Cutting SAW Vinyl with Cricut Maker

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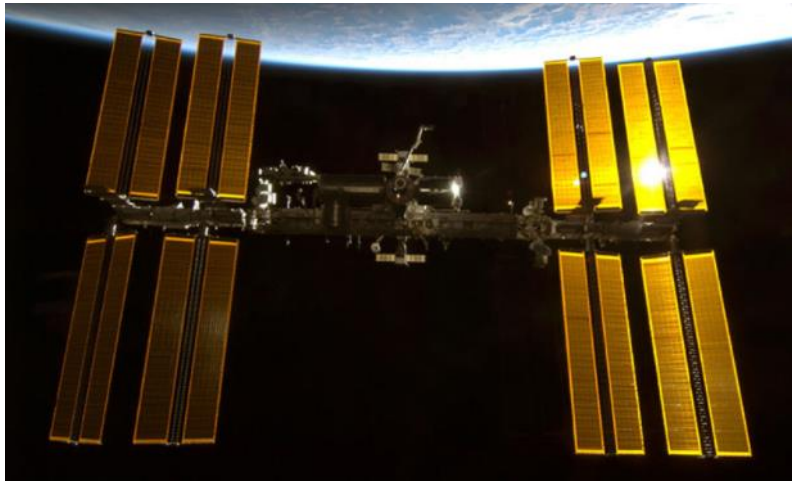
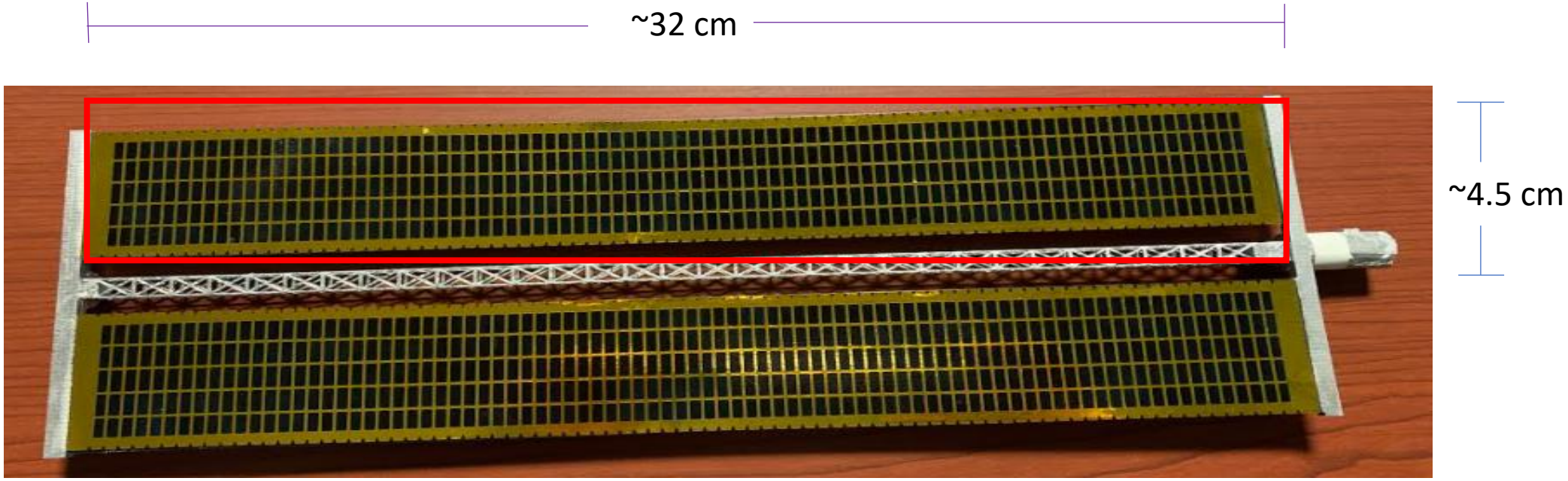
May the 4th be with you!

What you are making



- Vinyl stickers for the ISS Solar Arrays (the golden shiny stuff) using a Vinyl cutter
- Quantity needed: 16 panels per ISS (Each cut sheet yields 5 panels, so 4 sheets will need to be cut, you will have 4 extra panel for backup use)
- Panel Size : ~32cm x ~4.5cm



