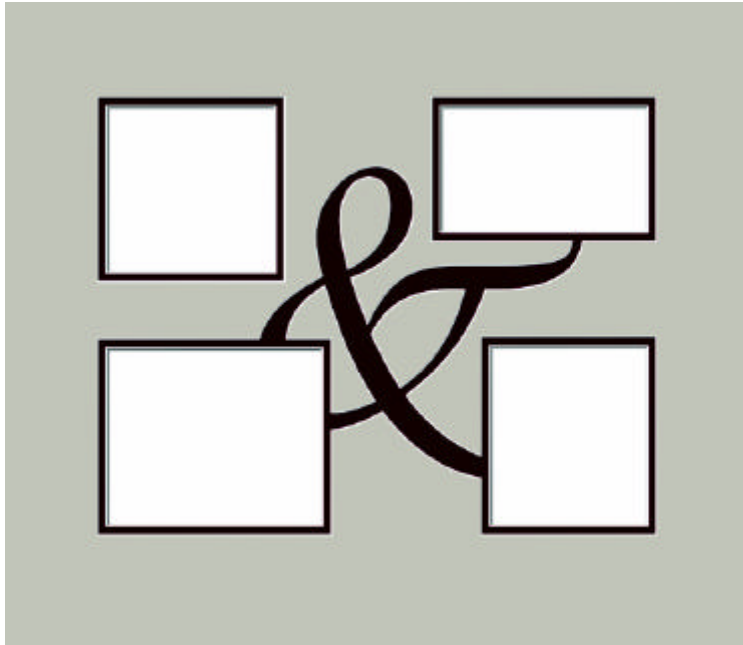


The Ampersand Grouping



It seems like every time we use letters in a mat design we strive to cut them as small as possible. Here is an idea where larger letters can overlap onto openings, be more a part of the background, and be quite large.

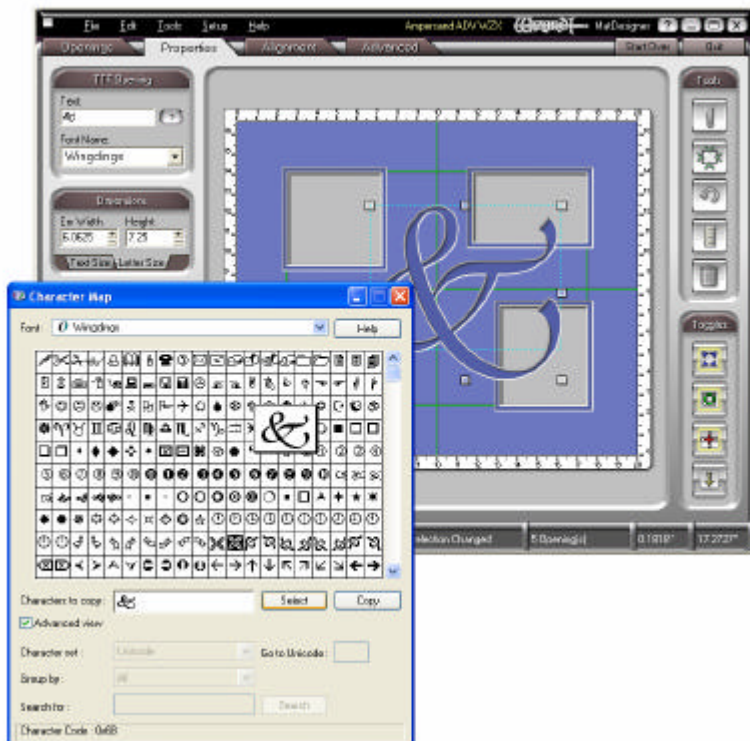
To get the ampersand in this design click **Add True Type Font Opening**. It is in the Wingdings font.

If you would like to see just what's in there at a glance, click the Question Mark at the right of the text box. This brings up a character map. See the illustration below.

Don't get too excited about all the new things you see here that you could cut.

