Work Completed

On Saturday, Frank headed down to the welding shop and tackled the task of welding up the aluminum components that had been previously cut and laid out. Due to the amount of welding needing to be done, Frank opted to use an aluminum MIG welder to accomplish the task over a TIG welder. While the MIG welder is quicker at completing the welding, it produces more splatter and less pretty welds than a TIG would do.

![Frank’s Aluminum MIG Welder Setup](image1.jpg)

Figure 1. Frank’s Aluminum MIG Welder Setup

Jackie continued to do research to better understand the power requirements of the easel so that she could pick out a suitable power supply. With the help of Chris, Jackie was able to narrow down the number of power supplies available for use in our project. Also, an illuminated rocker switch that will allow the client to shut off the easel was purchased by Jackie. This rocker switch insures that the easel will not move if the joystick is accidentally bumped. Lastly, later on in the week she turned down two rods
on the lathe from 0.75 inches to 0.50 inches. These rods are necessary for the stability of the canvas while allowing for the vertical motion of the device.

John was able to get in contact with the engineers over at P-Q controls to check on the status of our joystick. After sending an email to them, he learned that the joystick will be shipped out to us on Thursday February 23rd. Due to the nature of a screw-driven system, John also put in time researching a limit-switch system that will allow the horizontal motion of the device to be safely stopped without its mount coming into contact with any other part of the frame. These limit switches consist of a micro switch and a diode. The diode will allow the current to be reversed to the actuator (to reverse the direction) once it has tripped a limit switch and is stopped. John was also able to locate an additional 2 relays in the back room, completely eliminating the need for us to purchase any relays for our easel. An additional two bases must be purchased to facilitate the relays, however, since we only have four of them.

![Figure 2. Two Different Styles of Limit Switches](image)
On Friday, Frank and Adam cleaned up some of the metal components of the easel using our personal grinders that we brought up to the lab. After that, Adam began disassembling the heavy-duty tracking system that was salvaged from the back room. Instead of the recirculating bearings and stainless steel rod tracks, we are switching to using an 80/20 extrusion and a linear bearing. The pillow blocks set in the aluminum ends of the track were saved along with the threaded rod and the bearing that slides along the track. We will be using these pieces in conjunction with the 80/20 system to provide linear motion that is far more applicable for our application.

Figure 3. Old Bearings From the Track
Future Work

Over the next week, the carriage pieces can be cleaned and bolted together. The sharp edges on the easel need to be ground down as well as some of the less appealing welds. The 80/20 track length has arrived and can be cut to lengths using a hack saw that Adam brought up. Ways in which to attach the track to the base have been devised over the past few weeks and these brackets will be fabricated as well. Circuitry of the project will also begin after receiving our joystick which is being shipped February 23rd. Relays and a power source are the main components that now stand in our way to the circuit design of the project. Once the main mechanical parts of the device have been finished, we can integrate the electrical components of the design into the project.
**Project Review**

The majority of the welding work needed to be done on the easel is complete. With the joystick showing up very soon and the metal fabrication mostly done, the actuators can be placed and the wiring can begin to be planned and laid out. Team spirits are very high and we are confident that we will continue to meet our goal of providing a product that meets the client’s needs and is safe and functional.

**Hours Worked**

Adam: 11 hrs.

Frank: 18 hrs.

Jackie: 11 hrs.

Jon: 9 hrs.