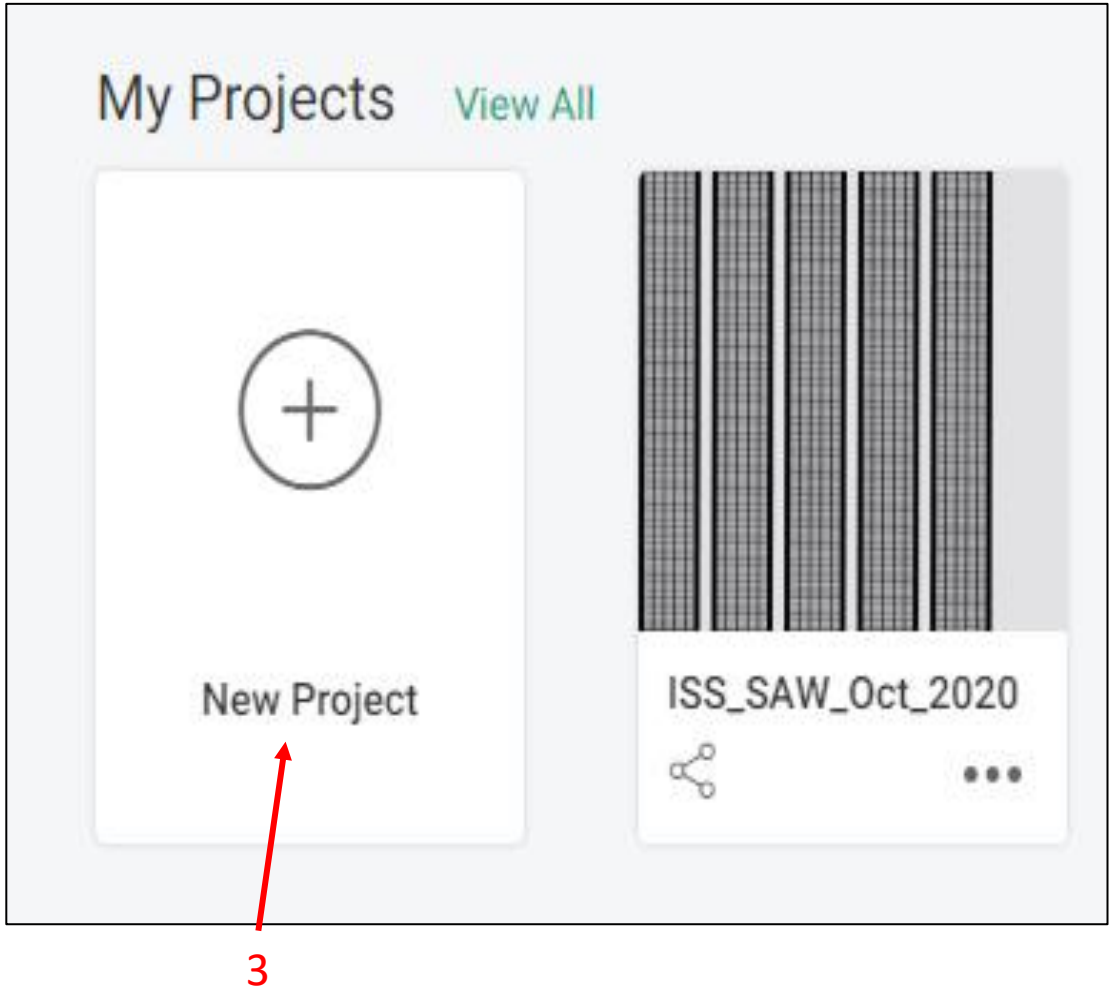
Here is what you need

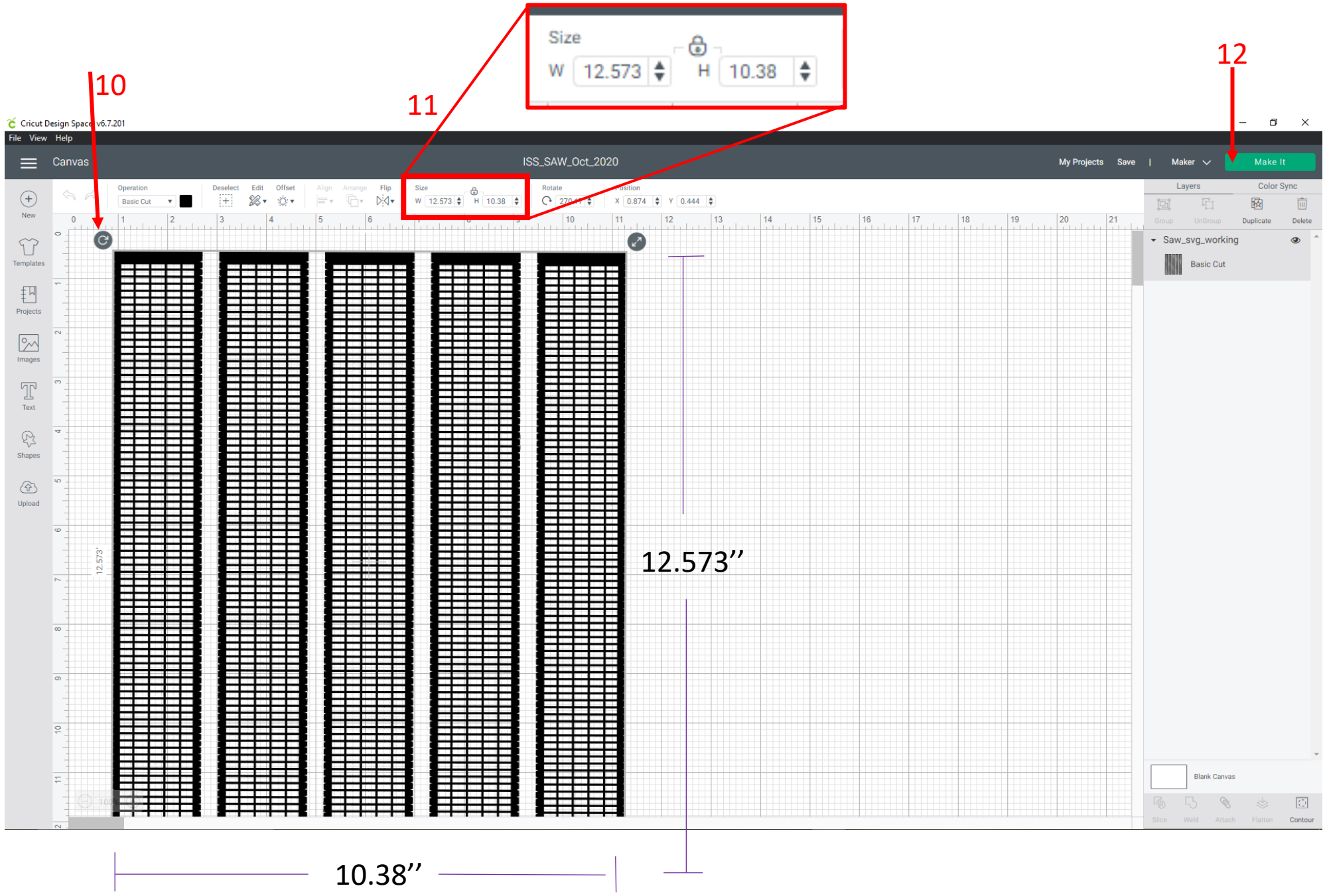
- Cricut Maker
- Cricut Design Space v6.7.201 (used here for images)
- SAW file (download from Github)
- 3D printed & painted ISS Solar Array
- 12” x 24” Cricut mat
- Shiny Vinyl
- Transfer tape
- Embossing tool or Weeding tool
- Tweezers (optional, but recommended)
- Scissors or Paper cutter
- Patience + loads of time for weeding

