



FAMU-FSU
College of
Engineering

Ghost Controls Lock Mechanism Design Review 4

Senior Design Team 510

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Sponsor and Advisor



Engineering Mentor
Darryl Beadle
Head Engineer Ghost Controls



Academic Advisor
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Senior Design Professor



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Team Introductions



Kayla Boudreaux
Project Manager
Presenter



Jacob Brock
Design Lead



Ernest Patton III
Quality Engineer



Dior Reece
Test Engineer



Olivia Walton
Manufacturing
Engineer
Presenter



Bradley Wiles
Materials Engineer
Presenter



Objective

The objective of this project is to design an innovative gate latch receiver mechanism that effectively addresses current customer acclaimed issues with misalignment and improper latching of Ghost Controls' current system. Our goal is to develop a solution that ensures reliable engagement, enhanced durability, and ease of installation.



About Ghost Controls

- Local to Tallahassee
- Automatic Gate Openers
- Variety of Applications
- Designed for Do-It-Yourself (DIY) Installation



Current Product – Zombie Lock

- Latch-Pin Style
- Weather Resistant
- Easy for DIY Install
- Improves Security for Properties and Homes



Customer Issues



- Latch misalignment
- Gate sagging
- Main cause of customer complaints

Project Focus - Receiver



Customer Needs

Easy and convenient
to use

Withstands 50 lb of
force directed at the
lock

Marketable design
characteristics

Performs in harsh
environments

Works for gates up
to 20 ft in length

Performs on swing
gates of various
configurations

Design Concepts

- Combined design concepts
 - Receiver ramp modification from High Fidelity Concept
 - Adjustable receiver plate inspired by Dr. McConomy



