Creating Topographic Map Files at Lois Legacy Art LLC:

Graphic Artist Design Guide

By Lois Kilberg

Contents

I. Introduction to this Guide and the Larger Document Set

This Graphic Artist Design Guide is part of a larger document set. The document set covers the development of files for new map regions to produce map products at Lois Legacy Art LLC. By following the procedures in the entire document set, you will deliver files that are ready to produce new map products on demand. The process described in this guide assumes that you already have the files resulting from artistically manipulating data using map software. This guide provides instructions to lay out the parts graphically for printing. After performing the procedures in this guide, the next step is setting up files for a cutting machine. This guide includes time estimates for each part of the process, where the timing is known.

The document set contains the following guides:

Executive Decision Guide
Geographic Data Acquisition Guide
Digital Map Artist Design Guide
Traditional Artist Design Guide
Product Customization Guide
Graphic Artist Design Guide (this guide)
Cutter Design Guide
Production Test Guide

The procedures in this guide cover:

1. Loading the Artistic Map Imagery Files into Adobe Photoshop
2. Adding Graphic Elements
3. Adding Registration Marks
4. Creating Separate Print Layers

Note: This Graphic Artist Design Guide is still under development. More of these procedures will be described in future versions.

As you perform the steps in this guide, you will find it helpful to be very confident with these skills:

- Adobe Photoshop
- Adobe Illustrator

This guide covers creating map files that are consistent in size and in color themes with the company's currently available map products. For instructions on other procedures related to the map products, see documentation elsewhere for:

- Assembling 3D Topographic Maps on demand
- Printing Map Prints on demand
- Framing map products
- Packaging and shipping maps
- Pricing, marketing, and selling maps

II. 3D Topographic Maps and Map Prints at Lois Legacy Art LLC

Lois Legacy Art LLC designs, makes, and sells topographic maps that are unique, artistically rendered, and made to-scale with archival paper. The company desires to bring out elements of beauty and the forces in nature that might not otherwise be noticed as people go about their daily lives. The company typically designs the maps in multiple color themes. Illustrations relevant to each map's geographical area often decorate the maps. Customers can customize maps with points of interest and routes. The company offers two map media choices:

- **3D Topographic Maps**. The 3D Topographic Maps are crafted from layers of archival paper that are sealed. The layers project outward from the surface and are made to-scale as closely as possible. The 3D Topographic Maps are offered in two sizes: 12"x16" and 18"x24". Customers can hang 3D Topographic Maps on their walls and set them on horizontal surfaces. Customers may purchase company-made frames with special easy-release features. See Figures 1 and 2 for photos of 3D Topographic Maps made by Lois Legacy Art LLC.

3D Topographic Map of the State of Massachusetts

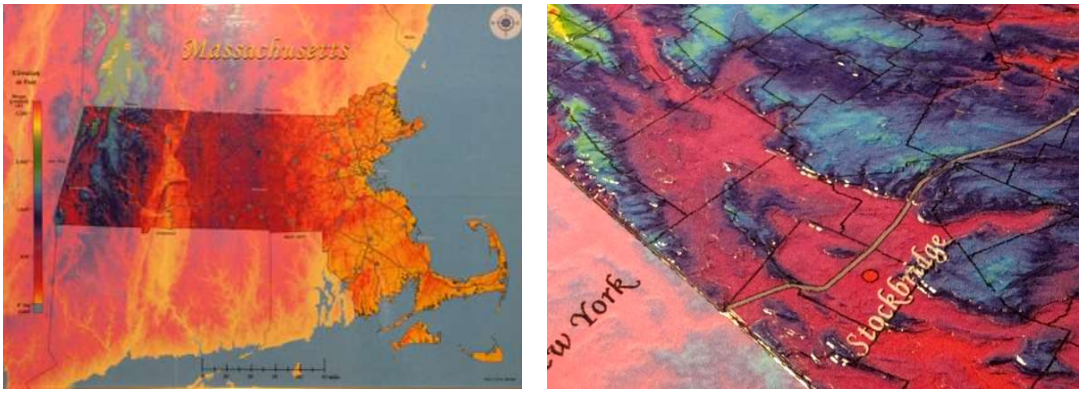


Figure 1: Photos of a 3D Topographic Map Product for a State, Straight View and Closeup

3D Topographic Map of Arlington, Massachusetts

Figure 2: Photos of a 3D Topographic Map Product for a City, Straight View and Closeup

- **Map Prints**. Flat 12"x16" Map Prints are available in the same color themes and customizations as the 3D Topographic Maps. Customers can hang Map Prints on their walls once the prints are framed. Customers may purchase company-made frames with wired backs.

From time to time, the company may desire to add new map areas to the product offerings. The document set covers the steps to turn that into reality, resulting in files ready to create products on demand.

III. Laying Out the Artistic Map Imagery

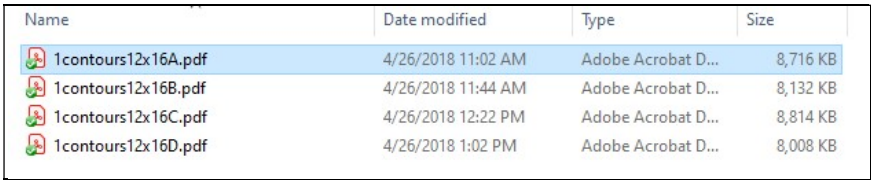
In this procedure, you will convert the artistic map imagery resulting from following a previous guide into a new Adobe Photoshop file. Repeat these steps for each color theme (see Appendix C for color themes).