1) Turn on & plug in Cricut Maker
2) On computer, launch **Cricut Design Space** 

3) Click **New Project**
   - Project image will be saved to **My Projects** for future use after initial upload (see example right)
4) Click **Upload** 

5) Click **Upload Image**
6) Drag and drop **ISS SAW** file into window or click **Browse** to locate file to upload
7) Click **Upload**
8) Click the image/project you just uploaded under **Recent Uploads**
9) Click **Insert Images**, then image will show up on the canvas

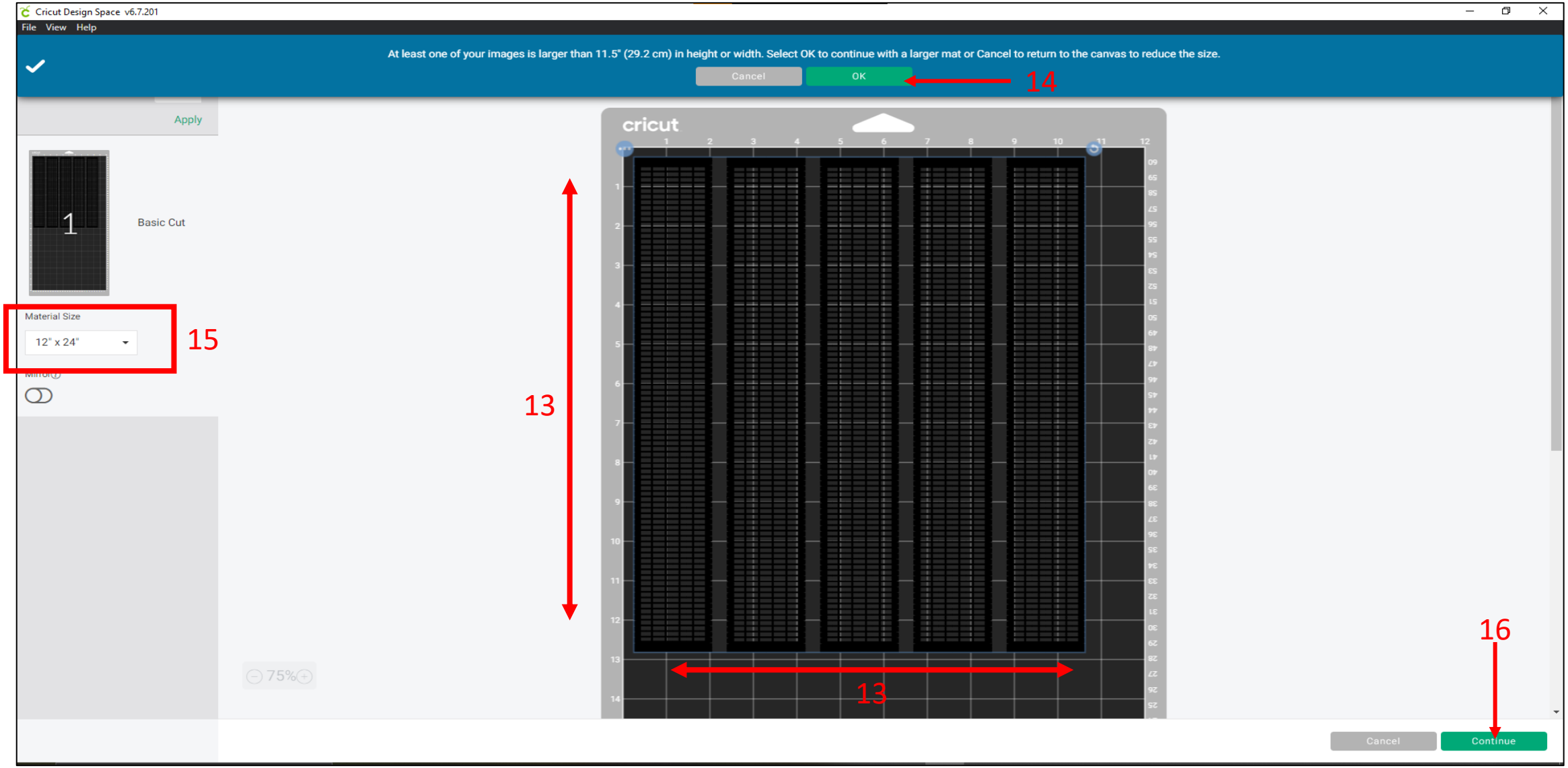




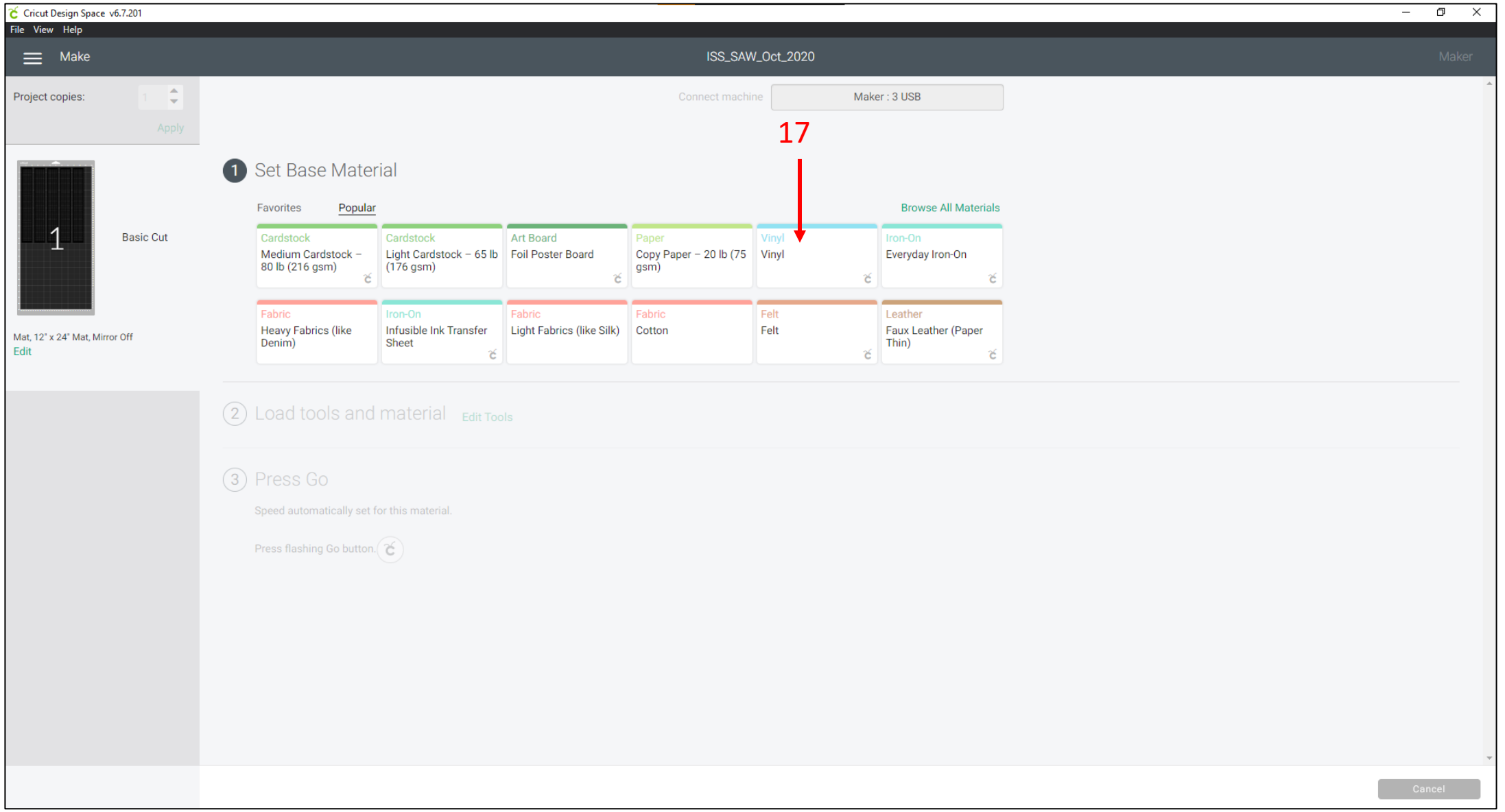
10) Adjust image by spinning the image length wise, move image to be within 12'' (should look like image to left). Cricut mat is 12x24, thus the side of image greater than 12'' need to be oriented properly

11) Image size should have auto adjusted to above shown, but if needed adjust as needed.
W = 12.573
H will auto adjust

