

# Mechanical Aid for Traction on Ice

## Background

Ice causes injuries due to slips and falls in the winter months. Maine Dept. of Labor estimates:

- ❑ Ice related falls are 6 times more common than ladders, buildings, and structures
- ❑ Ice accidents leads to 25,000 days of lost work time
- ❑ \$2.3 million costs each year to Maine state employees



Current ways to minimize slippage:

- ❑ Special footwear with built in traction - costly
- ❑ Additional Traction devices (e.g. Crampons) – messy and inconvenient to use



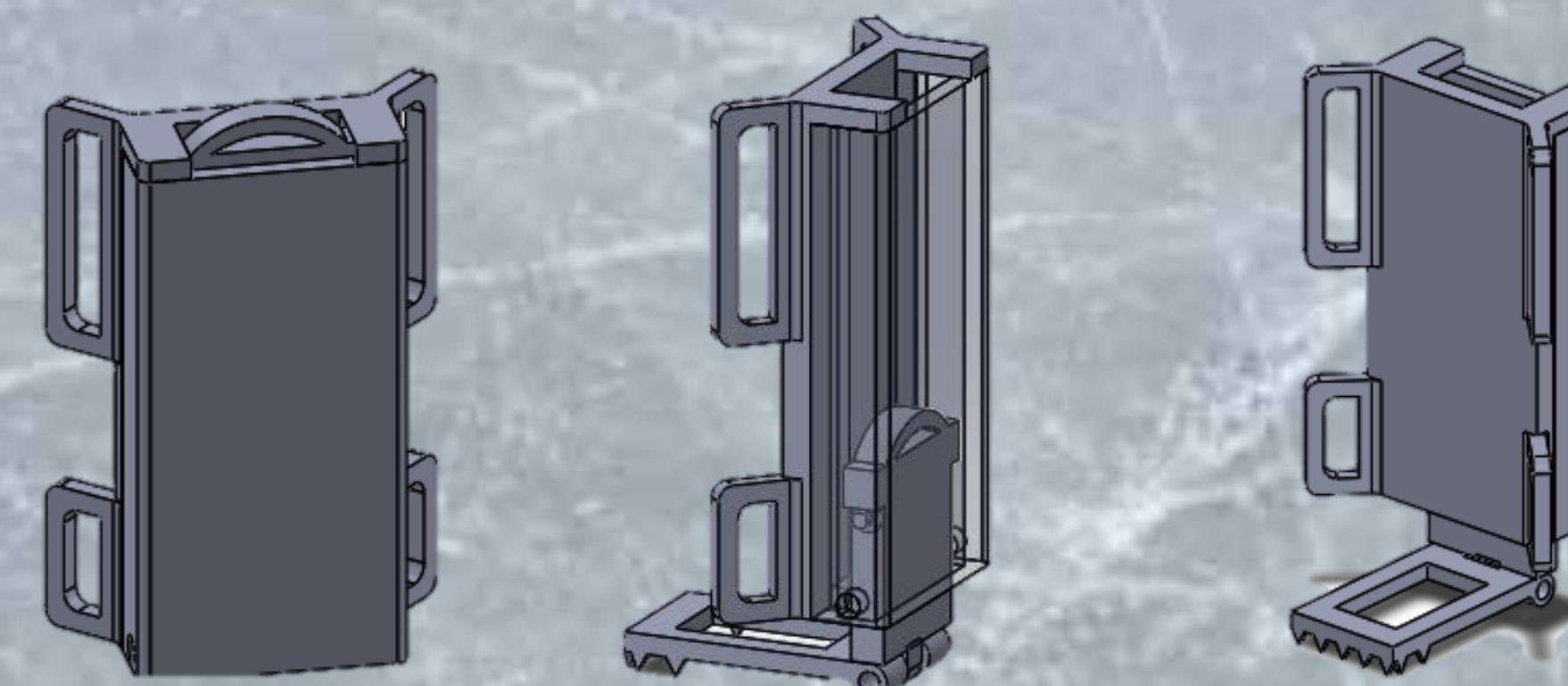
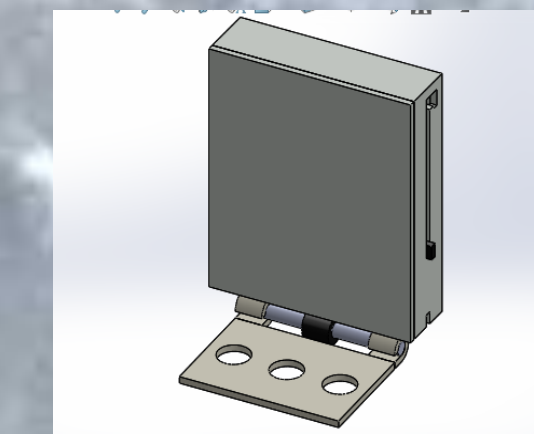
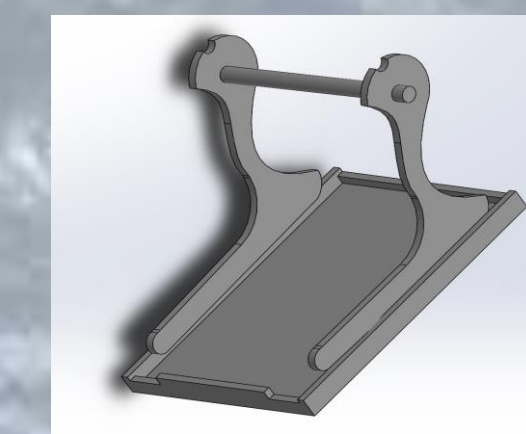
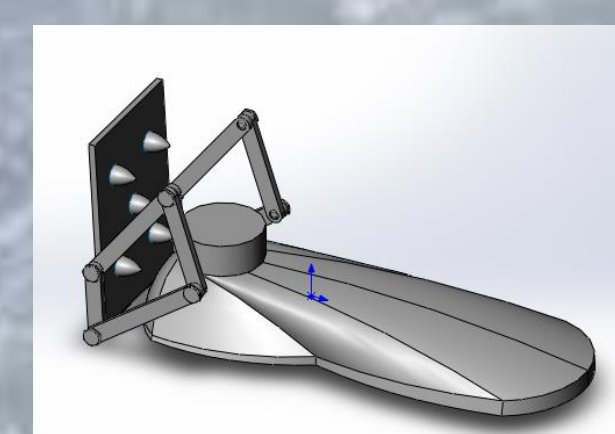
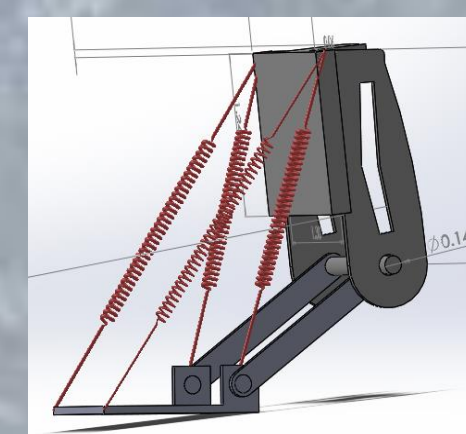
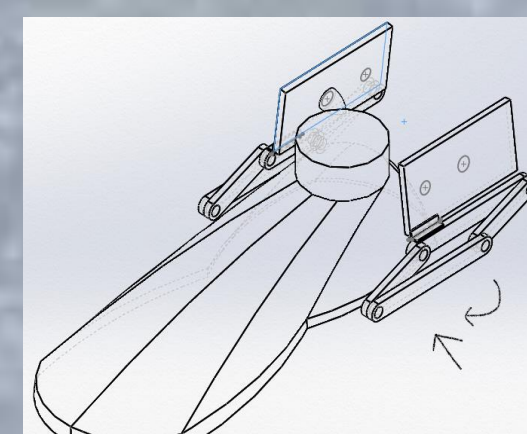
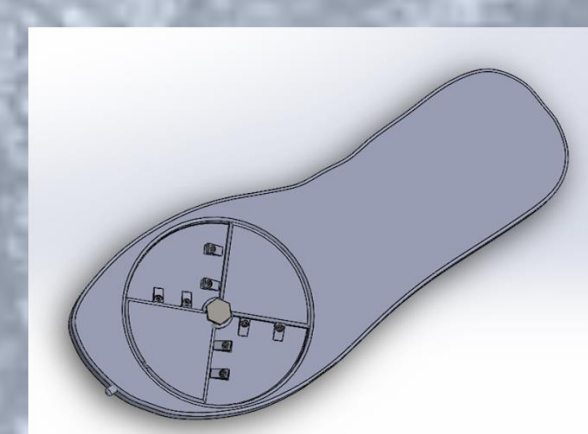
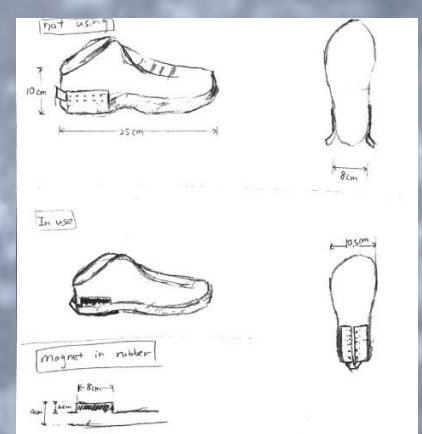
## Goal

Design and prototype mechanical ice traction device that is secured to the footwear once and left on.

