

Canopy Gluing Procedure for the RV-8/8A

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RV-8A (Finish Kit at time of writing)

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Introduction

- I decided to glue on the canopy because I have heard of numerous RV-8s (and other RVs) that have cracked canopies
- I believe that the RV-8 canopy represents the worst situation for differential thermal expansion because of the long length (6 feet)
- Sikaflex is designed to glue Plexiglas and Lexan windows while maintaining flexibility. The 1/8" gap combined with the flexibility of the Sikaflex allows for differential thermal expansion of the canopy and the frame
- I figured that if the Sikaflex proved to loose strength or adhesion over time, it could be replaced in sections without removing the canopy. If the canopy were pop-riveted on, replacing the canopy and skirts would be the only way to fix a crack.

Introduction (Continued)

- This should go without saying, but the following represents only how I glued the canopy. Each builder must decide the best procedure for his/her aircraft.
- The following procedure outlines a way to glue the canopy with a pleasing fillet and still properly follow the instructions.
- Other builders have applied the glue in a few blobs first, then coming back the next day and filling/smoothing. This works OK, but the instructions for Sikaflex specifically say that the glue should be applied within 2 hours of applying the primer. This is difficult to do and I would think that 3 hours would be fine, but after 24 hours, I believe the adhesion will not be as good.
- I'm not saying that these builders will have a problem, I just wanted to follow the instructions and have the best airplane possible. I may be trying too hard to get it perfect.
- The following procedure is not exactly what I did (but what I wish I did), see the last page for those details

Materials Needed

- Sikaflex 295 UV Black (2 tubes)
- Sika Primer 209 (1 bottle)
- Sika Cleaner 226 (1 bottle)
- Spring Clamps
- Adhesive Backed Rubber Sheet (or similar) 3/16" thick, I got a 12"X12" sheet from McMaster
- Gloves, rags, solvent, squeegees, etc.

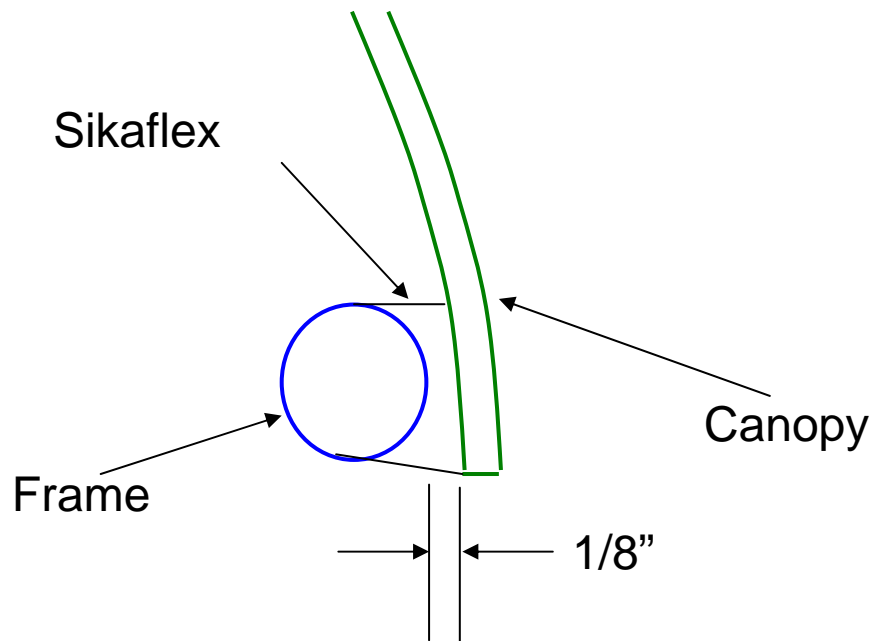
Fitting Canopy

- Trim canopy according to plans, except use spacers (1/8") during this process
- For this part, I used two thicknesses of garden hose and spring clamps*
- One piece of advise is to make the "big cut" a little earlier than the plans state. Leave yourself a little bit of extra material in the front and back so that after the big cut, you will have enough material to get it squared up and to "fine tune" it.*

*These ideas came from Mickey Coggins's Website: <http://www.rv8.ch>

Preparation

- Determine the width of the glue joint desired on the canopy – this is mostly preference, I tried to keep the width to a minimum. Some like big fillets.