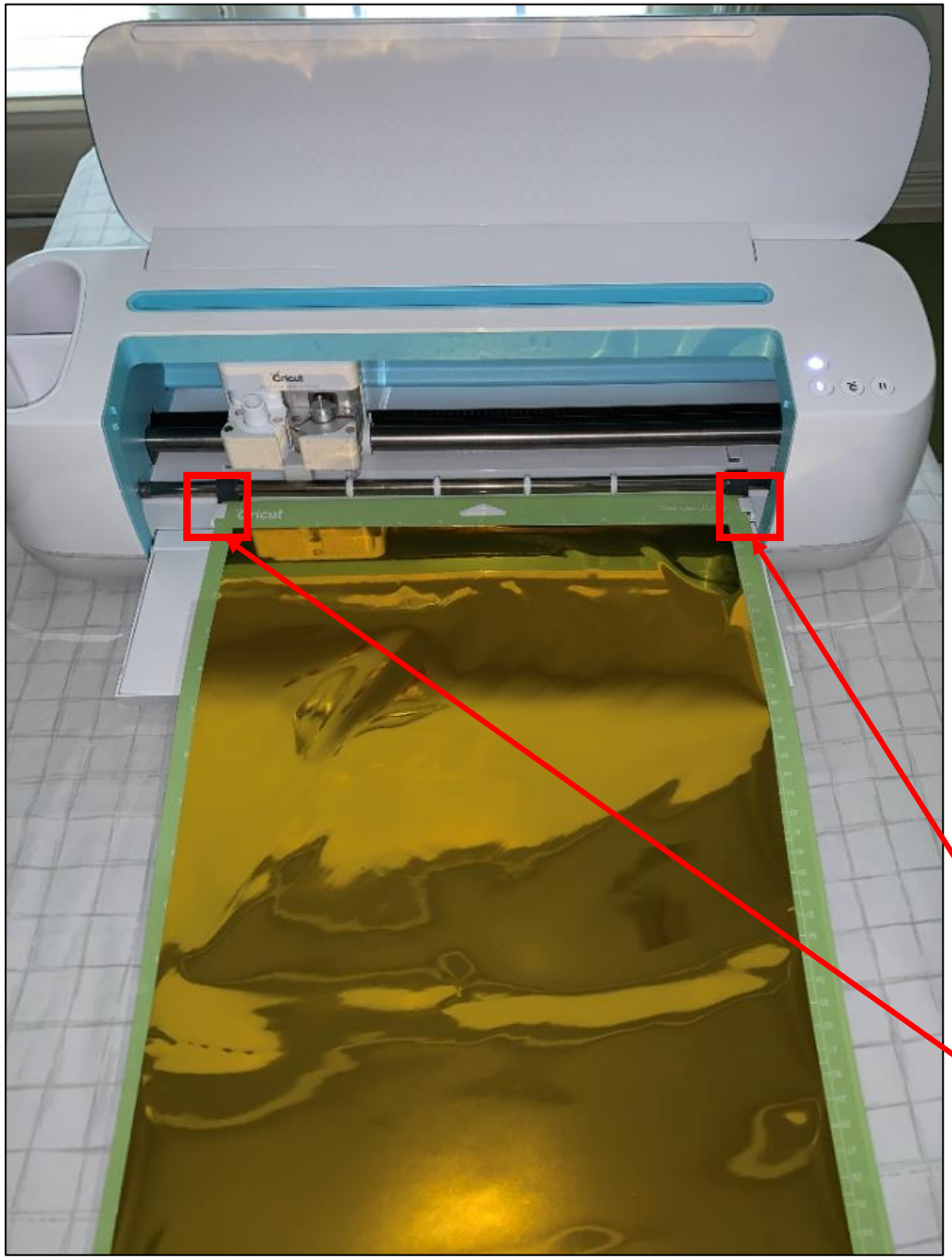
12) Click **Make It**



13) If needed, adjust placement of image to be within mat size (12'' x 24''). CAUTION Placement of image on this virtual mat will mirror placement of image to be cut on the physical mat when feed into Circuit cutter later, so plan ahead
14) Click **Ok** to acknowledge using a larger mat
15) Double check **Material Size** box says **12" x 24"**, if not find and select using drop down arrow. This is the size of mat to be used
16) Click **Continue**



