

The recently-opened perishables distribution center provides P&C Food Markets new opportunities to expand its distribution and create operational

efficiencies. Designed and engineered by Webber/Smith Associates the 230,000 sq. ft. complex serves almost 300 supermarkets.

PERISHABLES

New perishables complex brings high operating efficiencies

BY KEITH SWIEDNICKI

P & C Food Markets has recently opened its new perishables distribution center in Syracuse, New York. The new 230,000 square foot distribution center is on the technological forefront in warehousing productivity and has successfully maximized the efficiency of their storage and distribution system by consolidating their perishables items in one facility.

Prior to the opening of P & C Food Markets' new perishables center, the perishable products were stored in three different warehouses. Faced with increased sales and item proliferation, these facilities were becoming inefficient and costly to operate and maintain.

The objectives behind consolidating all perishables in the new facility was to permit handling an increase in volume and variety of these items, freeing up space in their 570,000 square foot dry grocery State Fair Boulevard warehouse, and to realize transportation savings and increased store service through consolidating shipments to customers.

The increased efficiency of the new facility has allowed P & C Food Markets to better manage consolidated perishables deliveries

to its own 62 stores, 92 wholesale customers, 67-unit Big M franchise, as well as the recent addition of 49-unit Quality stores chain.

The new facility operates on two shifts, six days a week. It handles over 365,000 cases weekly, including 100,000 cases of produce, 85,000 cases of dairy/eggs and 50,000 cases of fresh-boxed meat/deli provisions and 130,000 cases of frozen food and ice cream.

As a result of a complete evaluation of the perishables departments, the 230,000 square foot P & C Food Markets' building was designed to handle anticipated item variety, movement and inventory levels with growth for future operations.

A detailed analysis was performed to determine the storage requirements for each department. The objective was to ensure that each room provided sufficient facings at floor or level and storage capacity to handle design year requirements.

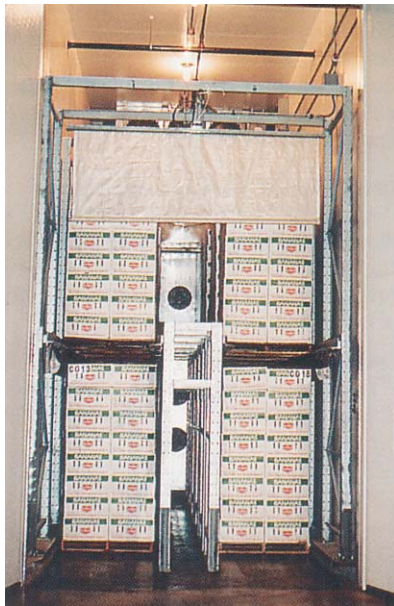
The item master file was segmented by department and individual items were categorized according to average weekly cubic movement and inventory volumes. Items were subsequently assigned appropriate storage slots according to movement and/or inventory requirements.

The rules used vary according to product type and characteristics.

For each perishables department, ten percent open slots were allocated for ease of operation in addition to new items and all existing storage requirements being prorated to design year by the

Keith R. Swiednicki is a consultant with Kom International, Montreal, Canada, specializing in effective distribution systems. This article draws on his experience with P&C Food Markets, where he aided its changeover to a new 250,000 square foot Perishables centre.

In its new perishables facility, P&C Food Markets installed five pressurized banana rooms (CoolCare), having a capacity of 1,152 cases each. P&C ships 7,000 cases per week, on average, to its stores.



The dock area features Serco vertical dock levelers. Overhead storage space is provided for empty pallets above the 24 door locations. Up to 2300 pallets can be stored in this fashion.

percentage of new items forecasted.

To assist management in achieving its desired goals of productivity and efficiency of operations, P & C Food Markets engaged Kom International, Montreal, Quebec, Canada as its consulting and engineering partner on the project.

A comparison of various materials handling layouts was analyzed by Kom resulting in a new narrow aisle conventional facility constructed to 32 feet clear stacking height in the freezer and 26 feet clear in the remaining ambient temperature areas.

