



CASE STUDY

WAREHOUSES & STORAGE

MBMA

METAL BUILDING MANUFACTURERS ASSOCIATION®
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Flexible Design/Fast Delivery

Metal Buildings are the Top Choice for Warehouse & Storage Buildings Nationwide

According to FMI, demand for warehouse and distribution facilities is continuing to grow, servicing a mix of core trade routes and last-mile logistics. Much of the market's growth is due to the relatively recent introduction of the value-added warehousing and distribution market, which can expedite and enhance freight transportation, warehousing and logistics-based industries by assembling and/or customizing products when they arrive at a distribution facility. That segment of the market generated over \$43 billion in revenue in the U.S. in 2018, according to research published by Statista.com.

The self-storage industry also remains strong. With annual industry revenue around \$38 billion, the market sector continues its growth cycle. Construction spending on these facilities was about \$1 billion annually in 2006 and now exceeds \$5 billion. Nearly 10% of households depend on self-storage facilities, spending an average of nearly \$100 per month in rental fees. The number of storage facilities varies according to different sources; but the range spans from 45,000-52,000, which represents more than 1.5 billion square feet.

Both the warehouse/distribution and self-storage markets depend heavily on metal building systems for their facilities. Why? The reasons are abundant. Here are several key factors:

Cost: First and foremost, a developer or owner of these facilities wants the best solution that brings the greatest value. Metal buildings offer competitive initial costs, low life-cycle costs and long life spans.

Speed of Delivery: The faster the building goes up, the quicker your return on investment. Metal buildings can be erected at least 30% faster than conventional construction.

Life Cycle: Metal buildings and metal roofs are low maintenance. Steel doesn't rot or warp. Metal wall panels and roofs are generally warranted by the manufacturer, and a recent study determined that metal panels may have a life cycle of upwards of 60 years.

Weather Resistance: Metal building systems protect and preserve precious inventory inside. Metal roofs, a key component of any metal building system, can handle heavy snow, remain weathertight during torrential rainfalls, have exceptional fire resistance and are shown to withstand hurricane-force winds.

Flexibility: A metal building's structural system provides maximum flexibility to create a variety of floor plan configurations: L's, U's, squares, rectangles and more. Column-free interior space adds to the value. A building's strength and structure allow for cranes above, heavy equipment below and ample room for robotic systems to seamlessly flow and function throughout the facility.

Economy & Quality Blend to Create Warehouse Form & Function



ABF FREIGHT

Elkhart, Indiana

ABF Freight, in Elkhart, Indiana, is a division of logistics leader ArcBest. ABF Freight operates a less-than-truckload network across North America to offer seamless transportation services in both the short- and long-haul markets. Helman Sechrist Architecture designed ABF Freight's award-winning facility. This metal building system features 24 dock doors with canopies. Stone and horizontal metal panels are combined to give the office area a sleek, modern vibe. A large upper window brings abundant natural light into the warehouse portion of the structure. The building was erected by DJ Construction Company Inc.



BCP TRANSPORTATION

Deerfield, Wisconsin

Founded in Deerfield, Wisconsin, BCP Transportation is a certified woman-owned, asset-based trucking company. It provides transportation services, logistics support and full-service warehousing. Its recently completed warehouse is a metal building system that is temperature-controlled and food-grade certified. The facility was designed by Sketchworks Architecture, LLC and erected by 1848 Construction, Inc.

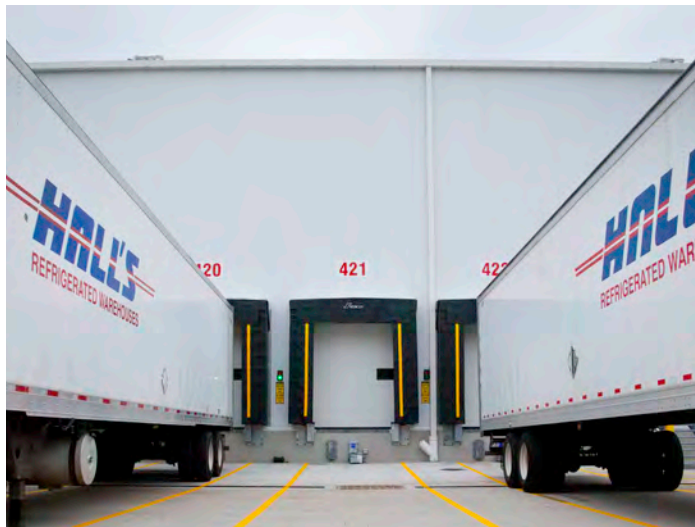
CZ CARTAGE

Fowlerville, Michigan

The husband-and-wife team of Paul and Sheri Cornell invested \$6.5 million in a 131,000-square-foot truck terminal and freight consolidation warehouse. The facility was designed by architect Michael McKelvey and built by BRIVAR Construction Company.

