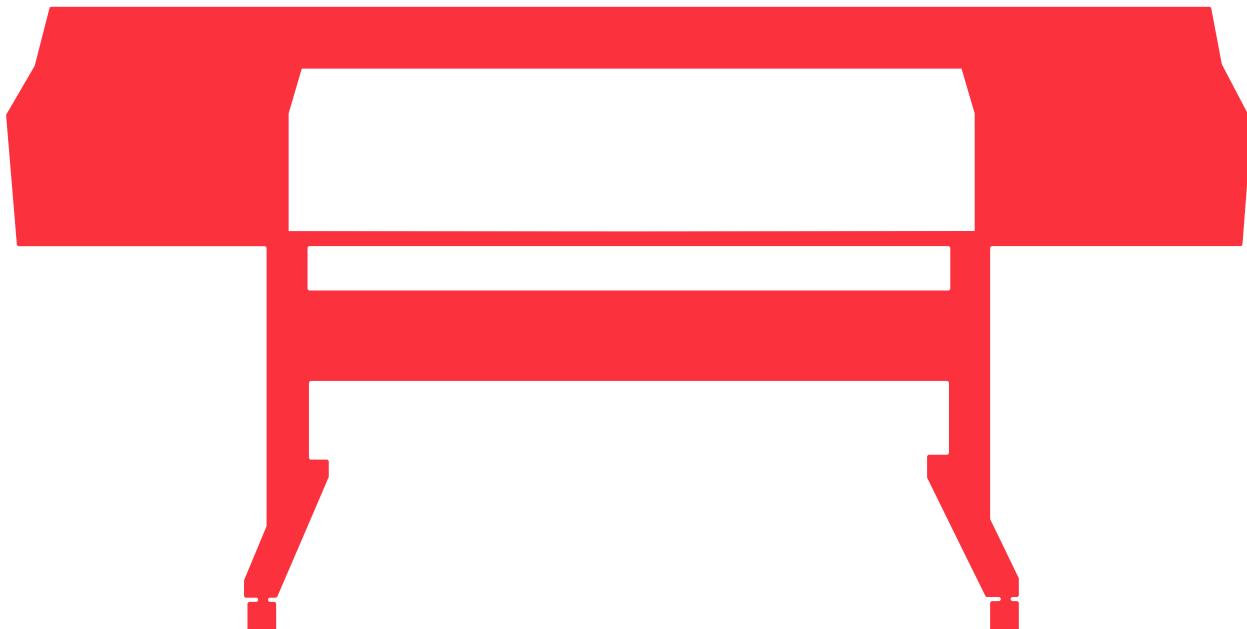


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# *Roland Printer Training Manual*

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How to operate, design, and create.



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# Intro to Roland SG-540

The Roland SG-540 is a large format printer and die cutter. Popular applications include stickers, banners, large format photography, vinyl wraps, and heat transfers. This manual is specific for SCC Makerspace training procedures. This is an open source manual and may be used in other makerspaces as they see fit. This manual will cover the following:

- Printing Software
- Design Software
- Loading and Unloading Media
- General Machine Operations
- Stickers
- T-Shirts
- Banners and Grommeting
- Photography
- Spooling other types of media for patterns or schematics
- Pricing & Material Costs
- Extra Resources and Take-aways

## Getting Started and Applications

When training students on the Roland SG-540, begin with talking about its capabilities and applications, use examples included in the back of this manual.

### **APPLICATIONS:**

- Stickers and vinyl transfers
- Heat transfers on fabrics
- Vinyl banners with grommets
- Vinyl wraps and car decals
- Window treatments

# Sticker Workshop

## *How to produce stickers on the Roland Printer/Cutter*

### OVERVIEW

This workshop is offered two/three times a week at the SCC Makerspace. We offer an **overview of the machine, loading and unloading media, design software, printing software, and how to use the rotary cutter for large sticker jobs.** Participants walk away with the the sticker produced in the workshop and resources to learn more about the printer and its applications.

**Our Goal:** At the completion of a sticker workshop, the trainer signs off on the participant's "MakerBadge" with his/her initials by the letter "B" standing for Beginner. The student now has access to use the machine with supervision from Makerspace Staff.

