MARYLAND
INSTITUTE
COLLEGE
OF ART
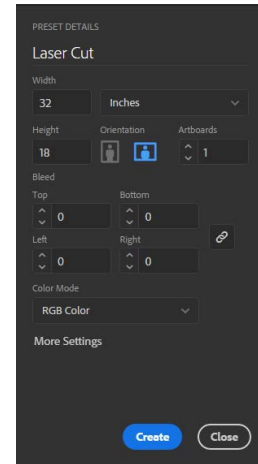
M|I|C|A

**Dolphin Digital
Fabrication Lab**

Preparing Laser Cutting Files in Adobe Illustrator

Set up your document

- In Illustrator, select File->New.. (Ctrl + N)

- Set "Width" to 32 inches and "Height" to 18 inches

- Set orientation to "Landscape" and "Color Mode" to RGB
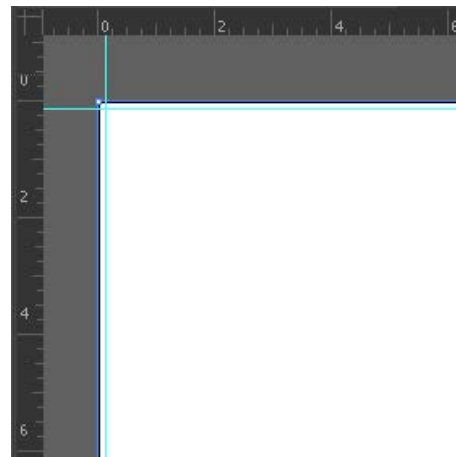
- Click Create

Turn on the Rulers:

- Select View -> Rulers -> Show Rulers

Set the Guides: ***Recommended***

- Set a guide line to the bottom edge of your material and the right edge of the material.
- We also recommend you place a guide at a 0.125-0.25 inches from each edge of the document that your material will touch. This will inset the design slightly so it is completely contained.
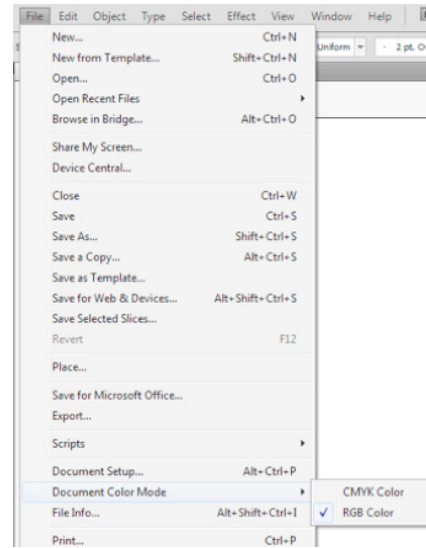
Preparing your graphics in Illustrator

Cut Type	Graphics Requirements	Single/Multipass	Order	End Result
Raster Engraving	• Filled Shapes or text • Images (jpg, bitmap, etc) • Lines with heavy stroke weights (+0.1pt) • Gradations	Multi-pass (like an inkjet printer)	Before Vector Lines following color table	Engraved area (Power is limited to prevent cutting through)
Vector Engraving	Lines with these properties • 0.1pt stroke weight • Aligned to center • No brushstrokes • No dashed lines • No compound paths • No clipping paths	Single pass (following vector path)	Dependent on color	Engraved line (Power is limited to prevent cutting through)
Vector Cut				Through-cut line (Power is increased to cut through)

The laser cutter can make three different types of cuts; see the table above for an overview of each. All cuts can be sent from the same Illustrator file. Graphics in the file are grouped into different colors, which allows the laser cutter to distinguish different cuts from one another. Colors are also used to determine the order in which vector cuts and engravings take place.

Color	Order	Red Value	Green Value	Blue Value
Black	1st	0	0	0
Red	2nd	255	0	0
Green	3rd	0	255	0
Yellow	4th	255	255	0
Blue	5th	0	0	255
Magenta	6th	255	0	255
Cyan	7th	0	255	255
Orange	8th	255	102	0

When the laser cutter runs a file, it automatically processes raster engraving first, before vector engravings and vector cuts. It will then process all vector cuts and vector engravings as one group--this is where color should be used to control the order of cuts. In the example below, black has been designated for raster engravings, red for vector engraving, and green for vector cutting.

(The colors used here are only an example; the same cuts could be made with different colors.)

By setting up the vector and raster engravings to go first, we'll keep the material stationary until the outline cut is made. When the file is run, the cuts and engravings will happen in this order.
1.   Raster engraving (black)
2.   Vector engraving (red)
3.   Vector cut (green)
When setting up a file for laser cutting, use a different color any time you want to assign different settings or affect the cutting order of a group of cuts.
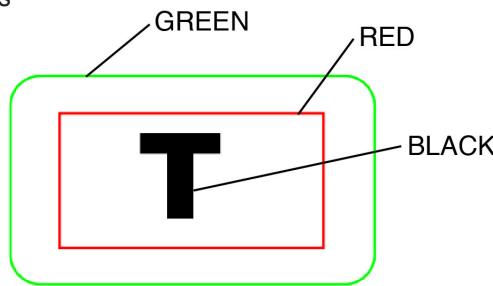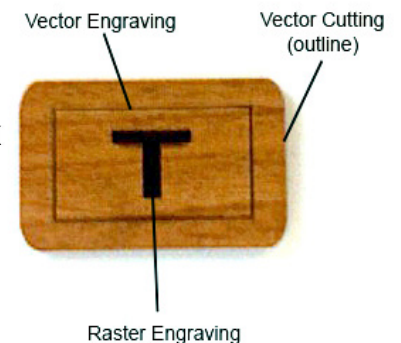

Fig. 1: Source File

Fig. 2: Finished Cut