The freight consolidation warehouse is of great importance to the success of the business. Manufacturers can ship freight of varied sizes and weights to CZ Cartage, where it is sorted by geography and moved onto a truck that's headed in the appropriate direction.

As owner Sheri Cornell explained to the *Livingston Daily*, "Say you have a truck going to Texas. We want to consolidate as much freight on one trailer as possible so you can send them a full load instead of a partial load ... instead of taking only three or four pallets. It's better for our customers' budgets and our roads."

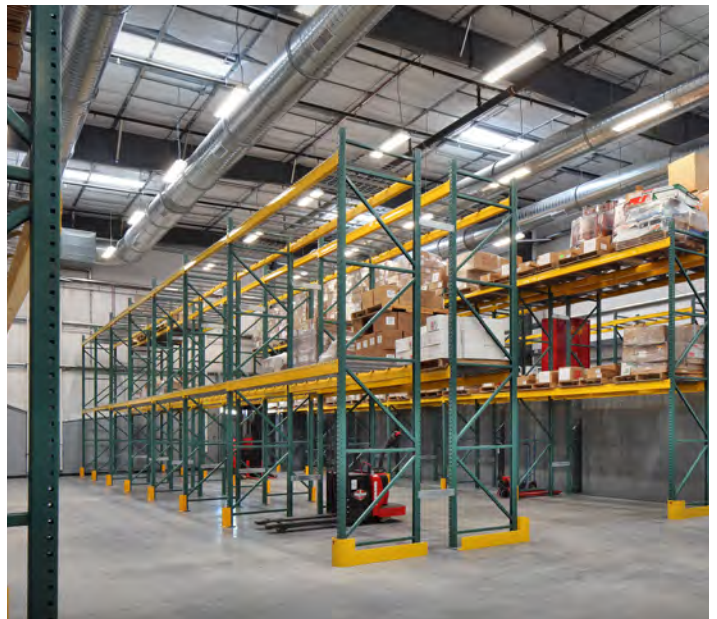


HALL'S WAREHOUSE

South Plainfield, New Jersey

Jayne Enterprises Group, LLC is a logistics provider that needed a warehouse facility from which to receive and then distribute fresh produce throughout the mid-Atlantic region. The company clearly needed a high-volume, perishable food refrigerated cross-dock facility. The owner hired AE Design as the architect to design a hybrid building solution. The owner expected long-term value for this \$1.2 million investment and set the following goals: create a highly functional warehouse that would require low maintenance and have high energy efficiency while offering effective use of space.

General contractor Hance Construction Inc. worked with a metal building manufacturer to create a 108,000-square-foot facility with all the benefits of a metal building, yet with the flexibility to customize as well. One example is the nesting of the portal frame bracing inside the flanges of the building columns to maintain the building's structural integrity while allowing the builders to install an extreme number of openings.



MADISON WAREHOUSE

Phoenix, Arizona

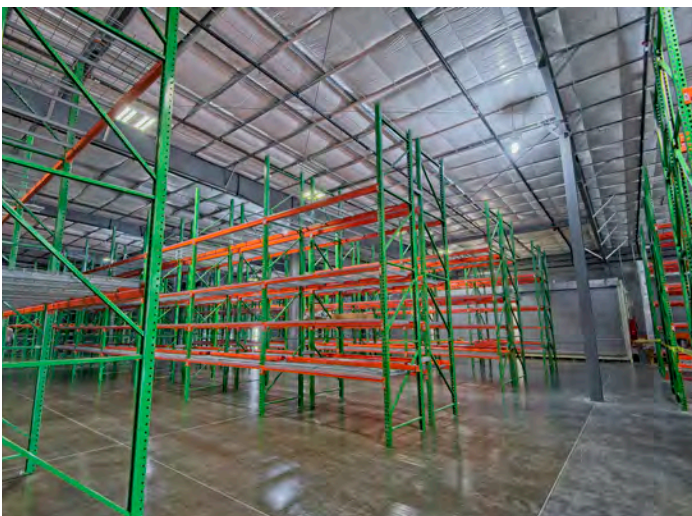
When the Madison School District in Phoenix, Arizona, needed a warehouse facility, it turned to the DLR Group for an efficient building design. The resulting structure is a 10,000-square-foot metal building that features a mezzanine and a cantilevered entrance canopy. The vertical metal walls, with tapered panel elevations, are finished in a premium color to create the building's distinctive look. The building is topped with a standing seam metal roof. Architectural Building Systems LLC and CHASSE Building Team provided construction services.