We need to realize that when font designers make these wingdings they do not have the Wizard in mind. Look

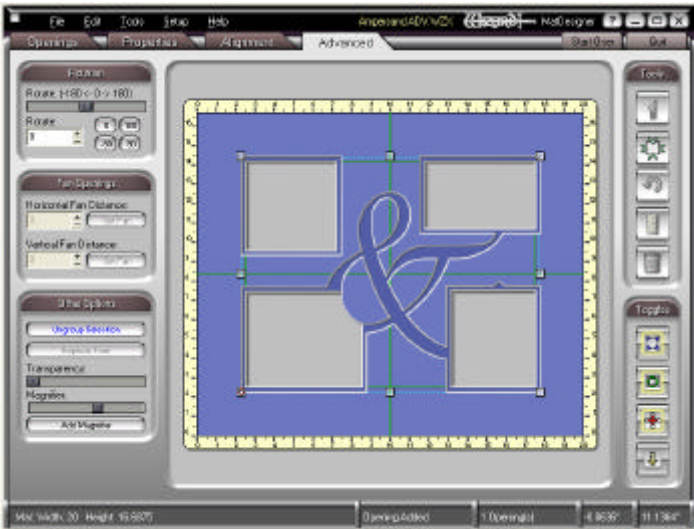
closely and you will see lots of tiny curves, lines that join each other at obtuse angles, and closely spaced elements. Some of them will cut fine at a sensible size, others may need a little alteration to be a bit more Wizard-friendly.



This may look like a simple merge project, but there is more than meets the eye here.

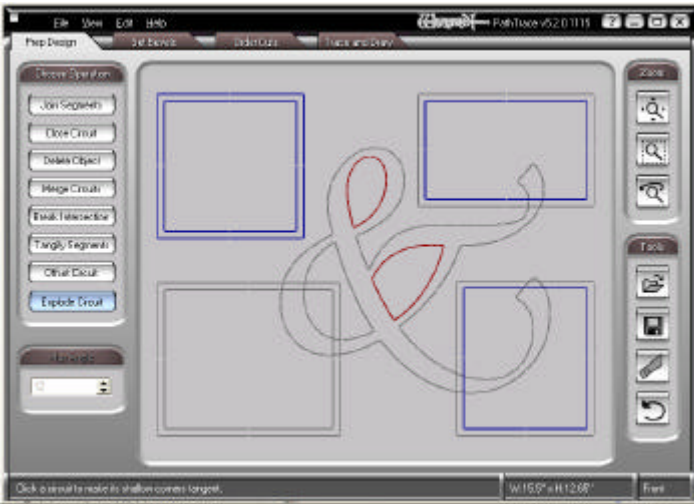
First, merging the ampersand with the bottom left opening is a PathTrace project. For an in-depth step-by-step review of the procedure, look at *PathTrace and the Oval Inset Mat* in the Education section of the website.

Second, the spots where the two openings on the right meet the ampersand need some attention so that they look better and cut better. On the bottom, the flourish intrudes into the top layer of the opening. On the top, the flourish needs to intersect the opening a bit more gracefully.



This is what happens if you just select all the items and click the **Group Selection** button.

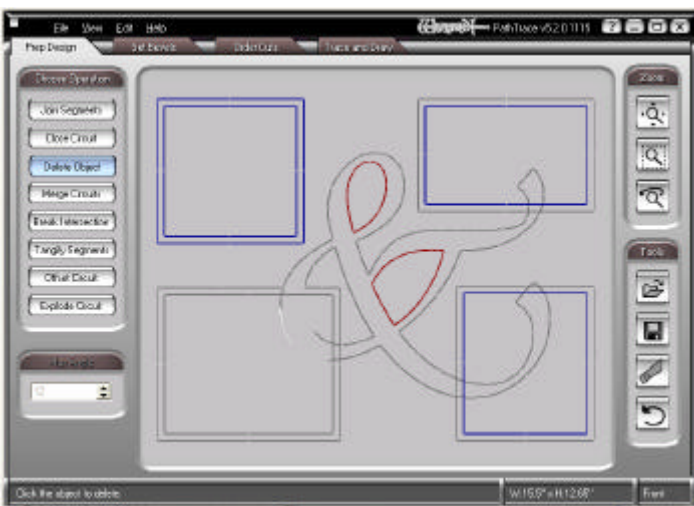
The bottom left opening doesn't come out the way we want it, so we need to take it into PathTrace and construct the openings.