B	I	A	Equipment/punch if material used
			Laser Cutter Acrylic Masonite
			Roland Printer Sticker Media Heat Transfer Media
			Powertools Plywood
			Sewing Machine Serger
			Electronics Circuit Board
			Vacuformer Vacuform Plastic
			CNC Bench-top Mill Foam Block
			3D Printers PLA Nylon
			Table Saw
			CNC Router



**Student knowledge and progression on the machine**—if a student is using the machine regularly and becomes proficient, he/she can use the machine without Staff supervision, at this point a Staff Member will initial the user's Maker Badge as "I" (Intermediate). In the future, we will regulate this system of Beginner, Intermediate, Advanced through demonstration tests. Once a student is considered "Advanced" he/she can use this manual to train other students. In other words, **the student does not have to be a Makerspace Staff member to train other students how to use the machine.**

### IN THE STICKER WORKSHOP

- Include page 3-11 of this manual
- When you get to page 8, use one of the saved Sticker Templates (saved as an .ai file on the desktop of the Roland Computer)
- Go through the steps to print one row of stickers on Glossy Calandered Vinyl
- Prepare materials needed before the workshop:
- **You will need:** Roland Printer Clamps, wheels, squeegee, scissors, exacto knife, and the rotary cutter
- Students will take home a sticker and resource handout at the end of the sticker workshop

# T-Shirt Workshop

## *How to produce heat transfers for t-shirts*

### OVERVIEW

This workshop is offered once a week at the SCC Makerspace. In this workshop, we offer an **overview of the machine, loading and unloading media, design software, printing software, how to apply transfer mask to your print and how to use the heat press for heat-transfers**. Participants take away a resource to learn more about the printer and its applications.

**Our Goal:** At the completion of a t-shirt workshop, the trainer signs off on the user's "MakerBadge" with his/her initials by the letter "B" standing for Beginner (**see page 4 of this manual**). The student now has access to use the machine with supervision from Makerspace Staff.

**Student knowledge and progression on the machine**—if a student is using the machine regularly and becomes proficient, he/she can use the machine without Staff supervision, at this point a Staff Member will initial the user's Maker Badge as "I" (Intermediate). In the future, we will regulate this system of Beginner, Intermediate, Advanced through demonstration tests. Once a student is considered "Advanced" he/she can use this manual to train other students. In other words, **the student does not have to be a Makerspace Staff member to train other students how to use the machine**.

### IN THE T-SHIRT WORKSHOP

- First **turn on the heat press** and set the temp to 400 degrees
- Include page 3 & 5–11 of this manual
- When you get to page 8, use one of the saved Heat Transfer Templates (saved as an .ai file on the desktop of the Roland Computer)
- Go through the steps of the Design and Printing Software but **DO NOT press print** (due to higher cost of material)
- Use a pre-prepared print to demonstrate: weeding, adding transfer mask, and actual application of heat transfer onto test t-shirt.
- Prepare materials needed before the workshop:
- **You will need:** Roland Printer Clamps, wheels, squeegee, scissors, exacto knife, pre-prepared heat transfer prints, test t-shirt, and transfer mask
- Students will take home a sticker and resource handout at the end of the heat transfer workshop

