

Lets make an assault pack pattern 4 dummies:

https://docs.google.com/document/d/1YerrxWR_9Cgrf-4FcCjp6cQKPGyX9WTNjNCz0wcbGto/edit?usp=sharing

This is a very simple pack, but not quite as simple as traditional “American” tactical packs. It has a bit of organic shape that might pose a challenge for someone inexperienced in pattern making, while being a very manageable project.

Since I’m lazy and don’t want to design anything for a tutorial, let’s take an existing product and basically build the pattern from the ground up. I do not advocate copying designs, and quite frankly I think everyone should aim to design and build their own gear, but this is a design that will teach you some lessons compared to shapeless packs. The same process can be applied to a sketch, a design drawing or just freestyle’d based on something you come up with.

No, you cannot have this pattern.

No, I’m not selling the pattern.

No, I’m not sewing it for you.

Yes, you can create your own pattern following these guidelines but I wouldn’t personally feel right about selling it or products sewn from the pattern since I respect the person behind the brand.

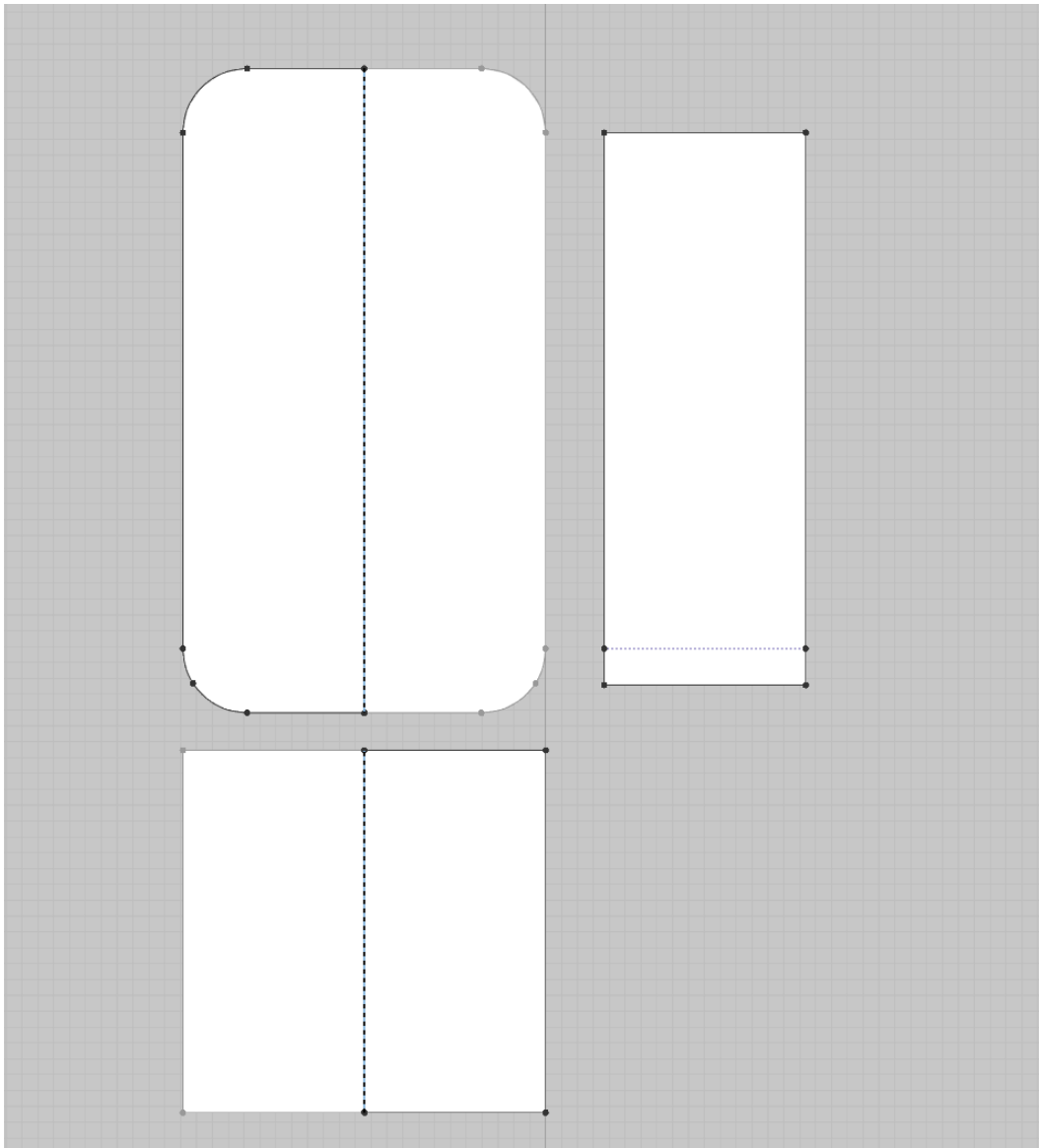


Basically from 3 views we get pretty much all the info we need. We get backpanel outline, side profile and front profile. In this case, we can tell that the backpanel is wider than the front panel, that the

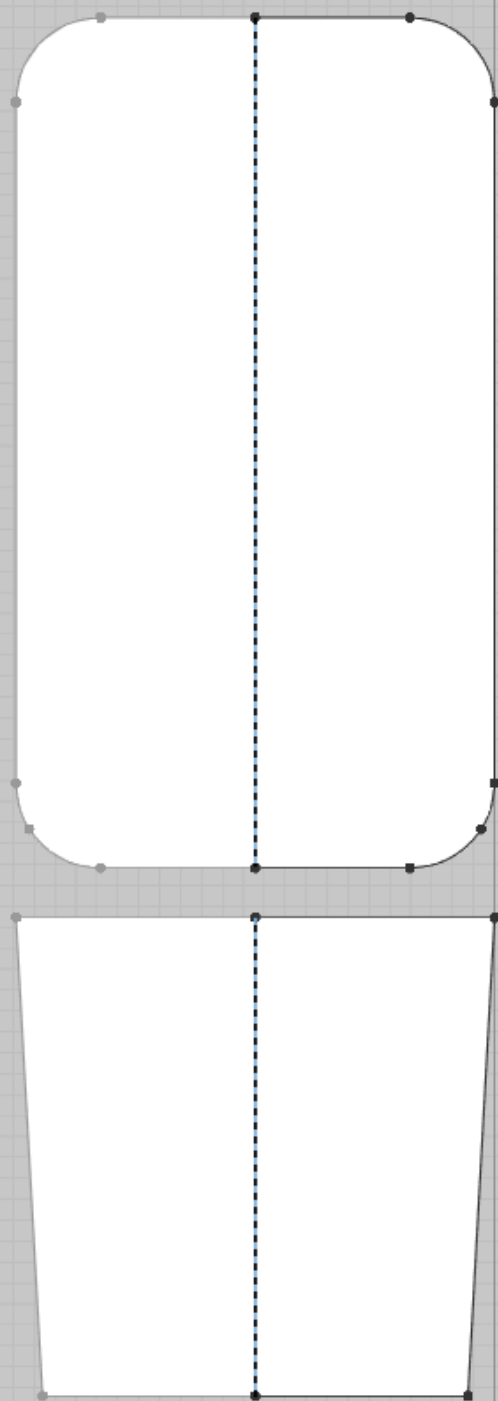
backpanel has a slight curve to it and thus the zipper also get a slightly diagonal angle. From the front we can see that the top of the zipper has a slight curve on the top. The MFG stated the rough overall dimensions, and we can use known sizes (PALS grids and webbing) to guesstimate the rest. Or just use whatever measurements we like. Basically when you either design it yourself or have a designer provide it, you typically get some rough idea of the measurements anyway.

