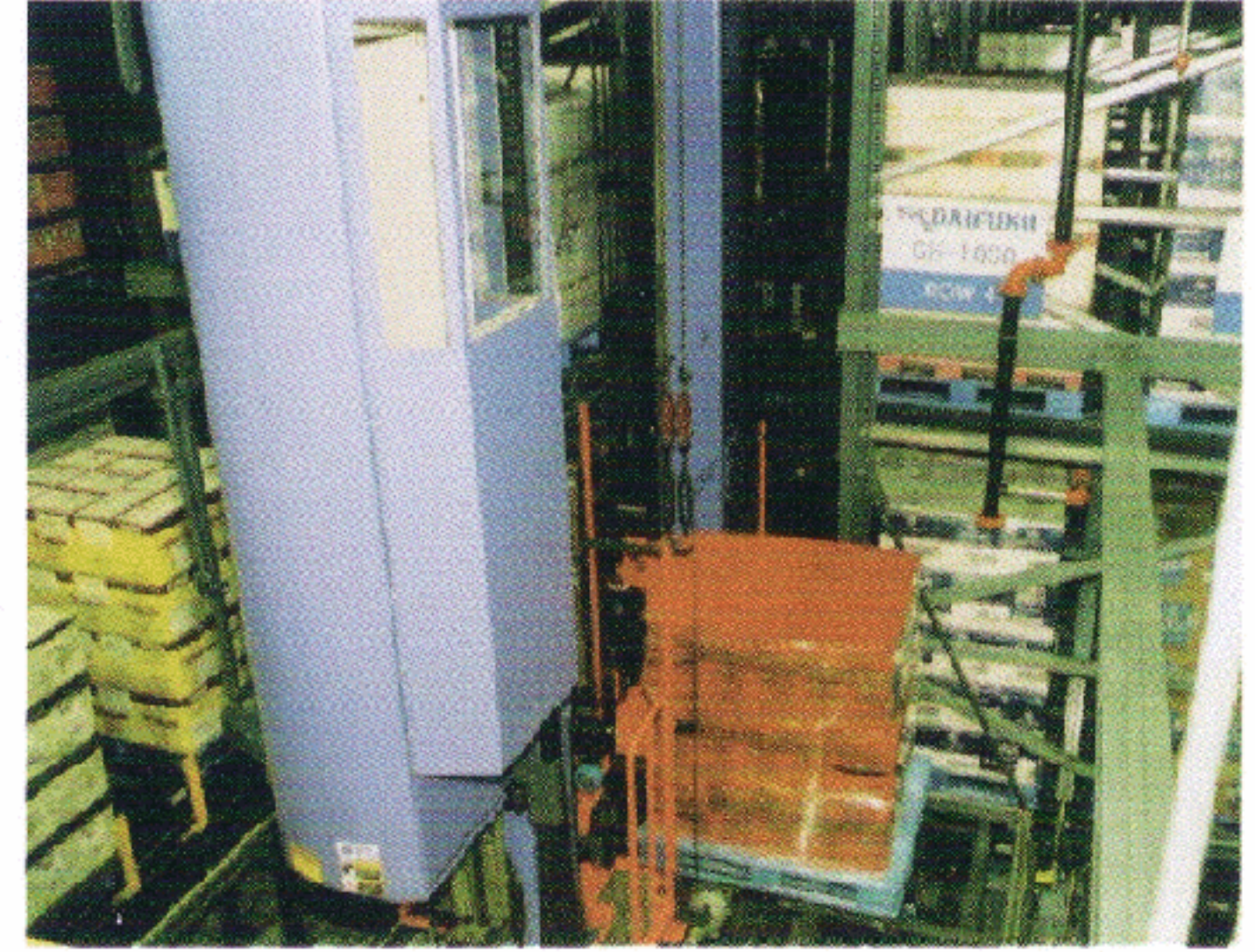
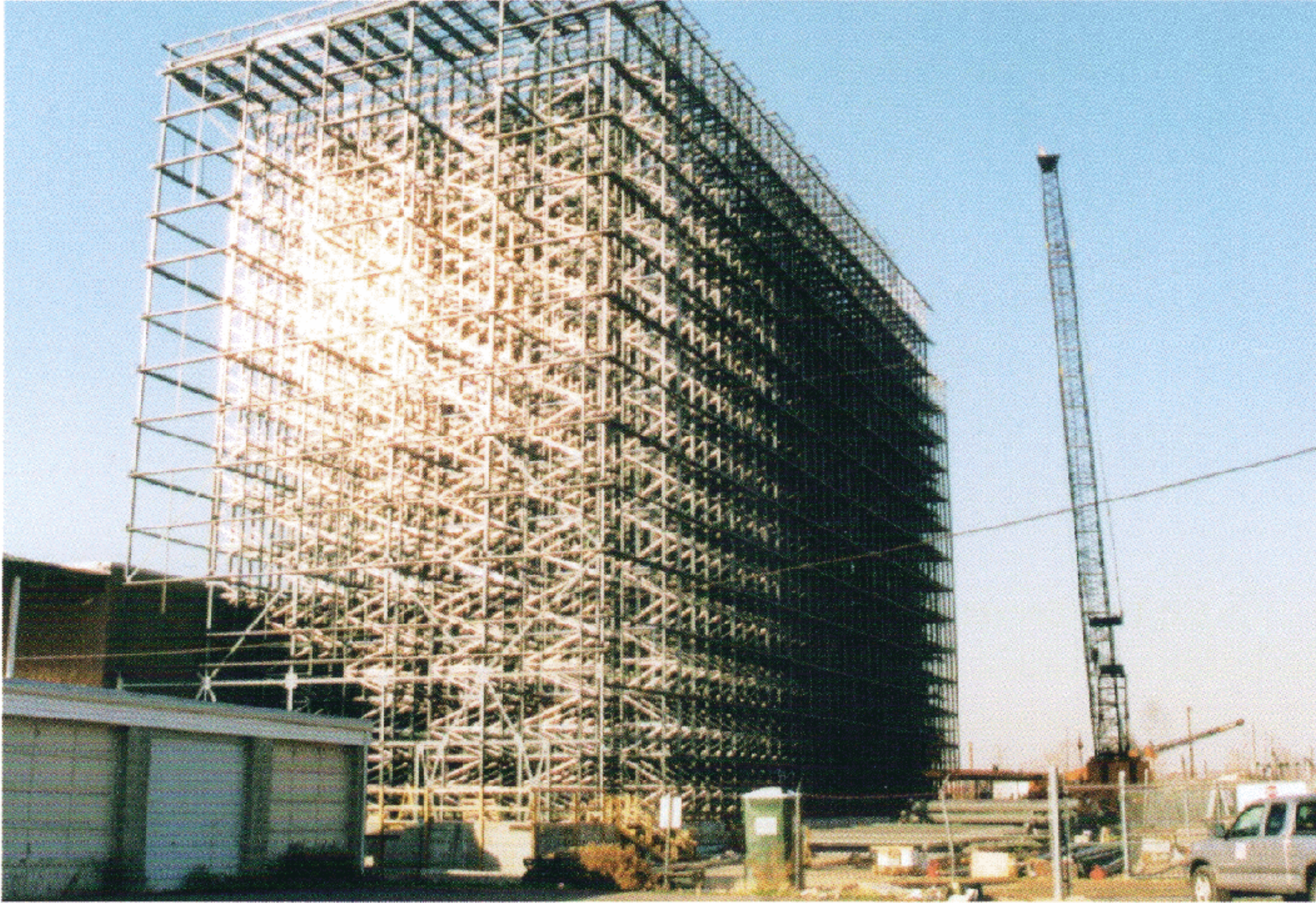


