1.1 - Signify Dock Consolidation

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Problem Statement
Signify’s two receiving areas, located on opposite sides of the facility, are perceived to be redundant, inefficient, underutilized, lead to increased lead times on certain shipments, and require an unnecessary amount of labor to operate.

Project Purpose

• Maximize capacity in order to have efficient receiving shipments along with gaining plant space for other operations in warehouse.

Project Objectives

• Provide conclusive validation that a consolidated receiving area will meet delivery demands.
• Provide a layout design and corresponding operating procedures for the new, consolidated receiving area.
• Perform a labor analysis demonstrating that the consolidated area and operating procedures will reduce labor requirements.

Current State

• Two operational receiving area.
• 3 people required to operate both docks.
• Inefficiencies due to low utilization and travel time between the two receiving areas.
• East dock has 4 dock doors (3 levelers).
• West dock has 3 dock doors (all levelers).

Problem-Solving Methodologies

DMAIC

Systematic Layout Planning (SLP)

• DMAIC is a data-driven strategy derived from Six Sigma used to improve specific processes.
• SLP is a tool used to design a facility by locating areas with high frequency and logical relationships close to each other.

Measure Phase

Time studies in progress to determine: carrier arrival rates, unload times, frequency of dock leveler requirements, and staging area requirements.

Analyze Phase

Arena simulation software will be used to simulate carrier arrivals, dock leveler requirements, and staging capacity so as to determine the number of docks (by type) and staging capacity required to satisfy demand.

• Consolidating the two receiving areas will only be possible if demand is less than the capacity of the smaller of the two receiving areas (West side).
• Arena simulation inputs:
  - Carrier Arrival Rate (# per day)
  - Unloaded Time (Dock Occupied)
  - Dock type
• Arena simulation outputs:
  - Number of Docks required (by type)
  - Staging capacity required (by # of pallets)
  - No levelers required for overnight carriers

Future Plans

• Use company GOPROs to collect full day’s worth of incoming shipments.
• Collect feasible information from Arena telling us how many docks with levelers and docks without levelers are needed.
• Use the SLP approach to modify the facility to produce an efficient layout.
• Obtain future time study data.

Evaluation Criteria

<table>
<thead>
<tr>
<th>Performance</th>
<th>Test Conditions</th>
<th>Max</th>
<th>Min</th>
<th>How is this tested?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dock Utilization</td>
<td>% reduction of time utilized</td>
<td>&lt;90%</td>
<td>&gt;95%</td>
<td>% time dock utilization available</td>
</tr>
<tr>
<td>Space Availability</td>
<td>% of available space (ft²)</td>
<td>100%</td>
<td>≤ 96%</td>
<td>Direct measurements of total space being used</td>
</tr>
<tr>
<td>Receiving Personnel Requirements</td>
<td>Number of operators required</td>
<td>Only 2 needed</td>
<td>3 always needed</td>
<td>Simulate operator flow using ARENA</td>
</tr>
<tr>
<td>Space Requirements</td>
<td>% reduction of space (ft²)</td>
<td>90% reduction of square footage</td>
<td>No Reduction</td>
<td>Direct measurements of reduced space</td>
</tr>
<tr>
<td>Operating Procedure</td>
<td>Was is provided?</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Team Members

Special thanks for their guidance and support to:
Haiver Montenegro, Signify
Jeremy Burns, Signify
Estella Robles, Signify
Dr. Patrick Thomas, Texas State University

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