



RAPID RESPONSE RUBBLE REMOVER

ME 463 Spring 2018



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Mission Statement

Goal: Provide a portable device that operates similar to a crane that will move debris away quickly

Necessary Functions:

- Lifting power
- Stability on rough terrain
- Portability to move around the disaster area

Improvements over

Benchmarks:

- Quicker response time
- Deployable in hard to reach areas to lift debris
- Reduces need to use tools to break apart large debris

Design Specification

Base Weight: 50 lbs

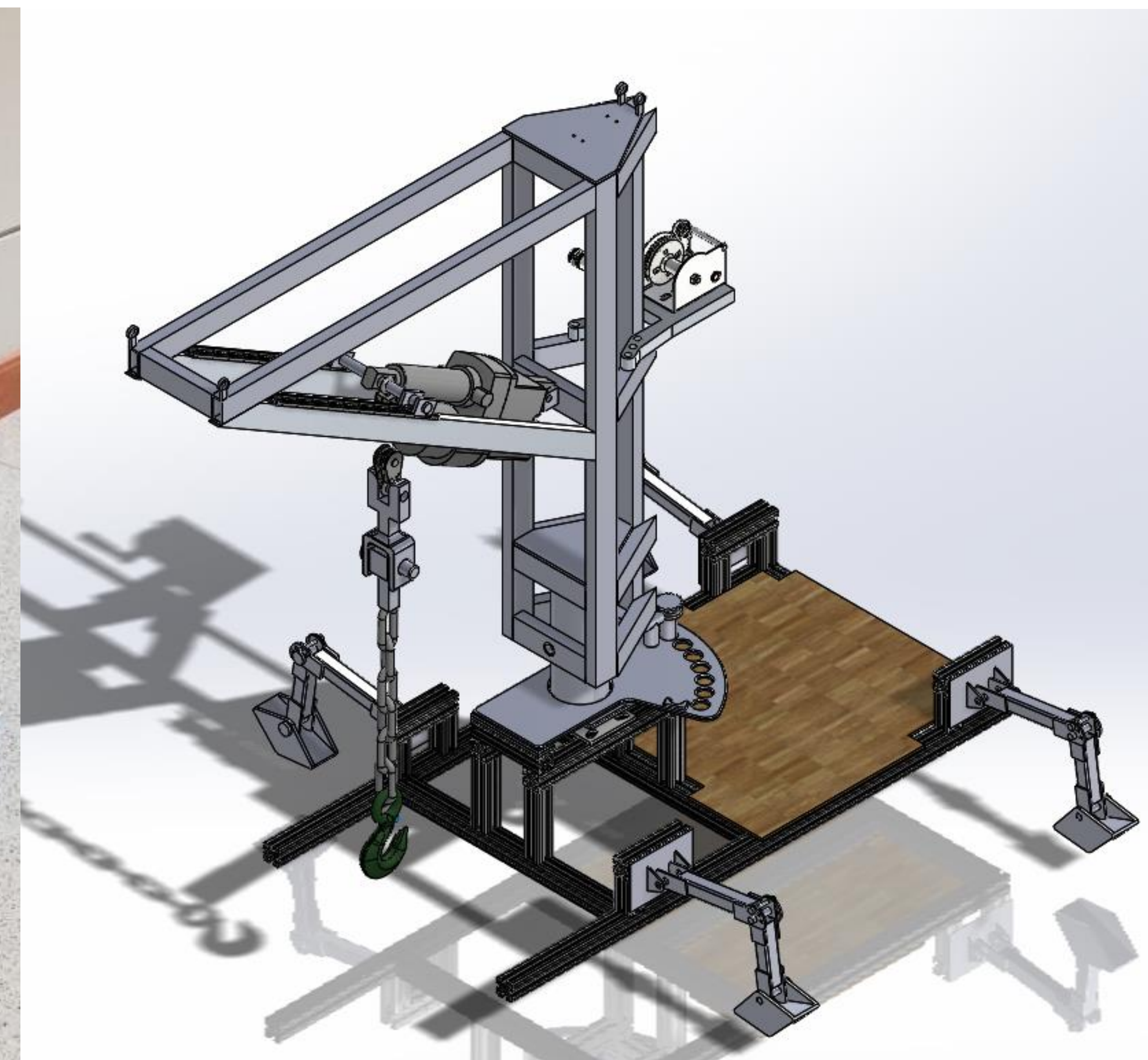
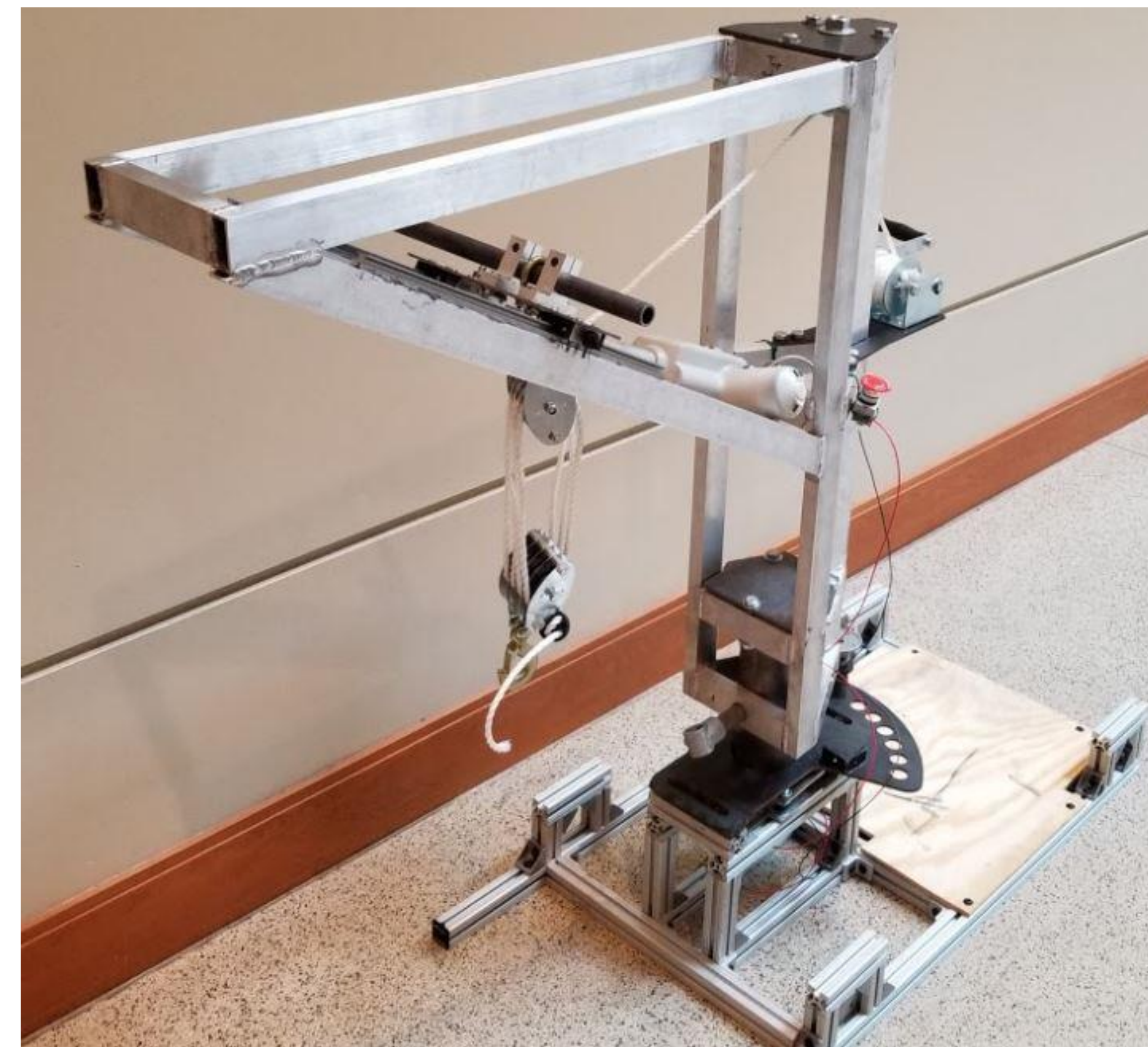
Upper truss Weight: 50 lbs

