**Work Completed**

This week I finished assembling the side supports and purchased brackets to attach them to the seat. The vinyl was staple-gunned into the wood, and screws will be purchased to attach the brackets to the seat and the supports. The finished supports, with brackets, are shown in Figure 1 below. This picture shows only the bracket attaching the supports to the bottom of the seat; there will also be brackets connecting each support with the back of the seat.

![Figure 1: Completed supports and brackets.](image)

The brackets will probably not be attached until other, unrelated tasks are completed, such as attachment of actuators and the control box. This is because the seat implementation will depend on other factors, such as where and how the actuators and control box are mounted, and where the joystick will be mounted.

I also spent some time this week thinking about how to create some extra space on the go-kart for mounting of various parts (namely, the actuators). There is some space near the rear of the go-kart and on the right side of the car, to weld some sheet metal, thus adding more space for mounting. The two possible locations are seen below in Figure 2.

![Figure 2: Possible locations to weld sheet metal for added space on the go-kart.](image)

On the left is the rear of the go-kart, and on the right is the right side. The metal rectangles show where sheet metal could be welded.
This week, Mike Marquis and I tested the 35-lb linear actuator using the electronic fishing scale. The brake handle currently on the go-kart (which will be removed) requires a 4-lb force to be fully depressed. The brake cable must be pulled with a 12-lb force to depress the brakes. Since there are two brake cables, a 24-lb force must be used to depress both the right and left brakes. The end of the brake handle that is depressed by the user moves approximately 2 ½ inches, and the end of the brake handle that pulls the cable moves approximately ½ inch. This means that we need an actuator which is rated at least 24 lbs and has a stroke of at least ½ inch. Also, since it will be used for braking, the actuator must be able to move pretty fast. The actuator we currently have, rated at 35 lb with a 2 inch stroke, can move at up to 2 in/sec, making it ideal for this application.

I also spent some time this week planning seat attachment. The back of the seat has two threaded holes, one of which lines up perfectly with a bar which is part of the frame of the go-kart. However, the hole also lines up with where the shocks attach to this same bar, but I believe that with the proper hardware, this bar can still be used to attach the back of the seat to the go-kart. As far as attaching the bottom of the seat, Mike came up with the idea of welding sheet metal to the frame and attaching the seat and the restraint to this (one point of attachment for the restraint will be the back of the seat, the rest will be the bottom). I investigated the frame of the go-kart where the seat will be. It is seen in Figure 3 below. The frame design here lends itself to welding sheet metal to it and it seems that this will be a good way to attach the seat bottom.

![Figure 3: Frame of go-kart where bottom of seat will be attached.](image)

**Future Work**

In the coming weeks, I will continue to work with the braking actuator and with the integration of several parts of the go-kart. I will attach the supports to the seat, which involves buying screws and drilling holes to secure the brackets. I also need to figure out how to attach the restraint and get hardware to attach the restraint system. There are several areas where we must weld sheet metal to the frame, including sheet metal to mount the seat, and sheet metal to attach the actuator to the go-kart. I must also figure out a way to attach the actuator to the sheet metal.

After I figure out how the actuator will be mounted, I must adjust the brake cables. Then I will install the actuator and attach it to the brake cables and control box. Additionally, I will make an armrest for the joystick, figure out how to attach it to the frame, and make a box to contain the joystick wires so they are not damaged during use of the go-kart. Mike Marquis and I will work together extensively on many of these tasks.

I hope to have the welding completed in by the end of week six, and then mount the braking actuator after Kevin has finished the control box and figured out where he is going to mount that, hopefully by the end of week seven or eight. I will then mount the actuator and adjust
the brake cables by the end of week nine. Next, I will attach the actuator to the brake cables and the control box, and install the seat, restraint and side supports by the end of week ten. Finally, I will make and install the joystick armrest, mount and box by the end of week twelve.

**Project Review**

At the end of the fourth week, the go-kart is still progressing smoothly. It was a big relief to learn that we could use the linear actuator we currently have for braking, since this will save us time that would have had to be spent figuring out another actuator to purchase and waiting for it to arrive. For me, much of the next few weeks will be spent welding and securing various components with hardware. Currently, we have about $600 of our total budget remaining.

**Hours Worked**

Time spent on the project 2/13/2008 – 2/20/2008: 17 hours