MASSCO

Park City, Kansas

MASSCO distributes maintenance and facility supplies and equipment and provides industrial packaging services, such as wrapping airplane parts. In a strategic move, it relocated from Wichita to Park City, Kansas, consolidating its corporate office and two warehouse structures into the 61,000-square-foot headquarters. The structure was designed and built by Hutton Construction.

The interior of the metal building is optimized for the firm's specific use. The warehouse area is 49,000 square feet and incorporates a narrow-aisle concept where the walkways are just 6 feet wide to increase storage capacity by about 40%. A 30-foot ceiling height allows for tall warehouse storage racks to further increase product capacity.



MERCEDES MEDICAL

Lakewood Ranch, Florida

Mercedes Medical distributes online medical supplies such as histology tools and equipment, pharmaceuticals and dermatology and safety products. As the firm grew over time, it expanded into three locations. To consolidate operations, it developed a 60,000-square-foot headquarters in Lakewood Ranch, Florida, bringing corporate operations, warehousing and distribution all under one roof.

Designed by Flad Architects and built by Halfacre Construction Company, the metal building has a tilt-wall facade and incorporates an industrial vibe, with exposed walls, steel and mechanical systems. The two-story structure includes a mezzanine with executive office space, an air-conditioned warehouse and complete distribution facility. The single-sloping structure also has a standing seam metal roof.

RLS Logistics

Delanco, New Jersey



RLS Logistics is a third-generation firm that serves small- and medium-sized frozen and refrigerated foods manufacturers by providing cold-storage warehouses in six locations across the United States.

One recent addition to the company is RLS' freezer building in Delanco, New Jersey. Designed by Manders Merighi Portadin Farrell Architects, it features a 44,500-square-foot building with a steel deck roof system and 6-inch insulated metal wall panels. The main structure provides a 10-bay loading dock with a mechanical lean-to. The 50-foot-tall wall modules were constructed horizontally and lifted into place. To maintain the insulating factor, the columns were set on 5½ inches of compressed rigid polyurethane foam blocks used as leveling plates.

“This is phase one of a four-phase project that will grow to 8.5 million cubic feet and accommodate 35,000 pallet positions over the next several years,” explains Tony Leo, CEO of RLS Logistics, Warehousing Group. “The first installment will showcase some of the most advanced technologies and practices in cold storage today. The facility is the first to employ a transcritical CO₂ refrigeration system, thus eliminating the need for environmentally unfriendly HFC refrigerants or dangerous, heavily regulated ammonia-based systems.”



Using a mobile racking system, like one developed in Europe, optimizes warehouse space and lowers the cost of the facility. Pallets are stacked high on motorized racks that move on tracks. During storage, the racks fit closely together without aisles. When a pallet needs to be accessed, the racks move to create space to retrieve it. This system requires a 54-foot-high ceiling instead of the more common 34-foot ceiling—a feature that makes cooling the facility easier and more energy-efficient. In addition, an adjacent solar farm powers the facility and feeds excess power back into the grid.

Convoy of Hope

Springfield, Missouri



Convoy of Hope, a nonprofit humanitarian organization based in Springfield, Missouri, works with communities to solve the root causes of hunger and poverty around the world. The group recently achieved the distinction of having served over 200 million people.

The development of a World Distribution Center allows the team to combine three locations into one 155-acre site. The facility contains space for Convoy's Disaster Services team, a volunteer area, 23 loading docks and a warehouse with 250% more storage capacity than Convoy's previous warehouse. General contractor Q & Company built the 237,000-square-foot metal building with a 37-foot gable and a 24-foot standing seam roof that includes a proprietary fall protection system. The walls are a combination of concrete tilt-up and metal panels with 4-inch insulation.

