

RPIW #1 Event Report

A transformational model that supports cultural change through the analysis and reduction of waste



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Summary,

We’ve added this summary page to the report to make the results easier to identify for those who are not familiar with the format of a standard Lean report out. While this organization identifies itself as primarily a distribution company, you will see they also perform some product installation services. Lean Integrated was originally hired to address improving operations through truck routing. It became clear however, during data collection, that the real opportunity was at the warehouse prior to truck routing.

We have attached a short 1 minute video that demonstrates the visual difference on the loading docks prior to and subsequent to the Lean event. On the surface, it appears the team “cleaned up” the loading docks. The summarized information below and the remainder of this report tells the real story.

* Most of the materials you see in the video, in the loading lanes and between the isles just behind the loading lanes is long term storage. Apprx. 6,000 sqft.
* The first morning of our Lean event, 7 trucks are backed up to the loading docks, not one of the lanes contained materials required for those trucks.
* The team discovered they just received 9 pallets of a product that was already overstocked at 53 pallets. This product had no demand.
* The warehouse supervisor had her teams pick orders days ahead of delivery to keep them busy. This filled the isles and loading lanes, leaving no available space for the next days deliveries.
* The picking team members changed their picking methods from single to team assignments. They timed their processes prior to and subsequent to the team approach. The team approach saved 5 hours and 21 minutes per shift. This was achieved while adding the “unpackaging process” prior to loading.
* All jobs were delivering with missing items. The Lean event team appointed one person to stand in front of the truck with a barcode reader while the truck was being loaded. This instantly eliminated missing parts.
* The installation crews eliminated 2.5 hours per day unpackaging onsite.
* The installation crews eliminated 2 hours per day loading packaging and delivering to the recycle center each day. Clearly, adding 4.5 hours of available installation time for each of 13 – 26 installation crews had more affect than truck routing would have.
* Only supervisors had authorization to drive company trucks, therefore, each day when missing parts were discovered, the supervisor would leave the jobsite to return to the factory for missing parts. No leadership onsite.
* The team discovered that project managers were deciding the tools to be delivered to the jobsite, even though most of them had never worked on a jobsite, the event team changed that to supervisors, eliminating returns for missing tools.
* This event saved **$579,417.20 annually**

Monday 11/27/2020

We started the day with a review of the previous events leading up to the change of scope. Our original project charter was to address the truck routing process. The logic was that we could significantly increase the productivity of the installation crews by eliminating the need for each crew to meet at the warehouse. While the data demonstrated significant potential for improved installation productivity, it also demonstrated critical requirements for improvement in the picking, staging and truck loading processes. Based on this data, the RPIW team decided to prioritize these improvement opportunities ahead of truck routing. The logic is that the truck routing process will be more effectively addressed once the teams optimize the picking process in support of the staging process which in turn supports the loading process. More specifically, trucks will need to have product loaded in order of delivery priority. They will need to be loaded to full capacity, safely and accurately. The staging crews will need to develop the skills and processes required to achieve those goals and the picking crew will need to pick the orders and the parts on those orders in the proper sequence for staging/loading.

With the new charter in mind, the teams began the day by establishing the RPIW theme, current situation and goals for each initiative. They followed that process with a review of the current baseline data. Gaps in required data were established and a plan to address those gaps was developed. Each of the teams went to the floor to begin collecting the required baseline data. While collecting this data, they began their current state value stream maps. Each team reported being enlightened by the issues they found on the gemba. Examples; trucks docked long distances from the staged materials they were to load and deliver, 3 returned loads stored in staging, 9 more pallets of door desks delivered to be stored with the 53 pallets already in the warehouse, long term materials stored in staging lanes, an order with a hot sticker attached that was pulled a week earlier but is still sitting in staging, etc. The team ended the day by agreeing to the schedule for Tuesday. Since the crews normally pick the orders and load the trucks on the night shift, the RPIW team decided they need to work night shift on Tuesday, Wednesday and Thursday.

Tuesday 11/28/2020

We started the day with a “Blurt out Minute” where each member of the team gets exactly 60 seconds to “blurt out” issues that they witnessed while on the gemba. The team followed up this exercise with a Hansei “Minute”. Hansei is the Japanese concept of self-improvement through critical self reflection. This is similar to the German proverb, Selbsterkenntnis – “self-awareness is the first step to improvement”. Each member of the team again received 60 seconds to describe one of the Lean philosophies that they learned or gained insight into, the previous day. The following list of Lean philosophies were presented to the team to guide the conversation;

