The Bicycle Sidecar for Abby Miller (CP)

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Clients: The Miller family specifically Abby Miller
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Introduction

The bicycle sidecar was developed for a young girl who struggles with Cerebral Palsy. Since she is unable to ride a bike by herself, the family has asked the team to design and build a sidecar that would be able to be parallel with the bike. The family had a pull behind attachment for their bike a long time ago, but since then Abby has outgrown it. The family wanted her next to them when they were riding so that they could talk to her and get her more involved in the experience. The sidecar's seat was purchased from a company that specializes in chairs to support and keep children with disabilities safe. It was critical that this chair was used due to Abby not being able to support herself completely. The rest of the project was fabricated by the team to the custom specifications that were given to them. This sidecar will allow Abby to enjoy being out on a bicycle and being outdoors while being safely looked after by her parents. Below is a picture of the sidecar.

Figure 1: Bicycle Sidecar.
Summary of Impact

The impact that this project will have on the family will be large. This sidecar will allow the family to take Abby with them when they go for bike rides. Not only will it make her more apart of their outdoors activities it will allow Abby to interact more with them during it. Previously she had little to no interaction be behind them, but being directly next to them will allow this communication. This sidecar will make her more portable outside in a safe, yet enjoyable manner. The seat that was integrated into the project was of the same make, just larger, as the on that was used in the past. Overall this will allow our client to be more active and for her to enjoy being more active.

Technical Description

The sidecar was created using various parts to create a safe and structurally strong product. The frame of the sidecar, which supports all of the components, was created with 1.5 inch 6016 aluminum tubing. Using this material was key to create a frame that was as lightweight as possible yet had to strength that was needed to support weight of everything. All of the welds of the aluminum frame were done at a 90-degree angle to ensure that all of the frame’s pieces were as precisely as possible. For the attachment of the seat, fenders and the footrests a combination of screws and bolts were used. The attachment of the sidecar to the actual bike was done using rubberized ring clamps to the frame of the bike and screwed into the frame of the sidecar. The use of the Carrie Tumbleform Seat was essential to making this sidecar safe for Abby. This type of seat provides the necessary support for the back, neck and head, which was very important to her family. This sidecar allows Abby to enjoy riding along side of her parents in a safe environment.

Figure 2: SolidWorks Drawing of the Sidecar.

Total Cost of Sidecar = Approx. $1,550