(I use Clo 3D, but you can do the exact same thing on paper- all the same concepts apply. I recommend paper models over software like Illustrator or Fusion 360. When making a paper pattern only make half and mirror it over when you're done, no need to make both sides when they are identical)

So we start with a simple backpanel with a 16x9 shape, I curved the corners to my desired radius. Larger radius is easier to sew. Then from our design sketch I made the assumption that our front was 8" wide, and since the bottom has a slight trapezoid shape it needs to be larger; I settled on 9". For the side I took the distance on the straight side (on the backpanel) and made a box that length and 5" wide. After measuring how far along the bottom would go up on the corner, I knew how much I needed to extend the bottom of the side with for them to mate up.



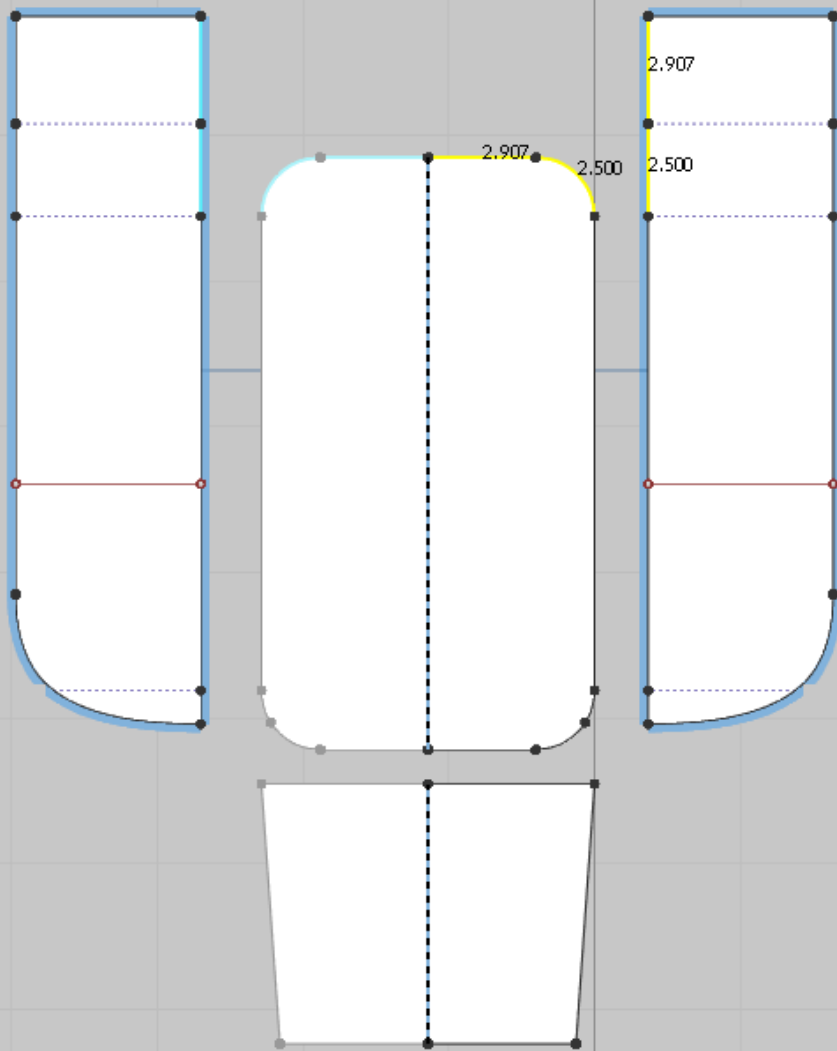
I taper the bottom to 8" and give my side profile the curve I think looks right.



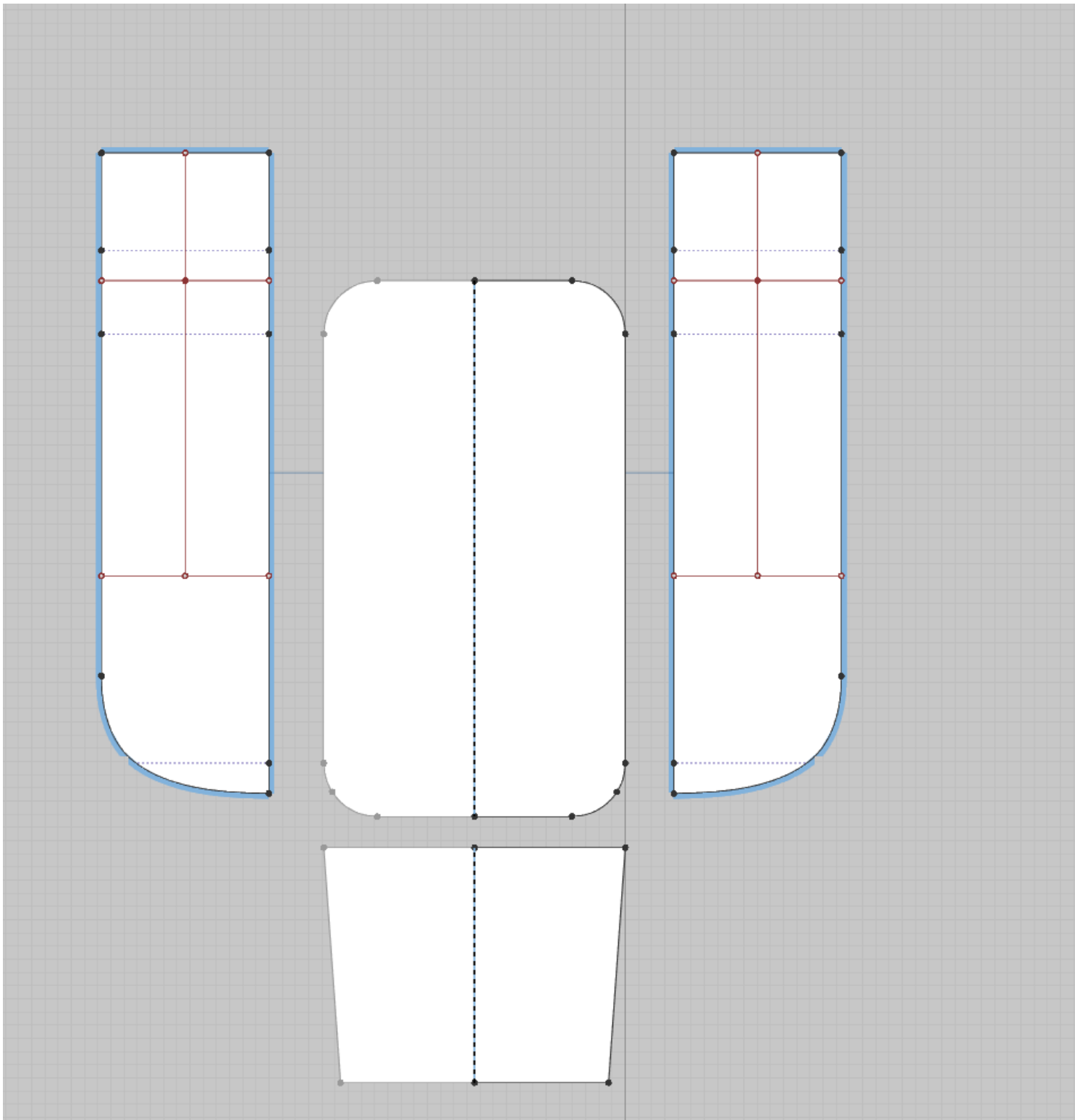
Technical drawing of a mechanical part showing three views: front, top, and side. The front view is a rectangle with a central vertical slot and rounded corners. The top view is a rectangle with a central vertical slot and rounded corners. The side view is a rectangle with a central vertical slot and rounded corners. Dimensions are provided for the front and top views.