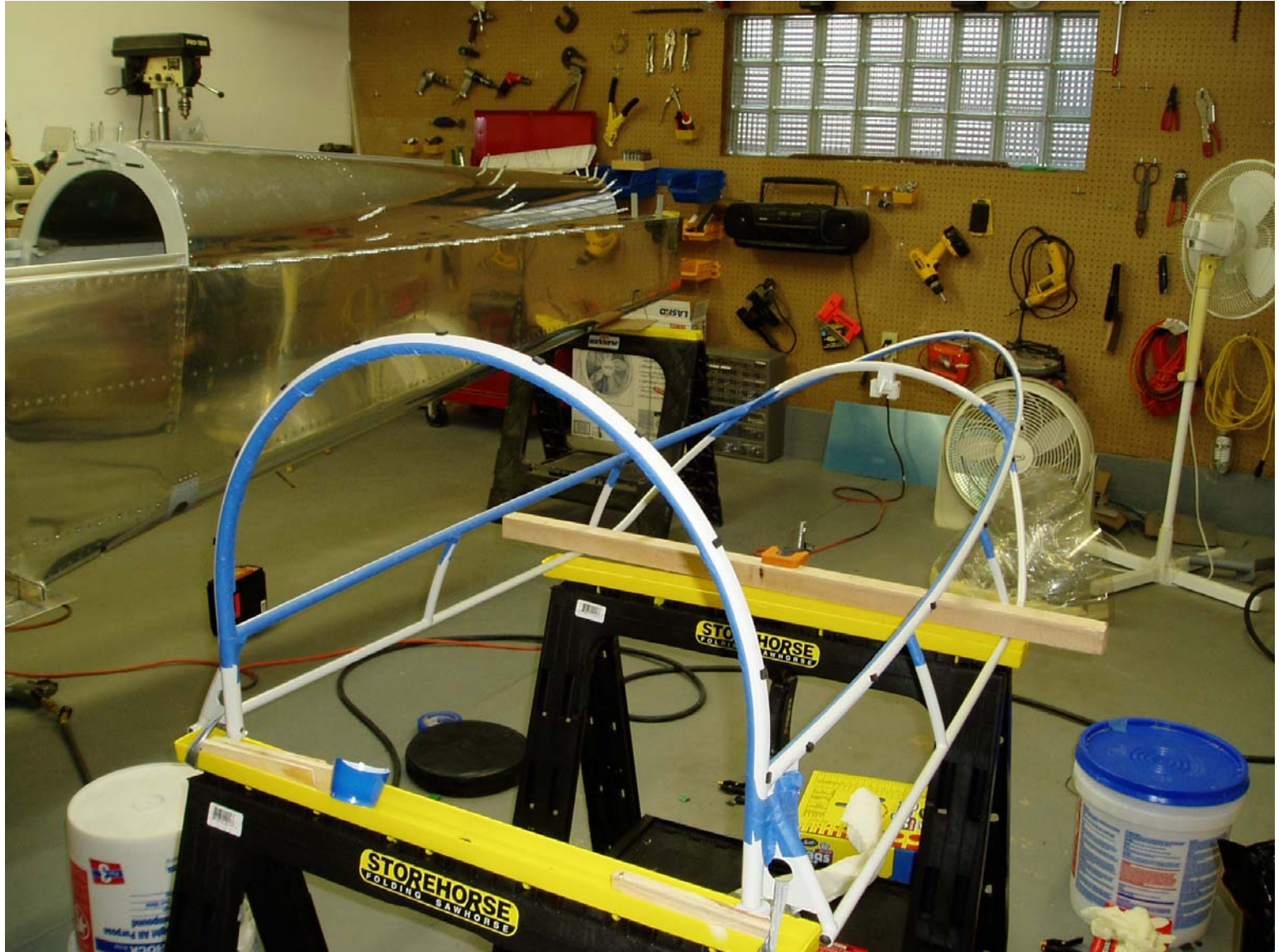


Preparation



- Tape off the glue area on the canopy
- Scuff up with Scotchbrite, don't be shy
- Note that in picture, the blue masking tape is on the inside and the black electrical tape is on the outside of the canopy

