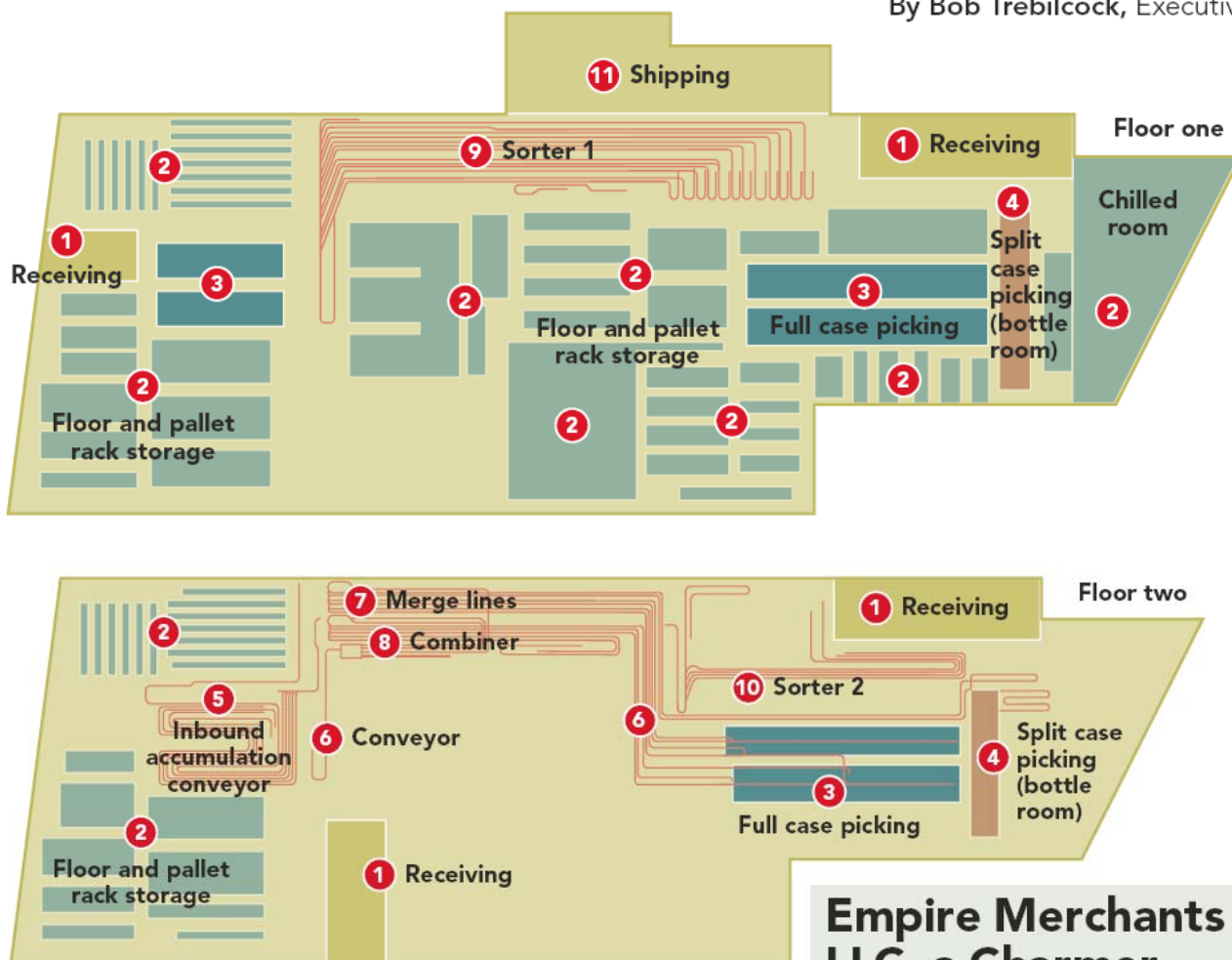# Sorting it out at
Empire Merchants

A high-speed sortation system speeds up to 8,000 cases per hour during peak times through Empire Merchants' wine and spirits distribution center.

