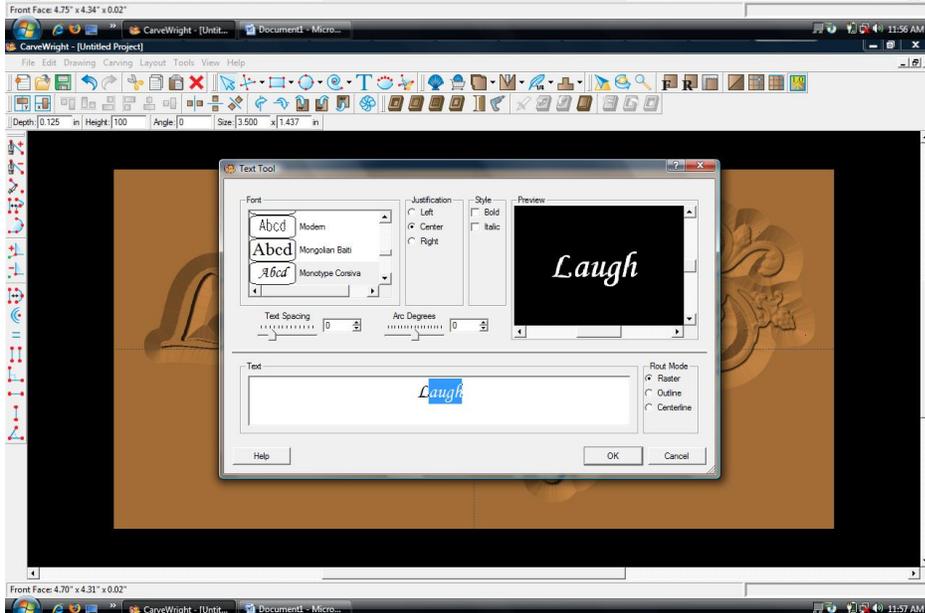
Click on board, right click and select “Paste”.



The word “Live” will appear again on the board. Double click on word.

Text dialog box will reopen.

Change the word to “Laugh” and click “OK”.



The word "Laugh" will appear on the board the same size as "Love".

Move to place as shown.

Click an open area of the board to unselect "Laugh".

 Right click and select "Paste" again.

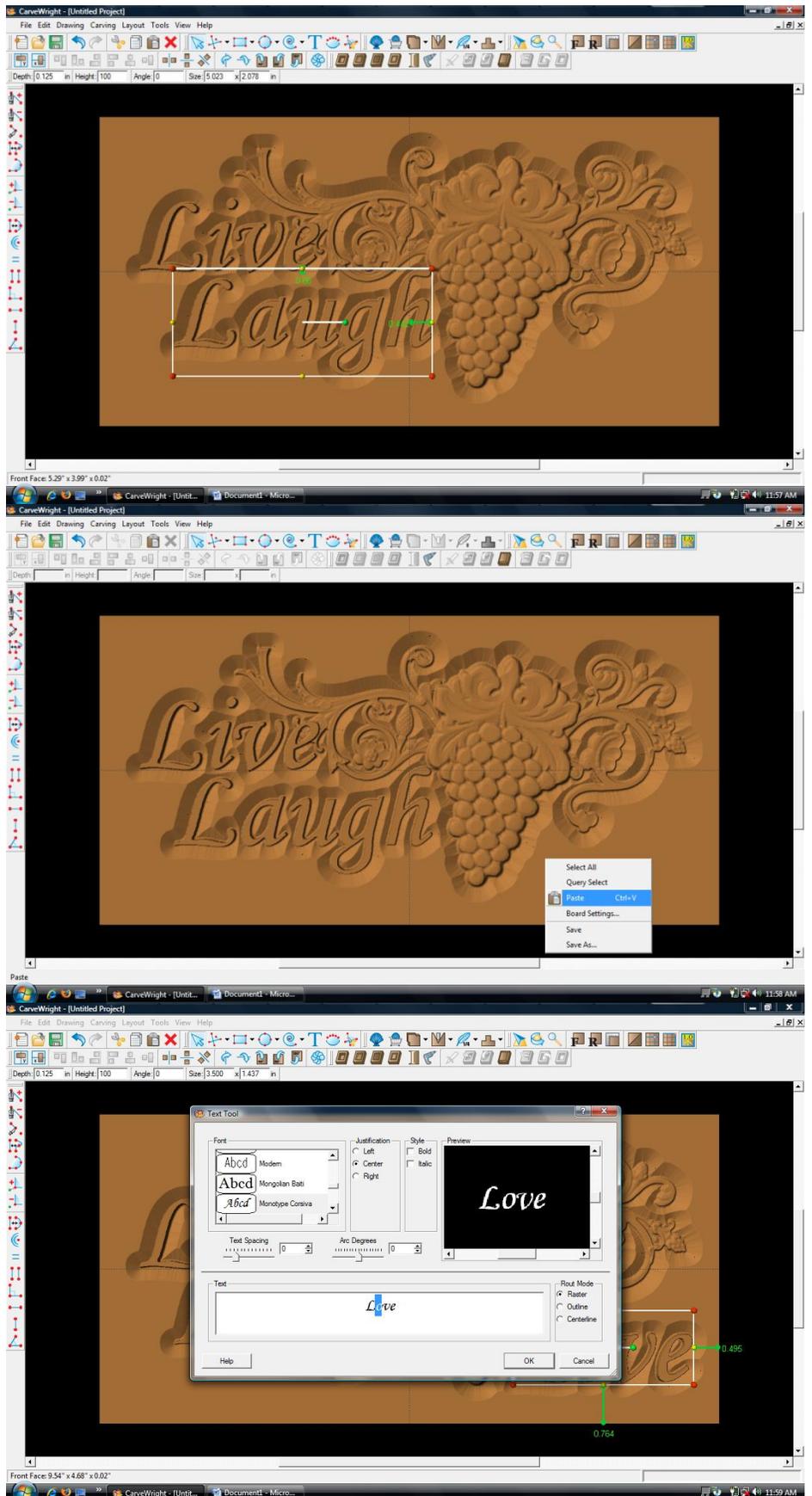
The word "Live" from the clipboard will appear on the board again.

Double click the word.

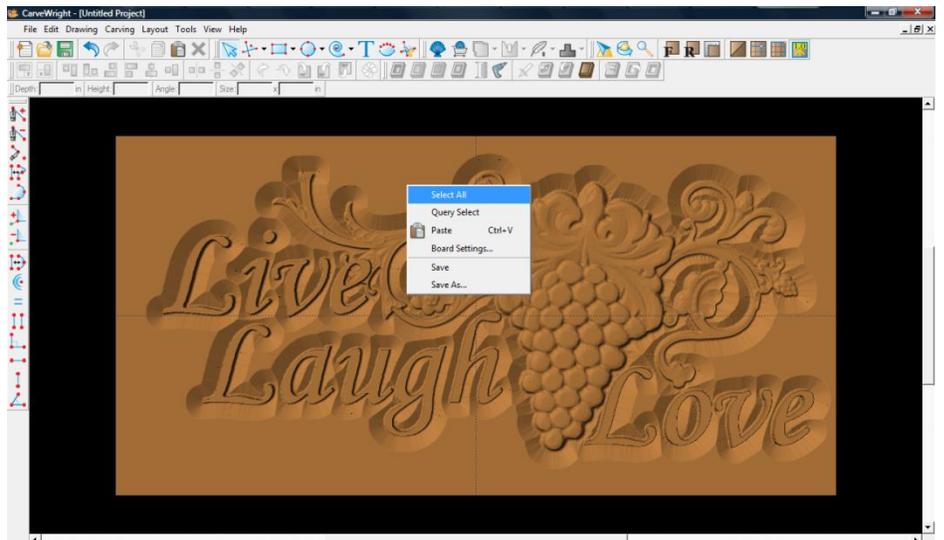
When the Text dialog box appears, change word to "Love".

Move to place as shown.

Click "OK".

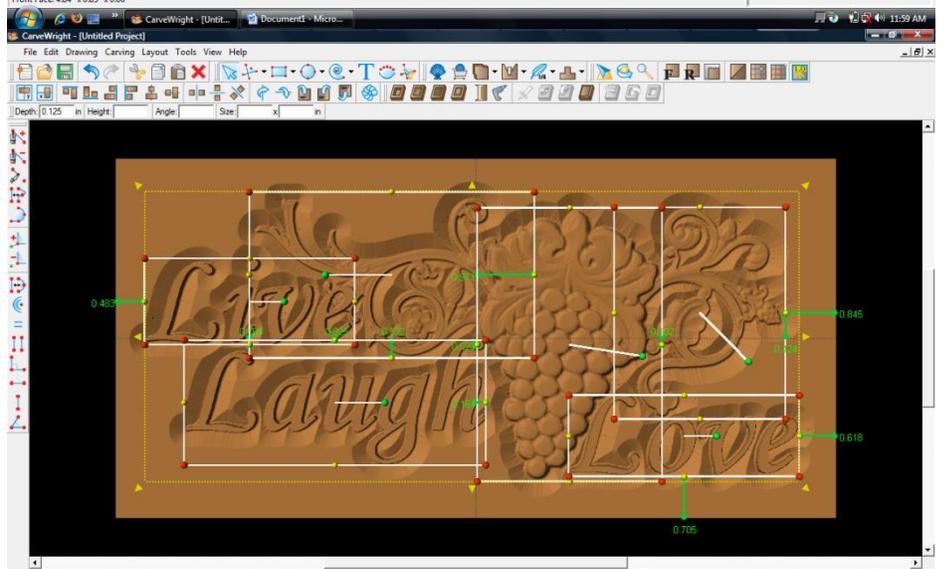


Right click on an open area of the board and choose "Select All".

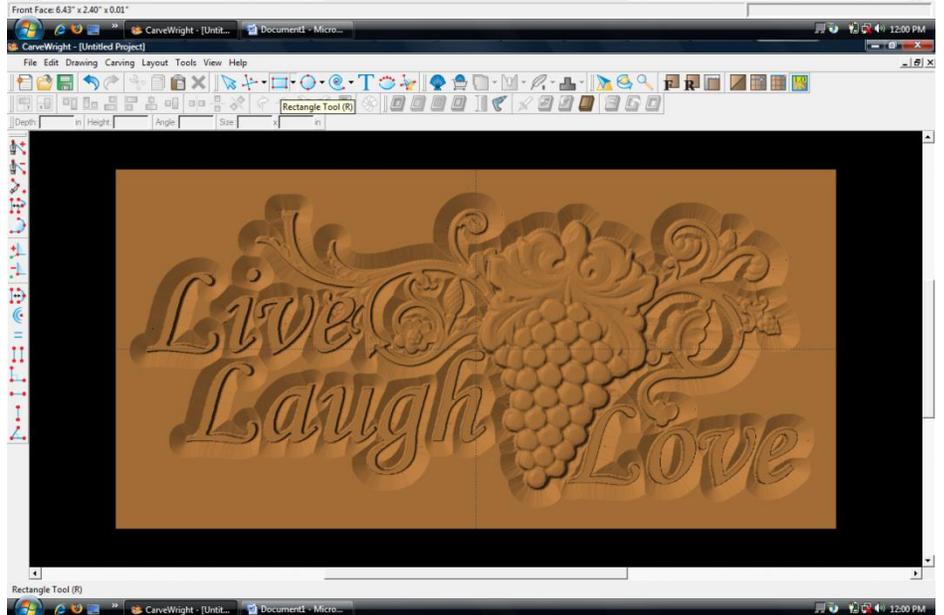


Notice the yellow dotted line around all patterns.

This allows you to move everything together.



Adjust the patterns so they are better centered on the board.



✓ DRAWING TOOLS



Select the "Rectangle Tool".

Draw Rectangle across the entire board, leaving a border as shown.

✓ REGIONS

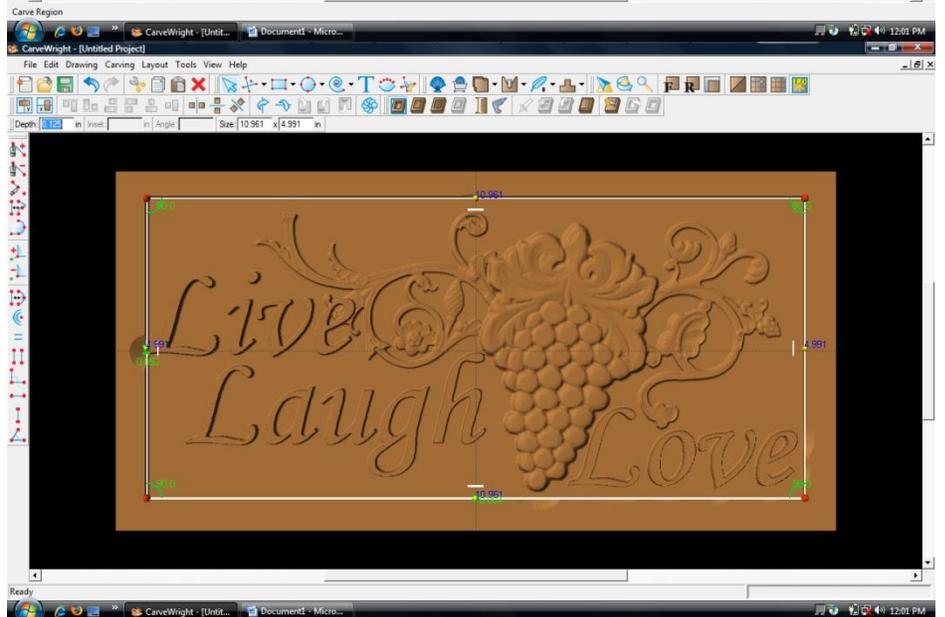
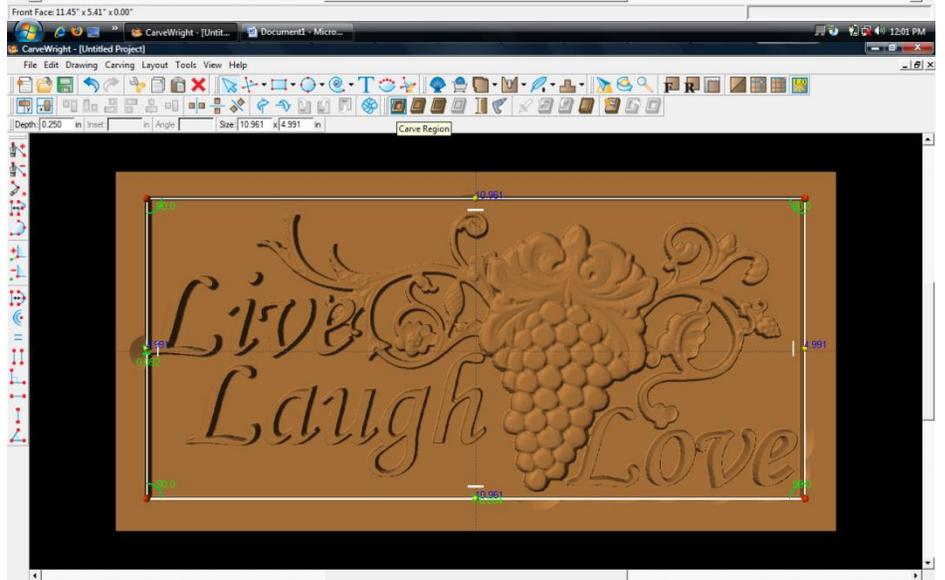
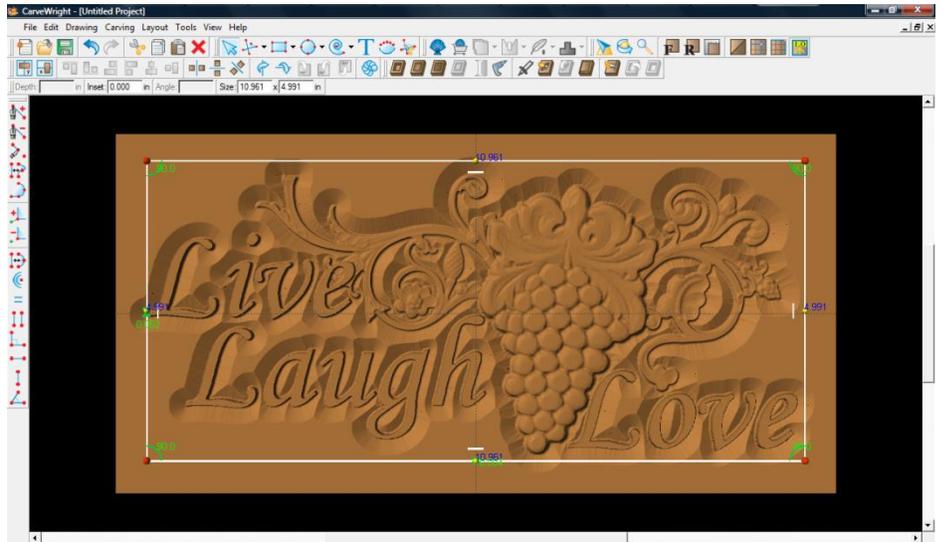


Select "Carve Region".

This applies a carved area to the rectangle with a default depth of .25".

- FINE TUNING
- ADJUSTING DEPTH

Change the Depth to ".125" to shallow this region to match the rest of the carvings.





Right click and select “Center Both”.

➤ TEXTURE

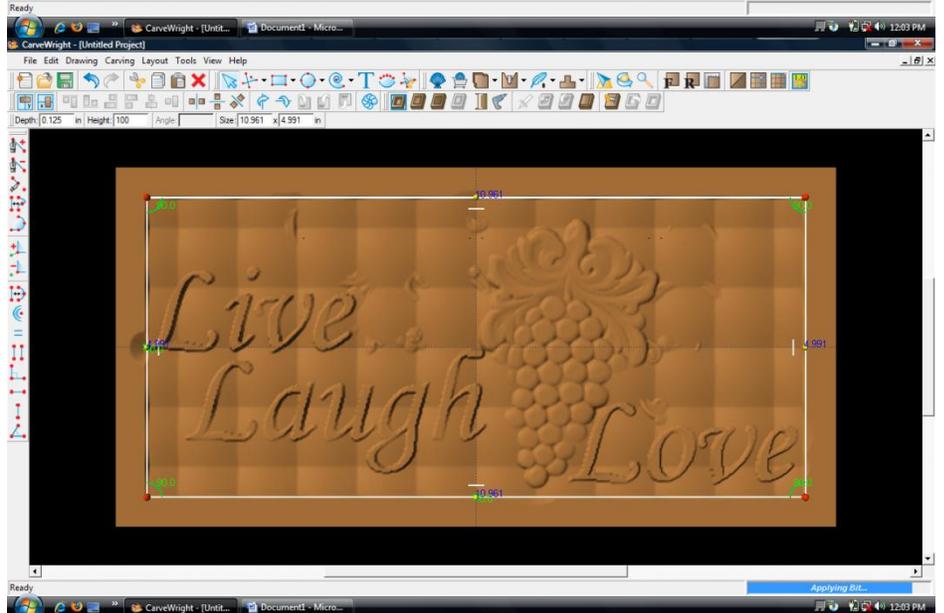
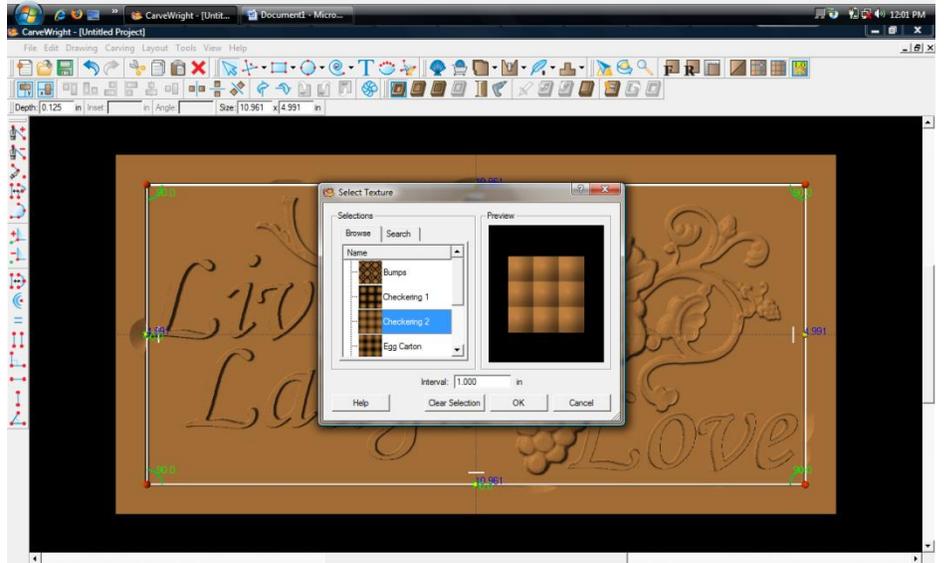
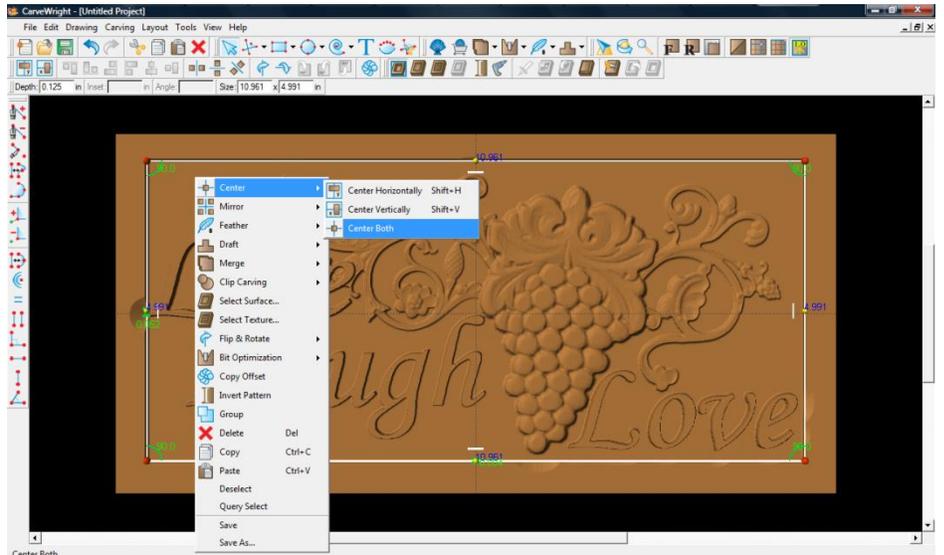


Click on “Select Texture”.

Texture dialog box appears displaying a variety of available textures.

Select “Checkering 2” and leave the interval at 1”.

Texture appears in the rectangular region, but is overtaking parts of the design.



- FINE TUNING
- ADJUSTING HEIGHT

Correct this by adjusting the Height to “20”. This sets the texture back enough to be more subtle.

- MANIPULATING THE WORKPIECE



Rotate and/or zoom your workpiece to see your design board more clearly.

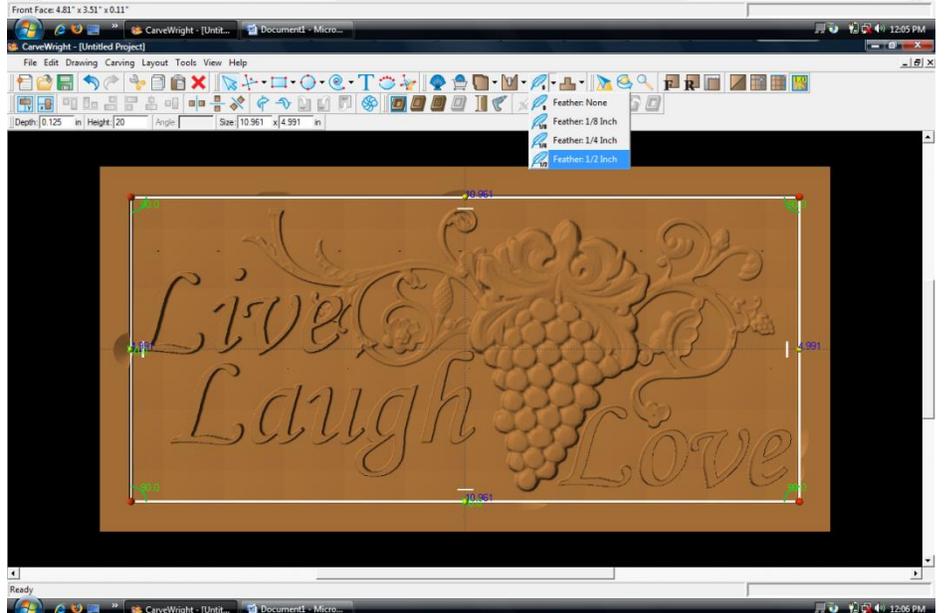
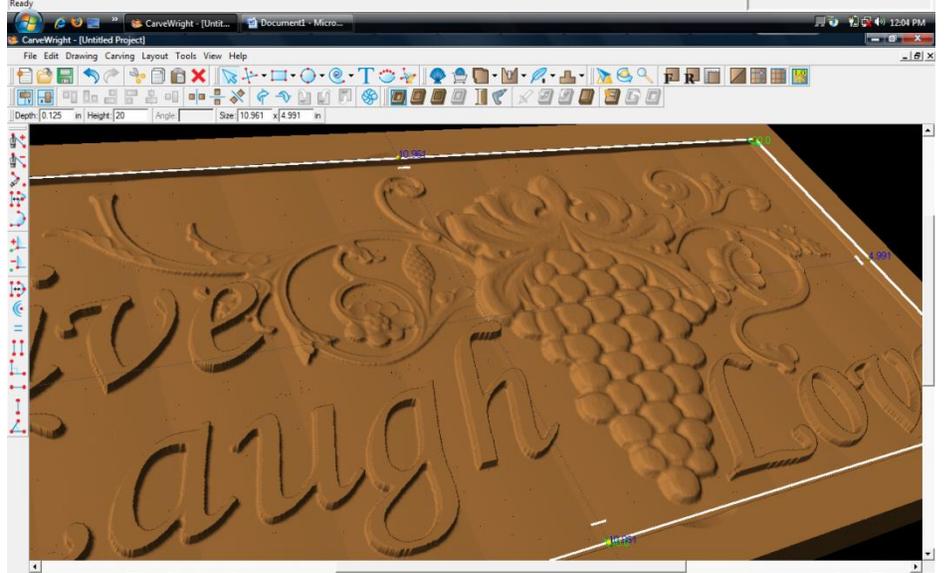
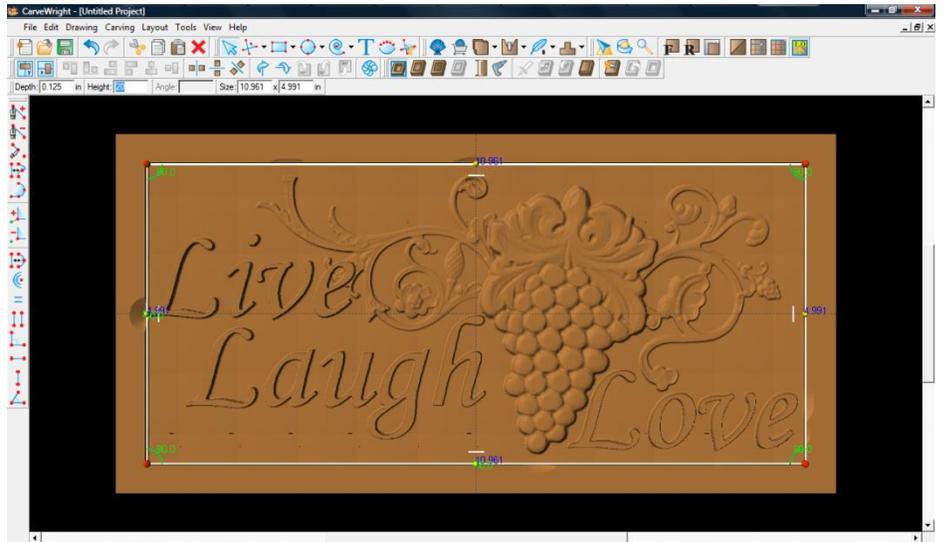
- CARVING OPTIMIZATION

- FEATHERING



With the rectangular region selected, click on the “Feather Tool”.

From the drop down menu, select “Feathering ½ inch”.



Adding a feathered edge applies an internal bevel to the region.

It helps to eliminate a straight up and down edge referred to as a “cliff edge”.

➤ CARVING LIST

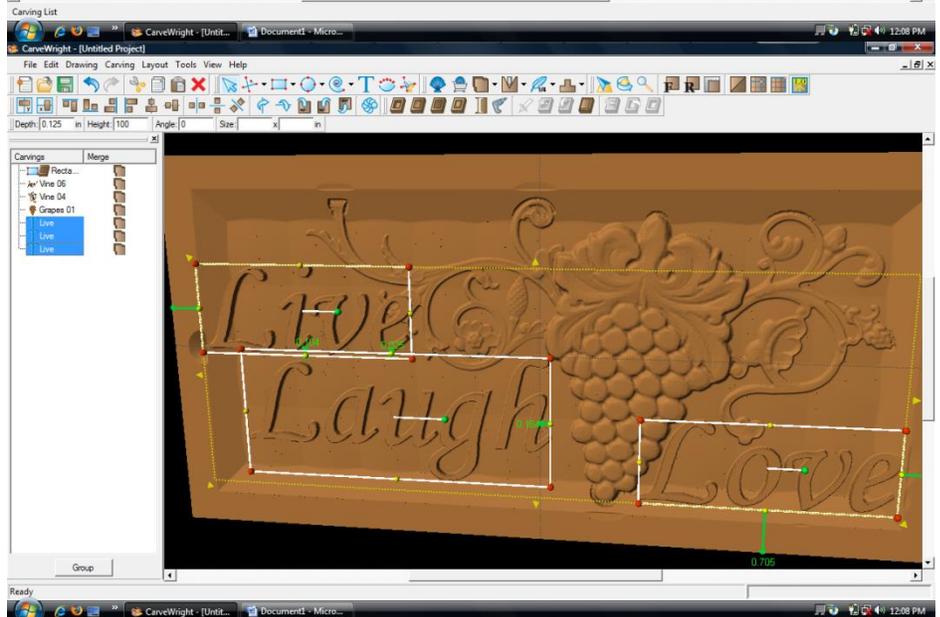
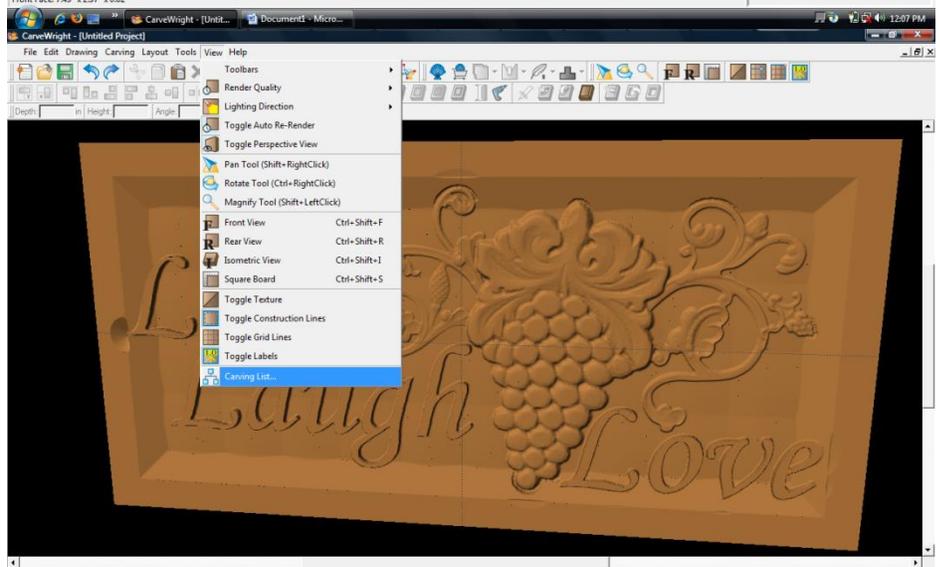
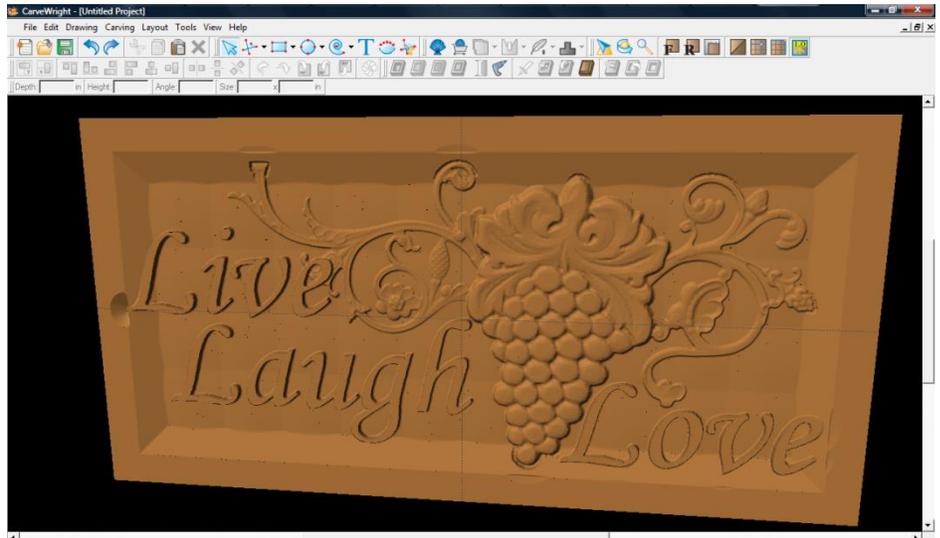


Select “View” and then “Carving List”

The Carving List opens on the left displaying every element on the virtual design board.

