

Bus Bike Rack Demo Stand



Faculty Advisor: Lucas Meza | Industry Sponsor: Cascade Bicycle Club
University of Washington Department of Mechanical Engineering

Introduction

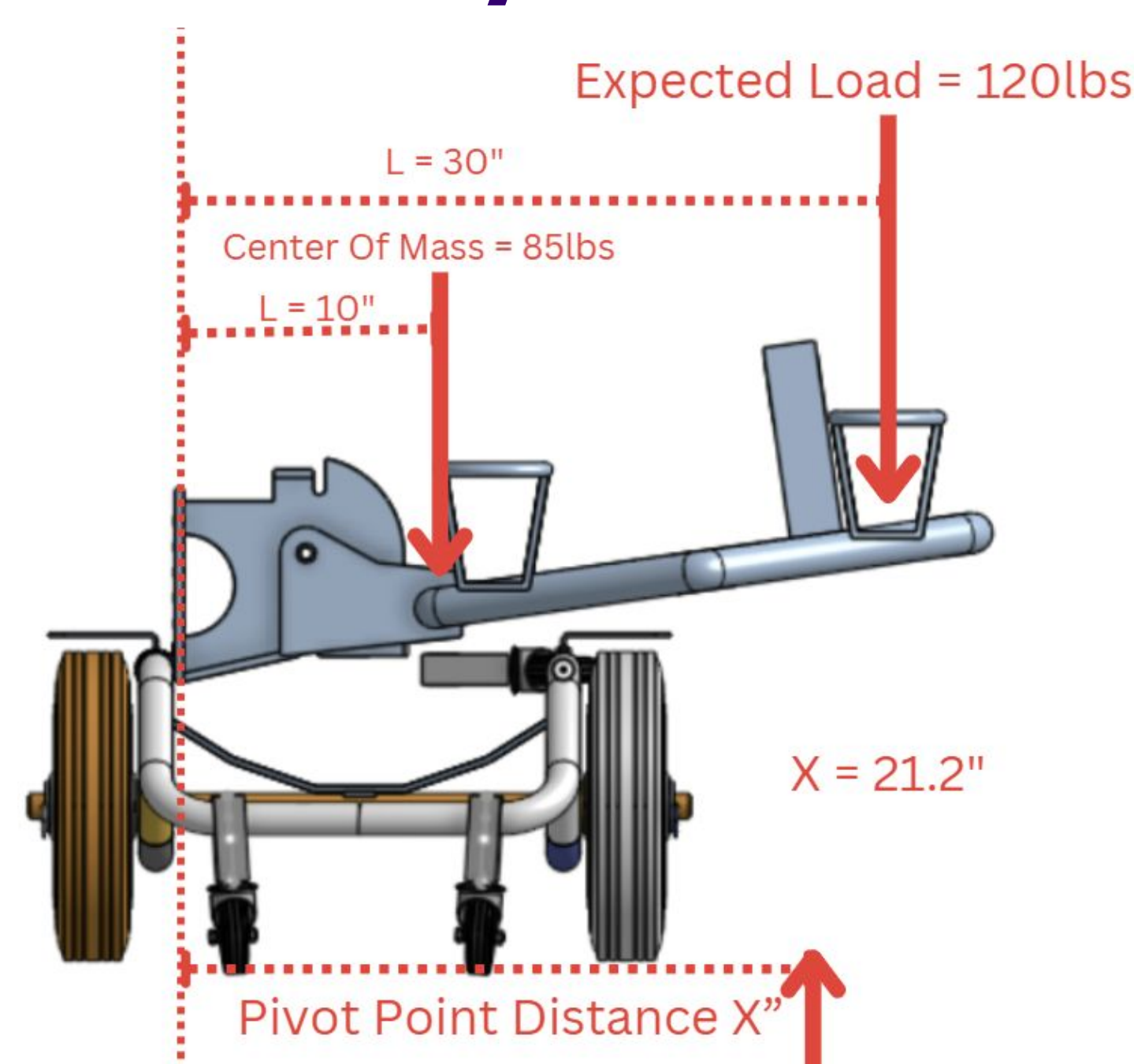
- Cascade Bicycle Club found that familiarity with bus bike racks is key to teens commuting by bike
- To expand their **Let's Go Further** program, Bike Buddies was tasked with creating a portable demo stand for use in Washington school districts