* Hansei – improvement through critical self-reflection…. The path to wisdom
* Creativity – the ability to think like a 12 year old
* Deming – driving out fear
* Genchi-Genbutsu – go and see with your own eyes
* JIT vs Jidoka – implementing JIT reveals issues – Jidoka addresses those issues
* Muda – the reduction of cost through the elimination of waste VA vs. NVA
* Pull vs. Push – one process leads to and supports the next
* Assumptions vs. root cause analysis

The team then briefly discussed the notion that our ability to envision the project outcomes had greatly improved through our genchi-genbutsu activities the previous day. In other words, being on the floor, involved in the process as the crew performed their duties, opened our eyes to the opportunities in front of us. These opportunities became easier to quantify as we experienced them in real time. These insights led to the following project vision:

* We have a standardized pick process – guaranteed all parts picked and staged
* All tools equipment and supplies required to pick have locations and supporting processes (standard work)
* We have properly trained the entire pick crew and have a sustaining process
* We no longer have long term materials stored in the staging area
* Amazon picks up staged materials minutes after they are staged
* No more returned deliveries
* Staged parts are staged in order of delivery
* Staged parts are staged in order of loading requirements (density)
* Staged parts are in the lane closest to the dock where they will be loaded
* We have properly trained the entire staging crew and have a sustaining process
* The loading process ensures trucks are loaded at the correct dock
* The loading process ensures all parts are loaded for each order
* The loading process ensures orders are arranged for path of delivery FILO
* The loading process ensures proper loading density
* The loading process ensures a properly secured load
* The loading process does not load damaged, or potentially damaged materials
* We have properly trained the entire loading crew and have a sustaining process

The teams then went to work completing their current state value stream maps and from there, the future state value stream maps. Starbursts were added to the maps and idea sheets were produced in support of the starbursts. Some of the teams went directly to the floor to collect final baseline data, others started on their first improvement kaizens. One of the items that became crystal clear this evening, is that the trucks were not being loaded by 4:30pm even though the loading crew starts at 3:30pm. The entire staging area is full of materials, yet the warehouse manager told us that the loading crew was waiting for the first picks to be picked and staged before loading the truck. That begs the question, why are all the staging lanes full, the areas between the staging lanes are full and another 2000 square feet of staged materials is stored and taped just outside the schedulers office? How can it be that 7 trucks are backed up to the loading docks, but not one of those trucks matches the materials currently picked and staged? We don’t know where it is yet, but there is a serious disconnect between what is pulled, when it is pulled and when it will be loaded.

Wednesday 11/29/2020

The team went to the floor to follow two picks all the way through to loading the truck. The staging crew prepared two areas the size of a BV and LT truck. The picking crew delivered all parts to the staging area, then barcoded all those parts out of inventory. This was the first improvement activity for the picking crew, which is meant to eliminate the potential for miss-picked or missing parts. The staging crew decided to unpackage all the parts in the BV LT staging locations prior to loading them on the trucks. The idea is to eliminate the need for the installation crews to unpackage all the parts prior to beginning installation. The team then decided to unpackage some parts that would not be able to fit through the man doors at the client location. These parts were wrapped and loaded on moving carts in a manner that would allow the installation crews to simply roll the parts into position. This was a great example of thinking past the next customer in the process, on to the final “internal” customer, the installation team. One of the staging RPIW team members, Kao Saechao is a foreman for the installation crews. He stepped up to train the night shift team to properly load trucks for stability, density, and safety. He employed components of the TWI process as he not only described the key steps of the process, he also described why these key components were important and why this was a critical step for the delivery team. As the team watched the staging crew unpackage the furniture, they noticed that they were placing the cardboard on the floor, intending to dispose of it later. The team asked if they would place the cardboard on a cart rather than on the floor, so they would not need to handle it twice. Great on the spot process improvement.

The loading crew changed a key step in their process as part of their kaizen event. They asked one member of the loading crew to stand at the truck and barcode (scan) all the parts being loaded on the truck as those parts were passing the truck threshold.

The team took care of some safety issues including the area in front of the fire station and the area in front of the eye wash station. They also found the misplaced supplies for the 5S station between the loading docks. As a side note, Steve Turner had a genchi-genbutsu moment when he walked by a truck that was returning furniture from a supplier to be stored in the As Is warehouse. He noticed the load was both protected and secured incorrectly. He asked Shane Kreuger to join him in training the driver on the proper wrapping and loading procedures.

Thursday 11/30/2020

Michael Montgomery, met with the Amazon team this morning to ask them if they would begin to think about purging the OS warehouse of all Amazon inactive materials. He also asked if they would expedite the pickup of 4 orders sitting in the staging area, they did a good job of getting that done.