These elements can be rearranged or selected in a variety of ways.

Select the 3 text files by holding down the shift button and clicking on each of them.



➤ CARVING OPTIMIZATION

➤ DRAFT



Select the “Draft Tool” and choose “Draft Large”.



This puts a bevel on the edge of the letters removing cliff edge.

➤ FEATHERING



Select the “Feather Tool” button again. This time select “Feather None”.

This removes the feather from the letters.

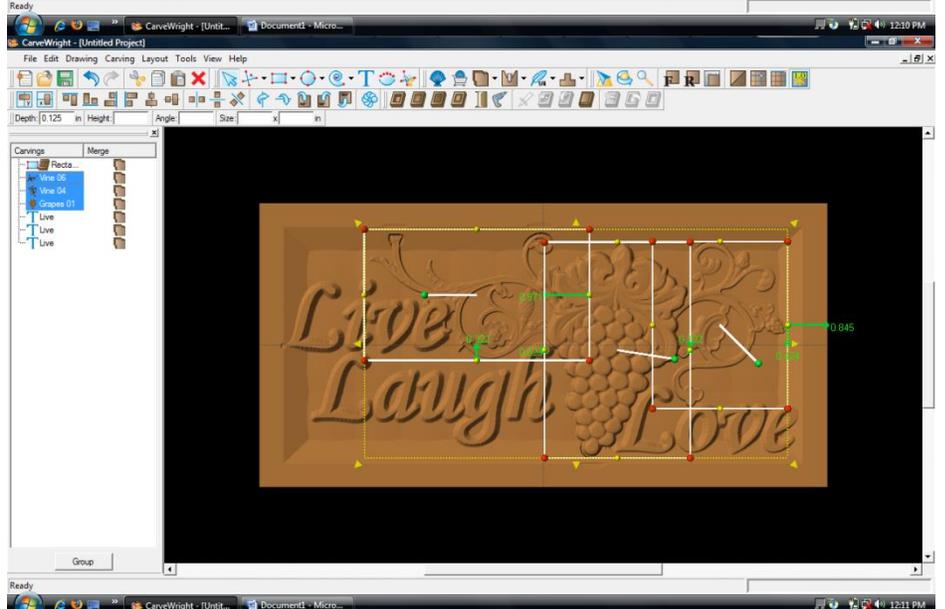
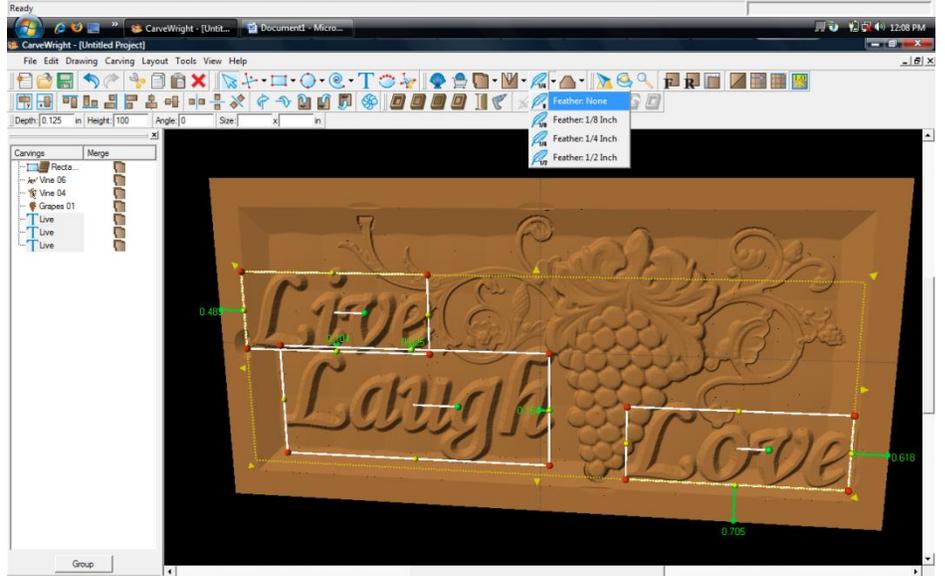
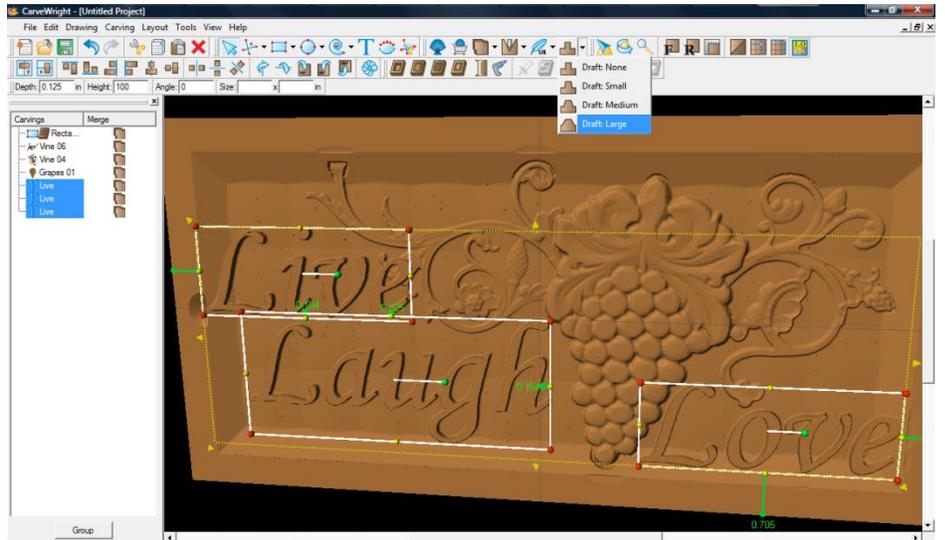
Select the 3 patterns from the Carving List.



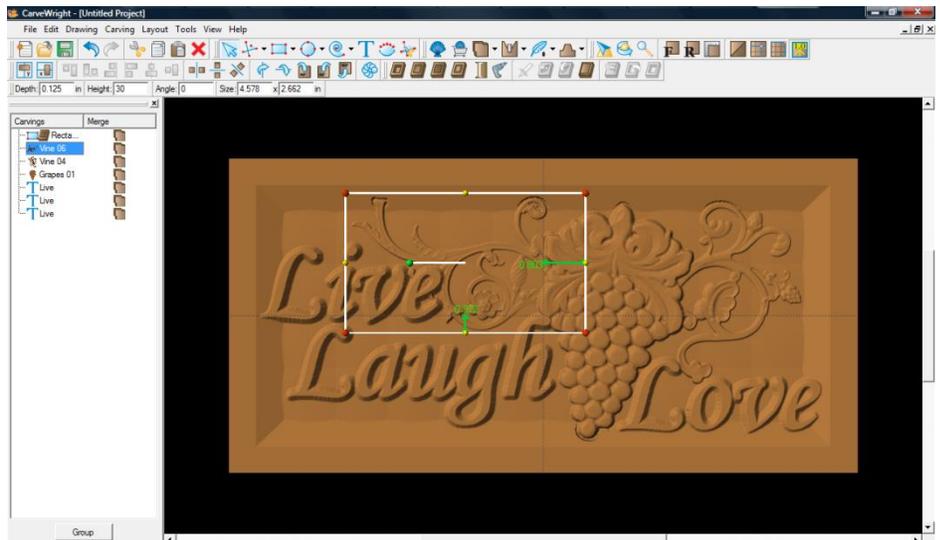
Select “Draft” and choose “Draft Medium”.



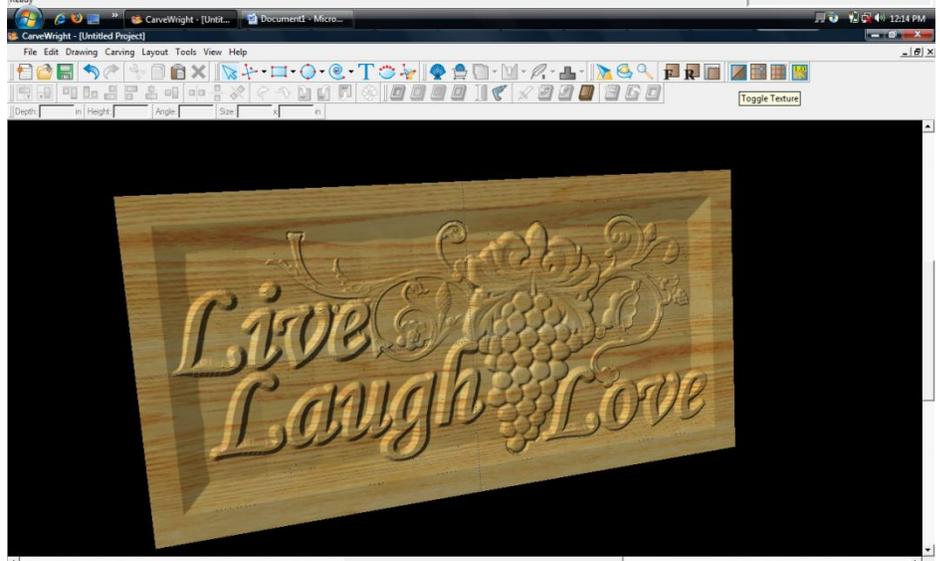
This slight bevel to the patterns aids in the removal of cliff edge.



Now select each element and adjust their placement until the design arrangement is satisfactory.

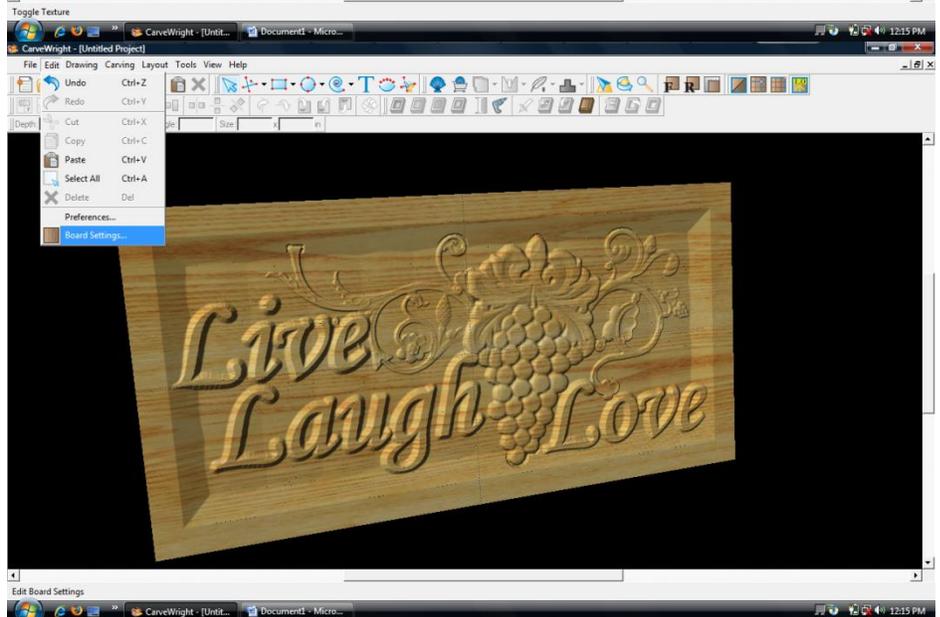


 Toggle the Texture back on to see the design with wood grain again.

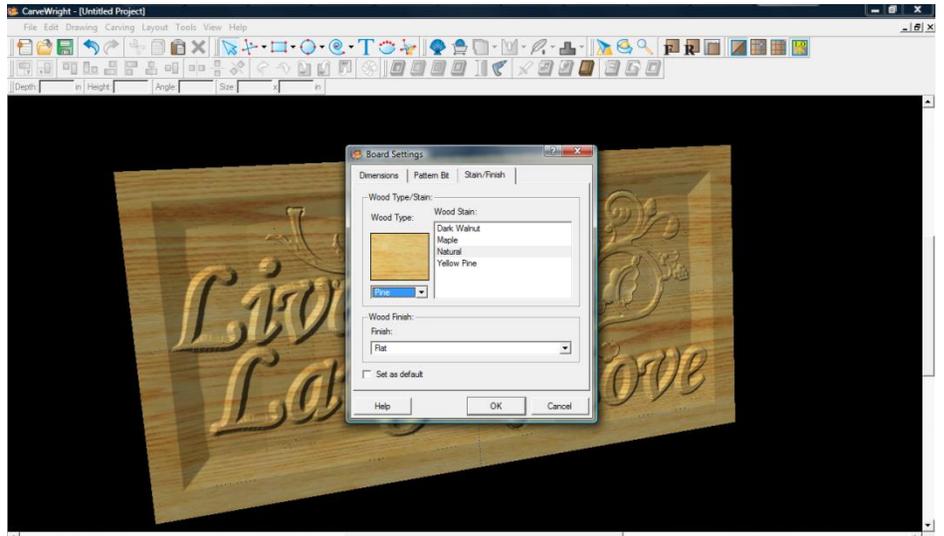


➤ BOARD SETTINGS

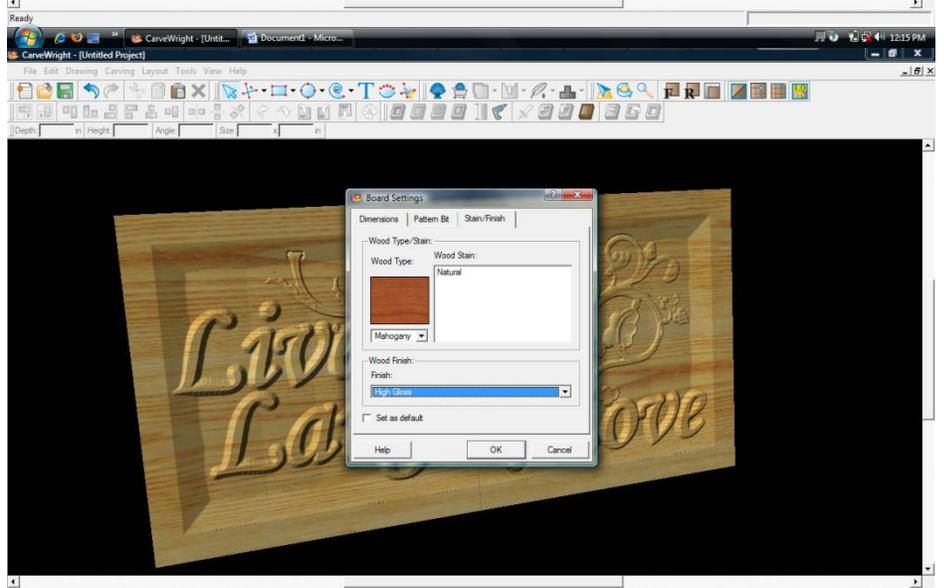
 Select “Edit” then “Board Settings” to open the board setting dialog box.



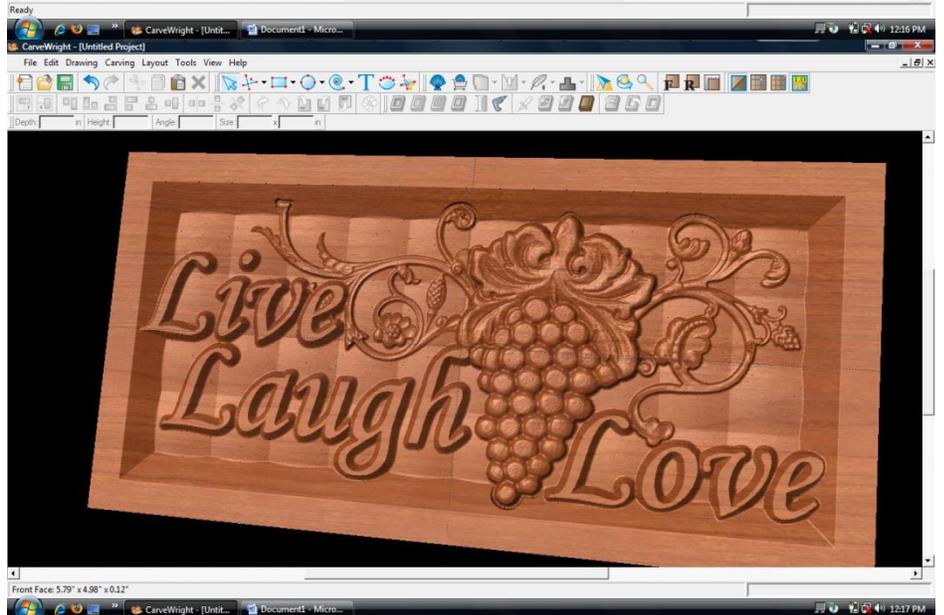
In the Board dialog box choose the Stain/Finish tab.



Change the wood type to “Mahogany” and the finish to “High Gloss”. Click “OK”.



The board’s appearance changes to look like a finished board.



Rotate to view it at different angles.

Select "File", "Save"

*****IMPORTANT*****

Name file and click "Save" to hard drive.

➤ UPLOADING TO MEMORY CARD

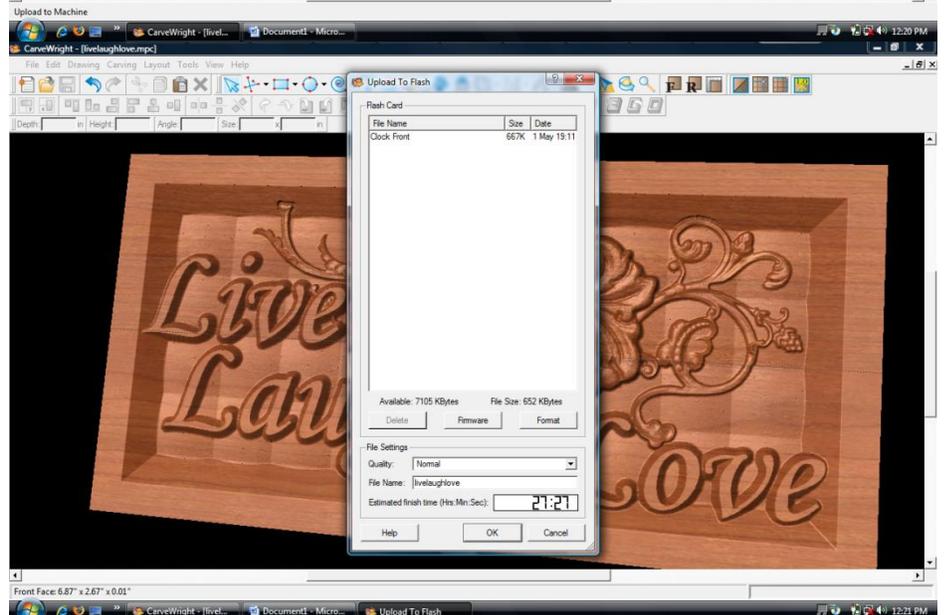
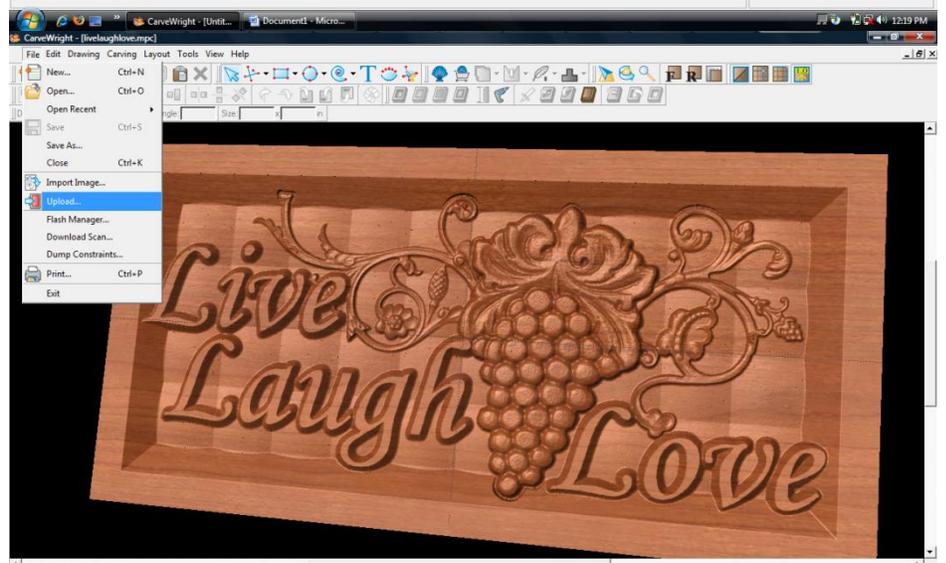
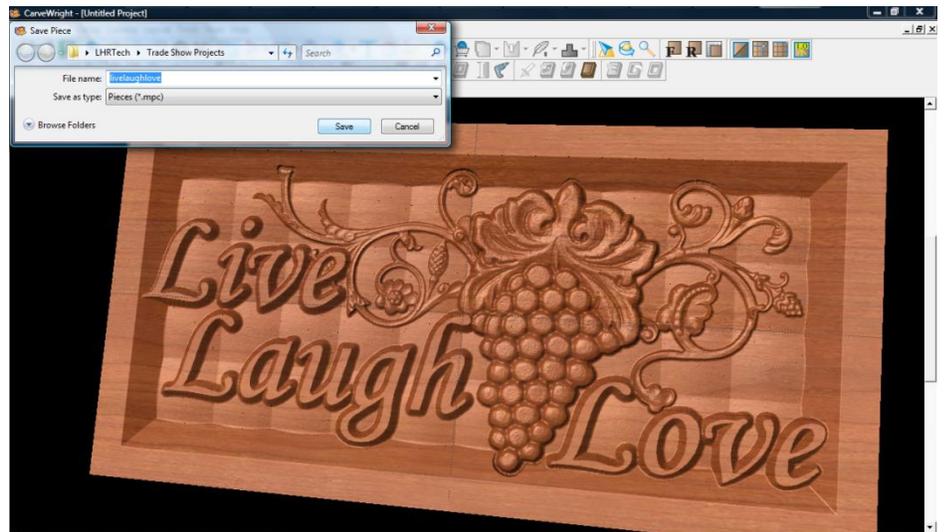
Select "File", "Upload"

➤ QUALITY SETTINGS

Flash Manager dialog box appears.
Set your quality setting to Best, Normal and then Draft to see how the estimated time to carve changes.

Save to memory card.

Example:
liveloughlove_N_27
(recognizable name_quality setting_estimated time to carve)



SPRING BLOOM

This project covers the following design concepts:

- ✓ OPEN PROJECT OR LAST PROJECT
- ✓ DRAWING TOOLS
- ✓ CENTERING
- ✓ CARVE REGION
- ✓ FEATHERING
- ✓ TEXTURES
- ✓ FINE TUNING
- ✓ ADJUSTING HEIGHT
- ✓ PATTERN PLACEMENT
- ✓ TEXT TOOL
- ✓ ADJUSTING DEPTH
- ✓ USING DRAFT
- ✓ BOARD SETTINGS
- ✓ MANAGING DATA
- ✓ UPLOADING TO MEMORY CARD
- ✓ SELECT QUALITY SETTING
- ✓ NAME PROJECT



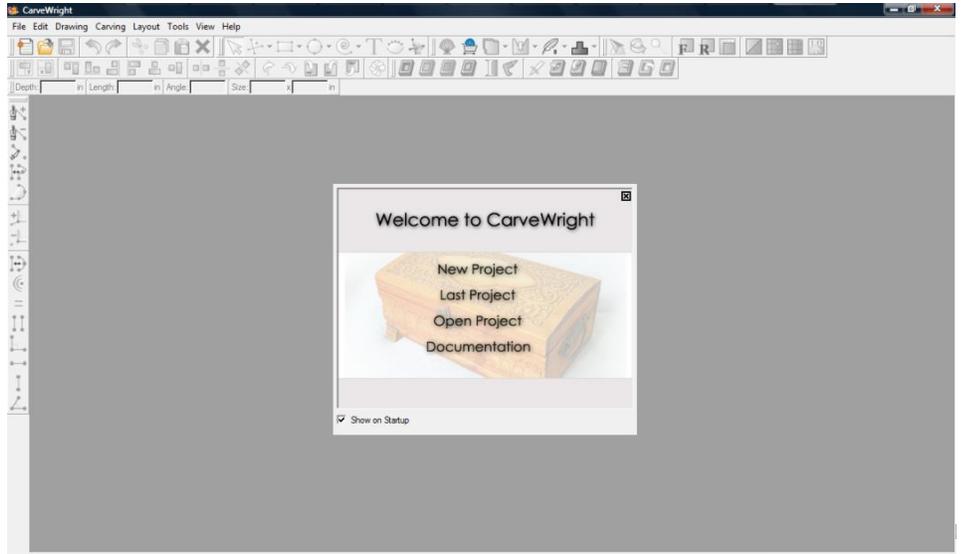
INSTRUCTIONS:

✓ STARTING THE SOFTWARE

Open the CarveWright Project Designer Software

The Welcome screen appears with project options.

Select "Last Project" or "Open Project" (if you have done something else, since Project 1-12 "My First Sign").



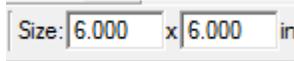
✓ DRAWING TOOLS



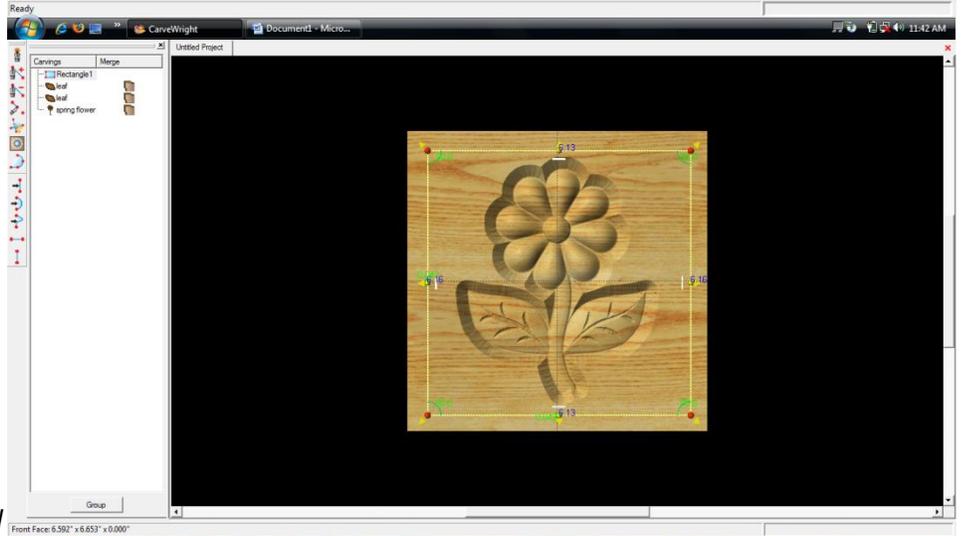
Select the "Rectangle" tool.

Click in top left corner and drag to subscribe rectangle area around the flower.

Set the "Size" to 6" x 6" and hit Enter to apply.



You could have also used the square tool for this.

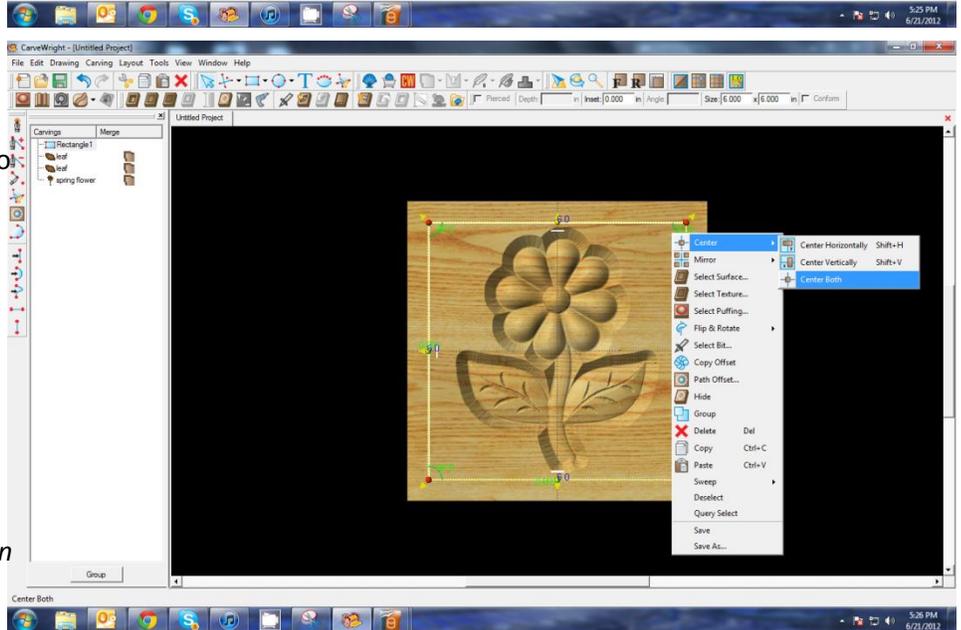


✓ CENTERING



With the rectangle selected, right-click to bring up menu of available options.

Select "Center" > "Center Both"



✓ CARVE REGION

Click on the "Carve Region" icon.



This creates a carved out region inside the boundary. Automatically defaults to .250" depth. Remember depth of pattern & how depth effects carve time.

✓ FEATHERING

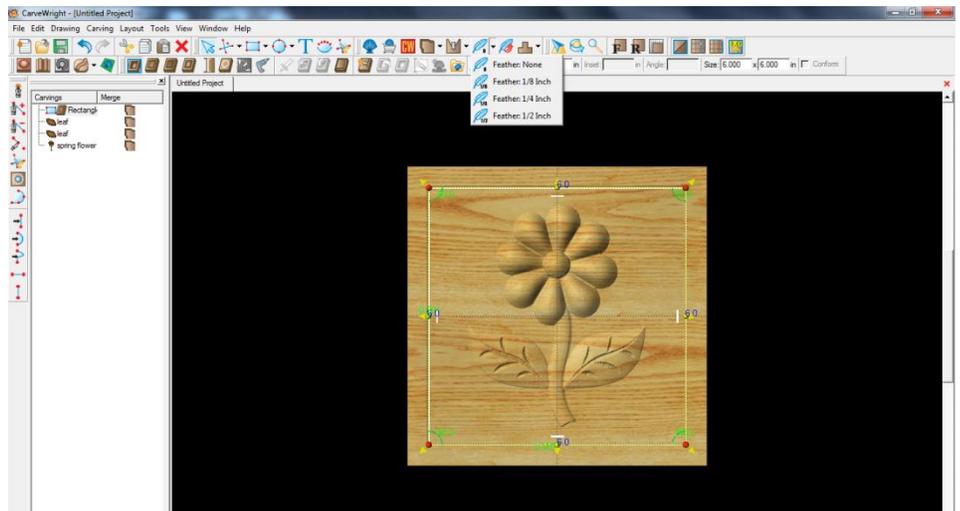


Click on “Feather” dropdown tool and select ¼” feather.

Select “Accept”.



This produces a ramped area and allows you to avoid “cliffs” while using a tapered bit.