Dimensions shown in the drawing:

- Front View:
 - Overall width: 2.500
 - Slot width: 2.907
 - Slot depth: 2.500
- Top View:
 - Overall width: 2.500
 - Slot width: 2.907



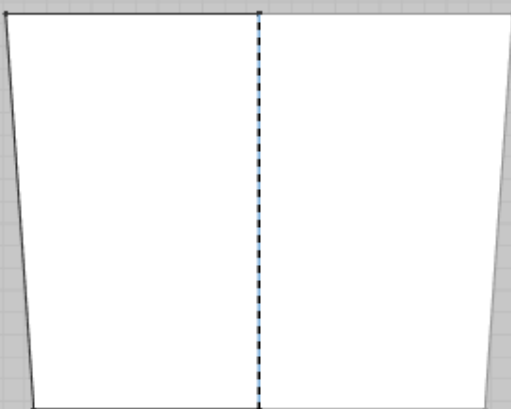
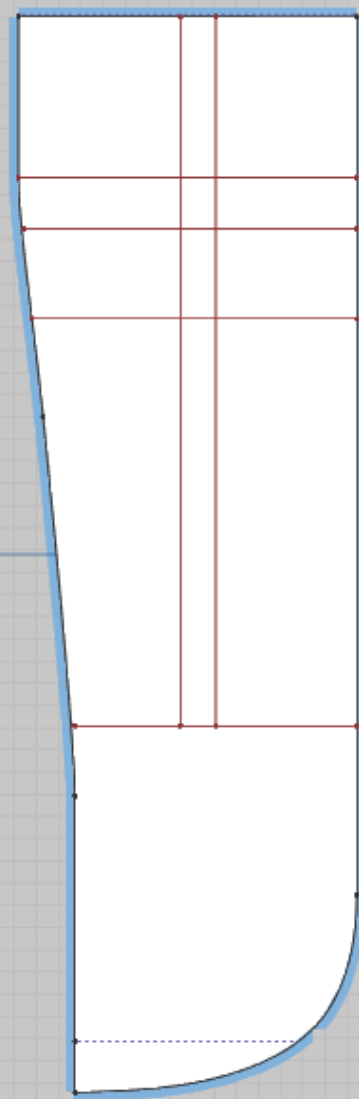
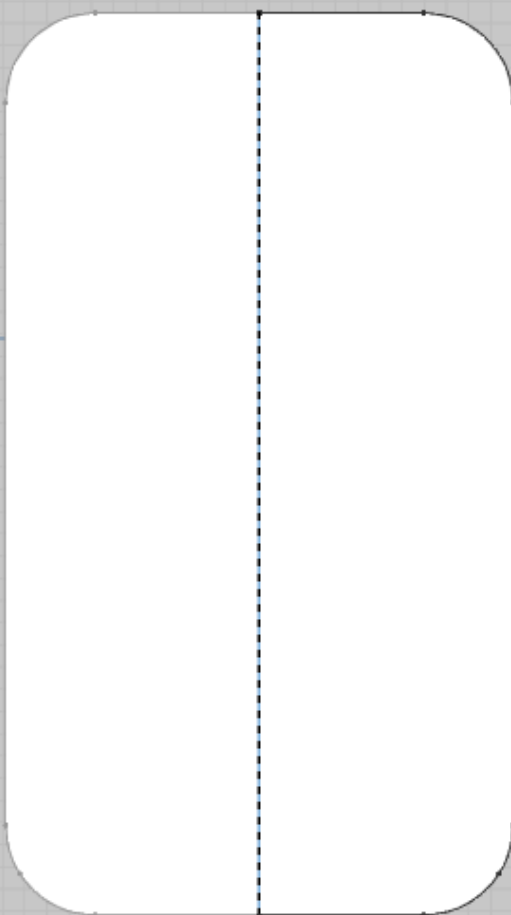
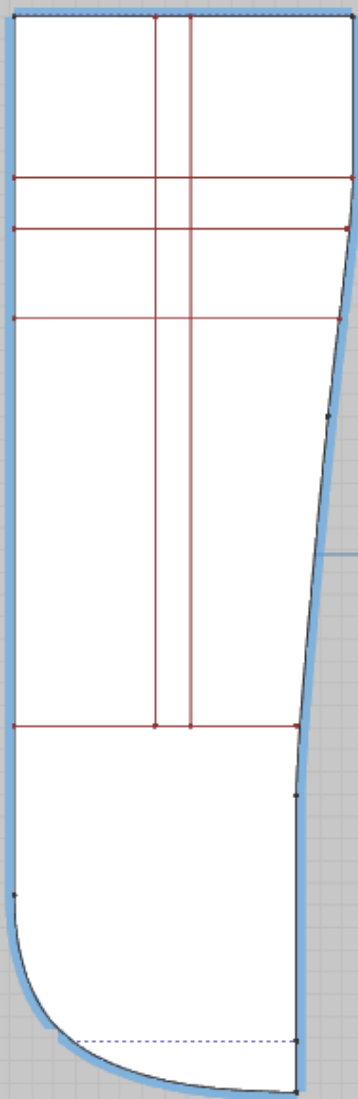
From here I mark out where I want my zipper. I also mark out a line that aligns with the top line of the pack, which is where I think the top of our side wedge will meet the main zipper.