Prototyping - Ramp

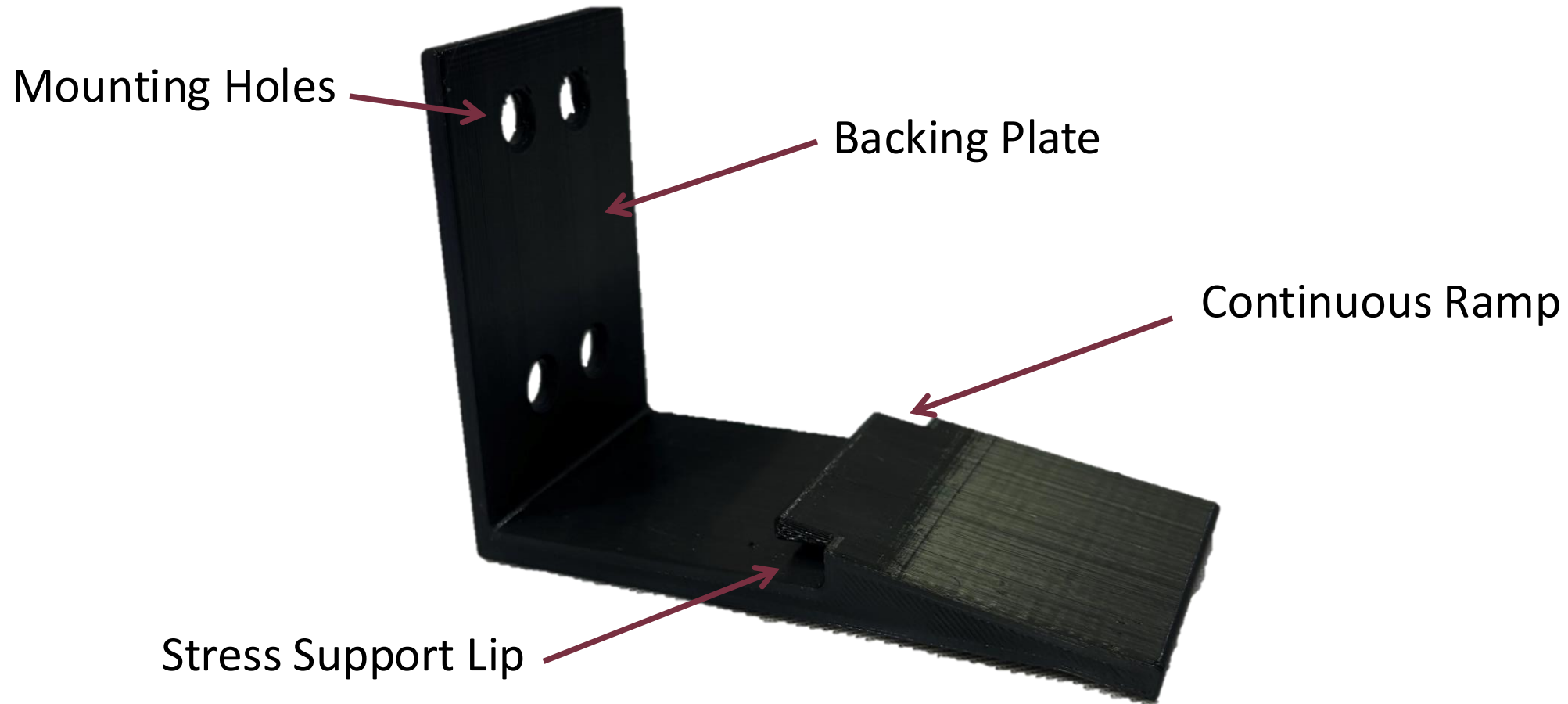


Original Design



Modified Design

Current Ramp



Prototyping - Adjustment Plate



Original Design

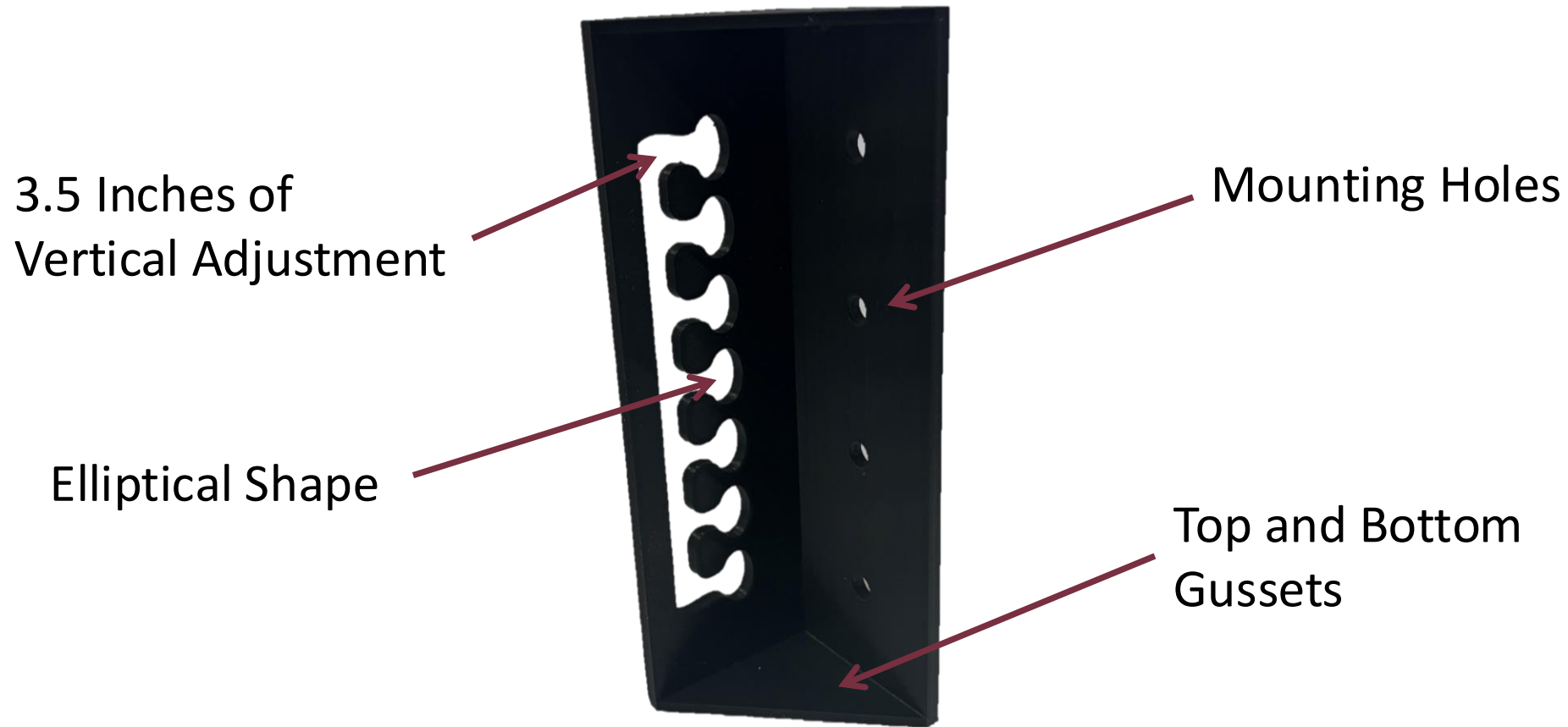


Slotted for Left
and Right Closing
Gates