✓ TEXTURES

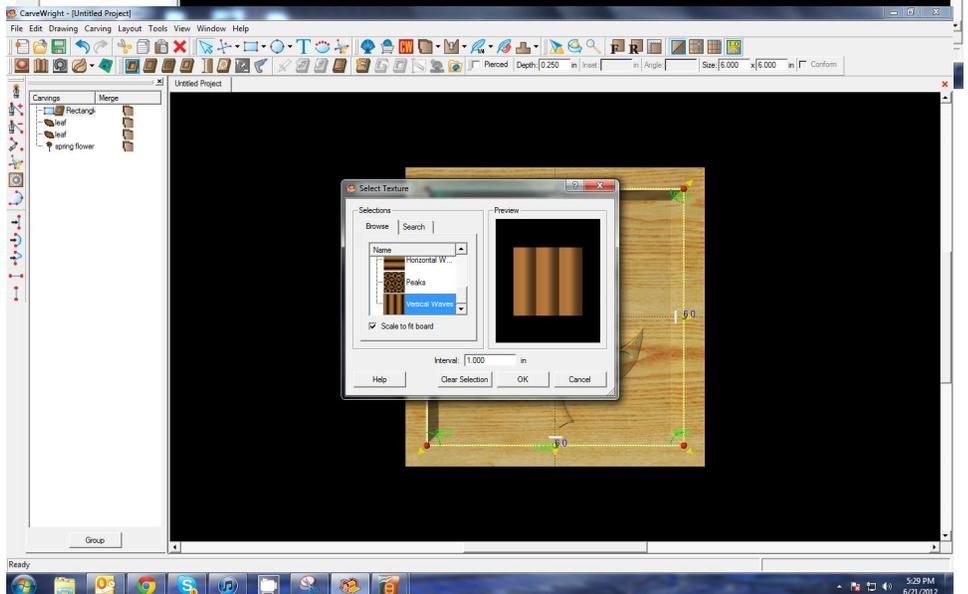
Select “Texture” tool.



Texture dialog box appears displaying a variety of available textures.

Select “Vertical Wave” and leave the interval at 1”

Texture appears in the rectangular region, but is overtaking parts of the design.

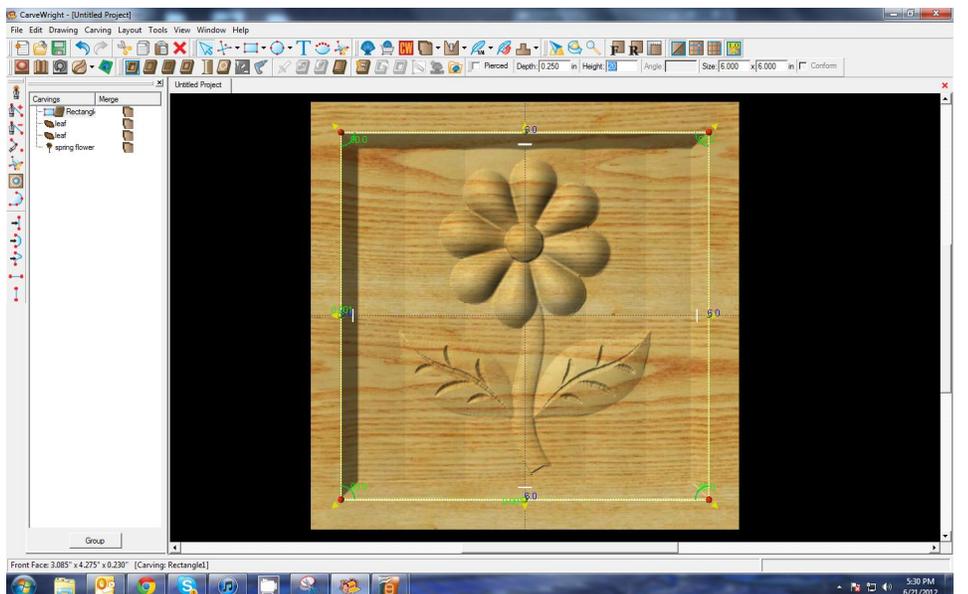


✓ ADJUSTING HEIGHT



Correct this by adjusting the Height of the texture to “20”.

This sets the height low enough to not overpower the foreground objects.

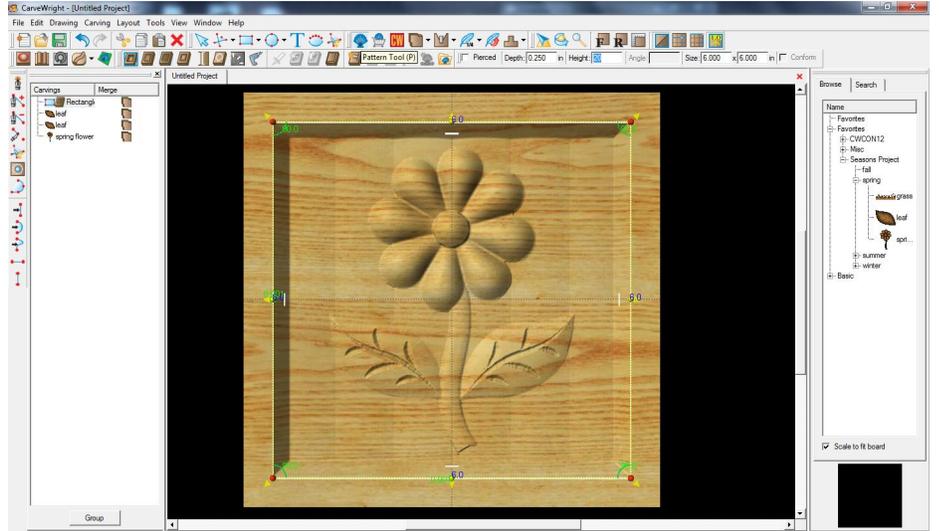


✓ PATTERN PLACEMENT

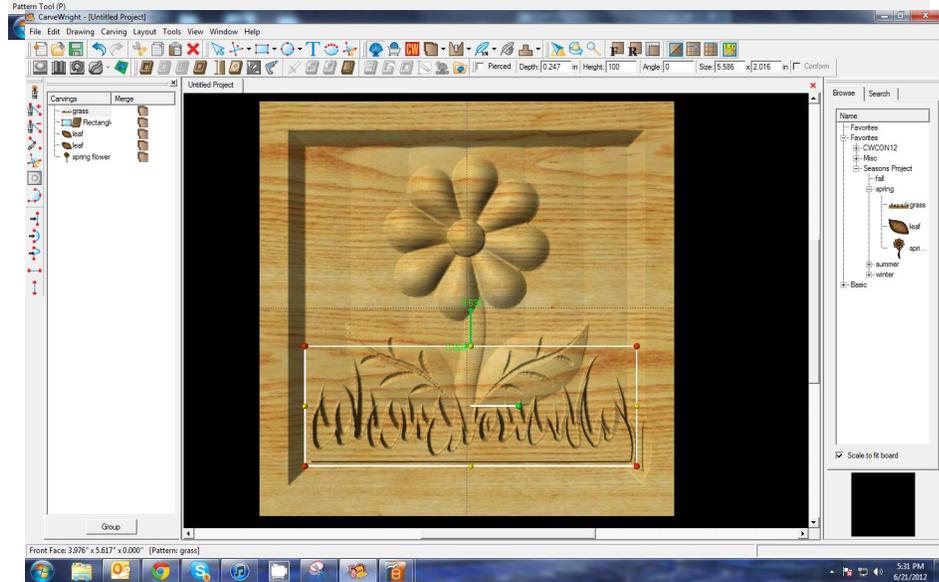


Open Pattern Library and click:

- + sign to open Favorites then
- + sign to open Seasons then
- + sign to open Spring pattern folder.



Select "Grass" pattern and place onto board as shown.



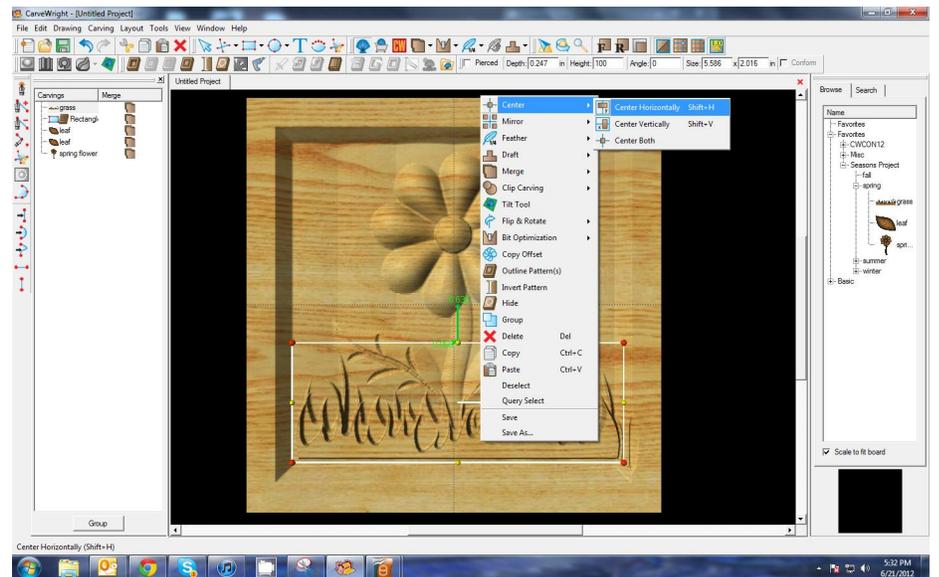
✓ CENTERING

Right-click to see available options and select Center > Horizontally.



✓ ADJUSTING HEIGHT

Change Height of grass to 30.



✓ FEATHERING

Change Feathering to None.



Make necessary adjustments to leaves or grass.



✓ TEXT TOOL

Next, select the "Text Tool" and click on board.

Text dialog box will appear. Select from any of the true type fonts that you have on your computer. *Some work better than others.*

Type the word "Spring"

Select "Raster" from one of the available Rout Modes.

Notice the other options available from "Text Tool".

✓ FINE TUNING

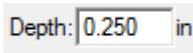
Manipulate the size and placement of the word, just as you would a pattern by scaling to size.

✓ CENTERING



Right-click to see available options and select Center > Horizontally.

✓ ADJUST DEPTH

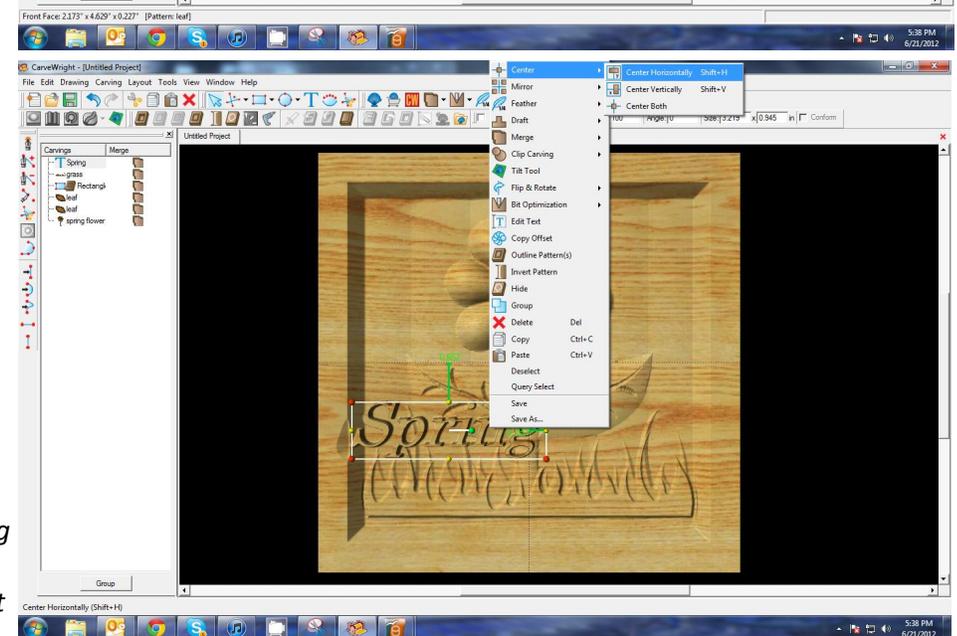
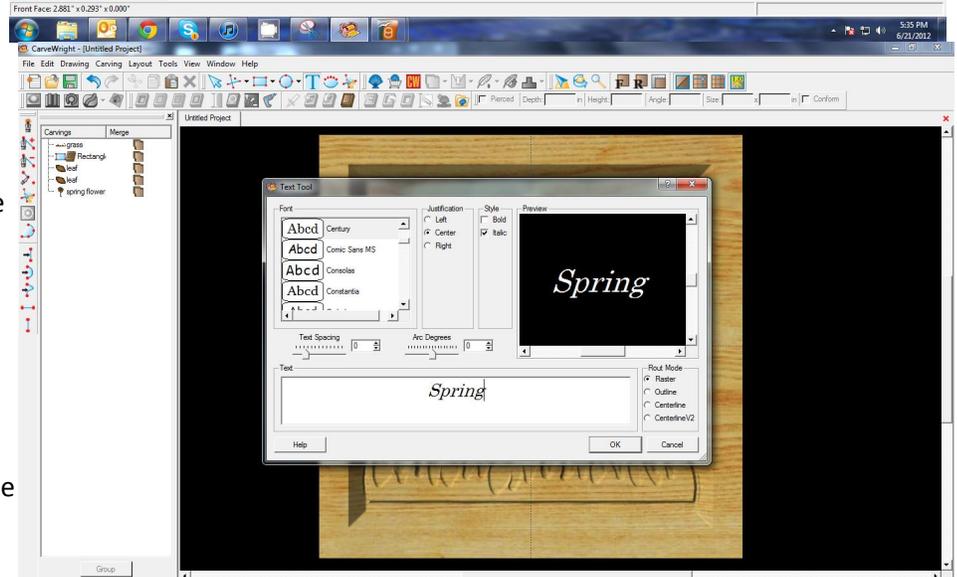
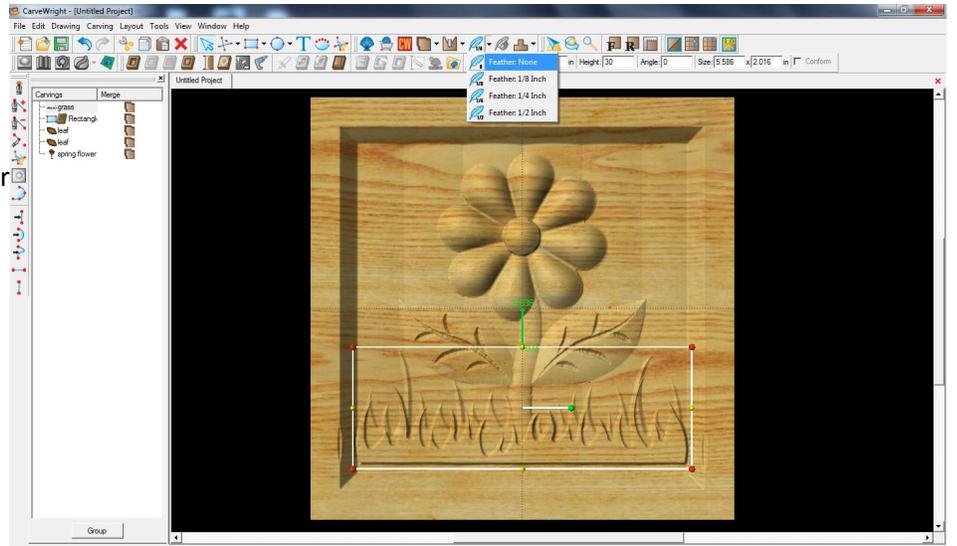


Set depth to .25"

✓ ADD DRAFT

Select "Draft" drop-down menu and change to Medium.

Draft gives a ramped area for the carving bit and avoids "cliffs" that may lead to chip out. Reducing the Height of the text may also help.

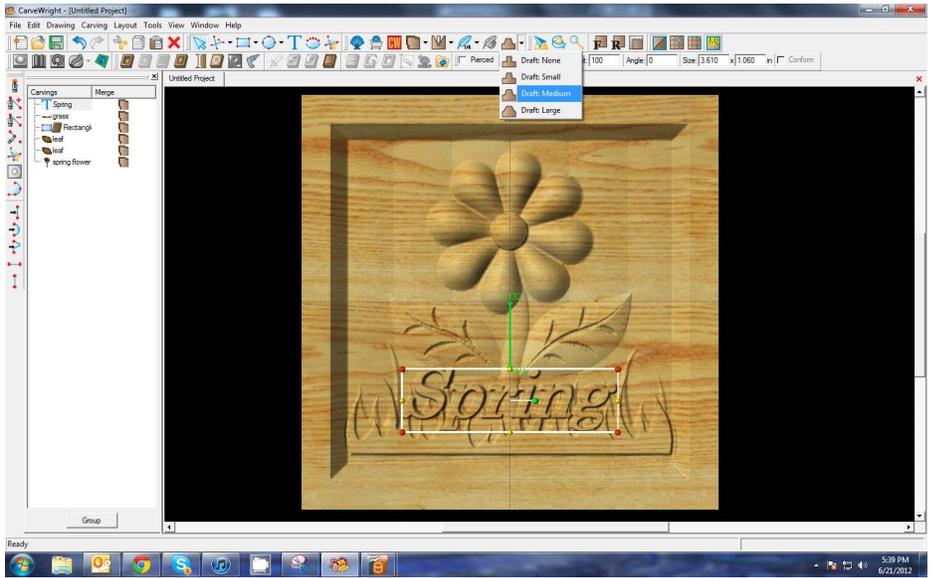


✓ BOARD SETTINGS

Use "Toggle Texture" to remove wood grain for better viewing.



Rotate or zoom in on your project to view it from different angles and make any necessary adjustments.



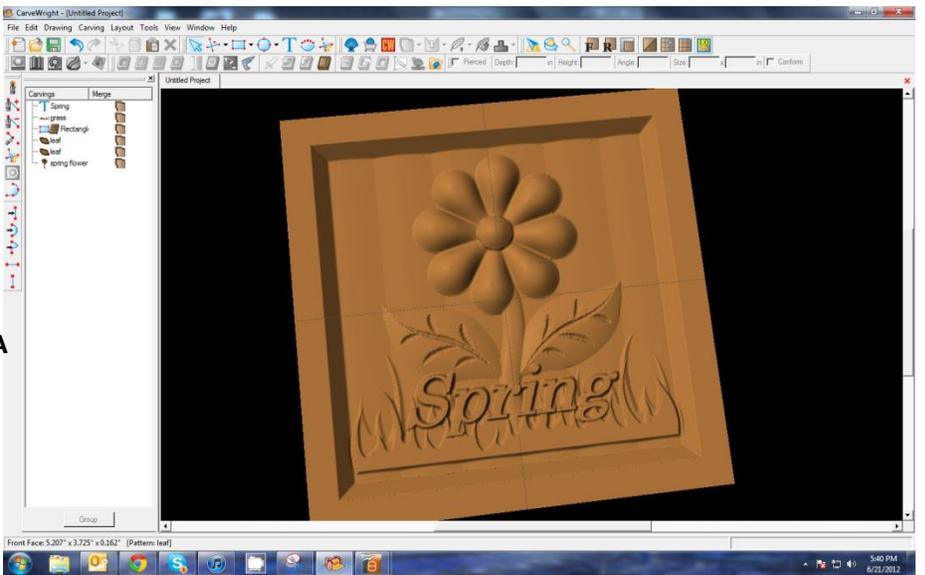
✓ MANAGING DATA

Select "File" > "Save"



*****IMPORTANT*****

Once a project is uploaded to a memory card, it cannot be brought back from the memory card into the software. Always SAVE YOUR PROJECT on your hard drive. A Projects folder is recommended and you should know where you saved it.



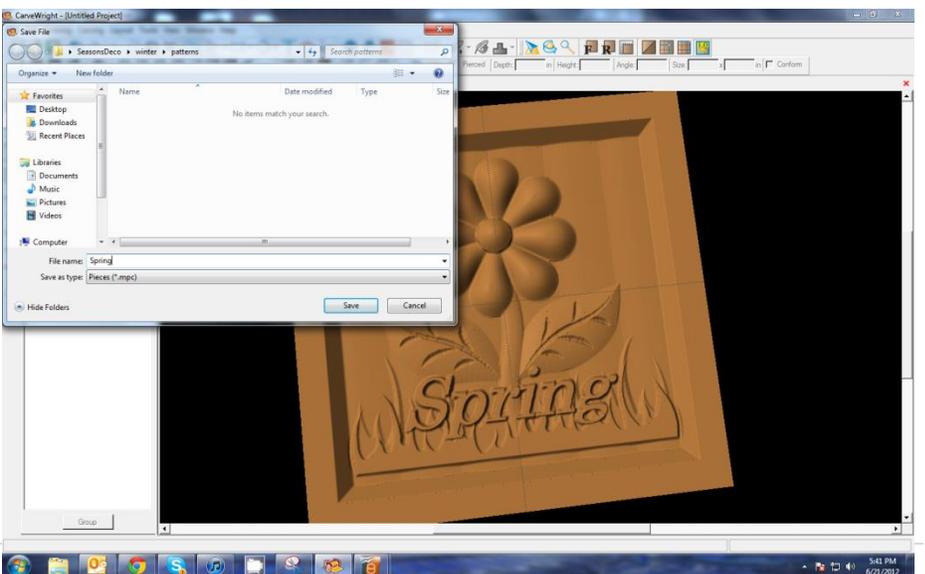
✓ UPLOADING TO MEMORY CARD

Make sure your Memory Card & Programmer are properly attached via your USB port, Select "File" > "Upload" to save to your memory card.



Select Quality Setting

- DRAFT
- NORMAL
- BEST
- OPTIMUM



These settings determine the number of passes the machine makes to carve your project. The more lines the better the surface finish. Make your decision based on material type, fondness of sanding vs. machine time, & test carve vs. final. Notice the estimated carving time differs by quality setting.

Name Your Project

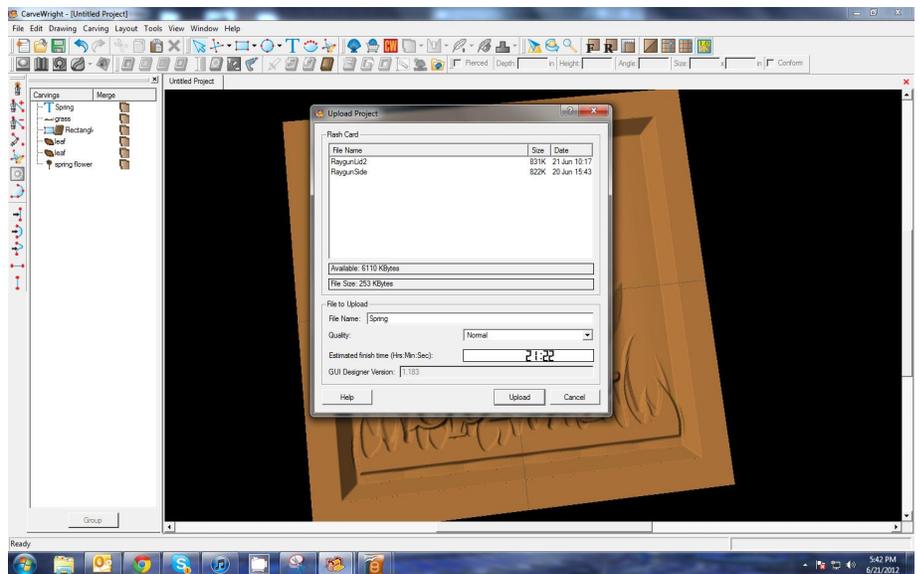
Example:

springbloom_N_45m

(recognizable name_quality

setting_estimated time to carve)

Click "Upload"



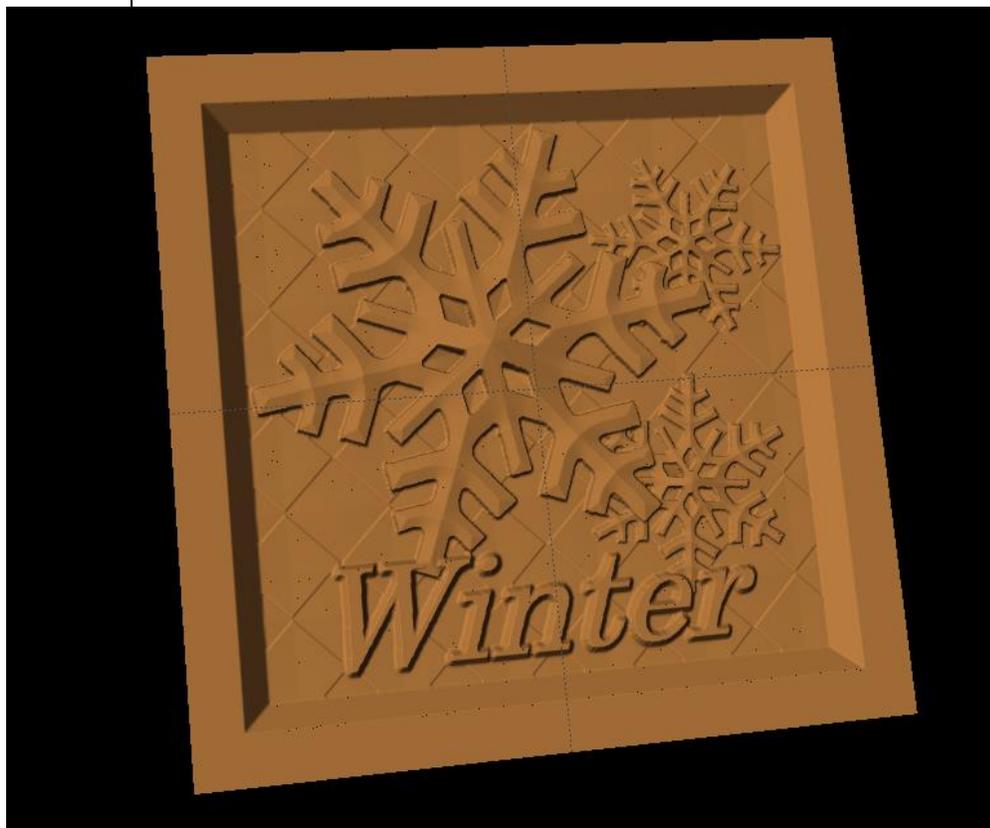
NOTE: Actual board to be placed in machine should be 7" longer or you should use a sled that has 3.5 extra inches on each end to STAY UNDER THE ROLLERS.



WINTER SNOWFLAKE

This project covers the following design concepts:

- ✓ STARTING SOFTWARE
- ✓ MENUS, TOOLBARS, SHORTCUT KEYS OR MOUSE BUTTONS
- ✓ MANIPULATING THE WORKPIECE
- ✓ SNAP TO GRID
- ✓ DRAWING TOOLS
- ✓ CARVE REGION
- ✓ FEATHERING
- ✓ PATTERN PLACEMENT
- ✓ ROTATE ELEMENT
- ✓ COPY & PASTE
- ✓ ADJUSTING HEIGHT
- ✓ TEXT TOOL
- ✓ FINE TUNING
- ✓ ADJUSTING DEPTH
- ✓ TEXTURE
- ✓ BOARD SETTINGS
- ✓ MANAGING DATA
- ✓ UPLOADING TO MEMORY CARD
- ✓ SELECT QUALITY SETTING
- ✓ NAME PROJECT



INSTRUCTIONS:

✓ STARTING THE SOFTWARE

Open the CarveWright Project Designer Software

The Welcome screen appears with project options.



Select "New Project"

Set your project board dimensions.

Length: 7"

Width: 7"

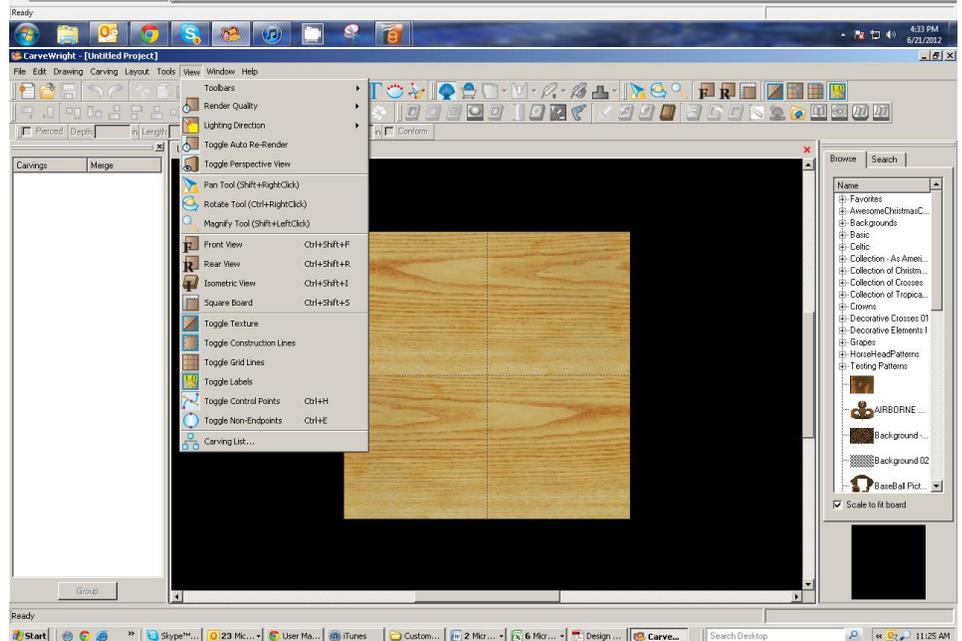
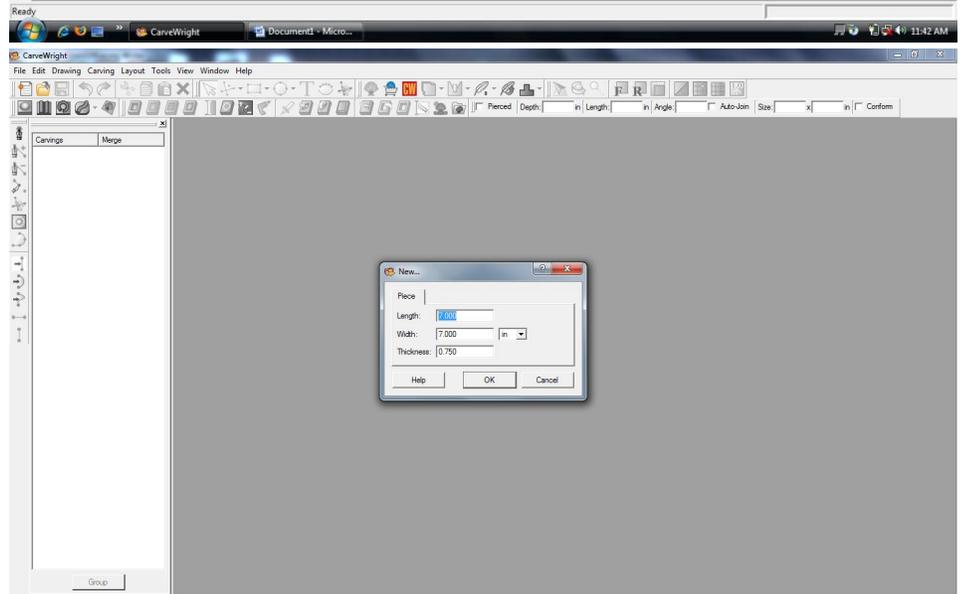
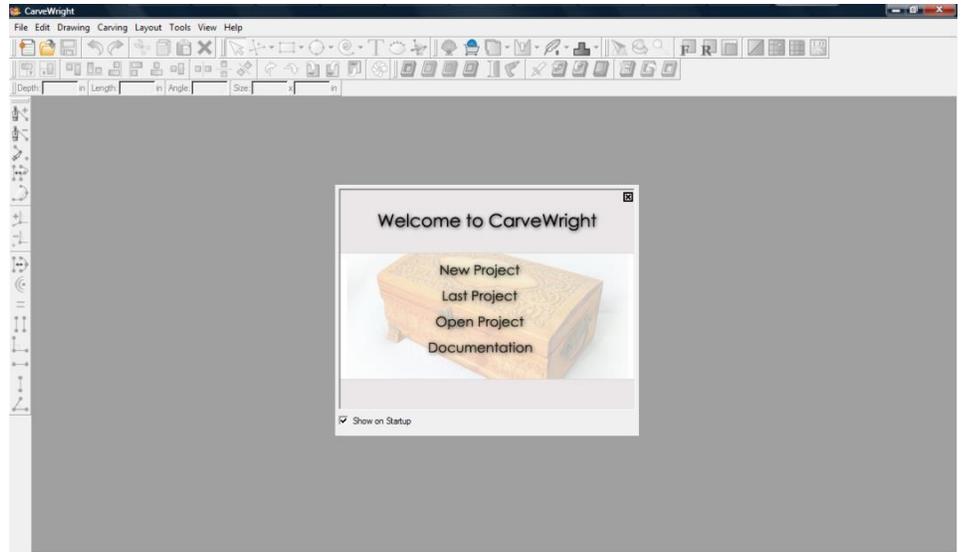
Thickness: .75"

Click OK

The project board size is not necessarily the actual size of the board being put into machine.