With an elevated modern concept, the building's interior sports a trending workplace design with tech-focused coworking hubs. A second building phase will include the Global Headquarters and Training Center. Fundraising for the building campaign will cover the cost of this \$34 million project.

"We are celebrating more than the construction of two magnificent buildings," says Convoy of Hope President Hal Donaldson. "We are celebrating the promise of hope. From this place, hope will flow throughout our state, across the U.S. and around the world in the form of food, water and emergency supplies."





SRC Medical

Hanover, Massachusetts

SRC Medical Inc., a second-generation family-owned business, specializes in injection molding of high-quality plastic. From its location in Hanover, Massachusetts, SRC Medical produces a range of applicators and droppers for the food, medical and pharmaceutical industries.

The company offers design services—from generating ideas to 3D CAD models. It then follows up with manufacturing capabilities, which include plastic and thermoplastic injection molding, hot stamping and high-speed assembly and wrapping.

Consistent growth since its founding in 1972 required SRC Medical to expand into a new and modern 45,000-square-foot facility. It houses a variety of assembly machines along with over 20 molding machines, six hot-stamping machines and five wrapping machines.

Lloyd Architects designed the hybrid project to include three buildings. The warehouse and storage facilities are metal buildings. The third structure, an office, has conventional framing and its lobby wall has a curtain wall exterior.

Specifications included a 2000-amp electrical service and transformer, energy-efficient lighting and occupancy sensors throughout the warehouse, a thyssenkrupp hydraulic elevator and a three-bay loading dock with hydraulic dock levelers.





EFCO

Monett, Missouri

EFCO manufactures aluminum doors, windows and curtain wall products at its facilities in Monett, Missouri. When the business began outgrowing its warehouse space, the first solution was to rent trailers. It soon became apparent that permanent facility improvements needed to take place.

The company met with a design-build team to begin the process of expanding the warehouse and production areas. EFCO originally thought it needed to add a two-story building, but after consideration and analysis, the management team opted for a massive building on one level with a connector tunnel.

The resulting 172,850-square-foot facility includes a main building that houses the final assembly area and warehouse and 27 loading dock stations. A small parts building with a 35-foot eave height connects to the existing plant via a tunnel for ease in transporting raw materials to the final assembly area. A two-story office structure and showroom complete the \$2.5 million complex.

In addition to the challenges posed by the sheer size of the complex, the construction crews faced cold and wet weather conditions, often working in mud. The site did not permit much laydown capacity, which meant heavy machinery and materials had to arrive and leave at specific times. Communication and precise coordination were key to ultimately meeting the schedule and bringing the project in on time.



INSULATION TECHNOLOGY CORPORATION

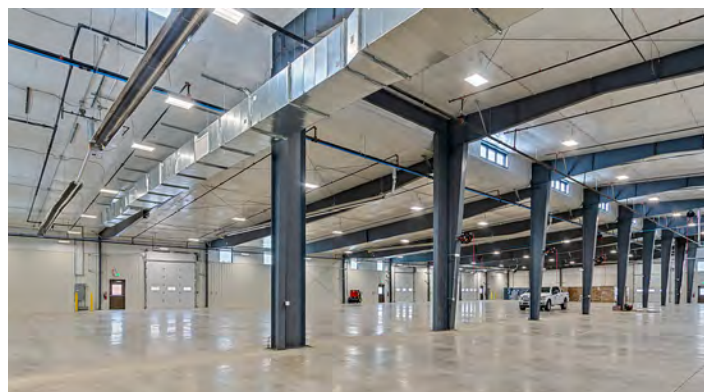
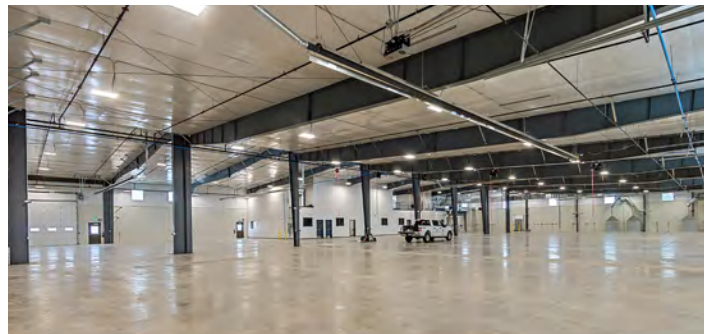
Frederick, Colorado

In the design and manufacture of innovative insulation blowing and removal equipment, Insulation Technology Corporation (Intec) is an industry leader. Based in Frederick, Colorado, Intec has served both do-it-yourself users and professional contractors since 1977. Intec's machines and accessories are built to provide ease and profitability. In addition, the corporation has added a new category of small, portable insulation machines that are capable of high production.

