

# Business Transformation and a Lean Culture

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**Roadtec**



# Outline

- About Roadtec
- Reason for change
- Deployment model
- Two Prong Approach
- Kaizen Process Results
- Sustainment
- Translation
- Lessons Learned
- Next Steps
- Questions

# About Roadtec

- Located in Chattanooga, TN... only
- 400+ employees working 2 shifts
- OEM manufacturer of mobile asphalt paving equipment – Pavers, Material Transfer Vehicles, Milling Machines, Soil Stabilizers, etc.
- Plant value stream – Quote to Receipt of Cash



# Who We Really Are



Bucket Head

Kyle<sup>2</sup>

Cosmo

Red

Mighty Matt

Jethro

Boo Boo

Meat

T-Pott

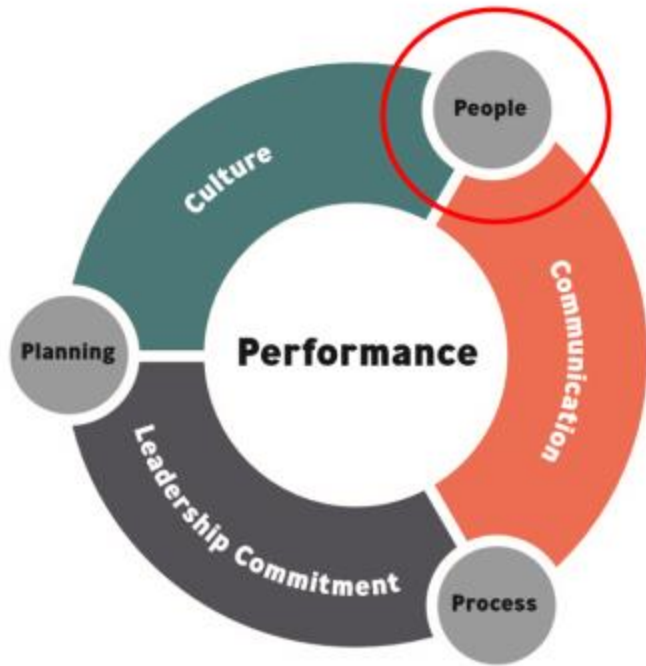
Bubba

**Challenge is to improve our processes at the same  
time we are developing our people**

# Business Imperative

- Traditional manufacturing with “push” system
- “Cost+” model vs market setting the price
- Key market erosion
- Excessive FG’s tying up cash flow
- Fierce competition
- Organizational silos run deep

