IOWA STATE UNIVERSITY
Department of Agricultural and Biosystems Engineering

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Feed Batch Mixer Box for Beef Cattle Farm

Client: ISU Beef Nutrition Farm, Ames, Iowa

Problem Statement

- Our client, requires increasing efficiency and decreasing time spent feeding cattle daily.
- Currently, there is daily loss of productivity and revenue.
- This project will better allocate workers and get more done every day

Objectives

- Must unload 92 ft^3 of feed into current RotoMix feed wagon
- Must function under 14 ft ceiling
- Improvement of daily feeding time

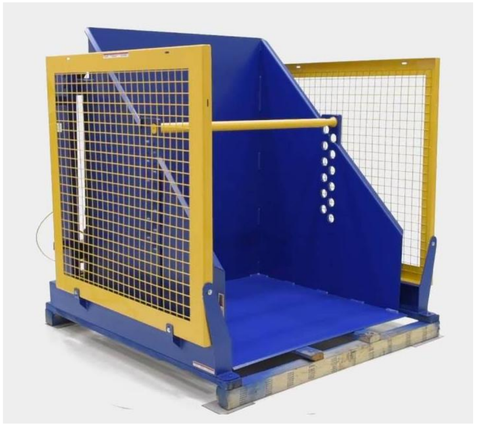
Constraints

- Budget
  - Librabox and iPad $4000
  - Load cells $1500
  - Steel $1500
- Prototype due Feb. 15th, 2020

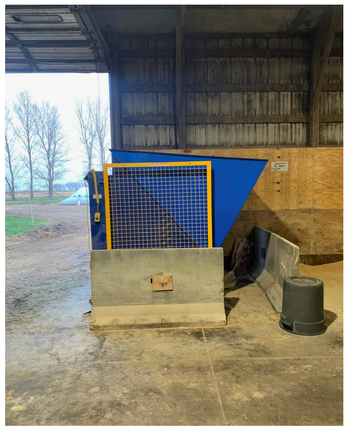
Scope

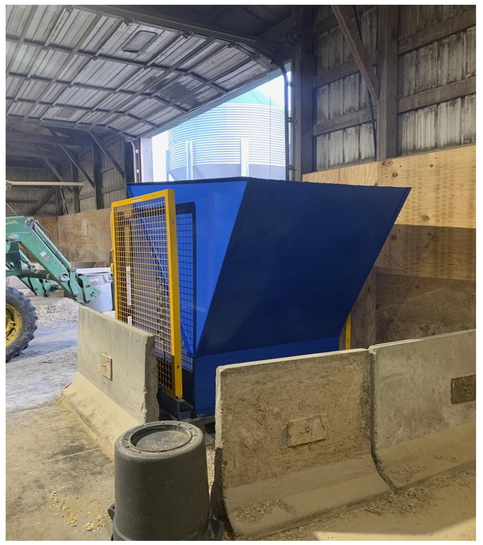
- Reuse of farm's cattle chute scales
- Repurpose of Vestil Hydraulic Box Dumper

Before



After





Methods/Approach

- Design, ordering material, dump box fabrication, testing, and then final modifications were all major tasks involved for this project
- The utilization of spare scales and the modification of a previously used dumping system.
- Analysis of the time spent feeding each day and it's decrease using our system.

Major Deliverables

- Major outcomes
  - Design cattle feed dump
  - Order/cut/bend material
  - Weld/fabricate to Vestil dump box
  - Test
- Measures of success
  - 15+ minutes saved during daily feeding

Recommendations

- We recommend having an individual load the feed dump while the RotoMix is unloading
- Paint to prevent rusting

References

- Vestil Manufacturing Corp. *HBD-2-60Vestil.* 2011. PDF. (https://www.vestil.com/page-drawings.php*)*

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