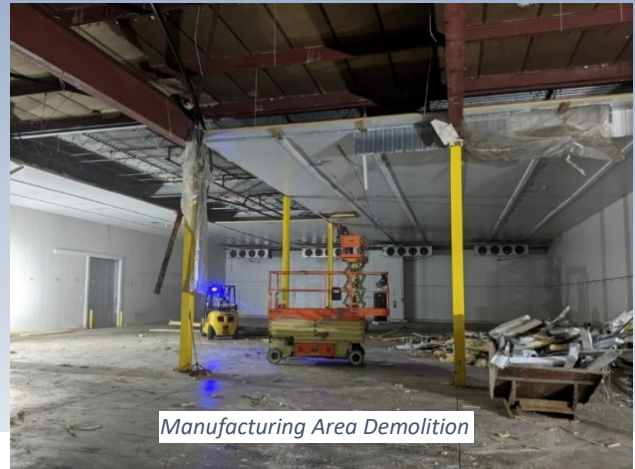


Development of Manufacturing and Warehouse Space

Problem: A manufacturer of skin health care products was experiencing unprecedented growth during the COVID-19 pandemic. The customer needed to grow their manufacturing output capabilities for a particular product line quickly to react to the unplanned demand. The scope was to develop 40,000 square feet of an existing refrigerated warehouse space into a manufacturing space for product filling.

Solution: Project Technologies and Services provided the customer with support by managing the entire renovation project from design through construction. PTS clarified the customer's production needs, evaluated space, and provided a detailed scope, budget, and timeline for the project. Once approved, PTS provided complete project management from engineering, architectural drawings, permitting, and on-site construction management needed to complete the project. PTS met the customer's expectations being within budget and on time.



Manufacturing Area Demolition

With the space being an older refrigerated warehouse, it lacked most of the needed infrastructure for the manufacturing process. Utility systems such as HVAC, compressed air, 480V electrical service, softened water, tepid water for eyewash stations, and sewer tie-in for wastewater needed to be designed and installed. Additionally, multiple problems with the roof and a portion of the structure were discovered and needed attention. PTS evaluated the issues and designed a solution for addressing the structural problems as well as coordinating a roof replacement.

PTS managed the bidding process for all the various trades utilizing the customer's approved contractors as well as introducing quality contractors that PTS had utilized on other jobs. Contractors that were the best fit on cost, quality, and availability were chosen.

For the roof replacement, inspections were conducted to include core samples and infrared scanning. Reports were provided and revealed the need for near term replacement of the area. A detailed roof design and installation inspections were provided by the contractor for the replacement.

The electrical design for the 480v feed was engineered to include a medium voltage switch and transformer, 1,200A main panel, 800A subpanel, and 110V panel. With little documented information on the existing system, PTS worked with the contractor developing a plan and managed the shutdown for the medium voltage tie in which included the customer and multiple tenants successfully.

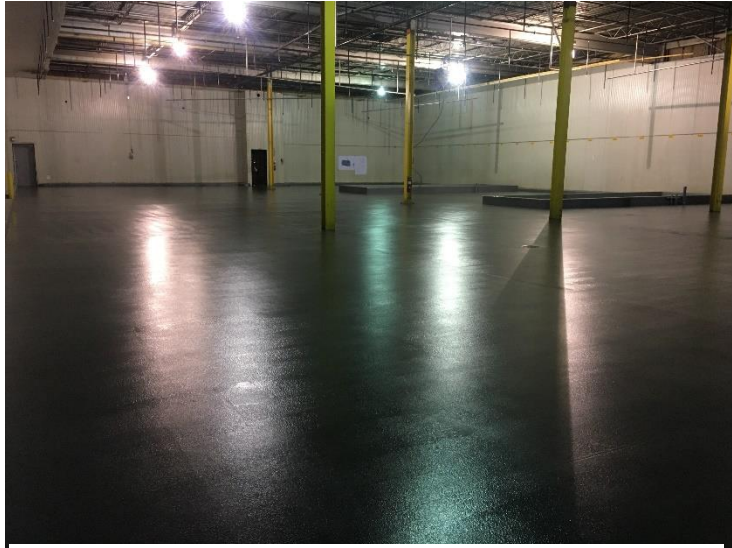
Development of Manufacturing and Warehouse Space-Continued

A compressed air system was engineered by PTS and installed to meet the customer's requirements. This included a 200HP oilless compressor, desiccant filter and 1,500-gallon receiver. Aluminum tubing was utilized for the piping to minimize installation cost and time.

The HVAC system for the manufacturing area comprised of a 25-ton unit, dry steam humidifier, relief duct ventilators. Non-production areas utilized electric ceiling mount space heaters for heating months long with waste heat from the air compressor. Through the HVAC unit location process, a structural assessment

of the roof was performed to accommodate the weight of the unit. It was discovered that the roof structure was insufficiently designed and already at its maximum capacity. The HVAC unit had to be relocated to a pad on the ground. A utility pipe rack needed to be designed to carry the piping and conduits loads supported by the roof.

A wastewater treatment system was designed by the customer while the containment dike was designed by PTS with support pads to accommodate the 4000-gallon holding tank and treatment system. PTS also coordinated sewer line tracing due to the lack documentation and of the property. The system tie-in was then designed, permitted, and installed.



Manufacturing Area - Prior to Suspended Ceiling Installation.