TEAM 12: BICYCLE SIDECAR
By:
Michael Wieczerzak
Nicholas Ouellette
Elida Babollah
Abby Miller’s Bicycle Sidecar

SolidWorks Drawing

Picture of the Sidecar
OVERVIEW

- Our Client
- Project Purpose
- Previous Work
- Development of Project
- Budget
- Conclusions
- Acknowledgements
OUR CLIENT

- Abby Miller and family (Scott and Julie)
- 17 Year old female with cerebral palsy
- Underdeveloped motor skills
- Requires full support of the head, neck, and torso
- Very limited ability to walk; needs help from family to do so
- Expresses the desire to ride/enjoy the experience of riding a bicycle
**PROJECT PURPOSE**

- To design a sidecar device that will attach to the frame of the bicycle
  - Sidecar frame will allow for a seat to be implemented into the design
  - Head/Neck/Torso support will be made in order to adapt to Abby’s physical needs
  - Frame will be lightweight and detachable for easy transport and ease in riding
PREVIOUS PRODUCTS

- **Chariot SideCarrier™**
  - Allows for easy communication between child and adult
  - Hitch design allows for easy attachment
  - Lacks wheelchair accessibility and body support

- **JENKEL-HEIMER Design**
  - Allows for wheelchair accessibility
  - Allows for child and adult to communicate
  - Lightweight frame
  - Safe frame design for a handicapped person
  - No attachable/detachable hitch
DEVELOPMENT OF PROJECT

- Frame
- Carrie Tumbleform Seat
- Fenders
- Wheels
- Footrests
- Hitch Attachment
- Bike
Development: Frame

- Made with 6061-T6 aluminum square tubing
- Lightweight
- Stable and strong
**Development: TumbleForm Seat**

- Specified by the client for use
- Adjustable neck support and restraints
- Added non-slip material
- Easy fabrication to sidecar
DEVELOPMENT: FENDERS

- Complete coverage of wheels
- Neoprene padding to protect Abby
- Made from lightweight aluminum sheet metal
DEVELOPMENT: FOOTRESTS

- Purchased from NEAT Market Place
- Ability to move the calf padding and footrest for easy entrance
- Easily can change the angle of the footrest
- Straps to secure feet
DEVELOPMENT: HITCH ATTACHMENT

- Three point attachment to the bike
- Can customize to most 26 inch bikes
- Design has very secure clamps
DEVELOPMENT: BIKE

- 18 speed RoadMaster
- 26 inch tires
- Purchased for family to have a custom fit sidecar
## Budget

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<tr>
<th>Description</th>
<th>Amount</th>
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<tr>
<td>Allotted Budget</td>
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<td>Total Under Budget</td>
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CONCLUSION

- Successfully tested the sidecar with a rider of equivalent height and weight
- Clients were happy with final design
  - Coming to test and accept project during Senior Design Day at Gampel
- Completed the project under budget
- All of the projected goals were met
ACKNOWLEDGMENTS

- Dr. Enderle
- The Miller Family
- Pete and Serge from the Machine Shop
- Tolland Bike Shop
- Mansfield Supply
- NEAT Marketplace at Oak Hill
- Marek and Emily
QUESTIONS???