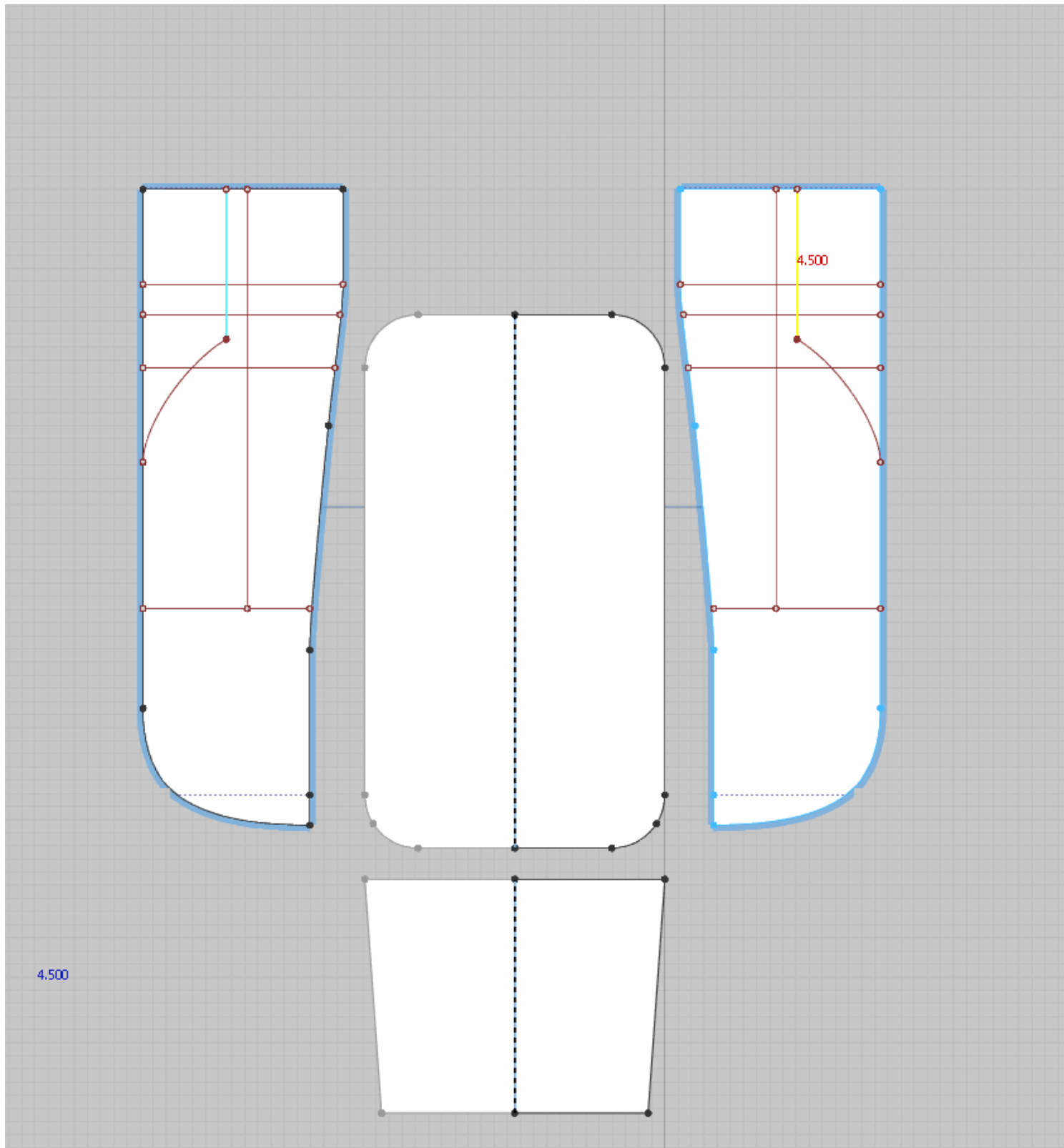
If you're doing it by hand with paper, you could quite frankly start out at this step after freestyling the side profile. Firstly I mark out the actual width of my zipper, then we need to add some shape to this pack, and it's very easy to do so. I extend the top center slightly back and make a

soft curve that meets our 5" width at some point I think looks nice. I then re-measure the distance on the new side panel line, and find out it's slightly longer than our backpanel; I simply reduce the top of the side so that they are identical by chopping off the top.

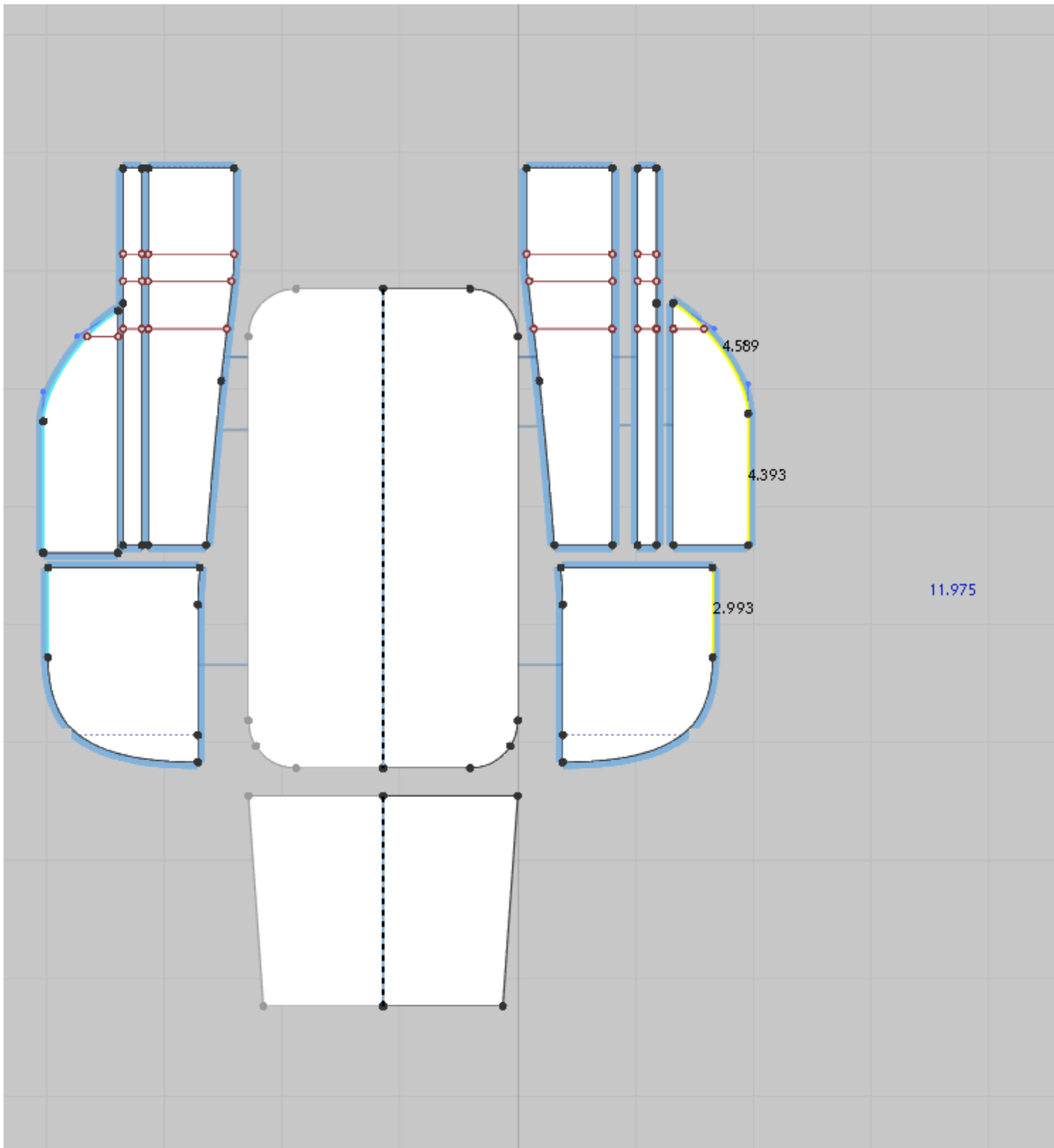
Notice how both the top part and bottom part have straight lines, this will cause our zipper to cant slightly forward when sewn because they aren't equal in depth. Just like our design asks for. Or it creates a shape to the backpanel to make it more (or less) ergonomic. I'm just following the design.