# Leading on the Edge



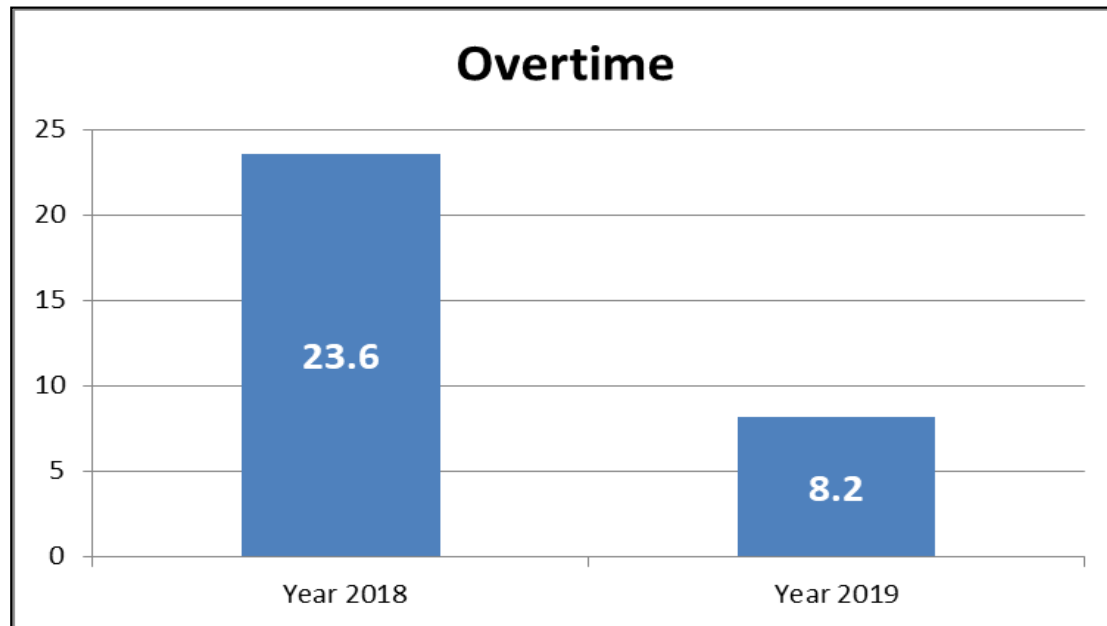
Development and people collaboration



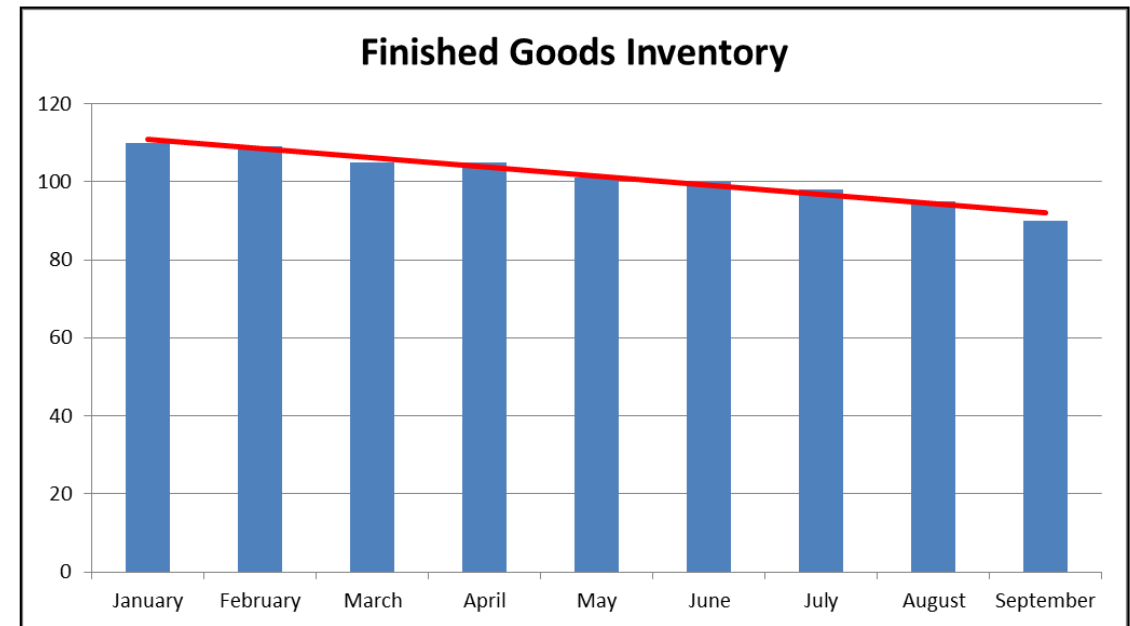
Empowering our people



# Results First, People Always

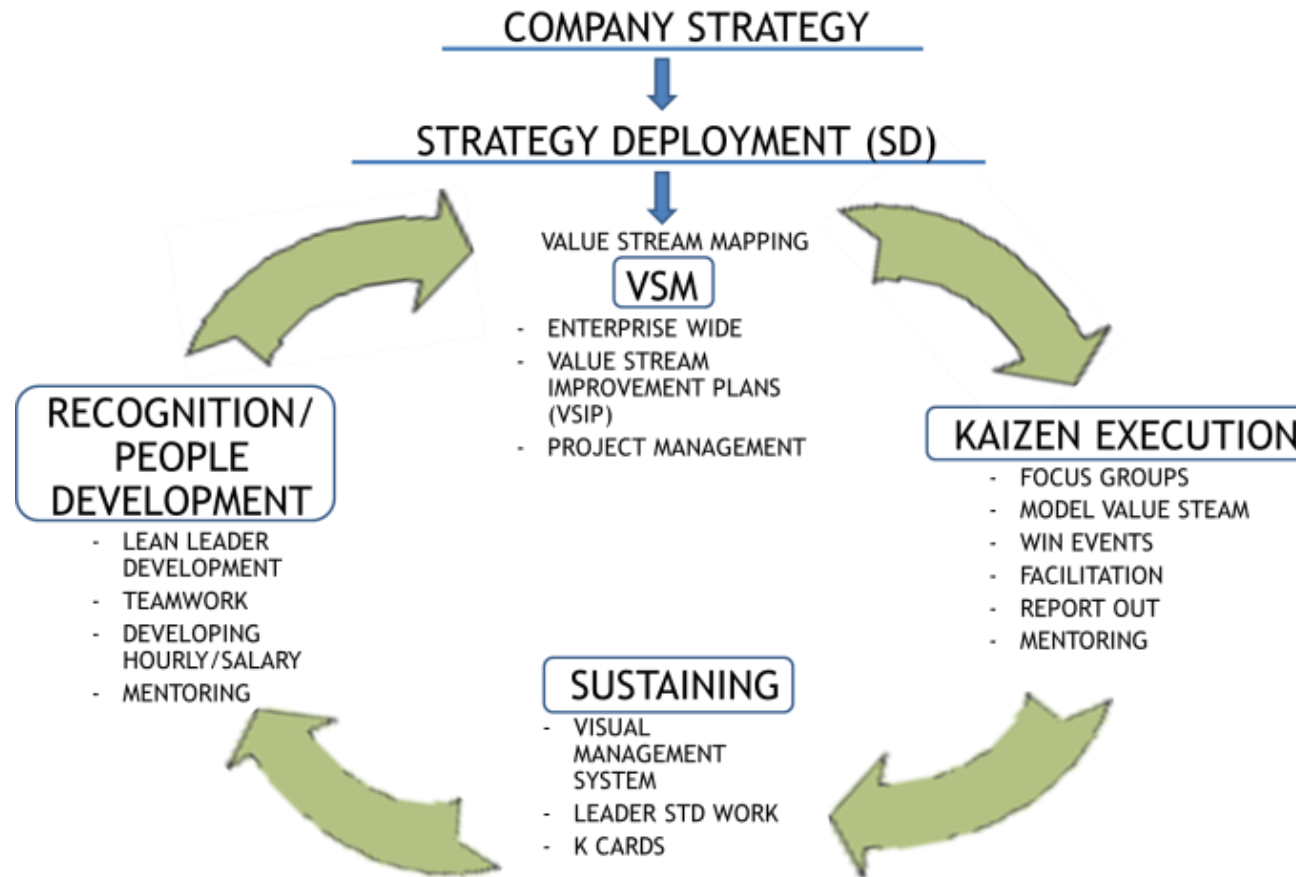