A. Gathering Materials to Lay Out the Imagery

Locate the following materials in order to complete the procedures in this guide:

- Computer, running either Windows or Mac
- Adobe Photoshop. These instructions are based on Adobe Photoshop CS4 version 11.0 from the Adobe Master Collection CS4, running on Windows 10.
- Adobe Illustrator. These instructions are based on Adobe Illustrator CS4 version 14.0.0 from the Adobe Master Collection CS4, running on Windows 10.
- PDF files obtained from following a previous guide in the document set. These are PDF files generated by Global Mapper and contain artistic map imagery. Select the files that match the color theme you are working on. Here is an example of how the files might be named:

File Listing for Artistic Map Imagery Using the Contours Color Theme



Name	Date modified	Type	Size
1contours12x16A.pdf	4/26/2018 11:02 AM	Adobe Acrobat D...	8,716 KB
1contours12x16B.pdf	4/26/2018 11:44 AM	Adobe Acrobat D...	8,132 KB
1contours12x16C.pdf	4/26/2018 12:22 PM	Adobe Acrobat D...	8,814 KB
1contours12x16D.pdf	4/26/2018 1:02 PM	Adobe Acrobat D...	8,008 KB

Figure 3: Example of Files Containing Artistic Map Imagery

Note: The Global Mapper application is used in another guide for this document set.

B. Loading the Artistic Map Imagery Files into Adobe Photoshop

In this procedure, you will create a new Adobe Photoshop file, place the multiple imagery files, and align them.

1) Placing the PDF files into a New Adobe Photoshop File

This procedure will take about five minutes.

1. Launch Adobe Photoshop.
2. Create a new file by selecting **New** from the **File** menu, with a **Width** of **160 inches**, a **Height** of **160 inches**, a **Resolution** of **300 pixels/inch**, in a **Color Mode** of **RBG Color**. See Figure 4 for an example screenshot showing the new file settings.

New File Dialog

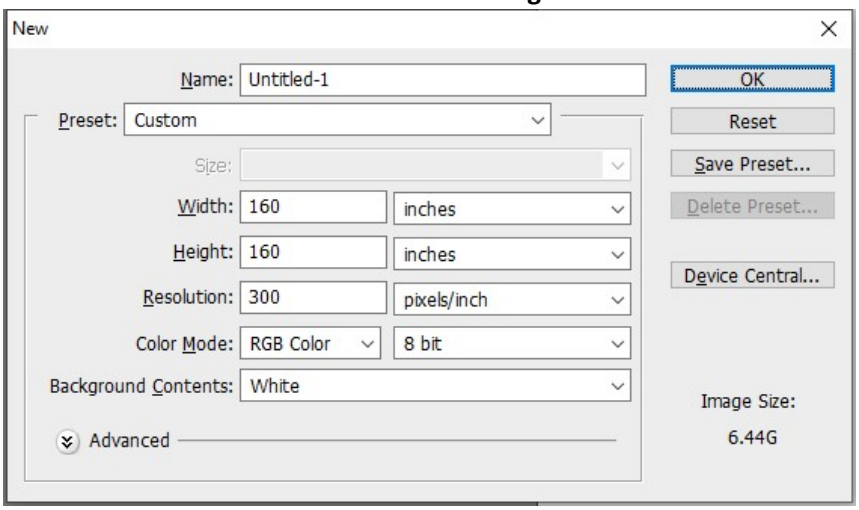


Figure 4: Settings for Creating a New Adobe Photoshop File

3. After you click **OK**, you might see the message shown in Figure 5. If so, click **Continue**.

Warning about Creating a Large Adobeshop File

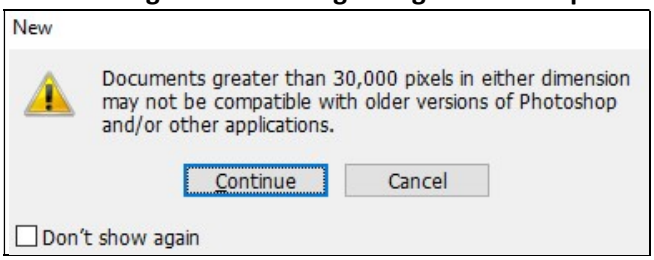


Figure 5: Warning Message that the Large File will be Incompatible with Older Software

4. Make note of the file location for the PDF files containing the artistic map imagery.
5. Display the **Layers Panel** by making sure that **Layers** is selected from the **Window** menu.
6. Make the new file fill the window by selecting **Fit on Screen** from the **View** menu.
7. Place each of the files as follows:
    a. Select the **File** menu.
    b. Select **Place**.
    c. Browse to the desired file.
    d. Select the **Page** option. See Figure 6 for an example screenshot.

File Place PDF Dialog

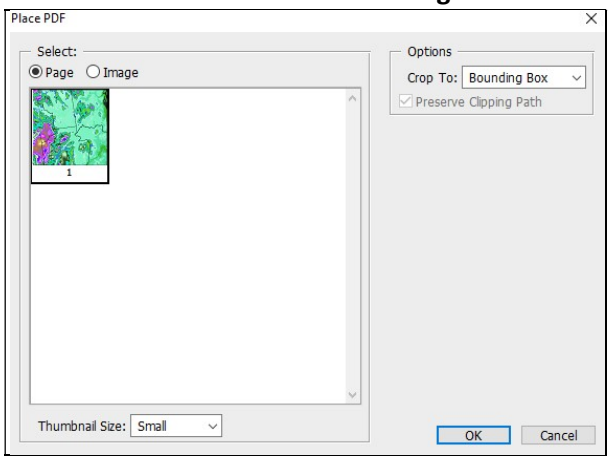


Figure 6: Placing a PDF File into Adobe Photoshop

e. Click **OK**. The placed image appears, centered in the window with a large "X" across it. See Figure 7 for an example screenshot.

Placed Image Initial Appearance

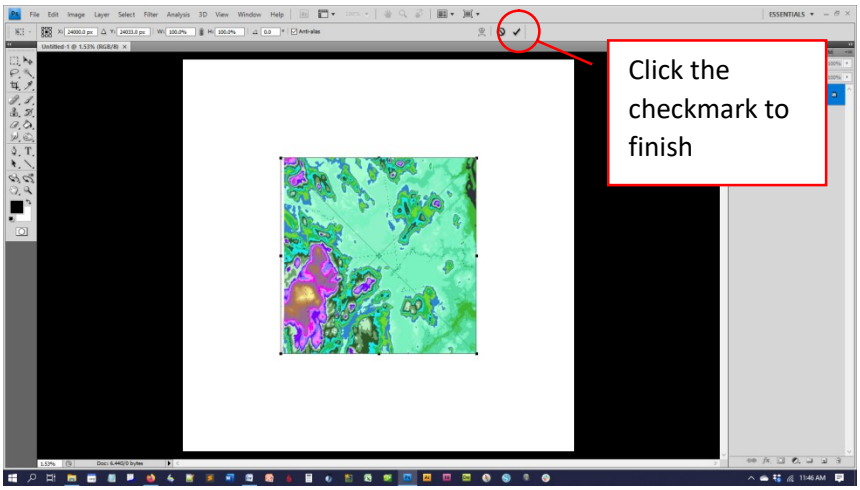


Figure 7: Placed File Initially has a Large "X"

f. Click the **checkmark** (see Figure 7) or press **Enter** to finish the file placement. The large "X" disappears. See Figure 8 for an example screenshot after completing the file placement.

