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WAREHOUSE DESIGN

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How Can We Reduce The Warehouse Footprint?

A modified wood products manufacturer was planning construction of an additional plant to fulfill increasing demand. The company had already developed a preliminary layout of the facility in tandem with an architect for budgetary purposes.

A team of warehousing experts from **Chools** was tasked with reviewing the finished goods warehouse layout in tandem with the architect to reduce the warehouse footprint and resulting construction costs while identifying optimal process flows, storage capacities and item slotting in the proposed layout.

Developing A Cost-Efficient Warehouse Design

We began by observing the operations at an existing plant to identify the handling and storage processes from manufacturing to shipping. There were many similarities that could be incorporated in the proposed facility; however, the joint evaluation revealed three key differences:

1. The proposed facility will produce fewer SKUs than the existing facility.
2. The proposed facility will ship finished goods exclusively by flatbed truck whereas the existing facility shipped via a mix of truck and railcar.
3. The proposed facility can rely on two close-by facilities to store additional finished goods inventory, minimizing any potential impact of inefficiencies resulting from an overloaded warehouse.

The client adjusted the mix on the expected production capacity, giving **Chools** the foundation to develop a layout to store the anticipated finished goods capacity. As items ranged between eight to ten feet in length based on SKU, adequate item slotting for each item size was maintained throughout the design process.

Chools modeled the shift in outbound volumes and developed potential second step layouts for both railcar and flatbed truck loading areas to accommodate these volumes.

The client also identified a two week time period when the production line shut down. This resulted in significantly larger inventory storage requirements than during the balance of the year. To address this, **Chools** developed a layout and process to temporarily store during this surge of inventory while minimizing impact on warehouse functionality.

Results

The modified warehouse layout significantly reduced the size of the proposed footprint while still developing a highly efficient warehouse layout. As a result, the company was able to reduce the budgetary cost of the warehouse section of the facility by over 2 million.

Key Takeaways

- In a warehouse with varying item sizes, it is very important to incorporate item slotting early in the process. Adequate storage capacity should be accommodated for each item size and not simply overall. Averages often lie.
- Accommodating short periods of inventory surges can be incorporated into layouts without utilizing temporary offsite storage. However, less efficient handling must be accounted for during the inventory surge.
- Identifying outbound volumes by mode is important in determining outbound staging requirements, which is a main driver of space requirements. In this case, loading into railcars is significantly different than loading flatbed trailers (in both space required for forklift movement and carrying capabilities). This also applies to parcel shipments, as additional space for packaging is required and order sizes are much smaller.

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