Design and Development

Design Requirements

- **Transportability**
 - Easily moved by one person
 - Storable in bike trailer
- **Usability**
 - Simulates real-world bike mounting
 - Intuitive to use
- **Stability**
 - Tip resistant
 - Low vibration

Stability Considerations

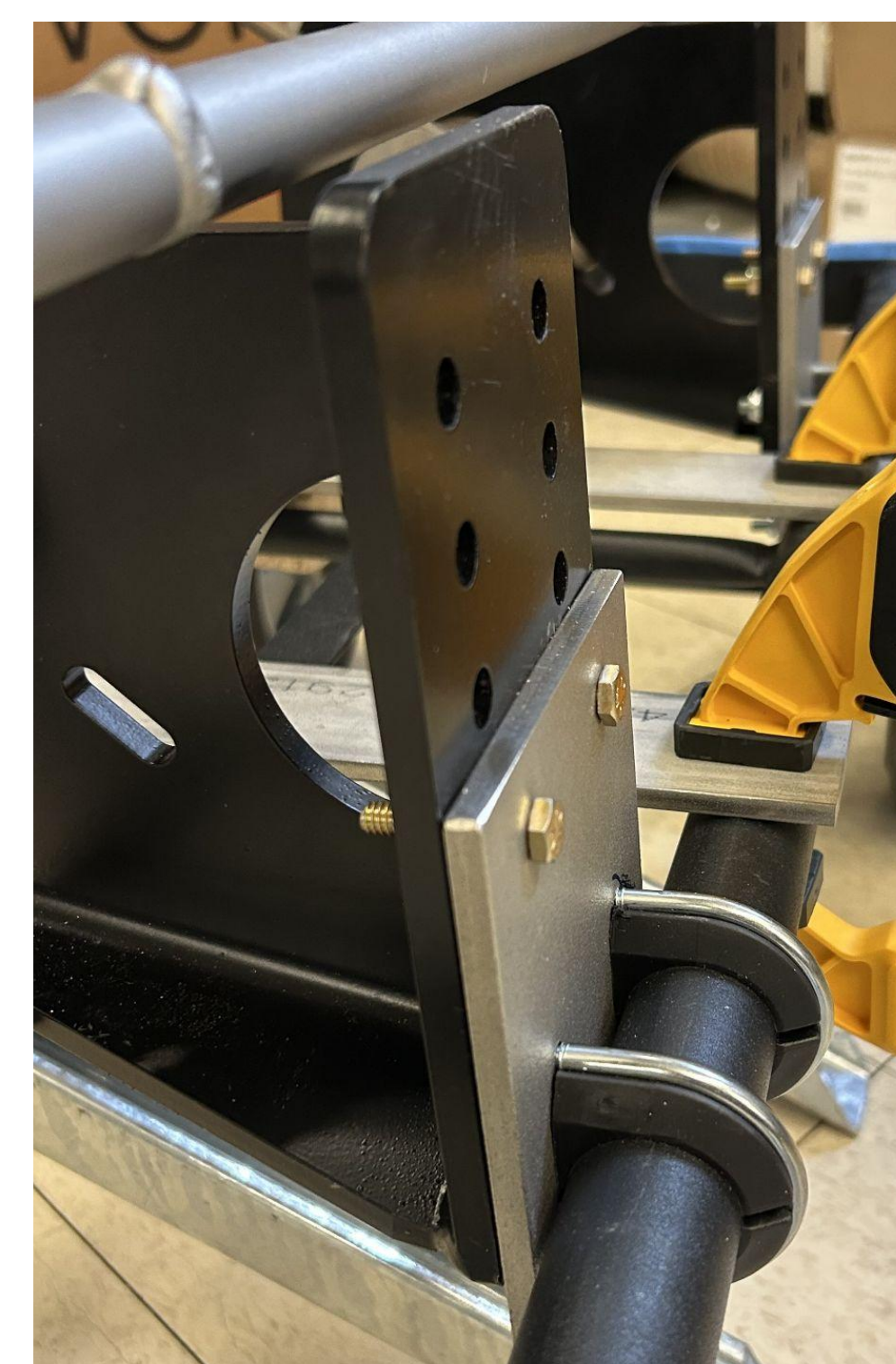
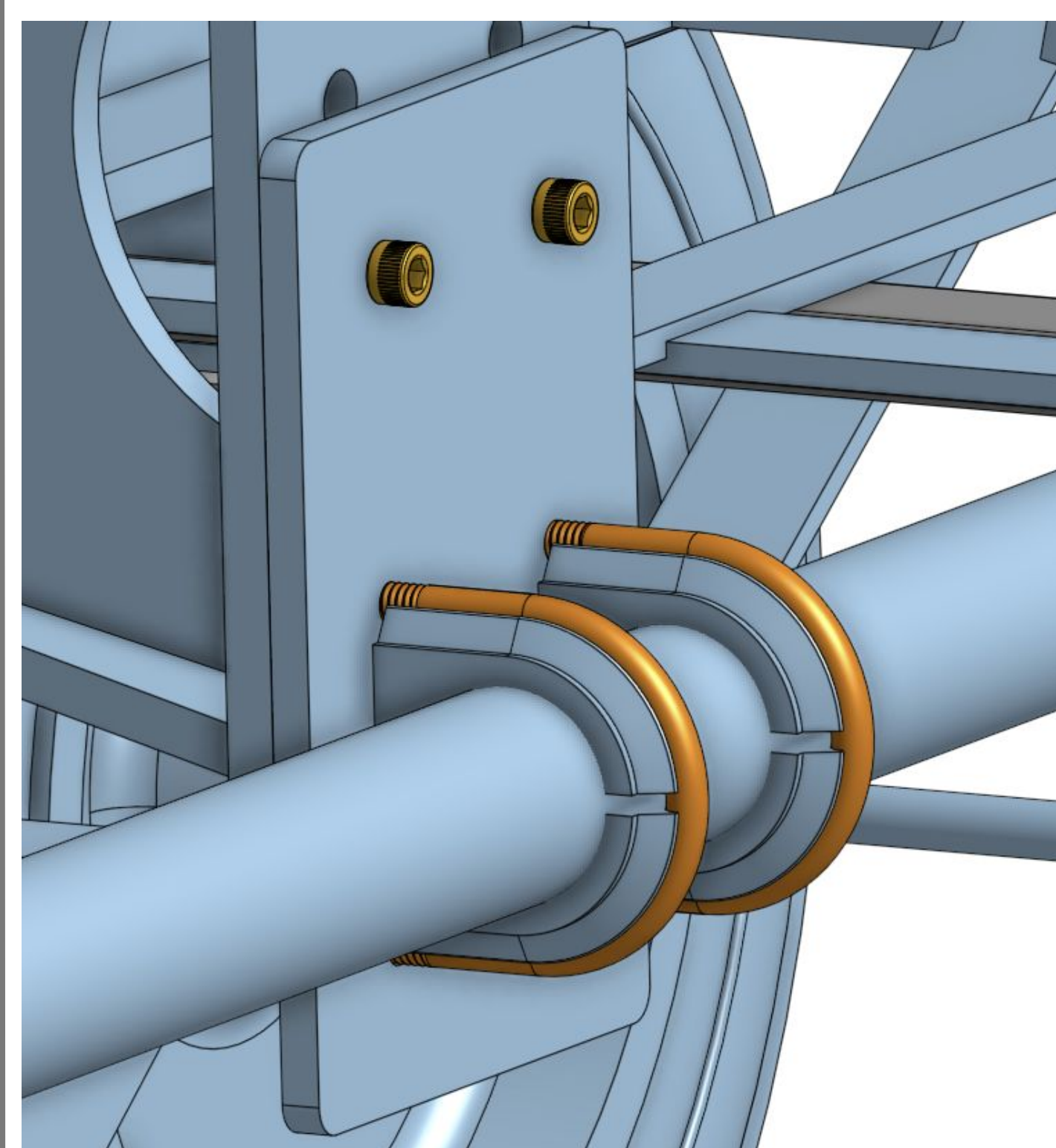