First Image after Finishing Placement

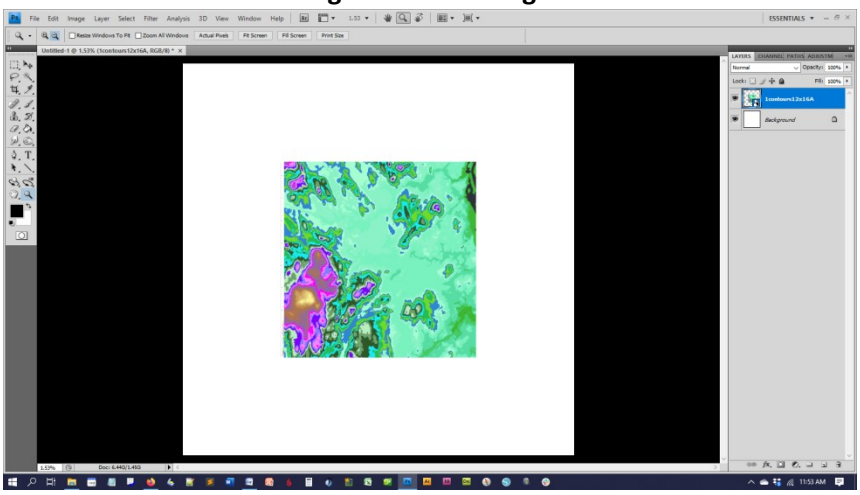


Figure 8: The First File is Placed

8. Repeat the previous steps to place the remaining artistic map imagery files for this color theme. The images will appear on top of each other. There will be multiple layers in the **Layers Panel**, with each layer corresponding to a placed image file. The images are considered placed objects, indicated by a special icon in the **Layers Panel** (see Figure 9). You will not be able to edit their contents until the layers are rasterized in the following steps.

All Files Placed, Not Rasterized

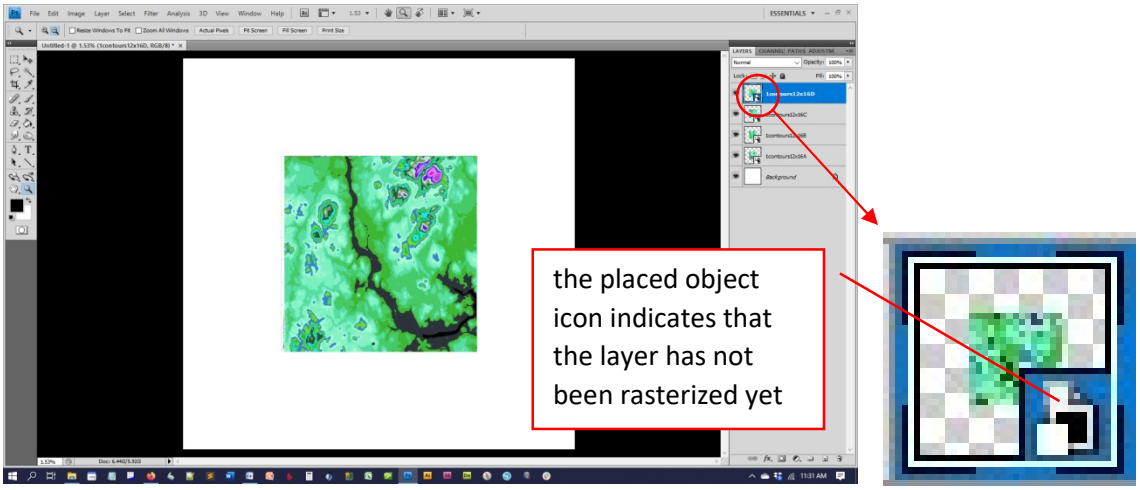


Figure 9: All Files are Placed but Not Yet Rasterized

9. Select all of the layers. See Figure 10 for an example screenshot showing all of the layers selected.

Selecting Layers

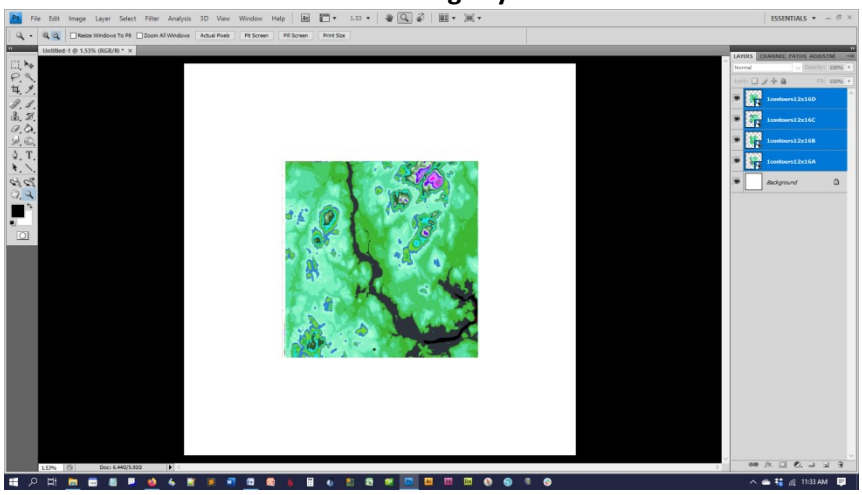


Figure 10: All of the Placed File Layers are Selected

10. Rasterize all of the layers at once by following these steps:
    a. With all the layers selected, **right-click** any selected layer. A menu pops up.
    b. Select **Rasterize Layers**. The special icons change to regular icons in the **Layers Panel**.