Intense Focus on OT Reduction



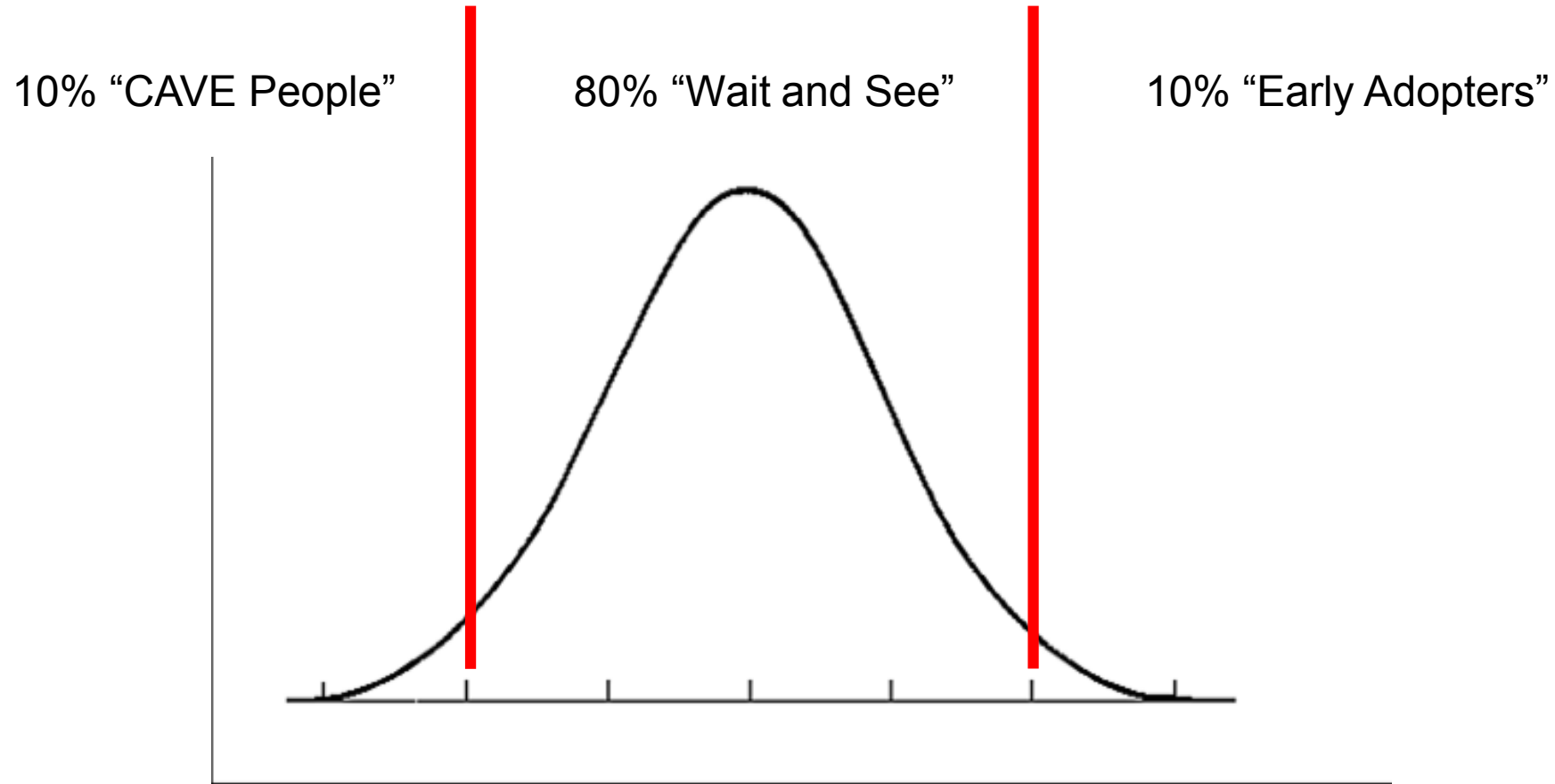
Reduced FG Inventory by \$15M

# Deployment Model





# Change Model



# Transformation Meaning



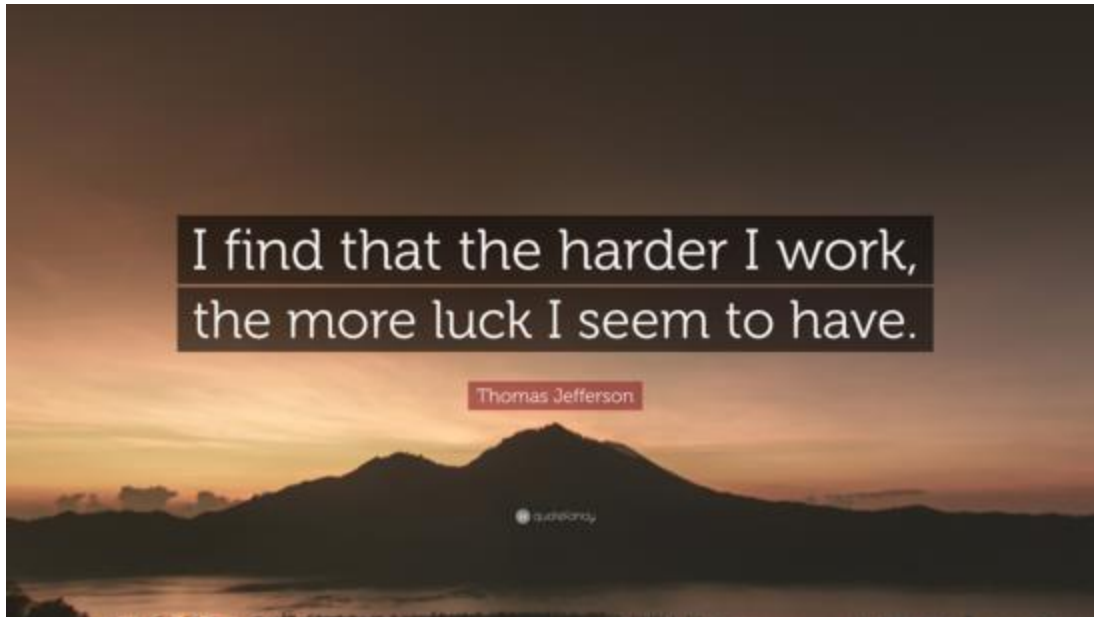
- Transformation begins at the individual level
- Lean Thinking, *then* Lean Doing
- TPS – “Thinking Production System”

# Teamwork



- Cross-functional is key
  - Don't fear diversity of experience or expertise
- We fail or succeed as a *team*.





