

Automated T-Post Driving System

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Introduction

Problem Statement: T-Post instillation processes are slow and labor intensive, there is a need for easier, economically viable solution.

Objective: Develop a remote operated machine that drives multiple t-posts without user assistance.

Design Criteria:

- Total weight < 250lbs (max load for UTV)
- Performance in all terrain environments
- Projected production cost < \$750/unit



Vehicle Mounted



<u>Final Design</u>









T-posts are loaded into the carriage assembly and dispensed into the driving position individually. Once the stop linkage is released, the

mass is lifted vertically on the rail, by the chain driven notch, and

dropped from a height of 2-3ft before impacting the top of the tpost. Once the post is driven to the desired depth, the stop actuator extends to return the mass to the storage position at the top of the rail. The vehicle will then pull forward and the t-post will release from the carriage assembly.

Free Standing

Final Design Features

- **3,200lbs of impact force**
- **Two-axis leveling adjustment**
- Installation cycle rate of ~60 sec/post
- 33 impacts per minute driving rate
- Total weight <300lbs
- Mounts on any vehicle with a standard 2" reviver hitch.
- 1 HP transmitted through a 1:12 gear ratio, a safety factor of 2.2 protects the AC motor from overloading.
 - **Remote-controlled operation**

<u>Manufacturing</u>

- Structures have been \bullet constructed of steel through various processes of welding, machining and cutting.
- Power transmission • components were sourced and assembled with some modifications.
- The electronic control ulletsystem is driven by a programable microcontroller that communicates with a remote to operate electronic components.

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Operation