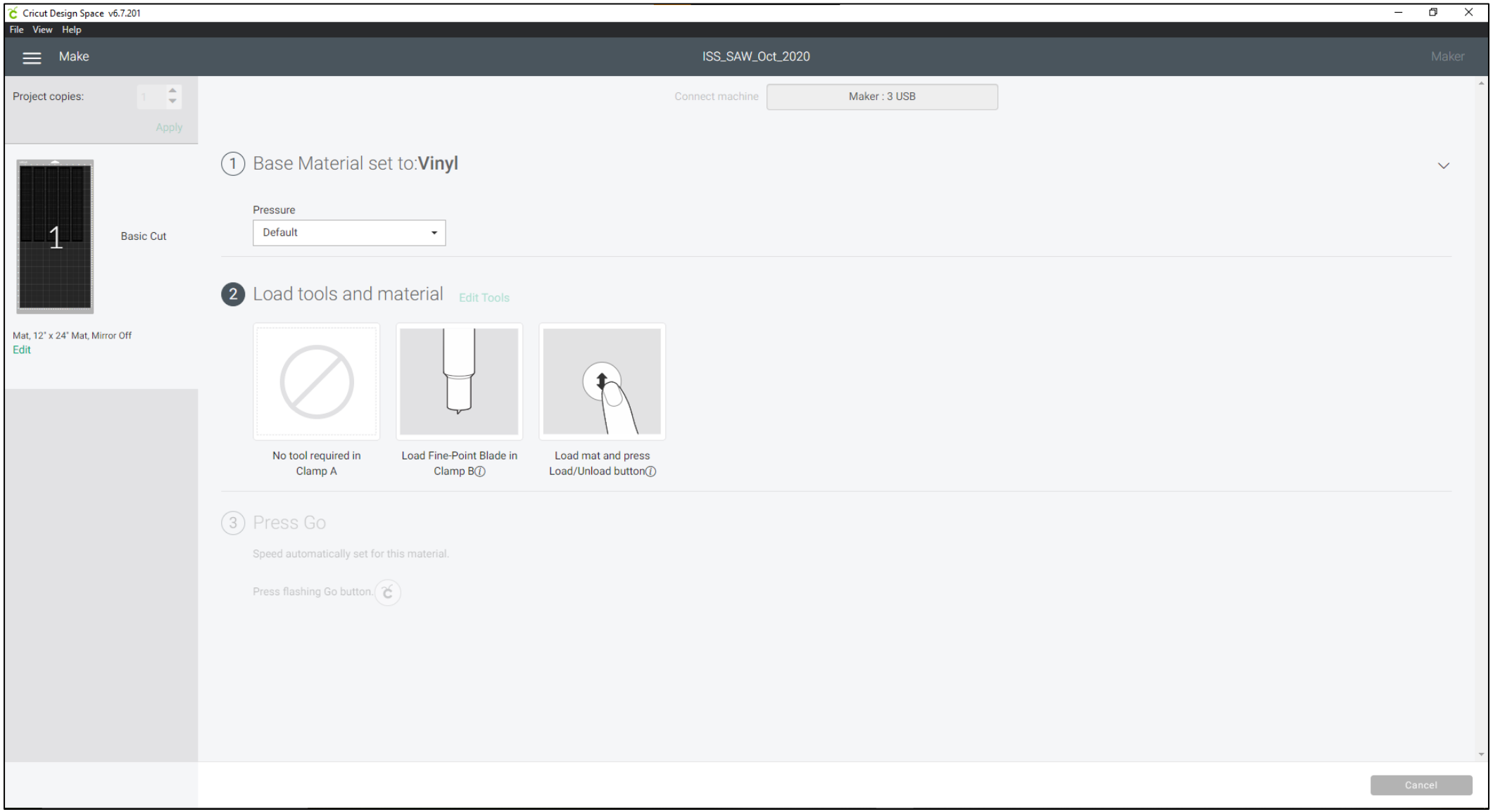
17) Click to select **Vinyl**



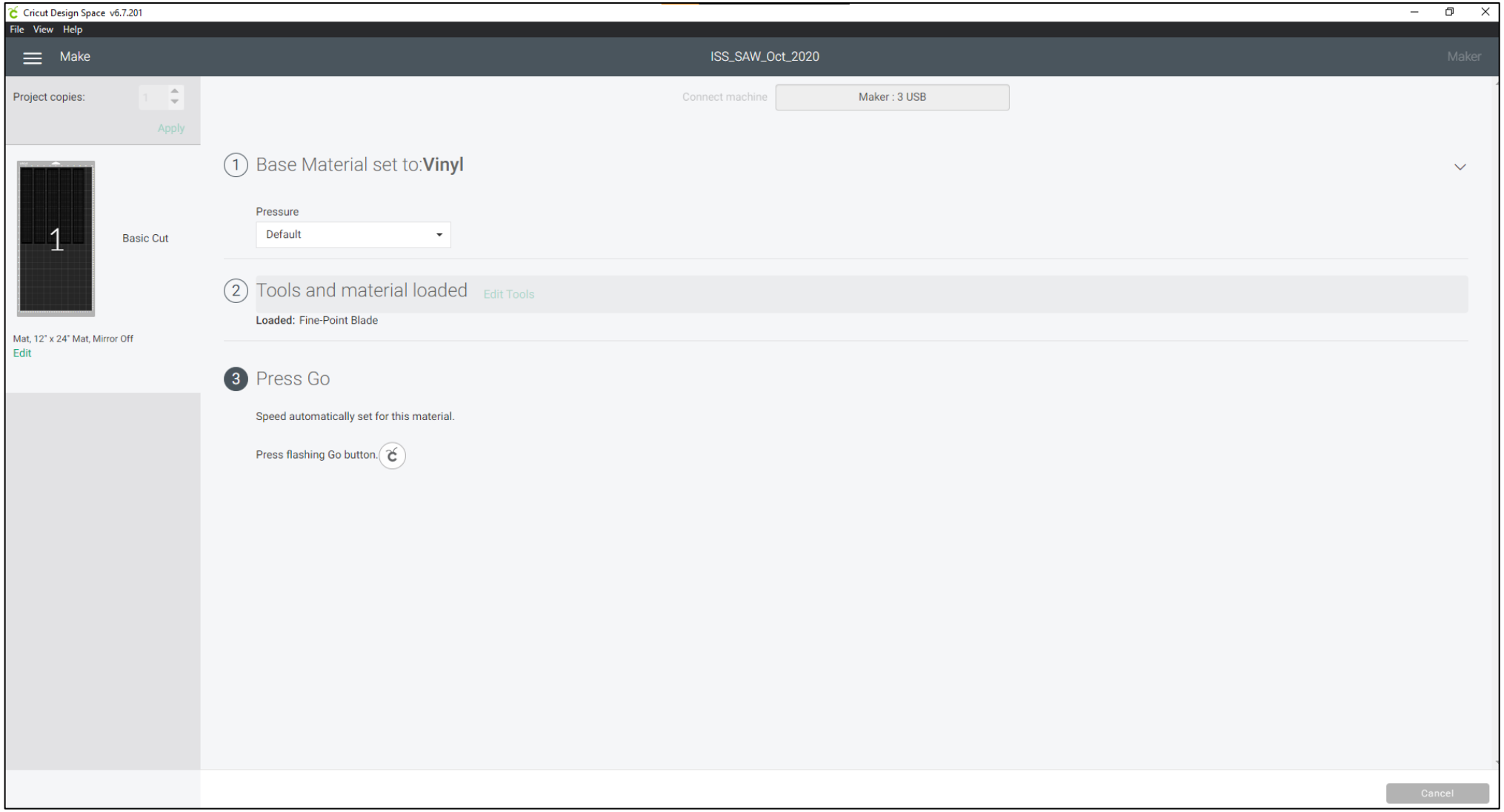
18) CAUTION Cricut unit placement : Allow at least 24” of space between back of unit to any object, such as a wall. This is needed to accommodate the physical mat travel space as it cuts the image

19) Prep & load the Vinyl & mat:

