



Introduction:

Human nature shows that people are reluctant to do work, simply in terms of moving objects over distances. The robotic transport apparatus will be able to move large objects efficiently in a variety of different environments. Using a set of tracks, it can move safely through any surface it faces. The control system of the apparatus is programmed to work with remote control from user feedback. Traditionally there are products that are used by our target consumers already, however the prototype created is much more advanced and offers the consumer many more applications than traditional methods.

Components:

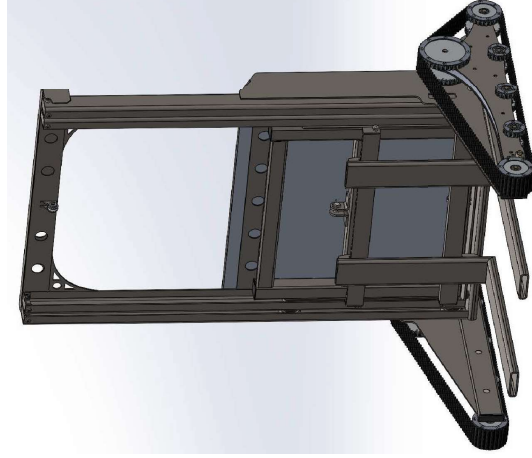
The Robotic Transport Apparatus operates on a variety of different systems that work cohesively. From the different pieces of the frame to the electrical controls each is integral to the success of the prototype. At the basics, a electric wheelchair motor controls a drive wheel on each side of the prototype to drive the apparatus. The controls operate on a 12 volt battery and a 2x60 sabertooth dual motor drive to provide the basic analog controls. A 2500-lb winch cable is fed through a pulley system to lift the forks up and down vertically.

Track System - allows for the apparatus to move over a variety of different environments

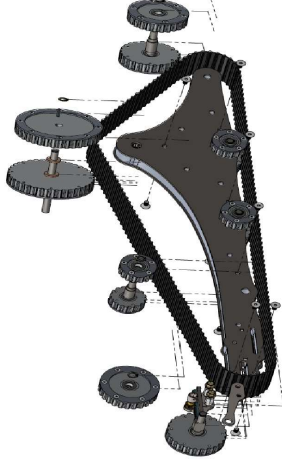
Mast to Track - connects to the track plates and creates the outer structure.

Mast - main components of the pulley and fork system, move with bearings inside of each other

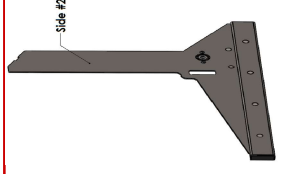
Design:



Full Assembly



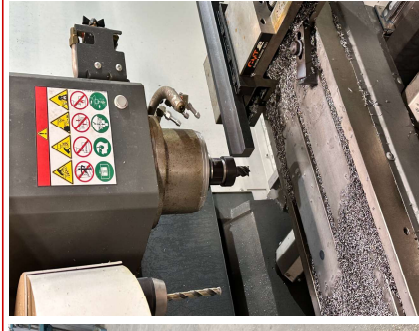
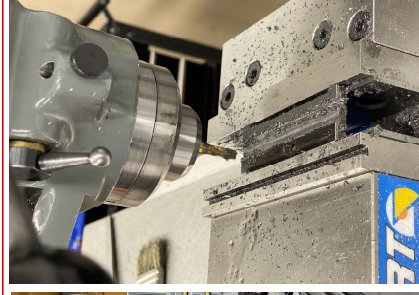
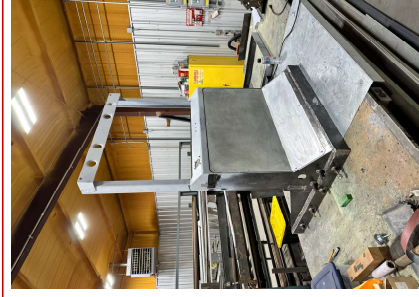
Exploded Track Assembly



Mast to Track Mount



Inner, Middle, and Outer Mast



Manufacturing:

During the construction of the prototype many different methods of manufacturing were utilized. Many of the larger parts were completed by the group's sponsors Northern Lucas and Sanco Metal Fabricators. The manual mill was heavily utilized for smaller parts.