

3S Trailer Suspension

Meeting # 20

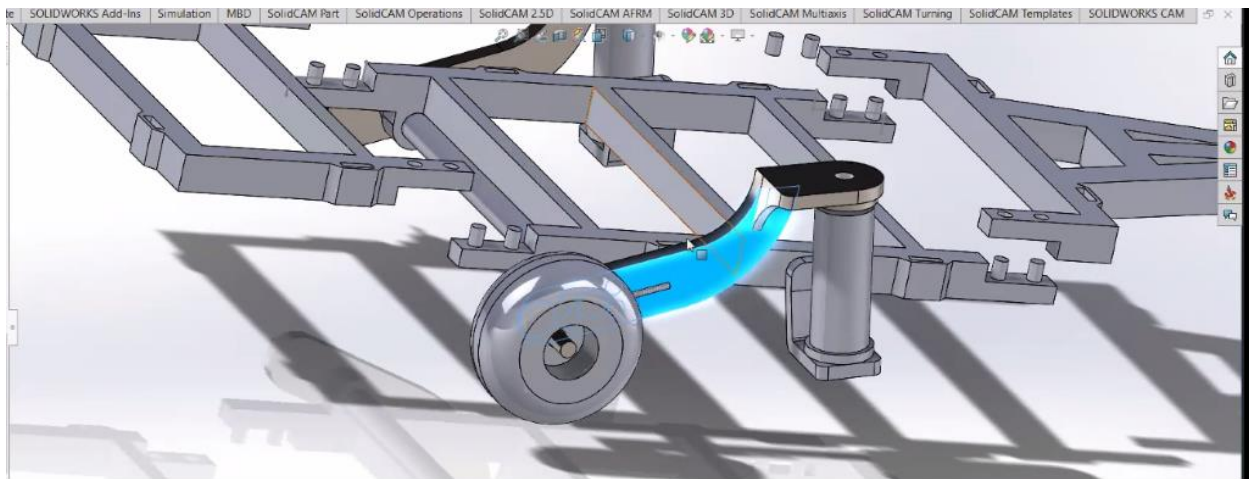
Start Date & Time: Thursday, 7/29/2020, 10:00am

Members Present: Kirk, Robert, Anson, Caitlin

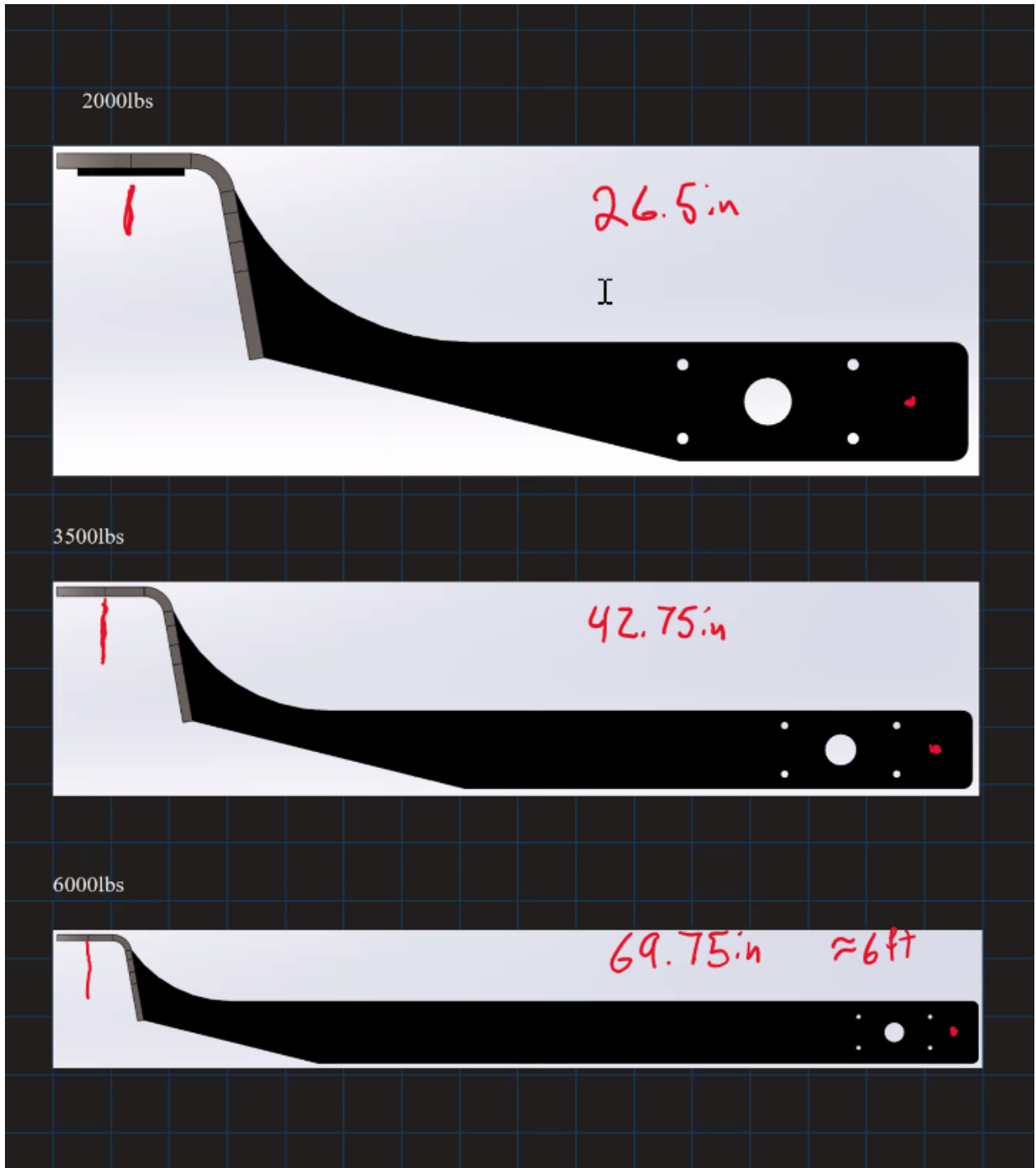
End Time: 12:55pm

Last Meeting:

- 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

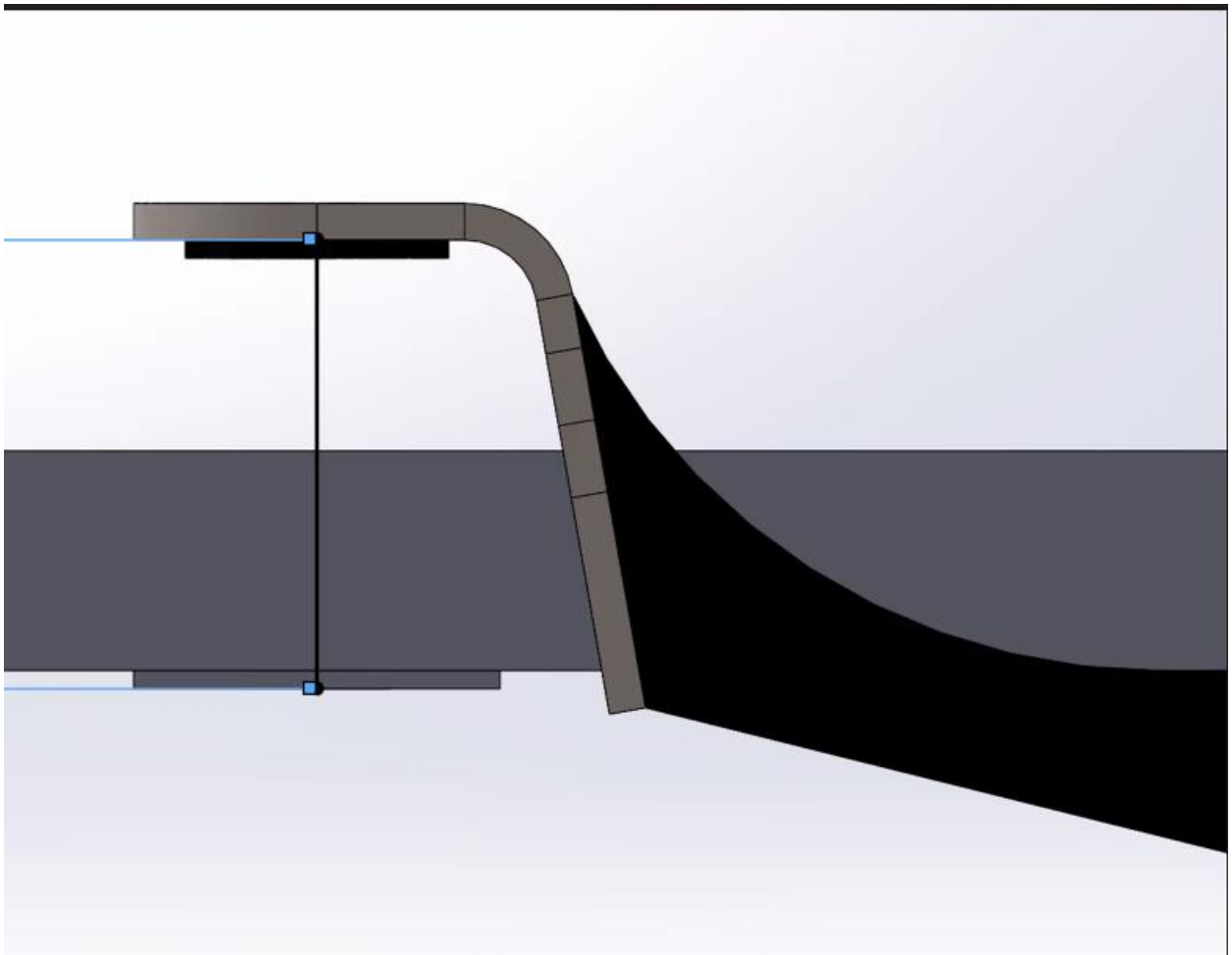


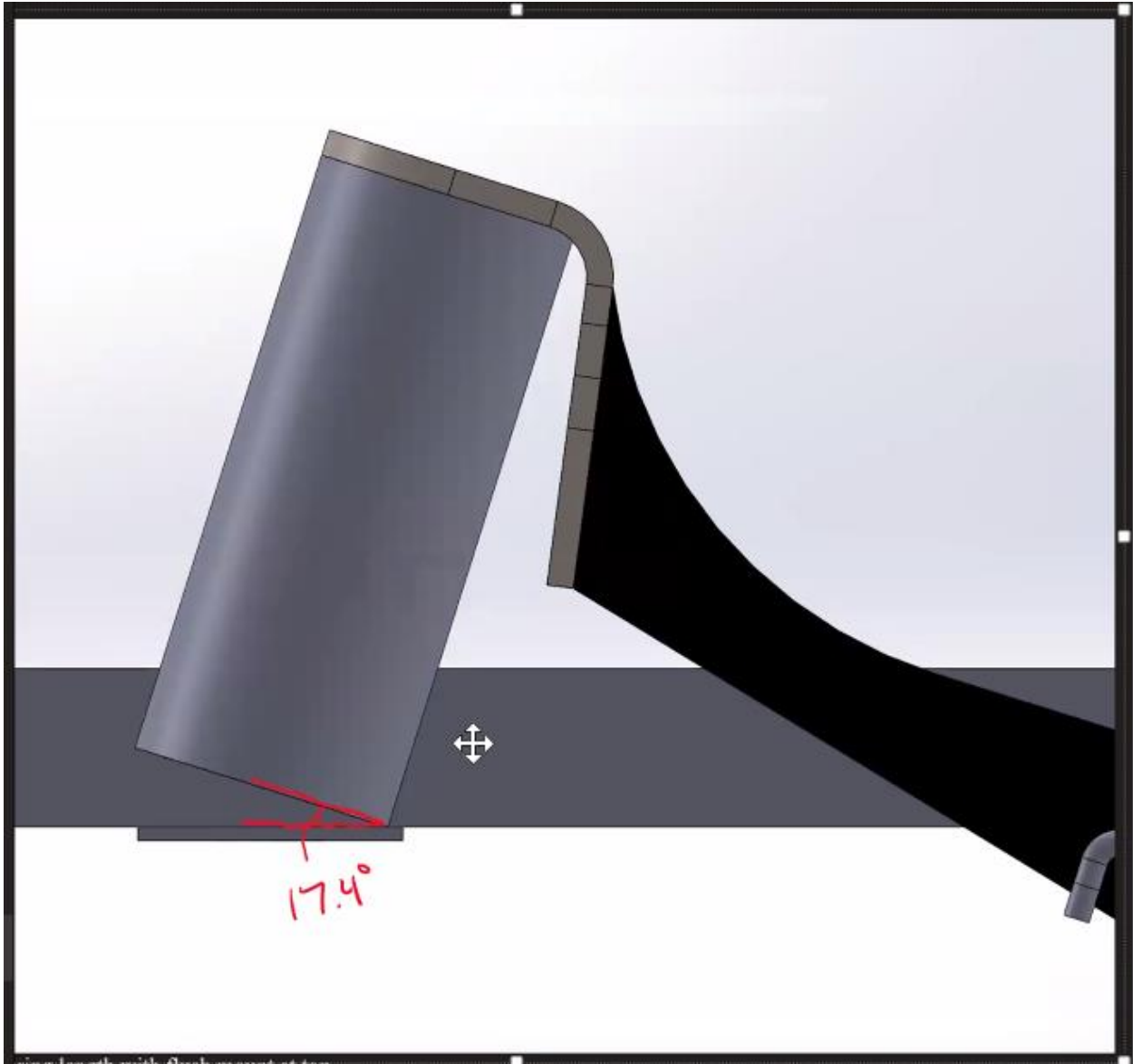
- 12:00pm meeting with Swenson
- 3500lb and 6000lb rocker arms and compare them to 2000lb
- Drawing packages make it pretty
- Spring mounts redo
- Wheels and tires



