



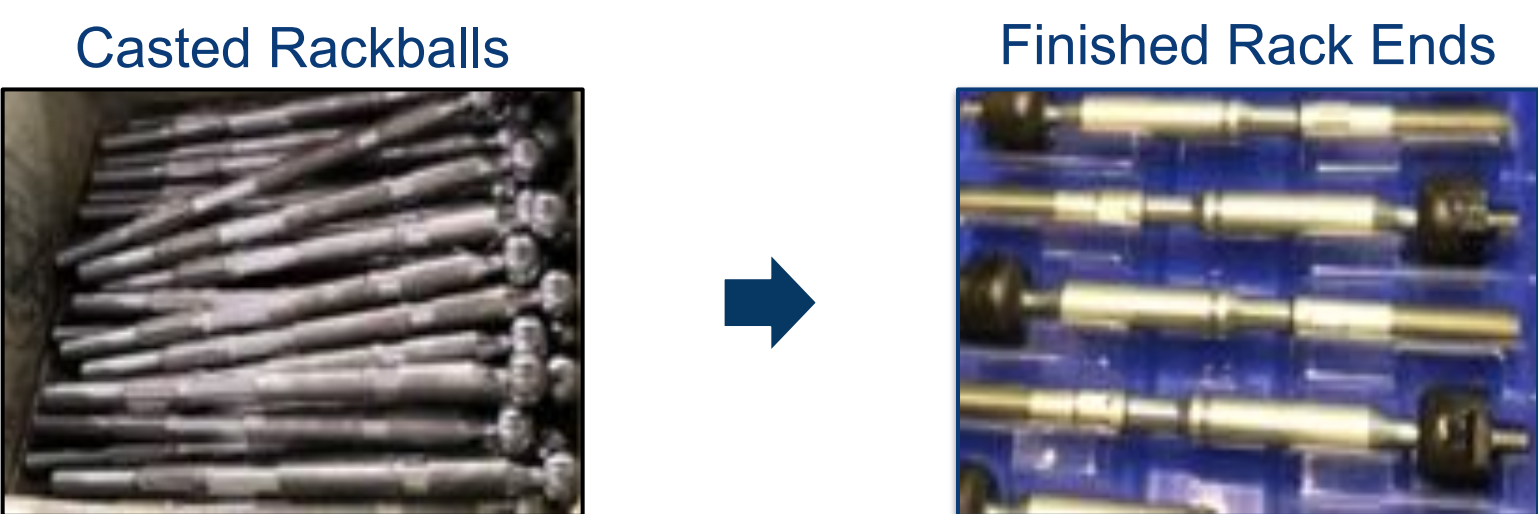
# Rack End Material Handling Optimization



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## Company Background

- Plant located in Wytheville, VA
- Opened in 2000
- Manufactures parts primarily for Toyota, Subaru, CAMI, Izuzu, and Honda



## Problem Description

The current material handling operation:

Lacks Standardization

Experiencing Late Deliveries

Requires Excessive Effort

## Objectives

Decrease time lost to late or incorrect deliveries by 50%

Decrease variability of cycle time to 17 minutes or less

The Rack End material handler operates a tugger and is responsible for delivering empty totes and raw materials to 18 workstations.