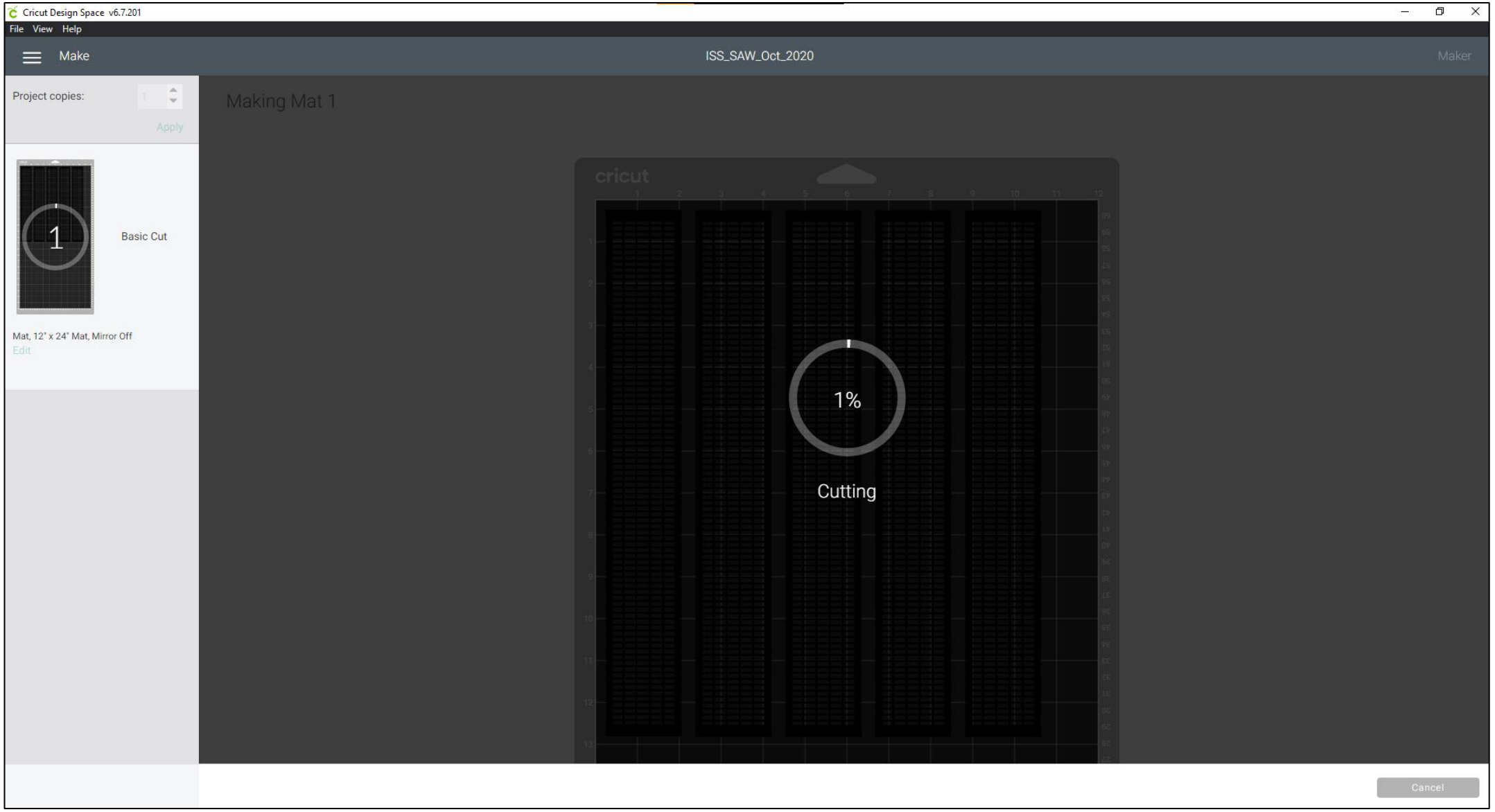
- Remove the clear protective film from 12”x24” mat & save for later use). Place the mat on a flat surface, sticky side up
- Unroll the Vinyl sheet, with shiny side up (as shown image to left), align & place the Vinyl sheet onto sticky side of mat. Placing Vinyl sheet on mat can be tricky, easier with a second set of hands, go find a volunteer! Be sure the Vinyl sheet covers the surface area on mat shown as preview in step 13
- If needed, to adjust Vinyl placement on mat, Flip mat onto a flat surface, Vinyl side down. Carpeted floor works just fine. Secure the Vinyl with one hand flat against surface, peel mat slowly from Vinyl with the other hand (instead of Vinyl from mat, this will result in less curl up Vinyl)
- When ready, peel off clear protective film from Vinyl sheet & trash
- Load mat onto Cricut mat track



20) Check to make sure **Fine-Point Blade** is in **Clamp B.** (Pre-install in unit out of box)
21) Press **Load** button on the Cricut unit. Button should be flashing



22) Press **Go Cricut** button on the Cricut unit. Button should be flashing



23) Sit back and enjoy the cutting show. Take some time to stretch your fingers in readiness for weeding later ;-)

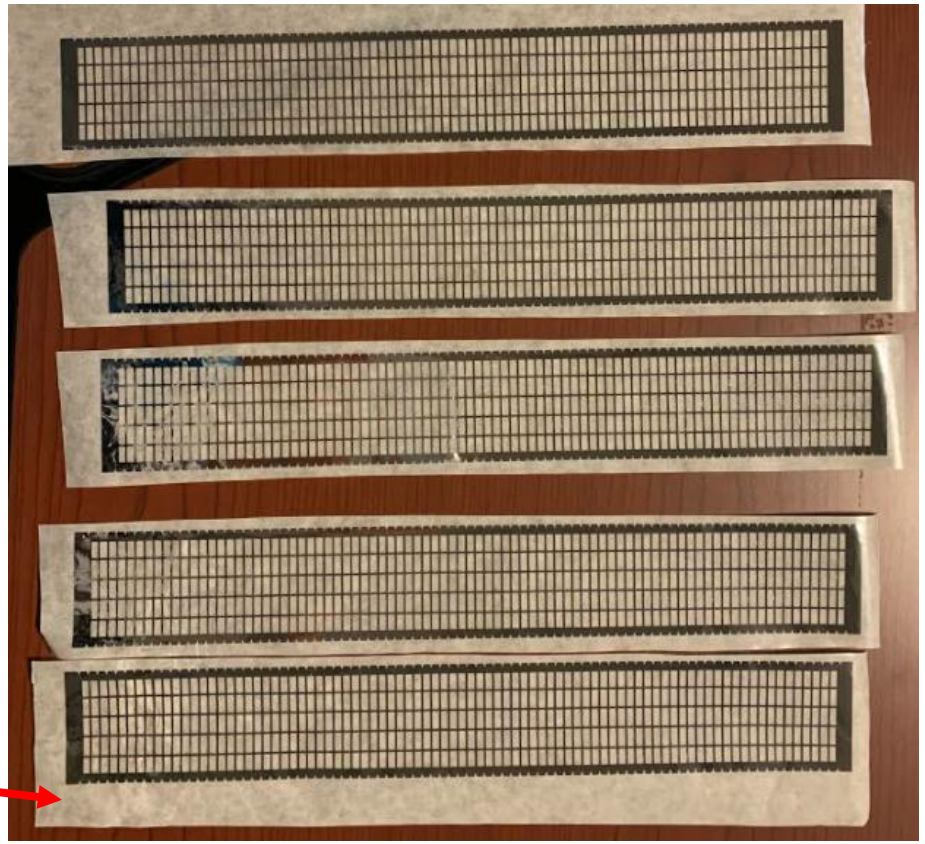
24) Final Vinyl product looks something like this after cut is complete
25) Release the Vinyl from mat:
    - Remove mat from Cricut unit
    - Flip mat onto a flat surface, Vinyl side down. Carpet floor works just fine. Secure Vinyl with one hand flat against surface, peel mat slowly from Vinyl with the other hand (instead of Vinyl from mat, this will result in less curl up Vinyl)
26) Using scissors or a paper cutter to cut SAW section from Vinyl roll, set aside for weeding step
27) For time savings, cut next sheet by repeating steps 17 - 26. If complete for the day, place protective sheet back onto sticky side of mat. This will extend life of the mat
28) Weeding the Vinyl sheet (do while next sheet is being cut or save for later. Your favorite beverage is recommend for this task ;-)
    - Place the cut SAW Vinyl on a flat solid surface, such as a clip board, counter top or desk. I used a large clip board of sort, friendlier on the neck and the back
    - Use an embossing tool or weeding tool to pick and remove each small tiny rectangles. The tiny rectangles are to be trashed, but the delicate outlines are kept, so be careful not to damage them
    - When using an embossing tool, firmly press the balled point from the corner of a tiny rectangle & push up to release the adhesive back from the backing sheet. Use tweezers or fingers to remove tiny rectangles, and trash. Yes! There are a lot of them, all rectangles will need to be removed