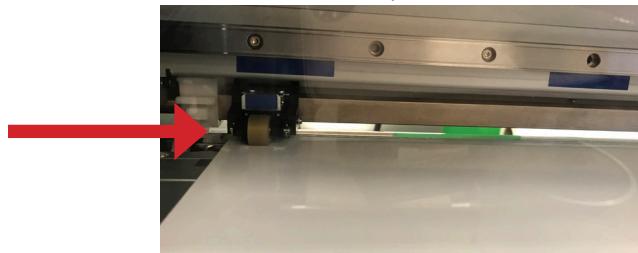


# A Little About the Machine

## *Roland Printer/Cutter*

### OVERVIEW

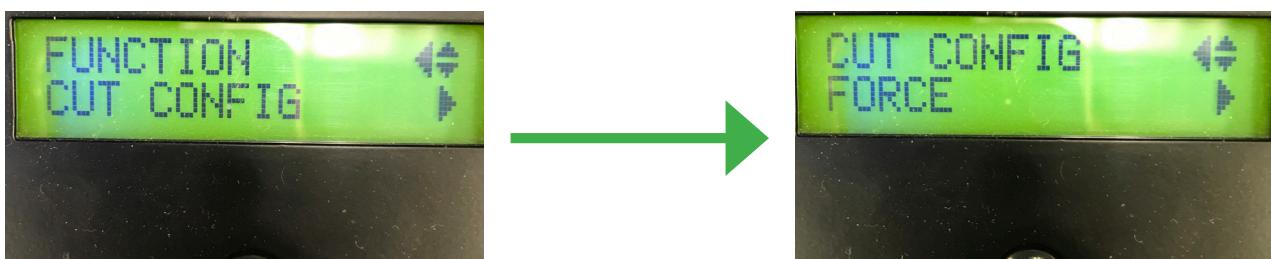
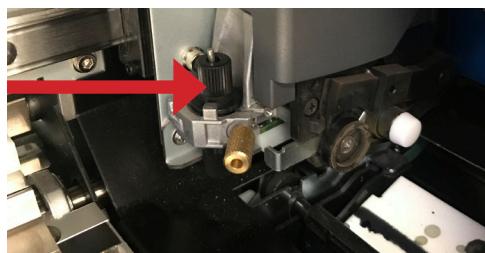
- **Wheels:** Wheels marked with blue are what the print head uses to measure the media

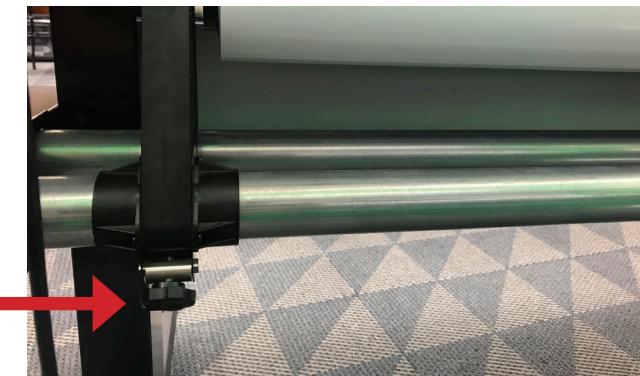


- **Lever:** Front and back lever to lift and adjust wheels



- **Blade:** manually adjust height of blade or adjust the force





## LOADING/UNLOADING MEDIA

- Adjust the media carriage according to media width, feed the media through the machine, tighten when aligned
- **\*for large rolls, loading and unloading media is a two person job.**
- After media is aligned, push the lever down and press **Enter** on the front of the machine
- Now the print head will measure from blue wheel to blue wheel
- When the print head is finished measuring it will show the media width on the screen



- **Now you can move on to the design software**

# Design Software

## Adobe Illustrator

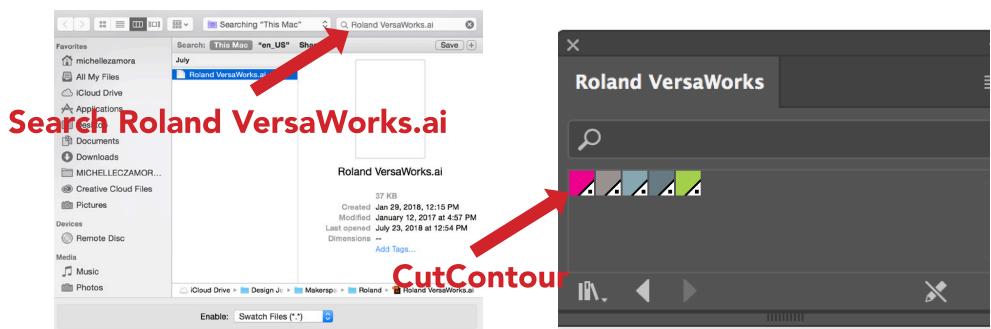
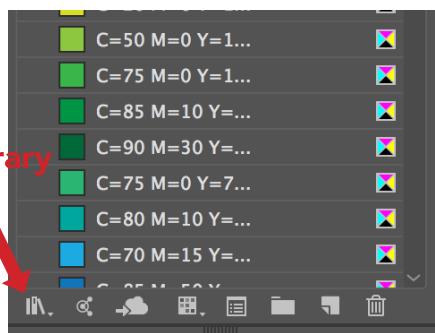
### OVERVIEW

You may choose to design in different software depending on what you are printing; stickers, banners, decals, heat transfers. Cutting lines must be vector data, therefore a basic knowledge of Adobe Illustrator is necessary for adding the "CutContour" stroke to your artwork for stickers, decals, and heat transfers. **Note: banners and photography do not require a CutContour stroke because this type of media cannot be die cut.** \*For more info on Contour Cutting refer to page 51 in the Roland Versa Works Quick Start Guide.