✓ MENUS, TOOLBARS, SHORTCUT KEYS OR MOUSE BUTTONS

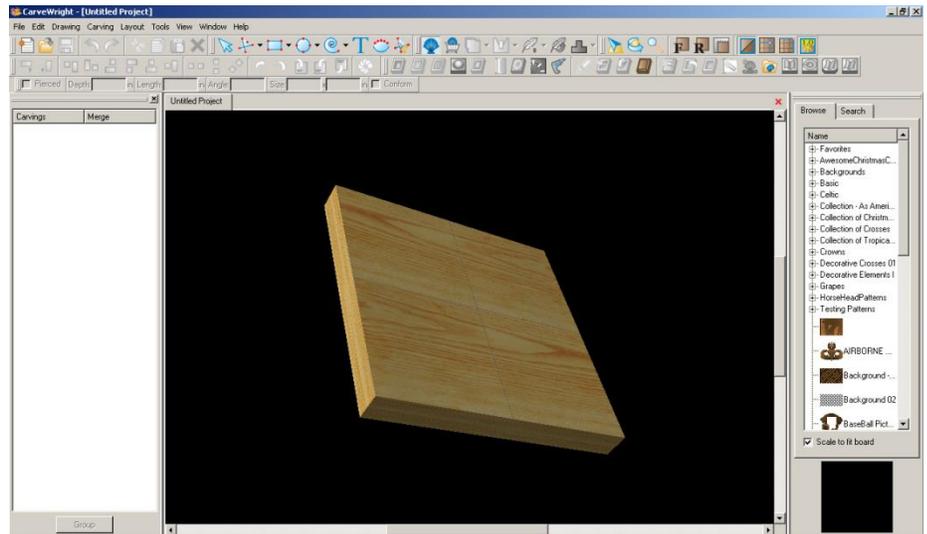
For every software function, we provide you three distinct ways to access that function. They are usually menu, icon or right-click. Some common functions, such as Copy and Paste, also use shortcut keys. These will also work in Project Designer.



✓ MANIPULATING THE WORKPIECE

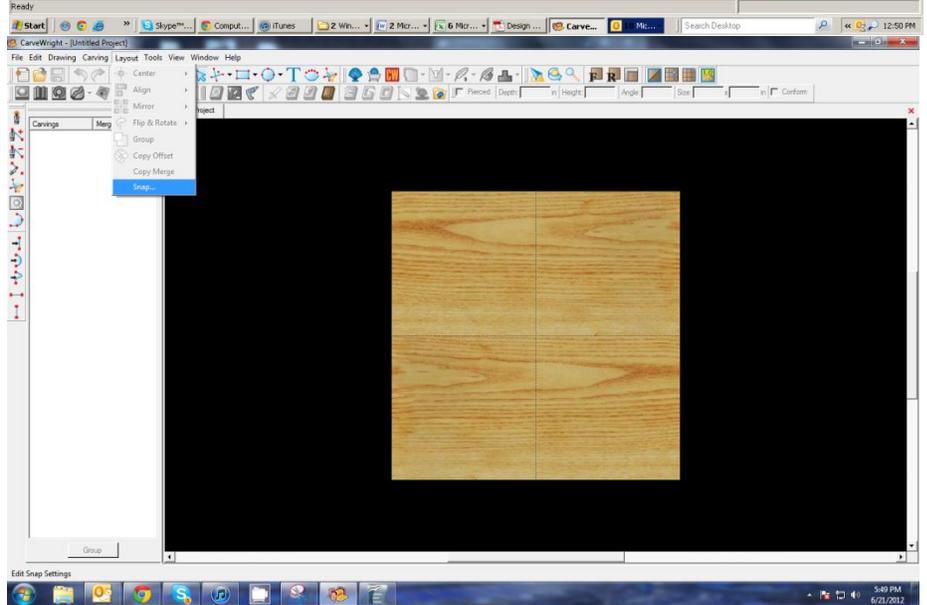
Board piece will display on screen in three dimensions. You can use these tools to get a different view of your project board.

-  Zoom
-  Rotate
-  Pan
-  Front
-  Rear



✓ SNAP TO GRID

Under LAYOUT menu, select SNAP.

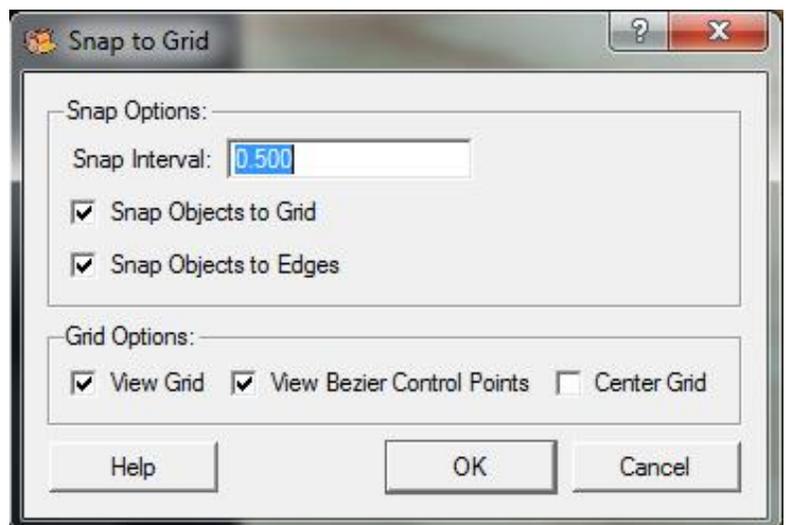


Snap Interval should be .5 inch interval by default.

Check boxes:

- Snap to grid
- Snap to edges
- View grid
- View Bezier Control Points (should already be selected as default)

Click ok

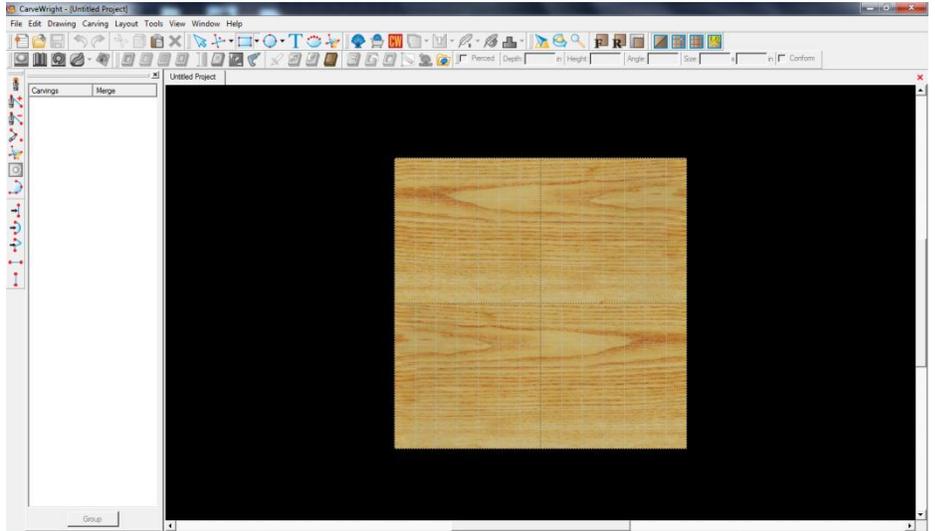


✓ DRAWING TOOLS



Using the grid, draw a box or rectangle .5" inside the project board, which should give you a box that is 6" x 6".

Select the "Pattern Tool" icon to open the pattern library along the right side.

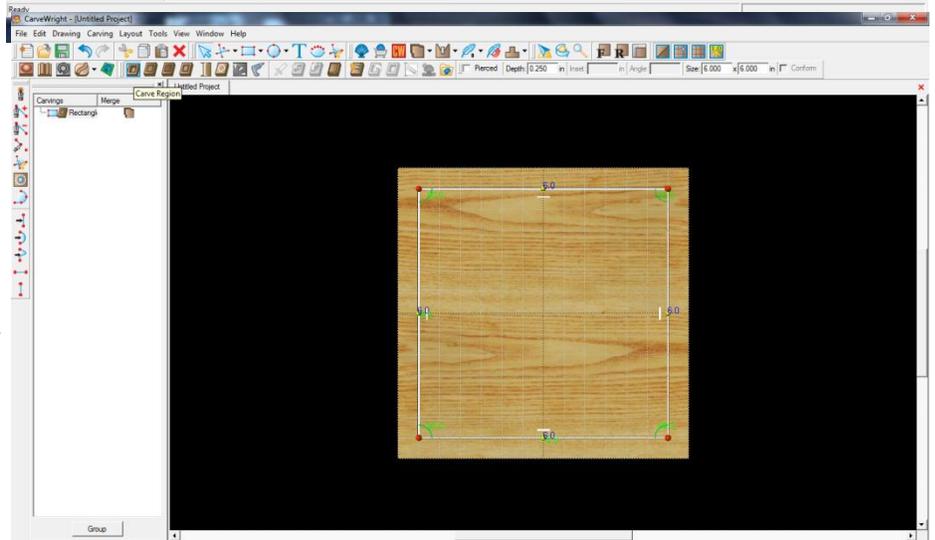


✓ CARVE REGION



Select "Carve Region" icon.

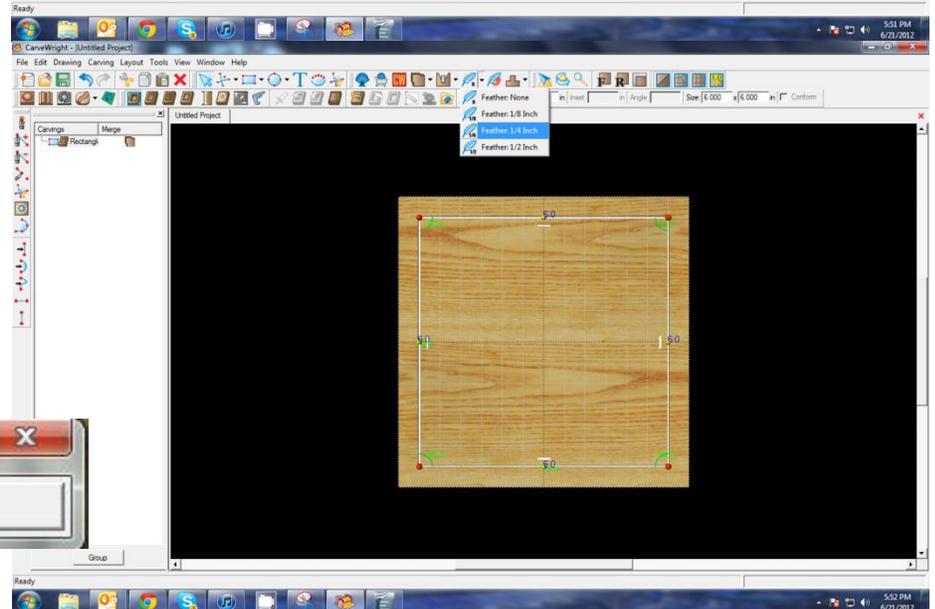
This creates a carved out region inside the boundary. Automatically defaults to .250" depth. Remember depth of pattern & how depth effects carve time.



✓ FEATHERING

Select the drop-down Feather menu and select 1/4" feather.

Select "Accept"



✓ PATTERN PLACEMENT



Select the “Pattern Tool” icon to open the pattern library along the right side.

Select “snowflake” under “Season Patterns” in your Favorites library from the winter folder.

Click once on pattern and once on board to place or click and drag to the board.

Double-clicking will attempt to open it in Pattern Editor Software.

Set depth of snowflake to .250”.

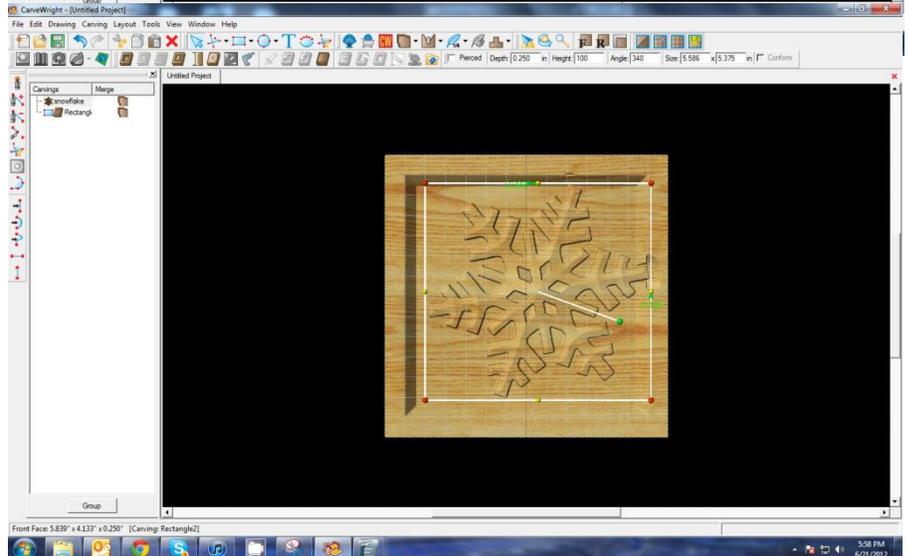
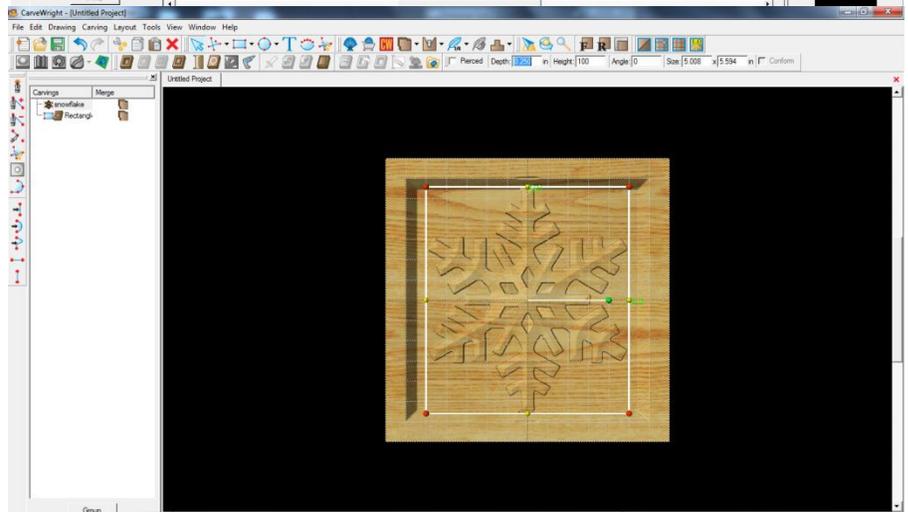
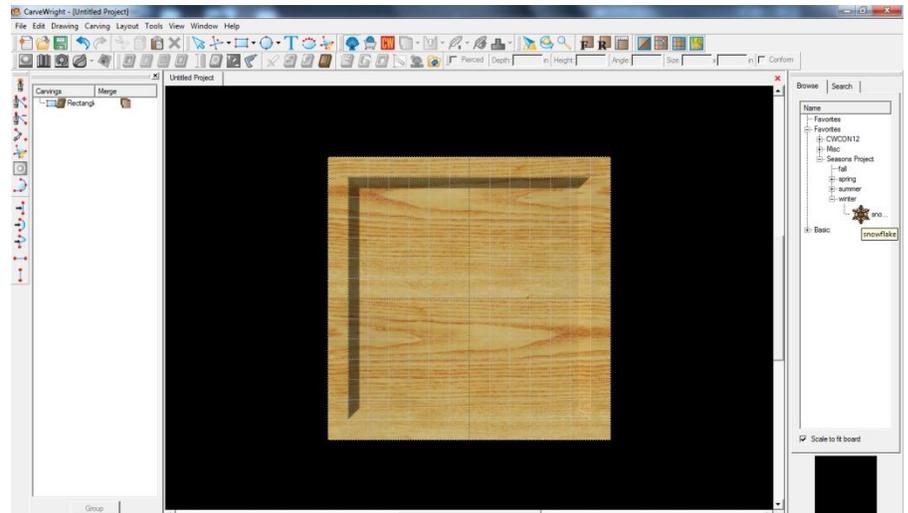


✓ ROTATE ELEMENT



Click on the green knob of the “Rotate” bar in the center of the element.

Rotate snowflake.

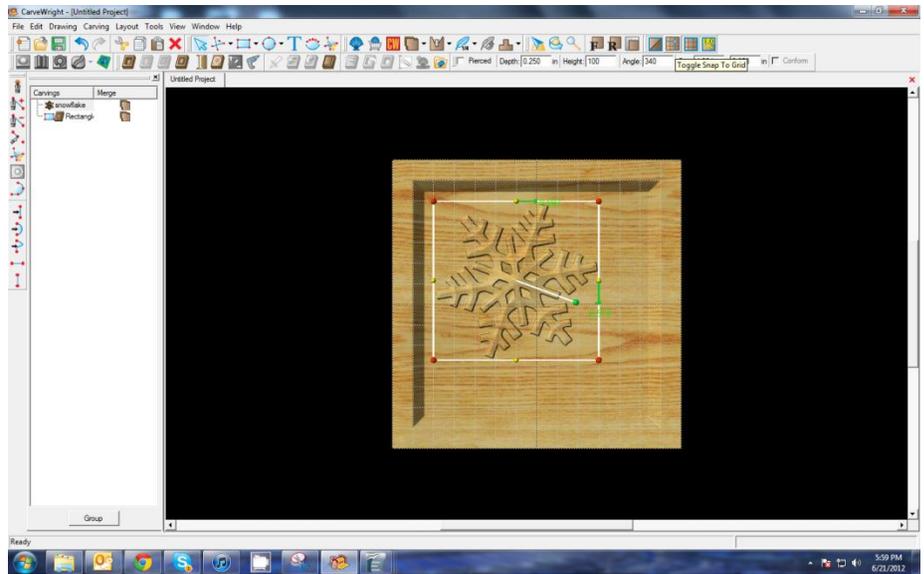


✓ PATTERN MANIPULATION



Use Red Nodes on the corner to Scale the element larger or smaller.

Yellow nodes will stretch or skew the element.



✓ SNAP TO GRID

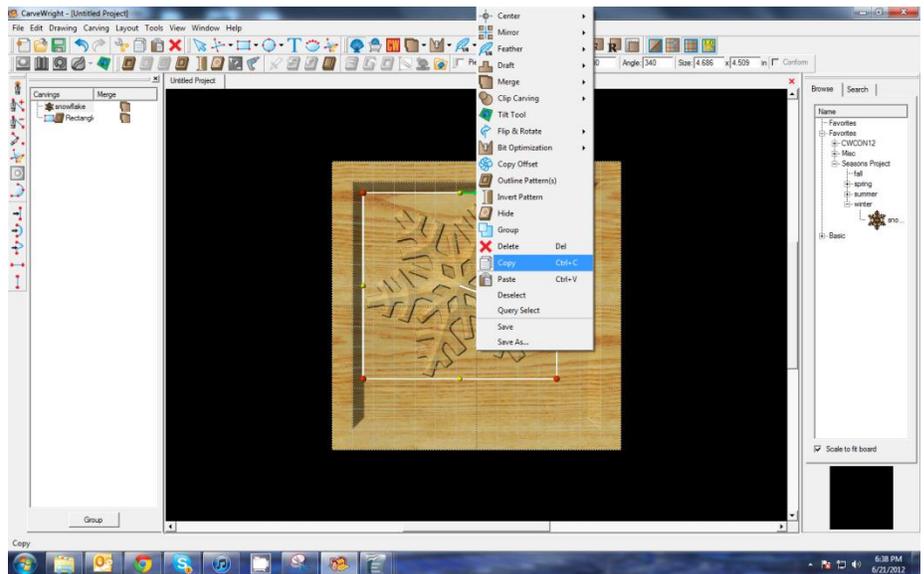


Click "Toggle Snap to Grid" icon to turn grid OFF.

✓ COPY & PASTE

With the snowflake selected, right-click and select copy.

Right-click again and select paste.



✓ PATTERN MANIPULATION



Use Red Nodes on the corner to Scale the element smaller.

Use Rotate knob to rotate the pattern.

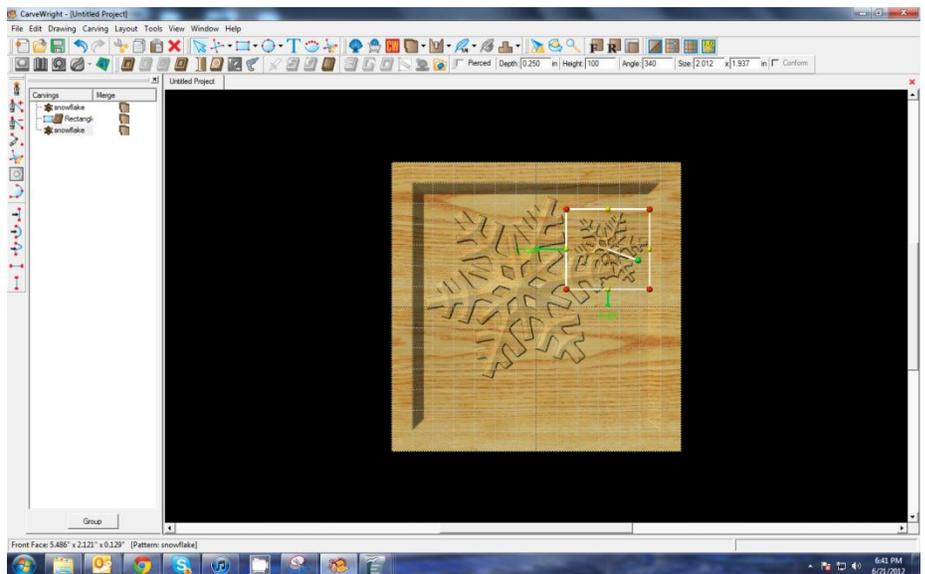


✓ ADJUSTING HEIGHT

Set the Height to .50.



Adjusting height is useful in making the same elements look like they are behind or in front of other objects.



✓ COPY & PASTE

Right-click again and select “Paste”.

Since the last thing you copied was the snowflake, you do not need to copy it, again. It is still on your “Clipboard”.

✓ PATTERN MANIPULATION

Manipulate the pattern, again, changing the rotation & size of it until you have it arranged as you would like.

✓ TEXT TOOL



Next, select the “Text Tool” and click on board.

Text dialog box will appear. Select from any of the true type fonts that you have on your computer. *Some work better than others.*

Type the word “Winter”

Select “Raster” from one of the available Rout Modes.

Notice the other options available from “Text Tool”.

✓ FINE TUNING

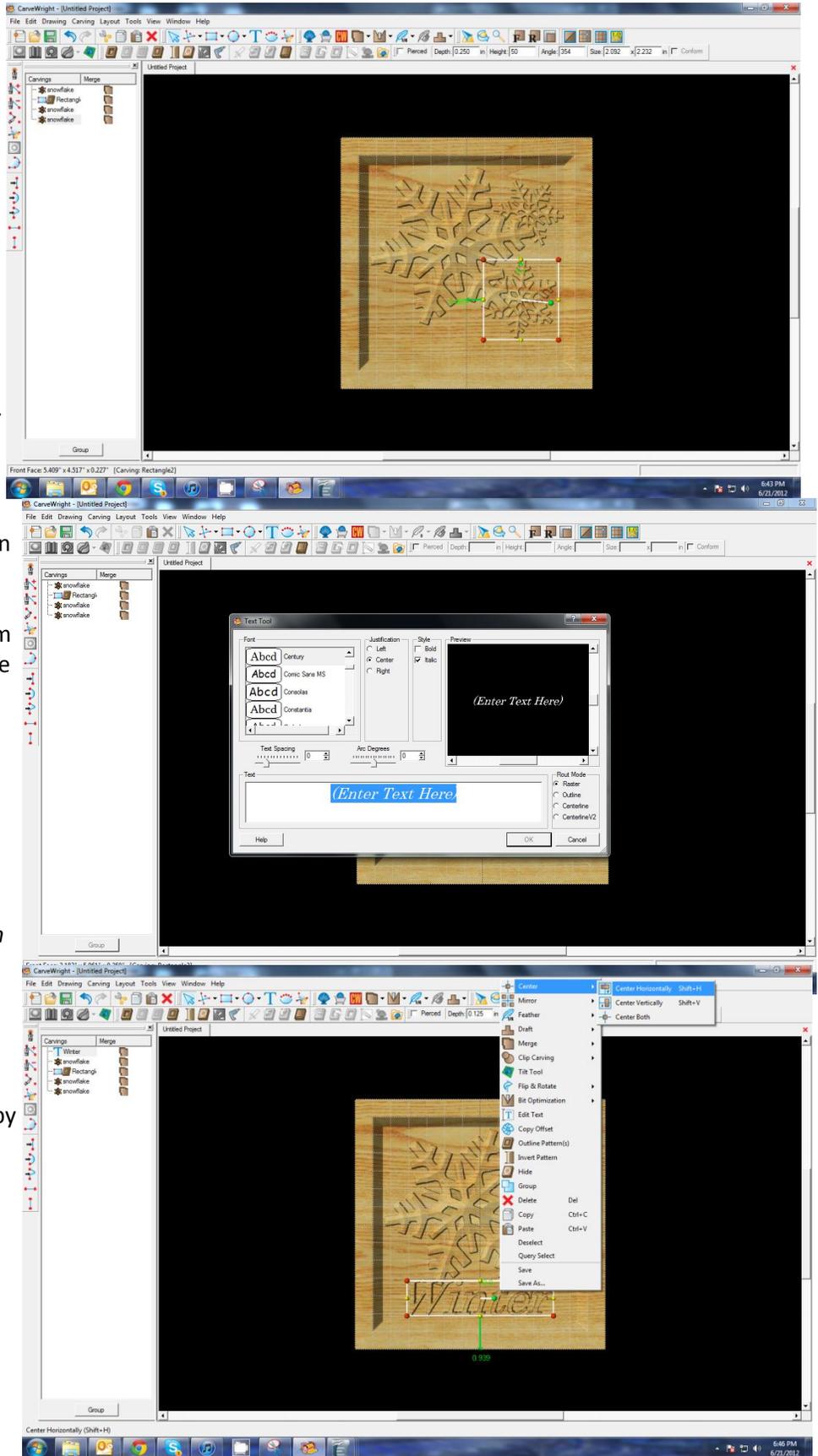
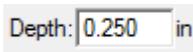
Manipulate the size and placement of the word, just as you would a pattern by scaling to size.

✓ CENTERING



Right-click to see available options and select Center > Horizontally.

✓ ADJUST DEPTH



✓ TEXTURES

Select "Texture" tool.



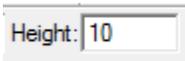
Texture dialog box appears displaying a variety of available textures.

Select "Peaks" and leave the interval at 1"

Click OK.

Texture appears in the rectangular region, but is overtaking parts of the design.

✓ ADJUSTING HEIGHT



Correct this by adjusting the Height to "10".

This sets the height low enough to not overpower the foreground objects.

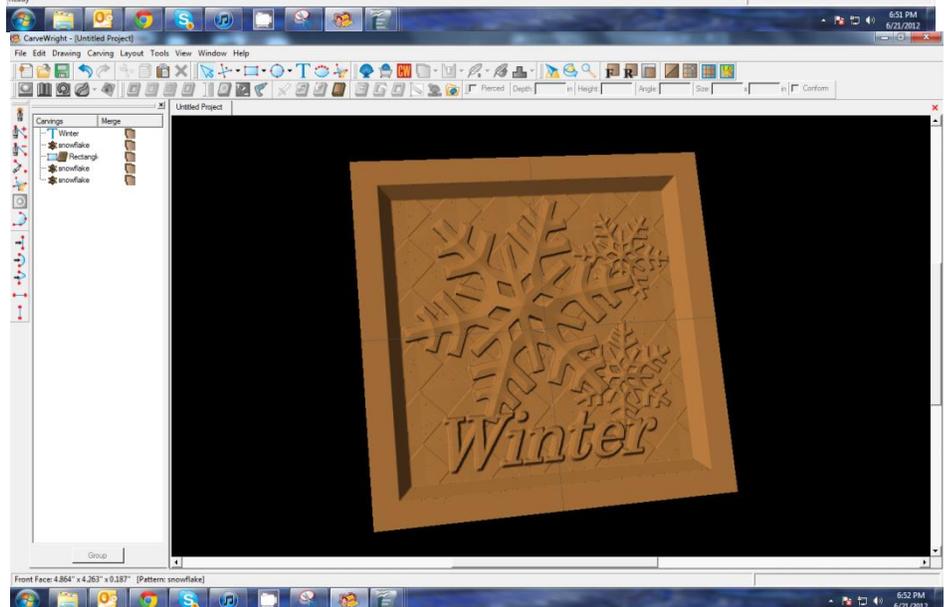
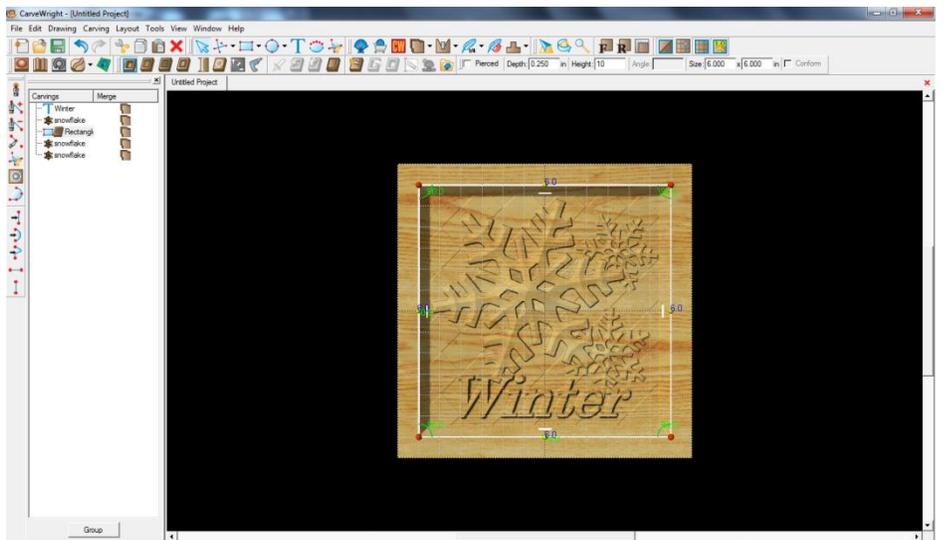
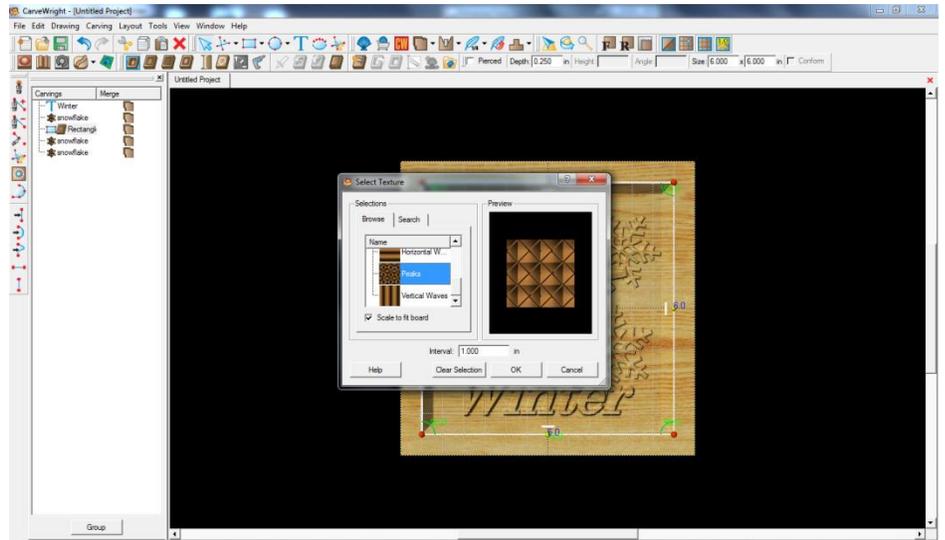
✓ BOARD SETTINGS

Go to View > Toggle Texture to remove wood grain for better viewing.

Also look at View > Board Settings > Stain/Finish to see how you can change the Wood Type/Stain or Wood Finish. This is a great way to present a proposal to a potential customer.



Rotate or zoom in on your project to view it from different angles and make any necessary adjustments.



REMEMBER THESE FUNCTIONS FROM PREVIOUS STEP-BY-STEP PROJECTS

✓ MANAGING DATA

Select “File” > “Save”



*****IMPORTANT*****

Once a project is uploaded to a memory card, it cannot be brought back from the memory card into the software. Always SAVE YOUR PROJECT on your hard drive. A Projects folder is recommended and you should know where you saved it.

✓ UPLOADING TO MEMORY CARD

Make sure your Memory Card



& Programmer are properly attached via your USB port, Select “File” > “Upload” to save to your memory card.