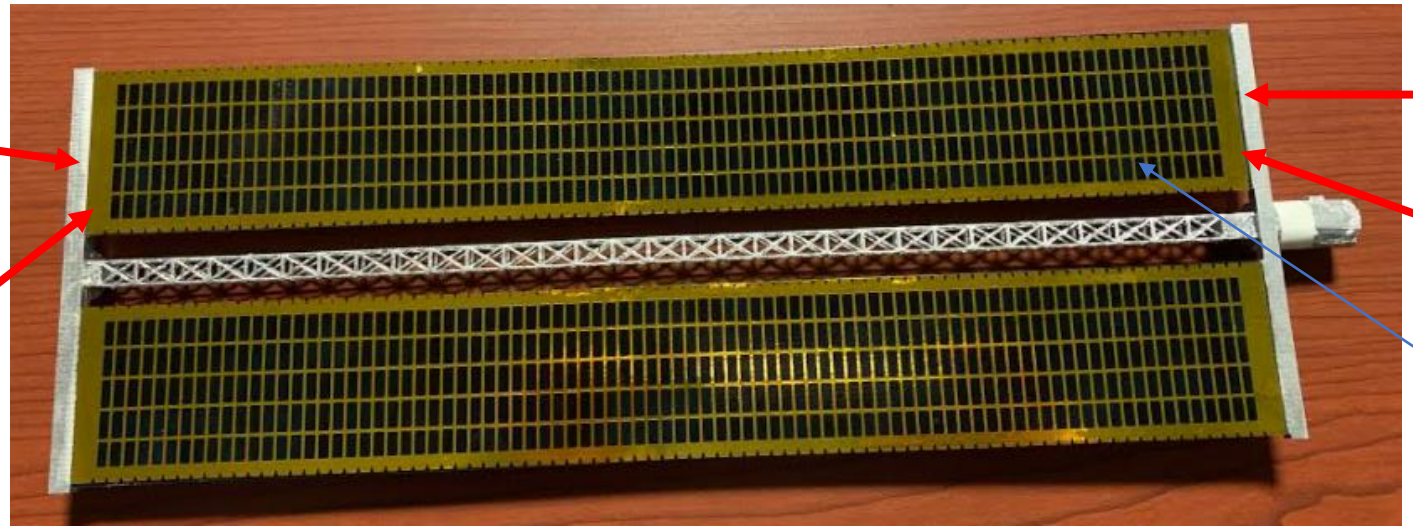
29) Cut transfer tape from roll, it needs to be slightly larger than the Vinyl cut. The extra transfer tape will allow handling of the Vinyl onto 3D print later and easier removal of the transfer tape from Vinyl afterwards
30) Place transfer tape onto Vinyl, sticky side of transfer tape onto shiny side of Vinyl. Press down for good contact
31) Flip the whole thing over, transfer tape down, Vinyl backing sheet up. Pin transfer tape against flat surface with one hand, peel back Vinyl sheet to remove from transfer tape. Vinyl backing sheet will be completely removed, outer edges of the shiny Vinyl will be removed too. Once done, you will noticed, the sticky sides of the transfer tape and Vinyl are on the same side, one big sticker
32) For easier application of Vinyl to 3D print, cut transfer tape between the images to free each SAW outline from the group

After tiny rectangles are removed + onto transfer paper

Cut

Transfer tape





33) Transfer the Vinyl onto 3D print (blue side). Place a SAW Vinyl sticker sticky side up, horizontally on a flat surface

34) Holding 3D printed SAW with both hands horizontally, blue side down, align the blue edges of 3D print to be the edges of shiny Vinyl. Vinyl edges should just touching the silver areas, covering all the blue painted area of the 3D print

35) Once aligned, lower the 3D print onto Vinyl sticker. Flip 3D print over to check alignment. If adjustment is needed, peel the sticker off 3D print, and try again until alignment is properly done. (Backup vinyl panel is available if needed)

36) When ready, to secure adhesive to 3D print simply place the 3D print with Vinyl/transfer tape side down back onto a flat surface, use fingers, hand or under side of a fist to press down on 3D print to encourage better adhesion of Vinyl to 3D print

37) To remove transfer tape from Vinyl, flip the 3D print over with truss down (aka, transfer tape up)

38) Peel transfer tape off Vinyl, start from a corner, pull slowly at a 45 degree angle to peel transfer tape away from the Vinyl. Its useful to keep one hand on Vinyl against 3D print while the other hand pull transfer tape away (this is not a ban-aide, don't rip it off fast, slow is the key)

39) Once complete, Vinyl will stay on the 3D print, transfer tape can be trashed. ISS panel would look like the above image