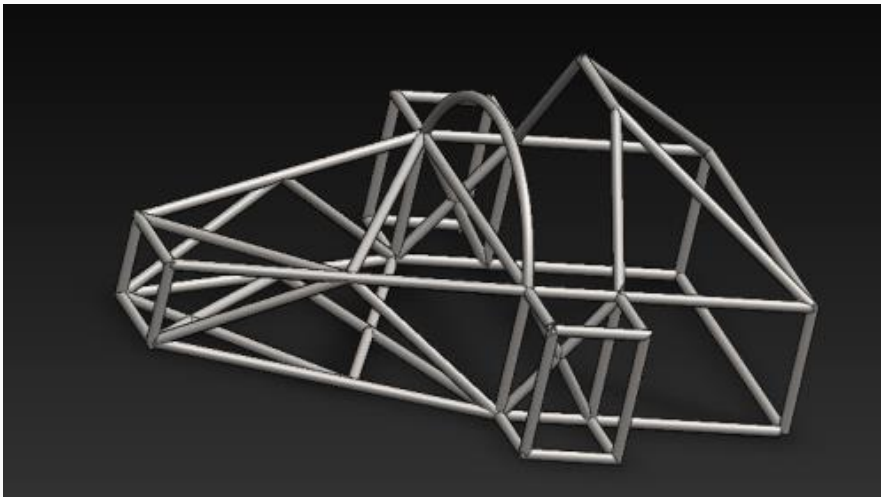
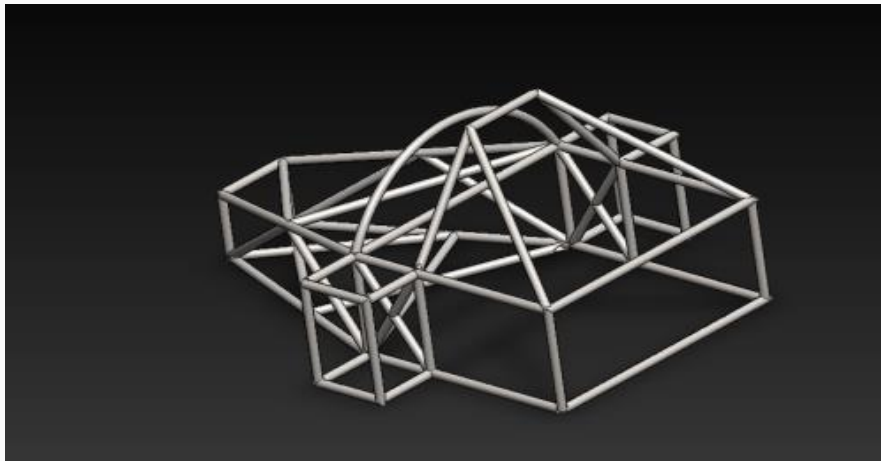


# Design and Analysis of Golf Cart Chassis

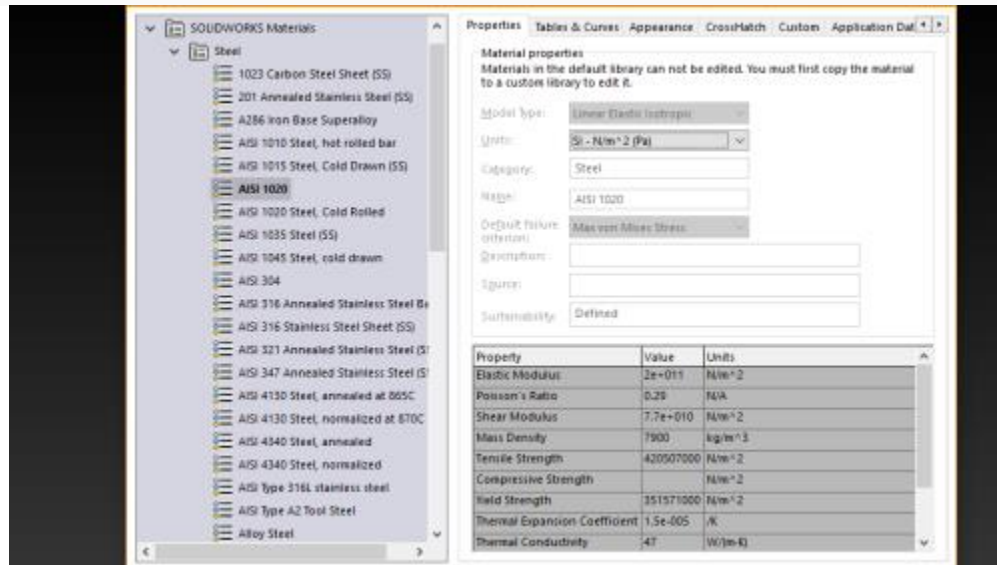
## Design of Chassis

The chassis of the vehicle is made of AISI1020 (polished steel). The chassis is designed in such a way that the load holding capacity is 265 lbs. The chassis of the vehicle is weighed at 169.75 lbs.

