



Craft Academy Solar Powered Racing (CASPR) Team



History and Basis of the Solar Car Challenge

In 1993, the Solar car Challenge launched an education program to provide high school students with tools and lessons to where they could build and race solar-powered cars. Every two years the Solar Car Challenge- a closed-track event made to allow students to display and drive their solar cars- was hosted at the world-famous Texas Motor Speedway.

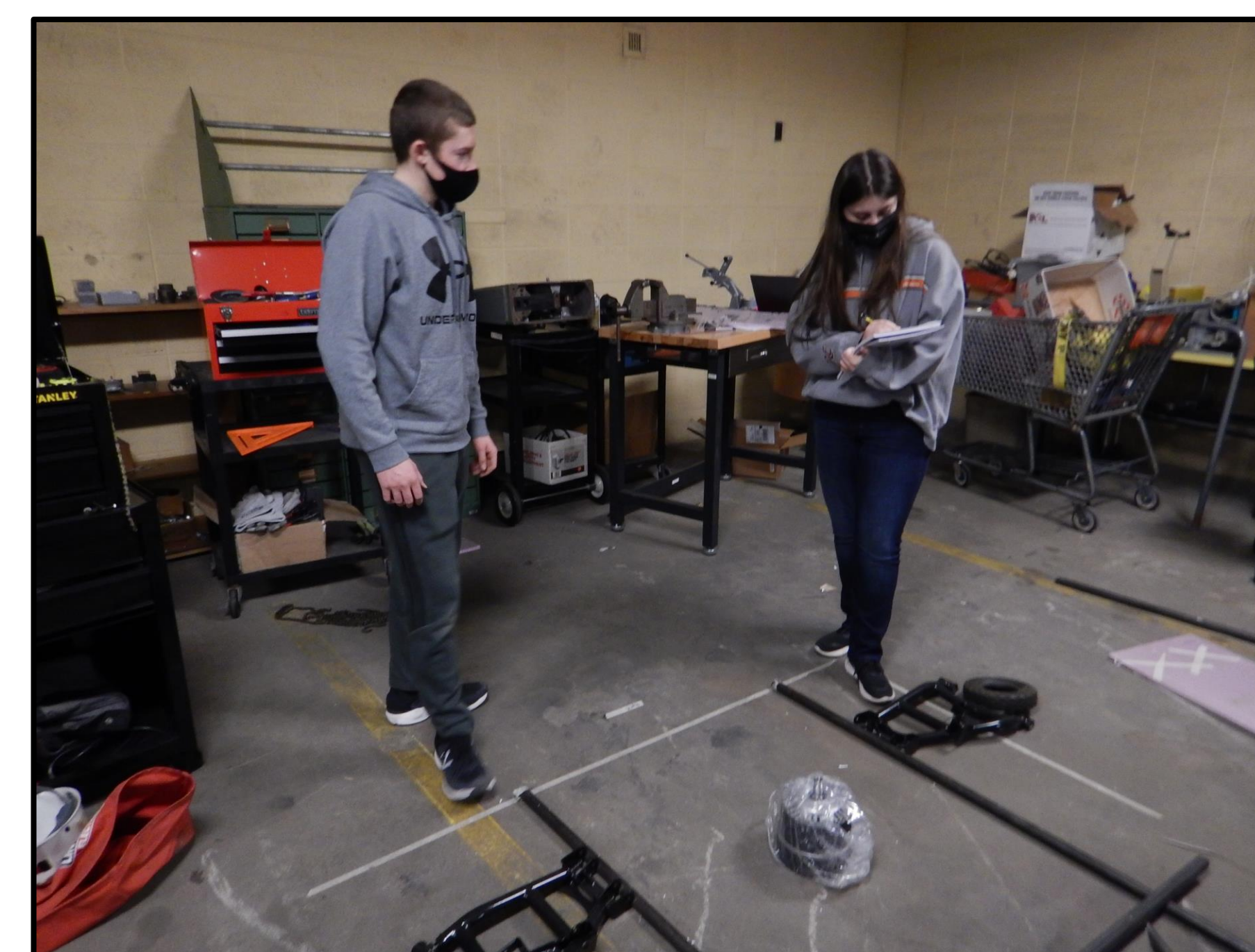
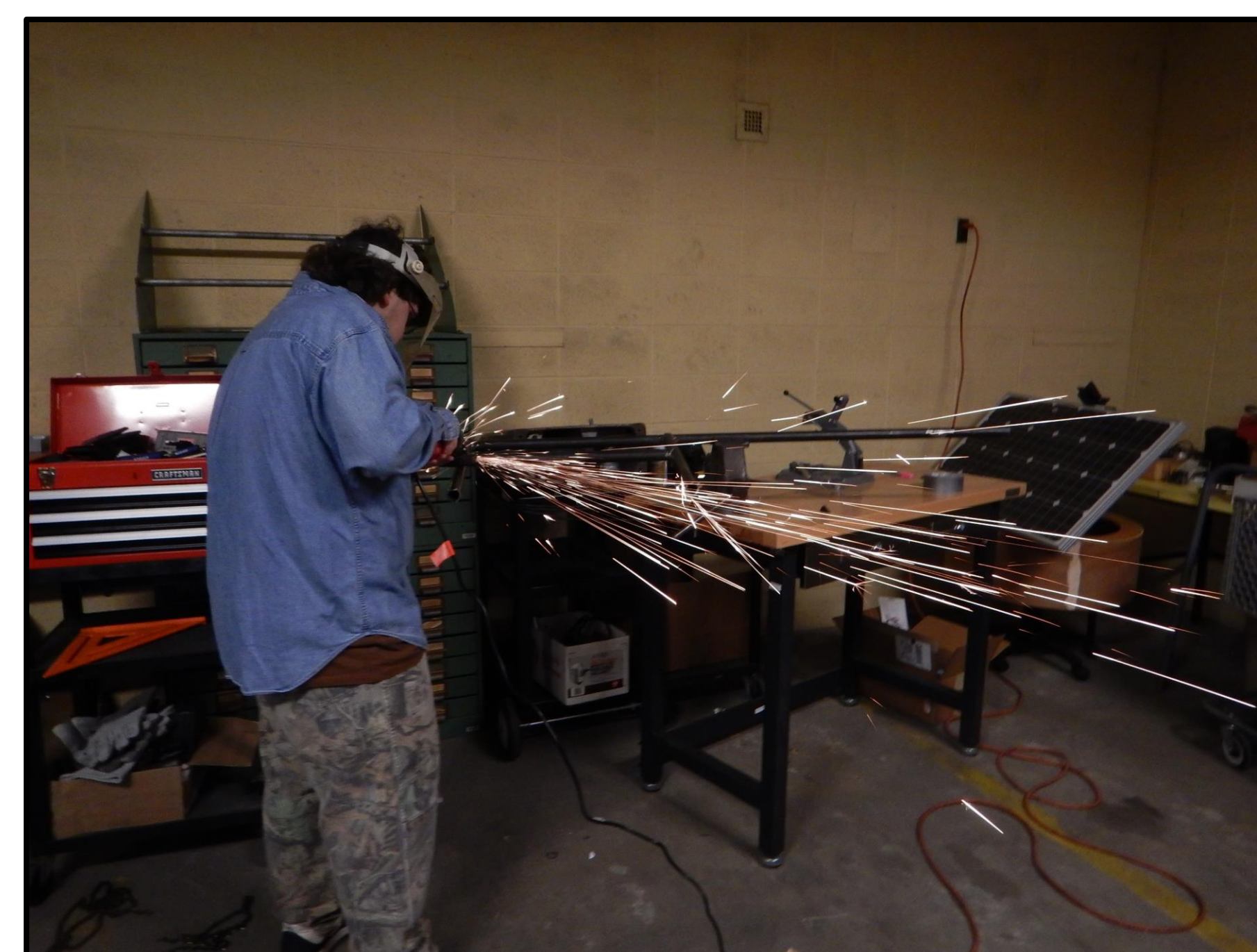
There are five divisions in for the challenge which includes: The Classis division, Advanced-Classic Division, Advanced Division, Electric-Solar Powered Car Division, and the Cruiser Division.

