Custom Tilt-in-space Wheelchair

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INTRODUCTION

The custom wheelchair was designed for a 16 year old girl with cerebral palsy, a muscle and development disorder which affects her motor skills and ability to move around. Since she is currently in a wheelchair for the majority of the day, the family asked us to design a custom wheelchair with a tilt-in-space feature to accommodate for Abby’s growing needs. Abby’s current wheelchair does not support her correctly and the padding has to be often replaced because of her wearing it out so quickly. There were many issues that the family had with the current chair that they asked us to address in the new design, for instance 1) functional support for her back 2) larger headrest 3) prevention from slipping forward in the chair 4) uniform solid footrest. The wheelchair frame was donated by NEAT Marketplace in Hartford, CT and modifications were made to this chair to accommodate the requests that the family made. This wheelchair will ultimately provide comfort and support for Abby and her family. Below is a photo of the completed customized wheelchair made for the Miller family.
SUMMARY OF IMPACT

This wheelchair was built to maximize comfort for the Abby and to also address the support issues that they had with her previous wheelchair. She will now be supported no matter which direction that she leans due to the incorporation of inflatable bladders to maximize support. Her new uniform footplate will allow for the family to push her around without the fear of her feet falling in-between and getting stuck or her getting hurt. The new larger headrest will prevent her from slipping off and hurting her neck and the new wedged seat cushion and safety harnesses will help the family to keep her in her seat without her standing up or slipping off. All of these customizations to the chair will allow Abby to and her family to have the piece of mind that she is safe in the chair and that she is comfortable.

TECHNICAL DESCRIPTION

The wheelchair started out as a donation, from NEAT, of an older Quickie Tilt-in-Space model that we customized to fit the customers needs. The chair was stripped and sanded in preparation for powder coating. The powder coating company, Central CT Coatings, chromed the frame and then applied a clear purple coating to achieve the desired purple finish that the Millers requested. The chair was widened to fit the 17” seat so a new seat plate and foot plate had to be fabricated. The seat back was donated also from NEAT in Hartford but it was too narrow so new mounting hardware and brackets had to be designed. Into the seat back bladders were incorporated to allow the family to adjust the support according to Abby’s changing posture. 2” memory foam padding was added on top of the bladders to increase comfort. The headrest was mounted on to the center of the seat back. The headrest is fully adjustable depending on Abby’s positioning in the chair. A chest harness and safety lap belt was added along with solid urethane tires. Accessories such as cup holders were mounted for both the operator of the chair and for Abby. This chair is built to last and be used daily for many years to come.