

## Team Meeting #13

12/11/19

### Test Weight

- Overestimate force due to resistance added by spools
- Solutions:
  - Add weight to top wheel
  - Add grippier material to wheel

### Roller Bearings

- Two attached to linear bearings
- Machined parts
  - Add to manufacturing folder
  - Put together drawing package

### Linear Servo vs. Linear Actuator

- Operator would have to control linear actuator
- Linear servo is what we will utilize
- Easy Amazon order
- Calculate force pushing back against wire
  - This will add force to the servo
  - Determine optimum speed for wire to have virtually no pushback
- We will need another stepper driver

### Angel's Question

- What about the encoder?
- Ian thinks encoder should be added
- Based off the Design Review we have decided to test the stepper motor without the encoder
  - Angel agrees with this course of action
- Having a check system would be nice
  - Motor will wear down
  - Encoder could help combat that
  - Form of quality control
- We could order it later

### Swenson's Thoughts

- Not comfortable ordering bearings
- Linear bearings would be overkill
  - Simpler options are available

#### Action Items

- Send in Portfolio – Alyssa
- Send address to Angel – Rennie

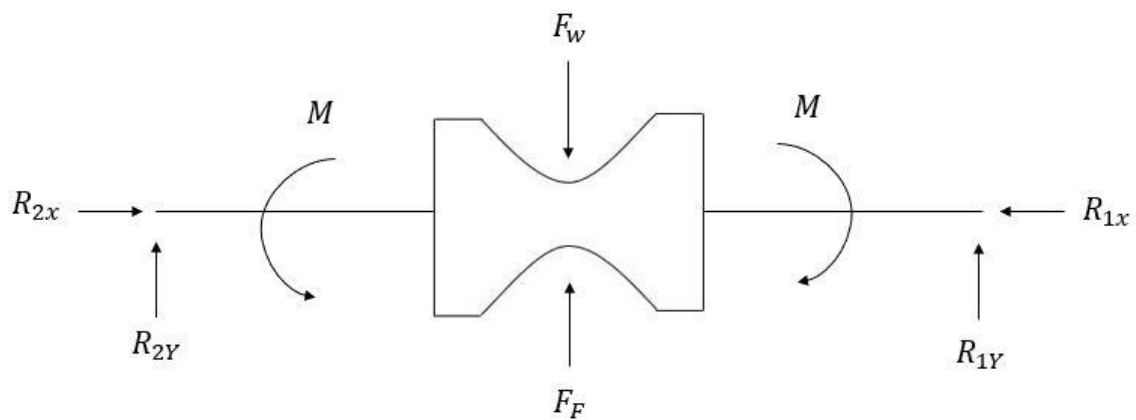
#### Machining Plates

- Laser cut instead of machining parts
  - For plates
  - Must be under a quarter inch thick
- Caution against putting bearings inside of the plate

#### Stabilizing top wheel

- Roller ball system inside of slots
- Notches in slots to set axles in
- Weight added to outside of axles
- Stabilizing bar

#### FBD



$$\Sigma F_x = 0$$

$$\Sigma F_y = 0$$

$$\Sigma M = 0$$

$$F_F + R_{1Y} + R_{2Y} - F_W = 0$$

$$F_F = F_W$$

$$M_1 = M_2$$

$$R_{1X} = R_{2X}$$

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- The sum of moments equals zero because of the way we sandwiched the axles to the slots
- Accomplish:
  - Determine optimal weight
  - Keep Rx stable
  - Create equal moments