



NEW HOME FOR SOUTHERN FOODS

A M King transforms a shell into a state-of-the-art processing facility.

By Keith Loria

When Southern Foods, a full-service meats, seafood, artisanal cheese and global specialty goods supplier that performs custom processing, decided to expand in Greensboro, North Carolina, it reached out to design-build firm A M King. Their task? Convert an 88,000-square-foot spec shell warehouse into a one-of-a-kind, innovative, modern United States Department of Agriculture (USDA) regulated meat, seafood and cheese processing facility.

Matt Miller, Senior Project Manager for A M King says the project involved separate meat, fish and cheese processing areas, a dry age meat room, separate refrigerated dock and dry dock for inbound and outbound distribution, culinary center with commercial kitchen and first floor and mezzanine office space. And, they had to relocate all of the clients' existing equipment, plus new equipment, into

a much smaller building footprint with room to grow.

"The first thing we had to consider was what the existing building had to offer and what we would have to do to get it ready for everything we needed to put in it," Miller says. "An important goal of this project, for both Southern Foods and A M King, was to use as much of the existing building as

possible. We're extremely familiar with the complex nature of food facility design and construction, however, this particular process of adapting existing structures to meet USDA food facility requirements was exceptionally challenging."

Challenges of the Job

Since the original building was designed as a standard dry warehouse, it did not support the level of mechanical and fire protection systems required for a facility where 50 percent of the square footage of space would be refrigerated.

Jami Lloyd, Architectural Designer at A M King, notes in order to keep the existing precast walls, roof and supporting structure, the design needed to isolate the steel members and exterior walls from the interior spaces.

"We were able to do this with a system of insulated metal panel walls, liner panels, baffles and ceilings," she says. "This gave us the proper framework to both physically and thermally maintain the new systems that are



The original dry warehouse was converted to refrigerated storage and processing spaces with a system of insulated metal panel walls, liner panels, baffles and ceilings. (Photo courtesy of A M King.)

required to control refrigeration temperatures for processing and storage of food. In addition, we ensured that the fire suppression system would operate as required in the case of an emergency.”

Another challenge was getting the facility ready a month and a half earlier than scheduled, as Southern Foods was required to relocate from its previous facility sooner than initially planned.

“A coordination meeting was scheduled with the subcontractors, and it was determined that in order to achieve this new timeline, the construction team would require overtime for labor to expedite key pieces of

equipment and coordinate a plan with the city building officials,” Miller said. “Through the consolidated effort of all parties, the new project end date was achieved.”

Meeting Safety Requirements

Once the structure was addressed, the design team turned its attention to the food safety and sanitation concerns of the new facility.

Tackling the specialty floor, Lloyd explains the team utilized Stonhard Brand Stonclad UT flooring, a high-strength industrial floor coating with a polyurethane 4 component mortar system that combines a urethane-urea binder, pigments and quartz aggregates.

“This coating is known for its high impact resistance, abrasion, thermal shock and chemical resistance,” she says. “We installed this coating over all concrete slabs in the food processing areas to provide a protective layer over our slab. Thus, we were able to prevent food particles from absorbing into the concrete slab and minimized the risk of bacterial growth. The aggregate is mixed in to provide a textured slip resistant finish for ensured safety.”

Additionally, the team installed numerous trench and floor drains and sloped floor slab to those drains so that when the processing rooms are washed down, the water self-drains until none remains.



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Since the room would have to be washed down so often, stainless-steel materials, best for corrosion resistance, were chosen for doors, hardware, equipment and exposed metals.

"Also, because these rooms are cleaned with high-temperature pressured water, we needed to ensure the light fixtures could withstand the extreme temperature changes and force from the pressurized water," Lloyd says. "To solve this problem, we chose fixtures that had an IP65 rating. The 6 means the fixture is dust tight and the 5 means the fixture is protected against water jets from any angle."

With all the equipment in this space, the design team wanted to make sure the conduit, water and refrigeration lines were sealed and off the walls to ensure proper cleaning processes could happen. Their solution was to seal standoffs for conduit and plumbing to assist with easy cleaning.