With consistent corporate growth, it became obvious that a larger manufacturing warehouse was needed to accommodate the expansion of Intec's manufacturing lines. Intec consulted architect Olsen Performance Team, LLC to design a 33,750-square-foot metal building with a clearspan that allows maximum interior clearance for manufacturing.

To enhance the work environment for employees, the designers included a clerestory feature and used white facing on the safety liner vapor barrier to reflect additional light. The building has an eave height of 24 feet with a standing seam metal roof. A combination of decorative wall panels enhances the aesthetics. The exterior walls, with a stone façade, boost curb appeal.

In addition to the manufacturing space, the facility includes a 4,000-square-foot space for offices, training programs, restrooms, break rooms and a large space for equipment and materials storage.



Storage Facilities: Efficient & Consistent, Yet Versatile in Colors & Concepts



SAFE STORAGE

Sanford, Maine

PATCO Construction Inc. served as a design-build partner on the Safe Storage facility in Sanford, Maine. PATCO promotes its construction services firm on its ability to be creative with design elements and products in order to produce steel buildings that are beautiful as well as highly functional. That goal is not lost on the atypical look of the Safe Storage entry. The 60-foot by 20-foot attached office features metal canopies and awnings. One 60-foot by 130-foot metal storage building, with false doors facing the road, is insulated and climate controlled. A 30-foot by 144-foot metal building was designed with a 12-foot height to accommodate large items. Rolling stepped eaves on four of the buildings add visual appeal.



LOCK TITE STORAGE

Flat Rock, Michigan

Flat Rock, Michigan, population 9,878, proves that you don't need to be a big city to need plenty of self storage. The local Lock Tite Storage metal building system, designed and built by Vanston/O'Brien, Inc., provides insulated metal walls and roof. With storage spaces ranging in size from a 5-foot by 5-foot-square to 12-foot by 25-foot units, the building is partitioned for flexibility and expandability.



VICTORY LANE

Omaha, Nebraska

Car enthusiasts of all kinds gather at Victory Lane in Omaha, Nebraska, to fuel their passion for the elite automotive experience. This specialty car garage, designed by Avant Architects, consists of four buildings totaling nearly 60,000 square feet. At a construction cost of \$1.68 million, the facility is referred to as a private car condo complex. Owners buy a car condo and have 24/7 access to the property.

Each of the garages is just under 43 feet deep and 22 feet tall. Each has a 6-inch concrete floor with a 12-inch round floor drain. A coating of premium polyaspartic epoxy protects the floors, which are also equipped with in-floor heating tubes. A 200-amp electrical panel supplies power to six LED ceiling lights and six electrical outlets. Metal walls are covered with 5/8-inch drywall. Finishing touches in each condo include a fire sprinkler system, a hose faucet by the front door, an insulated ceiling and walls, a bathroom and cable/internet service. Each automatic garage door is 16 feet tall with glass panels. The doors open to a common area that is often used for owner events and car club events.



VERONA STORAGE

Verona, Wisconsin

Verona Storage is independently owned and its proprietors are determined to meet the local demand through careful facility planning. Offering 32,350 square feet, the spaces are broken into a range of sizes: from 10-foot squares to 10-foot by 40-foot units. Catering to a clientele of both home and business owners, the layout provides extra-wide aisles between buildings to accommodate vehicles of all sizes. Built by 1848 Construction, Inc., the complex of conventional metal buildings provides secure, utilitarian designs that assure efficiency while reducing cost.



PODS

Appleton, Wisconsin

When PODS Enterprises, LLC developed its unusual portable storage system in 1998, it introduced a new way to move and store belongings. Today, PODS boasts residential and commercial services in 43 U.S. states, Canada, Australia and the United Kingdom.

In Appleton, Wisconsin, the local franchise owner, Packerland Portable Storage Inc., recently developed a 40,000-square-foot storage center to accommodate a growing need within the local market. Bayland Buildings, Inc. of Green Bay, Wisconsin, was chosen as the general contractor. The metal building system, branded in the familiar PODS red and white color scheme, includes multiple loading docks and overhead doors.




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