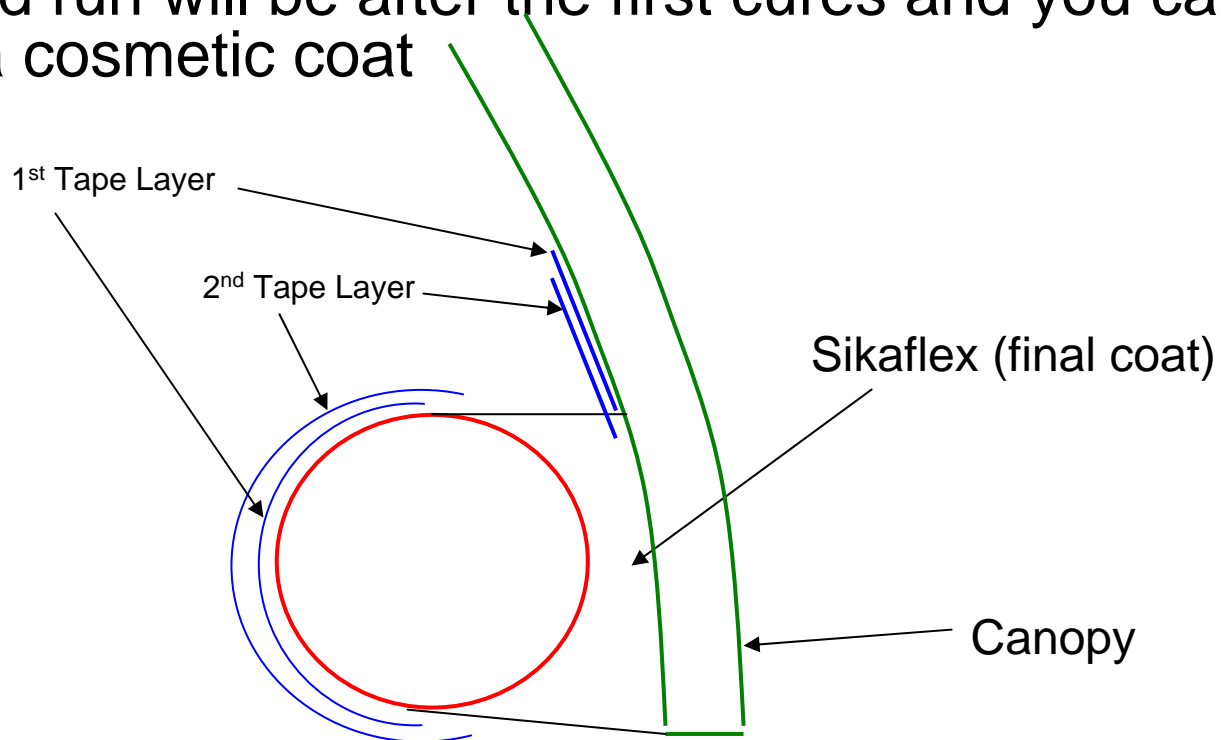
Preparation



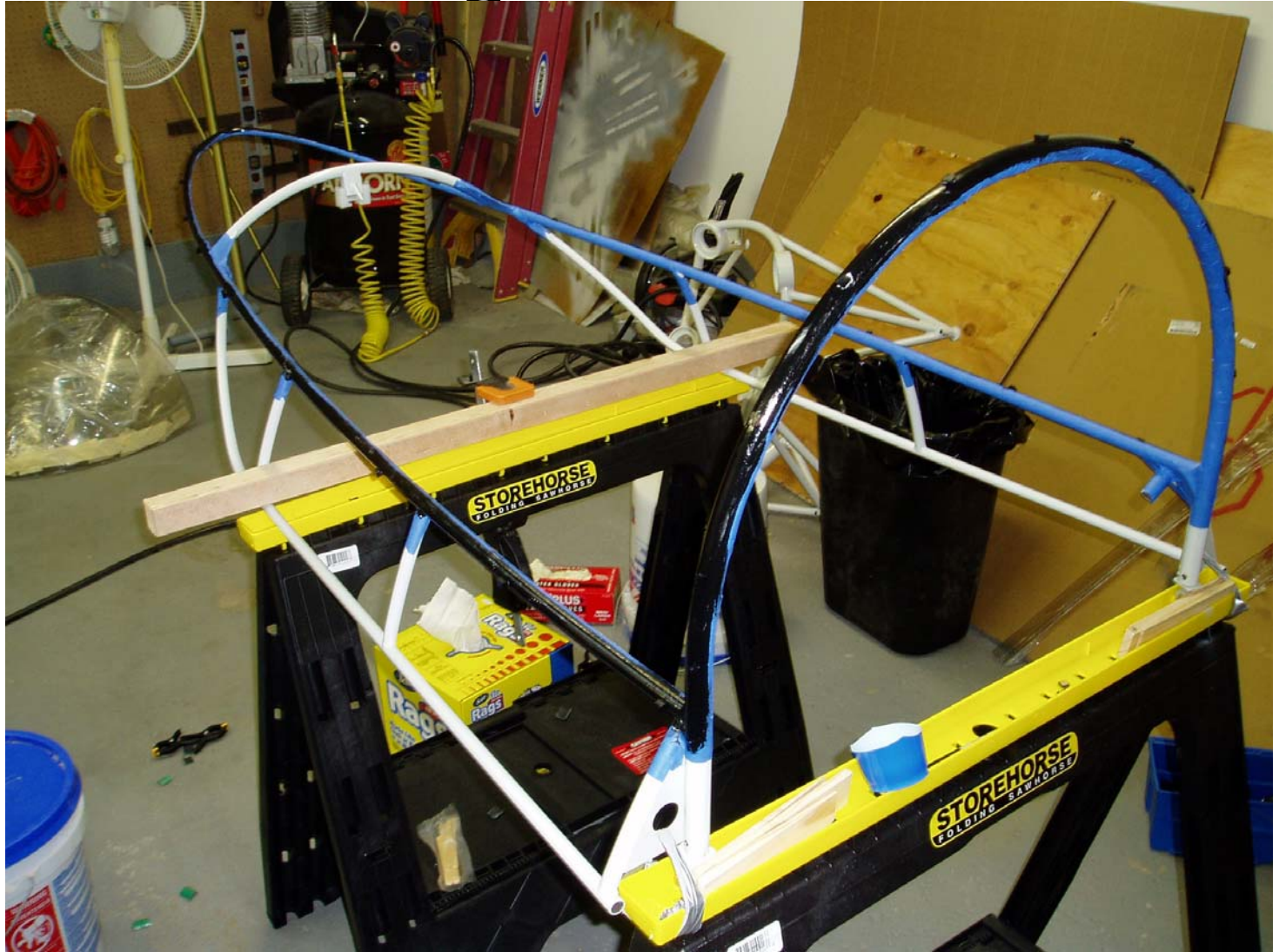
- Also tape off canopy frame and scuff powder coat
- Tape line should be where the Sikaflex fillet will end
- Stick on 3/16" rubber spacers (shore 30 or 40) cut to about 3/8" square (clamps will squeeze the rubber down to 1/8")

Additional Preparation

- I didn't do this but wish that I had:
- Lay a second layer of tape down that covers slightly more (maybe 1/16") area than the first layer
- This allows you to get the Sikaflex to cover the majority of the primer in the first run in the 2 hour window that Sika recommends
- The second run will be after the first cures and you can lay down a cosmetic coat