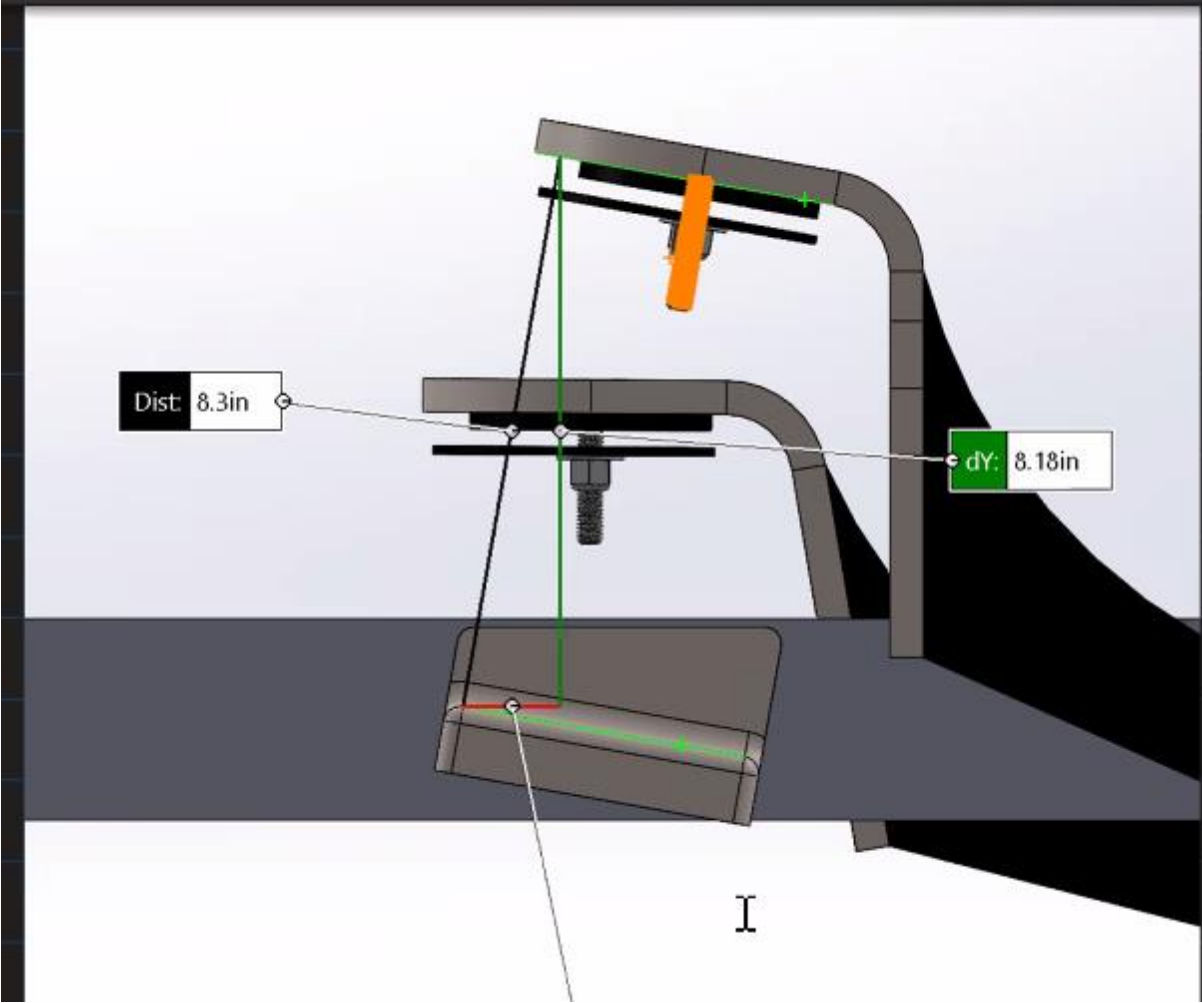
- 3500lb - 6 ft long
- 6000lb - 5 inches tall
- He thinks that they may be too long - why?
- Off optimum lever ratio
- What does the spring have to move?