# In Search of the “Silver Bullet”



# Two Prong Attack

## Plant-Level VS






*(Order entry to Shipment)*

- SOP Implementation 
- QEDII (Lean Principles) 
- Order Entry LT reduction 
- OT Reduction 

**Working “On” the Business**

## Product Family VS

*(Shop floor order to Shipment)*

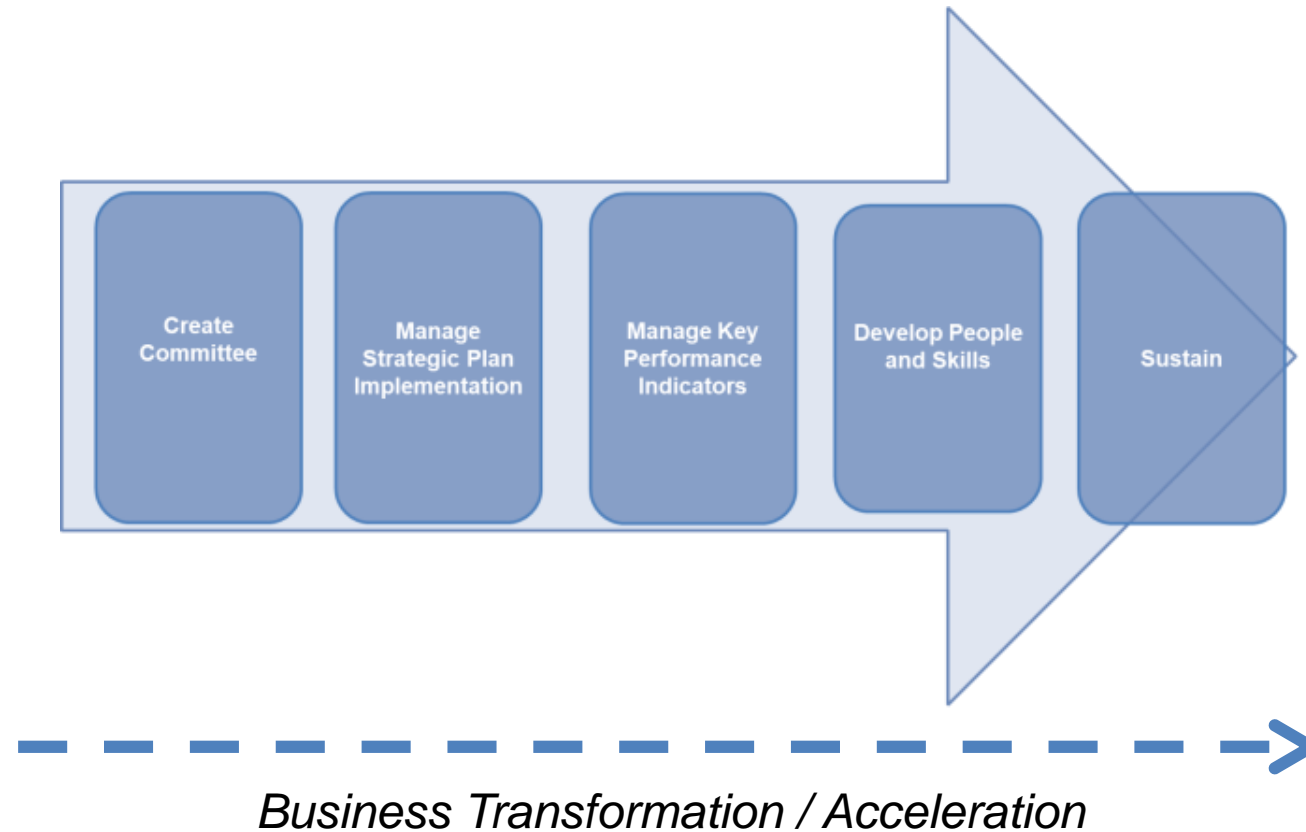
- Paver model value stream 
- Remove obstacles to flow 
- Part quality 
- Material delivery and parts presentation 
- Standard work 