Select Quality Setting

- DRAFT
- NORMAL
- BEST
- OPTIMUM

These settings determine the number of passes the machine makes to carve your project. The more lines the better the surface finish. Make your decision based on material type, fondness of sanding vs. machine time, & test carve vs. final. Notice the estimated carving time differs by quality setting.

Name Your Project

Example:

winterflake_B_1h45m

(recognizable name_quality setting_estimated time to carve)

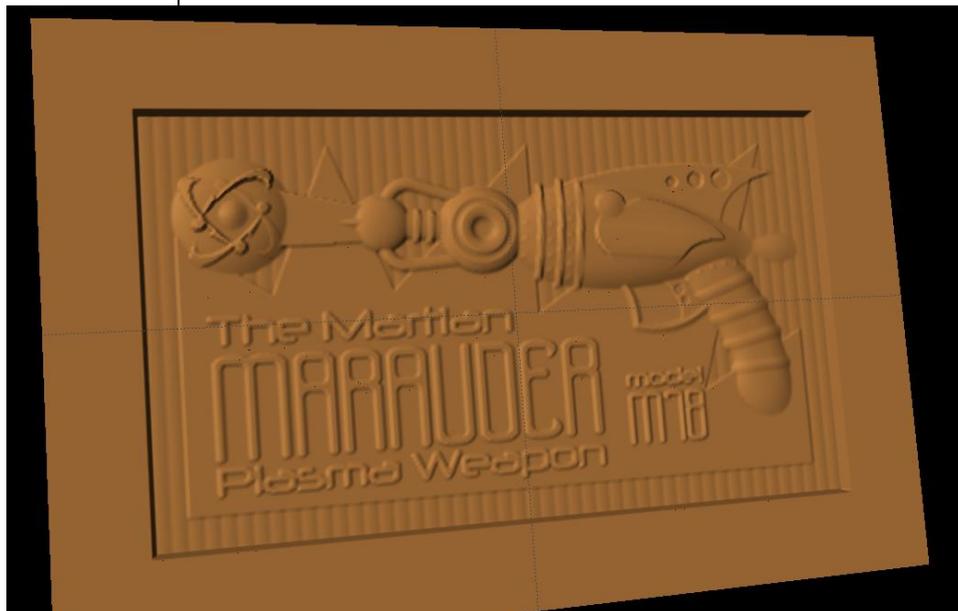
Click “Upload”

NOTE: Actual board to be placed in machine should be 7” longer or you should use a sled that has 3.5 extra inches on each end to STAY UNDER THE ROLLERS.

MARTIAN RAY GUN

This project covers the following design concepts:

- ✓ STARTING SOFTWARE
- ✓ MENUS, TOOLBARS, SHORTCUT KEYS OR MOUSE BUTTONS
- ✓ DRAWING TOOLS
- ✓ CENTERING TOOLS
- ✓ CARVE REGION
- ✓ PATTERN PLACEMENT
- ✓ CREATING A RAISED REGION
- ✓ CHANGE DISPLAY
- ✓ TEXT TOOL
- ✓ USING THE CARVING LIST
- ✓ CREATING A TEXTURE
- ✓ GROUP PATTERNS
- ✓ MANAGING DATA



INSTRUCTIONS:

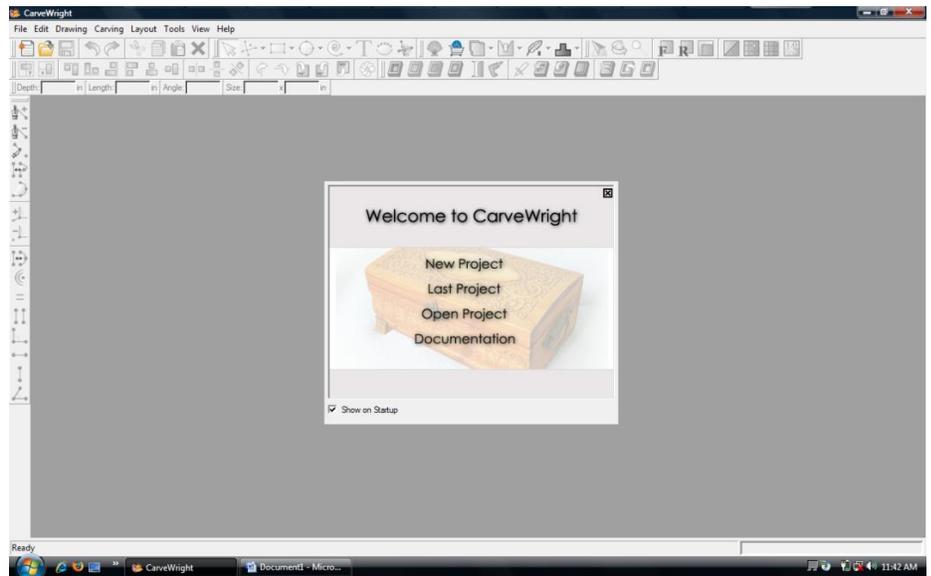
✓ STARTING THE SOFTWARE

Open the CarveWright Project Designer Software

The Welcome screen appears with project options.



Select "New Project"



Set your project board dimensions.

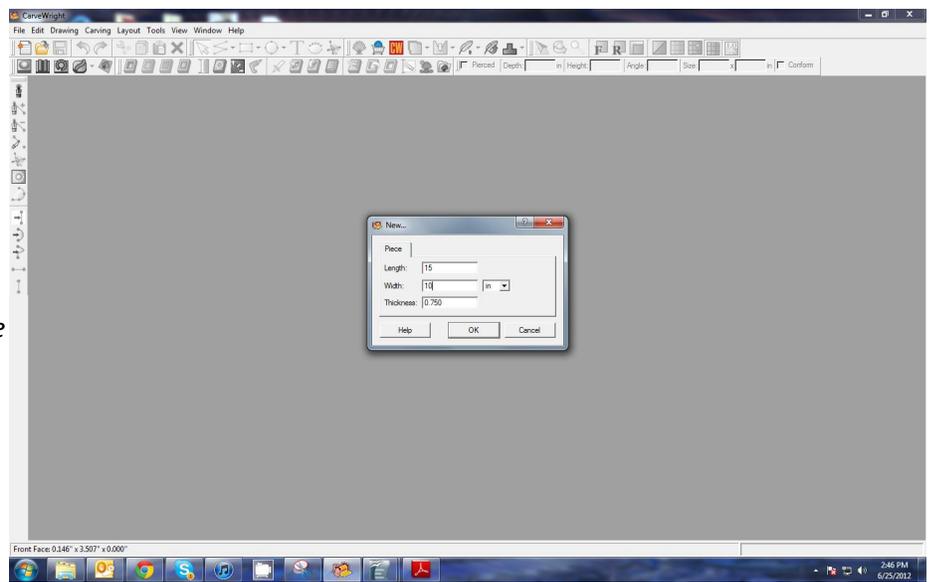
Length: 15"

Width: 10"

Thickness: 0.75"

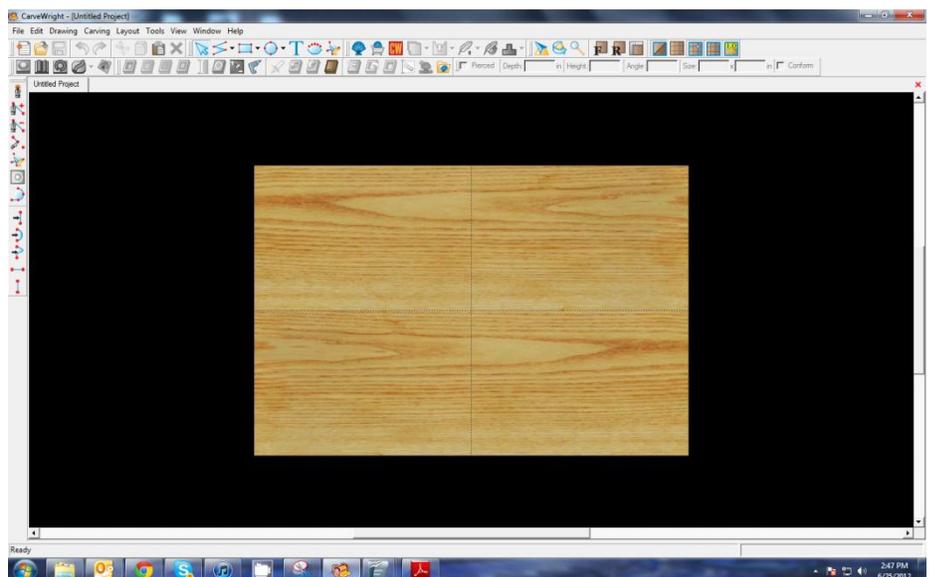
Click OK

The project board size is not necessarily the actual size of the board being put into machine for carving.



✓ MENUS, TOOLBARS, SHORTCUT KEYS OR MOUSE BUTTONS

For every software function, we provide you three distinct ways to access that function. They are usually menu, icon or right-click. Some common functions, such as Copy and Paste, also use shortcut keys. These will also work in Project Designer.

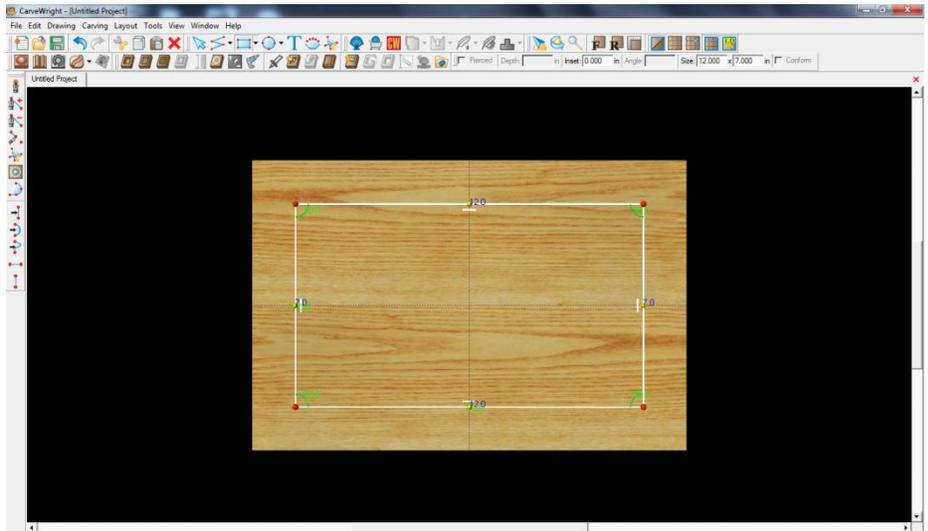
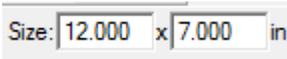


✓ DRAWING TOOLS



Using the rectangle tool create a box on the front face of the work piece.

Resize the box to be 12" long and 7" tall using the Sizing box found on the toolbar.

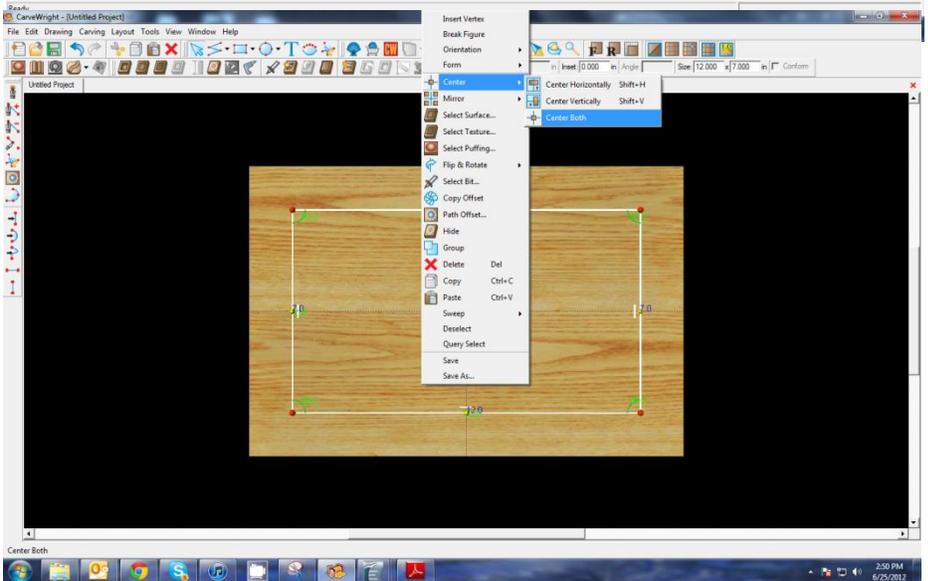


✓ CENTERING TOOLS



With the rectangle selected, right-click to bring up menu of available options.

Select "Center" > "Center Both"

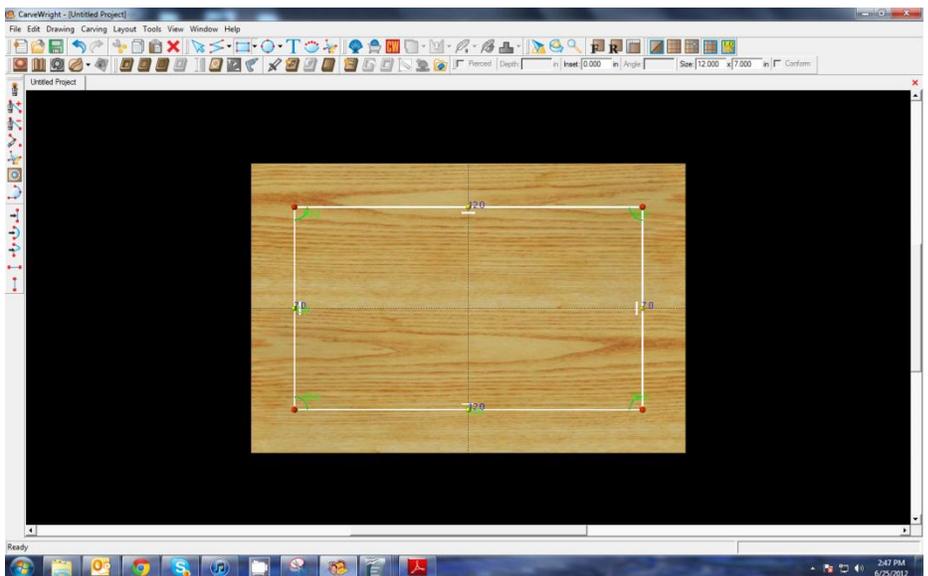


✓ CARVE REGION



Select "Carve Region" icon.

This creates a carved out region inside the boundary. Automatically defaults to .250" depth. Remember depth of pattern & how depth effects carve time.



✓ PATTERN PLACEMENT



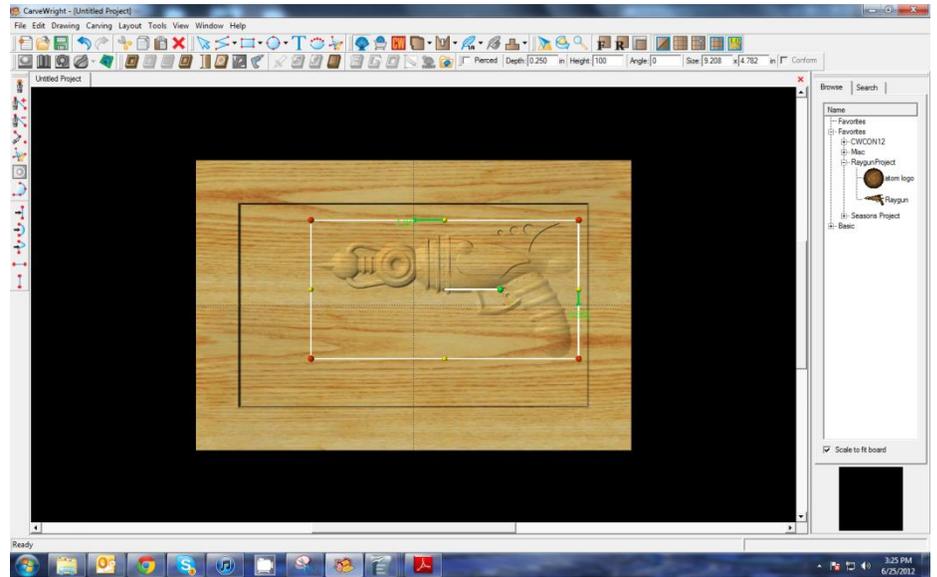
Select the "Pattern Tool" icon to open the pattern library along the right side.

Select "Raygun" under "RaygunProject" folder in your Favorites.

Click once on pattern and once on board to place or click and drag to the board.

Double-clicking will attempt to open it in Pattern Editor Software.

Place the Raygun pattern onto the board



With the Raygun pattern still highlighted, change its length dimension to 9", set its height to 999, and set the depth to .25". All of these variables can be found in the size box on the top toolbars.



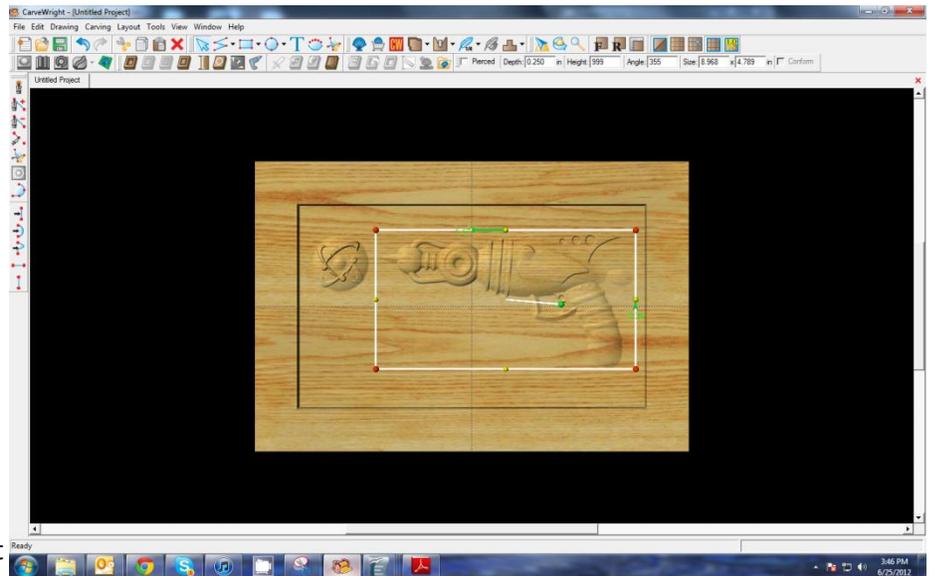
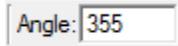
Click on the "Atom Logo" in the pattern library and place it on the board in front of the Raygun

Set its depth to .25"

Rotate the Raygun pattern slightly. You can do this by using grabbing and dragging the center green handle

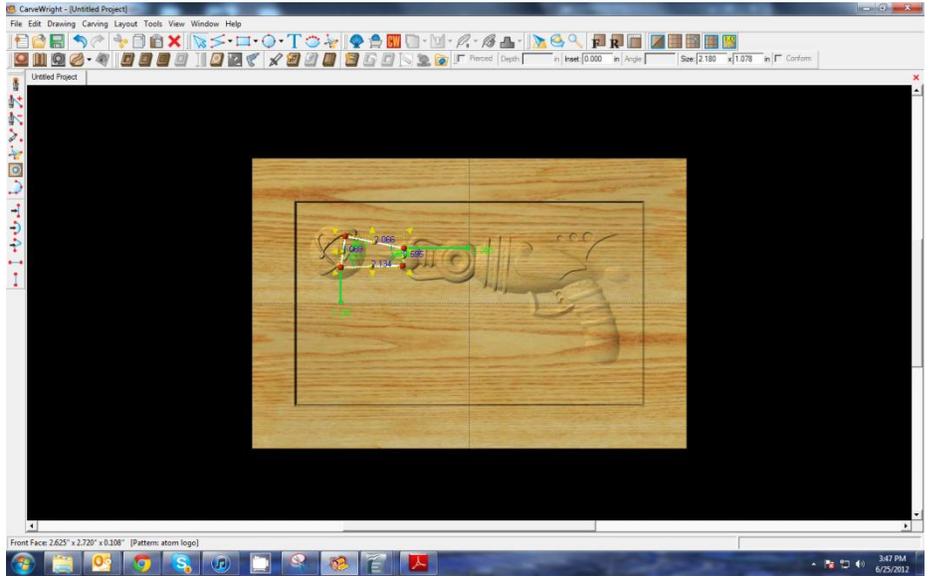


OR by inputting an angle in the Angle Input Box on the toolbar.



✓ CREATING A RAISED REGION

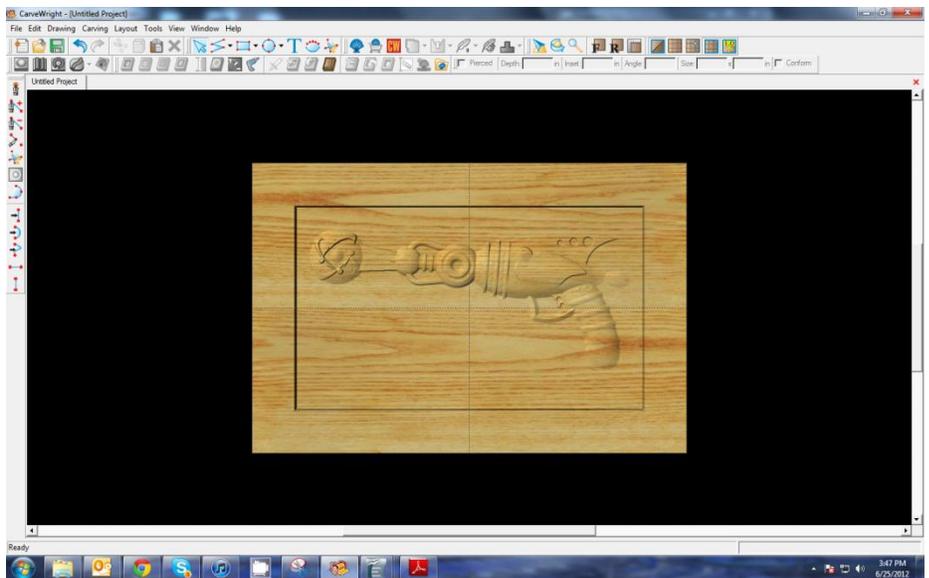
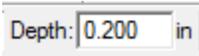
With the connected line tool, draw a tapered shape coming from the Raygun to the Atom logo.



✓ CARVE REGION

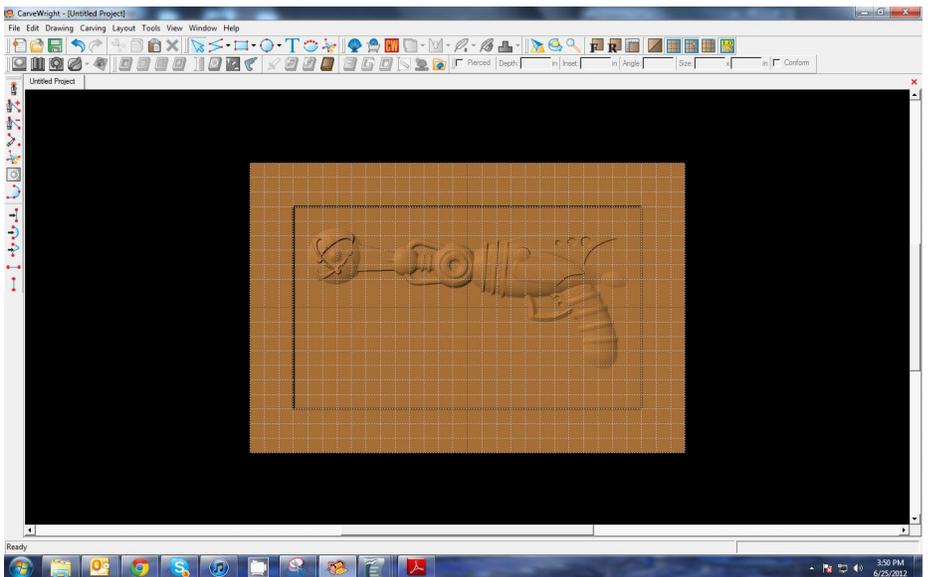


Select "Carve Region" icon and set the depth to .2".



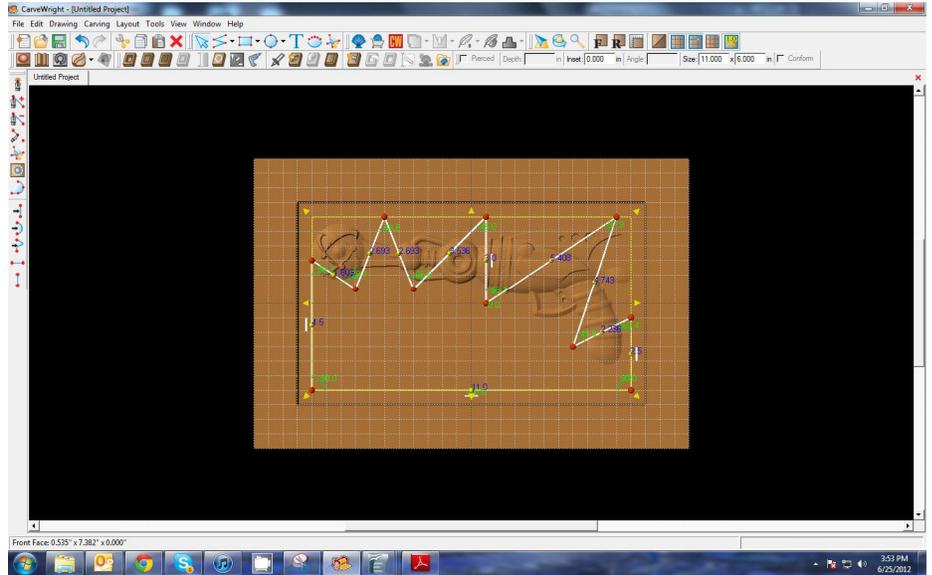
✓ CHANGE DISPLAY

Using the icons in the view toolbar, toggle texture off, toggle grid on, and toggle the snap to grid.



✓ CREATING A RAISED REGION

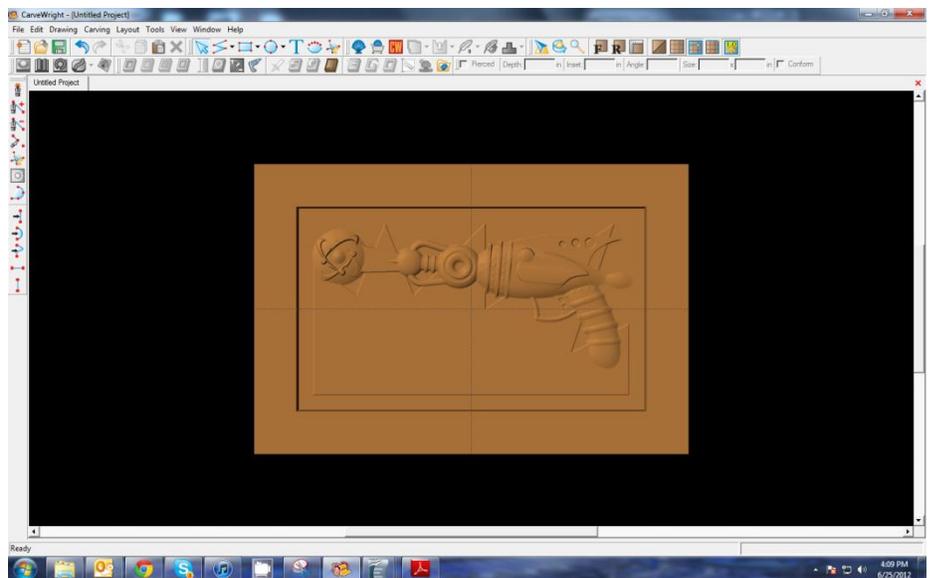
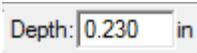
Select connected line tool again and draw starburst shape centered to the lower left.



✓ CARVE REGION



Select “Carve Region” icon and set the depth of the starburst to .23”.

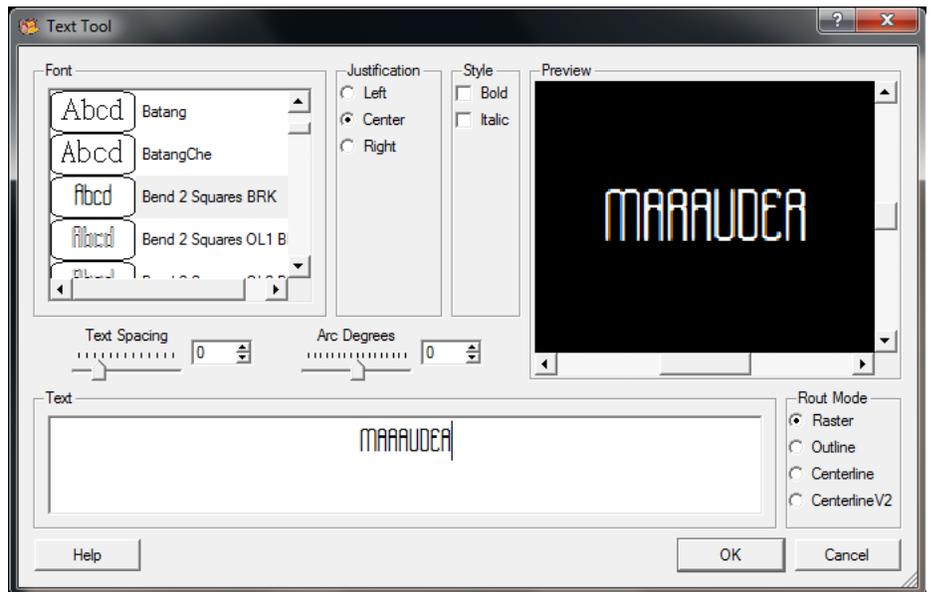


✓ TEXT TOOL



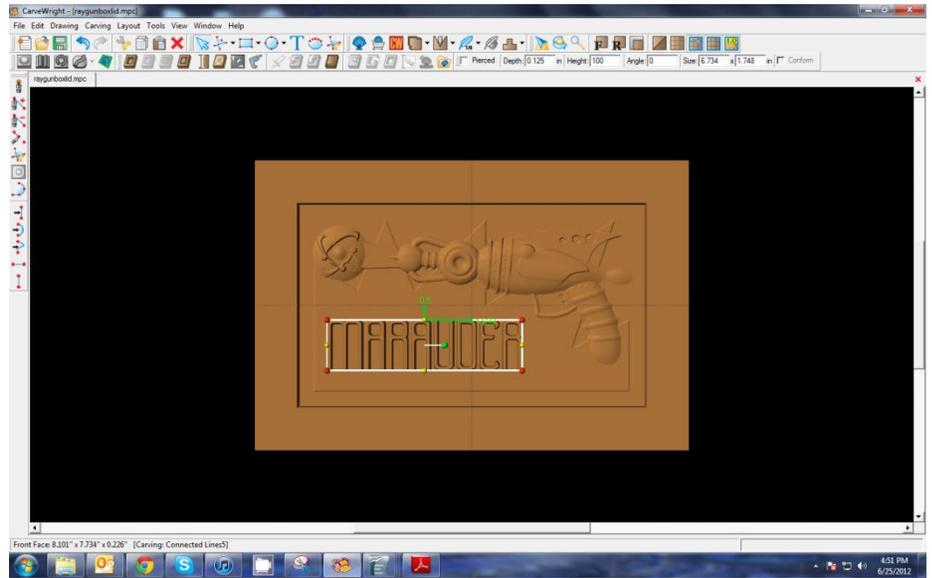
Next, select the “Text Tool” and click on board.