The team simulated pulling picks in flow. They picked in teams, pulling items directly from stock to the staging area. Then they stopped as one lane of the staging area filled up. They unboxed the furniture and moved the furniture to the truck with a team member stationed at the threshold of the truck to scan each item as it crossed the threshold. This eliminated the need to “stage” the items. The process was timed and compared against the baseline data collected the previous week. The new process reduced the entire time to pick, stage, and load the truck by 5 hours. Note that the process time was reduced by this amount while adding the de-boxing process.

The team noticed that much of the material staged in the isles of the warehouse is receiving materials moved to the isles to be put in their permanent locations. This led to investigating the operations of the receiving process. The team immediately found several processes that will need attention in the near future. One of those issues was the process Taylor uses to compensate for workload variation. Taylor planning ahead, had the teams pick two orders 24 hours ahead of the truck to free up manpower capacity for large loads coming into receiving. This put both those large orders in the staging area for the entire following day.

Friday 12/1/2020

Shane Krueger and Steve Turner began to assemble the information for the target progress report. Shane updated the project form to include the themes, current situations and targets from the three project teams. They began to collect and assemble the forms required for the report out while the teams finished the current and future state value stream maps. Each team then assembled the materials required for the report out and began to prepare for their presentations. Shane and Steve assembled all the report out materials into one packet and scanned them for presentation.

The team practiced their presentations in preparation for the executive report out at 3:30pm. The report out was quite successful and the CEO, Jeff Rospond, remained after the meeting to investigate some of the insights from the team. The following pages reflect the project baseline targets and results achieved.

**Target Progress Report**

**Event # and Name RPIW #1 Pull Stage Load\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Report Out Date: \_12\_/\_01\_/\_2020\_\_**