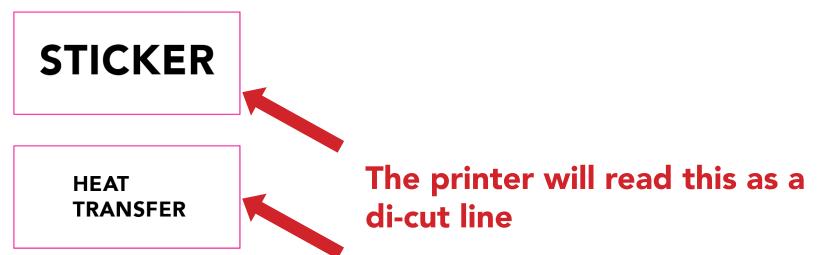
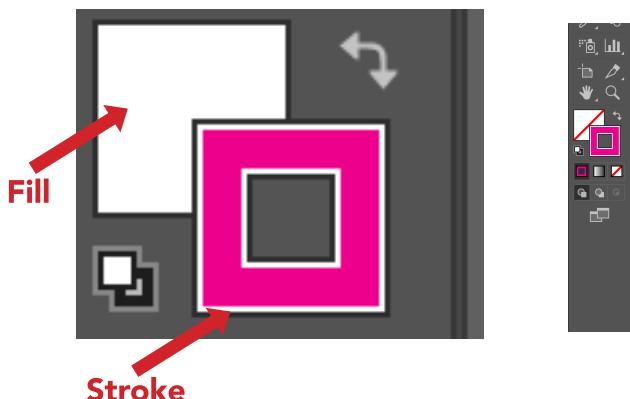
Adobe Illustrator: Adding the "CutContour" stroke:

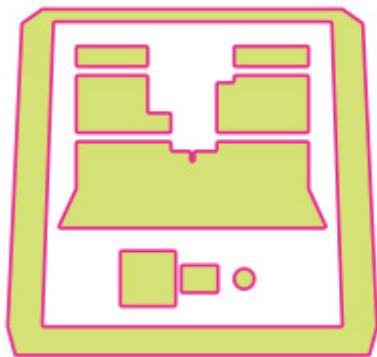
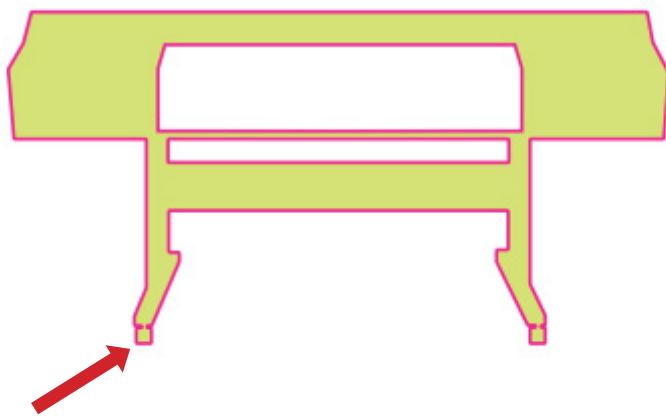
### ADDING THE CUT CONTOUR STROKE

- Open Adobe Illustrator or drag your finished file into Ai
- Click Window —> Swatches —> Library —> Other Library —> Search **Roland VersaWorks** on any iMac in the Makerspace—> Click Open.