All Placed Files Rasterized

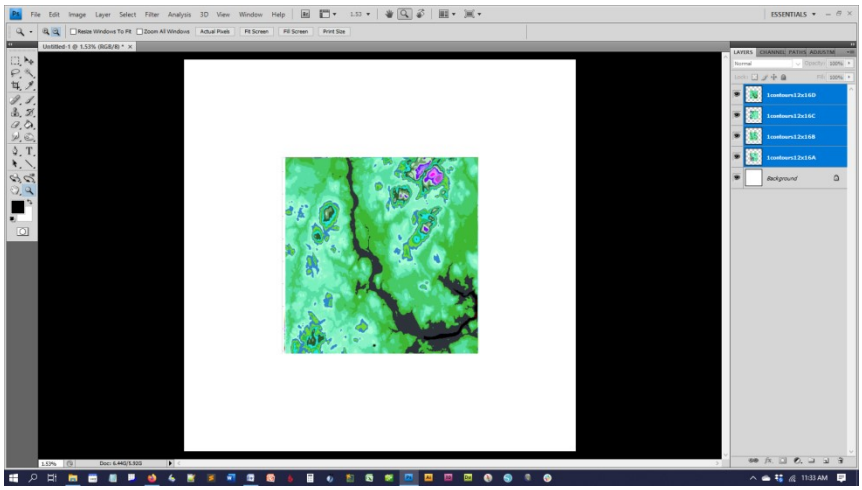


Figure 11: All Placed File Layers are Rasterized

11. Save the file and name it in a format such as **`themeSize_Composite`**. Because of the large size of the file being generated, you may be forced to choose a format such as .PSB. See Figure 12 for an example screenshot.

File Save Dialog

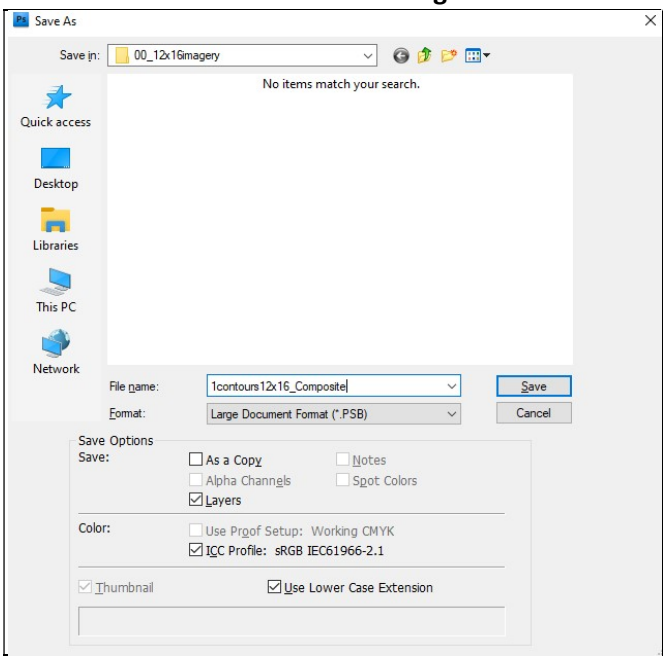


Figure 12: Saving the New Adobe Photoshop File

2) Erasing Unneeded Borders and Legends

The images will probably have borders and legends, which need to be removed (see Figure 13 for an example). You need to trim away everything except the actual map imagery. Follow the steps below, then repeat for each layer.

This procedure will take about five minutes.

Zoomed-In Corner of Image

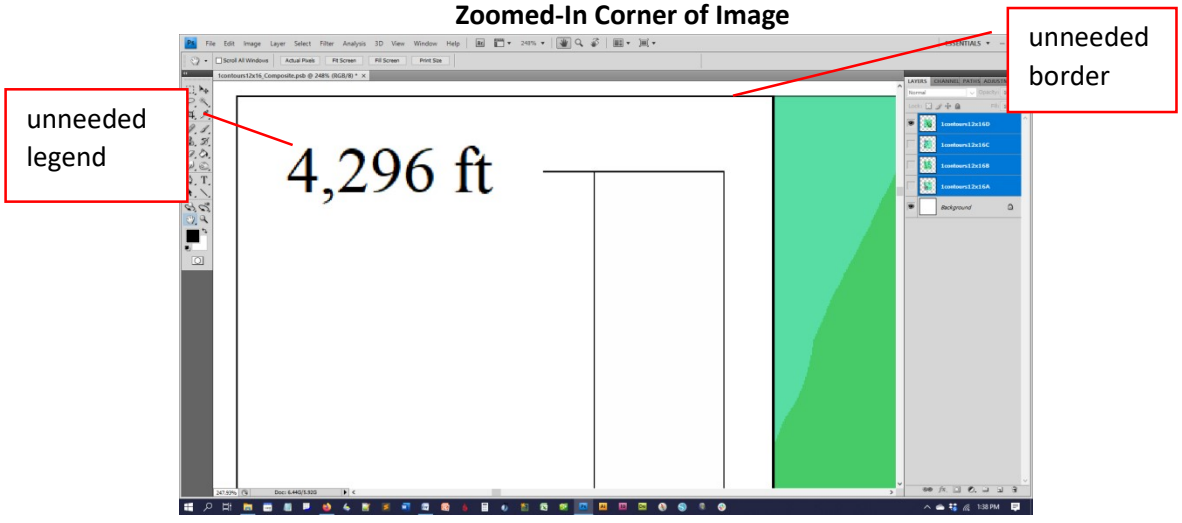


Figure 13: Example of Unneeded Border and Unneeded Legend

1. Show only one layer at a time. See Figure 14 for how to hide and show layers.

Layers Panel with Some Layers Visible and Some Layers Hidden

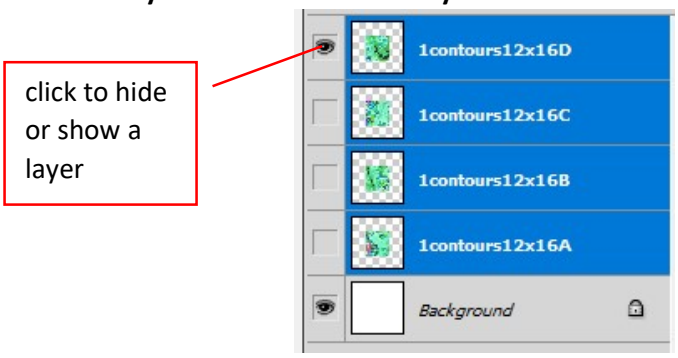


Figure 14: Hiding and Showing Layers

2. Remove unneeded contents from the left side of the map imagery:
    a. Select **Fit on Screen** from the **View** menu.
    b. Select from top to bottom, starting from the left and ending just slightly to the right of the desired imagery. See Figure 15 for a screenshot.