**Working “In” the Business**









# Steering Committee Process



# Pre-Requisites to Flow

- Quality parts 
- Capable machines
- Cross-skilled workers
- Implemented self-inspection 
- Motivated, informed and involved workers 
- Multi-disciplinary, problem solving teams
- Standardized work procedures 
- Visual performance measurement
- Reliable suppliers

# A3 Thinking

**1. Clarify the problem**

Problem statement:

**MFG:**  
Cycle time for Paver track assembly is excessive; especially, when back-to-back track Pavers are scheduled.

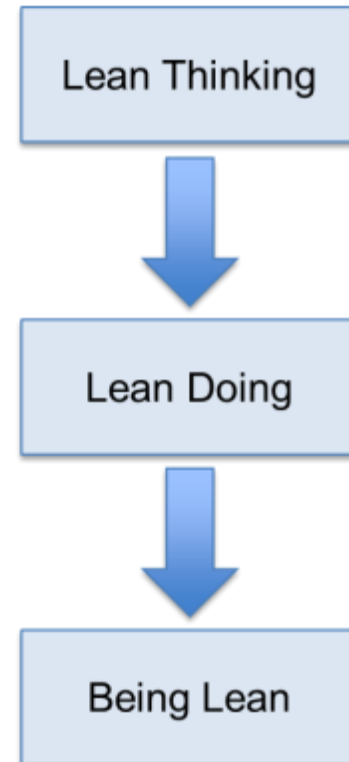
**SAFETY:**  
Process represents a significant ergonomic issue with significant part weight and repetitive motion

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**2. Breakdown the problem**

**MFG**  
2019 Paver Takt Time = 2.25 days  
Current Paver Cycle Time = 2.8 days  
Paver Track Assy Time Average = 30 hours (3 days)

**SAFETY**  
14 steps/wheel x 26 wheels/track set = 364 steps  
Bogie wheel weight = 70 lbs/wheel



- Cycle Time exceeded Takt Time
- “We are ok” – Data says, “We are **not** ok”
- Event Charter presented to OpEx Steering Committee

## Kaizen Sheet

Kaizen Title Paver Track Assembly Bogie Wheel Assy

Item	Problem	Measures Taken	Results
Safety	<ul style="list-style-type: none"> <li>•Lifting Bogie wheel that weighs 70lbs</li> <li>RP 175 – 24 wheels</li> <li>RP 195 – 28 wheels</li> <li>14 steps per bogie wheel</li> </ul>	<ul style="list-style-type: none"> <li>•Installed zero gravity lift assist</li> <li>•Newly designed bogie wheel lifting device to improve ergonomic conditions</li> </ul>	<ul style="list-style-type: none"> <li>•Zero unassisted bogie wheel lifting</li> <li>•Eliminated 14 steps per wheel</li> <li>•Reduced R3 rating from 128 to 6</li> </ul>

Before Kaizen



After Kaizen



## PAVER TRACK ASSEMBLY KAIZEN EVENT



1. Installed a zero gravity lift assist device. **Result: Reduced risk of injury.**
2. Cleaned work area, applied 6S principles, painted and clearly marked work zones. **Result: Improved layout and eliminated 14 steps per part.**
3. Installed and implemented parts organization system. **Result: Reduced operator motion and maximized time management.**
4. Implemented a rolling press ram frame to support the lift process. **Result: Reduced ergonomic risk for operator.**
5. Installed a track presentation table, which enabled vertical installation, reducing the previous awkward process. **Result: Improved cycle time and more efficient organization.**

**48%**  
reduction in cycle  
time (from 21 to 11  
hours)

- Safer work environment
- Reduced costs
- Improved quality
- Improved employee engagement