Set-up Time: <10 minutes

Lifting Capability: 200 lbs

Actuator Input: 24 V, 8 A max

Lifting range: 4 ft



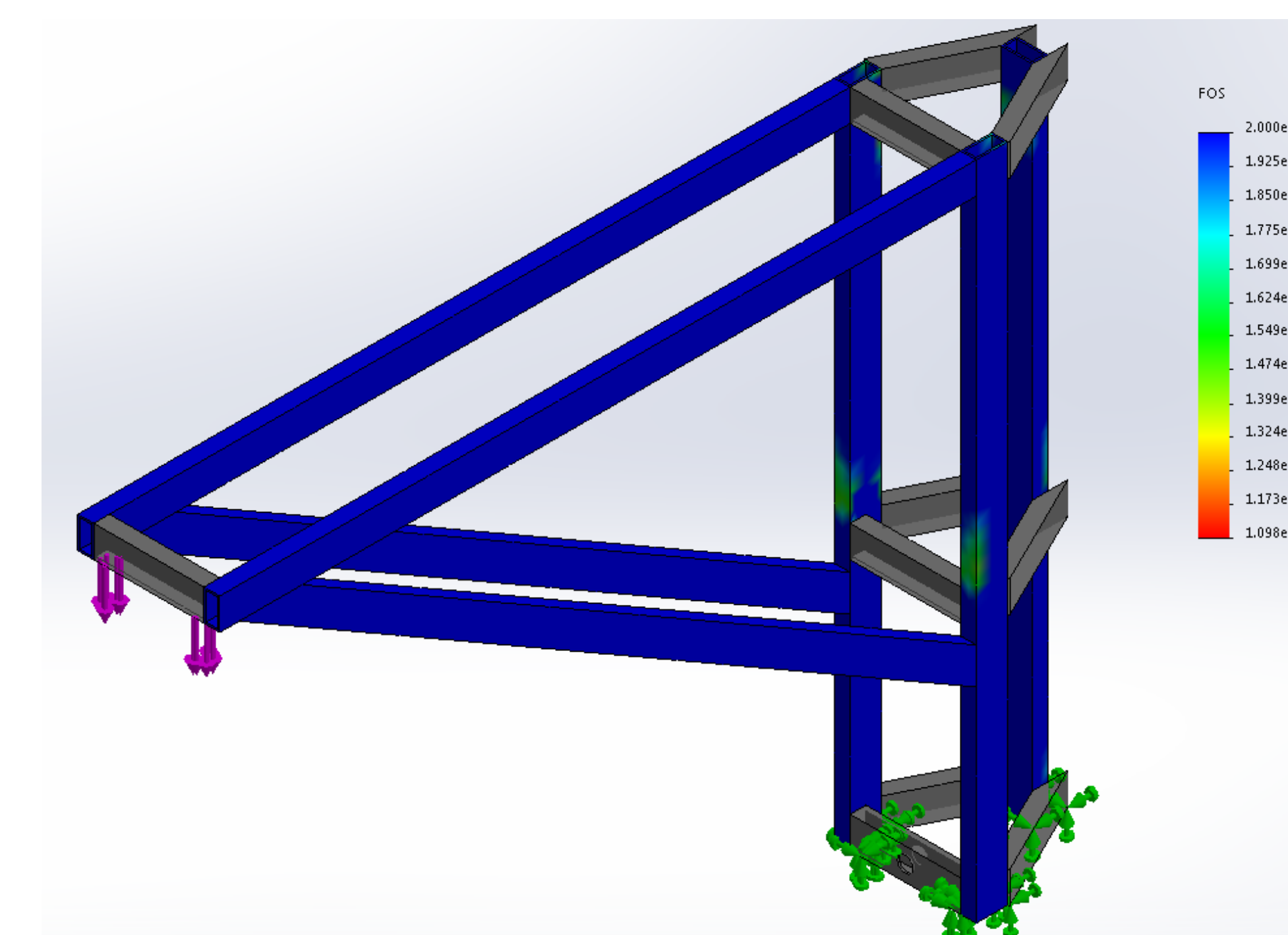
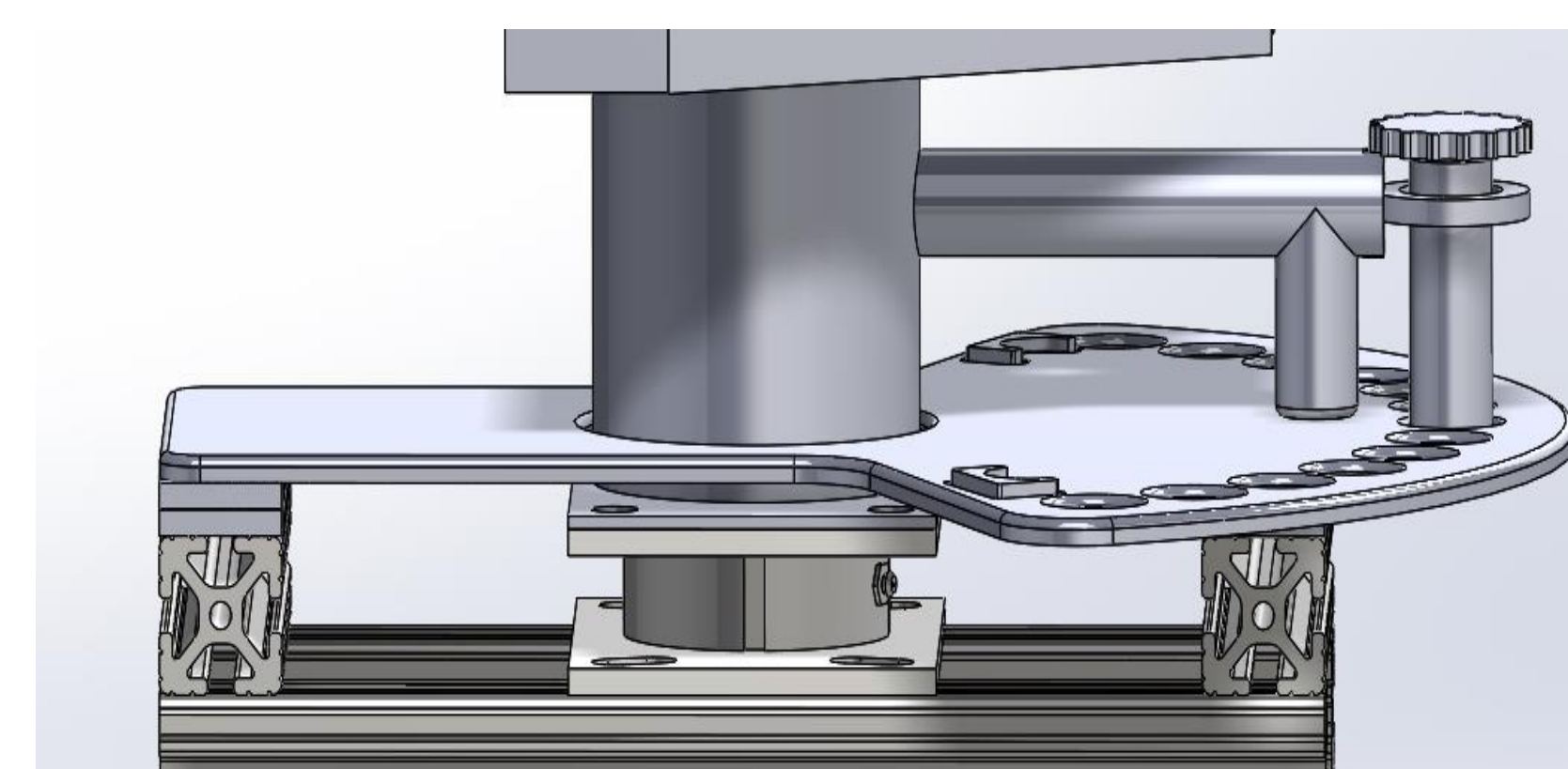
Testing



- Assembly time: 1 minute
- Upper assembly weight: 55 lbs
- Base assembly weight: 40 lbs
- Max lifting capability: 175lbs
- Device carried easily by a team of four as designed

Design Features

- 4-cord pulley for easy hand cranking assisted by a linear actuator
- Rotating/locking tower with wide stable base
- Easy pin system for setup and operation
- Aluminum base for low weight
- High strength steel turntable bearing
- Quick connect system for attaching debris



Marketability

Cost of Prototype: \$440

Potential Markets:

- Emergency Responders
- Construction
- Home Improvement

Retail Price: \$1060