Text dialog box will appear. Choose your font and type the name of your Raygun and click on OK (We call ours MAAARAUDER and use a font called Bend2Squares downloaded for free from urbanfonts.com)

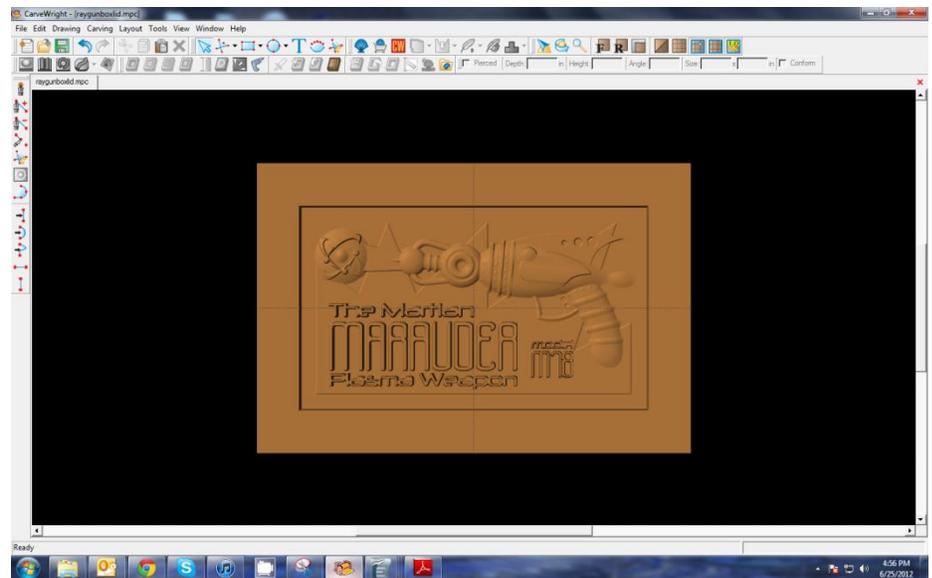
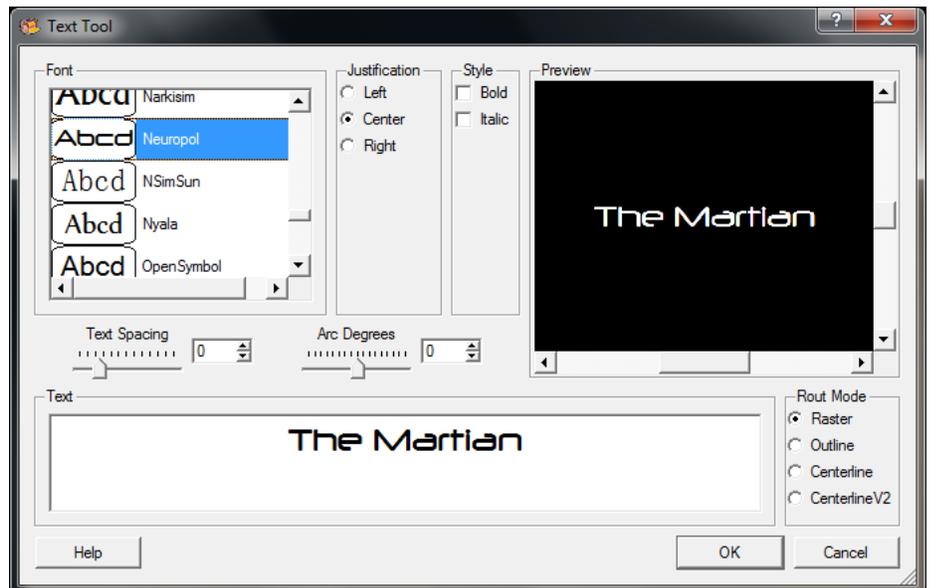


Select "Raster" from one of the available Rout Modes.

Scale the text and position it on the board.



Add more text where desired using the above steps. (The other font used is Neuropol and was free at dafont.com)



✓ USING THE CARVING LIST

Now with all your text placed, open the carving list by selecting the “carving list” icon on the toolbar.



From the carving list, select all of the text elements.

Set their depth to .25” and the height to 50.

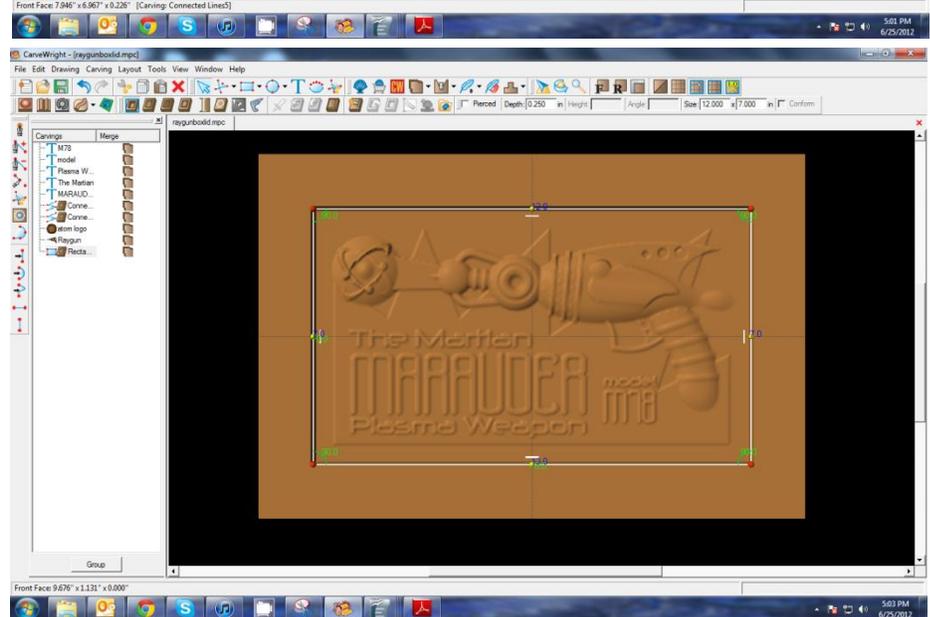
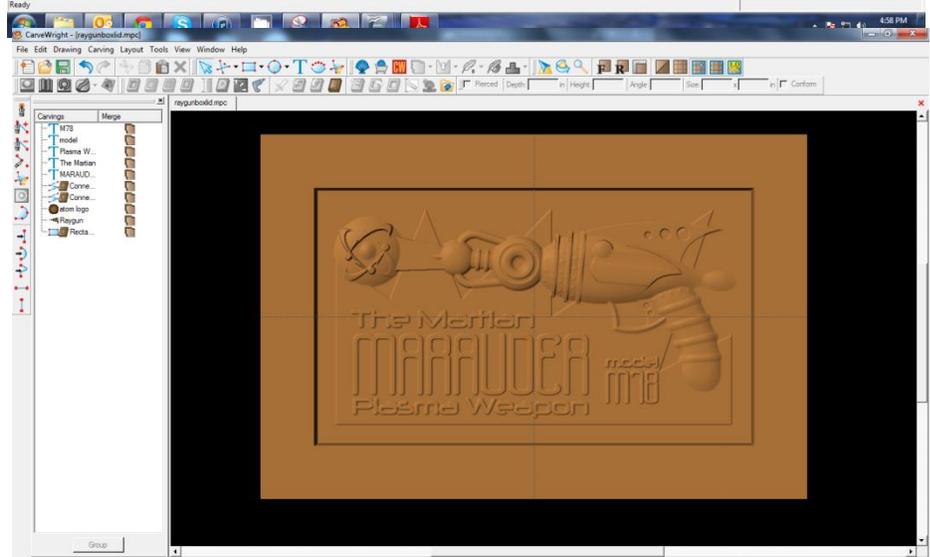
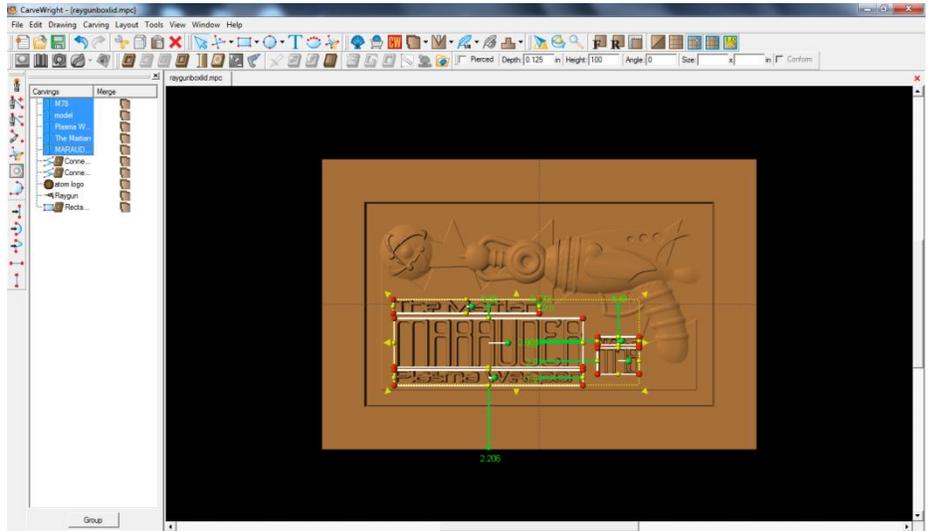


Set the draft of the text to medium using the “Draft” icon found on the toolbar.



✓ CREATING A TEXTURE

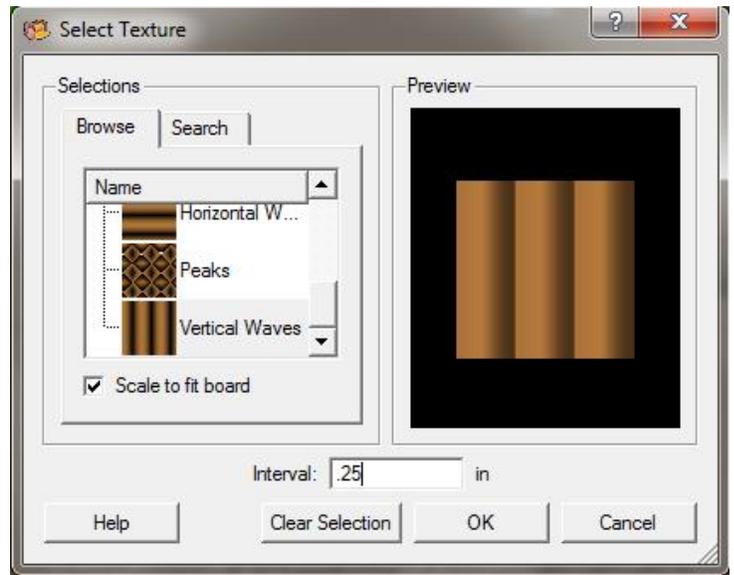
Select the background region that you created earlier and select the “texture” icon from the toolbar



The Texture dialog box appears displaying a variety of available textures.

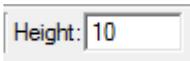
Select the Vertical Waves texture and set the interval to .25"

Click OK.

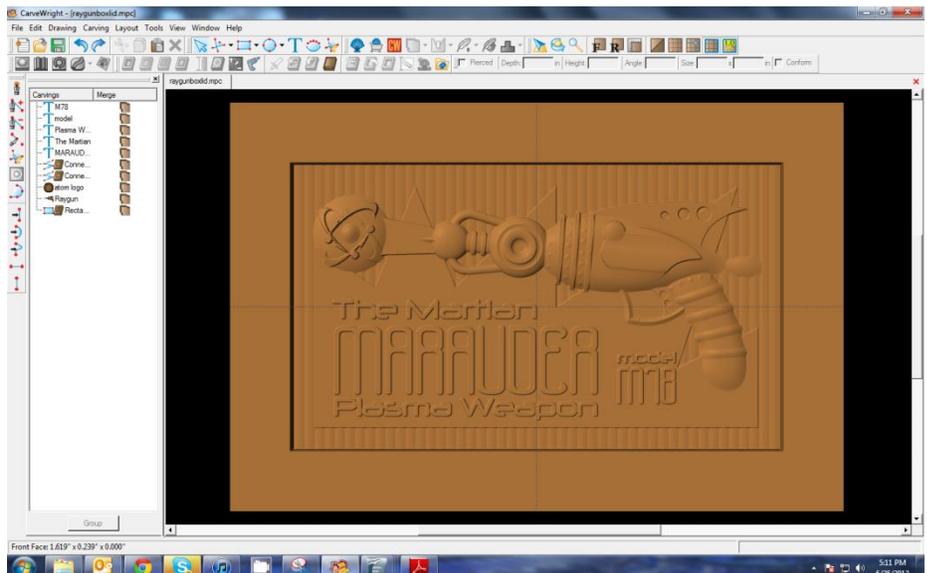
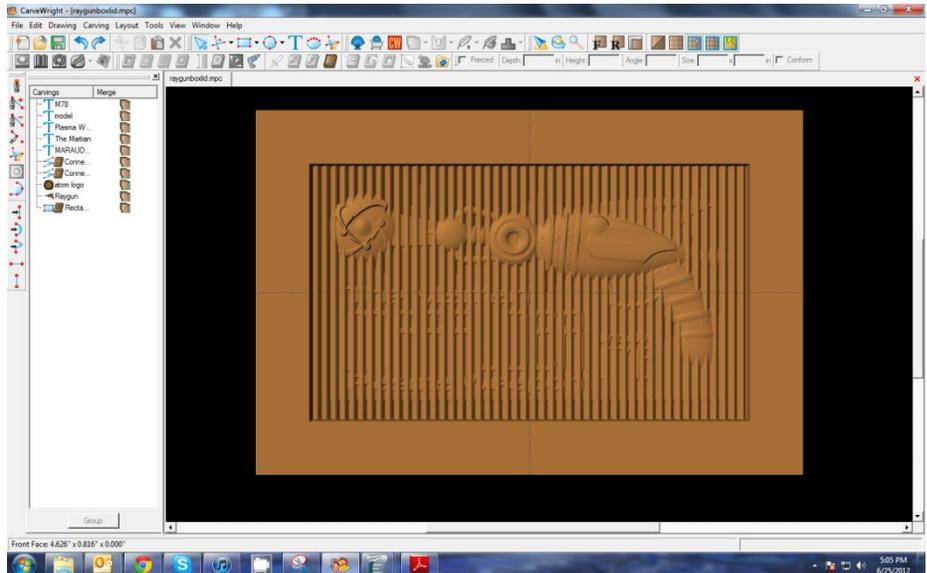


The texture appears in the rectangular region, but is overtaking parts of the design.

Correct this by adjusting the Height to "10".

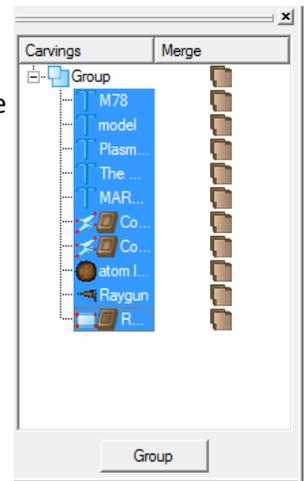


This sets the height low enough to not overpower the foreground objects.



✓ GROUP PATTERNS

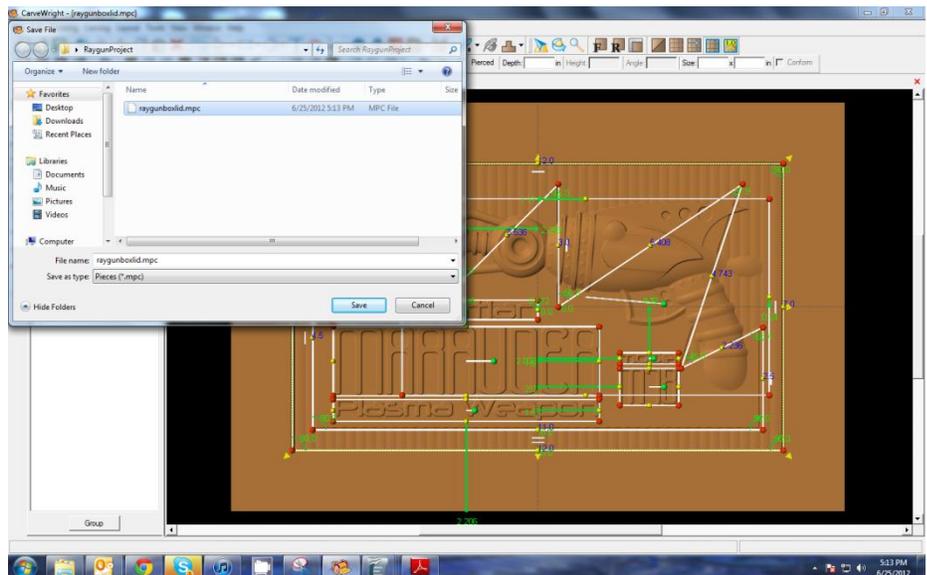
In the carving list select everything that is in it and select the group button at the bottom of the list.



✓ MANAGING DATA

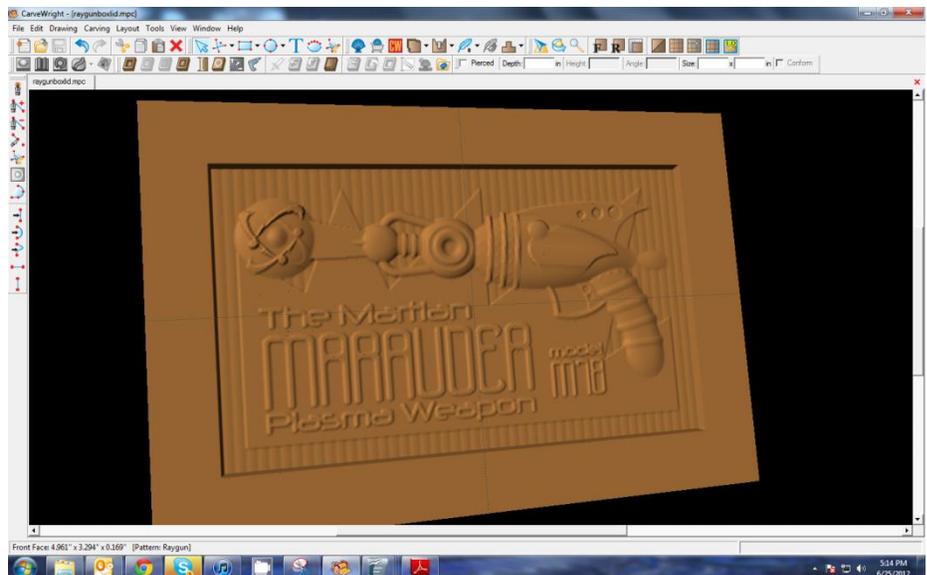
Save the project as Raygun box lid and we'll revisit it in a later project.

Select "File" > "Save"



*******IMPORTANT*******

Once a project is uploaded to a memory card, it cannot be brought back from the memory card into the software. Always **SAVE YOUR PROJECT** on your hard drive. A Projects folder is recommended and you should know where you saved it.



HOUSE NUMBER SIGN

This project covers the following design concepts:

- DRAWING TOOLS
- SNAP TO GRID
- SETTING CONSTRAINTS
- CUT PATH TOOL
- CENTERLINE TEXT
- COPY & PASTE
- FLIP & ROTATE
- CREATING A CLOSED REGION
- MANAGING DATA
- STAYING UNDER ROLLERS
- UPLOADING TO MEMORY CARD



INSTRUCTIONS:

➤ STARTING THE SOFTWARE

Open the CarveWright Designer Software

The Welcome screen appears with project options.



Select "New Project"

Set your board piece dimensions.

Length: 12"

Width: 5.5"

Thickness: .75"

Click ok

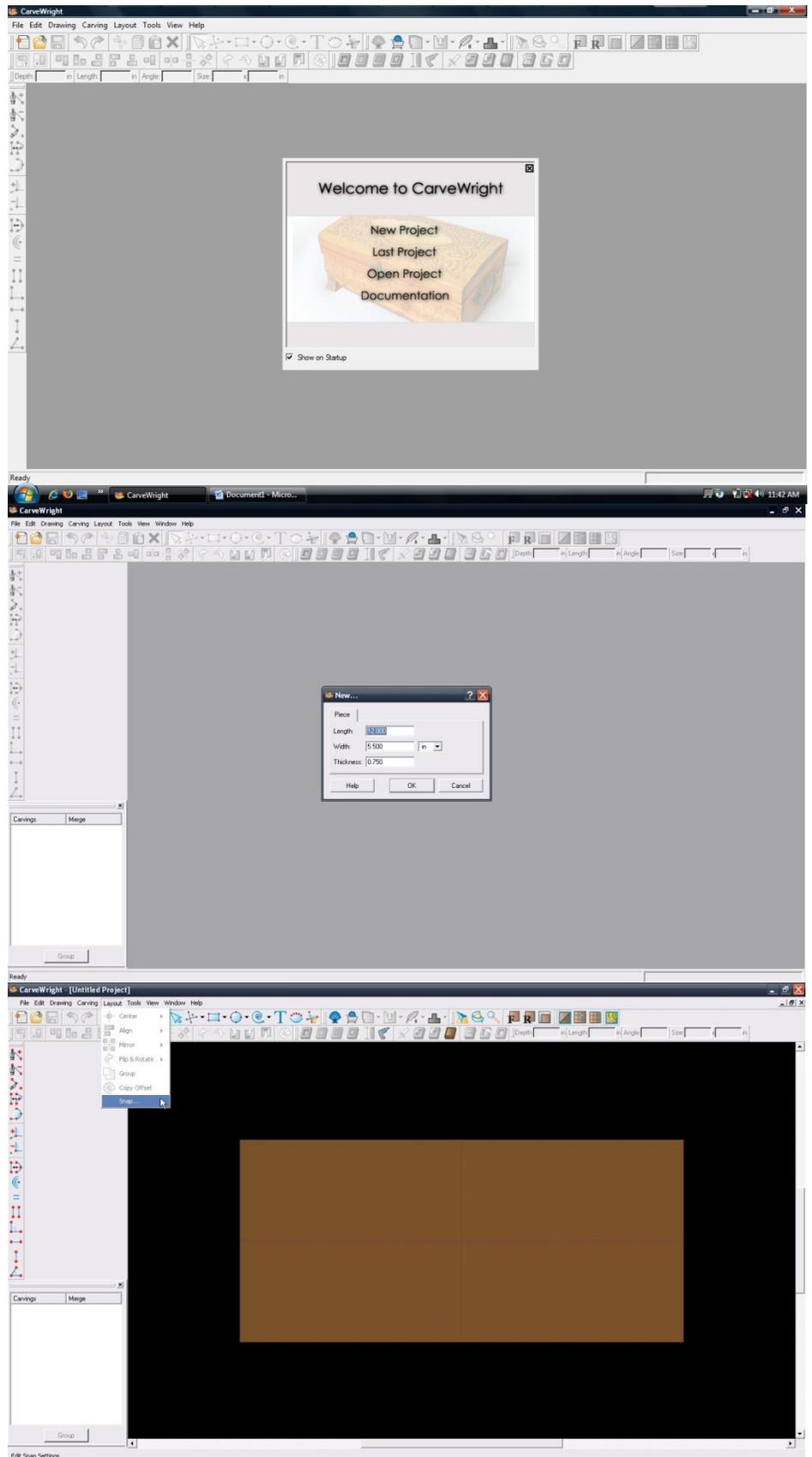
➤ BOARD SETTINGS



Use "Toggle Texture" to remove wood grain for better viewing.

➤ SNAP TO GRID

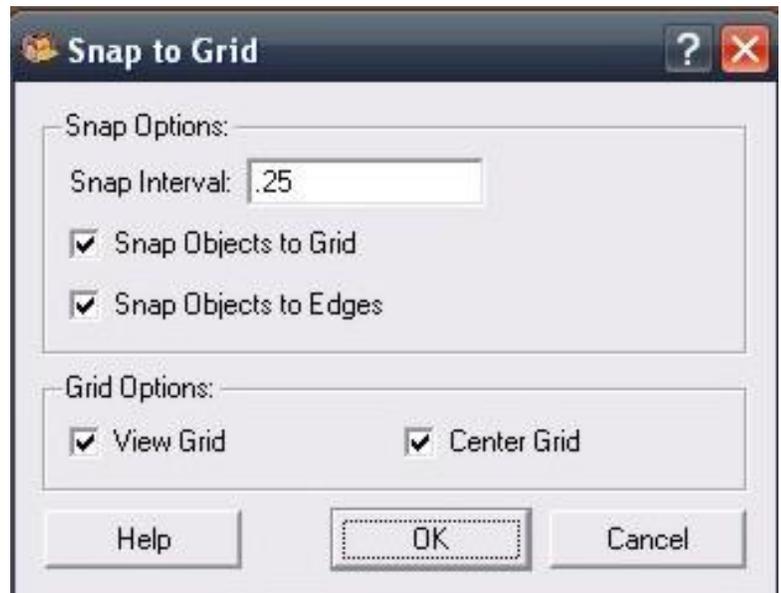
Go to the menu bar and click "Layout" then select "Snap..."



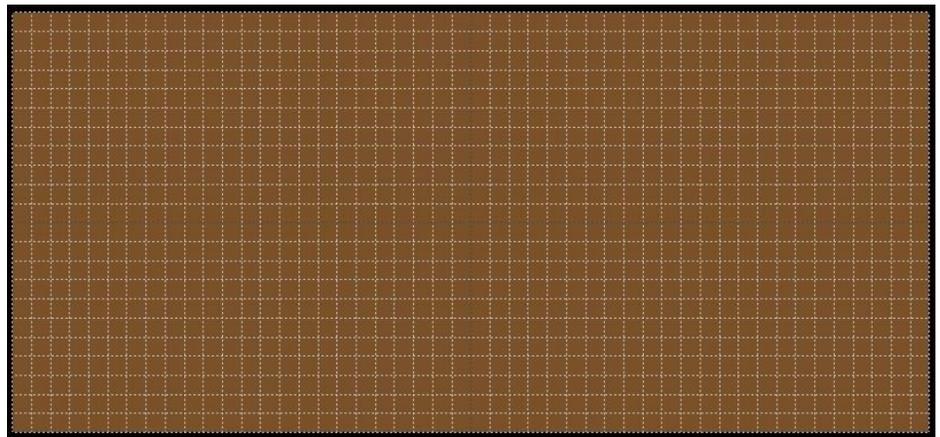
From the “Snap to Grid” dialog box change the “Snap Interval” to “.025”.

Check Snap Objects to Grid; Snap Objects to Edges; View Grid & Center Grid

Click “OK”



On your work piece you should now see a set of grid lines.

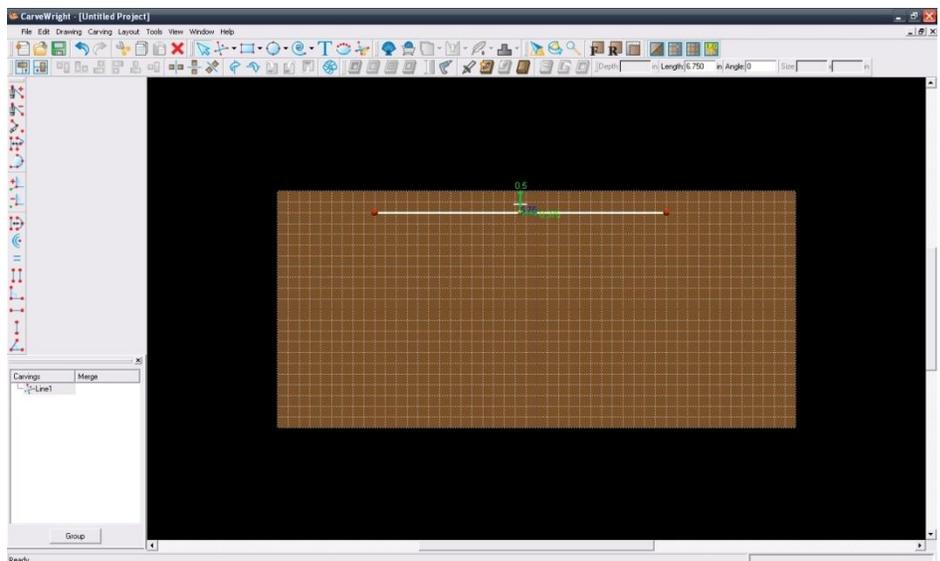


✓ DRAWING TOOLS



Select the “Line Segment Tool”.

Draw a horizontal line on the board on the second gridline from the top. The vertical green arrow shows the distance from the element to the top (or edge) of the board. Move the element or change the number to “.05”.



✓ CONSTRAINTS

In the “Length” box or with the Blue Number type “8.0” and press Enter.

✓ DRAWING TOOLS



Click on the “Circle Drawing Tool” drop down menu and select the “Arc Tool”.

With your mouse pointer place your cursor over the left red node on your horizontal line.

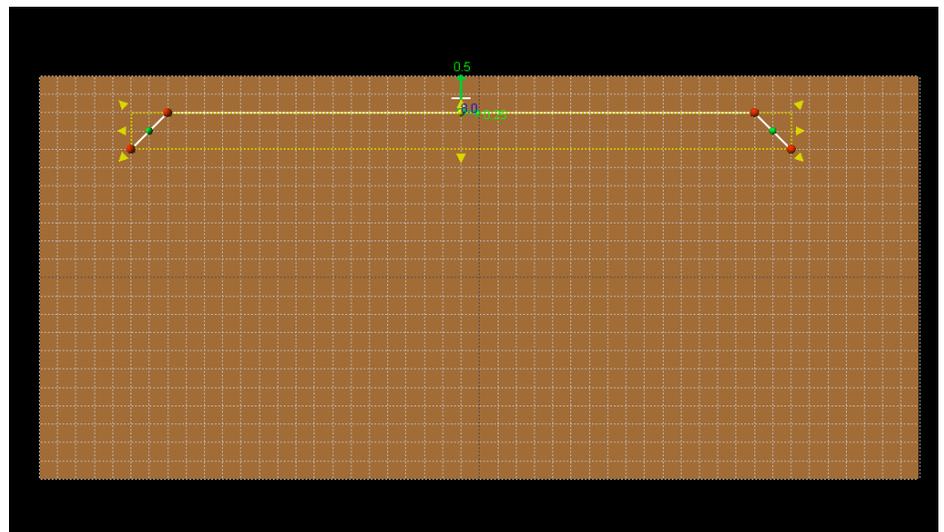
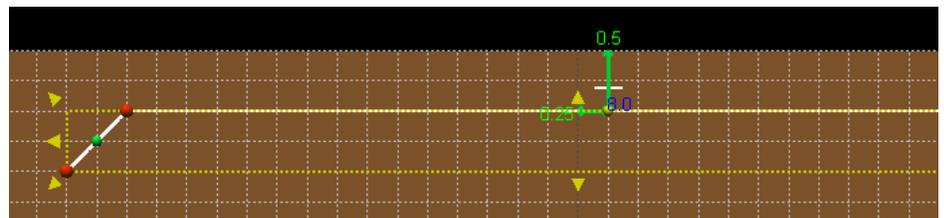
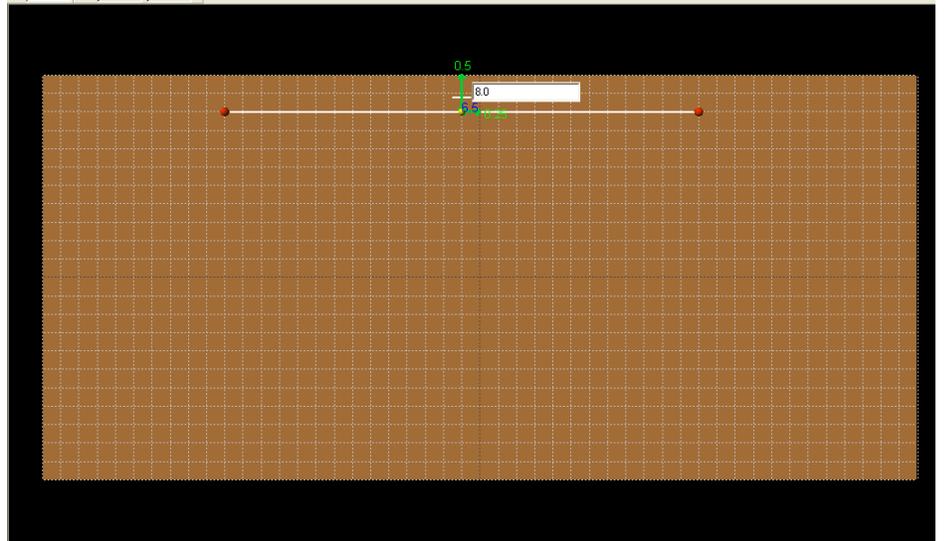
When done correctly it should give you a visual notification that you are connecting the two drawing methods.

When you see the connected notification, left click once. Now count two grid lines to the left and two grid lines down and left click once.

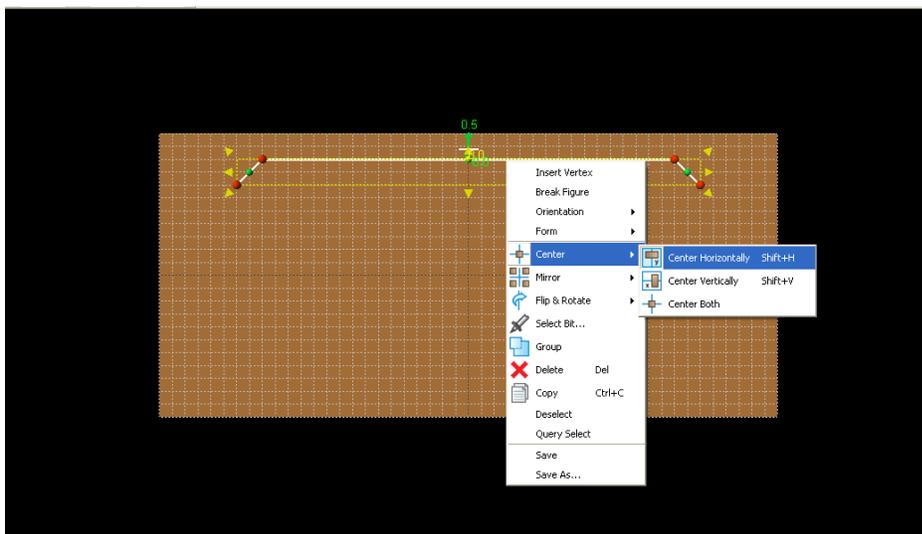
At this point, we will not set the arc radius.



