

With the water jet mastered, our next challenge was to design a coffee cup holder for the coffeehouse. One of the main problems with the way their coffee shop is run is the cup holders. Due to cost the most viable option for them is to use cardboard cup holders from Dunkin Donuts, which are flimsy, disposable and hard to hold. We came up with our own design, which allows for a few improvements. Here are some pictures of the work in progress:



-Matt cutting holes for the coffee cups



-Ken evaluating our first design



-Greg testing the ease of cup removal from our first design



-Testing remove ability in our second design



-Sketching the final design in OMAX



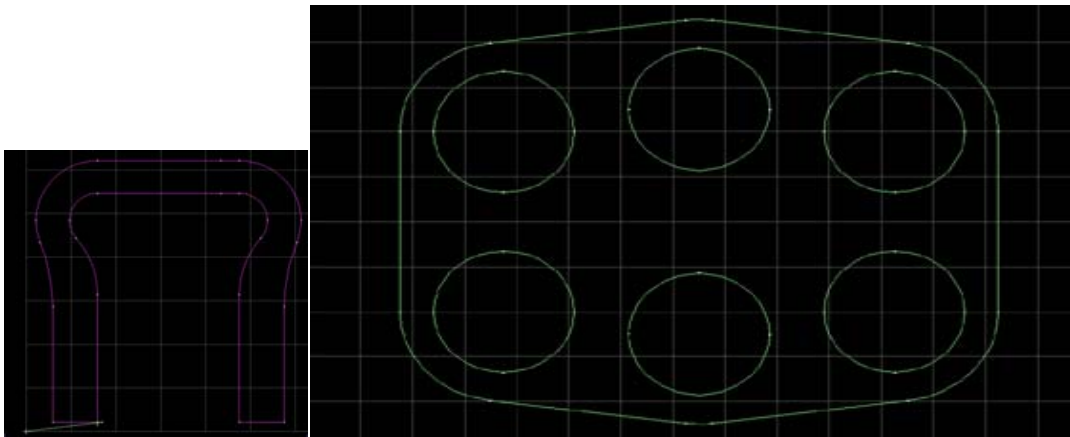
-The finished products!

The first prototype is the design on the left. It allowed for six cups to be held with a handle in the center. Placing the holder on a table top caused the cups to lift out of the holder, allowing them to be easily removed. However, there were a few flaws with this design. First of all, the handle hole is quite small, suitable only for small children. Second, spilling coffee is an issue when using any cup holder, and this design did not lend itself to easy cleaning. This design was more for proof of concept than anything else.

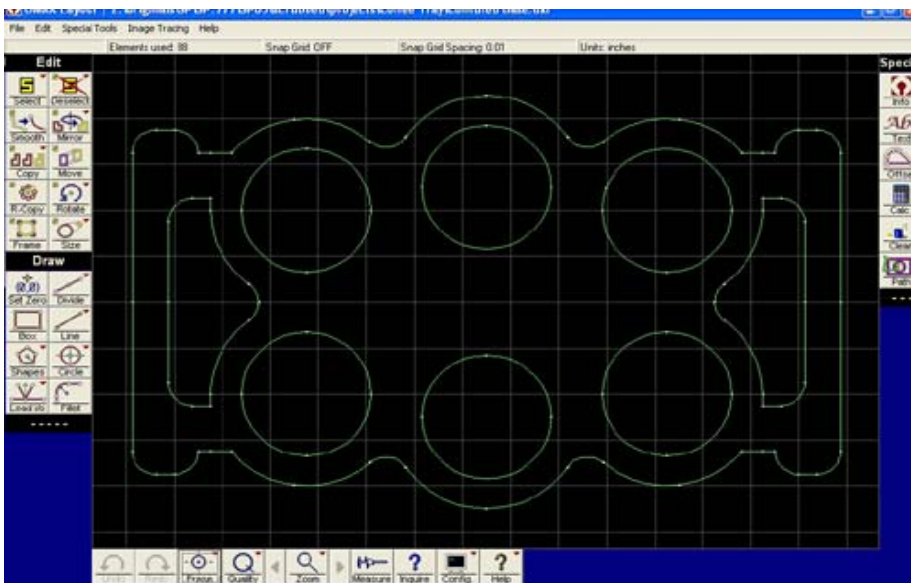
The second design (middle) had a few noted improvements. First of all the handle is an open design, allowing for any sized hand to hold it. The cup holder itself is made out of polycarbonate, making it easier to clean, cut cleanly on the water jet, and making it easy to bend feet out of the material as shown. Finally any sharp edges were eliminated, making it safer for the students of the Learning Center to use. However, it was noted that in addition to carrying coffee the students must also carry envelopes of change for the customers. This led to the rubber bands on the handle as shown in the picture.

Our final design (right) includes a more ergonomic handle, a clear slot for change envelopes as well as a gap for easy cleaning and removal of spilled change. The cups

in the middle are further spaced from the handle to allow for more radial symmetry, so it is easier to carry with some cups removed. This design is undergoing field tests!



OMAX Drawings



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