- Now the Roland VersaWorks Panel should be open in your file, the CutContour spot color (magenta).
- Use this swatch to add a stroke to your sticker or heat transfer
- The Roland Printer uses this CutContour swatch to di-cut sticker or heat transfer media
- Be sure to use the spot color named "Cut Contour," VersaWorks only recognizes cutting lines with this specific name
- It cannot be added to your design in Photoshop or InDesign because it is a **native Illustrator File**
- **\*It can be added in Corel DRAW as well**

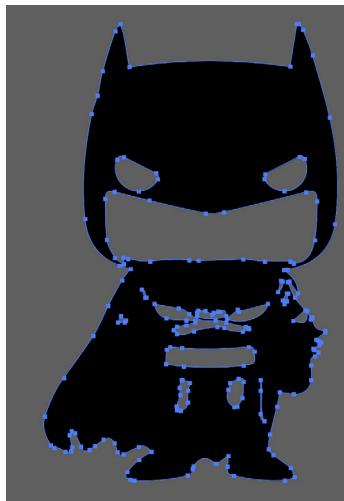




Use the CutContour swatch to outline abnormal shapes for stickers or heat transfers

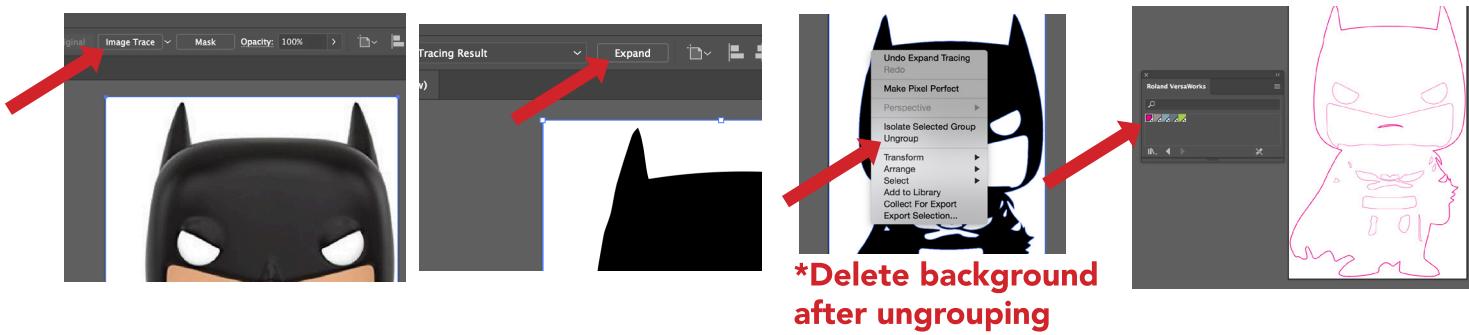
## FOR BEST DI-CUT RESULTS

- Manually trace your artwork with the pen tool, if it wasn't already a vector object
- Image trace is possible but produces jagged edges and multiple points (explain)



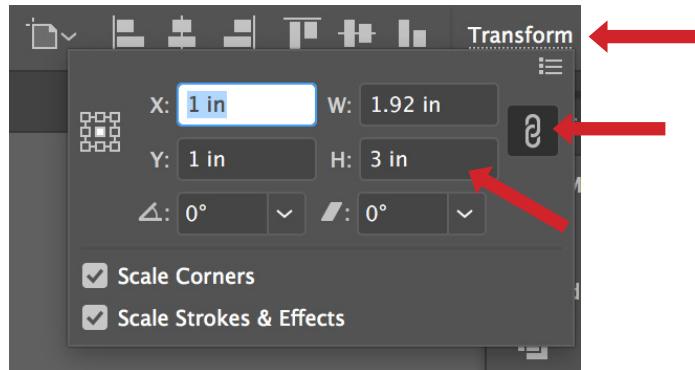
## IMAGE TRACE

- Open your file (.jpg, .png) in Adobe Illustrator
- Select your file
- Click Image Trace
- Click Expand and then right click--> Ungroup
- Add the CutContour Stroke to your now vector object