Select the “Arc Tool” again. Do the same to the right side of the line segment. Your shape should look like the top part of a trapezoid.

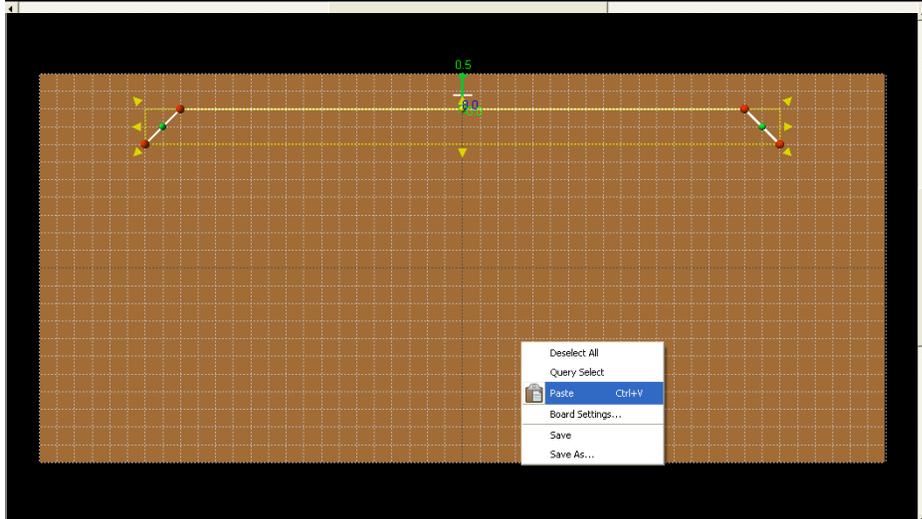


Right click on the line and select
"Center", "Center Horizontally"



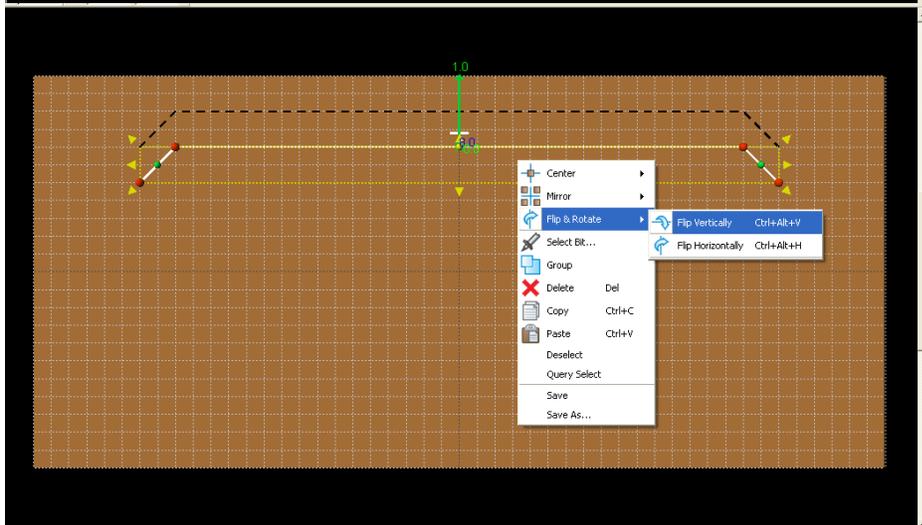
✓ COPY & PASTE

Select the line segment that was
just created. Copy it and then
paste.



✓ FLIP & ROTATE

With only the pasted line segment
selected, Right click and select
"Flip & Rotate", "Flip Vertically".



Now move the copied line to the second grid line from the bottom.

There should be two line segments in the Carving Tree.

✓ CONSTRAINTS

Constraints are given to guarantee a uniform project layout.

On both line segments, set the Constraints for Center of the Board and Edge of the Board to "0.0".

NOTE: Changing the number applies a "Constraint" and the number indicates this by turning yellow.

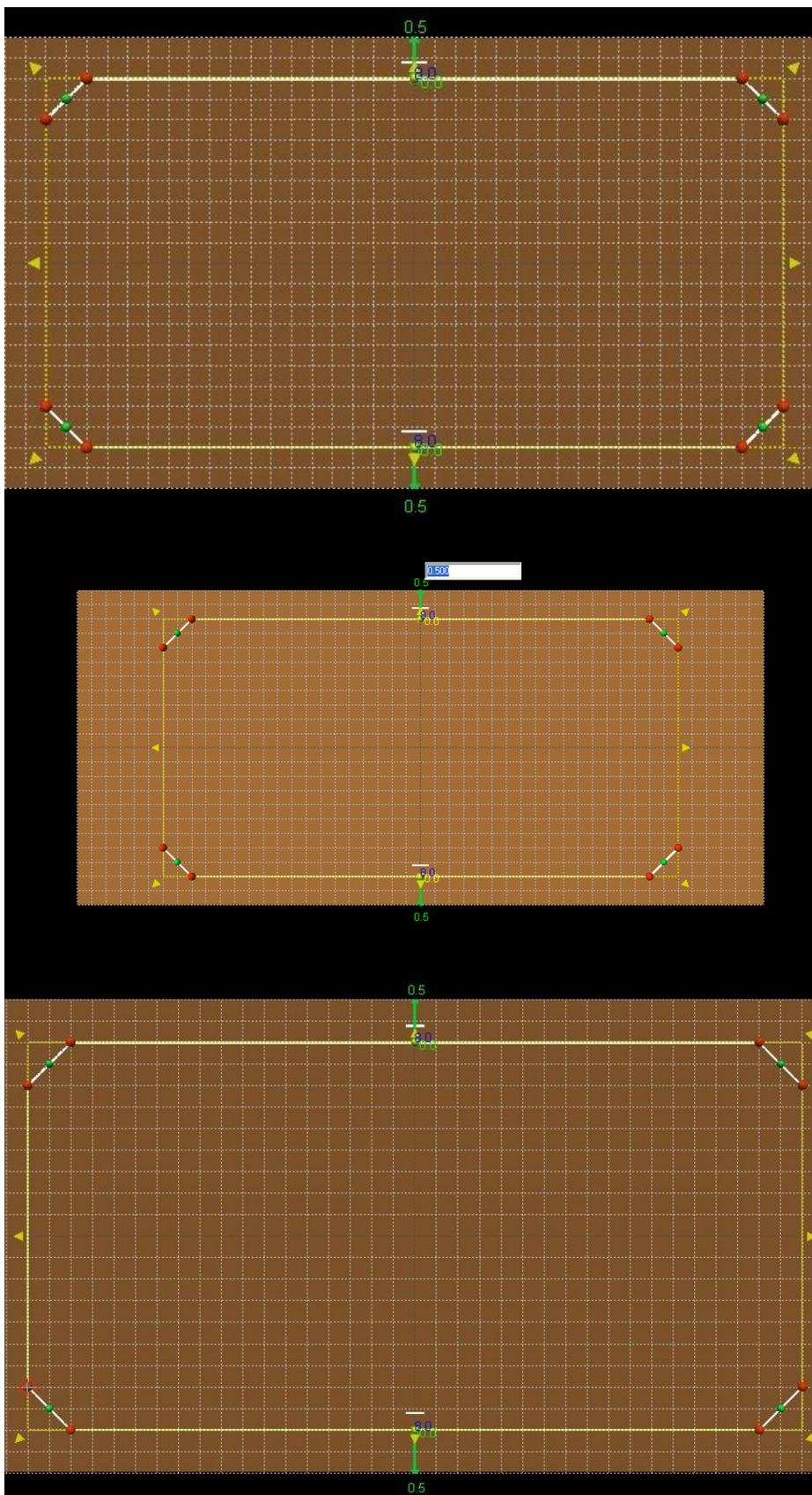
Note: To remove or edit a constraint, right click on the number and select remove.



Select the Arc Tool and connect to each red node on the left side of the work piece.

Note: If connection is successful, the Carving Tree will show only one Line Segment.

Repeat prior action with the right side of the design project.



✓ CREATING A CLOSED REGION

The shape should now be completely connected (“closed region”).

✓ CUT PATH TOOL



Note: Region is not fully connected, if “Cut Path” option is not available when the element is selected.

Check each red node to make sure they are fully connected.

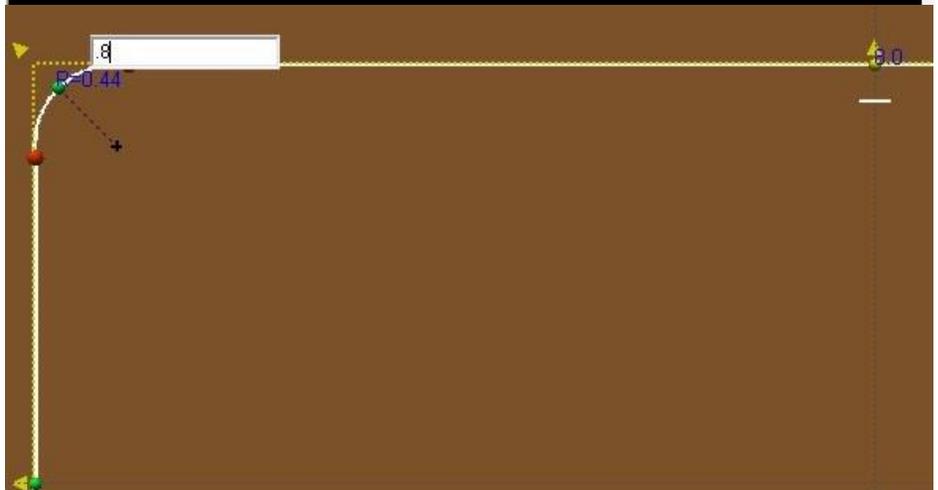
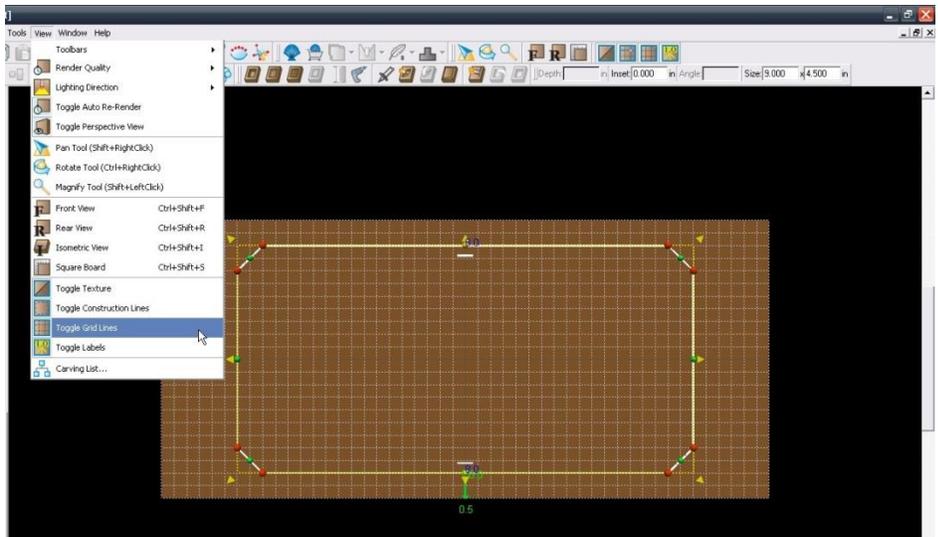
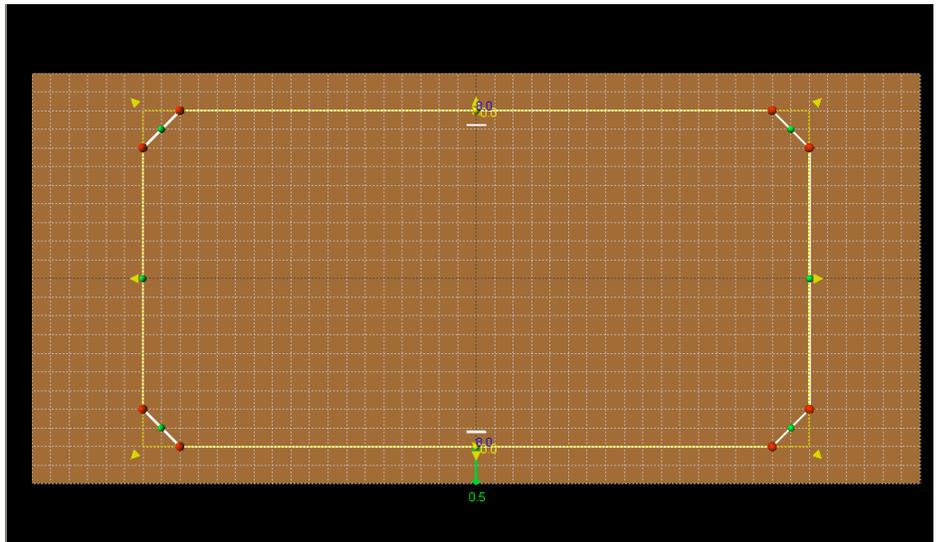


Go to View and select “Toggle Grid Lines”

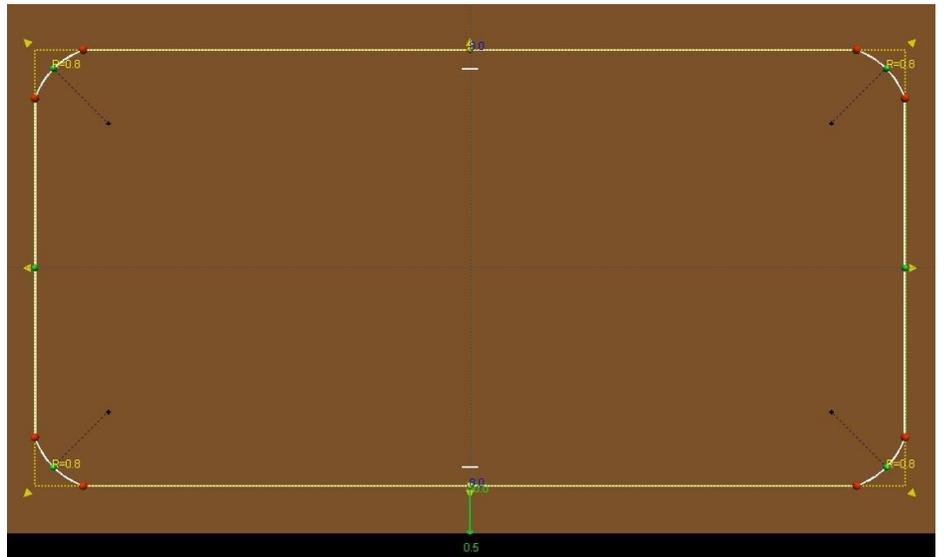
✓ SETTING CONSTRAINTS

Start with the upper left arc. Left click the green node and drag it toward the upper left of the board. Depending on how far you dragged your arc, your radius (R=) will vary.

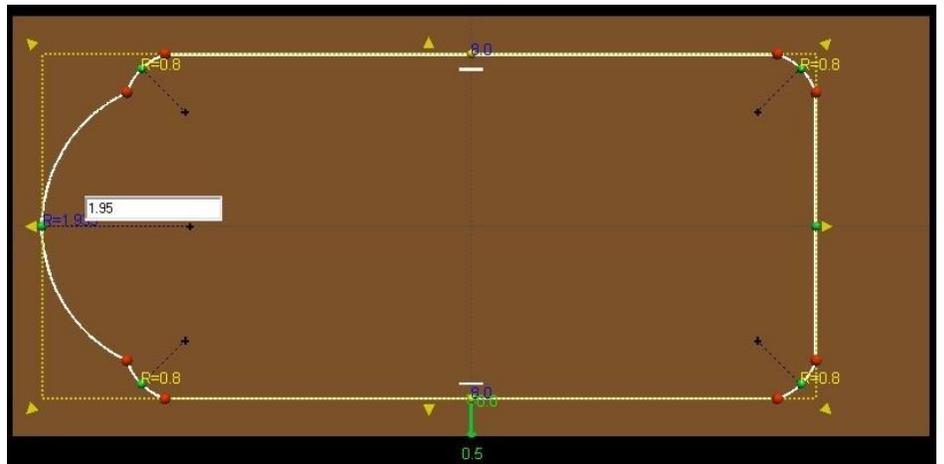
Left click on your radius (R=#) and a box will open where you can constrain your radius. Type “.8” in the box and press Enter.



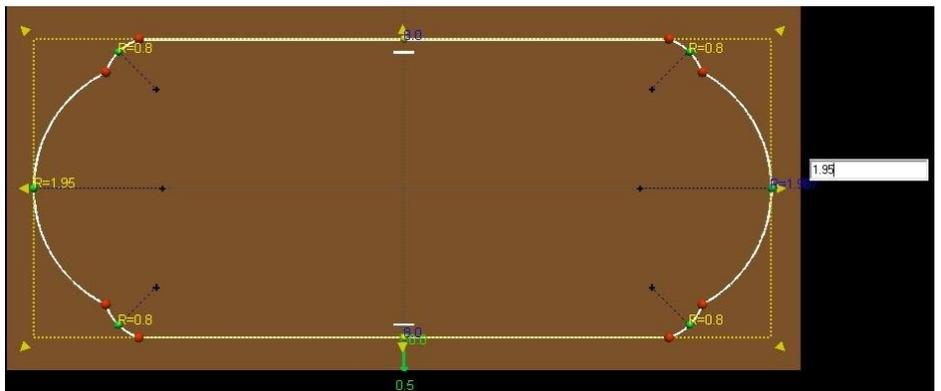
Repeat this step to constrain the three remaining corners to “.8”.



To change the radius on the vertical arcs, Left click and drag the left green node to the edge of the board. Once you have an arc left click on the radius (R=#) and change it to “1.95”.



Repeat this step to constrain the other vertical arc to “1.95”.



✓ CUT PATH TOOL



Select the “Cut Path Tool”.

In the “Cut-Out Control” select “Flip Cut”, “Hide Cut-Out” and “Accept”.

“Flip Cut” changes the cut path from the inside of the vector line to the outside of the line. When cutting out carved patterns, the outside is preferred for better results.

✓ TEXT TOOL



Select the “Text Tool”.

Click anywhere on the board.

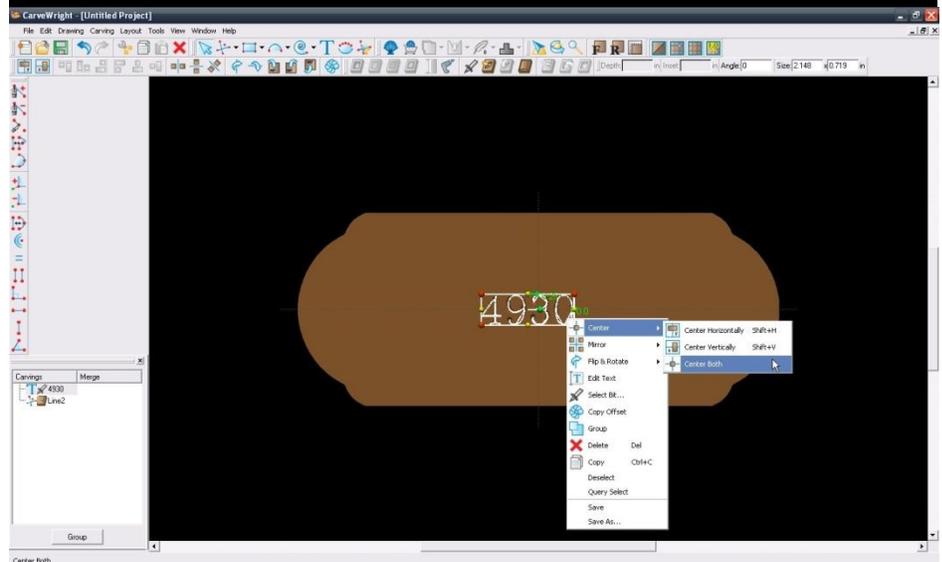
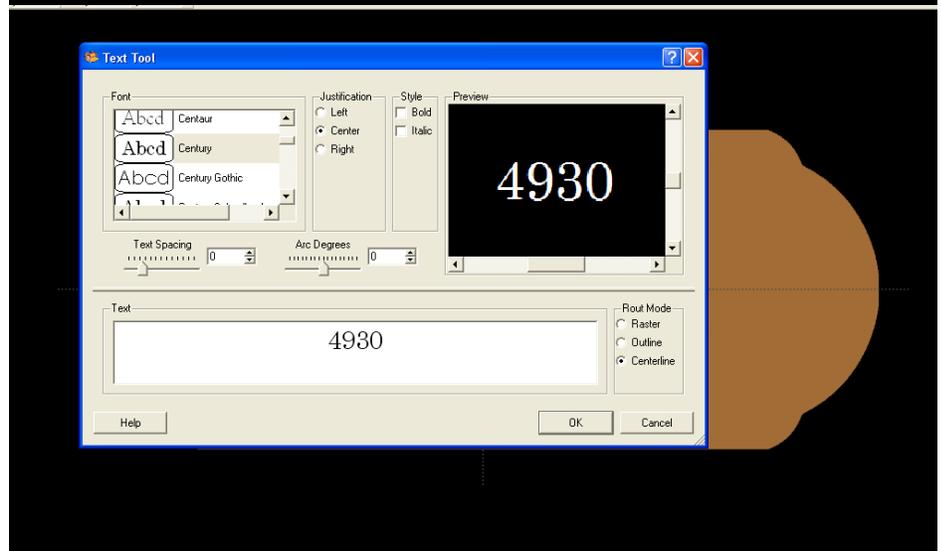
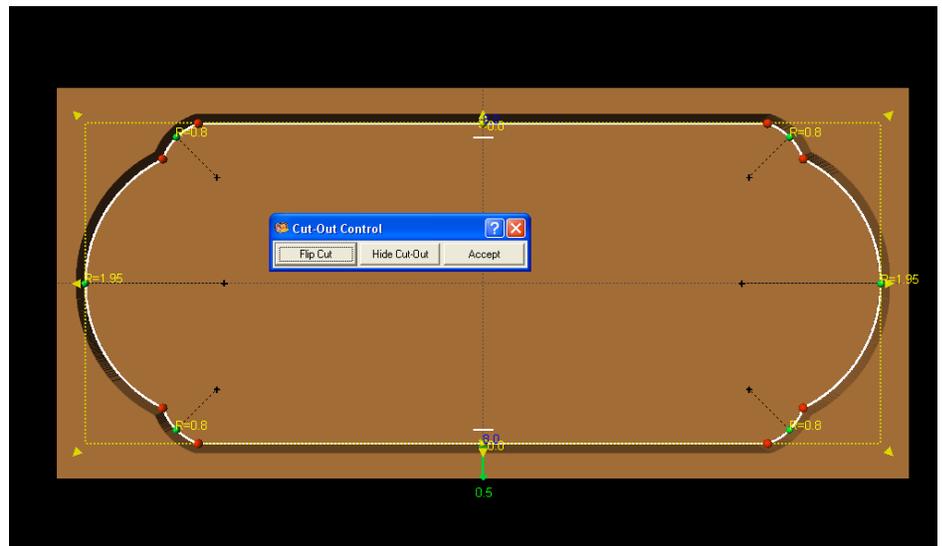
Select the following options:

- Font = “Century”
- Justification = “Center”
- Text = (Your house number)
- Rout Mode = “Centerline”

Select “OK”

Right click on the newly added text and select “Center”, “Center Both”.

To resize the address simply click and drag any of the red nodes.



Once the address is the size you like, save the project.



Select "File", "Save"

*****IMPORTANT*****

Name file and click "Save" to hard drive.

- UPLOADING TO MEMORY CARD



Select "File", "Upload"
Save to memory card.

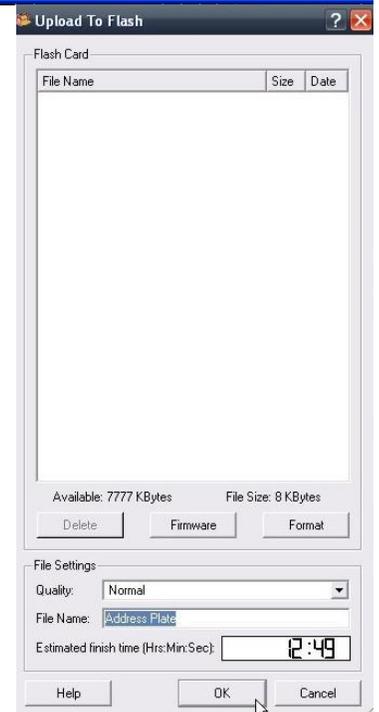
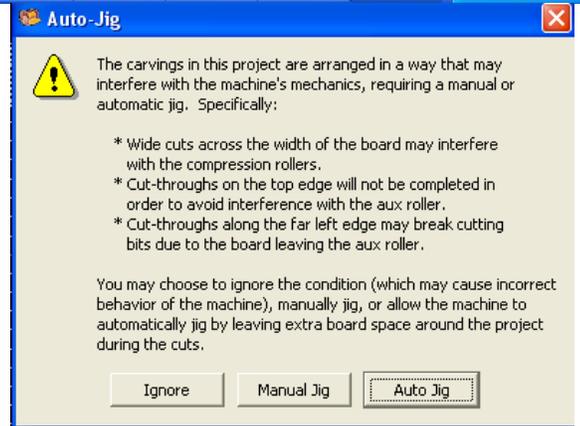
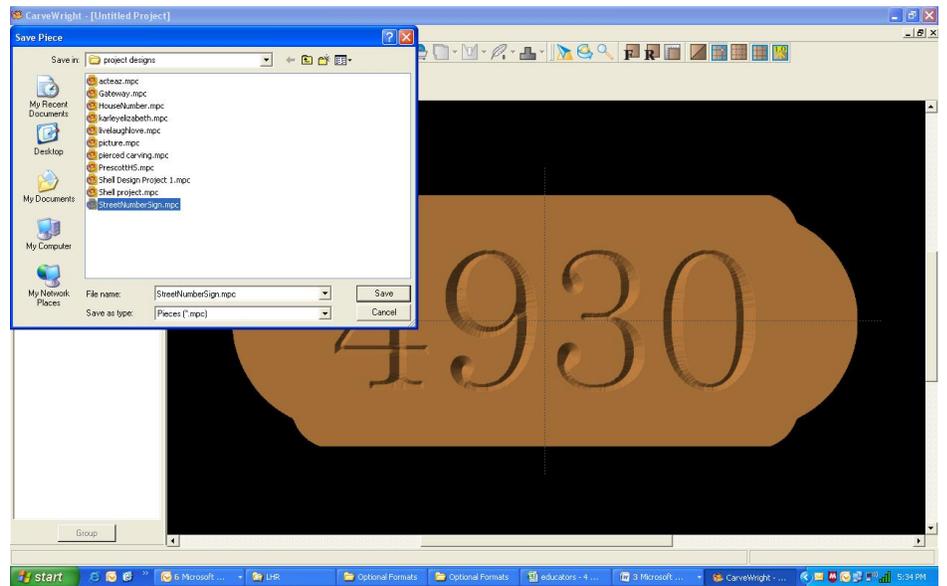
- STAYING UNDER ROLLERS

Note: The Auto-Jig option may appear when uploading to the memory card. Auto-Jig scales a project according to a predetermined set of dimensions to avoid possible errors. In this case the board we setup in the software is 12". The actual piece that should be inserted into the machine needs to be at least 19" to stay under the rollers. Therefore, select "Ignore".

Example:

streetnumbersign_N_13

*(recognizable name_quality
setting_estimated time to carve)*



IMPORTING IMAGES AND MAKING LITHOPANES

Project Designer always comes with an import image function. This importer, accessed from the file menu, allows the import of several bitmap, or raster, image type. The file types that can be uploaded are the following: BMP, JPG, JPEP, PNG, MNG, GIF, XPM. The most common of these formats used are the JPG and PNG formats, which are the standard image files found on the internet and produced by digital cameras.

RESOLUTION

Images can vary greatly in resolution, so it is important to understand what it is in order to pick proper images for importing. Resolution in digital images is described by pixels. Raster, or bitmap, images are composed of rows and columns of individual squares referred to as pixels. The size and number of these pixels determine the resolution. The rows and columns of pixels are described as width and height, and the size of the pixels is described as PPI (pixels per inch). The higher number of pixels an image has, the higher resolution it is. It is important to use the highest resolution images you can for good quality carvings. It is important to note that you cannot add pixels to an image to increase resolution. An image can always be reduced, but never enlarged without losing image quality.

For example; the CarveWright carves at a resolution of 128 ppi. So if I were to make an 8"x10" lithopane, I would need an image of 1024x1280 for the best quality carve.

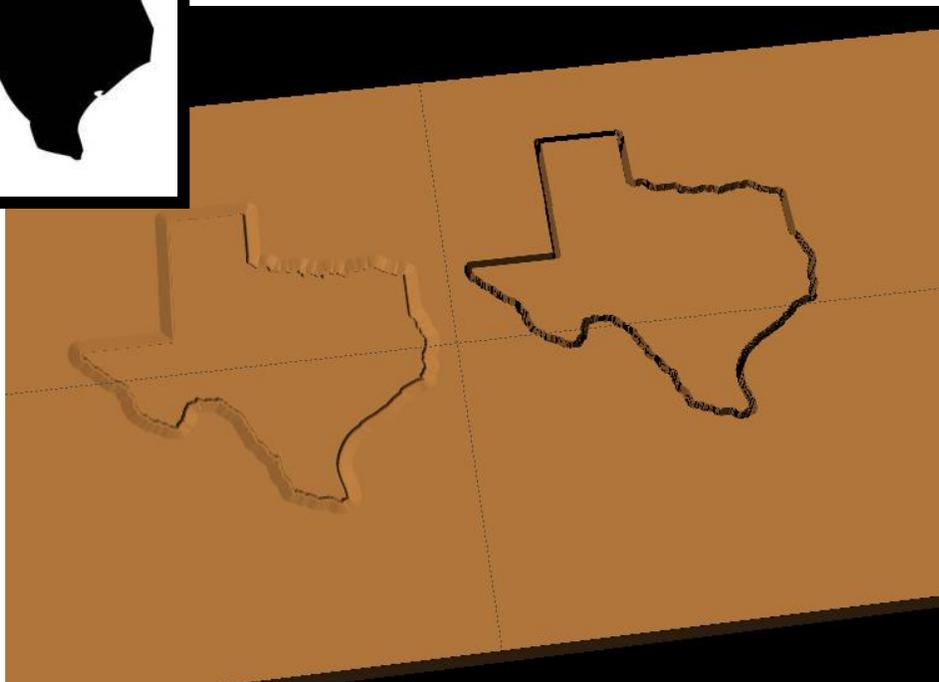
The next two tutorials in this section describe the process of importing images and making lithopanes.

IMPORTING IMAGES

This project covers the following design concepts:

- ✓ IMPORT IMAGE
- ✓ SELECT CROP
- ✓ 3D VIEW
- ✓ CHANGING DEPTH
- ✓ LOWER TO REMOVE IMAGE BACKGROUND
- ✓ SAVE ITEM

There are several different types of images that can be imported into the Designer software and made into patterns. Besides various file formats, there are different types of images from logos to clipart to photographs to scanned drawings. As unique and different as they may be, so too, are their challenges. This Design Project aims to assist you in overcoming some of the basic challenges.



The Designer software comes preloaded with over 50 quality patterns to use in your project designs. There are also over 7,000 patterns available on the CW PatternDepot in virtually any subject imaginable. Add to that the ability to import digital images and the possibilities with your CarveWright Designer Software become endless.

BASIC IMAGE INFORMATION :

A digital image is a numeric representation (normally binary) of a two-dimensional image. (Wikipedia)

✓ **IMPORT IMAGE**

Open Designer Software.

Go to “FILE > IMPORT > IMPORT IMAGE FILE”.

Navigate to wherever your image is located on your computer.

*****IMAGE FILE TYPES & RESOLUTION*****

The basic Designer Software can import various file types. These file types are considered “raster” and are made up of pixels, rather than geometric shapes (vector).