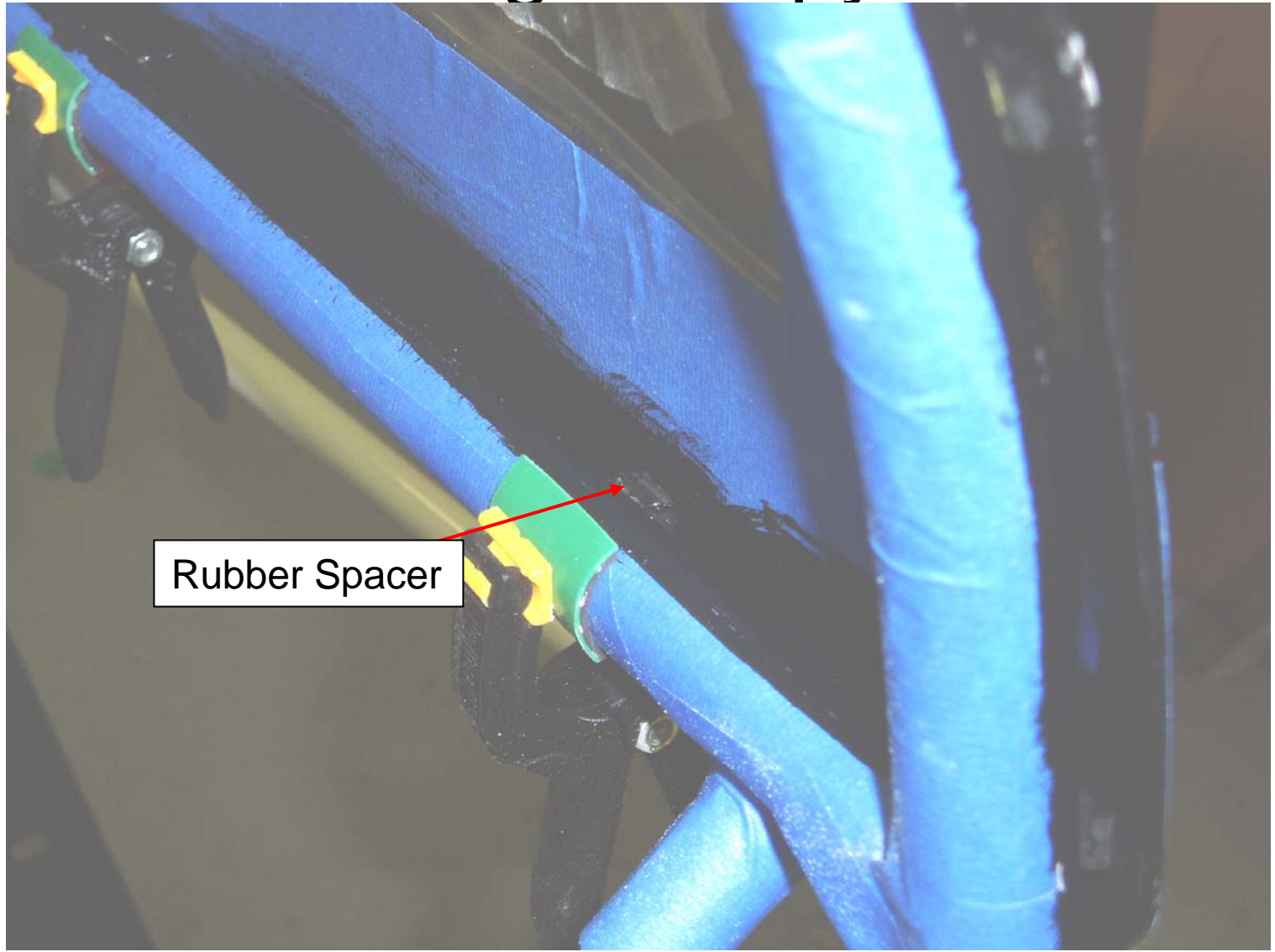


Cleaning & Primer



- Clean and brush on primer on both the canopy & frame
- You can leave the spacers on the frame as you clean and prime

Placing Canopy



Rubber Spacer

- Place canopy on frame with clamps - I used slices of garden hose so that the clamps wouldn't slip off the frame
- It is hard to tell from the picture, but there is no Sikaflex yet, only primer

Applying Sikaflex – First Round

- Inject the Sikaflex into the joint, you may have to inject it from top and bottom
- Smooth out the Sikaflex with a squeegee – do not be too concerned about cosmetics at this point.
- Work in sections at a time and make sure that your smoothed fillet is on the tape line or within your top layer of tape
- Peel the tape as you go, before the Sikaflex begins to harden. If too much of the fillet is on the tape, it will make a mess when you peel the tape
- I believe that it is important to get the Sikaflex in contact with the primer within the 2 hours (or at least close) for best adhesion.

Applying Sikaflex – Second Round

- After 24 hours, you are ready for the cosmetic coat
- There will be a sliver of area between where the fillet ends and your remaining tape layer begins that will need to be cleaned & primed
- Working in sections at a time, prime, apply Sikaflex, and smooth joint to a pleasing finish. Peel the tape off as you go. This may take time, but if you work in sections, this doesn't cause problems with the Sikaflex curing before you can spread it out

