FlatPack Lamp

The objective of this project was to create an object out of plywood in “FlatPack” style. A FlatPack object is an object made completely out of flat pieces, which can be assembled without fasteners of any kind. This means that the entire object can be packed up flat at any time, hence the name.

I decided to create a lamp because I appreciate decorations that invite attention. A lamp is the perfect embodiment of this idea, since when it is the primary source of light in a dark room, it will always draw someone's gaze. In addition to providing light, it also serves as a catch-all tray. The bottom features four large, arched openings with a soft catch tray for all of my pocket things. Now, whenever I want to place my stuff down or head out of my house, I have to stop by the lamp that I built.

Figuring out how to make this lamp was no easy feat - I had to learn laser cutting, CNC routing, toolpathing, traditional power tools, flat pack design, and wiring. Everything I made for this lamp was with a medium I had never used, and in a form factor I had never worked with.

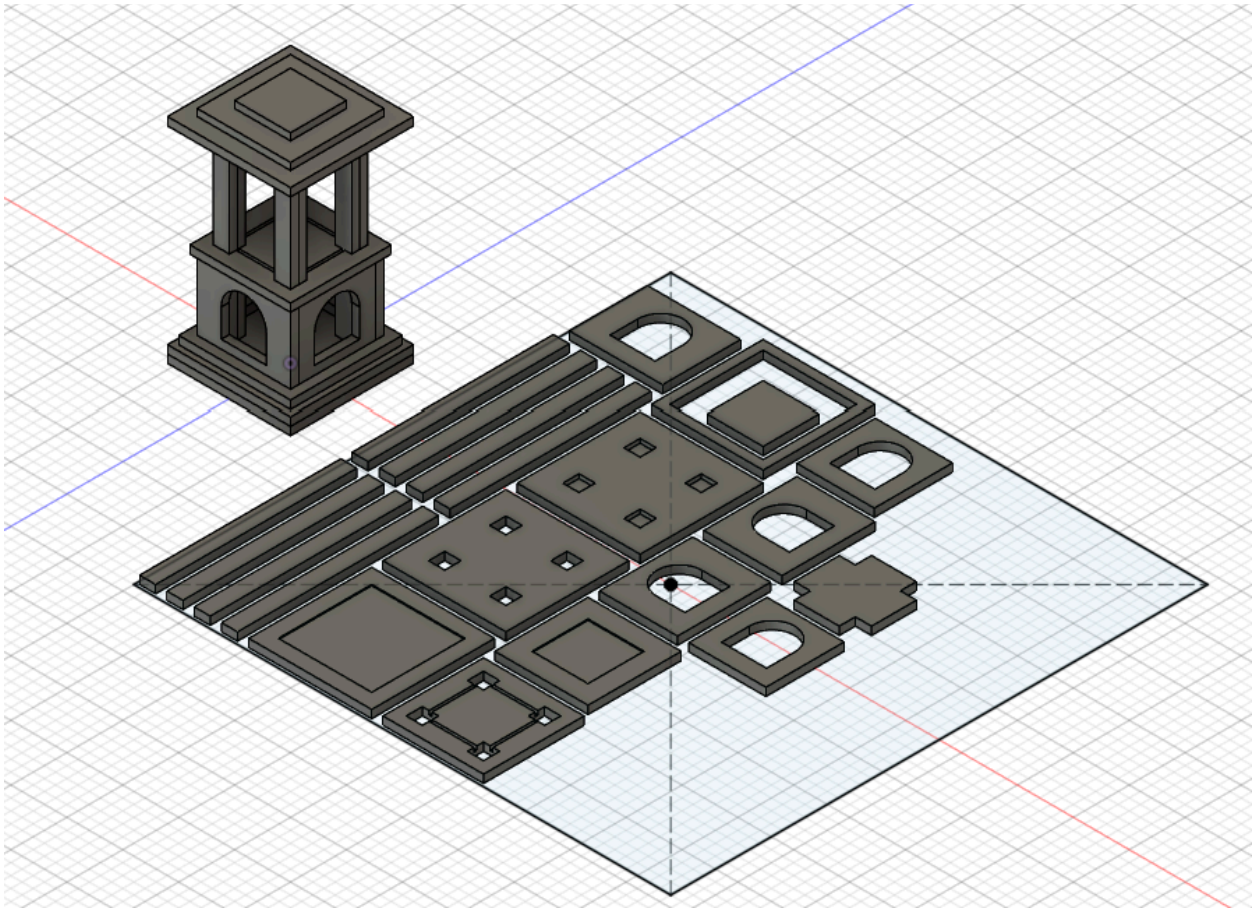
In addition to the wood part of the lamp, there is a subtle detail that was yet another skill I learned for the project. I tufted a small rug to fit at the base of the lamp, serving as the base of the catch-all tray. The rug is supposed to appear like a bird's-eye view of a winding river.