- .png
- .jpg (.jpeg)
- .bmp (bitmap)
- .gif
- .mng
- .xpm

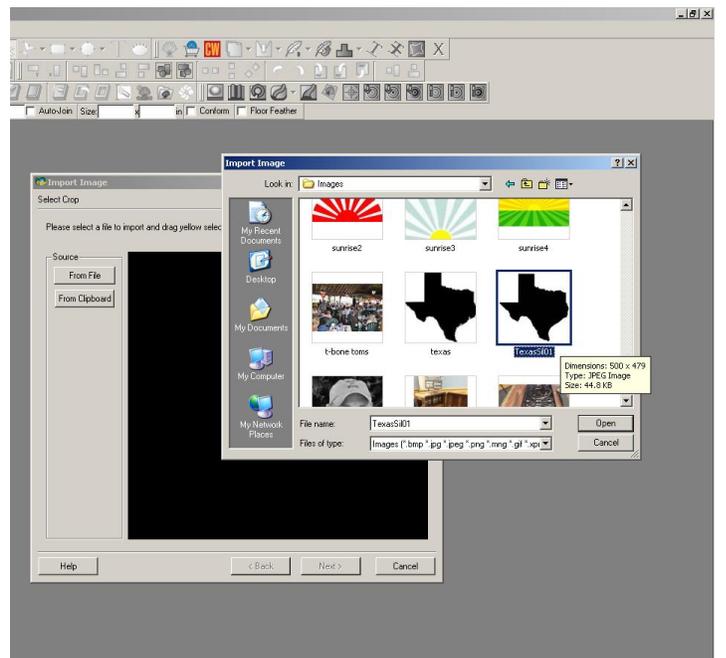
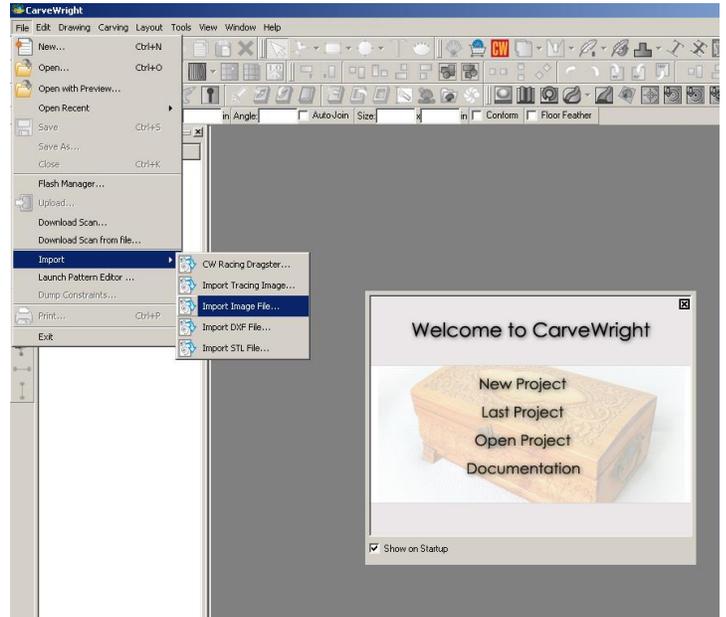
Image resolution is the detail an image holds. There are several types of resolutions, but importing **higher resolution images results in better quality patterns**.

Digital images come from a variety of sources. Some of these may not be satisfactory to use or may require additional “clean-up” to be of usable quality.

The Internet is a great source for variety, but remember, images on the internet are usually low resolution, so that they will load onto your computer screen faster. Some digital photographs are very high resolution. Scanned photographs have other issues, such as low resolution flatbed scanners, poor quality image being scanned, debris on scanner or defects on image. Scans of hand-drawn images also take into account how hard or lightly you are pressing down on the pencil.

A high resolution logo from your customer is much better than a customer’s company logo pulled off of their website.

Select the image you want to import. Click “Open”.



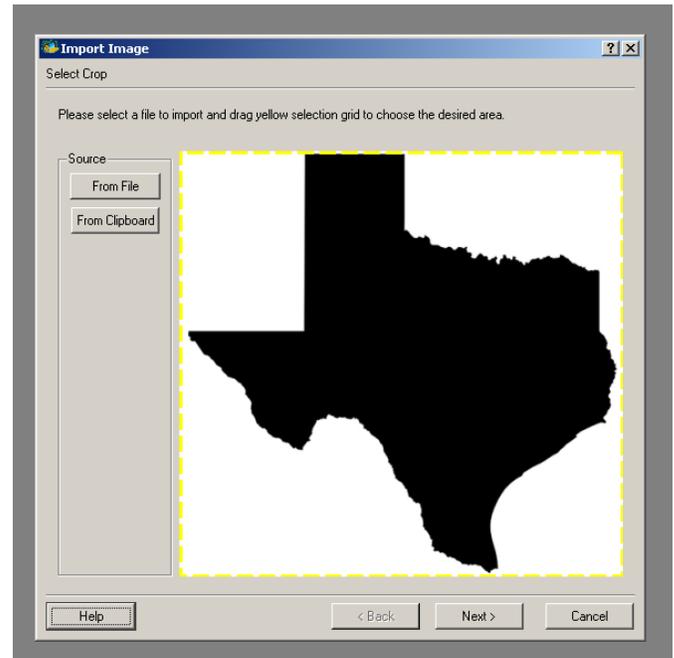
✓ SELECT CROP

During import image, you can crop your image. (Licensed patterns cannot be cropped in this method. For those we use the “clip carving” function.)

To crop, hover over the dotted yellow line until you get the double ended arrow, then Click and Drag to frame the image, however you would like to crop that image.

Converting a 2d image into 3d has presented itself as quite a challenge, and is almost impossible as there is simply not enough information in a flat 2d image to make it true 3d. The Designer software gets you close by converting your 2d image into a grayscale and “assigning” a carving depth based on that grayscale. White gets the deepest carve and black the shallowest. There are 254 levels of gray inbetween that make up the detail. This conversion takes place by clicking the NEXT button.

Click “Next”.



✓ 3D VIEW

There are several things you can do to manipulate your pattern at this point in the import process:

Zoom & Rotate: The Pattern View window that is the larger area on the right side will allow you to ZOOM or ROTATE the pattern to get a better view of it.

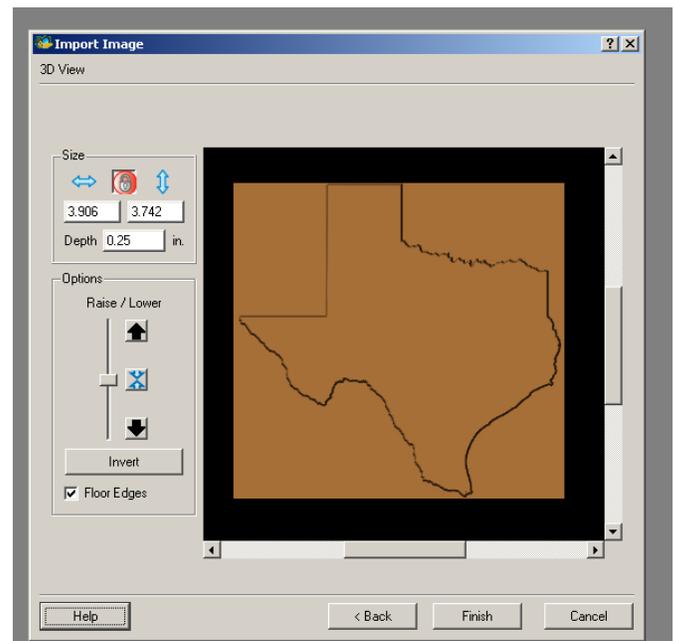
Size: The image width and height can be changed. The lock keeps the pattern in proper aspect without skewing it.

Depth: The depth is the size difference between white & black. Default is always .25, but you may often want to narrow the difference for a smoother transitioning pattern by lowering the depth.

Raise / Lower: Raise moves the pattern up and eliminates the top layers (default is black). X resets it to the original. Lower moves the pattern down and eliminates the bottom layers (default is white).

Invert: Changes the pattern to white on top and black on bottom.

Floor Edges: Floor edges should be left on to keep the edges all at the same depth for consistent feathering of the pattern.



This image technically should have two levels – white and black. White is the deepest & black is the shallowest by default unless you selected Invert.

✓ CHANGING DEPTH

Change depth to 0.1 or leave for thicker pattern.

✓ LOWER TO REMOVE IMAGE BACKGROUND

Click the down arrow once to remove the white background.

If it is not a pure white background, you may need to click several more times to get rid of most of the background that you do not want. Pattern Editor (advanced software purchase required) may need to be used to clean up some patterns.

Select “Finish”.

✓ SAVE ITEM

Select the location in your Pattern Library Favorites folder (or create a New Category), where you want to save your new pattern.

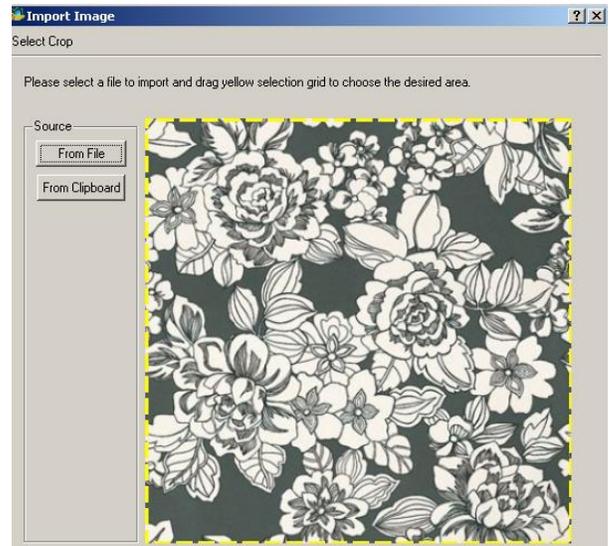
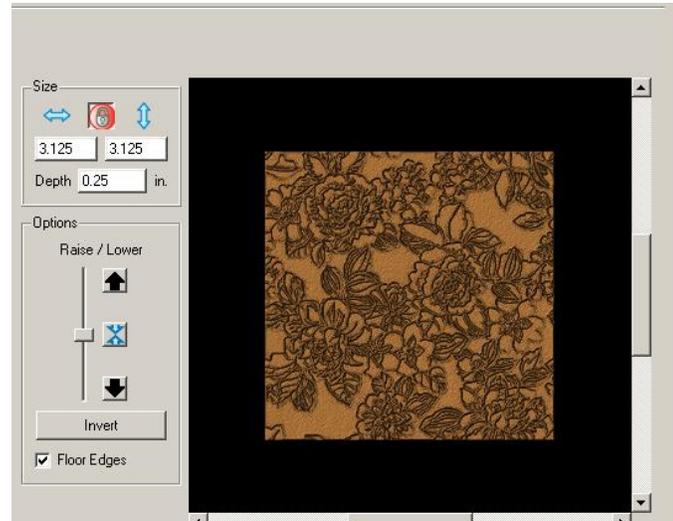
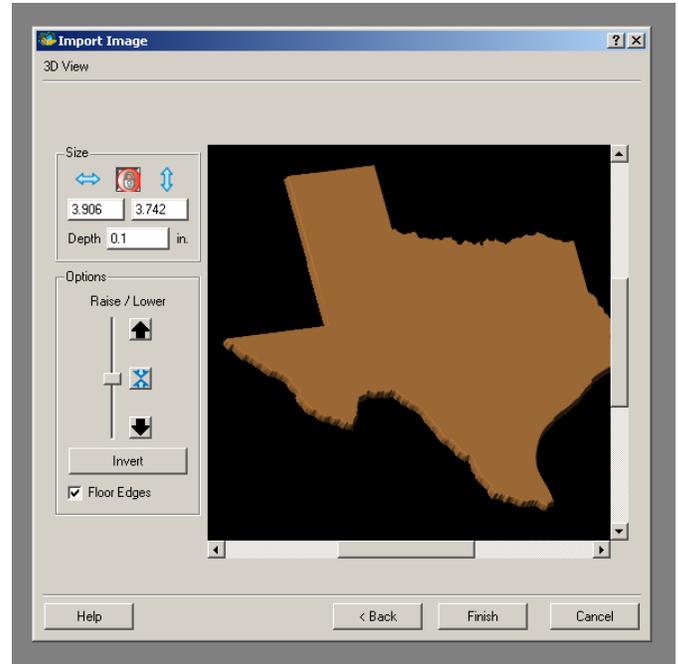
Name the pattern.

Select “Save”.

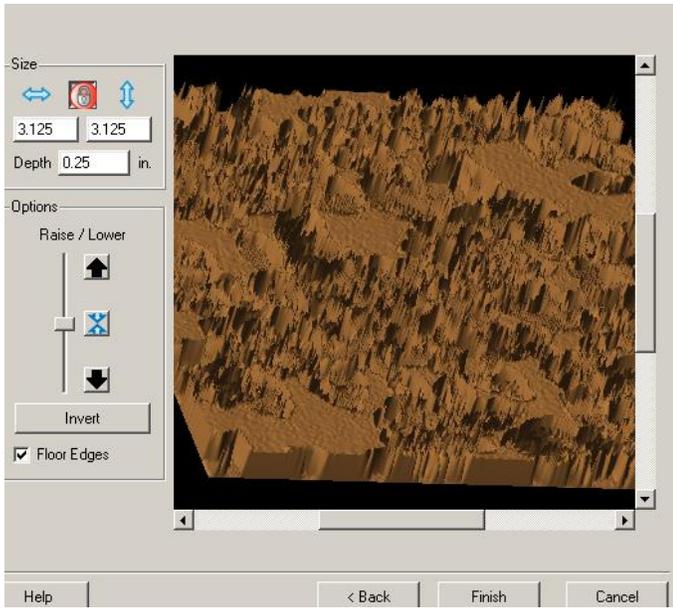
Now you can use the new pattern in your projects or use the shape of it to make cut-outs.

EXPERIMENT TO FIND A PATTERN THAT WORKS:

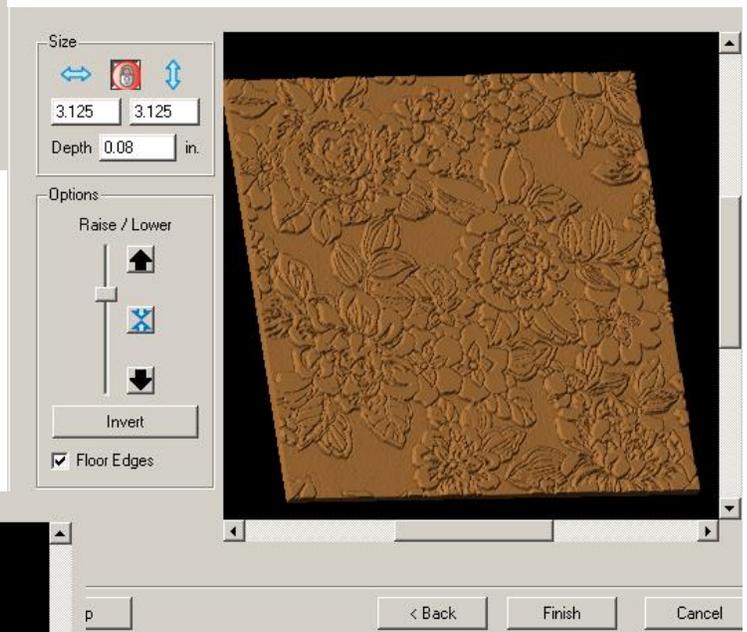
This is the image with multiple layers of gray.



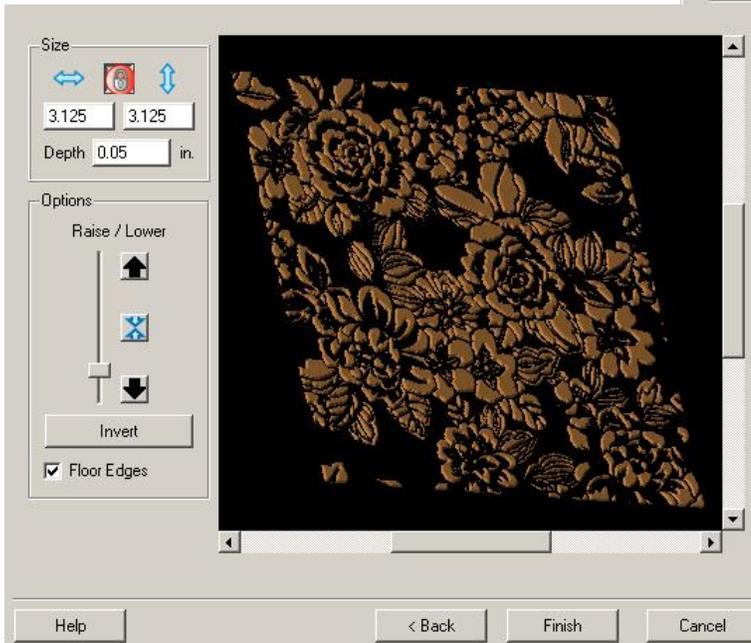
This is the pattern imported with NO manipulation.



This is the same pattern viewed from the side. (EEK!)



This is the pattern after being manipulated.



Here is another option.

Other manipulation can be done using advanced software such as Pattern Editor, 2d Vector Drawing Tools & 3d Pattern Modeling.

CREATING A LITHOPANE

Adopted from Tips & Tricks article; Lithopane 101 by Jason Allen and edited by CarveBuddy



History: Originally Lithopanes (lithophanes) were made as a part of a piece of porcelain, typically the bottom of a cup or mug so the user would see the image when the cup was empty.

It was created as a wax original by an artist who carved the wax to create thin and thick areas that would represent light and dark areas. This wax original went through several steps to end up as a part of the piece of porcelain.

Our modern Lithopanes are made using editing software and carving or CNC machines. The lithopane itself is carved from a sheet of translucent material (usually $\frac{1}{4}$ of an inch thick). The carving creates the light and dark areas due to the variations in thickness. By carving away the material, an image can be formed that is visible when lighted from behind.



Like a stained glass window, a Lithopane needs to be illuminated from behind to reveal the image. Illumination may be provided by an incandescent or fluorescent light, candle light, or sunlight. Direct sunlight is not needed -- the light from an overcast day will provide adequate back illumination.

The Lithopane can be used mounted or unmounted. There are a number of mounting methods, some of them include:

- 1) Mounted in a box with back lighting
- 2) Attached to a suction cup to hang in a window
- 3) As a part of a piece of stained glass art
- 4) In the base of a lamp
- 5) Inserted in a frame

Although the first mounting style is commonly used as a night light, the image can be viewed in normal room lighting using a 9 watt puck light for back illumination, available for around \$10 at any home improvement store.



Size: In theory, the lithopane can be made in any size, but there are practical limits. Because the width of the CarveWright is limited, the maximum width is about 14". They look great in standard 4x6, 5x7 and 8x10 sizes but you can make whatever size you wish.

Our largest lithopane was used on the Cpl. Jason Dunham memorial and it measured 14"x 28" (fig. 1) As long as you stay within the 14.5" maximum width of the CarveWright, you could honestly make a lithopane 8 feet in length.

Color/Tint: The material that Lithopanes are made of comes in a variety of colors. In sunlight, using a white material, the color/tone of the Lithopane can be similar to a black and white photograph. Using a Bone or off-white color yields a sepia tone (antique-looking) photograph. The effect depends upon the color of the material being used. When used as a night light, an incandescent bulb will give the lithopane a warm tone. For larger Lithopanes, fluorescent lighting may be used and will provide a more neutral tone.

SUGGESTIONS FOR PHOTOGRAPHS

Need some ideas of how to pose your subject? Browse stock photo sites that are in business to sell the rights to photos. The contributors to these sites are amateurs and professionals that have uploaded their photos for use by others. It costs nothing to look --- just search by the type of subject (like baby, dog, deer, etc.). Looking at how the pros compose a photograph can give you some good ideas on how to compose your own photos.

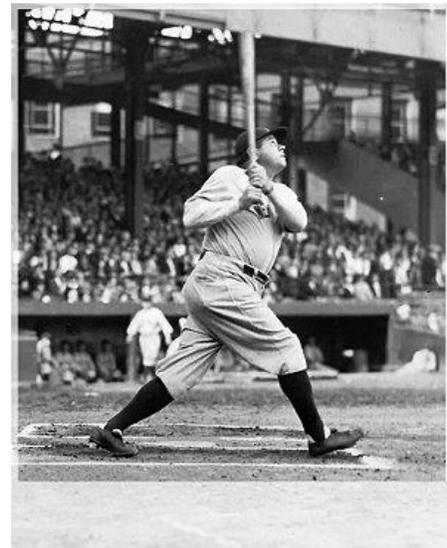
Zoom in on the subject -- try to make the photo sized as close as possible to the finished product that you want to achieve.

Use a white or light-colored background -- this will make the subject stand out.

Save pictures at the highest resolution allowed -- too low of a resolution will decrease the sharpness and quality of the lithopane.

Image Requirements: To make a good lithopane, a good digital image is needed. The best source is from a digital camera, but it is also possible to scan a photograph. If you scan and/or edit an image, be certain to save it at the highest resolution possible.

Crop or Zoom In on the Subject: Cropping an image is done to draw attention to the subject. This will also eliminate a good amount of any unwanted background. (You can crop an image when you import your image into the Designer software that is included with your CarveWright machine) There are limits to how much the subject can be enlarged, depending upon the resolution of the photo -- as you zoom in, the pixels in the final image tend to become blocky, which reduces the sharpness of the final carving.



Editor: For the %techies+, here is a general guide for the recommended maximum size litho using various megapixel settings. At different resolutions, some cameras offer an option to choose different image qualities. For the %non-techies+ simply select %best+and you'll be able to achieve great looking lithos.

Camera Resolution (megapixels)	Dimensions (in pixels)	Maximum Carving Size (in inches)
2	1,633 x 1,225	4 x 6
3	2,048 x 1,536	5 x 7
4	2,464 x 1,632	6 x 8
5	2,592 x 1,944	6 x 9
6	3,008 x 2,000	6.5 x 10
7	3,072 x 2,304	7.5 x 10
8	3,264 x 2,448	8 x 10
9	3,464 x 2,598	8 x 12
10	3,651 x 2,739	8.5 x 13
11	3,830 x 2,872	9 x 13.5
12	4,000 x 3,000	9 x 14

The more pixels in the image file, the higher the resolution. Here's an example of a digitally scanned photo at an original 2400 x 3000 resolution.

Isolating the Subject: Many times it is desirable to isolate the subject (crop) from the background. First the background is removed around the image (this can be done using the Pattern Editor software that is included with the scanning probe or with any photo editing software), then it is often best to feather the edge to soften it.

Composite Images: Isolated images also make it possible to make a composite of several individual images. This is useful if two (or more) subjects are to be combined from different photos or rearranged to different locations on the same photo.

Avoid Low-Quality Images: Images that have been compressed for email or websites may have a reduced quality that may look fine for onscreen display, but are not suitable for lithos. In either of these cases, if it is necessary to use such an image it will be best to check with the original owner of the image, to see if a high-quality (hi-res) image is available. The net effect of using low-quality/low-resolution images will be that the litho will not be as sharp as when the original image is used, and may

suffer from jpg artifacts (defects) that occur when an image has been compressed for the web or email.

Scanned Prints: As a general rule, if the lithopane image is to be made from a scanned print (photo), the image on the print should be at least the same size as the lithopane.

Professional Photographs and Artwork: The Federal Copyright Act provides protection to authors and artists for their original works, including photos and drawings. Among the protections that copyright owners have is the exclusive right to make copies of that work and prepare other works based on the original. You should ~~steer clear~~ of using material that is covered by copyright. In order to make a lithopane from a copyright protected item (regardless of whether it is marked with the © symbol or not), permission must be granted by the owner. The owner is the photographer, artist or the company that he or she works for.

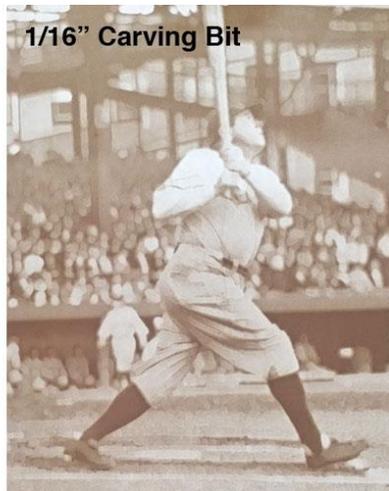
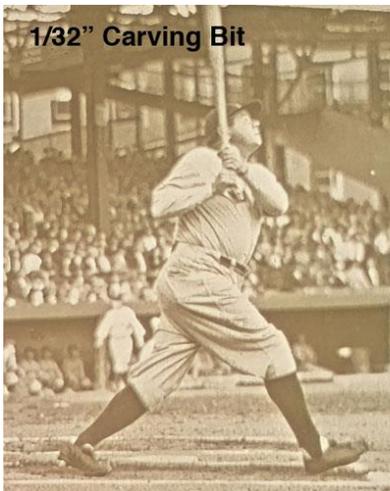
THE ART OF MAKING LITHOPANES

Ladies and gentlemen this is truly a simple process, every Lithopane that we have produced has been created and edited using just the software that is included with our CarveWright machine and scanning probe (the scanning probe software is not necessary to make great lithopanes).

Our Process: The process starts with a digital photograph. The digital photo is imported into the Designer software, where the software will convert the image to as many as 256 shades of grey and build a ~~height map~~ image from it. The digital information from this image provides the depth value for the shades of grey in the image.

The Designer software reads the image data and converts each pixel value into a depth to be carved into the material you are using, typically it is some type of cast acrylic material (Corian®, Staron®, Meganite®). These materials are opaque at normal thicknesses, but as the thickness decreases, they becomes more and more translucent. This effect duplicates the light and dark areas in the photograph. The carving can be done using the 1/16" Carving bit that came with your CarveWright machine and takes anywhere from 35 minutes to 2 hours depending on the quality setting you select (good lithopanes can be produced using the ~~craft~~ setting but for

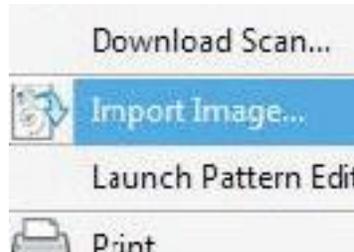
better results use ~~best~~). With Designer PRO, the 1/32" Carving bit is an available option for achieving even higher detail.



Use the following 9 steps and you will be making great Lithopanes that can be cherished for many generations to come!

STEP 1

Decide on the image that you would like to make into a Lithopane.



STEP 2

Start your Designer software, then click on **File** and scroll down to **Import Image** and click again - this will open the **Import Image** window that asks you for the source of your image (i.e., where it is located) - you are given

two options **From File** or **From Clipboard**. Select the appropriate option.



STEP 3

If you click **From File**, which is common, navigate to the photo file location.

STEP 4

Select the photograph you would like to edit and double click on it, or simply click **Open**.

STEP 5

The Designer software will import it into the **Import Image** window - here you will be able to crop the image to select the part of the image that you



would like to make your Lithopane from.

You can select any part of the photo (called cropping) by clicking and dragging on the dashed yellow box that is around the photo or image.

STEP 6

Once you have finished the cropping of your image, simply click the **Next** button located at the bottom of the **Import Image** window - doing so will convert the window over to

the **3D View** window and will also do the magic of converting your image into the **Height Map** that will be used to produce your Lithopane. At this point you have some editing options **Raise**, **Lower** or **Invert** the image - we recommend you do none of these - just click the **Finish** button.

Give your image a name in the %Save Item+ window and click %Save+. The image is now a CarveWright pattern (ptn) and can now be found in your pattern library by clicking on the blue shell at the top of your Designer software.

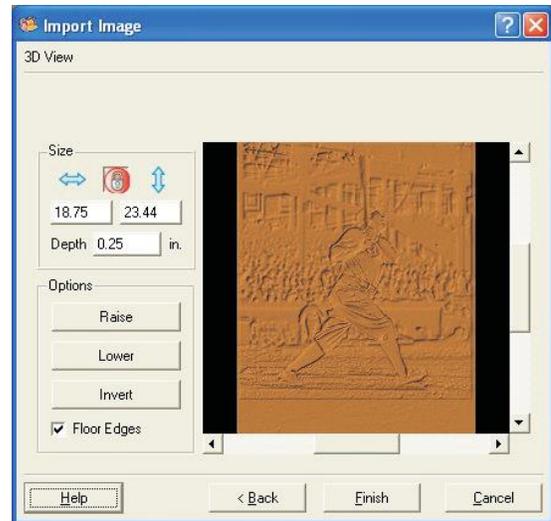
STEP 7

Click on the blue clamshell to open your pattern list, find the pattern that you just created from your image, click on it,



then click on your board,

place the image pattern on the board as you desire.



STEP 8 - Setting Depth and Height

The settings that we use are as follows - set your depth to .180 and the height to 450 - these settings will give you a nice, bright Lithopane that can be enjoyed at all hours of the day (it can be viewed in daylight when mounted in a backlit box).

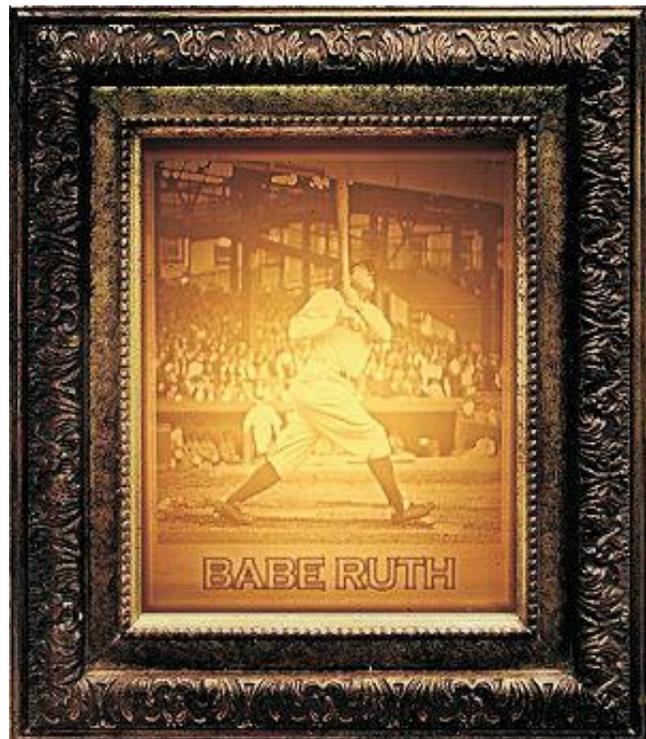
STEP 9

Save your project as an mpc file with any name you choose, then upload your project to the memory card when you're ready to run the project at the machine.

Lithopane Results:

This 8x10 carving was done on Bone Corian from the CarveWright Store. Runtime was 59 minutes on BEST quality setting.

The pictures here don't do the lithos justice - you have to see one up close, and in person to appreciate the detail and marvelous backlighting effect.



**MAKING A
“SLED” OR “JIG”
FOR LITHO
CARVING**

Most litho carving is done on 1/4+thick material, which is too thin to feed through the machine. Therefore, it is necessary to construct a jig (sled) for the material to be placed into. The jig will add to the overall thickness to meet/exceed the minimum 1/2+needed for the machine.

Making a jig for carving on cast acrylic is very simple. Perhaps the easiest way to make your jig is to use your CarveWright/CompuCarve.

Go to your local Home Center and buy a piece of 3/4+thick MDF (Medium Density-Fiberboard). Next, cut the piece to your desired dimensions. For this example we will use a 24+Long x 12+Wide x .75+Thick piece of MDF, and will create a jig to fit a sheet of 1/4+thick acrylic up to 11+x 17+. A common size is 8x10.

Feel free to adjust the jig size and the 8x10+recess dimensions to accommodate whatever size acrylic sheet you require. Just be certain that the overall size of the jig is a *minimum* of 7+longer than the acrylic you will carve on. This is essential so the jig will always be captive under the compression rollers.



Create a new layout in Designer with a virtual board measuring 17+ Long x 12+Wide x .75+Thick. (The virtual board is 7+shorter than the real board you place into the machine, which in this case will be 24+long).

Draw an 8x10+rectangle on the board and use the CENTER BOTH function to place the rectangle deadcenter on the board. (In our example, the jig will actually be 14+longer than the actual acrylic piece. This will allow you to create a rectangle recess up to 11+x 17+if desired.) Make the rectangle a CARVE REGION with a depth of .25+. This is the recess that your acrylic sheet will be placed, so it will sit flush with the top of the jig's surface.

Save the project, then upload it to your memory card and run the project on the 24+long MDF board. Once completed, you now have a jig to hold your cast acrylic sheet.

