

3S Trailer Suspension

Meeting #19

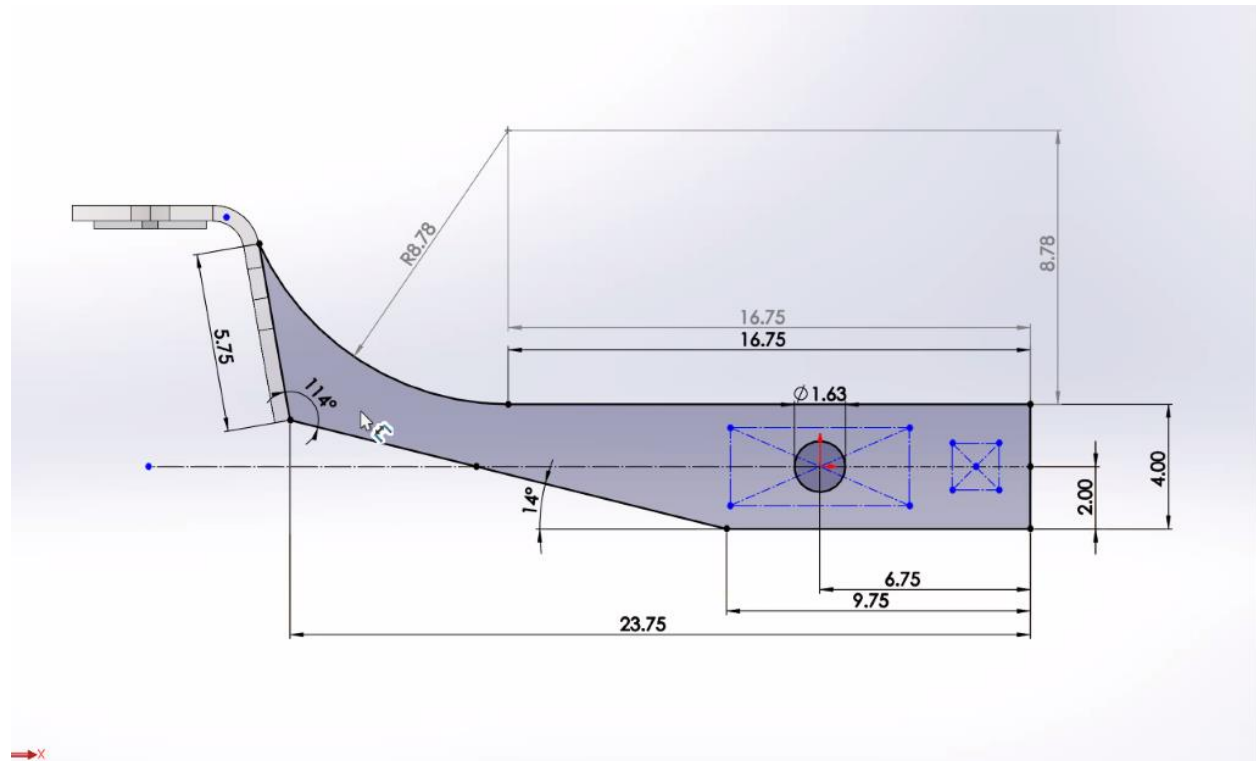
Start Date & Time: Tuesday, 7/28/2020, 10:00am

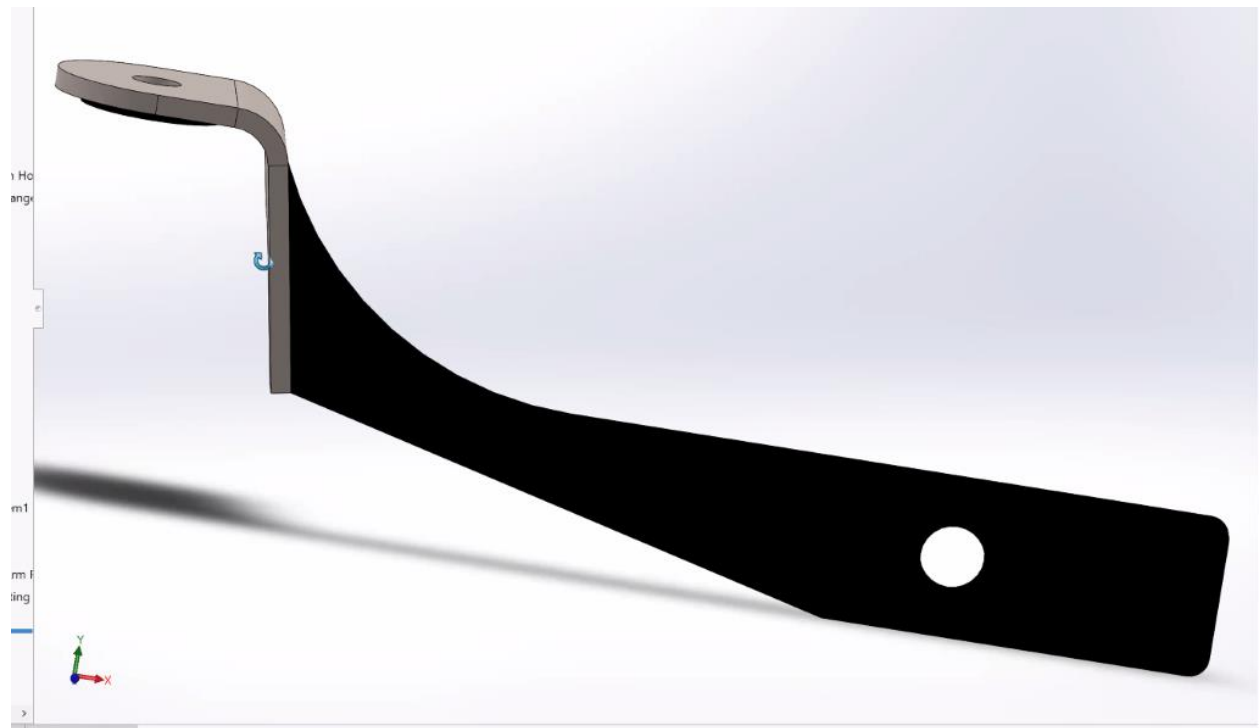
Members Present: Anson, Caitlin, Kirk, Robert

