Snobike

There’s no bike like a Snobike!

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The Snobike Team

Team Members (in order): Matthew Milan, Matthew Brouwer, Jen Meneely, Justin Karsten
Outline

1. Review Problem and Solution
2. Feasibility
3. Resources
4. Engineering Analysis
5. Design Norms
6. Accomplishments
7. Future Goals
Review Problem and Solution

- Current bikes cannot function properly on snow

- Prototype a bike with a tread and ski system to allow use during the winter
Feasibility

- Ktrak is a current option on the market
  - Want to reduce price
  - Addition of convertibility
- Using current snowmobile parts
  - Build on existing technology
Resources

- Calvin College Student Senate
  - Donated Two Mountain Bikes
Resources

- Family Friend Charlie Vallier
  - Owns Top of the Lake Snowmobile Museum
  - Donated essential parts
    - Tread
    - Skis
Resources

- Tread
Resources

- Skis
Resources

- A-1 Snowmobile Swap and Show
  - Secondary Ski option
Engineering Analysis

- Rear Tread Traction
  - Static Coefficient of Friction (COF)
  - Between rubber tread and various surfaces

<table>
<thead>
<tr>
<th>Surface</th>
<th>Low Value</th>
<th>High Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snow (Wet)</td>
<td>0.30</td>
<td>0.60</td>
</tr>
<tr>
<td>Pavement (Dry)</td>
<td>0.50</td>
<td>0.85</td>
</tr>
<tr>
<td>Pavement (Wet)</td>
<td>0.25</td>
<td>0.75</td>
</tr>
</tbody>
</table>
Engineering Analysis

- Front Ski
  - Kinetic Coefficient of Friction (COF)
    - Between skis and snow
    - Varies from 0.01 to 0.3
Engineering Analysis

- Initial Rear Design
Engineering Analysis

- Modified Rear Design
Design Norms

- **Transparency**
  - Be obvious in design and usability

- **Stewardship**
  - Provide a low cost, environmentally friendly mode of transportation in all seasons

- **Trust**
  - Provide a reliable solution to seasonal transportation hazards
Accomplishments

- Kit design
- PPFS - revised
- Industrial Consultant Meeting
Future Goals

- Initial prototype fabrication date
- Determine a way to objectively test and improve the initial designs
- Testing plans and dates need to be decided
Questions?