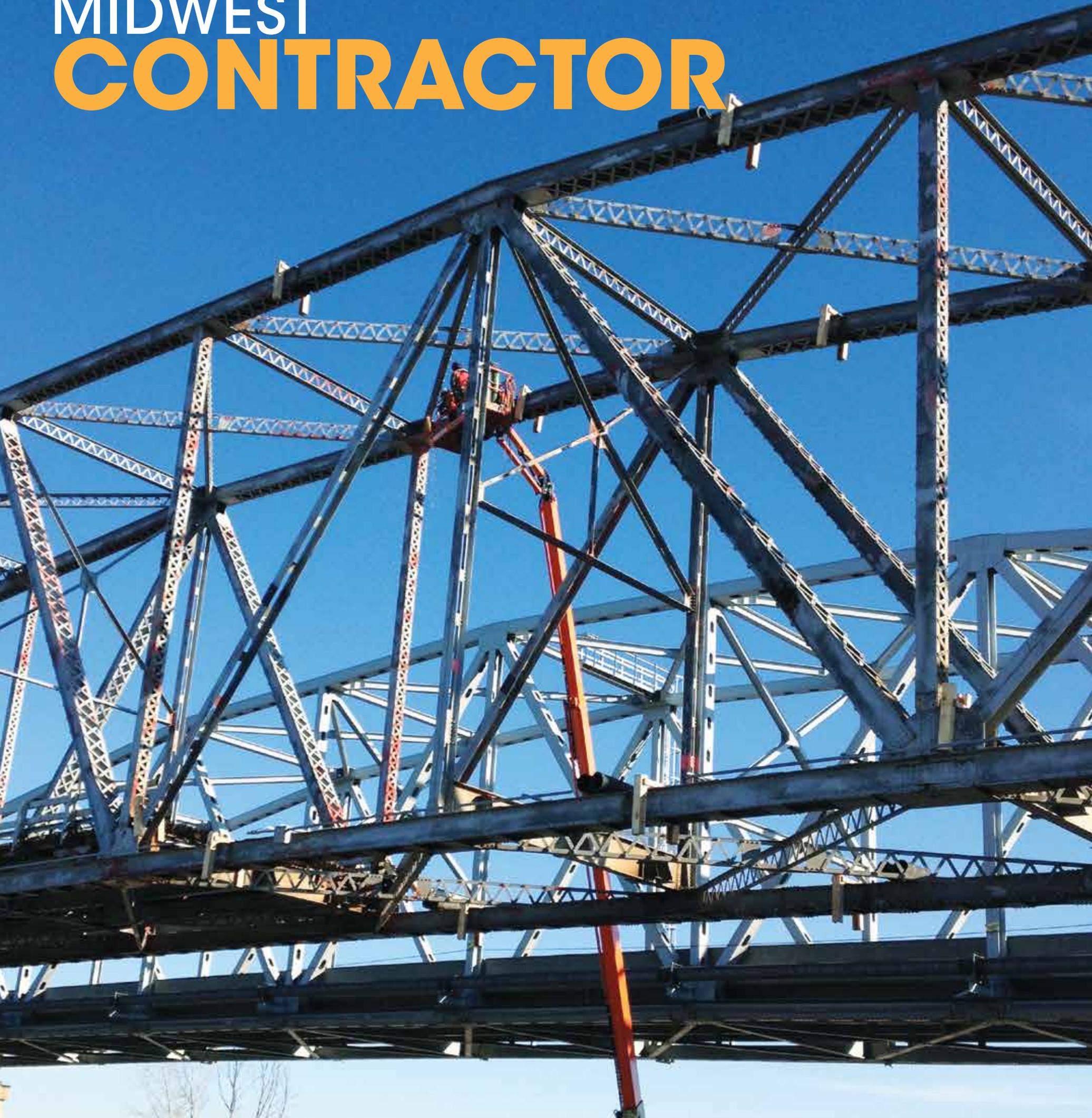


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Geofoam Solves Unique Construction Challenges on the K-State Memorial Stadium Renovation

By John Myers

For many, the college experience is a wonderful time in life when ideals and character are formed and memories are made that last a lifetime. Each college student and each college experience is, of course, unique. While the memories made are all different, for those who attend the same school, even if at different points in time, those memories are 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 in Manhattan, Kansas, was the first public institution of higher learning in the state. The campus' architectural style was initially defined by the use of native limestone. Large, stout masonry buildings with arch 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), Memo-

rial Stadium's general seating capacity was 17,500, although attendance records show crowds of up to 20,000 attended events. The stadium faithfully served as home to the Wildcats' football team until 1967, 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 K-State campus life 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 K-State'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.

Repurposing for Greater Use

With the passage of time infrastructure deteriorates and eventually, if left unresolved, it will become a danger. Recogn-

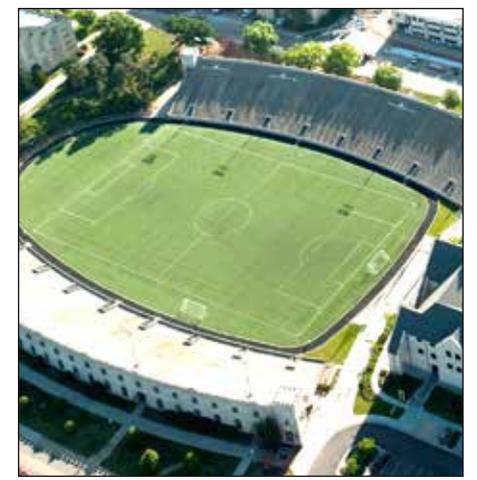
izing the stadium's historic significance in its football heyday and as a campus haven in the decades since, the University undertook a program to revitalize and repurpose Memorial Stadium in a multi-phase process that reached completion in April. With the first phase of construction breaking ground 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 story of its own," says Sean Zaudke, Vice President with Gould Evans, the 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 blackbox 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 two entailed a dynamic transformation of the building below the

stands. Designed by the Ebert Mayo Design Group 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 Career Center.

An Innovative Green Roof System

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 actually been roofs above each building, that function 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 materials and designed to represent the hues and subtle undulations of the Kansas prairie, the green roof design strategy provided an



ideal way to reseal 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,” continues 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 are, ultimately reducing the seating capacity down to around 1,000 per side. The Geofoam panels would then be covered with soil and planted with native species like Pale Purple Cornflower, Prairie Blazing Star and Blue Pitcher 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 light weight, has a tremendous R-Value that remains constant over the product’s entire life cycle and doesn’t absorb infiltrating water. This made it a great roofing insulation,” shares Zaudke.

Working with 100-Year-Old Concrete

When the roof and other design challenges were resolved, mid-west regional contractor Hutton Construction led construction management services for the phase two 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,” says Curtis Calvert, Project Manager for Hutton Construction, who also happens to be a proud K-State graduate. Calvert credits roofing subcontractor Western Specialty Group for precisely determining the most efficient way to cover the slope without much material or labor waste. “During pre-construction, 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.” In a true twist of irony, Calvert shares a construction story for the ages about the project.

“As we were doing the punch list, walking

along the east stadium’s exterior wall a few individual stones were identified that we wanted replaced,” he recalls. Behind one of those single stones among literally thousands a mason discovered an old tin can with a note inside. “The note was hand written and signed by five masons who had worked on the original construction,” says Calvert. “It was their way of reaching out to the future and sharing a bit about their lives.”

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 to last a life time will begin anew at Kansas State University.