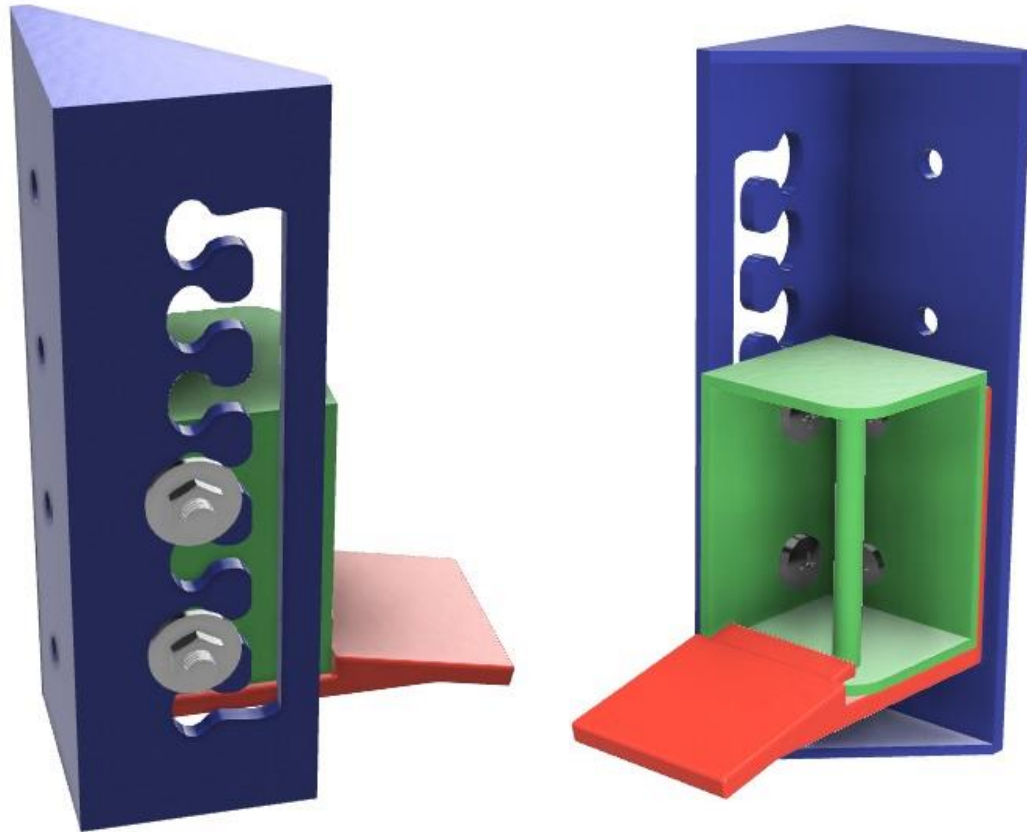


Redesigned
Slots for
Strength

Current Adjustment Plate



CAD Prototype Assembly



- Modification of the current receiver
- Receiver box ramp to guide lock into position
- Adjustable plate mounted on gate post
 - Accounts for sag