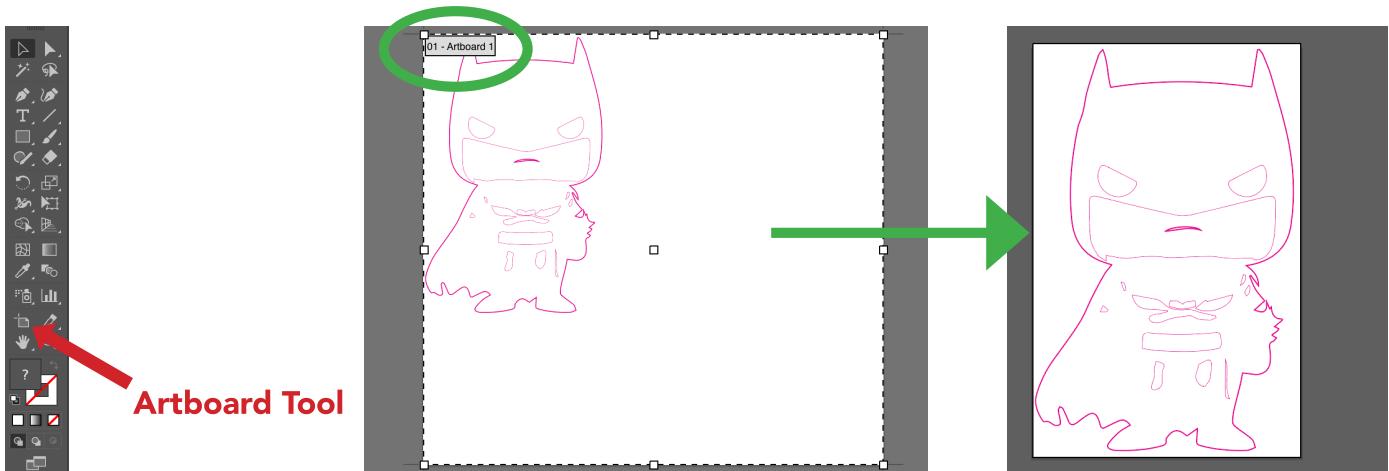
## SCALING YOUR ARTWORK

- Don't forget to scale your sticker or heat transfer
- You can scale in the printing software, but **for most accurate results, scale in the design software**
- Select your object
- Click Transform
- Make sure the **link** on the right of W and H is linked
- Write in the height or width of your preferred end size



## ADJUSTING ARTBOARD TO ARTWORK

- When your design is complete, and the CutContour stroke has been added, you need to **adjust the size of your artboard to the size of your artwork**.



## YOU'RE ALMOST DONE! **SAVE AS .PDF**

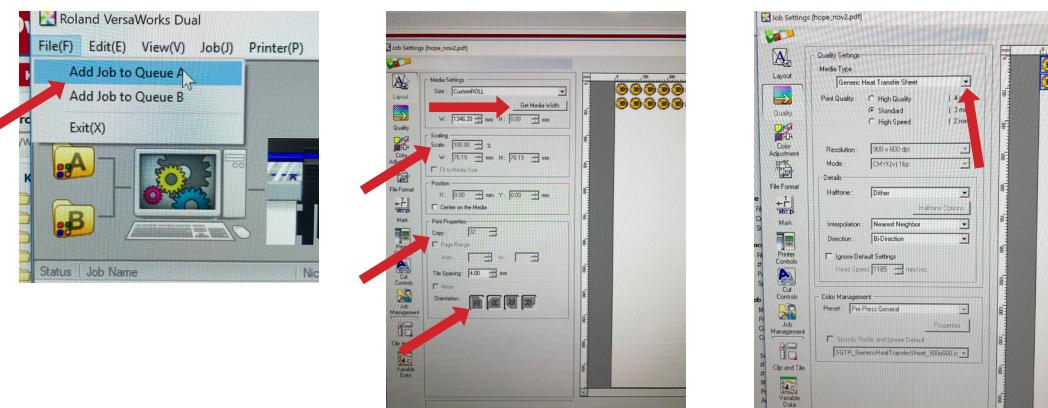
- When you are ready to print, click File--> Save As--> file\_name.pdf (save to the cloud, USB or directly to the Roland Computer in the Makerspace).
- Importing files into VersaWorks Dual: If you saved your file to an external source, download it or plug in drive and drag it into the correct folder on the desktop-->**Stickers, Heat Transfers, Photography, Banners**
- **Do not print directly from your USB, data may be lost and the file is subject to corruption**
- Now you are ready to open the printing software: **Roland VersaWorks Dual**

