



Pedibus 2.0

Team No. 22

Members: Kyle Anderson, Stephen Avery, Alejandro San Segundo, Brett Willenbacher



Background and Purpose

Design and fabricate a fully functional, multi-user, pedal powered vehicle for the purpose of entertainment; Also known as Pedibus, Pub Crawler or Party Bike

- Vehicle will be part of the **Capital City Pedicabs** current fleet
- There are currently no mass productions of this type of vehicle

Design Requirements & Objectives

- ✓ **Frame and Vehicle Design**
 - ✓ 10 passenger minimum
 - ✓ Room for extra passengers
 - ✓ Multiple fwd speeds plus reverse gear
 - ✓ Free weight towable
- ✓ **Vehicle Fabrication and Testing**
 - ✓ Frame, Powertrain, steering fabrication
 - ✓ Integration of outsourced parts and components
 - ✓ Pedaling operation, hill climb, braking, and maneuverability testing

Future Work

- Front hitch mount
- Powder Coating
- Sound system
- LED lighting

Outsourced Work

- Vehicle roof
- Wooden bar top

Frame and Seating

- Ladder frame design w/o integrated suspension (8.5ft x 16ft)
- Bench seating allows room for extra riders

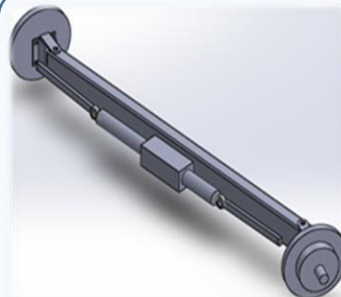
Frame FEA Analysis

Torsional Testing	Load Testing
10000lbf applied	4500lbf on seat posts 500lbf on bar top
Max deformation <10in.	Max deformation <0.13in

Structural testing for frame design proved **successful** with a safety factor of **1.3**

Towing Platform

- Torsion axle for towing eliminates need for suspension
- Electric drum brakes on towing axle
- Standard towing hitch mount



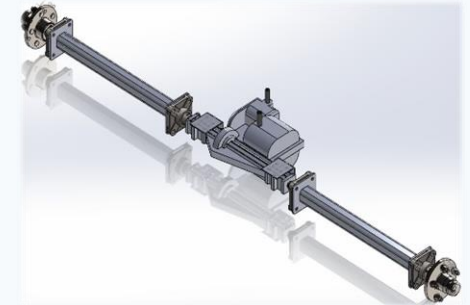
Steering design rendering

Steering

- Rack and Pinion
- Curb to curb <45ft

Powertrain

- Dual driveshaft to manual transaxle
- 6 fwd speeds plus 1 reverse
- Belt friction clutch system



Transaxle and differential CAD rendering

The Pedibus 2.0



Finalized vehicle after successful testing