**Event Description Improve Flow\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

| **Measures** | **Baseline** | **Target** | **Day 1** | **Day 2** | **Day 3** | **Final** | **Percent Change** |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Space (Sq. Ft.)**  Amazon Long Term Material  Door Desks;  Lockers;  Inactive Amazon in AS IS on floor.  Amazon sitting in staging waiting for load  P**re-sold warehouse.**  **pre-sold space available.**  **Amazon floor space inactive and sitting taking up space.** | 1060 bays pre-sold  1,050 sf  770 sf  212 bays inactive of Amazon product (no movement over 30 days) =  12,190 sf of Amazon inactive product on floor.  400 sf.    20% entire warehouse  50% of current allocated pre-sold space  7900 sf total  6300 as is  1600 pre-sold | 50%  50%    50%  50%  N/A  N/A  N/A  N/A  N/A | Tuesday | Wednesday | Thursday | Friday  No Change  1,230 sf 12/09/17  12/06/17  0  N/A  N/A  N/A  N/A | 0%  115%  100%  100%  N/A  N/A  N/A  N/A  N/A |  |
| **Inventory**  **53 pallets of door desks**  **Lockers**  **Glass**  **Monitor Arms**  **Monitors** | 1,590 door desk  190  600  40 pallets  40 pallets | 50%  50%  50%  50% |  |  | 1,730 | 0  0  0  12/06/2017 | 117%  100%  100% |  |
| **Walking Distance (ft)**  Walking distance per part picked. | 143 ft. per part | 50% |  |  |  | 71 ft, | 50% |  |
| **Part Travel Distance**  Walking distance per part | 143 ft. per part | 50% |  |  |  | 71 ft, | 50% |  |
| **Leadtime (h:mm:ss)**  **Pickers** | 2:30 per part | 50% |  |  |  | 1:20 per part | 47% |  |
| **Quality (# Defects per day)**  Blocked Isles  Finding tools and equipment | Need explicit data  Approx. 50% of total pick. |  |  |  |  |  |  |  |
| **Productivity Gain Output**  **Input** |  |  |  |  |  |  |  |  |
| **5S-Envirnmntl,Health&Safety**  **5S-Envirnmntl,Health&Safety** | Eye wash area cleared and cordoned off  Fire Department Water Valve Access |  |  |  |  |  | 100%  100% |  |
| **Set-Up (mm:ss)** |  |  |  |  |  |  |  |  |
| **Cycle Time (mm:ss)**  Picker  Install Process  Installers stopping by recycle yard to dispose of packaging materials | VA = 1:15  NVA = 4:00  Pickers unpackage product rather than installers  Installers no longer stop by recycle yard | 2.5 hours per day per installation crew  2 hours per day for installation crew to gather up packaging materials, load in truck and stop by recycling |  |  |  | 0  0 | 100%  100% |  |
| **Capacity** |  |  |  |  |  |  |  |  |
| Remarks: | Space – total bays in pre-sold -1060  212 bays of inactive Amazon material in pre-sold warehouse (212 x 57.5 sq.ft. – 12,190sq.ft.  7900 total Amazon inactive materials sitting on floor, of that;  6300 is in the As-Is warehouse and  1600 is in pre-sold  Long term – **1000 sq.ft.** of Amazon floor space in As-Is moved to amazon warehouse  **300 sq.ft.** of Amazon floor space in pre-sold at receiving wall moved to amazon warehouse  **500 square** feet freed up in the new tool crib area  37 bays of Amazon long term materials removed – 37 x 57.5 = **2,128 sq.ft.**  Total Amazon long terms space acquired:  1,000  300  500  2,128  **3,928 sq.ft.**  Space – staging area – Dimensions 36 x 18 approximately **2000 sq.ft.**  Space – staging area – isles between racks, 6 isles 4’ x 80’ = **1,920 sq.ft.**    Space – windows in staging, receiving, and Amazon 14 area;  1120 sq.ft. in Amazon 14  84 sq.ft. shrink wrapped pallet in staging area  112 sq.ft. receiving wall glass  39 sq.ft. South wall by door 4  117 sq.ft. by door 5 between eye wash station and fire station  100 sq.ft. shrink wrapped pallet in the receiving area  **1,572 sq.ft. Total**    Picker walking distance: - based on an average of 275 (empirical data) parts pulled per day, the pre event picker walking distance equation results in, 143ft. per part times 275 parts, or, 143x275=39,325ft.  The post event part travel distance is 71ft. or, 71x275=19,525ft.  The reduced travel distance, post event, is 39,325 – 19,525 = **19,800ft.**  In the new process, only one person is moving materials from the location picked, to the staging area. IN the pre-event process, each person on the pick crew traveled the pick distance.  Part travel distance: - based on an average of 275 (empirical data) parts pulled per day, the pre event part travel distance equation results in, 143ft. per part times 275 parts, or, 143x275=39,325ft.  The post event part travel distance is 71ft. or, 71x275=19,525ft.  The reduced travel distance, post event, is 39,325 – 19,525 = **19,800ft.**  Lead time – pre event pick time per part was 2 minutes, 30 seconds. The post event pick time per part is 1 minute, 20 seconds. The equation is 2:30 – 1:20 = 1:10, or one minute ten seconds. 1:10 time reduction per part times 275 parts = **5 hours, 21 minutes** in reduced pick time per day.  Cycle time – install process – pickers now unpackage the product so that the installation crews no longer need to. This reduces 2.5 hours of unpackaging time for each installation crew. We currently have 13 installation leads, but we are conservatively figuring that four of those leads are receiving unpackaged loads resulting from this new process. The equation is 2.5 hours x 4 deliveries per day, or **10 hours** of unpackaging time saved per day.  Cycle time – installation crew recycle process - currently the recycling crew must find a location of packaging materials on-site, move those materials to that location during the install, then organize and move those materials back into the truck at the end of the installation process. They then stop by the recycling facility on their return trip to the warehouse. This entire process requires 2 hours of installation crew time per crew per day. 2 hours per crew x 4 crews per day or, **8 hours** of recycle time per day.  Cycle time – time observation revealed a reduction of 5 hours per pick. The team timed all picks during the data collection week, then again during the event week. The new process reduced the average pick time by **5 hours.**  37 Bays of Amazon long term materials removed – 3928 sq.ft. x $.78 = $3,063.84 savings per month, x twelve months = **$36,766.08** annually  Staging area 2,000 square feet freed up – 2,000 x $.78 = $1,560.00 savings per month, x twelve months = **$18,720.00** annually  Staging area, isles between racks, 1,920 square feet – 1,920 x $.78 = $1,497.60 x twelve months = **$17,971.20** annually  Windows 1,572 sq.ft. - 1,572 x .78 = $1,226.16 x twelve months = **$14,714.00** annually  Picker walking distance savings – 19,800 feet @ an average travel speed of 1.5 mph = 2.5 hours in saved travel time per day or $21.50 x 2.5 = $53.75 per day x 5 days per week = $268.75 x 22 work days per month = $1,182.50 per month or **$14,190.00** annually.  Lead time 5 hours, 21 minutes pick time per day @ $21.50 per hour = $115.03 per day x 5 = $575.13 per week x 22 days per month = $2,530.66 per month or **$30,367.92** annually  Cycle time – install process – pickers unpackage product saving the installation crews 10 hours of unpackaging time per day. 10 x $23.50 per day = $235.00 per day, $1,175.00 per week, $5,170.75 per month or $62,040.00 x 4 main crews = **$248,160.00** annually.  Cycle time – installation crew – recycling is eliminated for the 4 main installation crews. 8 hours x $23.50 per hour x average 4 installers per crew = $752.00 per day x 5 = $3760.00 per week, $16,544.00 per month or **$198,528.00** annually. **Total Annual Savings - $579,417.20.**  Note – there are 13 installation crews, 4 of those crews are affected by these improvements. | | | | | | |  |