To: Dr. Sarah Oman
From: Team F4 Marshall Playground
CC: Jeremy Cook
Assignment: Hardware Review 1
Date: Feb 16th, 2018

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1. Manufacturing

At the beginning of this semester. The team has been ready for implementation and manufacturing. We decided to make the exterior body of the cart out of a mix of fiberglass and polyurethane. We knew that molding could be a bit complicated procedure to go with, but we had the ability and the knowledge by now to do it. We first were trying to get our plug for the exterior body of the cart made of foam. We then realized that foam wasn't the best choice to do the plug so we went with wood to get the plug done and ready for molding. We bought all the materials and kit for the molding, but we did not have a place or a machine shop to do the procedure for molding. We got a contract with a company in Phoenix so they help us in making our part molded by the shape we intended to have. The plug that was created by the team was ready Feb, 13 and was delivered to the company with the tools and the kits that the team bought. We are now waiting the part to get molded, and then pick it up. Pictures and figures are shown below of the plug that we created and was delivered to the company for molding.

2. BOM up to Week 4

The bill of materials can be found in appendix A. Our bill of materials shows the materials that we have been buying up to the last week (Week 4). It will have the total, and you will realize that the total is less by much than the provided budget from our sponsor. This is because we have only bought the materials for molding and the plug. We are now buying more materials needed to complete the project. The full bill of materials will be provided in Hardware Review 2.

Figure 1: This is a top view of the plug which has a hole cut out so the child torso, head, and arms will be outside of the cart.

Figure 2: those would be the side walls from wood to get the part ready for molding. Everything is lined with plastic, but it's hard to see. Basically, a plastic sheet is wrapped around every piece of wood.

Figure 3: that's an outside look of how the plastic sheets works on one side, and then secured on the other side. Noting that will prevent it from getting contacted with the fiberglass resin.

Figure 4: Round corner molds that are typically used in drywall applications, and we used it and taped it in the corners to have a molding part with no sharp edges.

Figure 5: This figure shows the three-way intersection. It will come out of the mold rough, and it will be sanded to a smooth round corner.

Table 1: Completion and Actions

	What was completed by me?	List of actions
Abdalaziz	• Buying materials • Creating the plugs • Cutting the wood needed for the plug body • Reviewed and edited some of the parts in CAD • Discussing with the team the topics for the analysis	• Start adding important things to the report • Keep in touch with the company that'll be molding our plug • Strat my individual technical analysis
Mohammad	• cutting woods • Edits for CAD modeling	• replacing the tires with casters. • Movement of the cart on the right track.
Khaled	• Managed the website • Edited and added parts on the report • Helped on cutting the wood with the team	• Keep updating the website as needed • Documenting all future meeting minutes • Start my technical analysis for the project
Abdullatif	• Buying materials • Delivered the materials from Flagstaff to the company in Phoenix • Keep in touch with company	• Doing some assign parts on the report • Testing the design • Do drawing for some parts for the design
Saad	• Ordering the parts needed for the project • Bill of Material • Managed the budget	• Updating Bill of Materials • Budget • Helping the group in building up

Appendix A

Table 2: Bill of Materials

Bill of Materials						
Item No.	Title	Desc.	Qty.	Seller	Price per unit (pre-tax)	Unit of Price
1	Nordstrand Fiberglass Chopped Strand Mat Cloth 50" x 360" 1.5 oz	E-Glass Fiber Roll CSM GRP for Molding Roofing Boat Marine Repair - Resin & Epoxy Compatible	1	Smart Parts US	55.99	USD $
2	2x3-96" Stud	1.5in x2.5in-96in Select Stud	2	Home Depot	2.25	USD $
3	92-5/8 Stud	1.5in x2.5in-92.625in KD Prime Stud	4	Home Depot	3.27	USD $
4	FIBGL Resin	Bondo 404 Fiberglass Resin 1 Gal	1	Home Depot	37.97	USD $
5	9" ADHCOVER	Better 9in Adhesive and Epoxy Roller	2	Home Depot	4.97	USD $
6	4" FMBRSHWDN	Chip 4.0 Flat Brush	1	Home Depot	3.97	USD $
7	10x25 3.5mil	10'x25' 3.5 MIL CLR Plastic Sheeting	1	Home Depot	10.98	USD $
8	Tray Liner	Linzer 9 in pet tray liner white 1pk	1	Home Depot	0.98	USD $
9	1" Drywall	1" Coarse Drywall Screw 1LB	1	Home Depot	6.28	USD $
10	3/8 PART BD	0.369 in 3/8 cat pb 48in x 96in	1	Home Depot	9.98	USD $
11	PRECONCGRY	1-Kote 80lb gray premium concentrate	1	Home Depot	16.45	USD $
				Total	153.09	USD $