Best Mechanical Design

The Utah State Alcohol Beverage Control Warehouse

Submitted by: Layton Construction

2003 Best of



Few buildings submitted in this year's competition were so clearly focused on mechanical design as this one. The Department of Alcohol Beverage Control Warehouse is unlike any other in the country according to Layton Construction's Project Manager Ben Russell.

"As far as I know there really isn't anything else like it," said Russell. "We really didn't have anything else to look to for guidance or to compare to."

The building serves as the central storage and distribution site for all alcoholic beverages in Utah. The 100-foot tall building is made of concrete slab with steel racks supported by piers drilled into a foundation. An outer shell, which protects the building, is a lightweight, heavily insulated metal panel designed to match an existing building on the site. The warehouse is designed to be expandable and can be added onto with little or no disruption to the existing building.

Inside the building there is little more than metal racks, conveyor belts and cranes. Pallets of beverages are retrieved by a completely automated robotic system. Conveyor belts move pallets which are picked up by cranes and moved to storage or to the distribution area.

One of the main challenges faced by the construction and engineering team was controlling the internal temperature of the building which was required to be between 50 and 70 degrees from top to bottom.

According to Bailey Dunford of North Star HVAC standard roof top cooling units discharge air at about 50 degrees.

"We just couldn't dump air that cold in at the top and maintain the temperatures we needed," said Dunford. "Scott Deakins from Colvin Engineering came up with the system that takes the warm air mixes it and recirculates it. With that system we were able to keep the building at 60 degrees from top to bottom."

Deakins said he had several ideas on how to manage the temperature problem so he built a model to test them.

"Using the CFD (computational fluid dynamics) model we were able to come up with something that we felt thought would work," he said. "We were able to use off-the-shelf components for it so it saved time and money and it will save on maintenance in the future."

As a design-build project, the engineering team was brought in at the beginning of the project as was able to address problems ahead of time.

The project was completed ahead of schedule and according to officials at Layton, is operating flawlessly. <<

Key Players

Owner: State of Utah Department of Facilities and Construction and Management

Architect: GSBS Architects

General Contractor: Layton Construction Co.

Engineering

North Star HVAC Inc.
Colvin Engineering