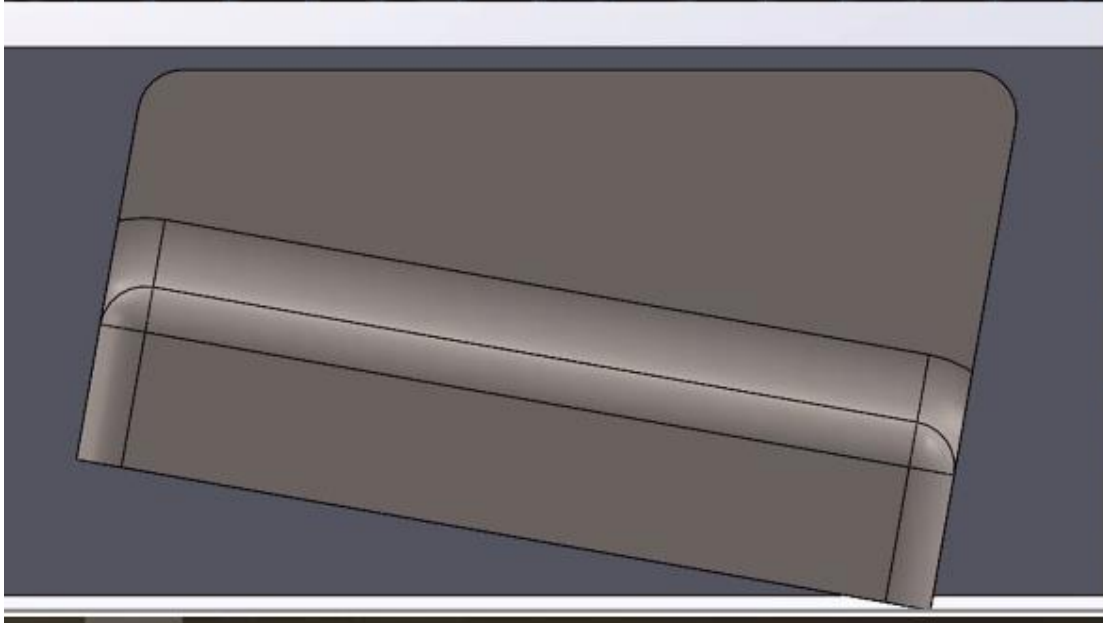
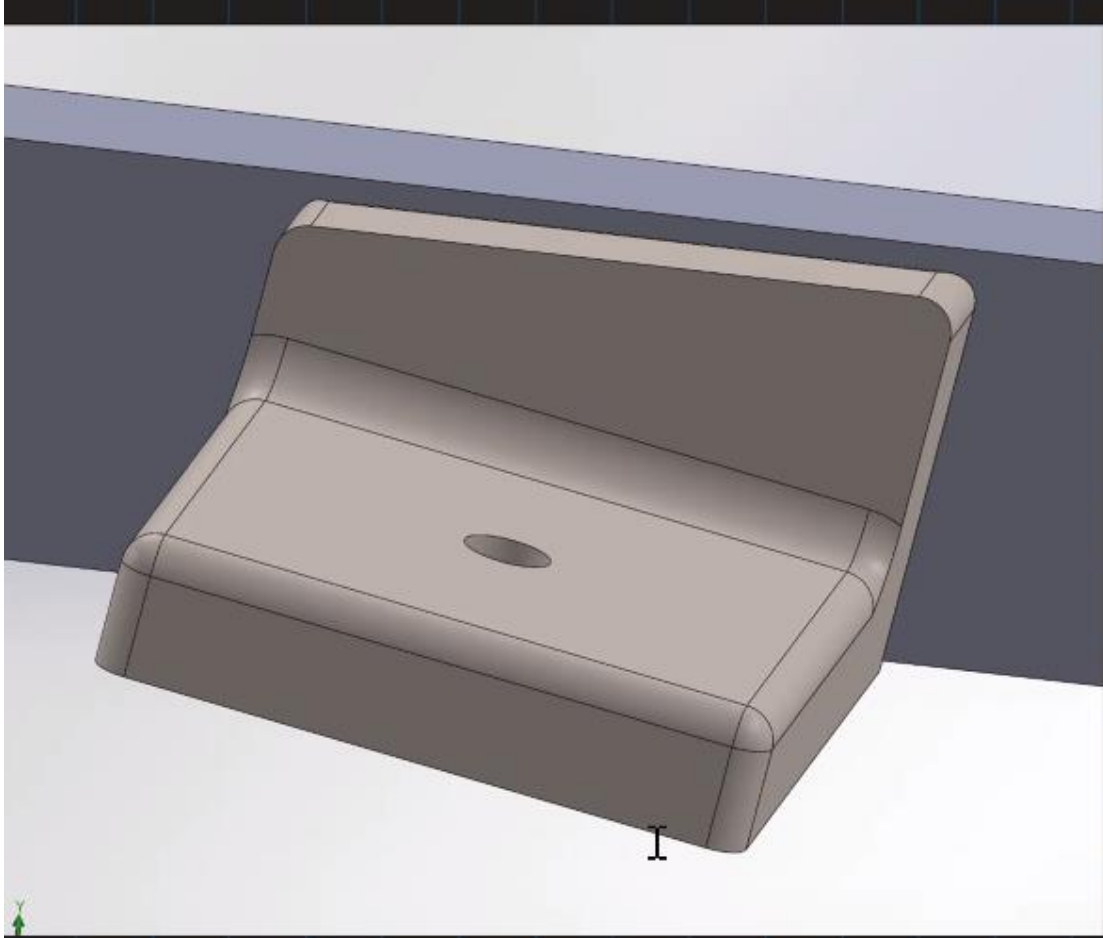
- Spring must be very flexible
- Everything had run through FEA and it passes!
- Rob read it incorrectly so that is why the lever was so long
- We will redo those get back to Swenson
- Is the hole for the axle and hole for the bolts staying the same?
- FEA says that nothing must change
- Shear analysis 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