PROGRESS PICTURES

I started by creating the initial design in Fusion, a program that I learned for this project. Fusion has great tools for making flatpack furniture, and it allows toolpathing to be done in the same software as the modeling.

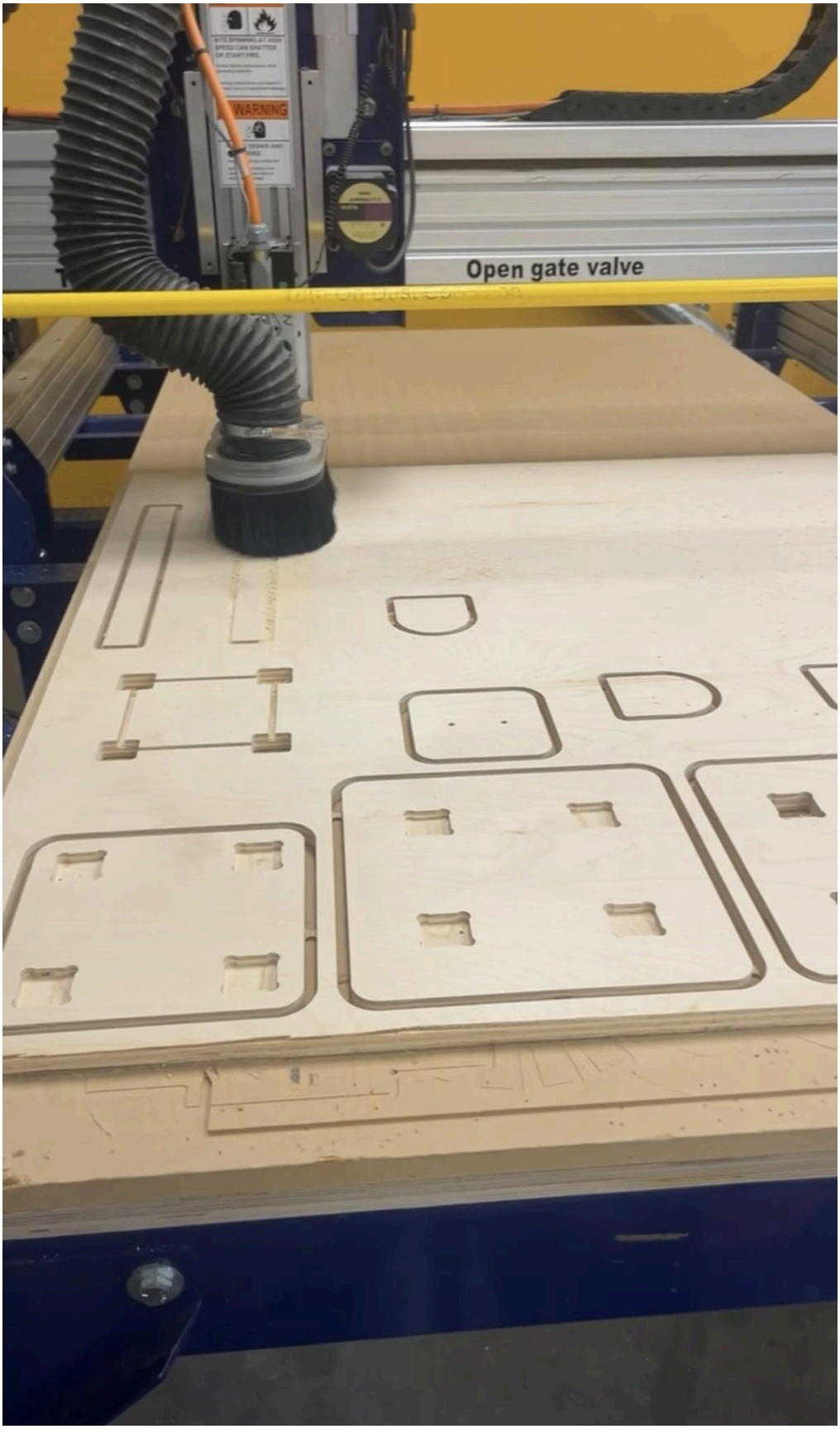
I went through many, many designs in Fusion before I decided on the final one. Figuring out how the lamp would look, and how it would come together, was on my mind 27/7 for the better part of a month. Creating the object in FlatPack style added a huge amount of complexity, because all of the parts had to interlock like a puzzle since there were no screws or glue. Secondly, I had to figure out how to put the light and lampshade in without making new holes or having any wire exposed. The end design was quite well-thought out, and pretty elegant, if you ask me.

Here is the CAD model I eventually used to create toolpathing for the CNC. On the left is the lamp (without the shades or light), and on the right are all the pieces laid flat within a 4’x4’ square, which represented the piece of plywood I used.