Selected Area on Left Side Extending Just to the Right of Map Imagery

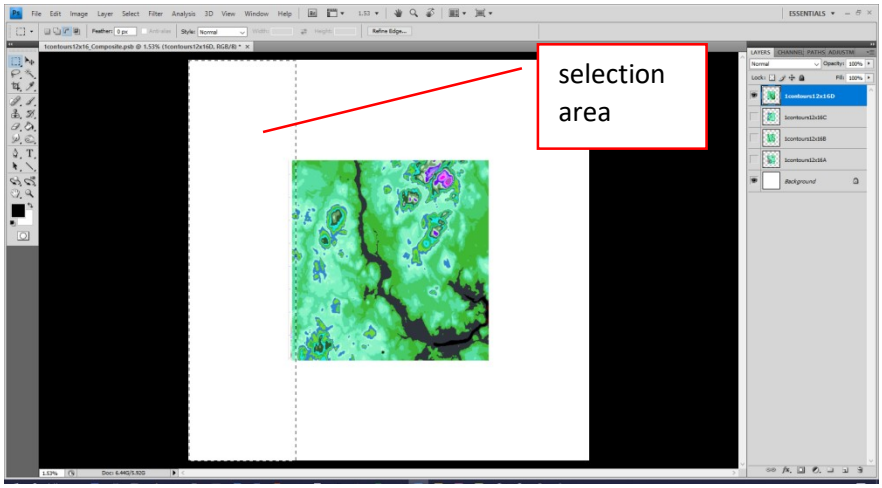


Figure 15: Selecting the Left Side of the Image Layer

    c. Use the **Zoom Tool**  anywhere along the right edge of the selection area until the view is zoomed to about **400%** (you can see the zoom level at the bottom left of the window). Make sure you can still see the right edge of the selection area as well as some map imagery.
    d. Select the **Rectangular Marquee Tool**  .
    e. Use the **Left Arrow Key** to move the selection area to the left until it no longer includes any map imagery (see Figure 16).

Zoomed-In Image with Unneeded Parts Selected on Left Side

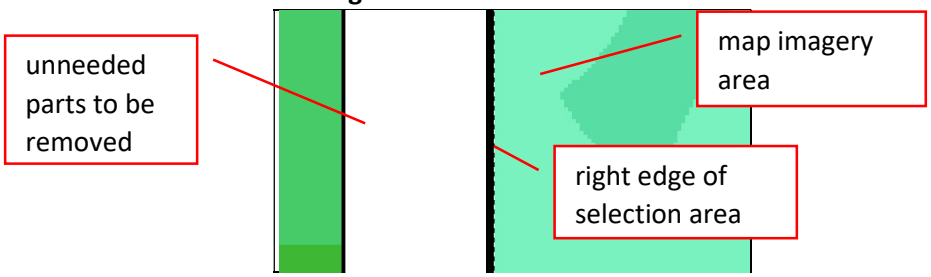


Figure 16: Unneeded Areas Selected

f. Press **Delete**. The selected area disappears (see Figure 17).

Zoomed-In Image with Unneeded Parts Removed from Left Side

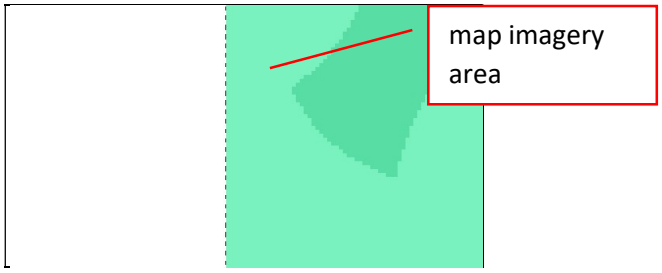


Figure 17: Unneeded Areas Removed

3. Repeat the previous steps in a similar manner to remove unneeded areas from the bottom of the map imagery in this layer.
4. Repeat the previous steps to remove unneeded areas from the right side.
5. Repeat the previous steps to remove unneeded areas from the top.
6. Perform similar steps to remove unneeded areas from the left, bottom, right, and top of all the remaining layers.
7. Select **Fit on Screen** from the **View** menu. Now, all of the layers should contain only map imagery, without any borders or legends.

3) Aligning the Sections Manually

All of the imagery sections need to be aligned, so that they will appear to be one large image. To do this, you will move one section at a time and make it align with the other sections.

*Note: Do not use **File** > **Automate** > **Photomerge** to combine the images, because it can distort them.*

This procedure will take about 10 minutes.

1. Move each layer to the approximate correct location. To do this:
   a. Select the top layer in the **Layers Panel**.
   b. Use the **Move Tool**  to position the image at one of the corners of the window. You may be able to decide which corner is correct by looking at the name of the image file that was placed. For example, a layer named **`contoursA`** in the **Layers Panel** might belong in the upper left corner, **`contoursB`** in the upper right corner, and so on.

c. Select each remaining layer and move that layer to the correct corner. The window then shows all sections in their approximate locations. You will notice some areas of overlap. See Figure 18 for an example. You will need to align the layers so that they match exactly, with no misalignment.