Hardware Selection

Adjustment Plate to Post

- From original
ZombieLock



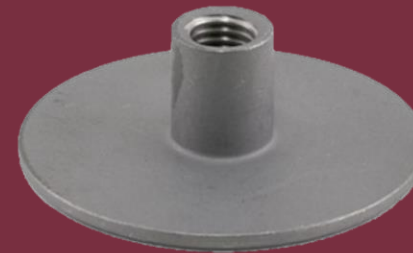
Receiver to Ramp

- Countersunk
- ½" Length
- Black
- Lock-nut/Washer



Adjustment Plate to Receiver

- Large Flange
- Threaded
- Anti-Corrosive



Physical Prototype Assembly



- Affords 3.5 inches of vertical adjustment
- Quick and easy to adjust, no tools required
- Boosts product reviews

Direct Comparison

Before



After



Short Gate Testing



Scuff produced
on prototype

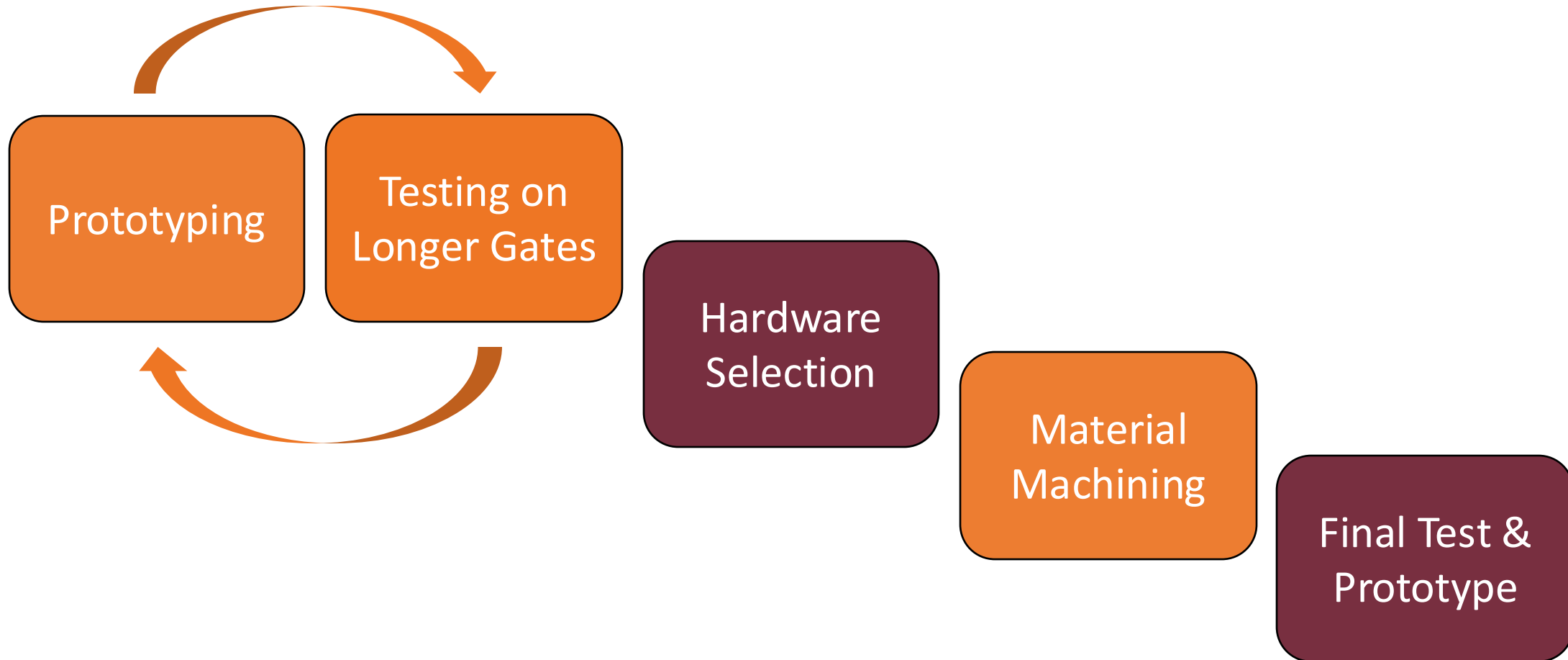
Powder coat
finish to add
durability

Plastic guard to
reduce friction
and absorb wear

Large amount
of deflection

Aluminum to
increase rigidity

Future Work





Questions?