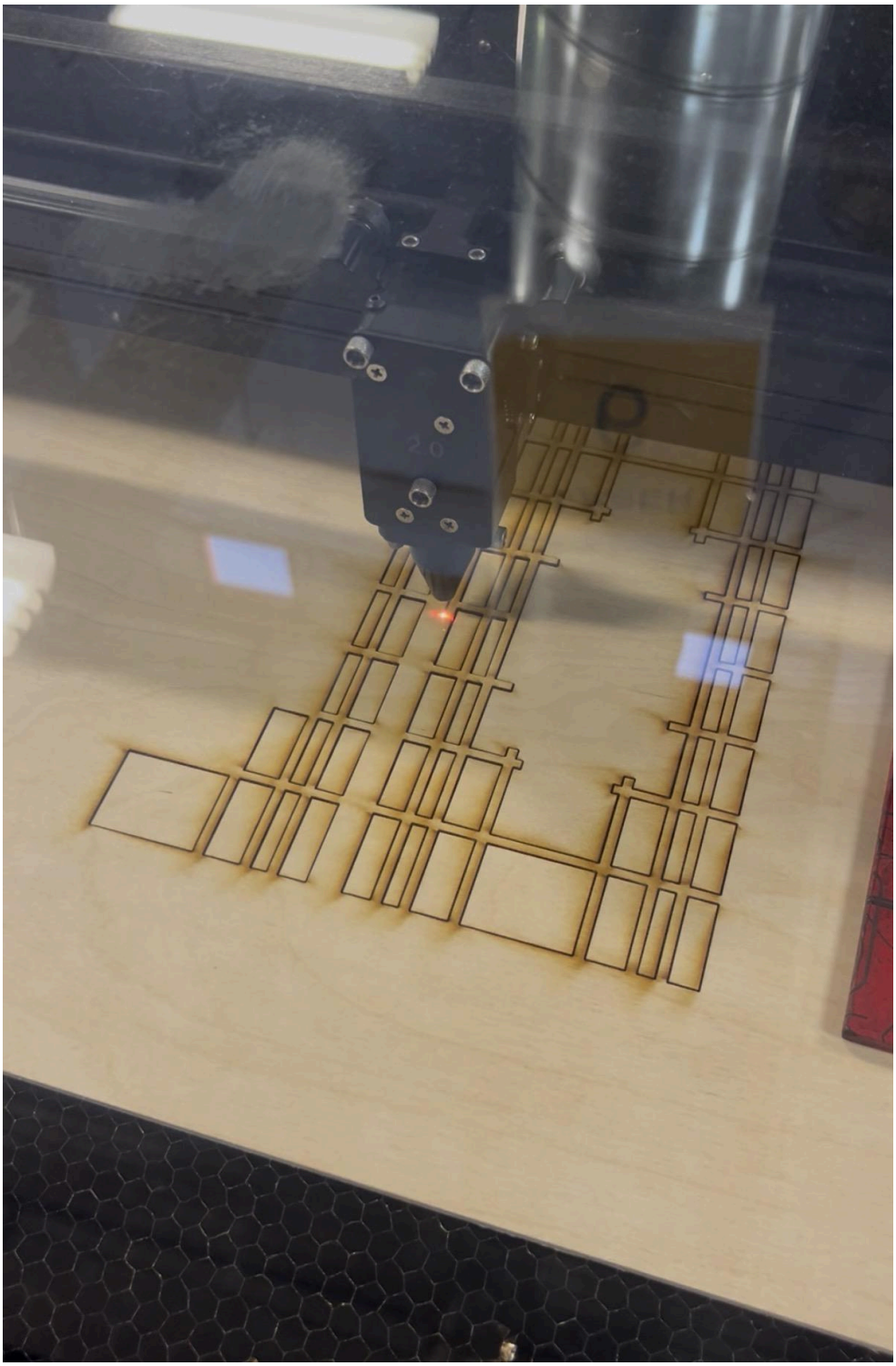
Next, I moved on to cutting on the CNC. I created a toolpath by using profile and pocket cuts. I mostly used a three-eighths-inch endmill router bit. Although not shown in the 3D model, I ended up rounding many of the corners in the toolpathing so that the router bit would have an easier time cutting the geometry.

Here are some pictures from the cutting and assembly process.


WARNING
Open gate valve

Unfortunately, those two are the only pictures I have of the process. I wish I had taken more, but I can’t go back in time. Not shown in these pictures is the egregious routing, sanding, and filling that I had to do to get every surface uniform and smooth. At this point, I was delighted with the result because it worked just as I had modeled it. This project was a good testament to measuring more than you think you should before making any cuts.

Laser Cut Lampshade Panels



Custom Tufted Rug for Catch-All Tray

Final Product