The Regulations of the Classic Division

The Classic Division follows all the rules and regulations of the Official Rules. The use of hub motors is not allowed. Solar modules (either individual cells or panels) must have a rating of 20% efficiency or below.

Craft Academy Solar Powered Racing

The ultimate goal of the CASPR team is to build a solar powered car to race in the solar car for the Solar Car Challenge Classic Division, and race in a cross-county race or at the famous Texas Motor Speedway. The car must have taillights, blinkers, headlights, and extra suspension. For the fall semester of 2021, we researched different parts and other solar cars to see what would be the best fit most beneficial. We were able to find all the parts needed for the construction of the car. The Solar Car Challenge website provides some resources to make finding parts easier. During the spring semester we have been focusing on building a frame with wheels so we can start to put the car together.



Overview of the Design Process

The first thing we did was create a design for the car. The car had to meet length and height requirements and give us enough room for our different components such as the motor, batteries, telemetry system, and seat for the driver. A design was decided during 2020, but due to Covid-19 not much work could be done, so this year we started at square one.

After we decided on a design, we started to find parts that were compatible with each other and parts that also meet the requirement. For example, we can and are using Absorbent Glass Mat, (AGM) car batteries, but not lithium.

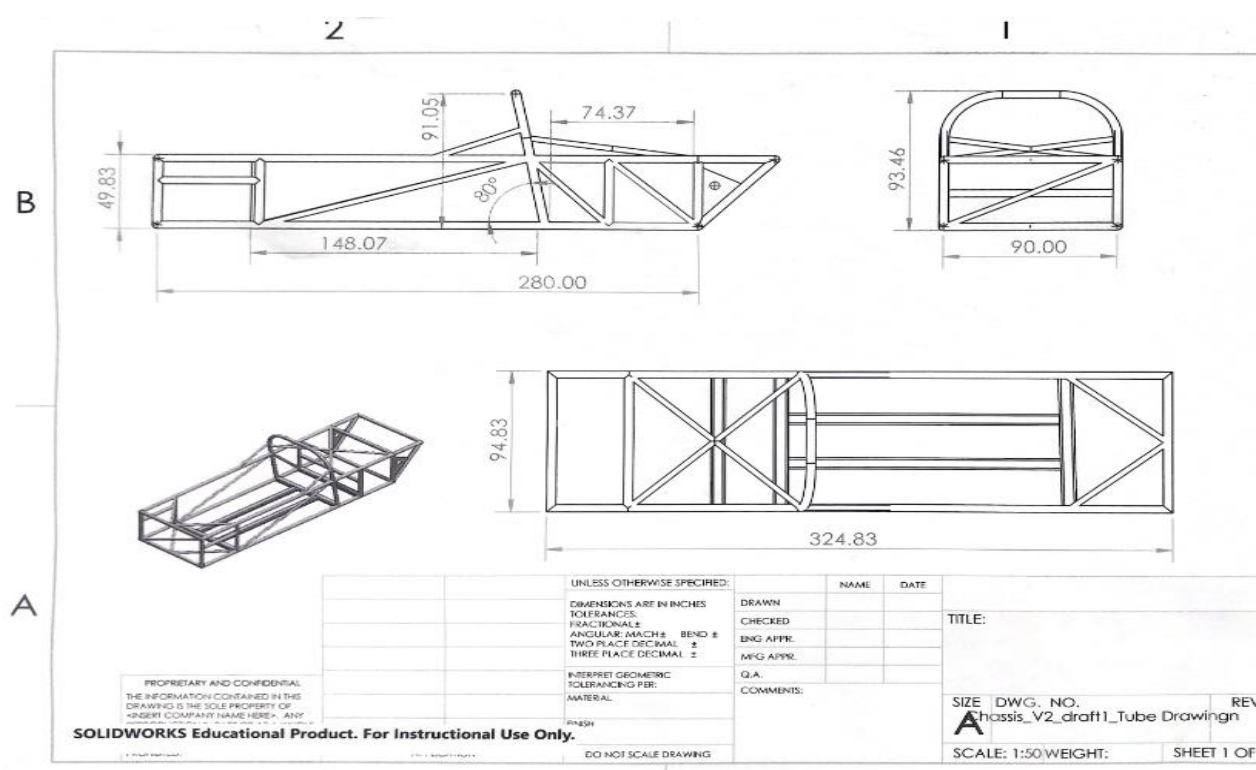
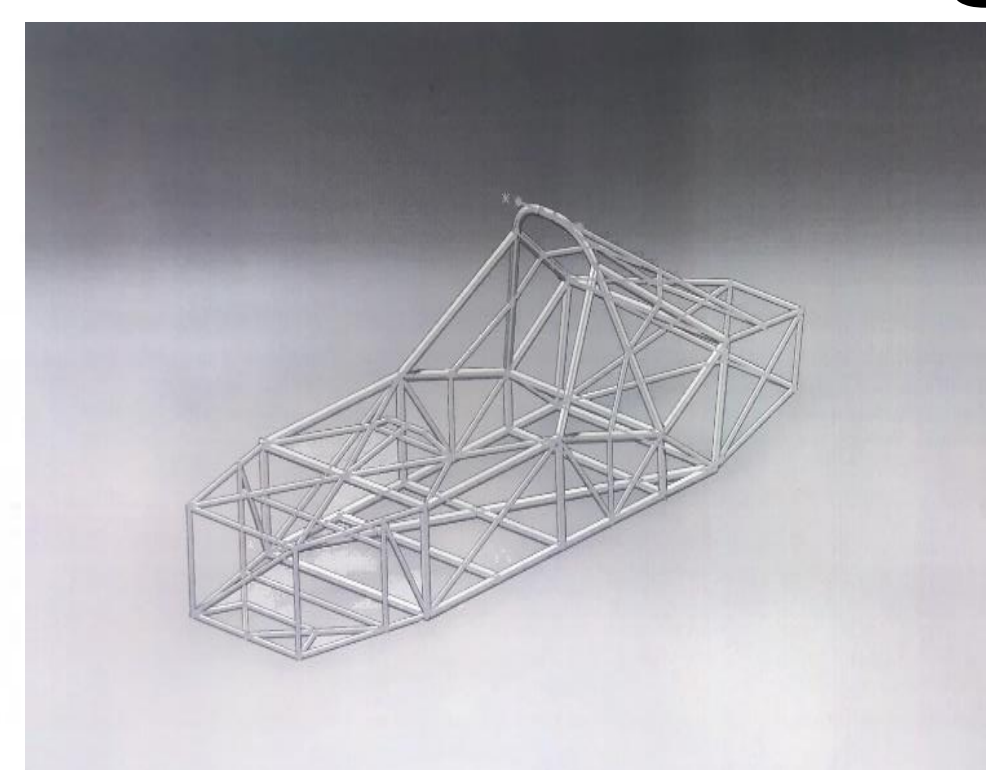
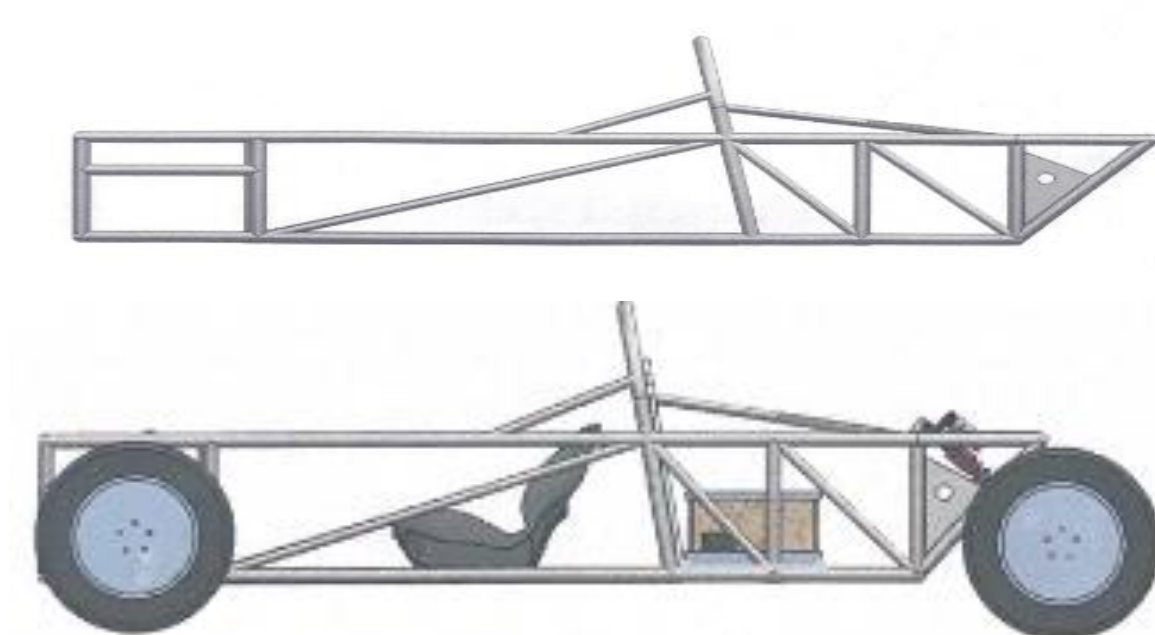
Once the parts have been identified, we need to obtain the parts. This can be through buying them or through donations from companies.

As we receive the parts, we start building the car. We are using a mixture of square and round mild steel tubing for our car. We must have a solid roll bar, made of a solid piece of metal. We also must have crush zones that are at least 15cm. We do all the wiring for our solar panel, batteries, brakes, lights, telemetry, and other electrical components. Any work that is done to the car has to be done by our team.

Throughout the design, we have to need to do some rethinking and designing to make sure that we are meeting requirements. Some of the changes that we have made are minor, but others are quite major. Such as reversing the body of our car to better allow for weight distribution, and arrangement of parts.

After having someone with more expertise in the construction of a solar car come and talk with us, we have decided to completely redo some of our designs.

Solar Car Design



Time Line For Solar Car Construction									
Frame and Wheels	█	█	█	█					
Larger Components			█	█					
Wiring and Connections				█	█				
Body constuction					█	█	█		
Fintuning							█	█	█

One green box is equal to one week.

Advisors

Dr. Joyce Stubbs and Dr. Steve Stubbs

Members

Andrew Dorn, Ally Hall, Bryce Watkins, Hayley Milner, Kaleb Trent, Owen Day, Sawyer Putnam

Solarcarchallenge.org has more information for those interested.