It is designed with a minimal number of members to reduce manufacturing cost and improve payload.



## Properties of Chassis



## Analysis of Chassis

The analysis is done in two parts:

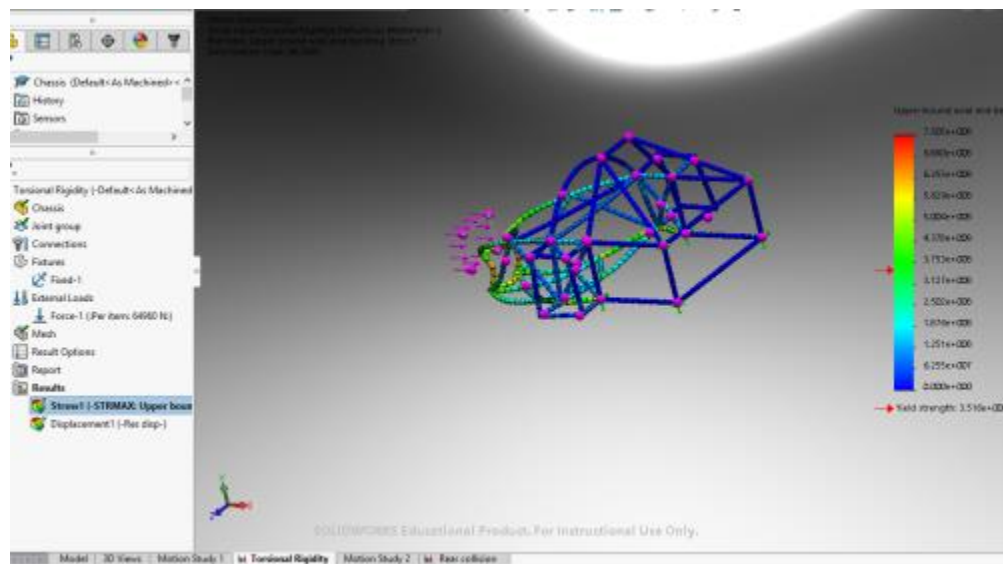
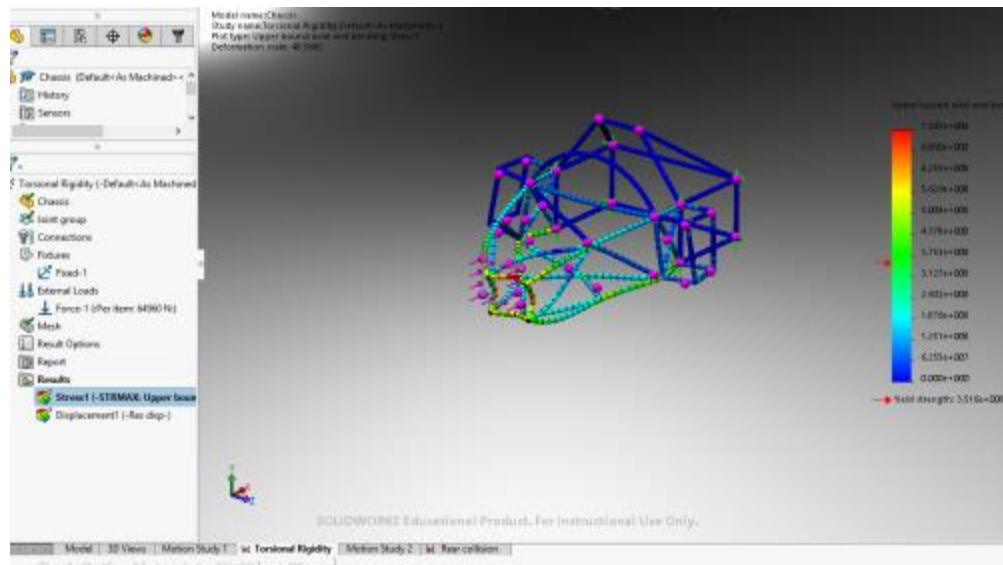
### (1) Torsional Rigidity Analysis

The torsional rigidity is a measure of the chassis's stiffness. It is of high priority for performance cars. But in case of a golf cart, the priority is to carry higher loads at lower speed.

In most cases, the torsional rigidity is measured in case of a head-on collision. When a car collides head-on at an average speed of 40 km/hr, the load that is transferred is 64,690N.

The nodes are fixed at the rear end as the collision is expected to happen head on.

In this case, the deformation factor is calculated to be 48.56. It is the ratio of the deformed dimension to the original dimension of the model.



Deformation Factor

It can be calculated using: <http://hyperphysics.phy-astr.gsu.edu/hbase/carcr2.html#cc2>

## (2) Rear Collision Analysis

One of the most common failures that occur to vehicles is a rear collision. The minimal force that will be transferred to the vehicle in case of a collision is 64,690N.

The deformation factor, in this case, is 3.7002