## Process

### Data Collection

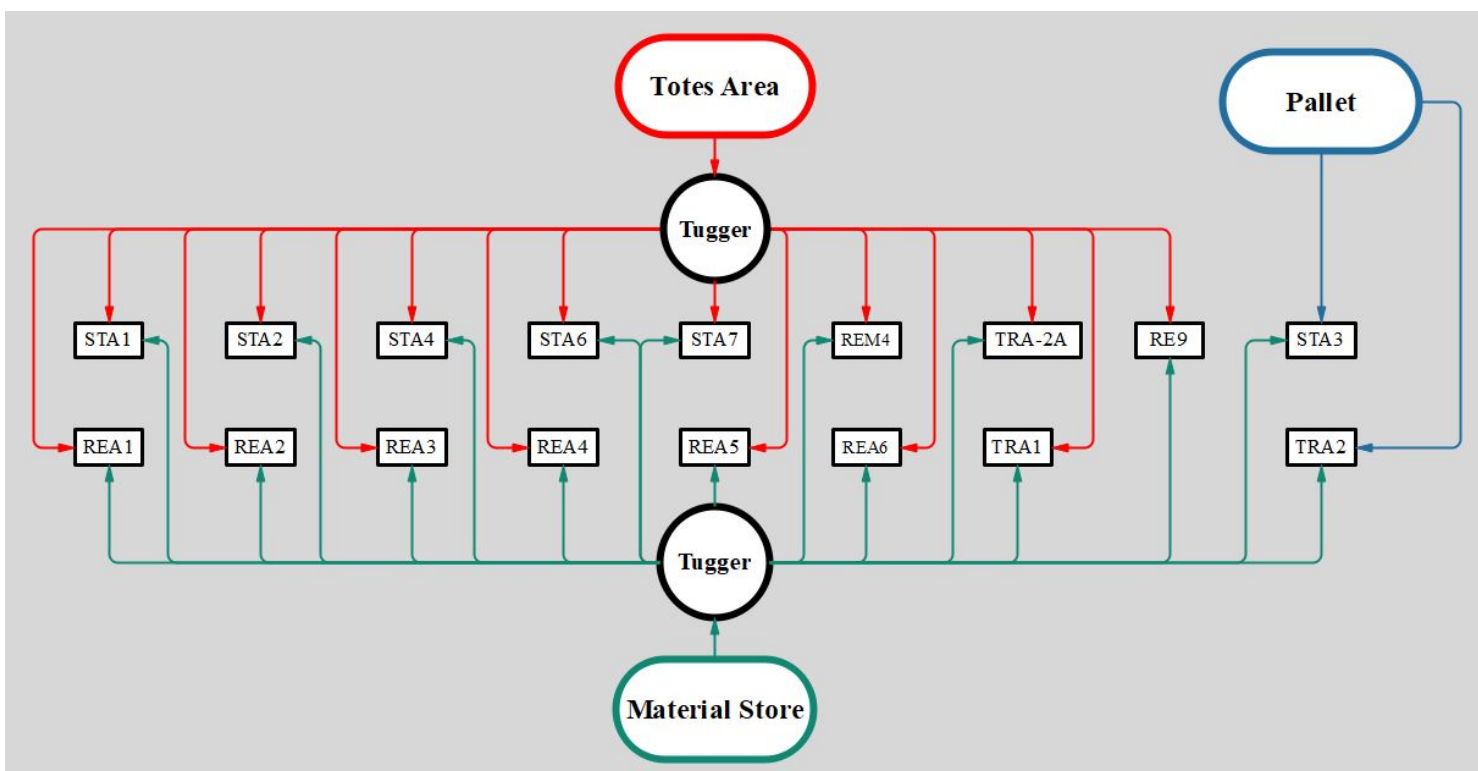
#### Time Studies

Start Time	Station Count	Stop Time	Duration
6:16	11 11 11 12	7:00	44 mins
8:25	11 11 11 11	9:08	43 mins