The facility's employee service areas have been centrally located within the office complex. A total of 27,000 square feet of employee offices and service areas have been provided on two floors within the complex.

To increase productivity, much emphasis was placed on product slotting methods. The slotting system used at P & C Food Markets was a compromise between three goals designed to suit the specific needs of both the warehouse and the customer. P & C's first mandate was to decrease time and handling costs in store receiving; the second was to maximize warehouse operational effectiveness; and the third was to introduce and augment ergonomics for order selectors.

The slotting system implemented combines attributes of the three stated objectives to improve operating efficiency. For example, all items were first categorized by department according to temperature and humidity requirements. Subsequently they were subdivided into family groupings similar to those found at store level (e.g. butter/margarines, juices, cheese, etc.).

Family groupings were subsequently segregated into major categories consisting of heavy, light, crushable, etc. and items within these sections were then slotted in ascending or descending case height sequence. This method ensures that the least crushable items are at the base of a selector's pallet load.

The benefit of slotting merchandise in case height sequence is that cases of the same height form more uniform layers on a pallet which results in a much more stable, secure and higher cube pallet load.

The sequencing of each family was carefully chosen to ensure that the case height at the end of each family sequence would lead into the case height of the next family sequence which accommodates the building of a stable pallet load permitting higher cube per load.

The result of combining the family grouping and case height sequencing within the major categories is an effective system which addresses both the store receiving concerns and warehouse shipping



The new P&C facility utilizes narrow aisle configurations with stacking height to 32 feet clear in the freezer and 26 feet clear in the remaining ambient temperature areas, with racks provided by Frazier.



Using slotting techniques recommended by Kom International which emphasize factors such as case size and weight, selectors at P&C are able to build pallet loads of consistent case heights and weight distribution from heavy at the bottom to light at top.

operations.

In the new slotting system, heavy products are grouped together, fast moving products are grouped together and medium/slow moving items are grouped together taking into consideration warehouse shipping and ergonomic techniques. The Kom "preslot" simulation enabled P & C to match up the largest slots with the fastest cube movement items and similarly the smallest slots for the slowest cube movement items.

The warehouse inventory management system must be sensitive to the weight of each product. To maintain the effectiveness of the slotting, the system must ensure that heavier cases are placed on the bottom of a regular rack and lighter (slower moving) items on the second level as in the case of two-level selection racks.

Alternative slotting strategies exist based on management priorities as regards to ergonomics, productivity and store labor.

The final slotting of a facility is performed for a static moment in time. Historic volumes of movement and inventory quickly change due to new product growth, changing sales patterns, seasonality and many other factors. Slotting must be constantly monitored and maintained *if* the warehouse is to be kept at its highest operational efficiency.

The implementation of this new slotting approach has resulted in the following:

1. **Overall Productivity Increase**
2. **Proper Size Slots Reducing Product Damage and Injuries**
3. **Reduction in Transportation Costs**

Slotting by case height and family group permits more cases to be selected onto a pallet and therefore more cube per load.

4. **Improved Store Service/Labor Productivity**

Family grouping at the warehouse reflects the layout of merchandise at store level which expedites store receiving and shelf restocking functions thereby improving store labor productivity.

5. **Ergonomic Approach**

Placing items into their proper size slots based on cube movement volumes and case weight reduces back injuries and increases order selection productivity.

The P & C Food Markets perishables layout has a net working capacity of 790,000 cubic feet of merchandise (net working capacity is defined to be the maximum amount of merchandise, expressed in cubic feet, that can be held without causing productivity losses due to overcrowding). When expressed as a storage density, this total gives an average of 5.0 cubic feet of merchandise per square foot of storage space occupied.

Department: 35' Deli/Dairy/Eggs

A 34,600 square foot room occupied entirely by regular two level selection racks and one level selection double deep racks handling 900 SKUs. Typical selection aisles are 10'-6" wide with two cross aisles of 12'-0" width. These aisles provide a highly productive working environment.

