Easelectric
Group #4

Weekly Report
Week #1
January 27, 2006
Adam Ross
Work Completed

Over winter break, the fabrication of the base (Figure 2) and clamp (Figure 3) portions of the easel was completed using square aluminum tubing for the base and clamp receptacles, smaller square steel tubing for the shaft of the clamp, and steel channel for the clamp’s arms. Nuts were welded on to the end of the steel channel of the clamps to provide threads through which a steel bar is inserted to complete the clamping (Figure 3). The sturdiness of the base was tested by means of creating a moment that approximates that of one created by a mass much larger than the maximum weight of the artist’s canvas. The easel stood firm on the table without lifting up in the rear.

Cardboard replicas of the remaining parts to be fabricated were constructed on Friday, allowing for us to visually inspect the mechanical design of the easel to check for any interference or design flaws that may not have been recognized by simply drawing the design on paper. The cardboard cutouts also allowed us to better visualize and understand the maximum ranges and angles of motion of the easel than the calculations based on paper analysis.
Figure 2. Base

Figure 3. Clamp Assembly
Future Work

Next week we plan to test and finalize the wheelchair accessibility of the device by using the cardboard cutouts along with a wheelchair. This will allow us to discern the optimal initial positioning of the actuators to allow for the best access to the canvas. We are also taking special care to make sure that no matter where the canvas is situated there is absolutely no possibility of it making contact with the user, table, or device. The cardboard cutouts and wheelchair will make this process possible now so that we do not have to go back and re-fabricate portions of the device later on in the semester, saving us valuable time. The edges of some of the aluminum pieces are rough and will need to be de-burred by filing this week as well to make sure the device is completely safe.

We are awaiting the arrival of aluminum tracking from 80/20 which will allow us to finish the complete fabrication of the base; adding the features that will allow for the transit of the carriage situated upon it. We have also ordered, and are waiting for the arrival of, the actuators that will be providing the muscle to move the features of the
The sizes of the actuators have been researched online and we believe that they will easily fit within the channeling used to construct portions of the base allowing it to be as compact as possible. Once the actuators arrive we will be able to continue fabrication on the device. We hope to receive these parts this week.

**Figure 4. Timeline for Upcoming Week**

**Project Review**

As of this week the team is currently on-track and on-schedule. We hope the cardboard cutouts will help us avoid any unforeseen mechanical problems in the future, and along with the timely arrival of parts, allowing us to continue to be on or ahead of schedule for the entire semester. There is one current problem that is being experienced, and that is with the nut/threaded rod assembly on one of the clamps; the threaded rod binds on a small structural imperfection in the channel near a weld and is difficult to move. We expect to be able to file this imperfection down to allow for easier passage and is not a major cause for concern.
Figure 5. Expected Timeline of Project’s Major Milestones

Hours Worked

Design/Analysis Hours Worked:

Adam  6
Frank  4 + fabrication over break
Jackie  6
John  6