#### Floor Observations



### Material Flow Diagram



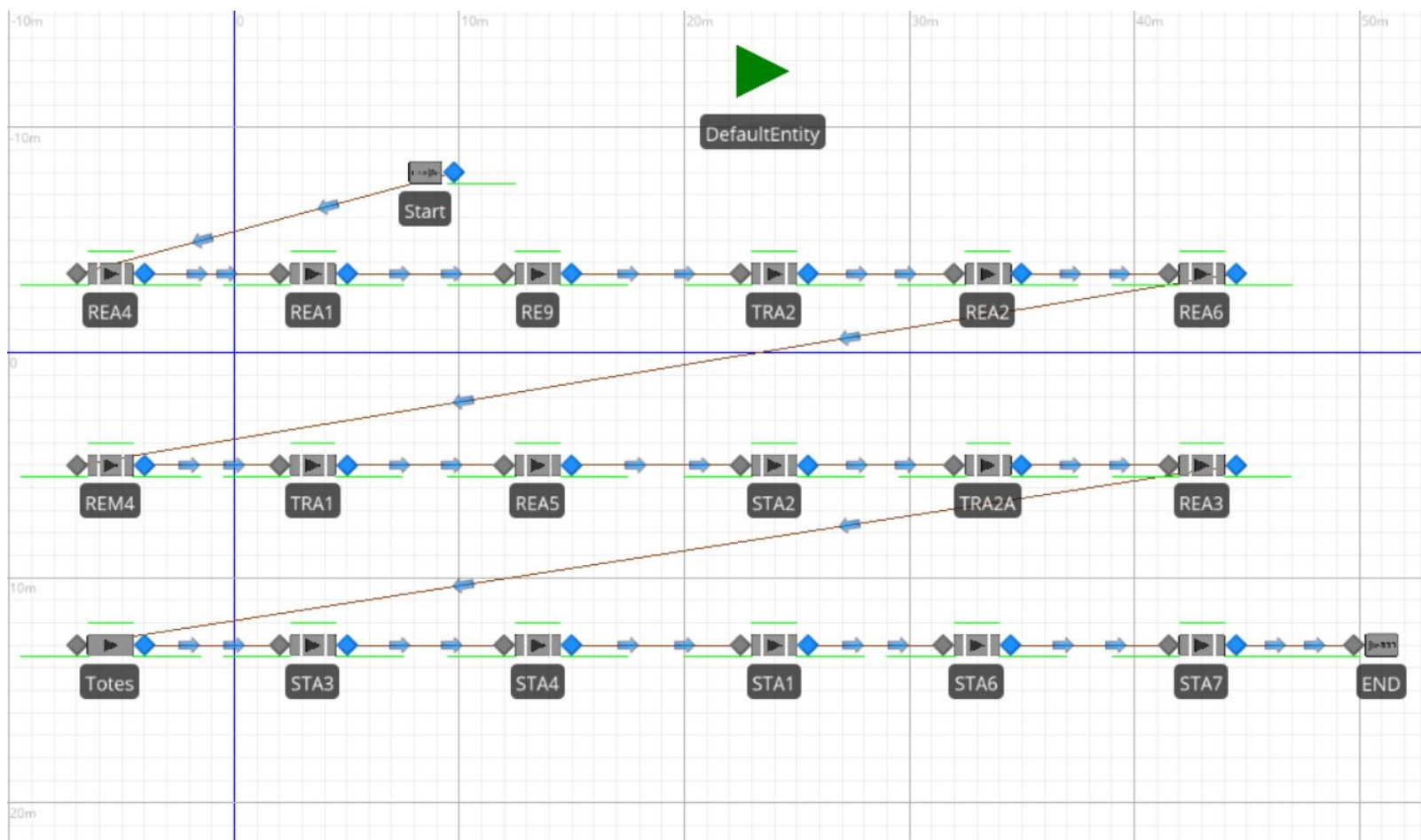
### Data Analysis

#### Machine Throughput Data

Machine	REA-1	REA-2	REA-3
Throughput avg	173.73	173.27	194.23
Throughput max	248	200	200
# per tote	16	10	12
Tote throughput	15.50	20.00	16.67
Buffer #	12.00	25.00	30.00
# full buffers per hr	1.29	0.80	0.56