End Time: 12:45pm

Last Meeting:

10:00am meeting



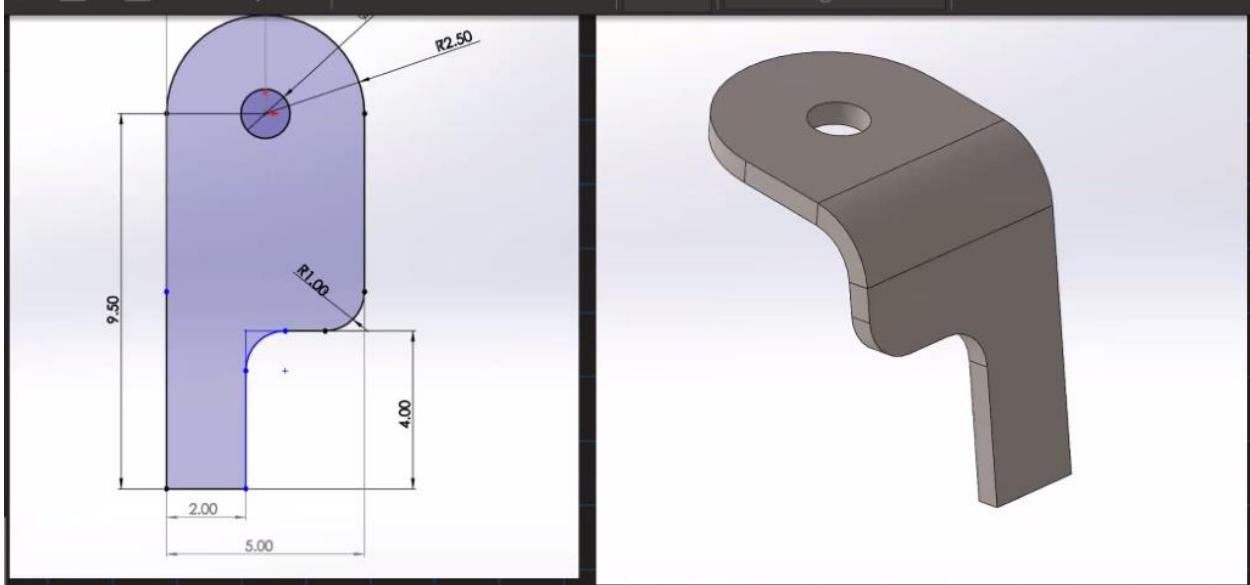




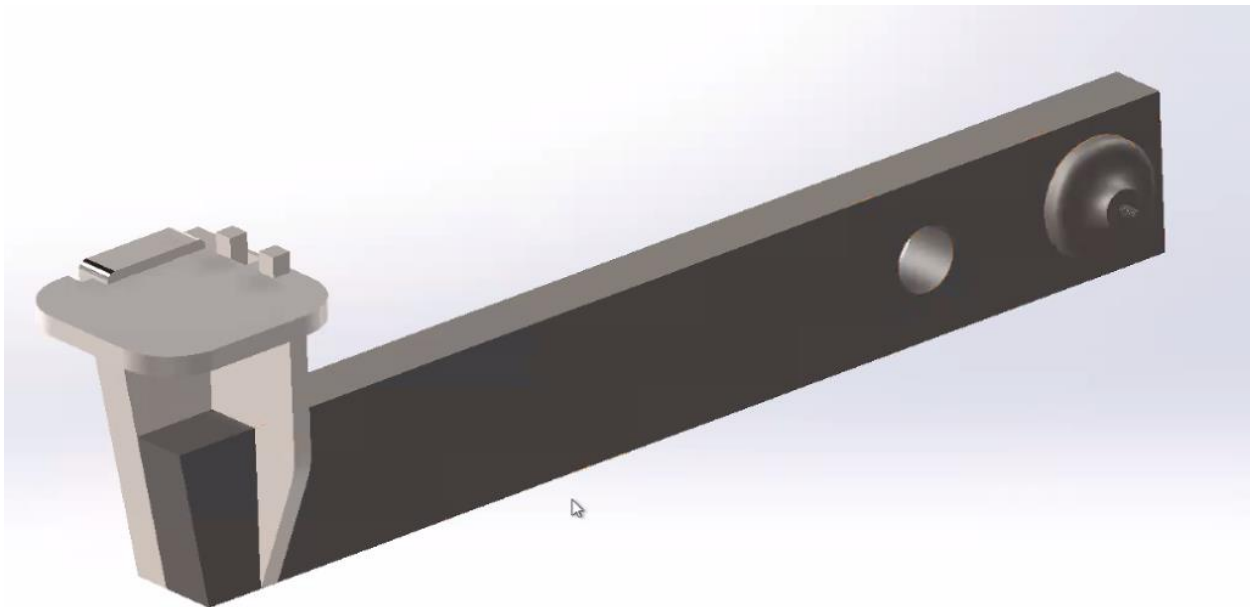
- Rob will do FEA on 3500lb and 6000lb

12:00pm Meeting with Swenson

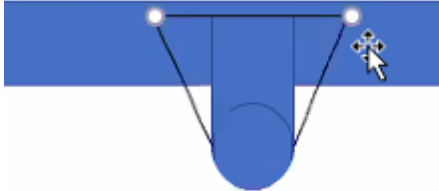
- Finalize rocker arm
- Fine adjustments/measurements
- Sweeping taper
- Rotating spring brackets
- Prototype?
- Have 3500 and 6000 FEA and BOM done by Tuesday



