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Renovation Turns K-State Memorial Stadium Green

By John Myers

Each college student and each college experience is, of course, unique. While the memories made are all different, they're often intertwined with the place itself. On campuses across the country, iconic and historic architecture blends stone and glass, regional vegetation and landforms with local cultural particularities to create places where memorable moments are made.

Founded in 1863, Kansas State University (K-State) in Manhattan, Kan., was the first public institution of higher learning in the state. The campus' architectural style was defined initially by the use of native limestone. Large, stout masonry buildings with arched capped windows and entrances set a formal tone. When Memorial Stadium was constructed as a tribute to Kansas State students killed in World War I, the formidable stone structure fit right in. Composed of two independent halves, west stadium (completed in 1922) and east stadium (completed in 1924), Memorial Stadium's general seating capacity was 17,500, although attendance records showed crowds of up to 20,000 attended events. The stadium faithfully served as home to the Wildcats' football team until 1987, when the university opened a new facility that today seats 50,000.

In the nearly 50 years since, Memorial Stadium has remained a fixture of Kansas State campus life, without having a truly defined function. For many programs such as band, lacrosse, soccer and intramurals, the open field makes an ideal practice/play surface, while runners and athletes of all sorts take advantage of the steep steps and track ringing the field. Like the fields, the interior buildings beneath the stands have also served a variety of functions over the years including academic, administrative, and storage. Most recently, the east stadium building housed KSU's Telecommunications Department and the Purple Masque Theater, while the west stadium primarily provided space to painters and sculptors in the Graduate Studies in Arts Department.

Revitalization

With the passage of time, infrastructure deteriorates and eventually, if left unresolved, it will become a danger. Recognizing the stadium's historic significance in its football heyday and as a campus haven in the decades since, the university undertook a program to revitalize and repurpose Memorial Stadium in a multi-phase process that reached completion in April 2015. With the first phase of construction breaking ground in November of 2013, this two-and-a-half-year process has repositioned each of Memorial Stadium’s wings as forward-thinking campus amenities that will bookend new student experiences for generations to come.

"As a K-State graduate, it was a real treat to get to come back to campus and participate in a creative transformation that will extend the life of the stadium while also starting a new story," said Sean Zaudke, vice president with Gould Evans, the Kansas City, Mo.-based architecture firm hired to lead the west stadium’s transformation. Gould Evans’ portion of the project entailed a complete gut and renovation to accommodate a fully modern black box theater for the Purple Masque Theater, which had been located in ad-hoc facilities in the east stadium.

With a new formal theater in place and the east stadium vacated, Phase II entailed a dynamic transformation of the building below the stands. Developed by the Ebert Mayo Design Group of Manhattan, Kan., with planning support from Gould Evans, the new Berney Family Welcome Center will provide a central location for students and families to connect with new student services, financial aid, housing and dining services, and the career center.

Project Challenges

On both the east and west side of the stadium, one interesting challenge K-State faced during early design discussions was what to do with the concrete risers above the revitalized structures. Since the stands had always functioned as roofs above each building, that purpose had to remain, though the university no longer had the need to account for 17,500 screaming Wildcats fans. With an ambition of repurposing the entire site as a welcoming embrace from the university to new students, K-State’s landscape architecture department proposed transforming the majority of the seating into green roofs. Planted with native vegetation and designed to represent the hues and subtle undulations of the Kansas prairie, the green roof design strategy provided an ideal way to reseed the new roof structure, while enhancing the stadium aesthetically and making a strong statement about environmentally conscious design.

"Initially, the thinking was to patch the concrete and then cover the stands with a layer of soil to develop the desired contours," said Zaudke. "However, when the structural loading report came back it was clear we couldn’t add a tremendous amount of weight to the roofs and still comply with today’s building code requirements.”

In response, the team turned to an innovative commercial building product, ACH Foam Technologies Foam-Control EPS Geofoam. At about 1 percent the weight of traditional earth materials, engineered expanded polystyrene (EPS) foam provided a lightweight material capable of filling in the slopes created by the rows of seating without overburdening the structural capacity of the roofs. The design called for filling in the upper two-thirds of seating and leaving the lowest rows of seats as they were, ultimately reducing the seating capacity down to around 1,000 per side. The Geofoam planks would then be covered with soil and planted with native species like Pale Purple Coneflower, Prairie Blazing Star and Blue Pimpernel Sage among a dozen others, creating a sloped prairie hillside bisected by a running track, which blossoms into a K-State color palette.

"The Geofoam was lightweight, has a tremendous R-value that remains constant over the product’s entire lifecycle and doesn’t absorb infiltrating water. This made it a great roofing insulation," said Zaudke.

Final Steps

When the roof and other design challenges were resolved, mid-west regional contractor Hutton Construction of Wichita, Kan., led construction management services for the Phase II east stadium renovation. Related to the use of the Geofoam, the biggest challenge on the construction side was the fact that the stadium’s concrete risers were poured nearly 100 years ago and between an antiquated construction methodology and the passage of time, no two steps were exactly alike.

"Figuring out the contours of all the steps was really quite a puzzle," said Curtis Calvert, project manager for Hutton Construction, who like Zaudke also happens to be a proud K-State graduate.

Calvert credits national roofing subcontractor Western Specialty Group for precisely determining the most efficient way to cover the slop without much material or labor waste. "During preconstruction, the installer came out and mapped every inch of the stadium, which allowed each piece of foam to be cut and configured to a specific placement on the slope," he said.

Today, construction is complete and the revitalized Purple Masque Theater has thrived in the first year of productions within the west stadium building since it opened in the spring of 2015. The west stadium vegetation has had a year to root and the east stadium plantings are now in their first growth season. In the fall of 2016, new students will experience the centralized services of the Berney Family Welcome Center for the first time and another generation of new memories will begin anew at K-State.

John Myers, sales representative for architectural products with ACH Foam Technologies, has represented a wide range of construction product lines over a 20-plus-year career and joined ACH Foam Technologies in 2011.