# Printing Software

## Roland VersaWorks Dual

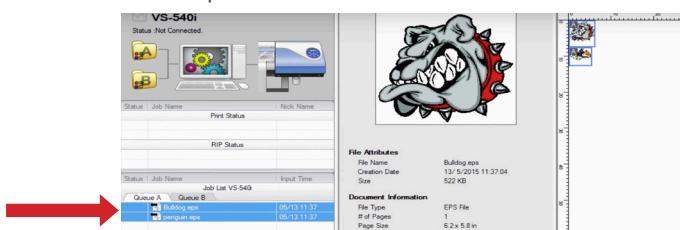
### OPEN VERSAWORKS DUAL

- After opening software, click YES when prompted
- File-->Add Job to Queue A-->Find file and click Open
- Double click the file to get to settings
- Click "Get media width" -- This number should match the machine, because you already loaded the correct media for your job
- In "Layout" you can: **scale, make copies, or rotate** your file
- In "Quality" **change your media type** to the correct media
- All other settings should be left alone unless a certified trainer needs to change the settings



### NESTING FILES

- You can add multiple files to the same print and orient them within VersaWorks
- Add all files to the same Queue
- Select all the files you want in the same print



- Click the nesting button to the right of the print button
- Now your files are nested
- Double click the nested files to get to settings, here you can: scale, make copies, or rotate your files



- When you are finished in settings, click **OKAY**
- Press **Print** when you are ready to print!



# Pricing

## Media and Ink Consumption

\*FOR STAFF ONLY

### OVERVIEW

Roland media may be purchased through the Roland website or through other vendors. SCC Makerspace uses both and one of our outside vendors is Glantz & Sons. We've found they offer quality rolls and a great selection for an affordable price. Our pricing is based off our material and ink cost. We then add a percentage on for students, school organizations (ex. Business Building or Rodda Hall North), and outside clients (ex. Old Soul Coffee or Track 7 Brewing Co.). Our aim is to be competitive with outside vendors and give students and campus community members an affordable price, while also giving them the opportunity to learn the machines and print their own jobs. We support and promote entrepreneurs and try our best to offer support and resources for such endeavors.

### ROLAND PRINTER CALCULATOR

- SCC Makerspace uses the a web-based calculator generated in Google Sheets to price out our jobs
- As a SCC Makerspace Staff member and trainer, know how to estimate and price jobs
- Students **do not need to know how to access and use this calculator**
- Access the calculator by signing into the SCC Makerspace Google Drive

Job Media **DO NOT ALTER**	Default Media Waste	Linear Inches Printed	Default Material Cost	Printed Material Cost	Ink Used (cc)	Total Ink Cost	Print Cost	Student	School Org
GOLD SHEET 100" Wide [SAMPLE]	6		\$333.35	\$0.00		\$0.00	\$333.35	\$500.03	\$666.70
Heat Transfer (30")	6		\$2.14	\$0.00		\$0.00	\$2.14	\$3.21	\$4.29
Gloss Cal Vinyl, Perm Adhesive (54")	6		\$0.35	\$0.00		\$0.00	\$0.35	\$0.53	\$0.70
Satin Poly Heat Transfer Material (30")	6		\$1.67	\$0.00		\$0.00	\$1.67	\$2.50	\$3.33
Lt. Wt. Banner Vinyl (54")	6		\$0.90	\$0.00		\$0.00	\$0.90	\$1.35	\$1.80
Premium Matte Paper, 190gsm (54")	6		\$0.67	\$0.00		\$0.00	\$0.67	\$1.01	\$1.35
RolyPoly Banner Film (54")	6		\$1.63	\$0.00		\$0.00	\$1.63	\$2.45	\$3.27
Solvent Glossy Paper w/Adhesive (30")	6		\$0.80	\$0.00		\$0.00	\$0.60	\$0.90	\$1.20
White Static Cling (54")	6		\$0.67	\$0.00		\$0.00	\$0.67	\$1.00	\$1.33
Medium Track Polyester Transfer Mask (30")	6		\$0.69	\$0.00		\$0.00	\$0.69	\$1.03	\$1.37

- Find the Calculator under **Roland Printer Job Calculator**
- Insert the linear inches and the ink used
- The calculator is pre-programmed for the 6" waste that is produced with every print
- Ways to pay—user can pay with cash or credit/debit.
- The link/QR is posted on the sign in front of the Roland Computer and on the white board on the front door
- Fill out a receipt (located behind the door in the office)
- If paid in cash, give the cash and receipt to an IA to place in cashbox and file