## Material Handling Route Design

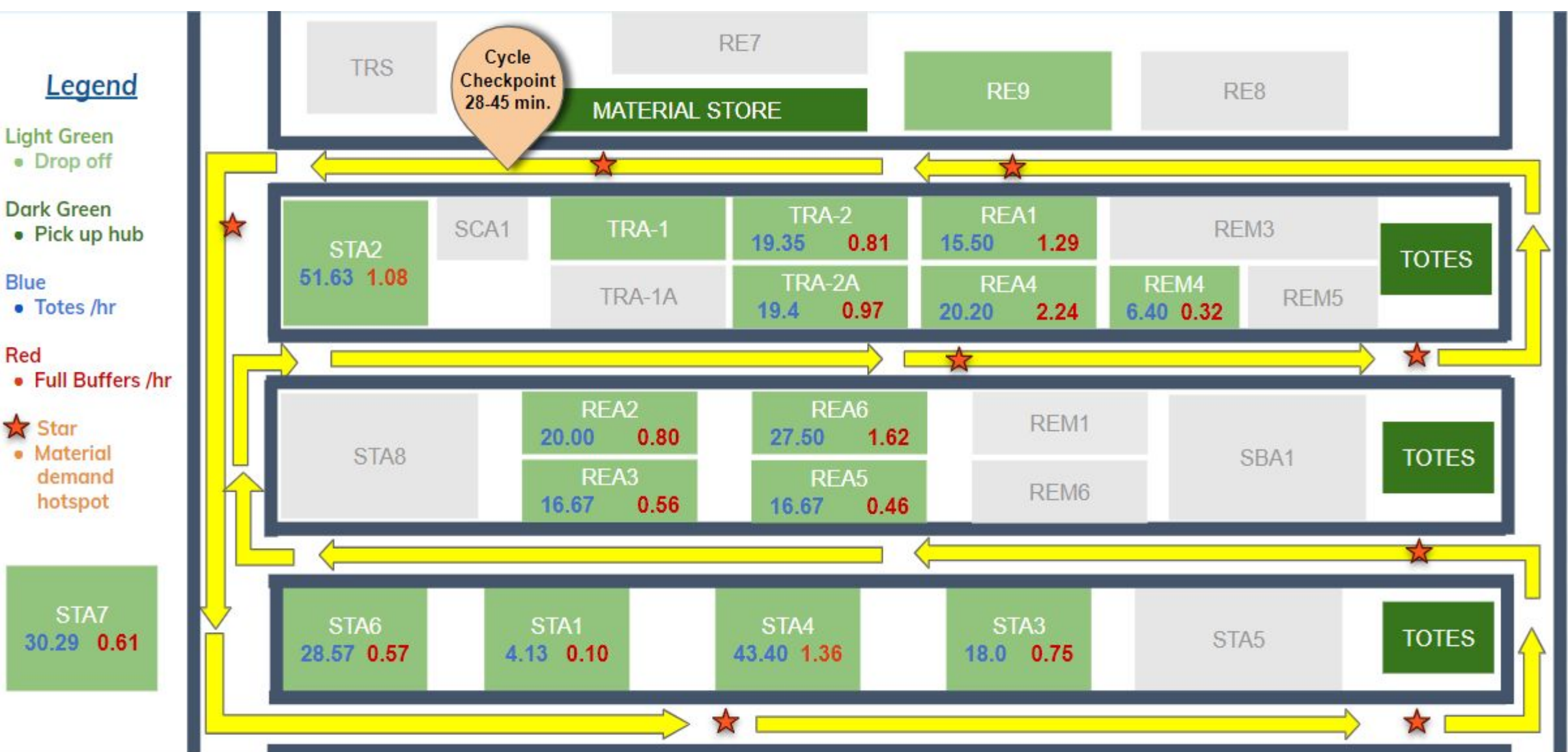
### Route Verification Simulation



Average Flow Time  $\approx$  34 mins  
Max Flow Time  $\approx$  54 mins  
Min Flow Time  $\approx$  12 mins



### Final Proposed Route



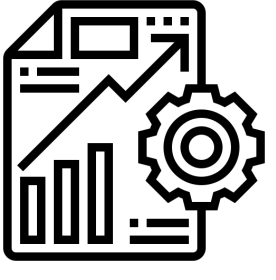
## Impact

0.97 hr of Labor Saved per shift  
Total Cost Savings = \$126,576

1 week of Material Handler training  
Total Investment Impact = \$2,976

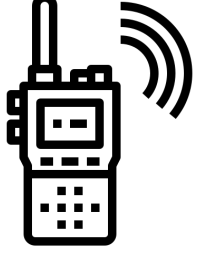
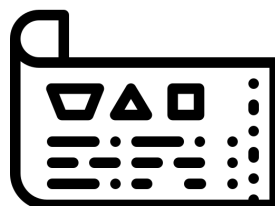
**Total Impact**  
**\$ 123,600**

## Recommendations



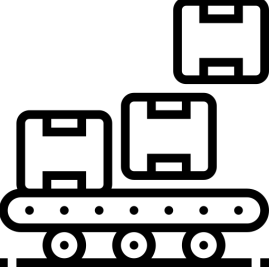
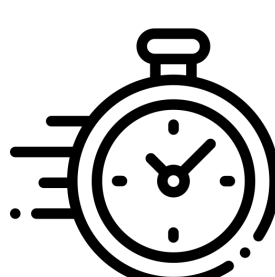
Machine Replenishment Data Tracking

Larger Labels for Machine racks with changing product



Radio Channel for Material Handlers

Define Allowance for Indirect Tasks during Route



Larger WIP Buffer for Machine RE-9

Fixed receptacle for corrugated waste