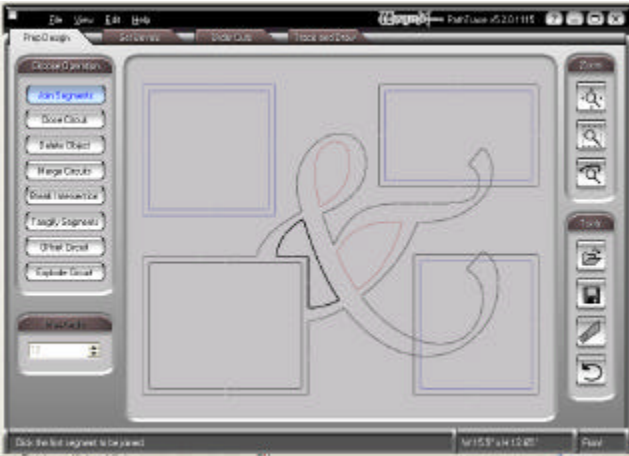
Start by exploding everything that overlaps.

The **Explode Circuit** function breaks a circuit into its natural parts – a rectangle explodes into four lines, for instance.

You will see that each of the curves of the ampersand are made up of about five curve segments.

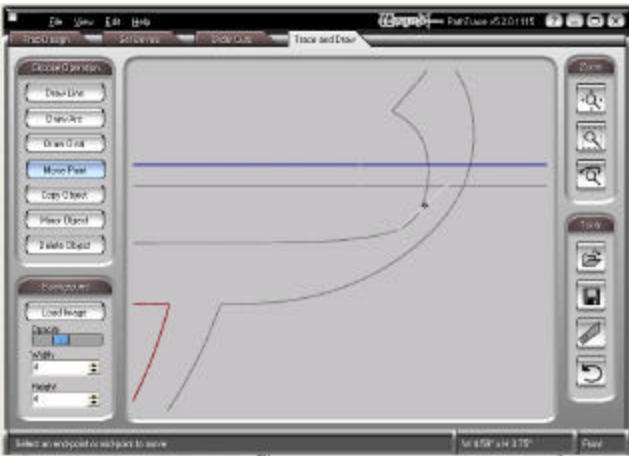


Break all the intersections and delete all the unnecessary pieces.



Join the segments and close the circuit for this part of the ampersand.

Review the details of this procedure in *PathTrace and Design Alteration* in the Education section of the website.

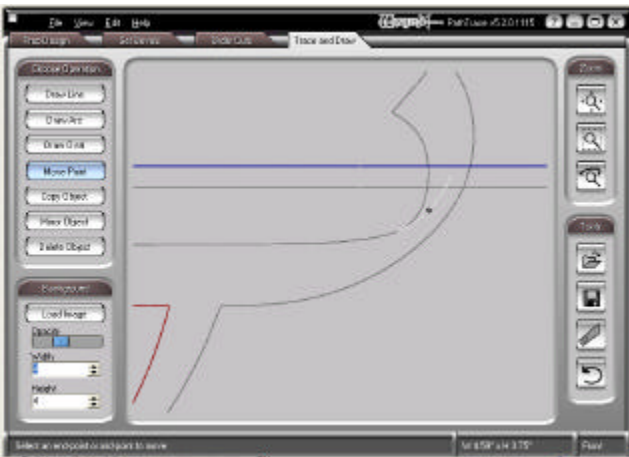


Fixing the curves

We need to make a more gentle curve where this flourish joins the opening.