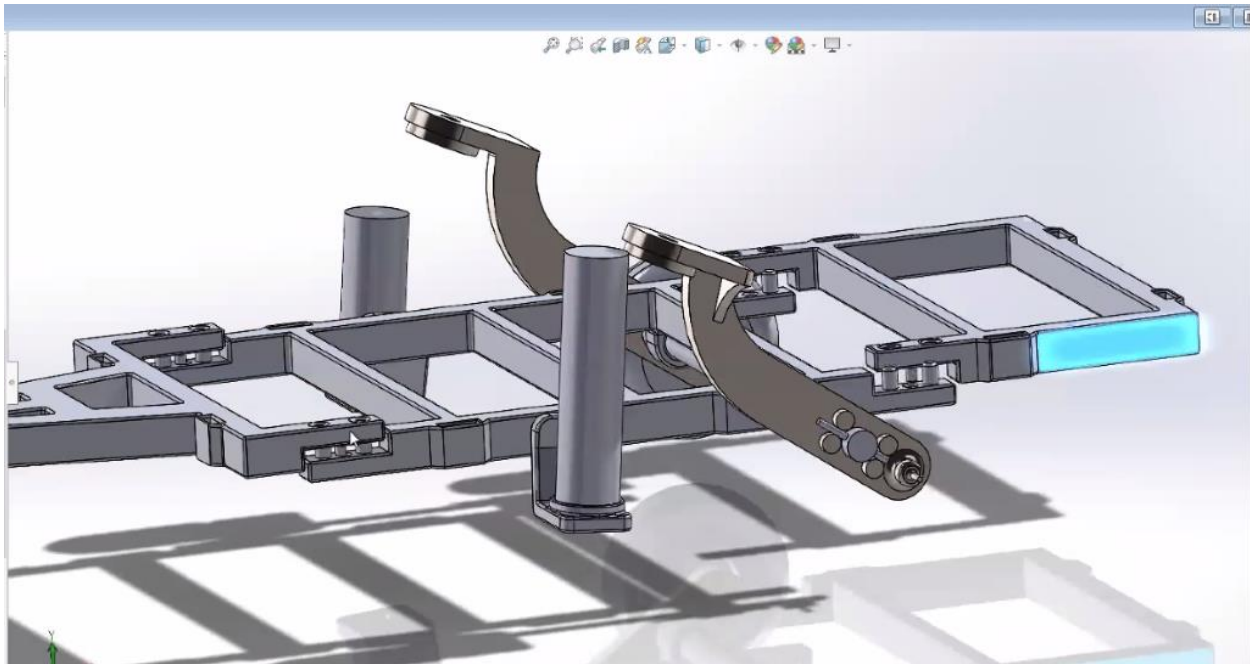


- Slightly angled mounting bracket

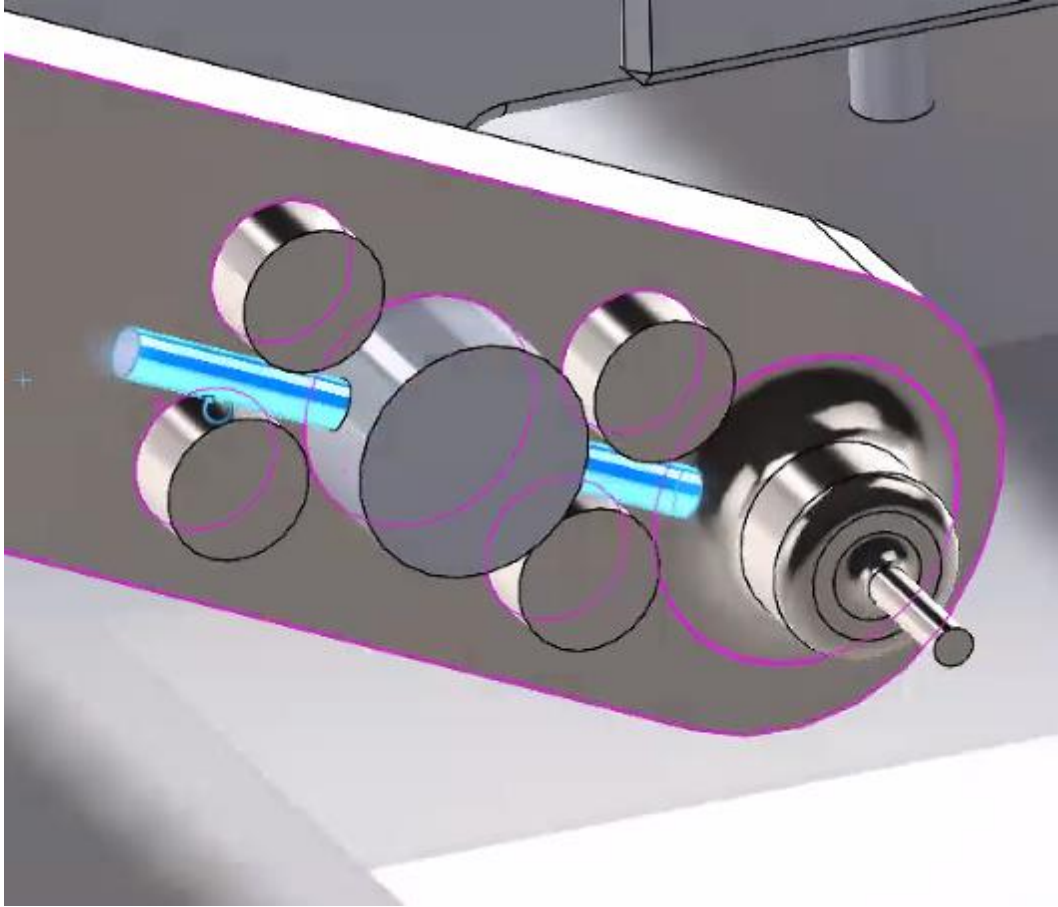




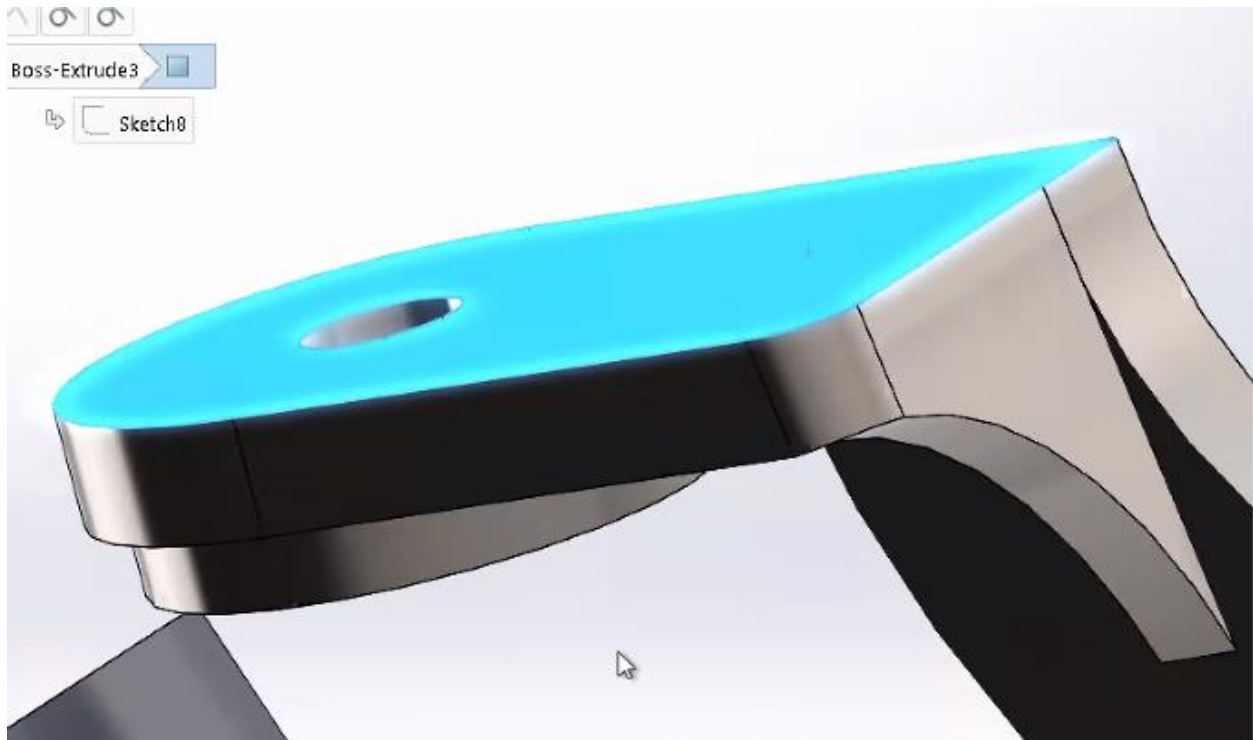
- 10-degree angle?
 - For the welds - 1/4 inch or 1/8 inch between them
 - Make it 1/4 - welding edge
 - Make it have a fillet
-
- Prototype updates
 - 18 inches long
 - Made it into three pieces that all snap together