Load Analysis: showed we needed pivot legs to prevent the device from tipping forward
Conclusion: leg design extends at least 8 inches from frame

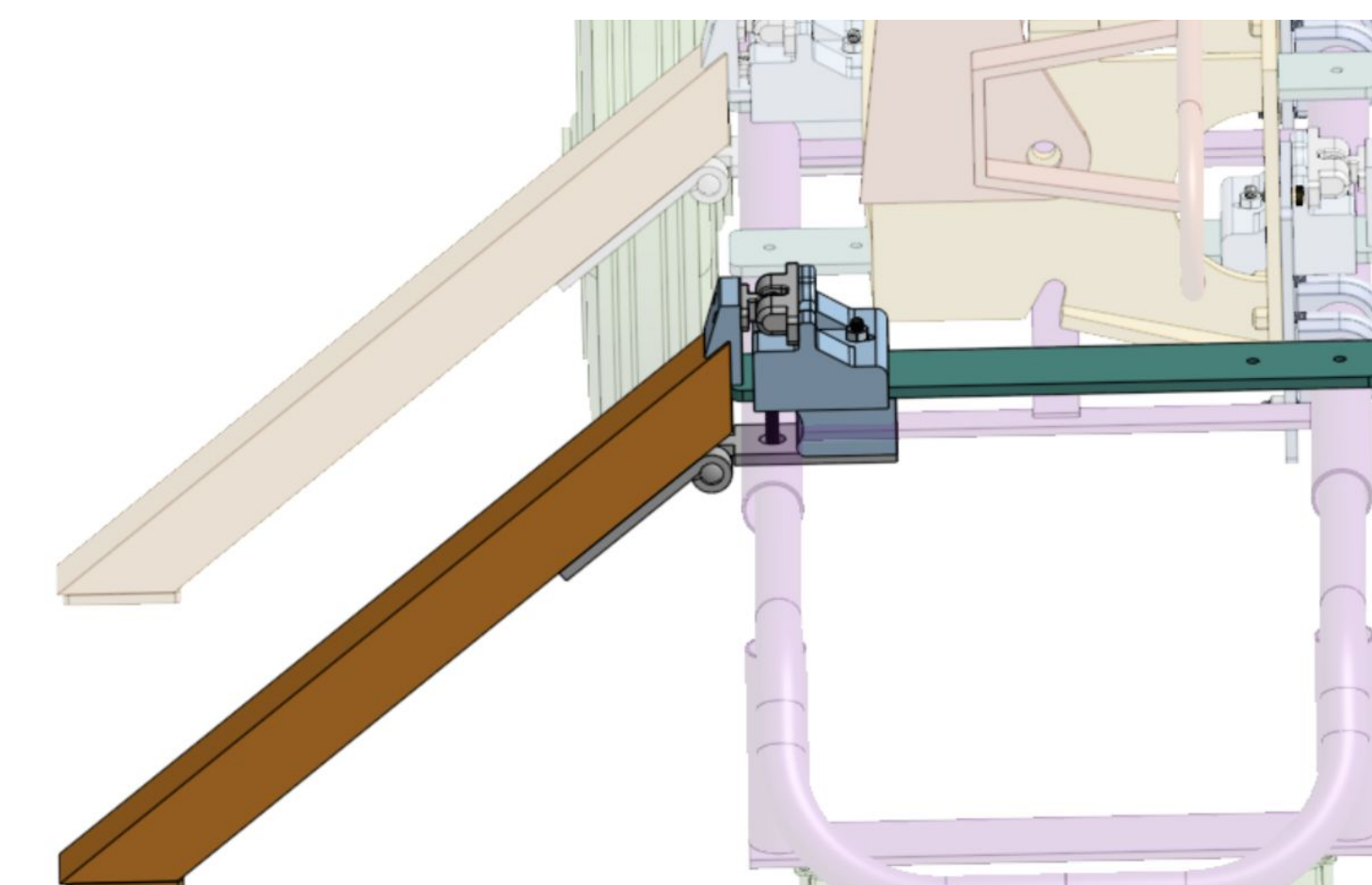
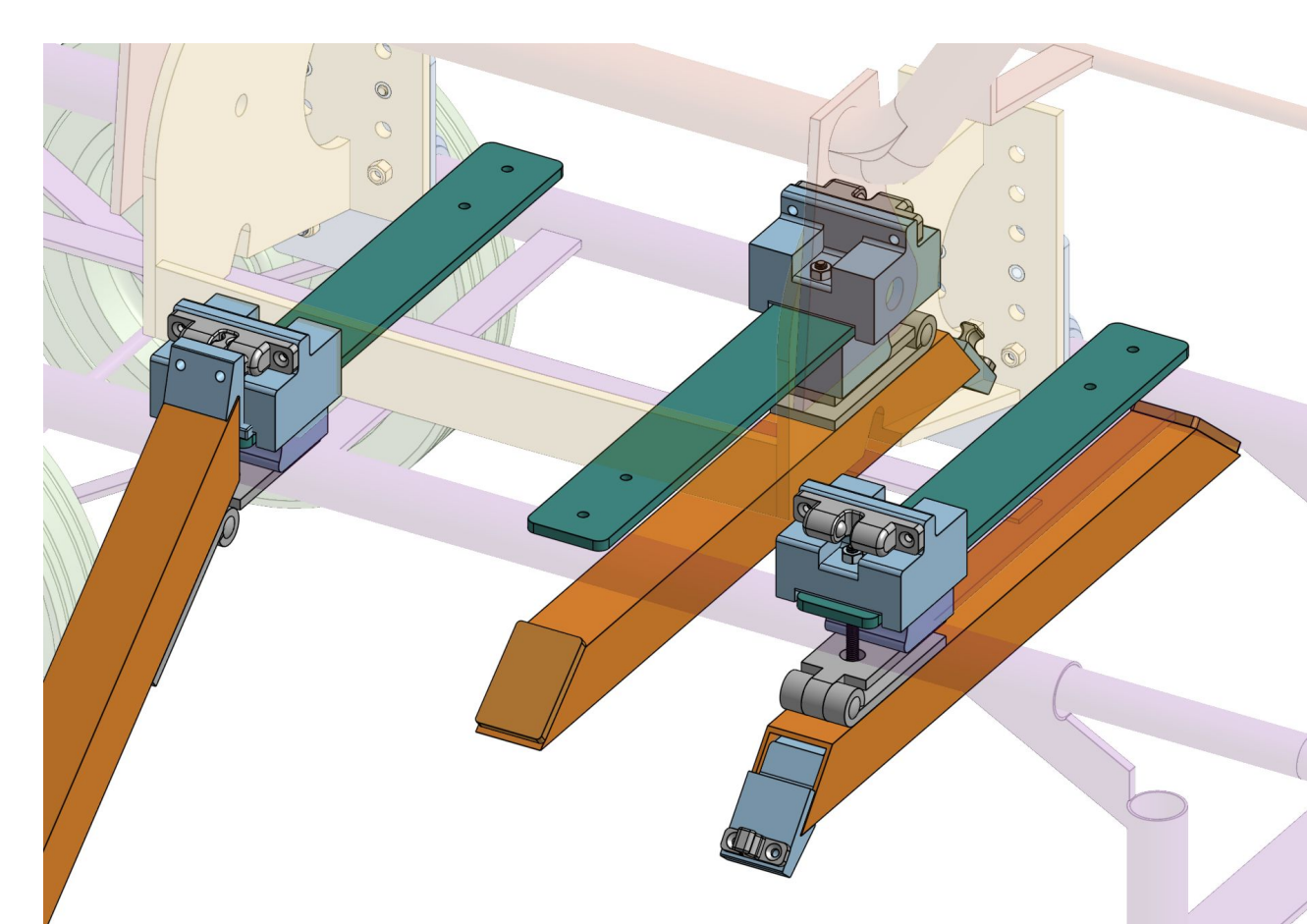
Final Design