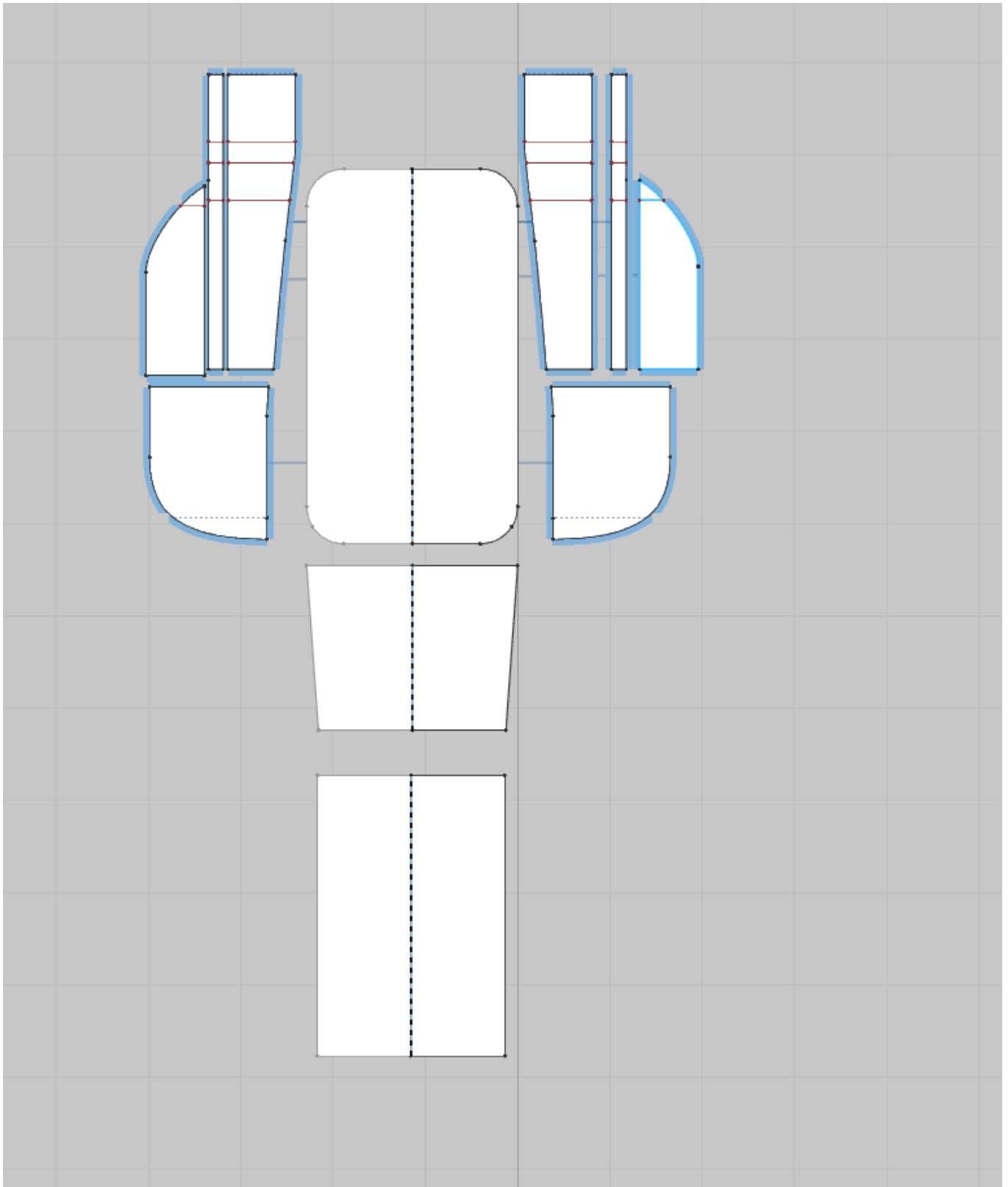
Now that we've shaped the top of our pack, we need to make our side the same as our design drawing by creating the wedge. I make an estimate about how much of my main zip I want to move over to the front panel, and simply cut it up.



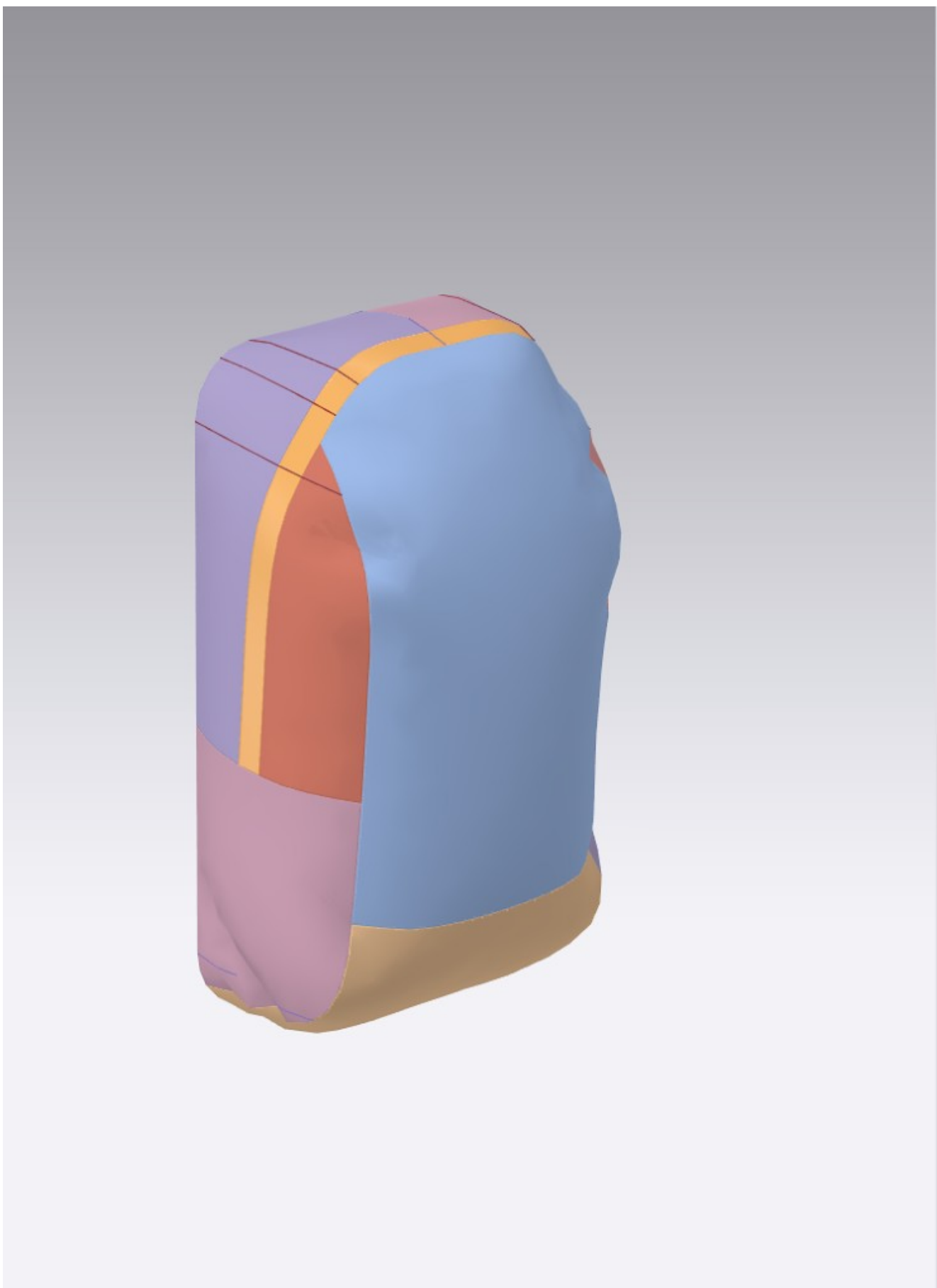
After cutting it up, (since we think our side panel wedge is right (it's no, more on that later)), we can go ahead and measure out the distance we need for our front panel.



With these measurements we can create our front panel, I think it has a pretty boxy shape so we'll go with that.