- Sweeping radius - chop the toe off - fillet weld on the top
- Double check FEA when you do that
- Can we extend the end piece inward a bit to add a fillet weld?
- Don't have it flush to the outside
- Where does the bottom part of the spring mount go?
- L bracket would give us more space
- Failure modes - more stress on the springs
- Optimize splitting the difference of an angle lever arm top and angle L bracket
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- This is a snapped together - we want 1-piece lever - these pieces would be too small and hard to work with
- Anson - work on 3D model prototype
- We have the filament already!!!
- We can start printing once the design is complete!
- Design consideration



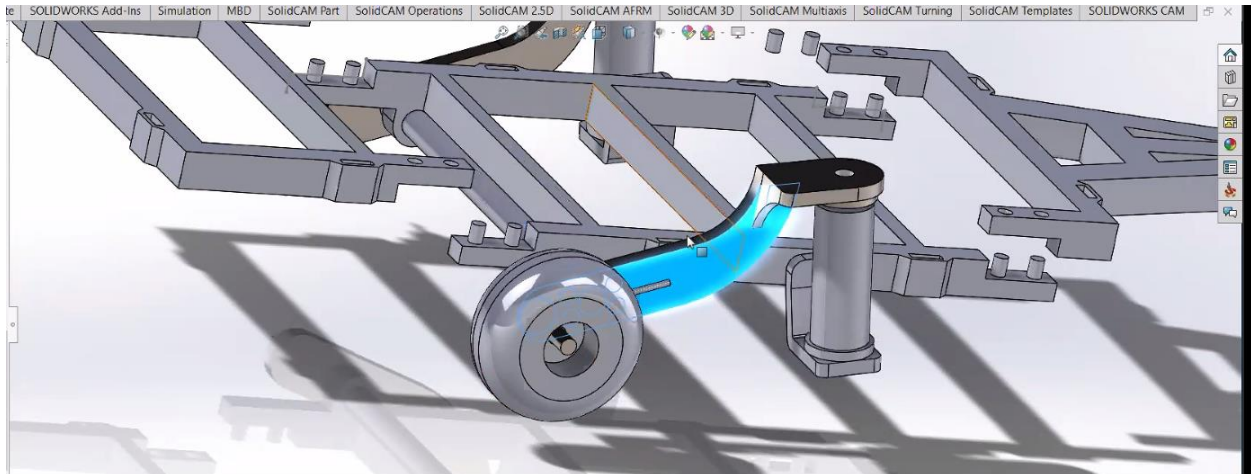
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- Required displacement for spring?
 - We need it to stay in line - not buckle

Today's Objectives:

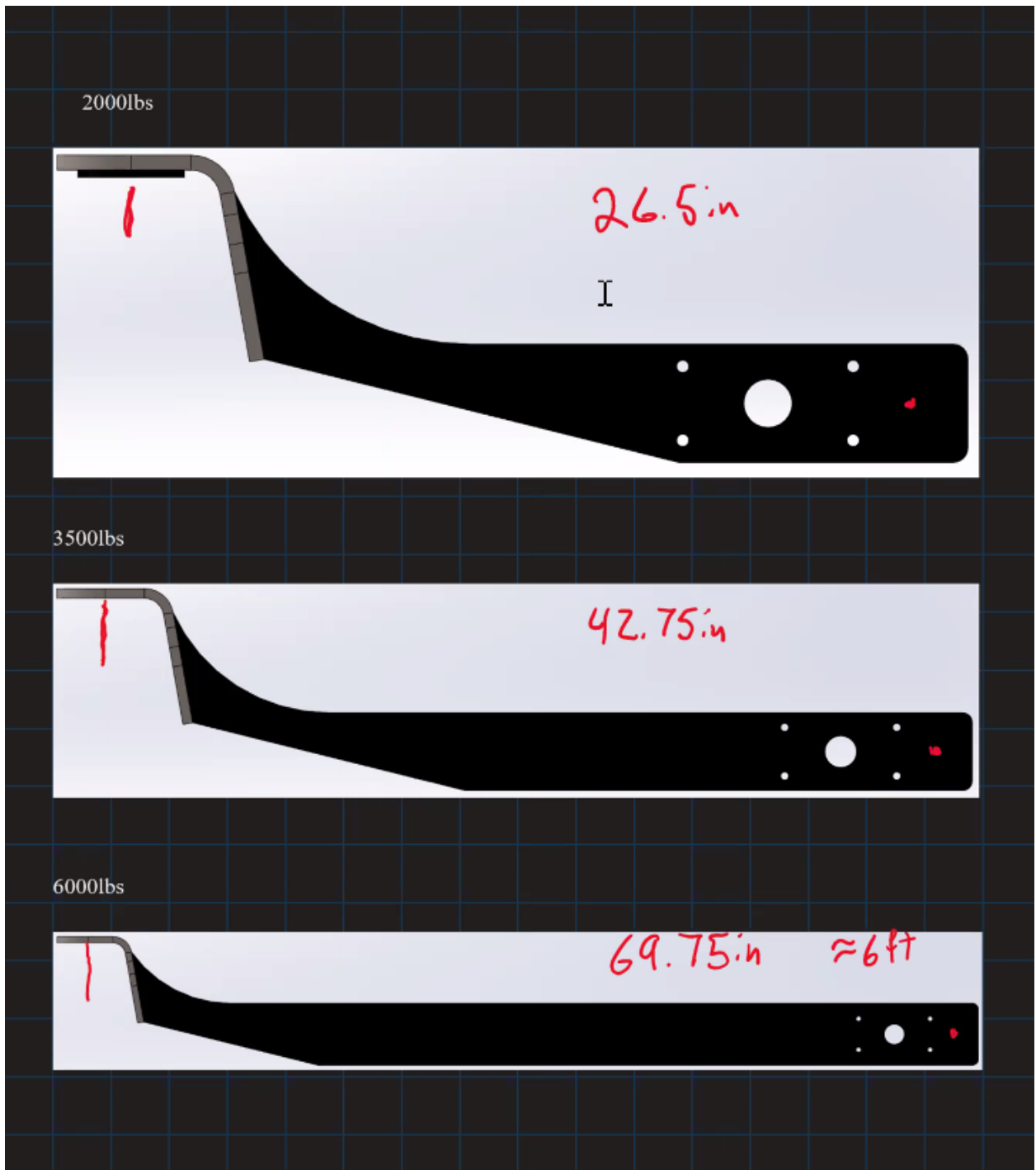
- Talk to Swenson about:
- Finalized 3500lb rocker arm - 6 ft long
- How long would the trailer bed have to be if the rocker arm is 6 ft long?
- The bed of our prototype was too long for the printer
- Value prop on the presentation