- 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
-
- 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

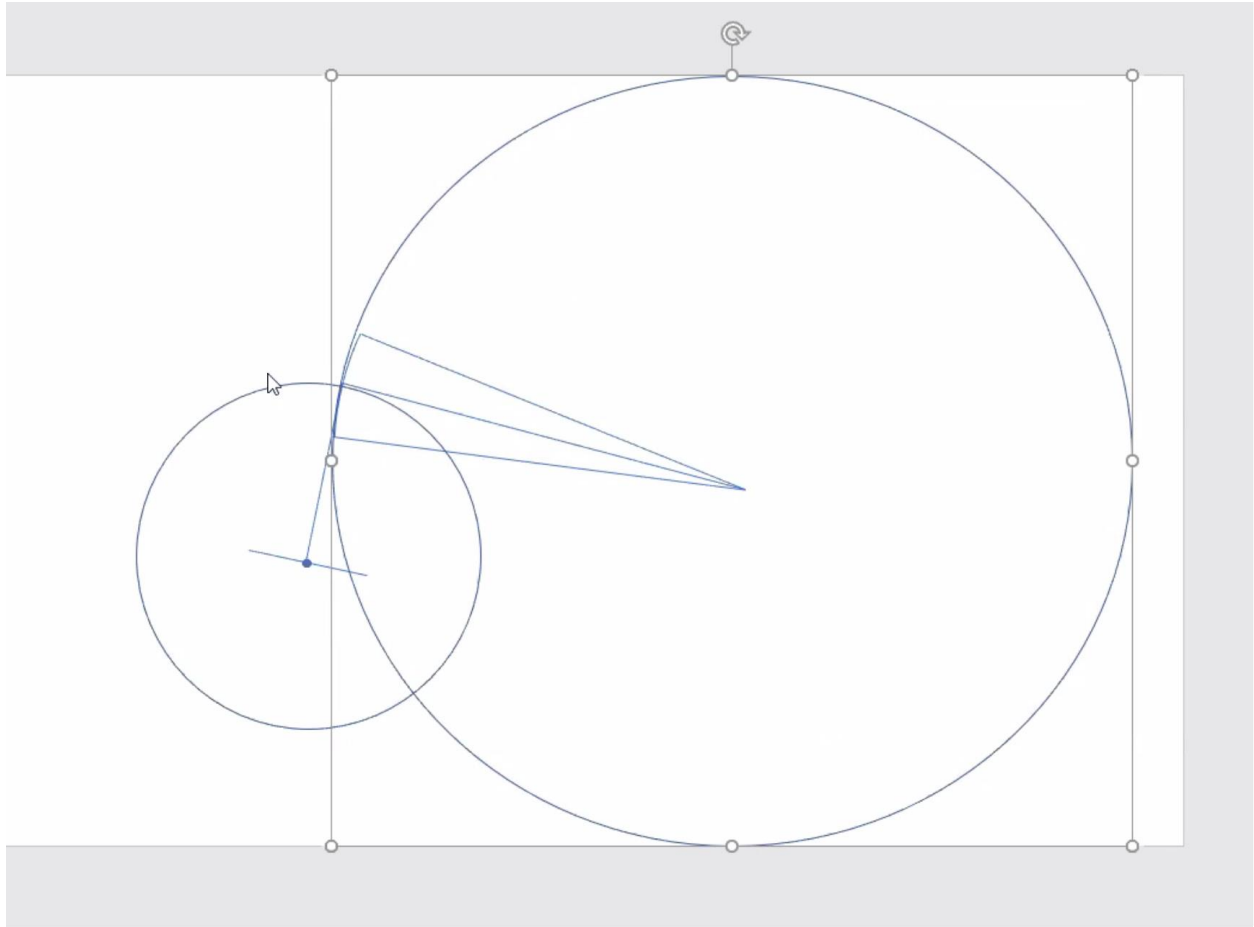


- He liked the flat plat with no bend - attractive
- Don't want to have to redo everything because we are running out of time
- End of next week on Thursday - final combination of project - 20-minute tech presentation
- It is similar to the design review
- Limited to 17 minutes 3 minutes for questions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