Imagery Sections in Correct Corners

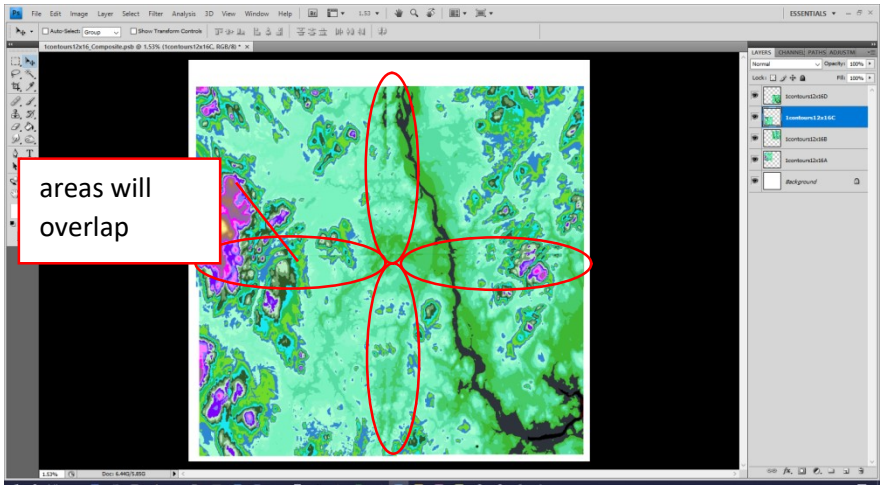


Figure 18: Imagery Sections in Approximately Correct Locations, Need Alignment

d. Show only two layers (to start with, it does not matter which ones). You will repeat the following steps on the remaining layers after finishing the first pair.

e. Reduce the transparency of the top visible layer by selecting the layer and entering an **Opacity** of **50%** in the **Layers Panel**. See Figure 19 for an example.

Two Map Areas Being Aligned

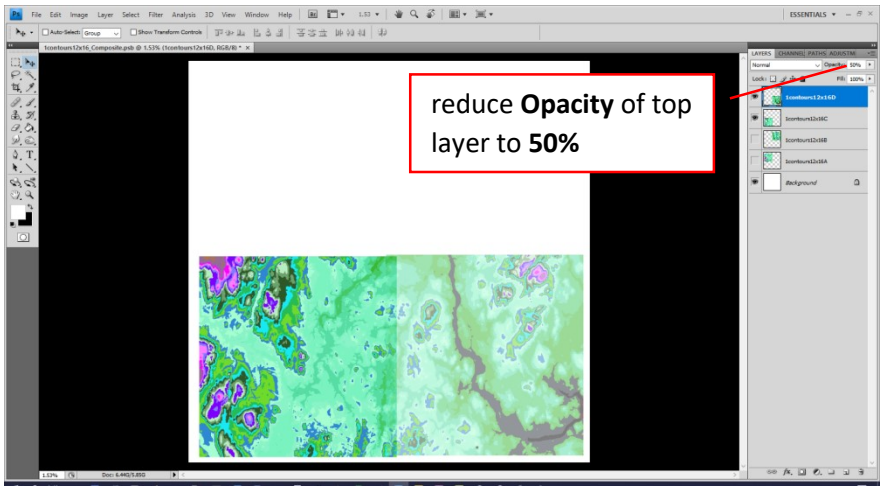


Figure 19: The Top Layer with Reduced Transparency

f. Move the top visible layer to match with the layer below it. Zoom in as closely as needed. See Figure 20 for a zoomed-in screenshot.

Two Map Areas Being Aligned, Zoomed-In

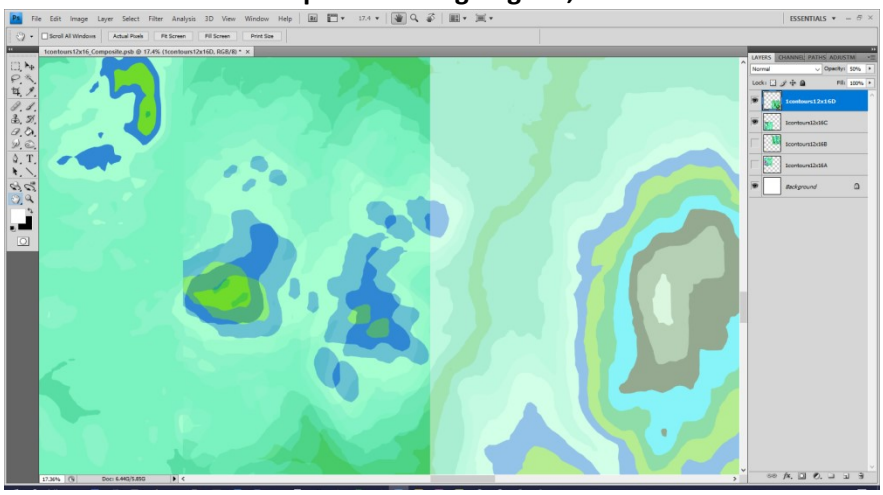


Figure 20: Zooming In to Determine How to Move the Top Visible Layer

g. Use the arrow keys to move the top visible layer one pixel at a time until the layers match as closely as possible. The layers may be very slightly different from each other. See Figure 21 for a very zoomed-in screenshot.

Two Map Areas Being Aligned, Extremely Zoomed-In

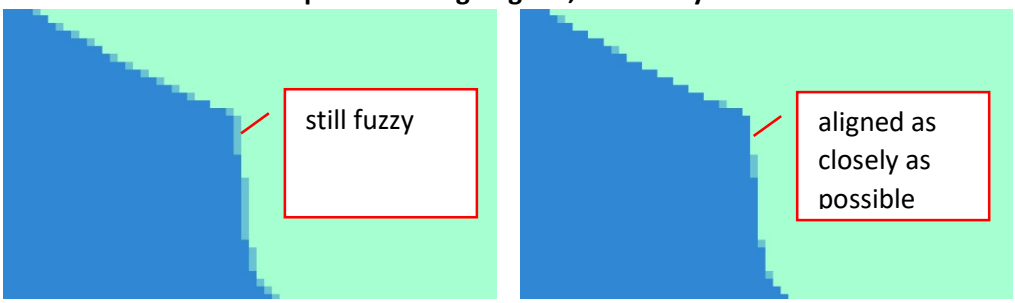


Figure 21: Moving by One Pixel to Match as Closely as Possible

h. Set the **Opacity** of the top visible layer to **100%**. The two map areas should now appear as though they were one image. See Figure 21 for a screenshot.