Notes:

- 10:00am
- What should we do for the value proposition slide? Bullet points?
 - Bullet points or provide the background slide and say the value prop during that slide
- We are having solid works problems!! OneDrive and solid works aren't being compatible

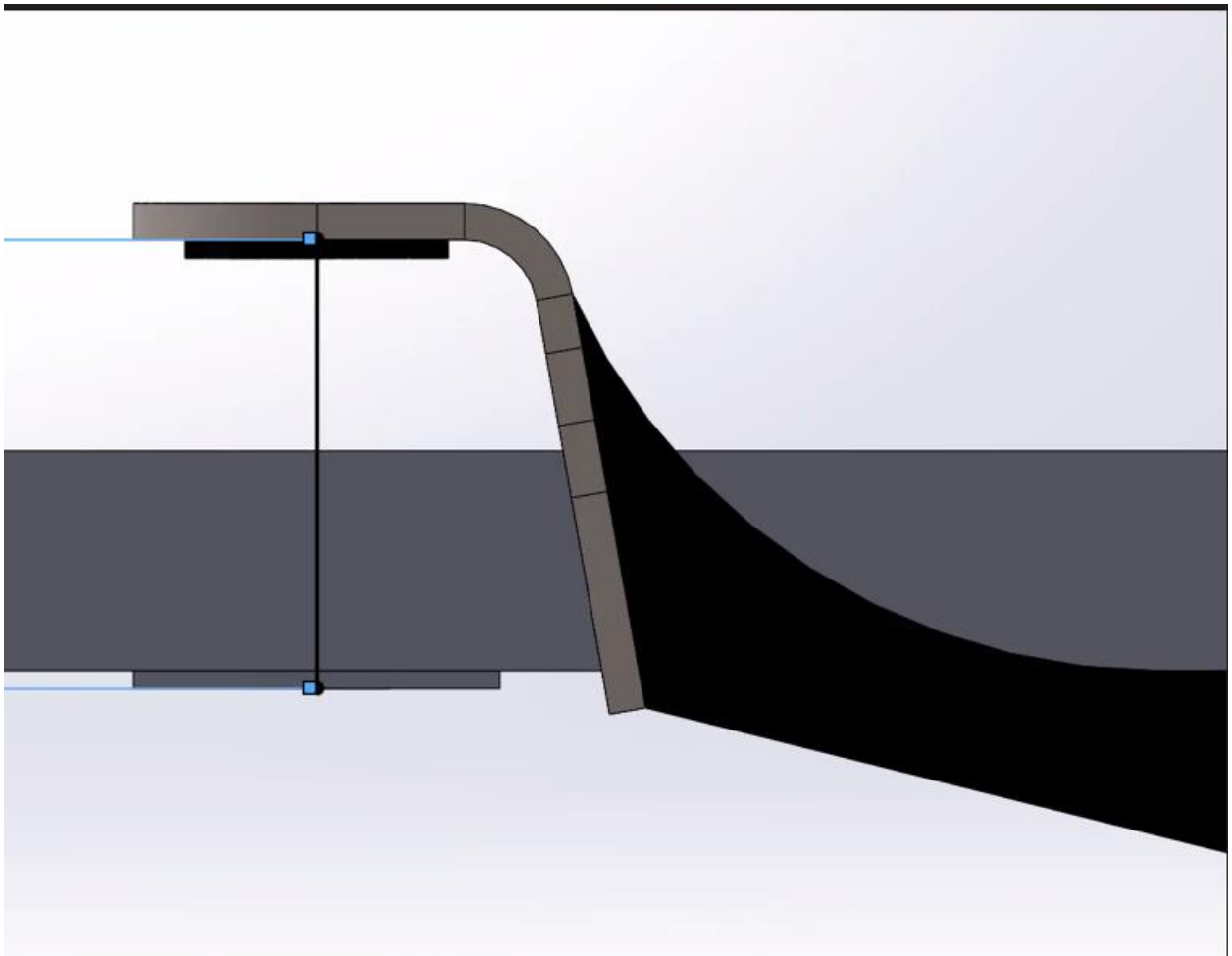


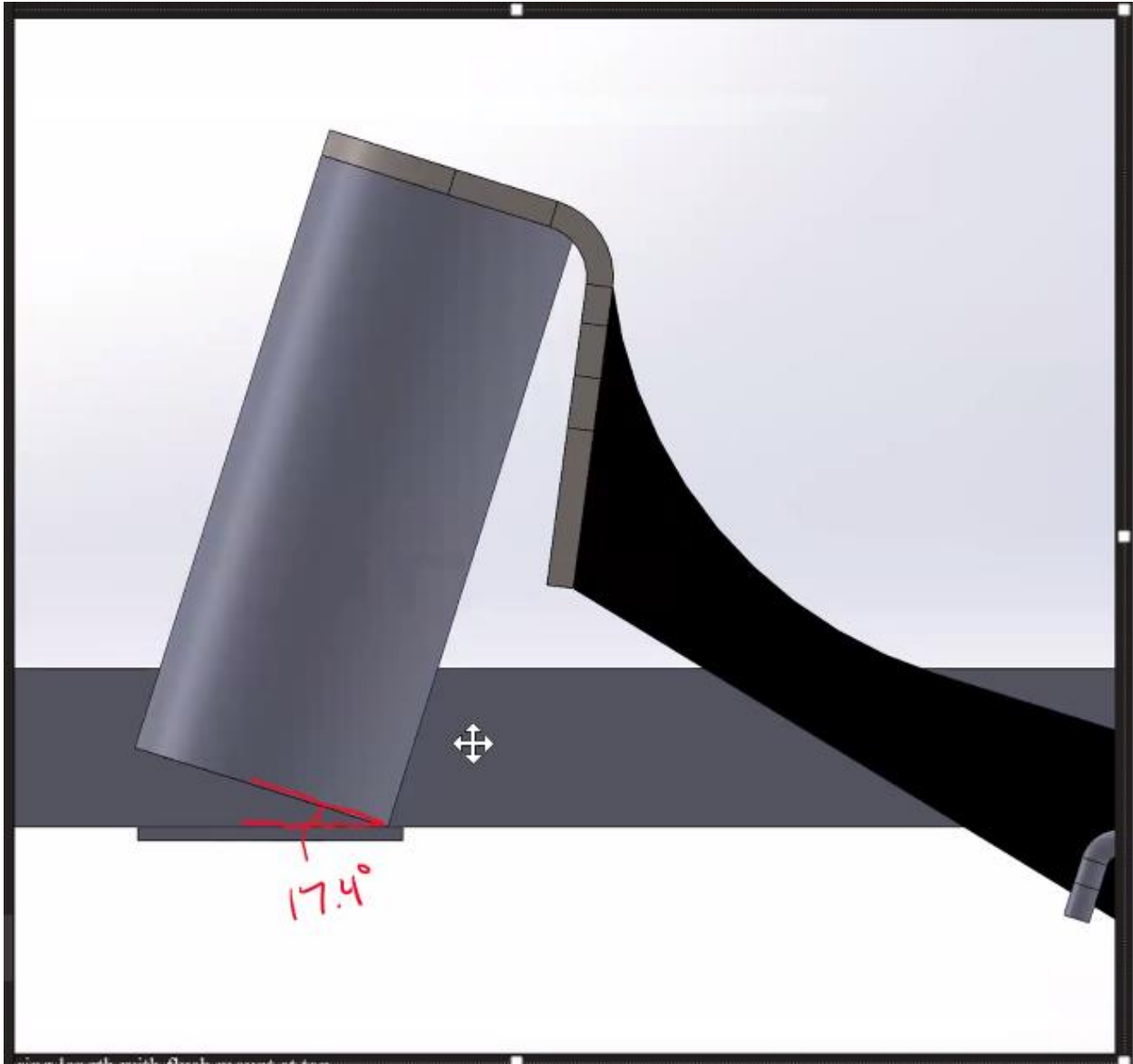
- 12:00pm meeting with Swenson
