

To: Dr Sarah Oman

From: Team F4 – Marshall Playground

CC: Jeremy Cook

Assignment: Hardware Review 2

Date: Mar 20th, 2018

1 Manufacturing

Manufacturing was one of the important steps that the team had consider and have had a lot of plans before we actually start manufacturing our project. As you were going through the above sections, you must have realized that our project is a combination of two sets. Which are the cart and track. We first have chosen a plan in our minds in terms of building the cart and track.

2 Cart Manufacturing

The cart's manufacturing plan was that we wanted to mold and cast our own intended shape of the cart. Why did we choose to go with casting? We felt that it is going to be better for us if we mold our own part because we could have instead bought a body cart in the market and simply make changes to it, however, it will not be easy for us to find a cart that is going to be similar to the shape that we intended to have as our exterior design of the cart. The team therefore moved on with the idea of casting and have actually bought the necessary tools and kit for the procedure of molding. The team then realized that we lacked a bit of experience with molding, and that we did not actually have a good area to mold, thus, we got a contract with one of the companies to only mold the exterior body of the cart. It was easy and not that expensive to take this step because we have actually made the plug first, and then we delivered the plug, the kit and tools that we bought along with the plug which actually turned out that the money we paid for the company was only for molding excluding everything else.

We waited 4 days for our molded part to be ready. Figure 1 shows the finished molded part that we picked up. Before delivering the plug, team F4 have had everything ready and set so we go right away and continue manufacturing the cart as soon as we pick it up. What we ended up having as problem is that when we had the molded body placed and secured in one of our teammates' garage as shown in figure 1, wrinkles in the body occurred when the molded part was left for one day which had put us in a problem that we needed to fix. Figure 2 will show you how those wrinkles looked like. The fiberglass resin should have pushed those wrinkles down, but it happened because probably the resin was not enough or wasn't molded correctly. Therefore, we went again to buy more fiberglass resin to cast those wrinkles and make them look better. An iterative procedure for molding happened when we used fiberglass resin to cover those wrinkles. We actually did molding three times to make sure those wouldn't occur again.



Figure 1: The molded exterior body of the cart.



Figure 2: Wrinkles occurred when the molded part was left in the garage.

After we did molding again three times, the casted body was thereafter ready, so we continued on manufacturing. The next step after a very long process of molding was painting and attaching the caster wheels. We used one color for the paintings which was red. In the sake of having the

cart look professional we used stain, as well as clear coats. The only body work or body filler that we needed to do before painting would be in all the corners, so they're blended. We then painted, stained, and clear coated the cart. The idea of staining and using clear coats turned out to have the cart be in a very good quality in terms of paintings as shown in figure 3. After painting was done, we have attached wood panels to the bottom outside body for the caster wheels which would add some structural stability. After we attached the wood panels, we then put the wheels, and tested whether or not they're were stable enough, and it was actually very stable and had a smooth movement. Figure 4 shows the wood panels with the caster wheels attached to the body of the cart. We are not 100% finished with manufacturing the cart, thus, this section will be updated as we move forward with manufacturing.



Figure 3: The cart after it got painted with attaching the clear coats



Figure 4: The wood panels and the caster wheels

3 List of Actions

Those lists of actions shown in table 1 are scheduled to be done in Spring break. We're shooting to have everything done in our project before next week which is after Spring break.

Table 1: List of Actions

	Actions
Abdalaziz	<ul style="list-style-type: none">- Keep working on manufacturing the track- Figuring out a way to attach the features to the cart
Abdullatif	<ul style="list-style-type: none">- Working on the track- Working on the seat belt
Khaled	<ul style="list-style-type: none">- Managing the website for website check 2- Working on the track, and adding features to the cart
Saad	<ul style="list-style-type: none">- Update the bill of materials- Ordering more parts needed for the track- Manufacturing the track
Mohammed	<ul style="list-style-type: none">- Work on our updated CAD package- Have correct dimensions on each part we're building