**Project Recap**

The main objective of this project is to design a wheelchair attachment that allows the user to ascend and descend any type of stairs. The attachment must first and foremost be safe, as well as portable, lightweight, and universal to any user and their wheelchair.

Every machine on the market is extremely expensive and heavy. These are two characteristics that the team had to change. A less costly and lightweight attachment will help increase the efficiency of the machine and make the stairclimber more portable.

The final report outlines a design that the team deems fit to meet the objectives of this project. This design is similar to last year’s TRASC design utilizing an attachment with a set of tracks that will grip the stairs and propel the stairclimber up and down the stairs. These tracks will be located underneath the seat and between the wheels of the chair.

The stairclimber succeeded in many of its objectives to improve upon last year’s design. Due to its wood and aluminum frame, the stairclimber is smaller and lighter than the TRASC, while still strong enough to support a wheelchair and user. The polyurethane grippers were lighter and gentler on floor surfaces than the previous design’s aluminum grippers. The two ATV winches reduced cost as well as gave the stairclimber the ability to turn. This makes the stairclimber useful on staircases with landings, or sharp turns at the bottom or top. All this was done with $866, about a third of the budget of last year’s.

The stairclimber had been tested multiple times in different environments and situations. Throughout the process the stairclimber came across multiple delays due to the instability of the machines drive shafts. Silver soldering was the chosen method of connecting the drive shaft to the drive gear in the ATV winch. While this bond was strong enough to allow the stairclimber to travel on flat ground, the stress of traversing up a staircase was too great, and broke the connection between the gear and shaft.

Despite the limitations of the prototype, the sponsors were very impressed and pleased with the team’s progress. Dr. Hills and Nancy were both in attendance at the design showcase, and their reactions to the stairclimber were very positive. The stairclimber's ground mobility, as well as the new tracks were their favorite features. The team is confident that with additional time, the issues with the stairclimber would be resolved easily.