"One of the most common issues with food safety and sanitation is cross contamination," Lloyd says. "Therefore, gowning rooms were provided as the main point of entry and exit into and out of the processing areas."

Fulfilling Needs

Bill Mutton, President of Southern Foods, also had another request for A M King. He wanted a space that would encourage client interaction.

"Southern Foods doesn't just sell you a product, we invite you to be a part of the selection process," he says.

To fulfill this goal, Miller says they installed triple-paned viewing windows in the meat, fish and cheese processing rooms, as well as the dry aged meat room.

"These windows are thermally broken so they can withstand the different temperatures on either side, without fogging or condensation," he says. "They allow for easy viewing so clients and guests can see the aged meat and cheeses, as well as the seafood, before the product is cut. The windows also provide a safe barrier between visitors and the raw product."

Mutton championed sustainability measures whenever possible. Miller notes the main sustainability initiative implemented was the use of an existing building in lieu of a greenfield site.

"It was important to all parties to locate an existing project site that could be used and modified to meet the owner's needs," Lloyd says. "With exterior precast walls, minimally



A distinctive 34-degree, 4,200-square-foot dry beef aging room is fitted with high-tech temperature and humidity controls and large viewing windows for customers. (Photo courtesy of A M King.)

insulated roof and structural steel already in place, we were able to meet our goal to design a thermally isolated space within the bounds of an existing structure."

The team lined the inside face of exterior walls with insulated metal wall panels. Insulated metal panel ceilings were suspended below the existing roof structure.

"We layered floor slabs with insulation and underslab glycol piping to create separation from the exterior elements," Miller says. "This separation allowed us to create a thermally sealed interior space that could withstand the required temperatures ranging down to negative 20 degrees."

HVAC systems were used to balance energy efficiency and economic viability. The facility's first floor non-production spaces and the second floor office spaces were configured as a variable air volume (VAV) system comprised of a packaged rooftop air conditioner with modulating natural gas heating and a variable speed supply fan.

Additional green measures included installing LED lighting, adding mechanical DX cooling systems, efficient heat pumps, higher than required R-Values for wall systems in refrigerated areas and implementing a complete occupancy sensor control throughout the building spaces. Also, each rooftop unit had two compressors for staging capability and to reduce energy consumption at lower loads.

One of the biggest challenges the design team faced was organizing the spatial layout. Southern Foods needed to have raw meat and

fish remain at the required temperature from arrival, through the cutting/packing process and in storage until ready to be shipped.

"Our challenge was to make sure each space the product passed through met the refrigeration, thermal and finish requirements necessary for maintaining its integrity," Lloyd says.

For example, A M King created easy access from the refrigerated dock to the -20-degree blast freezer and packaging area.

"The blast freezer, which is a vital part of the patty process, had to be centrally located in the building to ensure easy accessibility. However, that meant it had to withstand varying temperatures, sometimes extreme temperature differentials of 70 degrees or more," Lloyd says. "The construction of this freezer had to be carefully considered to ensure that it would perform."

To do this, 5-inch-thick IMP was used for the ceiling and walls, which were extended below the slab to prevent thermal transfer. Additionally, A M King's design-build team installed a glycol piping system to heat the underslab and constructed a baffle ceiling to help direct the air flow from the refrigeration system to the product to help bring down the temperature as quickly as possible.

Work Complete

A M King finished the Southern Foods project under budget and ahead of schedule in just 19 months.

The new facility now houses a 13,500-square-foot food processing area with a dis-



A high-strength industrial floor coating over all concrete slabs in the food processing area prevents food particles from absorbing into the concrete slab and minimizes the risk of bacterial growth. (Photo courtesy of A M King.)

tinctive 34-degree, 4,200-square-foot dry beef aging room fitted with high-tech temperature and humidity controls and large viewing windows. In total, there are 11,585 square feet of freezers, 11,429 square feet for 32-degree coolers and loading docks, a refrigerated cheese processing area, a 14,250-square-foot space for dry storage and a 12,660-square-

foot office mezzanine.

And, with the new fish processing area, cheese processing room and express purchasing for the general public, the company can do more than it ever has.

The project was a finalist in the CEBA Built by the Best Competition in 2020. 📧

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