Improved Safety R3  
score by **95%**

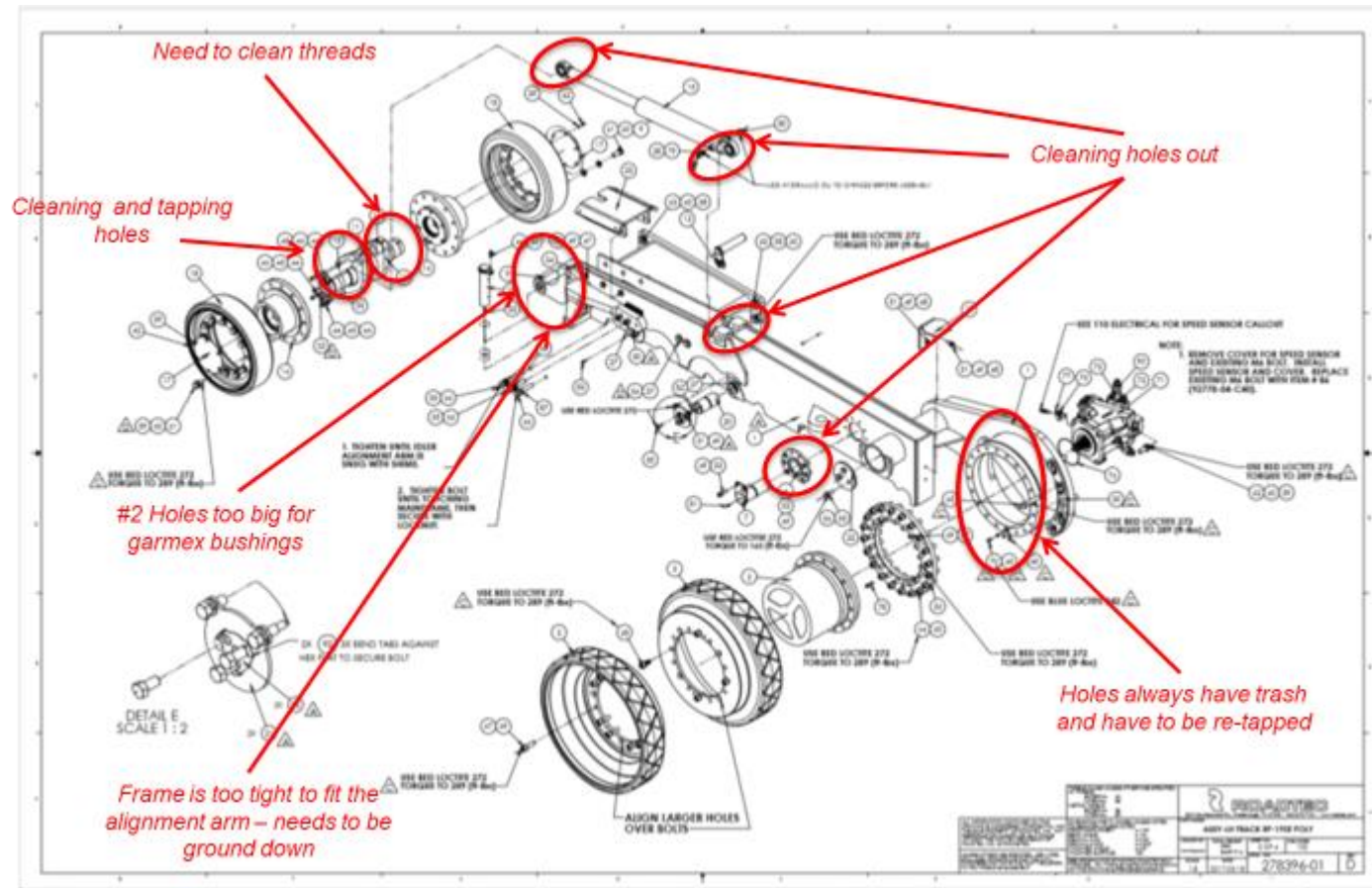


### Why Pavers?

- 40% of plant volume
- Growth opportunity
- Relative stability in demand



# Obstacle to Flow



*All this waste must be performed before the value-added processes begin*



# A Glimpse of the Future



After \_\_\_\_\_ (Leadership team fill in the blank), the entire plant will look like this

# Sustainment System

- Audit or Accountability Board?
  - Measures Standard Work adherence, Quality, and Safety (5S)
- Kaizen area is fragile after initial work is completed
- We never had to ask Supervisor (Butch) or Team Lead (Lannis) the importance of follow up items