Design Features



Pivot Plate Mounting

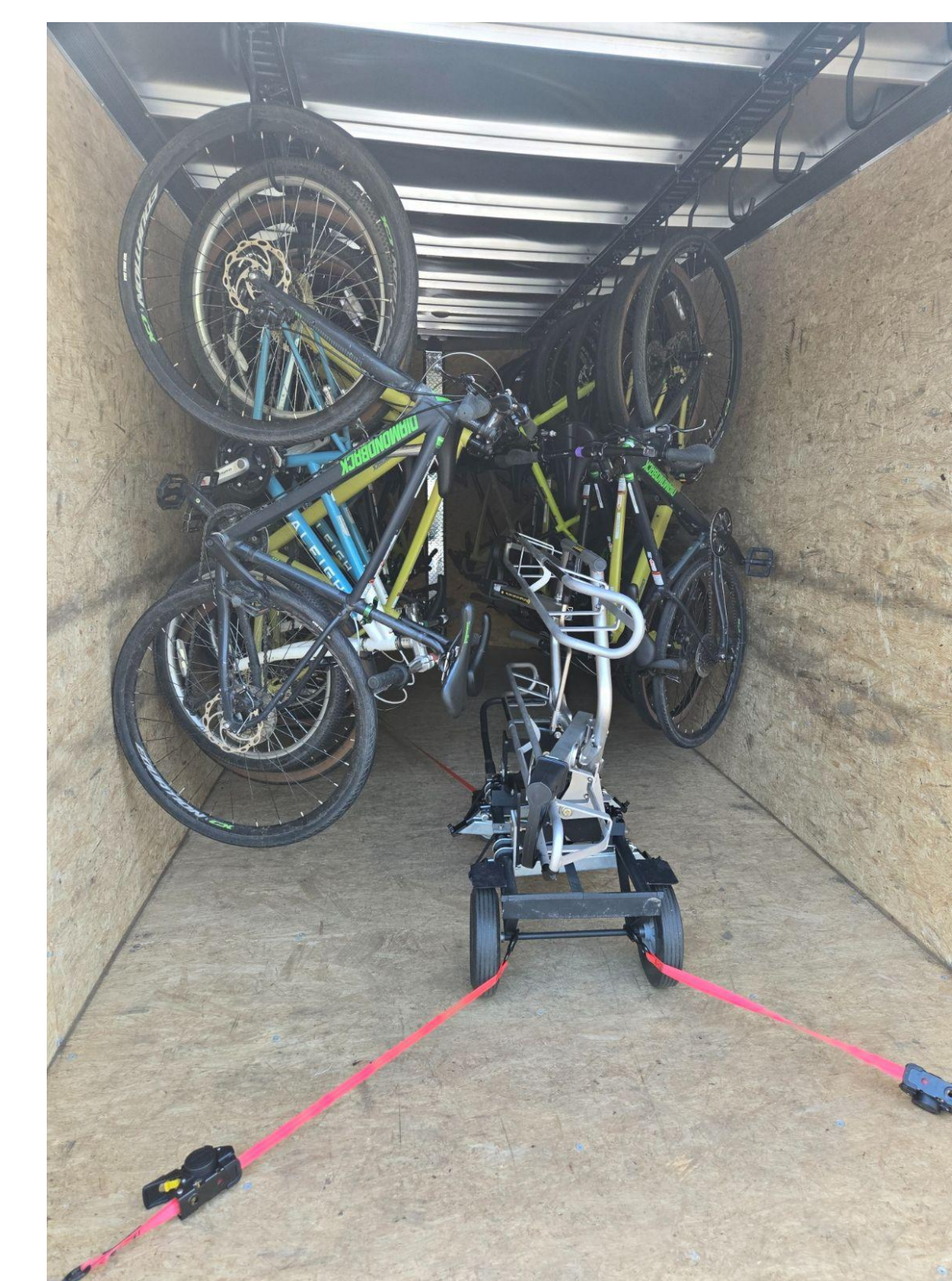


Support Legs & Securement

Product Features

- Dual travel modes
 - Upright for ramps and difficult terrain
 - 4-wheeled for flat terrain and local positional changes
- Vertically sized to accurately simulate rack use on a bus
- Hinged support legs to add stability and safety. Storable for transport.
- Robust rack attachment system to withstand overload and fatigue cases.

Configurations



Trailer Securement



Transport



Deployed

Acknowledgements

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Mechanical Engineering Capstone Exposition
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