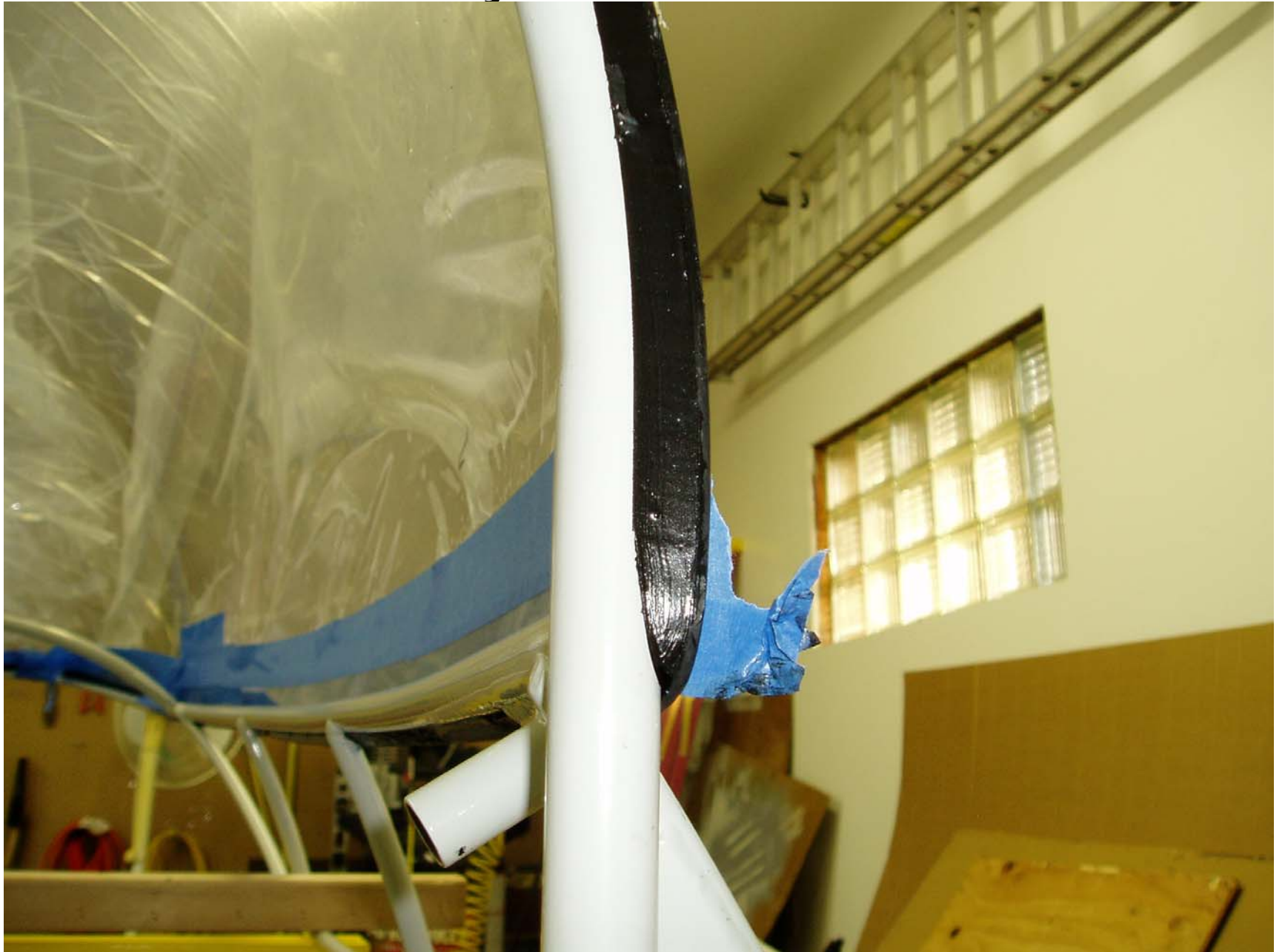
My Results



My Results



My Results



My Results



What I actually did

- I only applied the one tape layer
- I started by injecting the Sikaflex and smoothing to a pleasing finish in one section. I liked the appearance, but realized that it would take me way too long to finish in 2 hours
- I decided to just get it into the joint first and come back and smooth it out.
- What happened is that the Sikaflex started to cure and did not want to spread out. I made even more of a mess when peeling the tape off after it had partially cured. I did my best to salvage the situation.
- The next day, I retaped the canopy and frame and realized that the fillet was lumpy and very ugly
- I cut down the high spots with an exacto-knife (very tedious) and applied a cosmetic coat. I think that it would have turned out better if I had followed the procedure that I laid out, plus it would have been easier
- Overall it turned out pretty good and would go the gluing route again