## Requirements

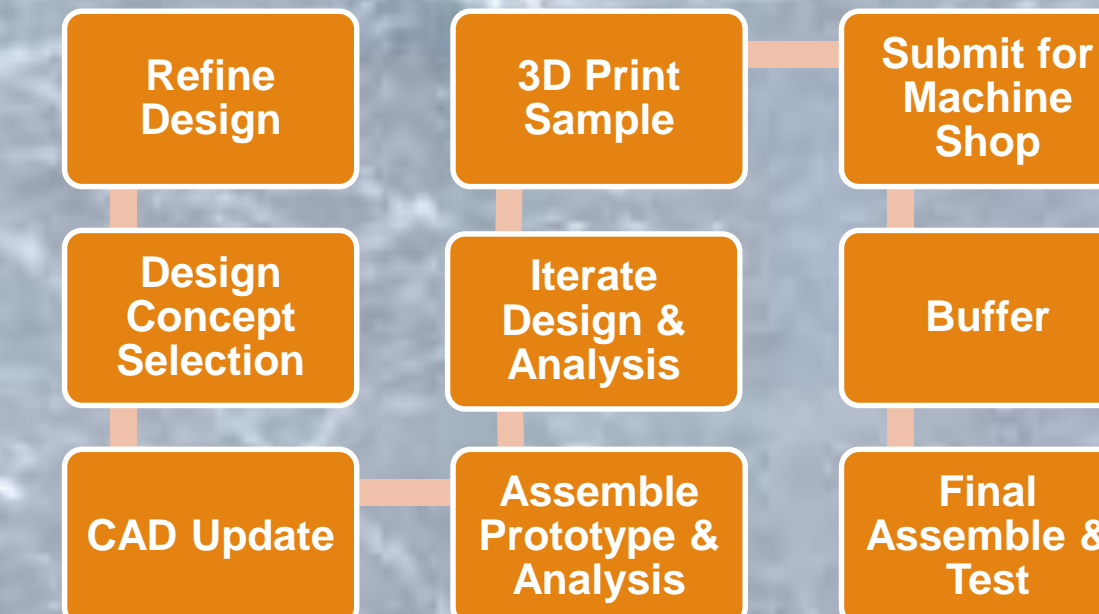
- ❑ The device will be secured to the footwear and left on.
- ❑ When disengaged, there should be minimal interference with the footwear sole and no interference with normal activities such as walking and driving.
- ❑ The traction will be engaged / disengaged using the opposite foot or hands
- ❑ There cannot be any sharp parts in the device that can cause injury to the customer.
- ❑ Be able to work under very cold conditions.
- ❑ The clearing of any ice, rock, slush from the device to properly operate the device should be as simple as knocking the obstruction off against the opposite shoe or the floor.

## Design Concepts

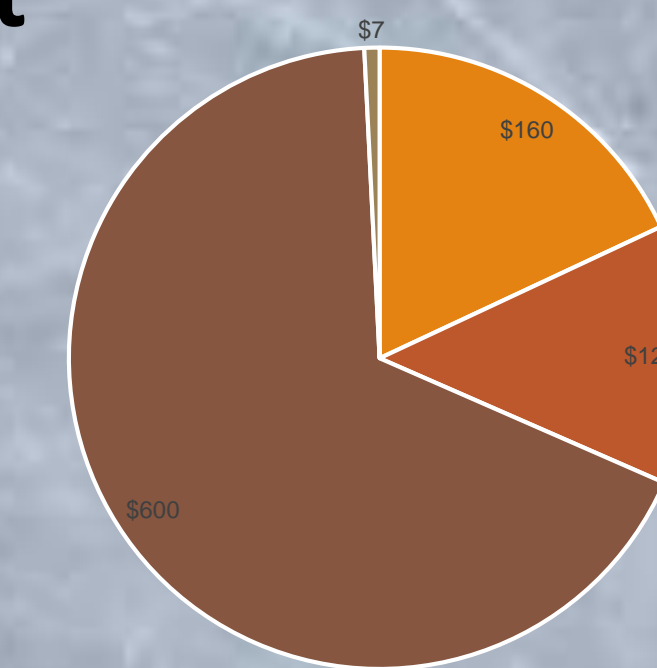


- ❑ The finalized design is composed of the housing, traction plate, slider, torsional spring and tension spring.
- ❑ Disengage mode: traction plate is inside the housing while a torsional spring attach to it are in tension.
- ❑ Engage Mode: After tension springs are released by click on the bottom, the traction plate slides down and turns 90 degrees to the bottom of the footwear.

## Timeline



## Budget



Expense	Amount
3D Print	\$160
Springs & Accessories	\$120
Fibracation	\$600
Test	\$7

Total Cost for Project: \$887  
Available Budget from Student Fees: \$1300

## Next Steps

- Real life experiments - simulating conditions
- Patent
- Manufacture
- Investors & Market

## Team



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