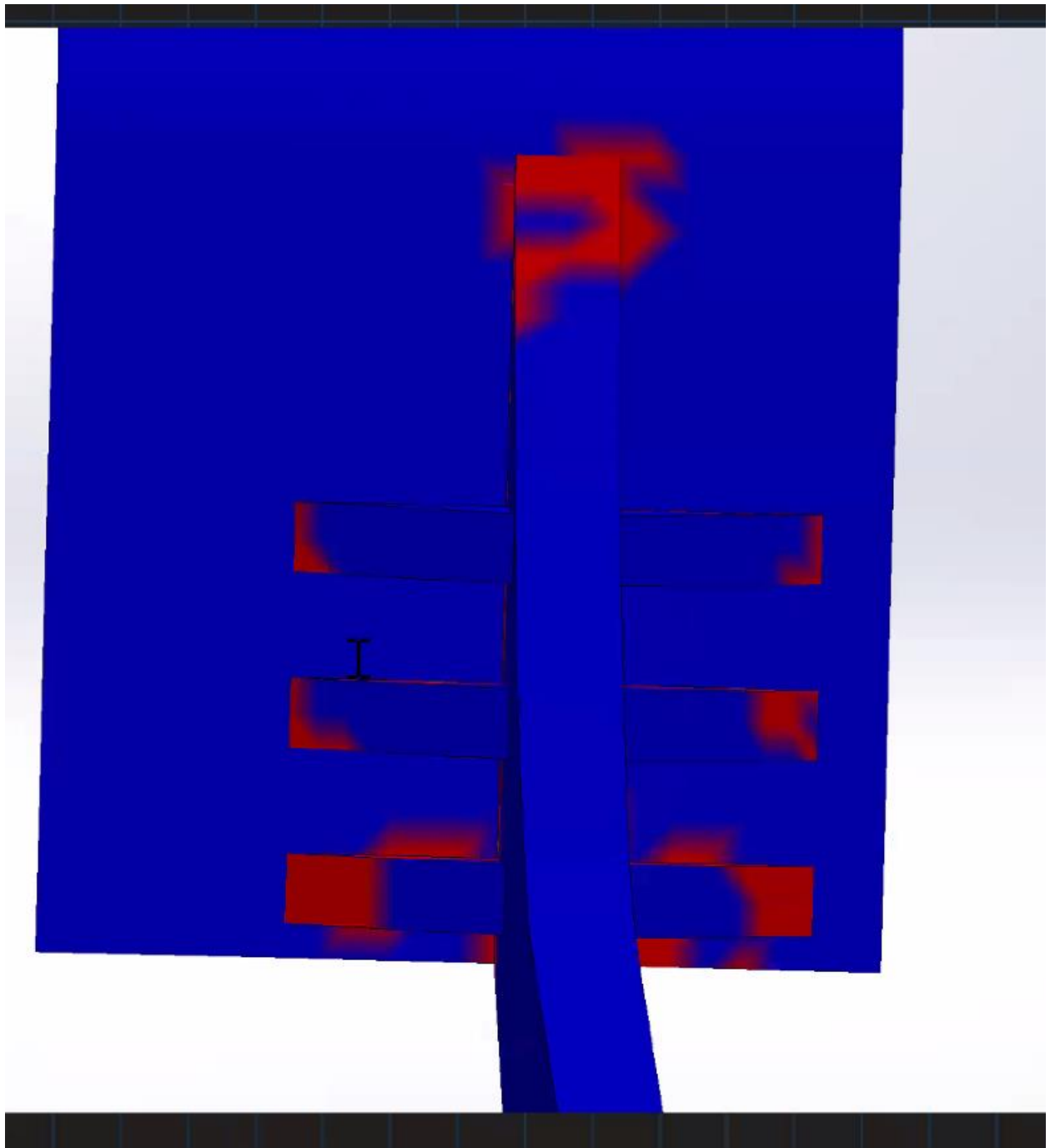
Today's Objectives:

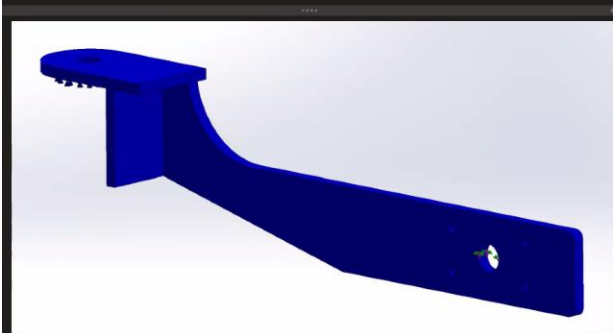
- Talk with Swenson about:
 - Spring mount angle Calculations
 - Progress with rocker arm
 - 3D printed prototype

Notes:

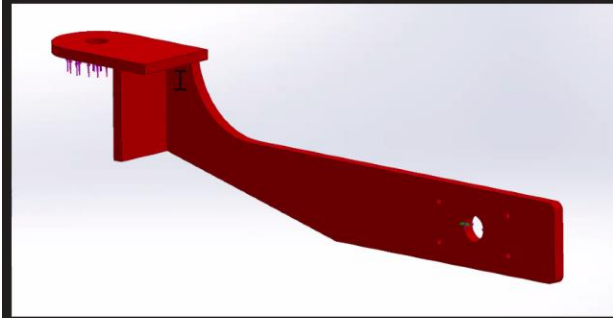
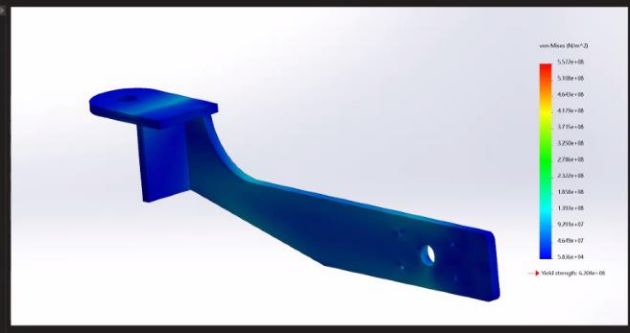


