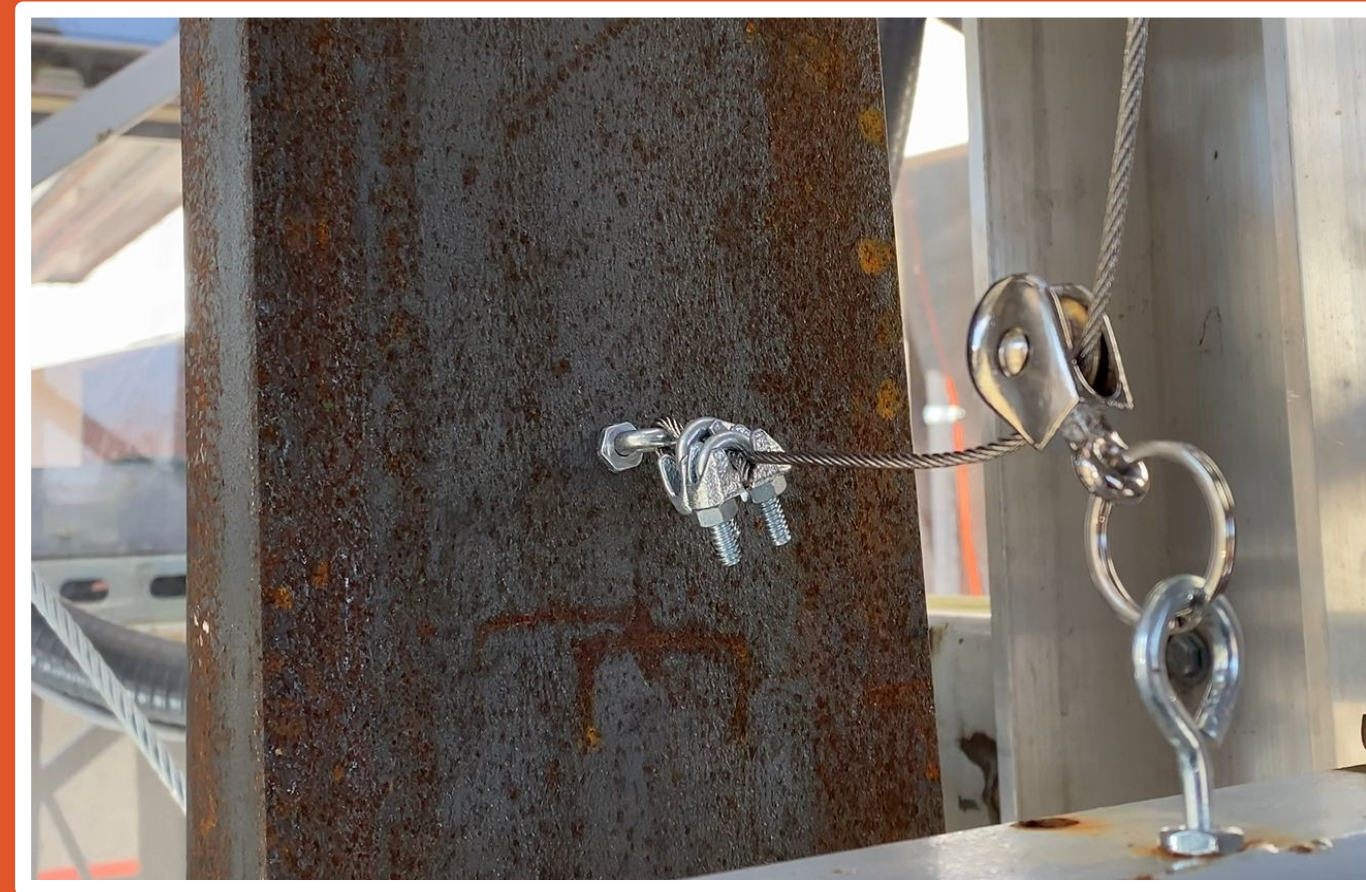
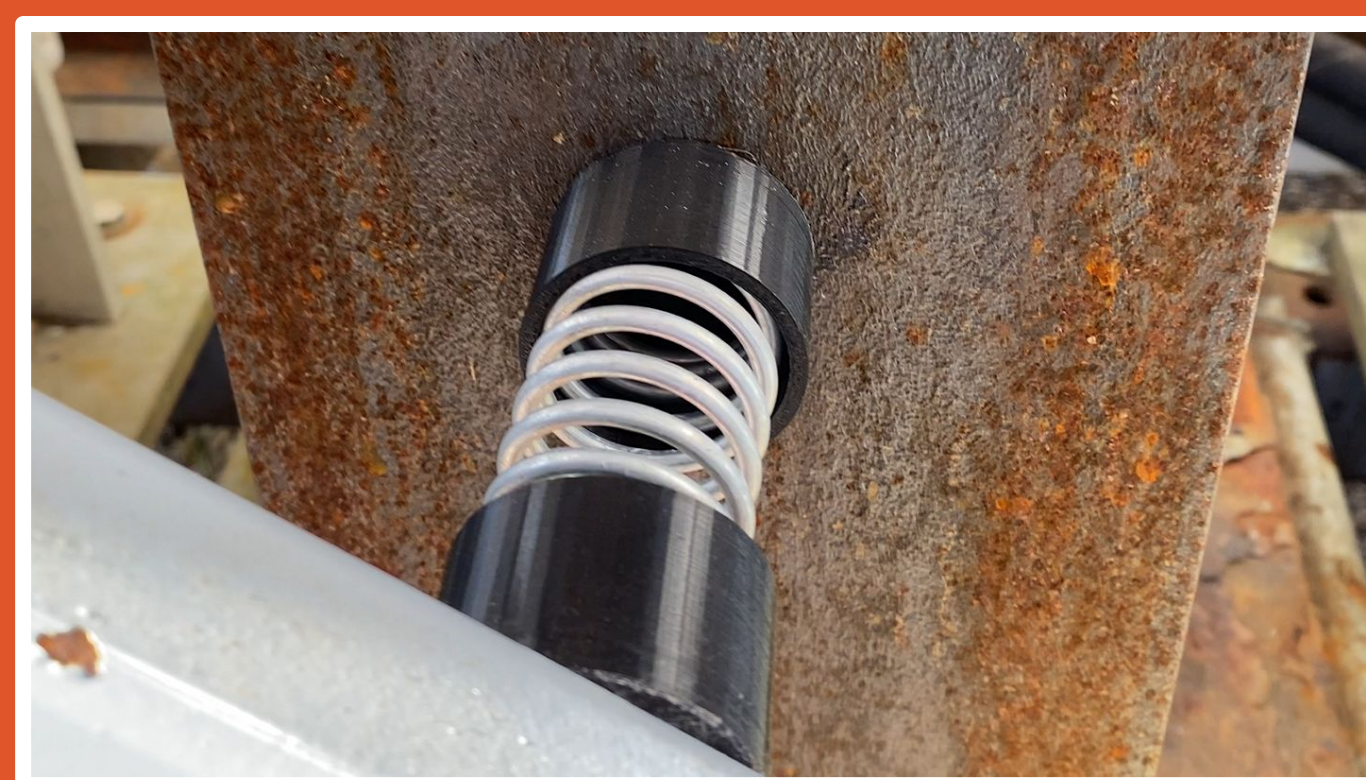


