**Alpha Description**

The alpha incorporates the previous proofs of concept with the original design and utilizes the best aspects from both. It uses a support structure for the motor, so that the force required to maneuver the conveyor belt will not damage the motor and the winch will be able to handle a greater load than it is originally capable of. The rubber was determined to have a high amount of friction, so the marbles are relatively immobile and the motorized rubber roller will move the conveyor belt at the optimum speed. The first proof of concept inspired the group to use a winch due to the unpredictable nature of a manually operated lifting mechanism. The second proof of concept revealed the issue of stress on the conveyor belt, so the group incorporated different support systems in the alpha to account for the different forces that will be inflicted on the conveyor belt.

Through the testing phase of the alpha we have made adjustments to the main structure and balancing point to help distribute the stress that will be put on the conveyor belt. The group has chosen a funnel design for the marble hopper, due to its success demonstrated in other group’s proof of concepts. The group applied a better balancing mechanism to compensate for the expanded area that was deemed necessary in the first prototyping phase. Another item which was improved upon was the overall aesthetic of our device by planning to paint the immense amount of empty surface area and decorate it to look futuristic. The Alpha design and construction process taught the group many valuable pieces of information that will be used in the final product.