Frozen Food/lee Cream

The freezer layout has a surface area of 75,000 square feet including a -20°F ice cream room in an enclosed area. This area is occupied entirely by two level selection regular racks and one level selection double deep racks carrying 1,300 frozen food items and 300 ice cream items.

Case height sequencing within family grouping was predominantly used in the freezer. The picking route shown here illustrates the effectiveness of properly sequencing the different family groupings for the construction of a stable pallet.

Produce

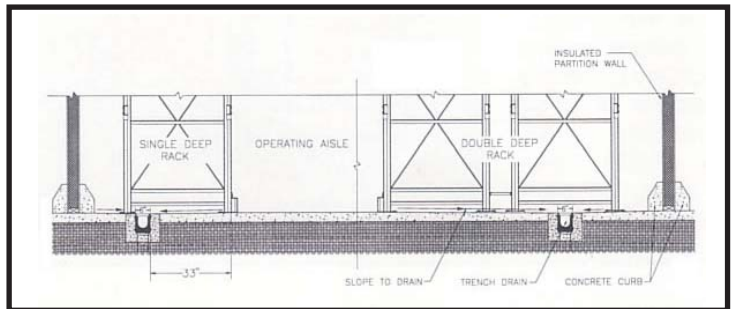
The produce layout is actually a composite of three produce areas allocated as: 55' dry produce occupying 21,800 square feet with 400 SKUs; 40' dry produce occupying 12,800 square feet with 320 SKUs

and 40* wet produce occupying 6,800 square feet with 70 SKUs. Insulated sandwich wall panels were provided to separate these areas to prevent moisture loss and or temperature fluctuation.

Boxed Meat/Poultry/Seafood Room

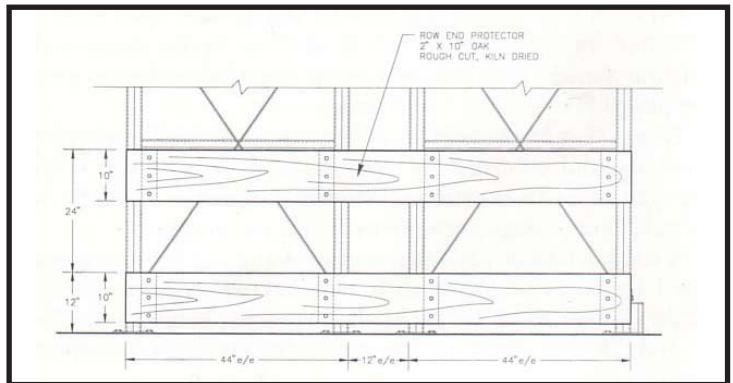
An 11,600 square foot room occupied entirely by one level selection double deep and single deep racks handling 200 SKUs. These racks have been elevated to permit the order selector to walk underneath the beams for easy access to product providing an ergonomically friendly pick slot.

Technical Highlights



This drawing depicts the location of the trench drain in the 35' wet produce and 28' boxed meat rooms. The drains were placed 33" from the face of the single deep racks to prevent reach truck load wheel contact, thus eliminating wheel wear normally caused by drains being located in operating aisles. Pitch of floor was in two directions, assisting the putaway and retrieval process.

Two hardwood members (kiln dried oak) were placed on the outside edge of all end aisle upright frames exposed to fork truck abuse. This method of protection is quite robust and aesthetically



pleasing.

P & C installed single deep storage racks (supported by roof members) overhead the twenty-four dock doors in the perishables area (see photo). This refrigerated space, otherwise unused, now stores 2,300 empty pallets. This space is also used for staging of merchandise.

Five (5) pressurized banana rooms (see photo) consisting of 2 pallets high, 2 wide, 6 deep at 48 cases per pallet will provide a capacity of 24 pallets or 1, 152 cases per room. P & C typically ships 7,000 cases per week to 275 stores.

KOM INTERNATIONAL

Phone: (514) 849-4000 FAX: (514) 849-8888

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