First Two Map Areas Aligned

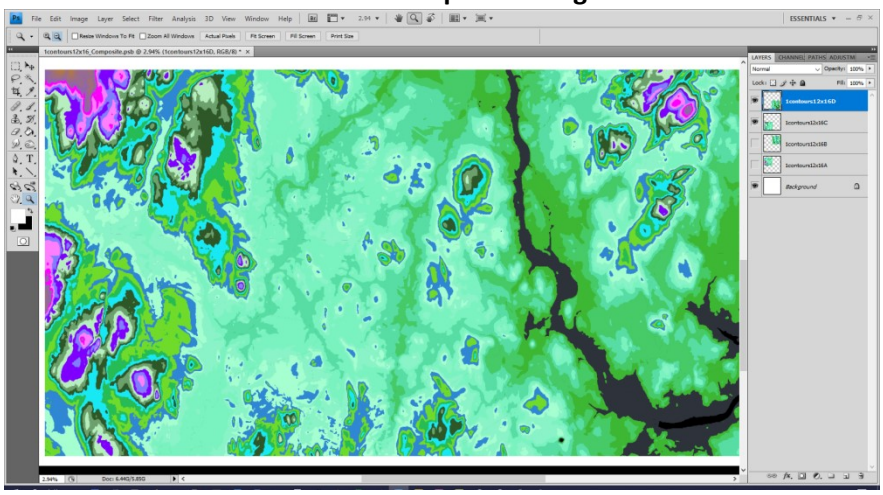


Figure 21: Two Visible Layers Appear as One Map Image

i. Repeat the steps in order to align the remaining layers. When working on the remaining layers, drag the unaligned layer in the **Layers Panel** to become the top visible layer, then show that layer. See Figures 22, 23, 24, and 25 for example screenshots of aligning the remaining layers.

Note: Be careful not to move the layers that are already aligned.