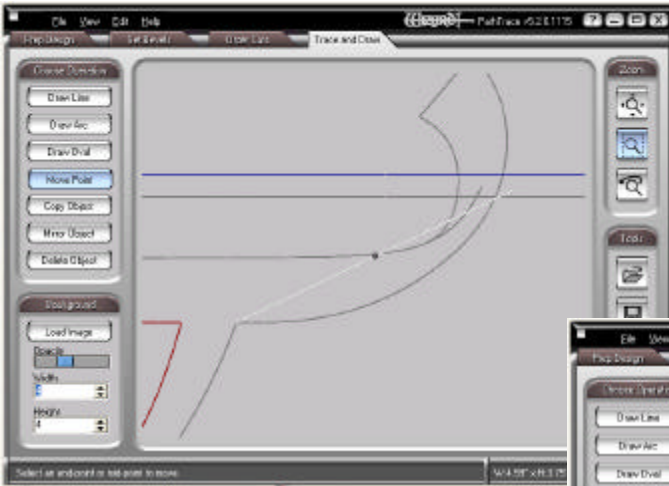
Right click to snap the start of a line at the endpoint of the curve segment we want to keep.

End the line where you think you'd like the new curve to end.



Click on **Move Point**.

Grab the midpoint of the line and drag it to the right. Watch it curve and click when you think it continues the flourish of the ampersand the way you'd like it.

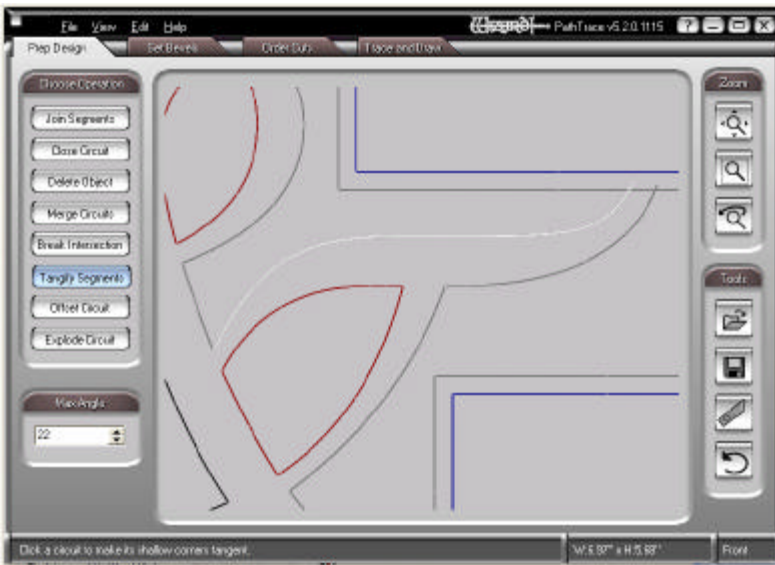
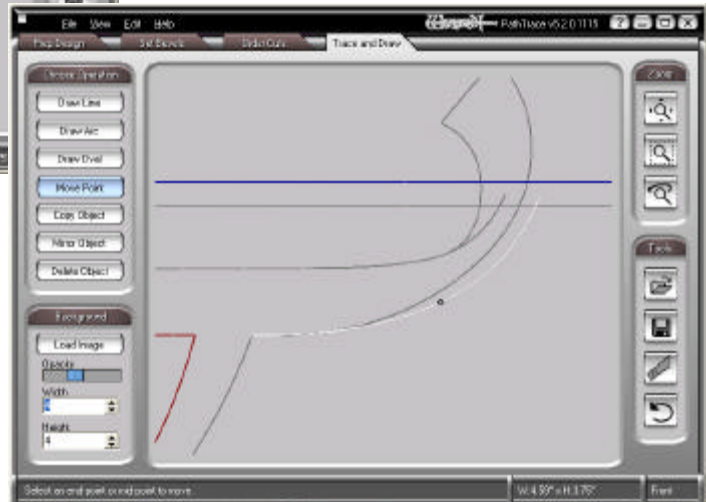


We will completely replace the lower portion of the curve.

Draw another line. Snap the left end to the angled intersection of the flourish and click the right end where you'd like the new curve to end.

Click on **Move Point**, grab the midpoint of the line, and drag it to the right until it forms a nice curve that gently tapers the flourish into the opening.