# Translation Begins

4/19	Sand	Wash	Tape	Paint	Black	Total	Goals	Untape	Decal	Final Assy	Final Ch Out	Rewo.	Total	Goals
Rp-190e 4217	Opal HRS-15 S-1:45 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	34.4	40	← 14%						17
Sx-8e 4003	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	42.7								
STP-2500e 4016	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	61.5	63	← 2%						24
Rp-190e 4218	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	34.15	40	← 15%					19.75	17
Sx-8e 4130	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	40.65	65	← 37%					25	26
Rp-190e 4219	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	40.45	40	← 1%					17.4	17
STP-2500e 4216	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	53.1	63	← 16%						24
Rp-190e 4127	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	32.3	40	← 19%						17
Sx-8e 4131	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	50.5	65	← 22%						26
Rp-190e 4220	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	35.45	40	← 11%						
STP-2500e 4217	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	45.45	63	← 28%						
Sx-8e 4132	Opal HRS-15 S-1:10 E-1:10 S-2:30 E-2:30 X5 T5:14	Opal HRS-2 S-1:30 E-1:30 S-2:30 E-2:30 X1 T5:1	Opal HRS-16 S-1:10:30 E-1:10:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14	Opal HRS-10 S-1:30 E-1:30 S-2:30 E-2:30 X5 T5:14									

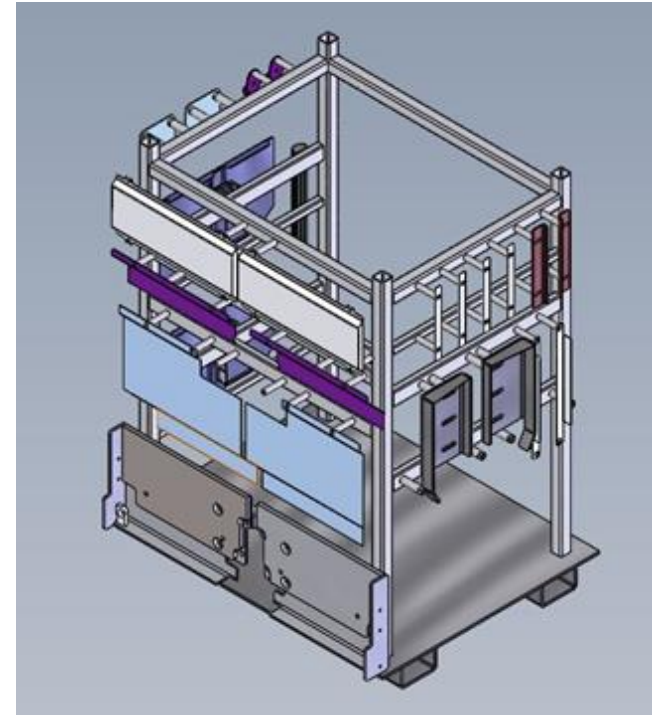
Improvement begins to occur in other areas of the plant



# Leading on the Edge



Model Cell Kaizen Team



Material Flow Improvement

# Leading on the Edge

## Kaizen Feedback

### **Nathan**

“I thought this was just a bunch of crap at first, but now I don’t.”

“It’s boosted morale.”

“Things are changing and it’s probably for the better.”

“Made me feel like I have a voice.”

### **Demetric (Meat)**

“I thought it was a bunch of crap, too but, it changed me. ”

“You’re being heard. ”

“It’s put on paper and it’s logged. You’re not getting your butt chewed.”

“Fixed it, not just a Band-Aid. ”

“Not beating around the bush, shoving under the carpet. ”

“This was a good thing.”

# Lessons Learned

- Difficult to gain traction using shot gun approach
- Change management is real. Do not create resistance. Example – Kaizen event at the end of quarter, end of month, etc.
- Communicate and share results throughout organization
- Establish steering committee quickly
- Culture before tools
- Profitable above Lean
- **Make Disciples**



# Next Steps

- Get really good at Strategy Deployment and Implementation
- Translation to other value streams
- Identify and develop future Lean Leaders
- Focus on transactional processes;
  - New Products
  - Service and Repair
- Benchmark other Lean companies
- ***Accelerate the work***

# Thank You!

***Your opinion is important to us!***

**Please take a moment to complete the survey using the conference mobile app.**

**Session No: ThS/38**

**Presentation Title: Business Transformation  
and a Lean Culture**

**Your name: Jim Smith**

**Company name: Roadtec, Inc.**

**Email address: jsmith1@roadtec.com**