Team 2A - WF Words

June 22, 2018

ME 486C

Hardware Review 1

Attached in this document will be the figures with the 50% of the project being done from both the building and having it done with SolidWorks. The building and the material that were used was done by following the steps below:

1) Started by building the frame for the plywood.

•Placed plywood on saw horses

•Measured out 35 inches width and 86 inches height on plywood with chalk line and a measuring tape.

•Cut plywood with skill saw along chalk lines

2) 4 cedar 2 by 6s were used for the frame. Two boards were sawed at 94.5 inches with 45 degree cuts.

•All measurements were made using a

•Cuts were made using an electric miter saw

•The other two planks were cut also with 45 degree angles. All four board were ran down a table saw to cut a 1/4 inch groove between the planks on the inside.

•A 1/4 groove was measured equal distance between the 1.5 inches thickness of the board on the 2 by 6

3) Plywood wood was cut at 35 inches by 86 inches. Plywood board was then slid into the grooves on the frame.

•Hammer and mallet used to fit plywood board into grooves

4) Frame was screwed down with 5/16 inch structural screws.

•Before structural screwed were fastened into frame. Two predrilled holes every inch along the side on each 2 by 6 where the 45 degree angles intersect were made first so the screws have holes to line up the frame.

5) Wood putty used to fill gaps between the 45 degree angles.

6) Legs were cut at 61 inches length wise to give support. Impact head Screws were used to attach legs to plywood frame. 8 total screws per leg.

7) Leg supports with wheels were cut at 32 inches long as to fit into a door frame. The 4 support legs cut at 22 inches and with 45 degree cuts used to support legs of frame.

8) 2 parts of 6 inch lag bolts were used to tighten support legs.

9)4 pieces of 90 pound locking wheels screwed down the bottom with 1/4 1.5 inch lag screws. All the parts were used to by using the following material and tools.

Materials used:

•1 4" by 8" by .25' birch plywood

•8 cedar 2' by 6' actual, 1.5' by 5.5' by 8"

•5/16th 4 inch structural screws.

•6 inch lag bolt with matching washer and nut.

•Natural color wood putty

Also, the tools that were used to do this first part of the project were:

Tools used:

•Ten inch electric miter saw

•Electric drill

•Ten inch electric table saw

•Six inch electric Skill saw

•Electric Jig saw

•Two by three feet Saw horses

•Measuring tape

•Chalk line

•Pencil

•Marker

•Hammer

•Rubber mallet

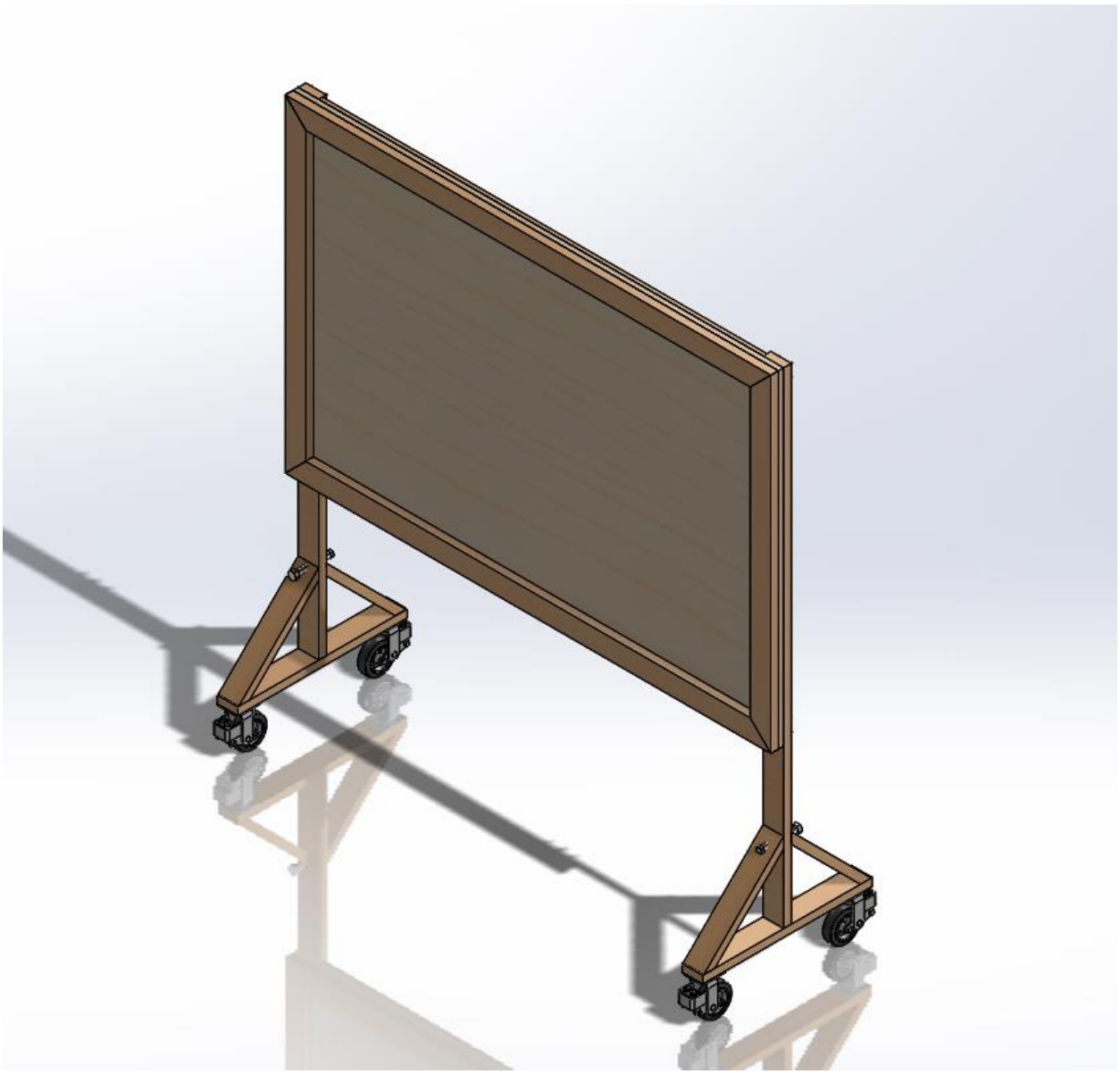
•T square

•Ruler

•Four foot and eight foot level

•5/16th inch wood drilling bit

•3/4th inch wood drilling bit

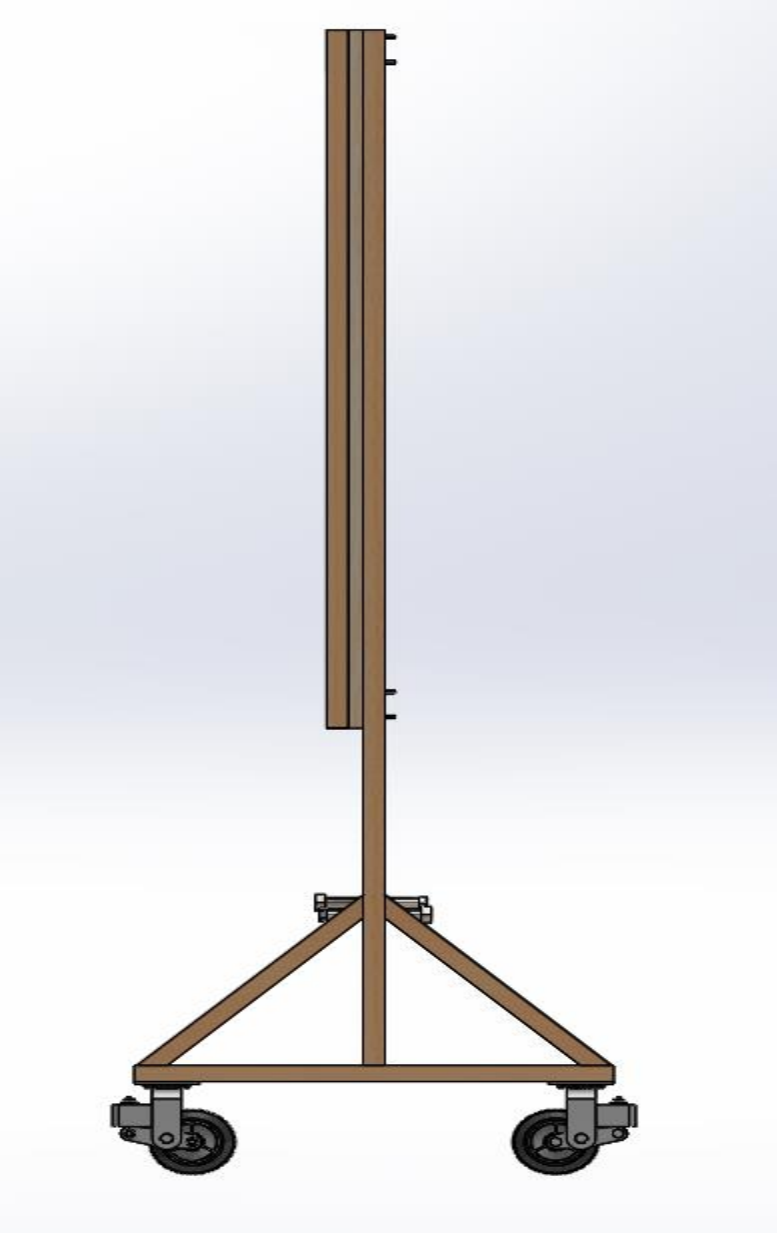


(Figure 1)

This figure shows the isometric view of the Scoreboard and the wheels attached to it so it can be moved from one place to another.

(Figure 2)

This figure shows the front view of the first part of the project. Which gives a better look at the Scoreboard.



(Figure 3)

This figure shows a side view to the project that will give a better look to the bottom part of the project. Also, we got the wheels from the Grab Cad website.

(Figure 4)

This figure shows how the scoreboard was built using the material above. In this figure, we used the Plywood material and all the other material with it is mentioned in the materials part above.

(Figure 5)

This figure shows how the two pieces of wood needed to be placed at a 45 degree angle. Also, we made a mistake of placing the wheels at the middle where we should have placed them at the end and the beginning of the base that holds the scoreboard.

Summary:

When we met with our instructor (Dr. Oman), she mentioned that we needed to finish the SolidWorks and bring it to her by next week to see the development that we have reached. Also, she mentioned that the project that have been built has a good quality. Furthermore, she mentioned that we needed to minimize the Velcro material that will be used to keep the ball attached to the scoreboard. And, she helped out in providing the websites where we can grab parts from either SolidWorks or Grab Cad. In addition, she and Amy (Teacher Assistant) showed us where our mistake was in building the project where as stated before the wheels where placed at the middle instead of being at the beginning and end of the base.

List of Action:

For the second part of the project, we would still need to build a catapult to deliver the ball to the required target. Also, we would need to build a base to hold the catapult. In addition, we would place to nails that would go at the sides of the catapult so it won't hit anyone or anything else besides the scoreboard. We would build the project and all the manufacturing process together. There are some individual parts that would need to be accomplished individually.

The Individual Parts Are:

Mohammad Alotaibi will do a research on how the Plywood material will be strong enough to hold the force coming from the Catapult that will be used to launch the ball toward the scoreboard.

Mohammad Alsaidi will continue on developing the Website for our team where he will add the new design that was built by SolidWorks and adding the 50% of the project that was built.

Shamlan Alshammari will do a research on how many of the Velcro material that will be used to cover the score board and if he will cover only the alphabets that are on the board or will he cover the entire board.

Bader Alshammari will continue on his CAD to deliver the best version of the design and also develop a part of the catapult that will be built in the upcoming weeks with the base attached to it.