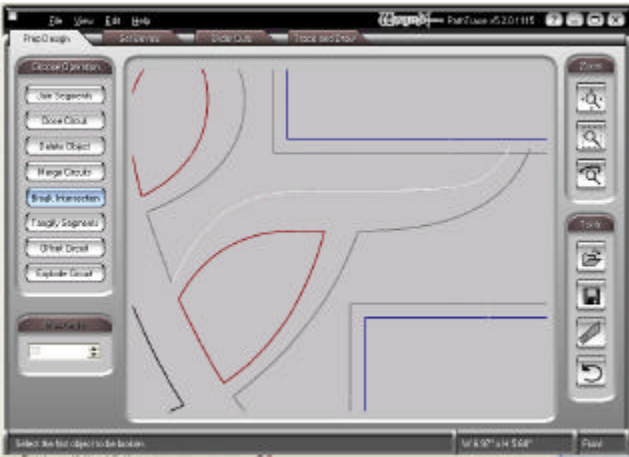
Delete all the unnecessary pieces.



Click on **Join Segments** and join all 5 of the segments that make up the top curve.

Click on **Tangify Segments**. This function smoothes out any angled junctions between the curve segments.

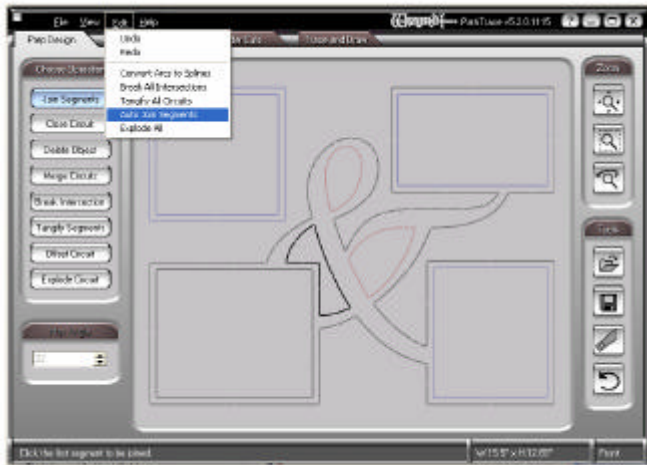
Type 22 into the **Max Angle** field. When you turn the curve white and click, any angle less than 22 degrees will be smoothed.



Break the intersections that the curves have with the bottom line of the top layer of the rectangle.

Delete all the unnecessary segments.

Repeat this break and delete operation at the intersection of the ampersand and the lower right opening, too.

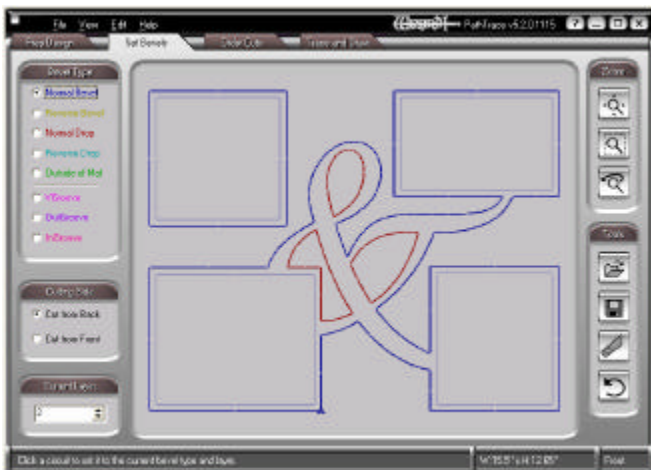


Zoom out and you will see that the ampersand and all the intersecting openings are ready to be joined and traced.

Click **Edit** then select **Auto Join Segments**.

The whole circuit will turn black.

It is a good idea to tangify all the items that have curves. Remember that True Type items are not designed with the Wizard in mind. The curves aren't all smooth and we don't want the head picking up and replunging in the middle of curves.



Trace it.

Pay attention to which openings need to be on layer 1 and layer 2.

Note that the three shapes in the middle of the ampersand will be glued back into place. The bevel needs to be on the outside, so trace it as a Normal Drop. See that it is red in this illustration.