

Optimizing Warehouse Design and Material Flow to Support Growth, Streamline Distribution and Improve Manufacturing Efficiency



1 Introduction

For more than two decades, a design and distribution company has established itself as a leader in destination retail, specializing in the design, development, and distribution of licensed and private-label merchandise for some of the world's most iconic brands and retailers. By combining on-trend design with diverse manufacturing and fulfillment capabilities, they deliver customized product assortments across multiple channels. With expertise in global sourcing, compliance, and both large-scale and quick-turn U.S. production, the company provides innovative solutions that range from

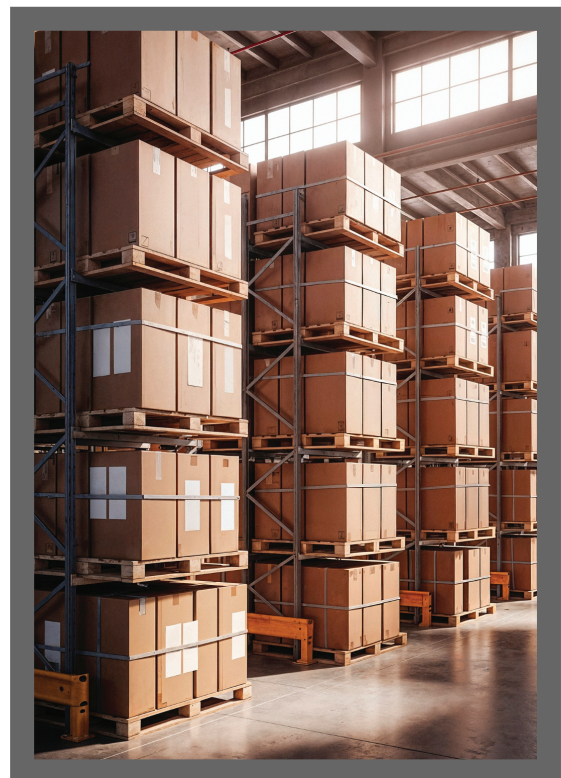
traditional manufacturing to print-on-demand, personalization, turnkey displays, and ecommerce—all backed by a commitment to quality, efficiency, and seamless automation. In July 2025, the company launched a new warehouse to enhance its distribution capabilities, which is when they decided to reach out to Alpine Supply Chain Solutions for assistance.



2 Challenges

When the company initiated the launch of its new warehouse in July 2025, the primary objective was to create a facility that would consolidate its distribution network while supporting ambitious growth target at 20% year over year. The vision centered around consolidating Manufacturing, warehouse and outside storage facilities into an optimized warehouse capable of fostering agility, flexibility, and scalability to respond quickly to changing business demands. However, several challenges emerged during planning and execution. One of the key constraints was the competing use of space. Decisions to construct a sizable office, expand the manufacturing footprint, and sub-lease portions of the facility significantly reduced the area available for storage, making it more difficult to fully optimize the building. In addition, while recommendations were provided for a more efficient design—including the adoption of denser storage systems such as pushback racking, Very narrow aisle configurations supported by material

handling equipment investments, and the use of vertical space above the pick area — Together, these challenges placed considerable pressure on the warehouse design, requiring careful trade-offs to balance operational goals with physical and regulatory constraints.



3 Solutions

To address the challenges and align the new warehouse with the company's growth objectives, Alpine Supply Chain Solutions applied a structured, data-driven approach. The process began with a comprehensive business analysis to establish a clear understanding of current operations and future requirements. This included a storage type analysis designed to determine the optimal mix of storage solutions that would not only accommodate existing inventory but also minimize replenishment activity for warehouse personnel. From this analysis, Alpine identified the ideal sizes and quantities for both pick and reserve storage locations, ensuring efficiency across all levels of the operation.

Additionally, automation options were assessed and incorporated into the planning process where applicable, providing the client with a vision of scalable, long-term solutions. After evaluating the site and client needs, Alpine iterated upon three distinct design

alternatives, resulting in maximized available space while supporting the client's operational goals. The layout design was reviewed collaboratively, with the client providing feedback at each stage. Ultimately, Alpine delivered a final facility layout that balanced practicality with flexibility, ensuring that the design was both immediately functional and capable of evolving with future business needs. This final package included high-level storage and equipment recommendations, budgetary guidelines, and a complete facility layout design, setting the foundation for a warehouse capable of supporting sustained growth.



4 Results

Through close collaboration and data-driven design, Alpine Supply Chain Solutions delivered a warehouse layout that optimized both space utilization and material flow within the client's new Apopka facility. Realizing a 66% improvement in storage density. The redesigned layout introduced streamlined paths for picking orders, processing returns, and supporting manufacturing, which significantly reduced the time required to handle returns and manufacturing activities while increasing inventory capacity by 195%. As part of the project, Alpine also performed a detailed automation evaluation. The return-on-investment analysis

showed that automation was not a cost-effective option at this stage, allowing the client to focus resources on higher-impact improvements that could provide more immediate value. This ensured that investments were directed toward practical solutions that directly enhanced efficiency. The project was completed on schedule, with the team developing five layout iterations and multiple storage type analyses to test different growth scenarios. This iterative process provided a final design that not only addressed the current



requirements but also allowed for incremental investments that would support the company's three-year growth projections. Along the way, process improvement ideas were shared with the client, some of which are already being implemented to further strengthen operational performance. Ultimately, the solution delivered optimized space utilization, improved flow between storage and manufacturing areas, clearly defined racking counts and material handling equipment requirements, and practical

process enhancements that improved worker productivity. By balancing immediate needs with long-term flexibility, the client is now well-positioned to operate more efficiently while building a strong foundation for sustained growth.