Two Aligned Map Sections with a Reduced Opacity Third Section to be Aligned

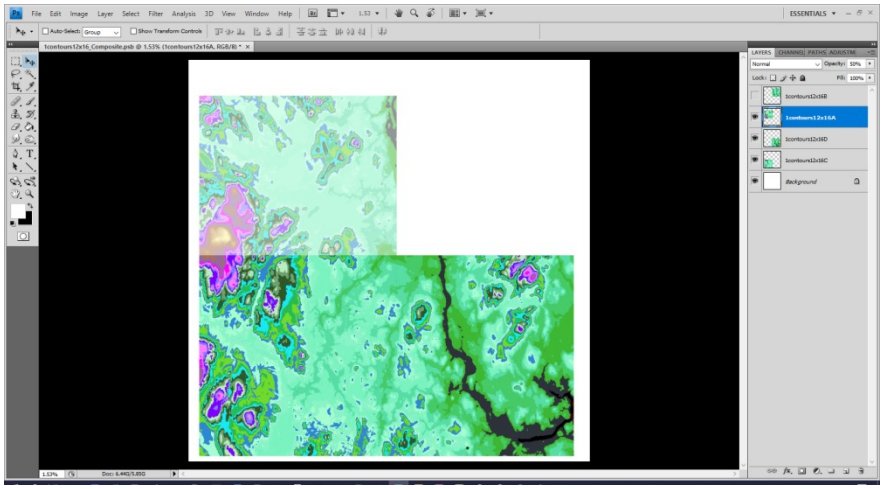


Figure 22: Working on the Third Map Section

Three Map Sections Aligned and Visible

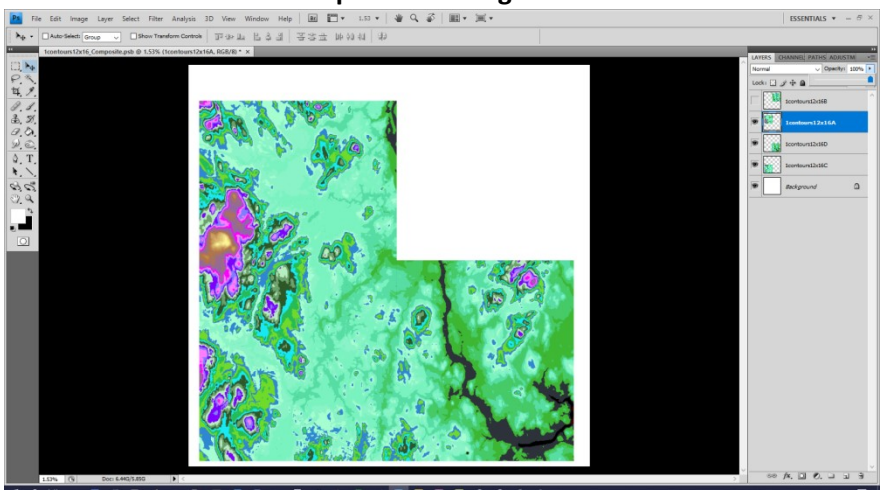


Figure 23: Third Map Section is Aligned

Three Aligned Map Sections with a Reduced Opacity Fourth Section to be Aligned

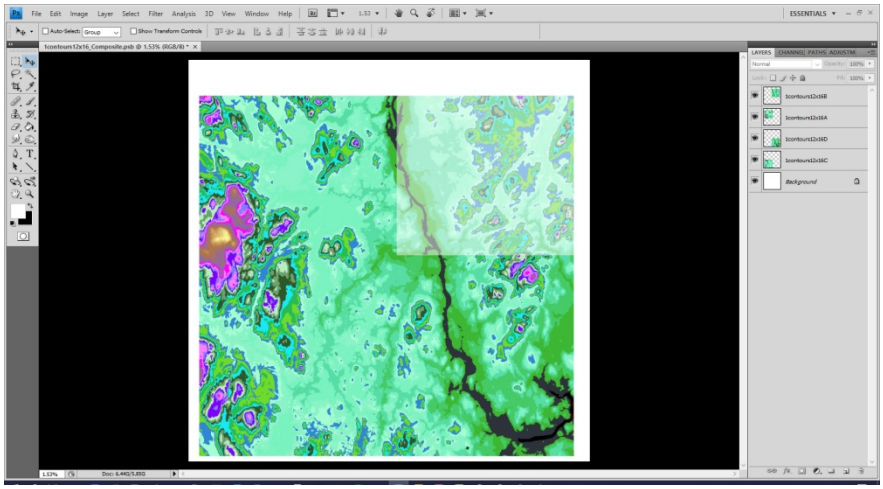


Figure 24: Working on the Fourth Map Section

All Map Sections Aligned and Visible

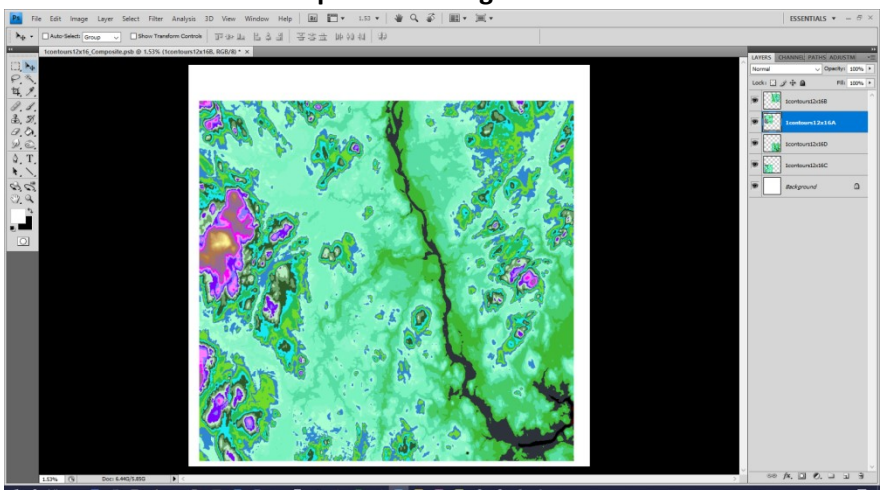


Figure 25: Fourth Map Section is Aligned

j. Make sure all layers are back to 100% opacity. You may leave the map sections in separate layers.

2. Remove some of the white border in order to reduce the file size. To do this:
   a. Make the view fill the screen by selecting **Fit on Screen** from the **View** menu.
   b. Use the **Rectangular Marquee Tool**  to select a smaller white border around the entire map.
   c. Select **Crop** from the **Image** menu. See Figure 26 for a screenshot.

Cropped and Aligned Map Sections

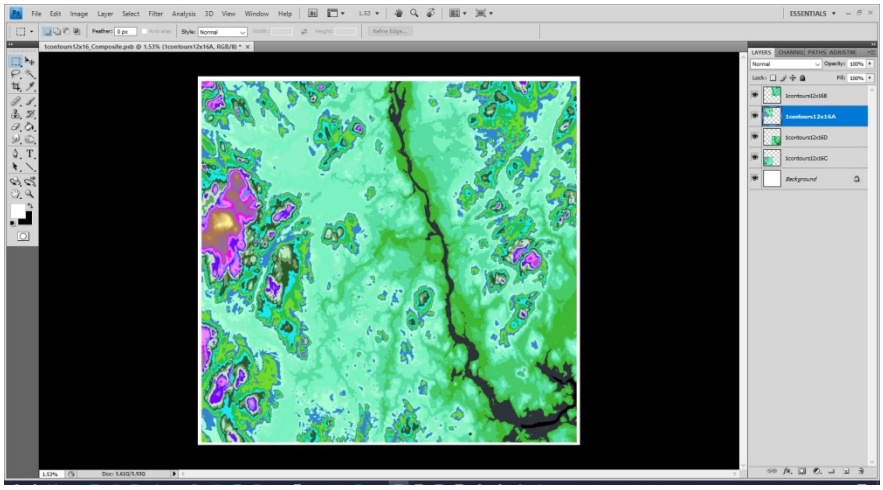


Figure 26: Map Imagery is Aligned and Border is Cropped

3. Be sure to save the file again after you have aligned and cropped the map.

C. Adding Graphic Elements

Bring in additional elements, such as boundaries, roads, legends, scales, scanned art, customer customizations, title, compass rose, and contours. The instructions to do this will be described in more detail in a future version of this guide.

D. Adding Registration Marks

You will need to add printed registration marks for layers of 3D Topographic Maps that will eventually be attached above the base. The purpose is to align the cutting machine to the printouts. The instructions to add the registration marks will be described in more detail in a future version of this guide.

E. Creating Separate Print Layers

After all the graphic elements are in place, you will create additional layouts to print each layer of a 3D Topographic Map. The instructions to do this will be described in more detail in a future version of this guide.

IV. Next Steps

Upon completing all of the steps in this guide, the next step is to set up the cutter files. Those procedures are described in the Cutter Design Guide.

V. Appendices

Appendix A: Reference Measurements

- 5,280 ft = one mile
- Height of one paper layer (using Staples #513099-WH, 20 lb., 96 bright, acid-free paper) = 0.008"

Appendix B: Board Sizes

Only a portion of the board base is available for the main map area, due to space needed for the title, other graphic elements, and areas that could hidden by framing. Here are usable sizes that were tested with actual mockups. Check with the company's product listings to see which sizes are currently offered.

Usable Board Area for Various Map Sizes

Board Size	Usable Short Side	Usable Long Side
4"x4"	2.4"	2.7"
9"x12"	8.2"	9.2"
12"x16"	11.0"	12.5"
18"x24"	16.9"	19.1"

Appendix C: Color Themes

Here are the color themes that the company currently uses. The exact appearance will vary.

Map Color Themes at Lois Legacy Art LLC

#	Graphic Example	Public Name	Internal Name	Notes for Using Global Mapper
1		Contours	Contours	Uses a Custom Shader. There must be separate PDF files set up for each map size.
2		Rainbow	HSV	Uses the HSV Shader with sliders that are customized to the area. The same PDF file can be used for all map sizes.
3		Hilly	Copper	Uses the Slope Shader. The same PDF file can be used for all map sizes.
4		Gradient	Gradient	Uses either the Gradient Shader or a Custom Shader. The same PDF file can be used for all map sizes.
5		Aerial	Aerial	Uses downloaded Aerial Imagery. There are no shaders involved. The same PDF file can be used for all map sizes.

Note: The Global Mapper application is used in another guide for this document set.

VI. Index