# Applications



*Stickers*



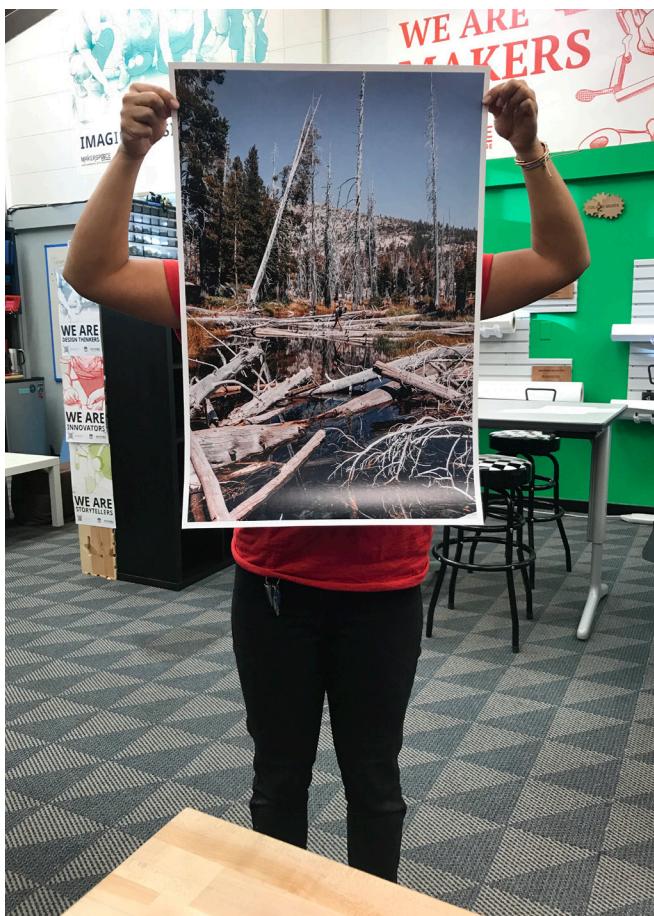
*Banners*



*Signage*



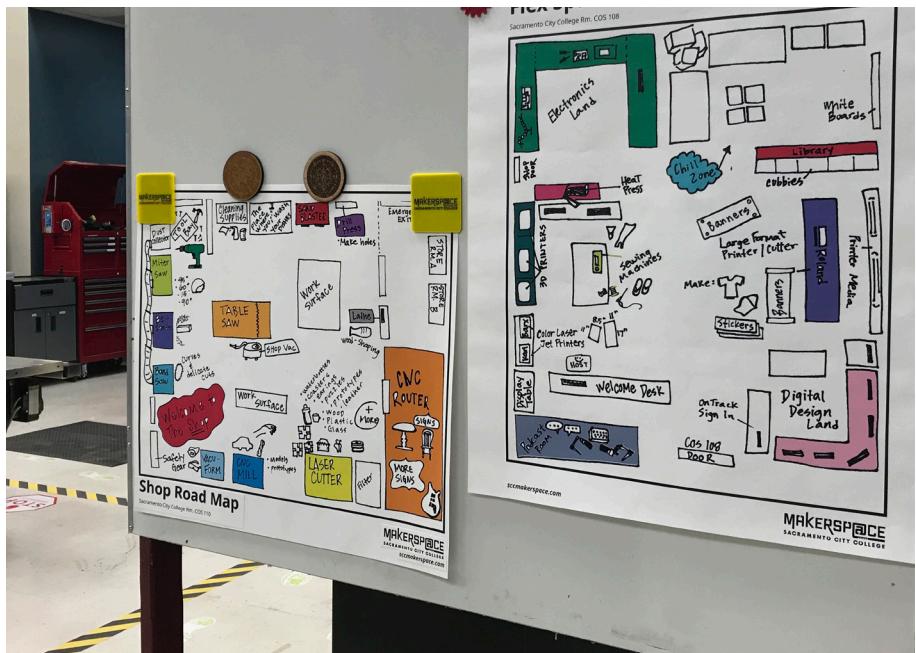
*Heat Transfer*



*Photography*



## *Heat Transfer*



## *Banners*



## *Grommets*