- 3500lb and 6000lb rocker arms and compare them to 2000lb
- Drawing packages make it pretty
- Spring mounts redo
- Wheels and tires



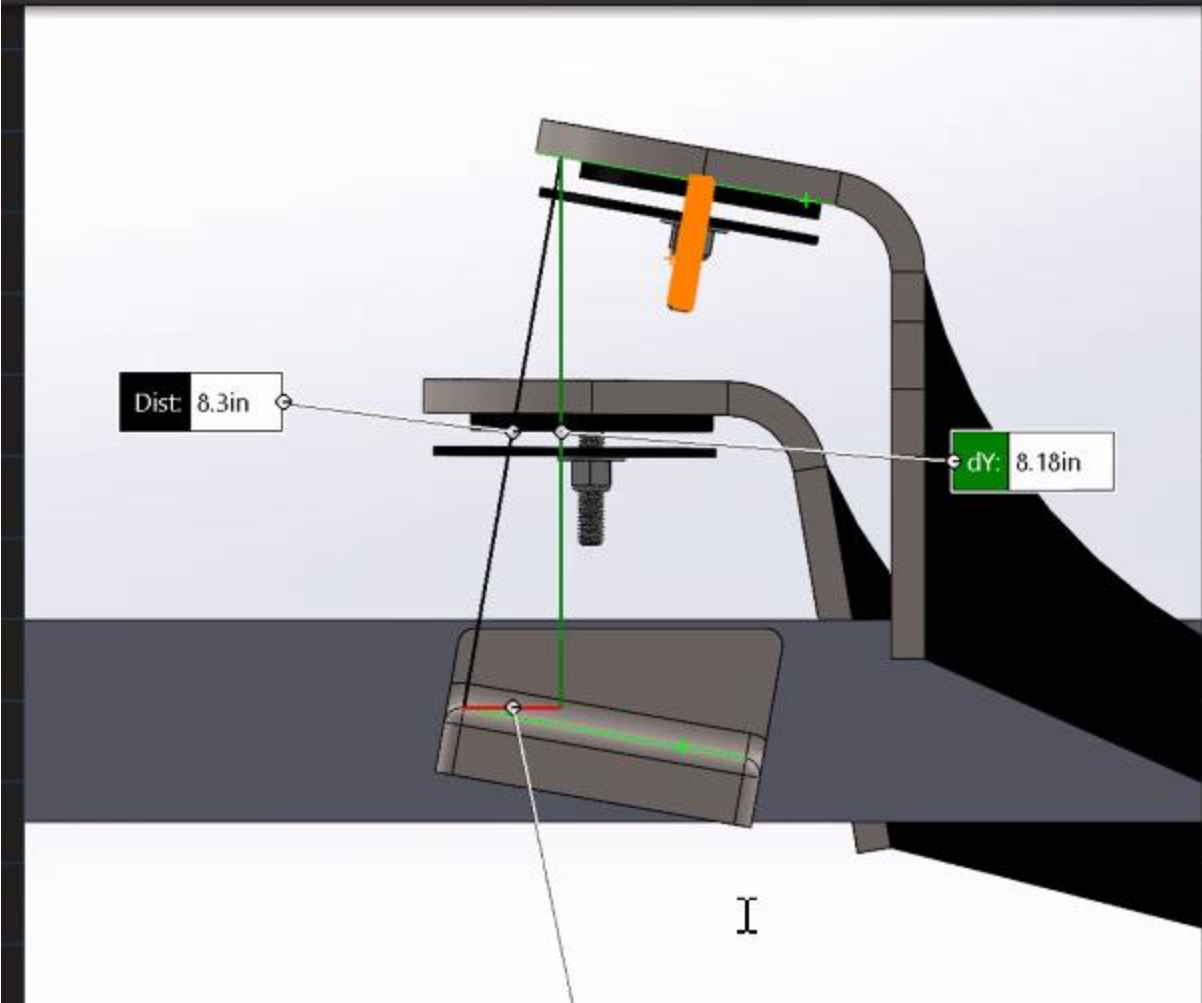
- 3500lb - 6 ft long
- 6000lb - 5 inches tall
- He thinks that they may be too long - why?
- Off optimum lever ratio
- What does the spring have to move?
- Spring must be very flexible

