Designers, Precasters Agree: Thermomass Is Ideal For High-Performance Construction

Each and every industry faces a unique set of challenges in terms of the varied environmental requirements of its buildings. The comfortable working conditions in a modern office would, of course, be completely inappropriate for a warehouse space. Similarly, the standard humidity levels found in agriculture facilities would be devastating to those in the paper and textile industries.

With decades of experience designing buildings in specialty markets, FORUM Architects knew that those specific constraints would be critical to the success of a planned expansion for the Wyoming Tribune-Eagle, a newspaper based in Cheyenne, Wyoming.

Providing expertise for the project was Charles A. Rosati, Principal Architect at FORUM with over 25 years of experience designing facilities of this nature.

"Newspaper facilities are a complex marriage between building and industrial processes," said Mr. Rosati. "With specialty projects like this, we explore the best use of materials and design to create a building not only capable of performing, but one that looks strong and has a presence in the community."

Since this project was an addition to an existing structure built in the mid-1980s, FORUM relied on architectural precast concrete in order to match the texture of the existing building while accenting the appearance with modern elements.

"Precast allowed us to blend the new additions in with the existing facility, giving us a solid, durable structure with an aesthetically pleasing exterior wall system that gives it a sense of permanence," said Rosati.

Early in the design process, FORUM teamed with Denver-based Rocky Mountain Prestress. "The decision to partner with Rocky Mountain was made because their plant was within 2-hours of the site, they have a great history in the area and they were able to expedite construction", said Scott Rhoades, Senior Associate at FORUM.

Rocky Mountain Prestress (RMP) has been a staple in the architectural precast market for more than 50 years. With a staff of more than 300, including engineers, designers and sales professionals, RMP prides themselves on pre-construction and design assistance.

"We were contacted by FORUM early in the project, a necessity in specialty buildings like this," said Dan Parker of RMP. "This enabled us to provide them with a look that reflected their desires as well as the necessary details and thermal performance to allow the building to operate as intended," Parker continued. "Once the scope was outlined, we turned to Thermomass for design assistance with the wall panels".

Thermomass insulation systems are an ideal fit for buildings that require specific indoor air temperatures and humidity levels and have been used in many media facilities, including newspaper presses such as this project, to rare libraries and public archives. The key to the use of architectural precast sandwich wall panels in the Tribune-Eagle expansion was System SC from Thermomass.

The FORUM/RMP design allowed for an 8-in exterior wall assembly comprised of two, 3-in layers of mild-reinforced concrete sandwiching 2-in of System SC. Combined with Thermomass' CC Series connectors,

the two layers of concrete were able to act compositely, creating a composite precast wall panel with edge-to-edge insulation and the moisture performance necessary for successful interior conditions. "If those conditions are too dry during the printing process, the newsprint will tend to tear," said Rhoades. "Therefore, we have to keep the press room humidified. If we are not able to keep the outside air - often cold and dry - separate from our warm, moist inside air the interior of the building will sweat. We want humidity, but not water."

To accomplish this in a precast assembly, a continuous layer of insulation is needed, free of thermal bridges and solid sections of concrete. "We look for continuity and R-value in our insulation systems. Without continuous insulation, cold spots develop, you get condensation, mold, and a deterioration of systems," said Rhoades. "With Thermomass, we were able to keep the dewpoint in the insulation itself, providing a more efficient solution than a conventional CMU, cavity wall assembly."

Detailed, specific, and sometimes complex environmental conditions are critical to the success of every structure. From the comfort of office employees to the storage of perishable goods, proper temperature and moisture management is essential. With over thirty years of experience in insulating high performance walls, Thermomass understands the challenges in providing optimal conditions for paper to people, and everything in between.

Contact

Thermomass is a manufacturer of insulation systems for integrally insulated concrete walls. With systems in use world-wide, Thermomass has a solution for all thermal and moisture challenges. Call Thermomass, 800-232-1748, to help with your next insulated project or visit them online at www.thermomass.com.

Polly Rosenbaum State Archives Building

The Polly Rosenbaum State Archives and History Building is a unique, 125,000 square foot archive facility for state documents, artifacts and public records requiring precise climate controlled storage environments.

Because of the delicate nature of these items, extensive research was conducted to ensure that the new facility would remain a cutting-edge sanctuary designed to protect against any conceivable threat, from theft and rodent infiltration to fire and water damage and even terrorist activity. A number of expert consultants advised on every aspect of construction, from lab equipment to the individual building materials.

Precast concrete panels insulated with Thermomass System NC were selected for the exterior walls, and Arizona precaster, T-Pac, constructed each of the 10' by 32' sandwich panels using a 3-in. architectural concrete layer, 3-in. thick insulation and a 6-in. inner structural concrete layer. Tied together with Thermomass MC/MS series connectors, this envelope provides wind shear and seismic support, 4-hour fire protection, and also contributes to the archive facility's strict controlled atmosphere requirements.

University of Kentucky Patient Care Hospital

When University of Kentucky Healthcare (UKH) set out to construct a new facility, it had a list of special requirements that needed to be met along with the requisite expectations of a high quality finished project.

On the outside, UKH wanted to match the exterior brick aesthetic already present on campus. Inside, the walls needed to feature an insulation system capable of meeting strict energy codes while also providing a continuous air barrier and vapor retarder. Finally, this entire multi-year project needed to be constructed in a manner that provided minimal disruption to the local campus life.

To make these complex requirements a reality, Thermomass teamed with Gate Precast to provide UKH and its architectural partner, GBBN, a solution comprised of insulated architectural precast cladding panels designed to meet every need.

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