By Bob Trebilcock, Executive Editor

Floor one

- 11 Shipping
- 9 Sorter 1
- 1 Receiving
- 4 Split case picking (bottle room)
- Chilled room
- 1 Receiving
- 3 Full case picking
- 3
- 2 Floor and pallet rack storage
- 2 Floor and pallet rack storage

Floor two

- 7 Merge lines
- 8 Combiner
- 5 Inbound accumulation conveyor
- 6 Conveyor
- 10 Sorter 2
- 1 Receiving
- 4 Split case picking (bottle room)
- 3 Full case picking
- 2 Floor and pallet rack storage
- 1 Receiving

EMPIRE MERCHANTS COMBINED several contiguous buildings in Brooklyn and installed a high-speed case sortation system to meet the distribution requirements of two companies from one facility. The system allows the distributor to take orders from customers across the New York metropolitan area up until 5 p.m. for next-day delivery.

Empire Merchants LLC, a Charmer Sunbelt Company
Brooklyn, N.Y.

SIZE: 500,000 square feet in Brooklyn; 250,000 square feet in Astoria
PRODUCTS: Wine and spirits
SHIFTS: Two shifts, five days a week
EMPLOYEES: about 140 in the warehouse
THROUGHPUT: 9.5 million cases per year

Illustration by Daniel Guidera

mmh.com

Receiving: During the day shift, product is received ❶ in Brooklyn from vendors along with transfers of the most popular items from the Astoria facility. Inventory may be delivered on pallets, slip sheets or floor-loaded in a trailer. In the receiving area, inventory is staged on the dock for confirmation against a purchase order in the warehouse management system (WMS). After the order is scanned, floor-loaded cases are palletized. The system then creates a license plate bar code label for each pallet. Once that label is applied and scanned, pallets are ready for putaway.

Putaway and replenishment: After receiving, the WMS simultaneously directs the putaway of new inventory ❷ and the replenishment of the picking modules ❸, ❹ based on the capacity in a rack and what was picked the previous evening. The fastest moving items are stored in floor locations; other products are stored on the floor, in pallet racks (both push-back and single-deep pallet rack), or in carton flow racks in the pick modules. Since this is a multi-level facility, product may be moved by lift trucks, order pickers and pallet jacks on the floor level, or by conveyor to reach one of the elevated levels. And, while the WMS is directing activities, operators have the ability to override the system to make more efficient use of the space. Once product has been scanned into a location, that inventory is available for picking in the WMS.

Picking: Empire receives orders up until 5 p.m. for next-day delivery to the five boroughs of New York plus Westchester, Nassau and Suffolk counties on Long Island. As the orders come in, delivery routes are created based on geography, the number of stops, and the number of pieces. A truck traveling the 100 miles to Montauk, for instance, will have fewer stops than a truck serving restaurants in Manhattan. Completed routes are then sent to a software system that creates pick waves to match the routes.

The system assigns routes to an ID, and then creates waves for each truck that will be loaded. Picking is done sequentially so the truck can be loaded on a first-in/last-out basis. Once the waves are created, the system generates picking labels for full case and bottle picking. There are 15 separate pick modules, including full case lines picking from pallets for the fastest-moving

items, and from flow rack for medium and slow moving items along with split case lines for bottles. The operators in the full-case pick modules ❸ pick the cases from pallets or from flow rack onto the conveyor line ❺, ❻ and place a bar code label on the top of each case. Once on the pick conveyor, the labels are scanned for verification before leaving the module. This scanner also stops multi-reads and no-reads in the pick modules before they become an issue elsewhere in the system.

Once a label is read, the case travels to one of the merge lines ❼. Operators in the split case module ❹, known as the bottle room, pick bottles to build mixed cases based on the pick sheets generated by the wave picking system. At the discharge point in the bottle room, the order is checked and a bar code label is placed on the side of the

case and released into the system ❺, ❻. The cases are then shrink wrapped to keep the bottles secure in transit to the customer. Once the order is confirmed, the carton travels to a merge lane ❼ just like full case orders.

From the merged lines, cartons travel to one of three pre-merges and to the combiner ❽ on the mezzanine level after which they are scanned by a seven-head scan tunnel that reads the bar codes, identifies the cases and directs them to their lane assignment. Any cases that have misapplied labels are rejected. A vision capture system immediately follows the scan tunnel and provides additional verification and security by photographing the carton prior to shipment and comparing it against the database of images.

Finally, cases are directed to one of 14 shipping lines by a sliding shoe sorter ❾. One divert sends the cartons to a second sortation system ❿ that serves additional dock doors. On the decline to the shipping area ⓫ on the floor level, a scanner confirms that the right case is going to the right shipping door. Once a truck is loaded, it is sealed and parked in the yard for dispatch and delivery the next morning. Ⓜ