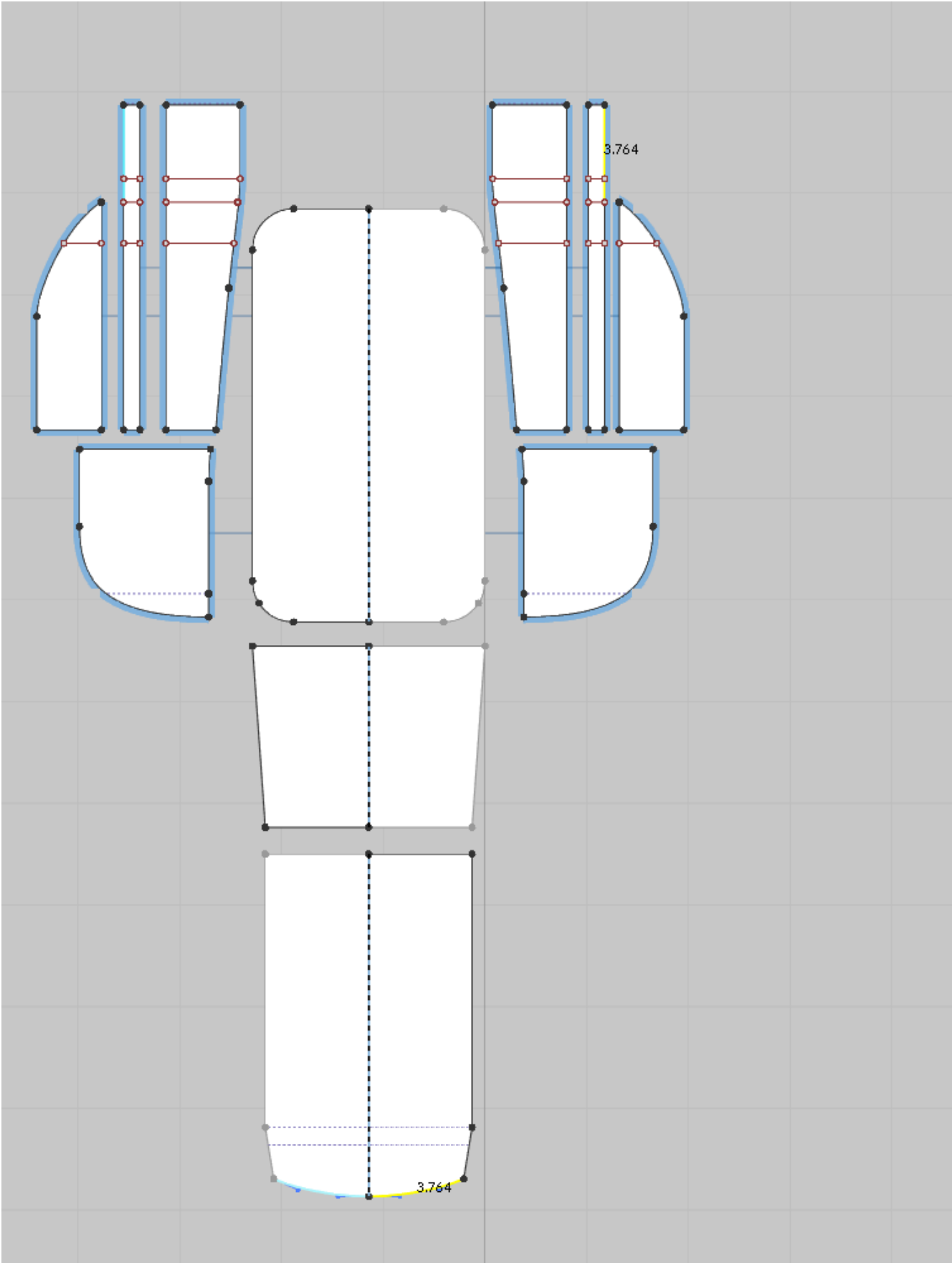
Now, I know the distance where the zipper connects to the front panel has a total of 9" (4.5" on each half), and that my front is 8" with a flat top. Let's try to give the top of the front panel a curve that has an overall distance of 9" so that they line up.



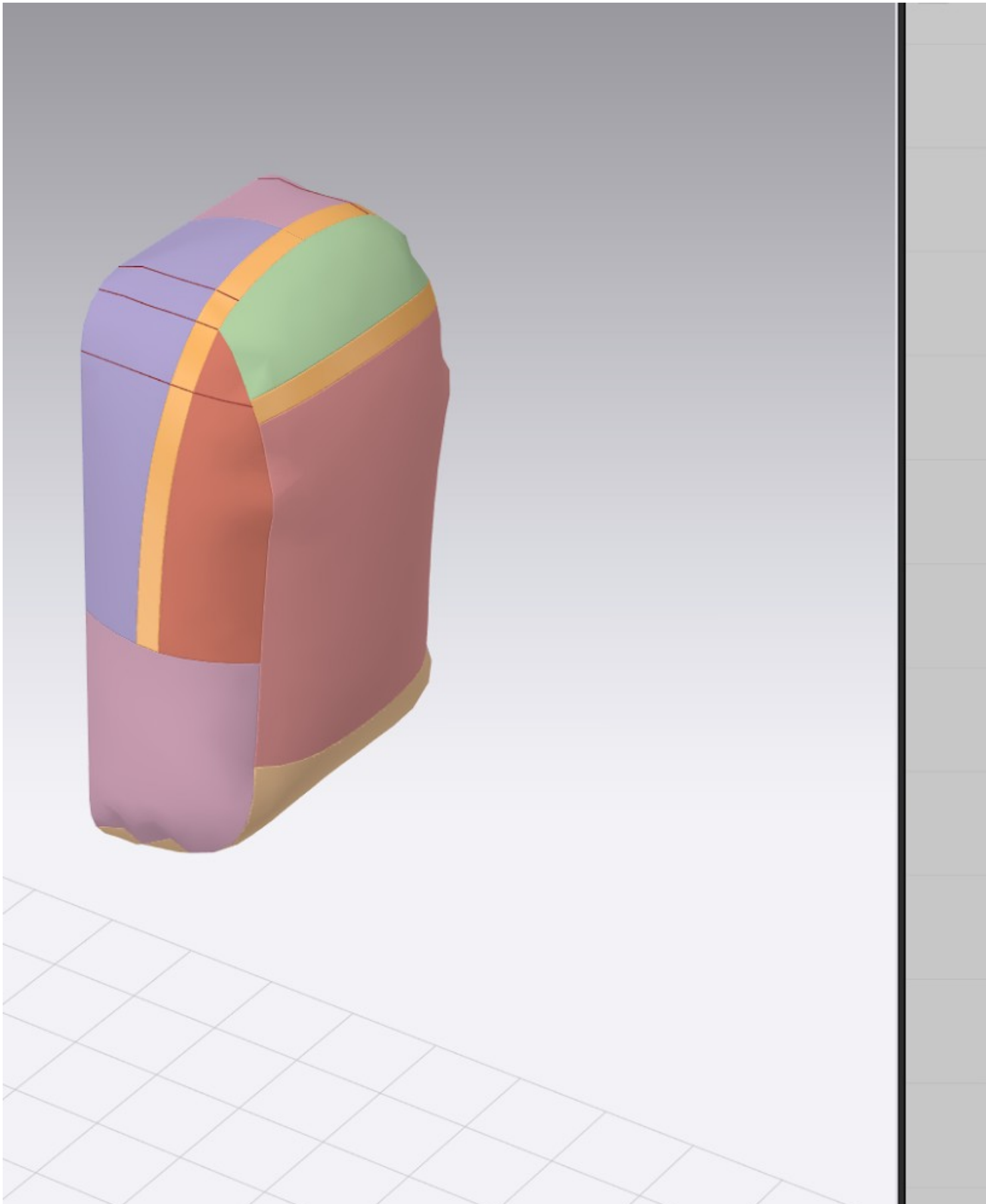
Whether your model is digital or on paper, we can all see that this isn't looking like the design we want to create. It doesn't have the taper and it looks a bit too uh, not right. You could be happy where we are right now and sew it together, but if you're building a pattern based on a design drawing, then I think it's weird to be happy with the result when it's so far away from what we're after.

