The goal of StarRider was to support a load of 200 lbs, move less than 3.5 mph, and have controls at 5 different locations on the vehicle. The device also needed to easily maneuver in therapy sessions while integrating a tilting seat. The physical therapist overseeing operation of StarRider also needed to have control of the speed and time that the vehicle translates following the press of a button. These specifications allow StarRider to accommodate users with a variety of needs.

**Key Components**

- **PT Controller**
  Center of controls. Allows the physical therapist to drive the device while adjusting speed and button activation to suit a particular child’s needs.

- **Chassis**
  Main support for the device, waterjet from 1/8” Aluminum to safely support a weight of up to 200 lbs.

- **Child Hubs**
  Hubs located at 4 locations on the vehicle allow the controls to be accessible to any range of mobility impairments.

- **Motors**
  Brushless motors with built-in brakes and optical encoders. Powered using a 24V battery, actuated using PWM signals, and can accurately control speed.

**Live Test**

- Tested safety and enjoyment of device with a 4 year old, 5 year old, and a 7 year old
- Allowed children to freely operate device in an open area
- Device performed as designed and was overall appealing to each child

**Load Test**

- Loaded device with increasing weight in increments of 25 lbs
- Ran device through all key movements at each weight
- Device was still maneuverable and stable while fully loaded

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