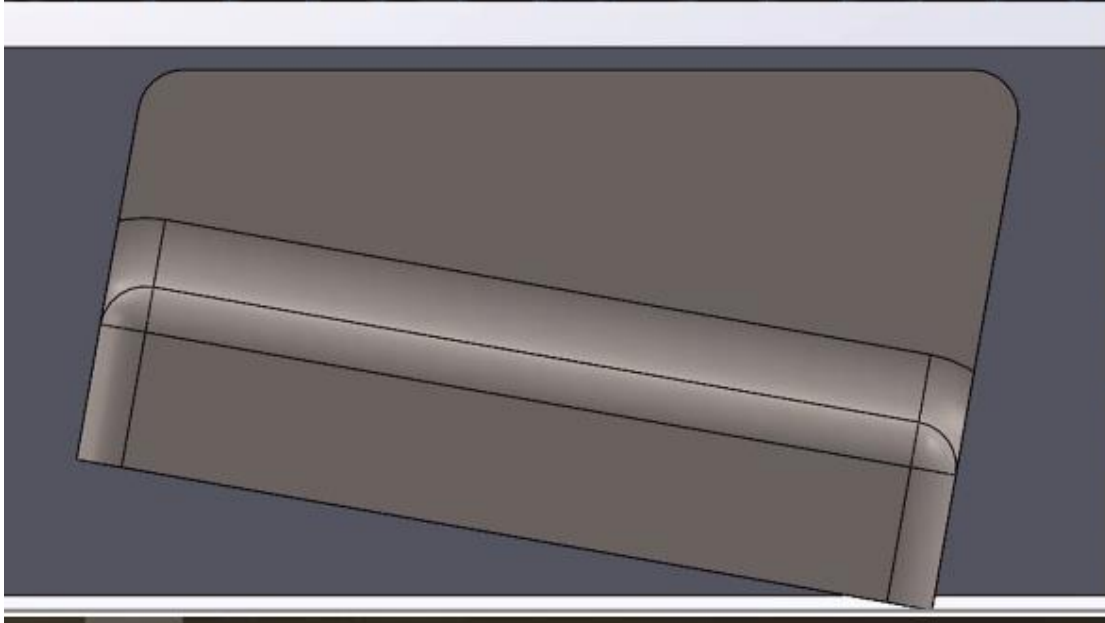
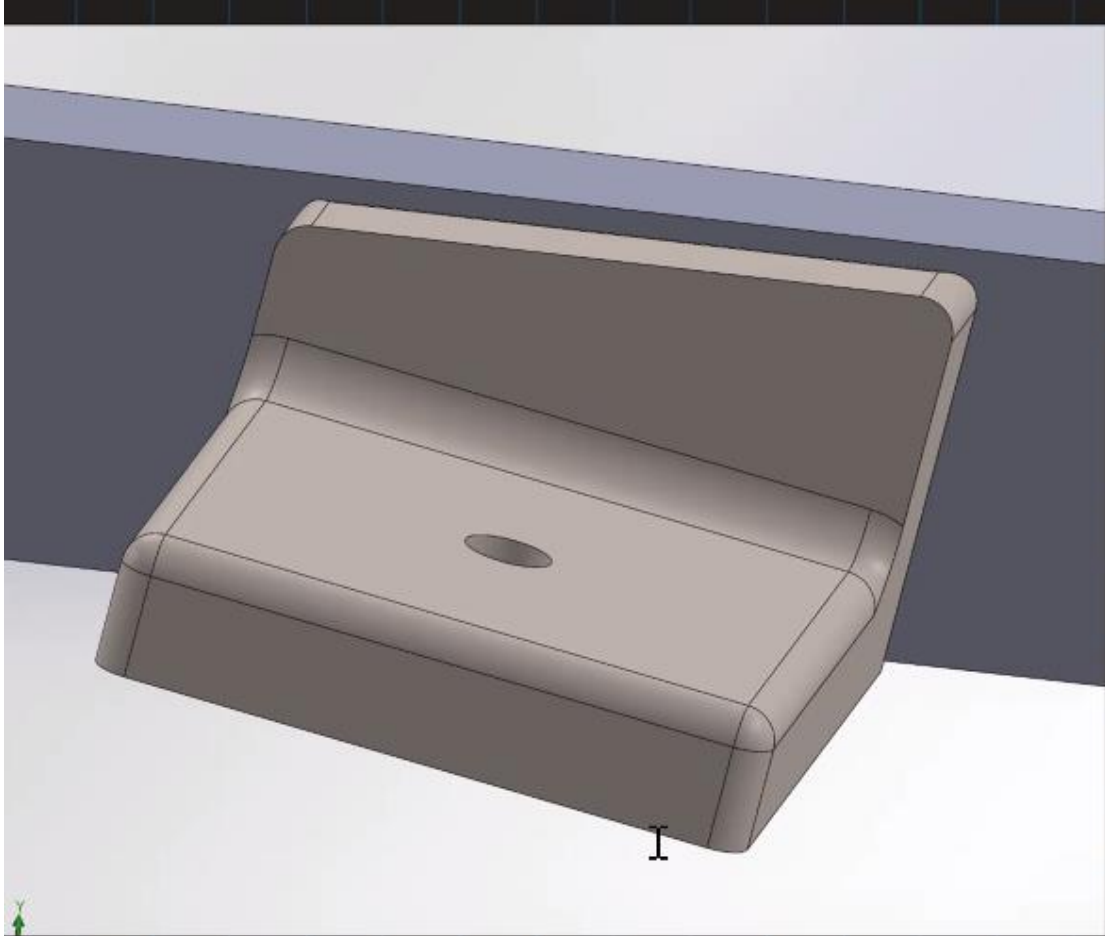
- Everything had run through FEA and it passes!
- Rob read it incorrectly so that is why the lever was so long
- We will redo those get back to Swenson
- Is the hole for the axle and hole for the bolts staying the same?
- FEA says that nothing must change
- Shear analysis on the bolt?
- Haven't looked on the hardware yet
- Moving to a larger axle - will be updating this soon
- Spring mount
- Free length vs compressed flat