So what's wrong? If we look at the red lines in the 3d model, we can see that our lines aren't exactly lining up with our initial lines spotted in the design. It seems like the wedge (red) is too low and that the top of our front panel needs a bit more shape to get a little tapered shape.

I extended the side wedge so that it goes higher, and I completely changed the top shape of the front panel. But; The top line of the top panel is still the same distance as the zipper and the sides of the front panel is still the same distance as the 2 side panels combined.

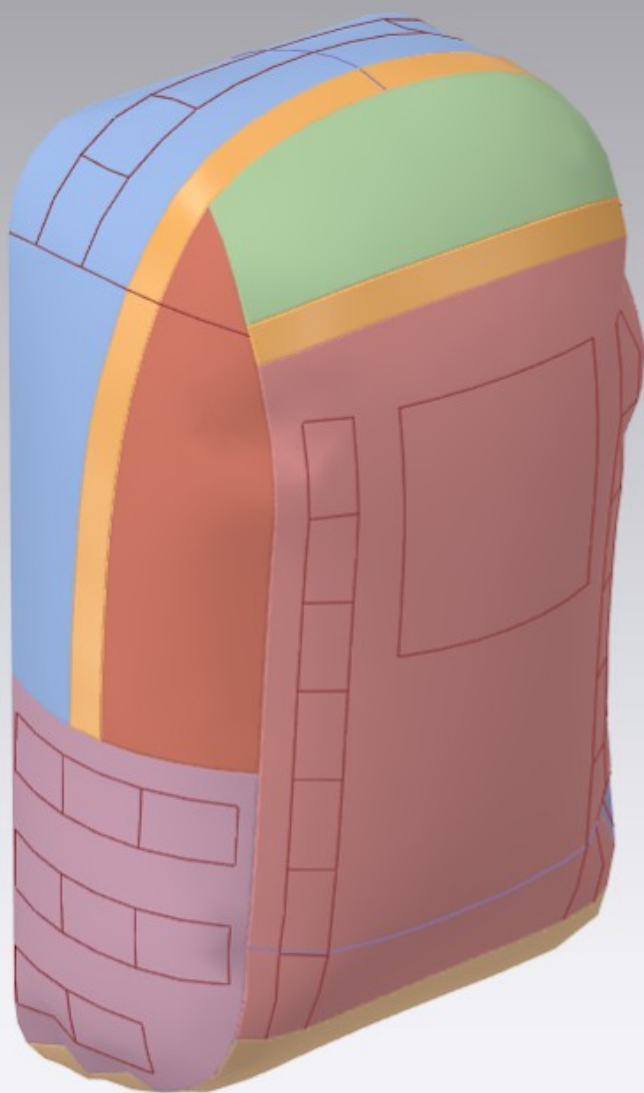


If we then split our front panel so that we get a zipper for a pocket, it starts to look quite correct. Based on our design we knew that the pocket had a curve, so we add a curve to the lower part of the front panel, which increased the overall distance from 8" to 8 and something, and match the line where the upper panel connects to the pocket zip. You probably need to adjust the upper portion slightly so it's still correct and we're almost there. Just keep in mind that all lines have to match.



Now we just slap on some PALS and velcro here and there, and it's done. A keen eye will notice that I reshaped the bottom piece to be a lot lower, since it was previously sitting way too high compared to our design. Add seam allowance, (print), and sew it together to make sure everything lines up. You've now made a pack based on a design.

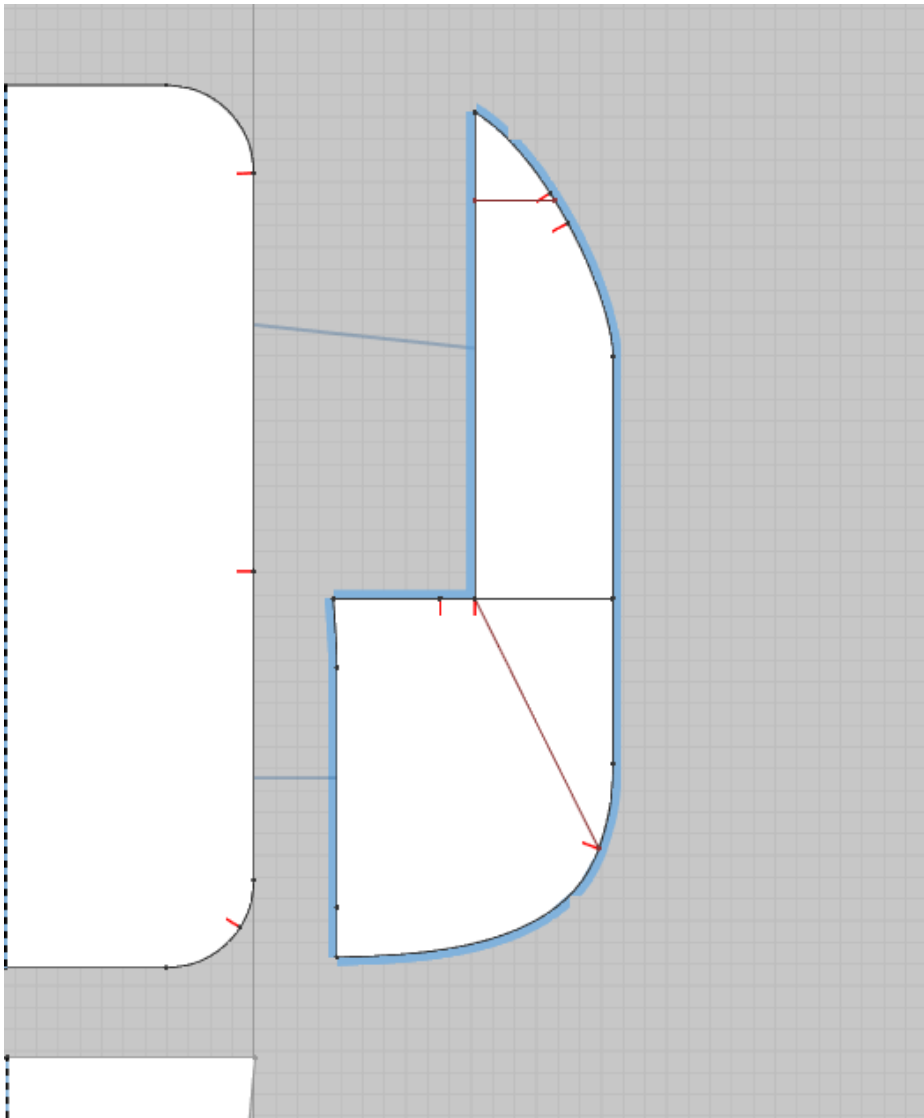
(I'm aware that on the design the lower side and upper side wedge is 1 piece, but that creates a 90 degree corner which I would avoid if possible, so I keep them split into 2. You can merge them if you like.)