- Force
- Only place it is failing is

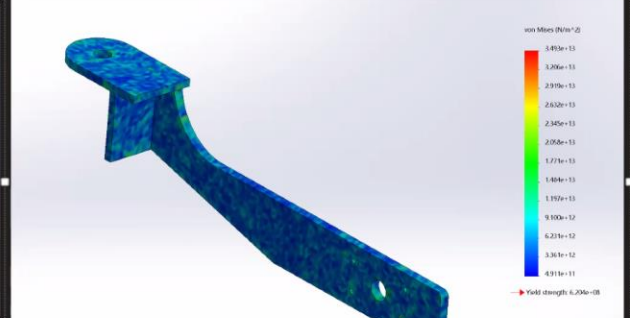


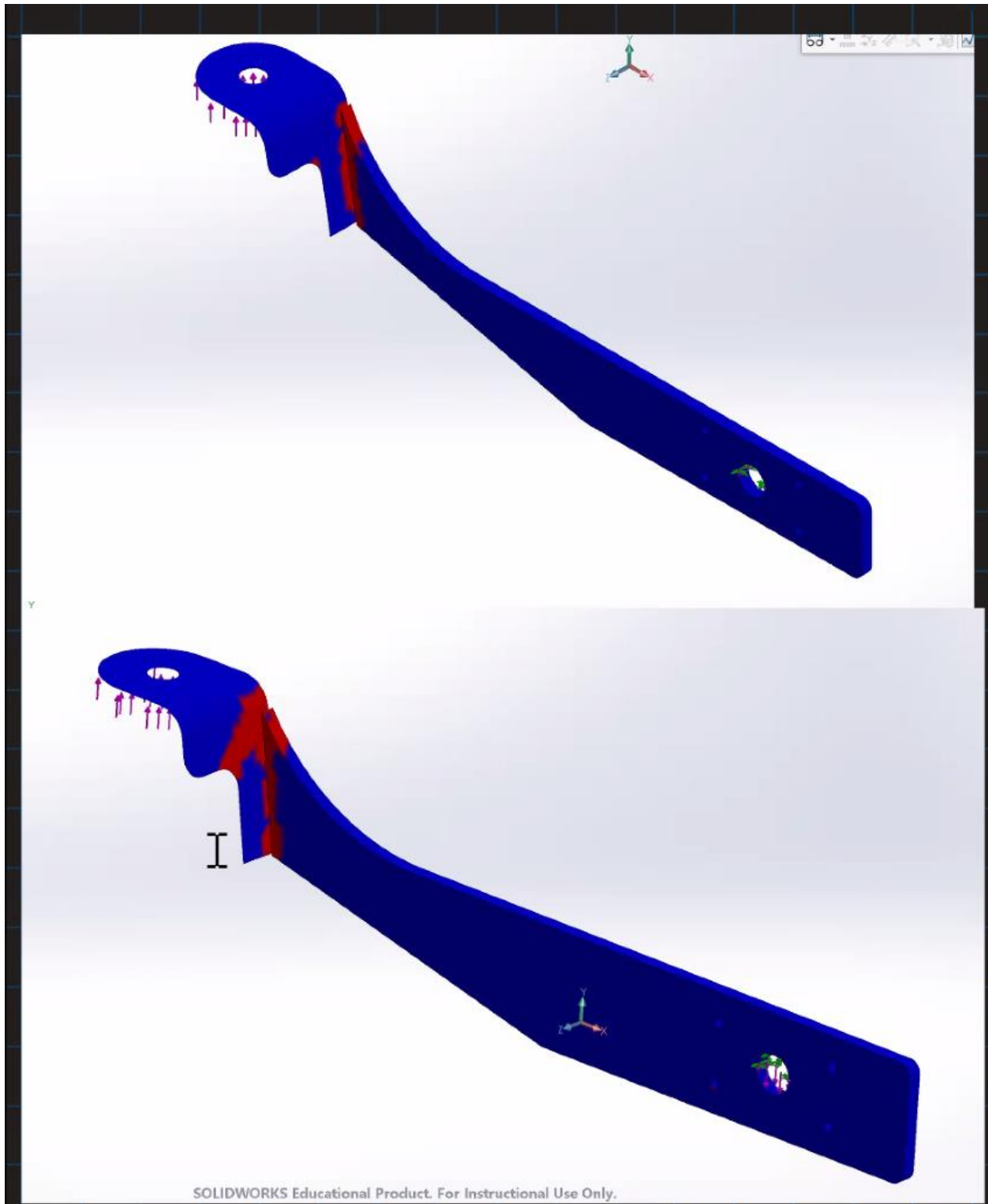


With Elastic Support @ 329 lbf/in

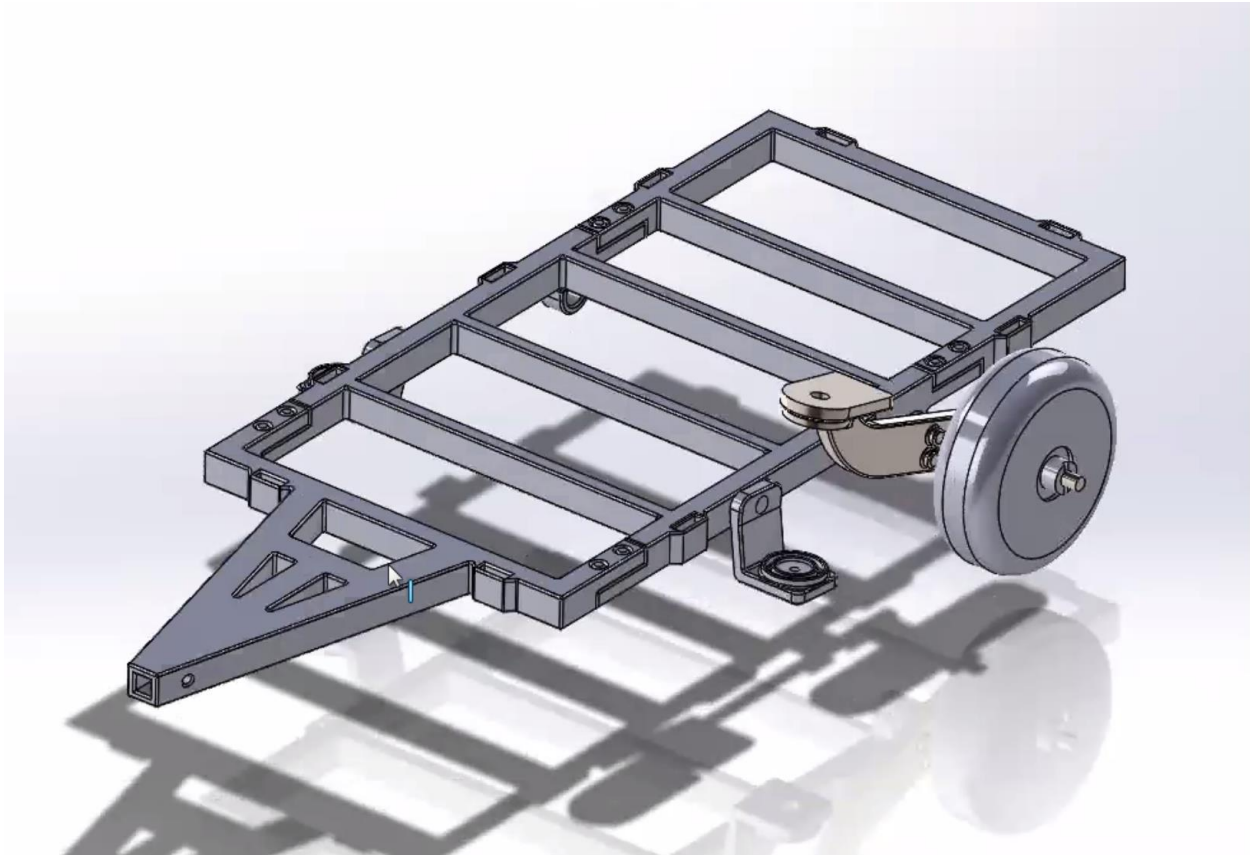


With External Force @ 1,765 lbf





- There are buckles everywhere
- Anson is finding different places to 3D print because the ones that are available are in use currently



For Next Time:

- Anson is 3D printing the prototype
- Rob is working on the FEA of the new rocker arm of 6000lbs
- Caitlin and Kirk are doing the spring mount calculations

Comments/Concerns/Reflections from Today:

- Failure on 6000lb rocker arm doesn't make a whole lot of sense
- 3D printers are all being used currently

Next Meeting Time & Date: **Tuesday, 8/04/2020, 12:00pm**