# OSU Solar Trailer Prop Arm Control Mechanism

Our team designed and installed a spring returning, cable and pulley system to operate the prop arm.



Cable Mounted on Prop Arm



Spring Mount Near Bottom of Prop Arm



Handle and Wall Bracket



## Handle and Wall Bracket

The final handle design was composed of an aluminum rod and an aluminum bracket. The raw materials were machined in the OSU machine shop to achieve the desired size and features. For the handle we used the lathe to turn a slot for the bracket, drill a through hole for the cable, and knurl the surface for a better grip. The wall bracket only needed a simple slot milled for the handle to slide into as seen above. All of these parts were then deburred and sanded to remove sharp edges and sandblasted to a uniform finish.

## Cable and Pulley System

- Our team chose to design and install a cable and pulley system because of the simplicity and reliability.
- Working with the already installed prop arm, we mounted our cable high on the lever arm to provide leverage and ease of use for the operator.
- The cable routing was kept out of the way in order to retain the open cargo space which is used for storage during traveling and events.
- A spring was mounted lower on the prop arm to keep tension on the cable system and return the prop arm to the engage position when there is no force at the handle.



## OSU Solar Trailer Background Information

- The sustainability office operates this solar trailer to provide power during various outdoor events.
- This solar trailer began as a capstone project in 2007 and has since had other capstone teams make various improvements
- The previous team installed a prop arm to support the weight of the solar array during long periods of time in order to reduce wear on the hydraulic lift system
- The newly installed prop arm had no means of engaging or disengaging while standing outside the trailer. This was annoying and unsafe as the operator had to climb inside the trailer and manually move the prop arm while the solar array is being lifted or lowered
- Our team installed a cable and pulley system to operate the prop arm while standing outside the trailer conveniently and safely