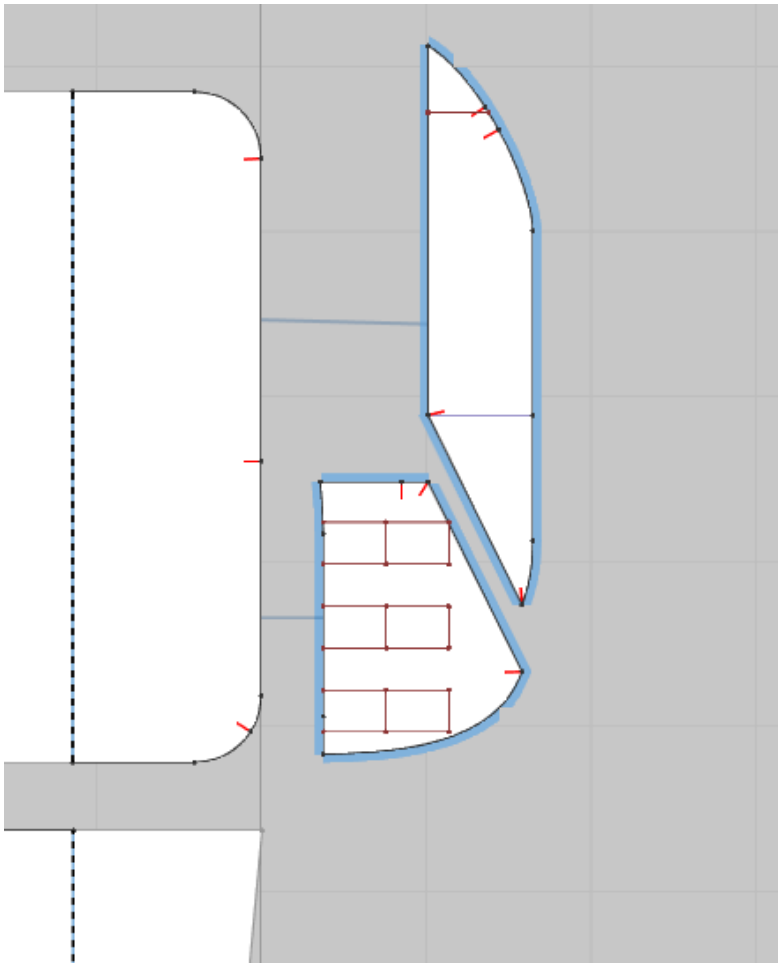
I personally don't find this to be a good pattern in terms of sewability. If the side panels were merged, you'd have a closing seam (ie the last seam before you sew the side+front together with the backpanel) with 2 90 degree corners which is challenging to sew compared to other options. With them separate, you don't really have any continuous closing seam option. It could still be sewn, but think about this when you're designing products and creating patterns because at the end of the day it will speed up the build process and reduce the chance of failure.

This pattern is easy to adjust to make it easier to sew. From our quick mock-up to check that everything aligns before going into a full product, we can clearly see that it's possible to cut the lower side panel and merge it with the upper side wedge.



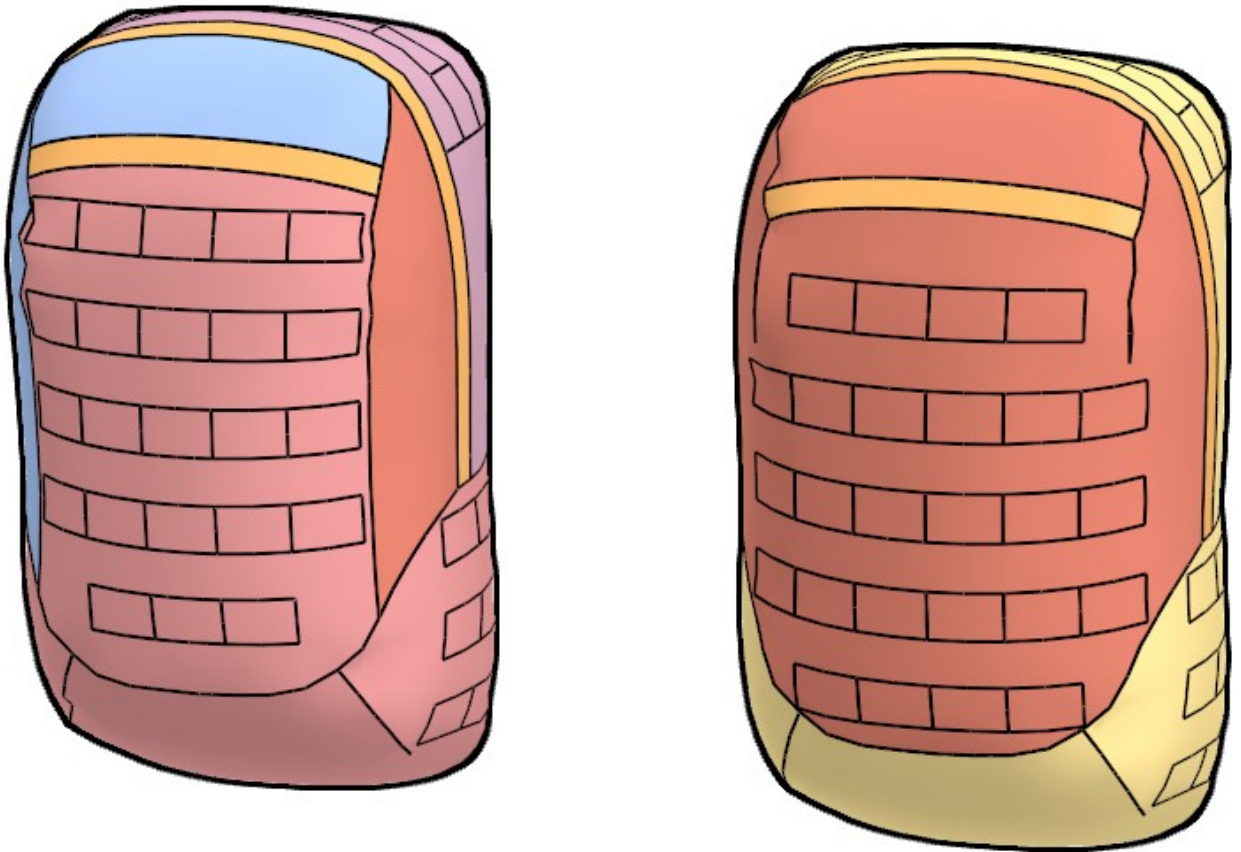


We sacrificed some PALS to make it work, it's now a much simpler product to sew and doesn't change the overall function or shape. It's a trade I would do any day. As an added bonus, you've now altered the product slightly compared to the original; A few more alterations and it's basically a "brand new" product instead of a clone.



This is just an example on how to approach pattern making when you have a design ready. It works the same with paper as it does digitally. Paper vs digital has all kinds of pros and cons. I really recommend doing this with paper prior to attempting to do it digitally. Most pattern making software has 0 utility unless you understand the basics of pattern making anyway, and paper will teach you that. Paper also gives you instant feedback on how things will behave and the issue like the top of the front panel would probably have been avoided because we would have seen that a full straight top wouldn't

give us the desired look.



I've now further refined my version of the pattern by creating a new bottom and lower side as a 1.piece panel with 2 darts and 2 different options for the front and wedge panels. This pretty much maintains the original shape, but makes it much more efficient to sew. Which design I end up with depends on how they turn out as prototypes. Or it might be back to the drawingboard.

Whip up some shoulder straps (I'm sure you can figure that one out yourself) and you're pretty much done.

Good luck into the world of non flat packs and pouches.

- Lasse, Nora Tactical 2023