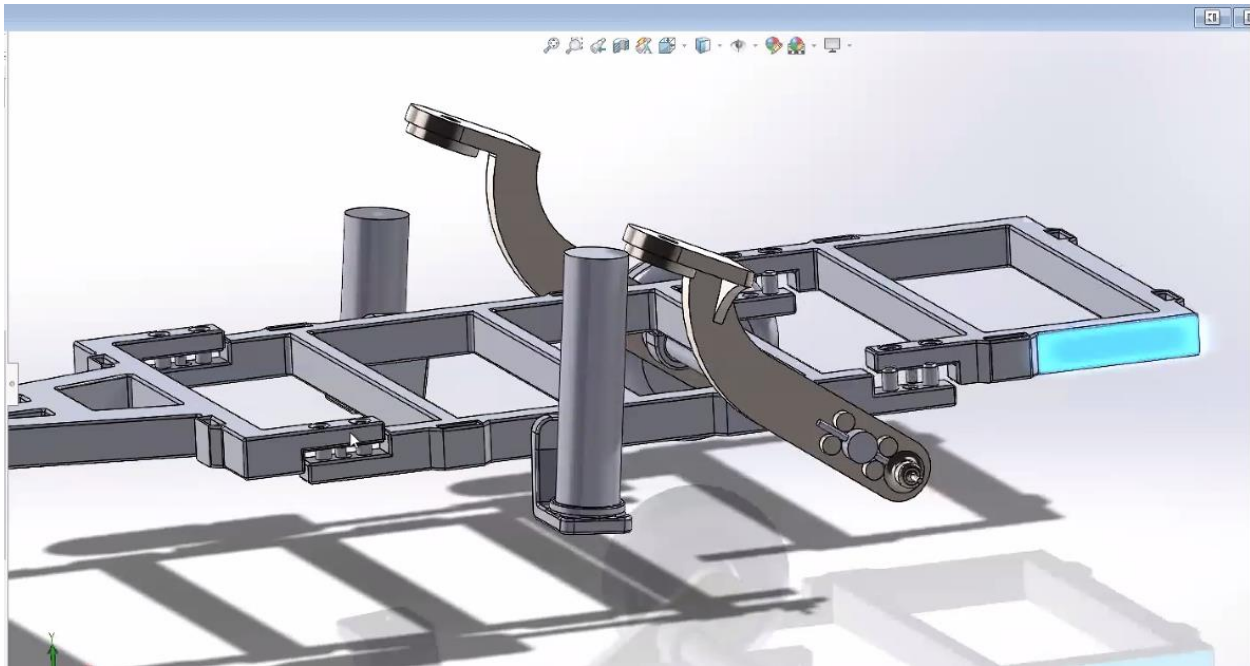


- Slightly angled mounting bracket

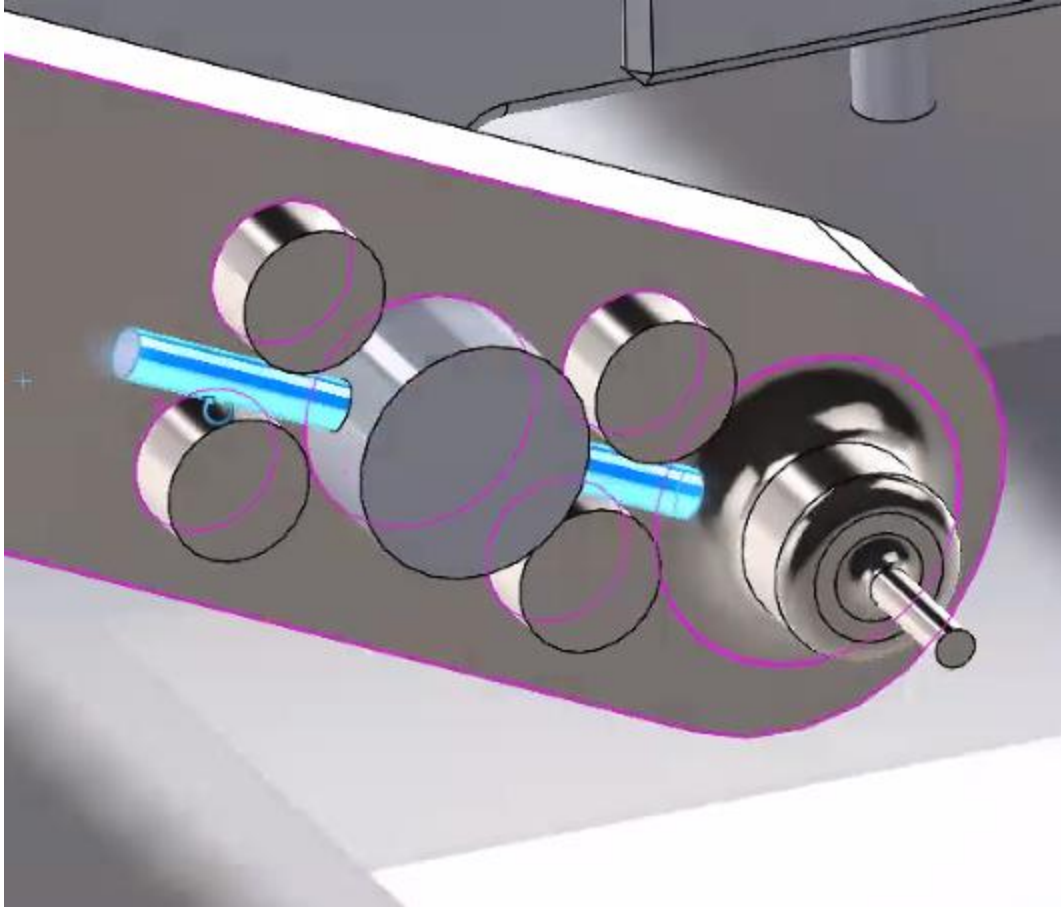




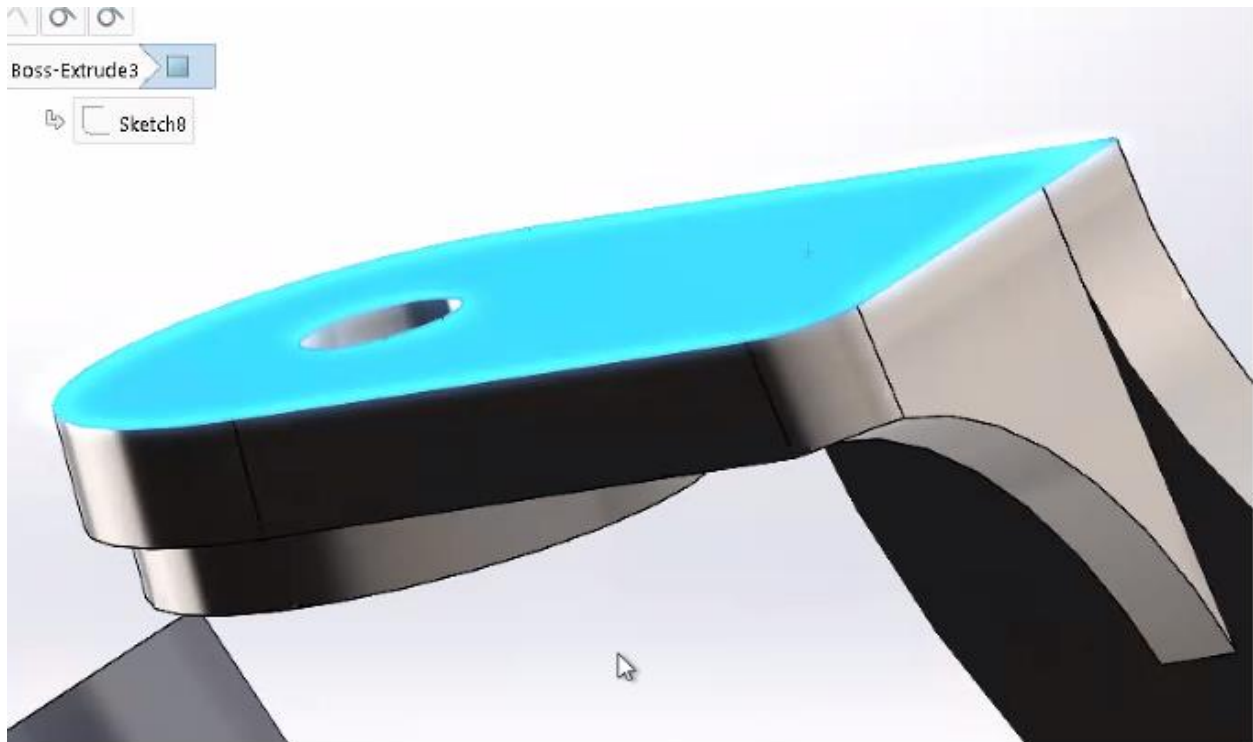
- 10-degree angle?
 - For the welds - 1/4 inch or 1/8 inch between them
 - Make it 1/4 - welding edge
 - Make it have a fillet
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- Prototype updates
 - 18 inches long
 - Made it into three pieces that all snap together



- Bed space of printer - 8 3/4" by 8 3/4"
- Something broke on the print so we need a micro SD card
- It can't collide with the axle
- Retaining the spring? - Tee 4 parts connecting to the spring, slips into a collar
- Hasn't been modeled yet
- Don't trim the spring just yet until the very end
- 3mm rods



- Make it have a handle to pull the pin out
 - What are we using for our axle - 3/8" dowel?
 - Using wood?
 - Maybe we need something with torsion response
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- Thoughts from Swenson for prototype
 - Easy to see the geometry
 - Same visibility for the full-scale trailer
 - How much will the springs compress? At the full scale
 - Didn't follow the systematic progress to find the degree for the angle
 - Prototype - doesn't following the welding process that we had discussed for the full-scale model



- He liked the flat plat with no bend - attractive
- Don't want to have to redo everything because we are running out of time
- End of next week on Thursday - final combination of project - 20-minute tech presentation
- It is similar to the design review
- Limited to 17 minutes 3 minutes for questions
- Portfolio, citizenship review, etc. due next Friday
- Steady progress

For Next Time:

- Full picture of prototype
- Work on Technical presentation
- More work with design of rocker arms
- 3D print prototype

Comments/Concerns/Reflections from Today:

- We have been having some solid works and One drive problem so that set us back a little bit, but we are good to go right now
- We have more design modifications that we need to do, and we are running out of time

Next Meeting Time & Date: **Wednesday, 7/29/2020 @ 9:30am**

