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# GREEN DESIGN



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# EPS Geofam Provides Alternative Fill Material at Augustana College

By Dale Mullikin

ROCK ISLAND, Ill. — A multimillion-dollar Center for Student Life now serves as the focal point for students at Augustana College in Rock Island since it debuted in time for the fall 2013 term. The college's centerpiece of academic life has been re-energized with a 35,000-square-foot addition, designed by Illinois-based BLDD Architects, which incorporates two new functions — dining services and student activities. An additional 39,000 square feet of the previous library structure will also be renovated. It's a groundbreaking project that depicts a new concept in student-centered college life.



Mullikin

The Center for Student Life was situated in the central area of the campus to maximize its effectiveness and to be at the centermost crossroad of student activities, according to W. Kent Barnds, executive vice president of the college. BLDD worked closely with the college to determine the perfect location for Augustana's students and to maximize the way students will navigate the campus. However, the perfect location also presented serious construction challenges because of its location on a hillside. John Whitlock of BLDD Architects explained, "The use of geofam allowed the design team to implement the college's vision without compromising the program, function or aesthetics. Without geofam, a major redesign might have been necessary."

Slope stability was a major sticking point as engineers put their skills to the test. The new Center for Student Life was added to the existing library building set on top of a steep hill. Part of the building is cut into the hillside to create a basement space, while the other will be built up to create an upper floor. According to Rock Island-based KJWW Engineering Consultants' lead structural engineer, Eric Reinsch, P.E., "Because the addition was so close to the hill, engineers were concerned that there would be a slope stability issue if the area under the kitchen/loading dock was backfilled with soil up to the fifth-floor elevation."

Reinsch explained, "The north retaining wall was revised to be a more standard wall and the soil fill behind it was substituted with lightweight EPS geofam to reduce the surcharge on the

hillside and wall. By removing the soil, we were able to reduce the wall thickness and design to be more of a traditional wall. Geopiers were used to support the footings and to densify the soil along the top of the hill.

"All of the foundations extend past the geofam and bear on the geopiers. The only thing the geofam is supporting is the weight of the slab and the associated live load for the floor — about 75 per square foot and 100 per square foot, respectively. EPS Geofam 15 from ACH Foam Technologies was selected because of its density and compressive resistance."

Casey Adamson was the foreman on the job for Centennial Contractors based in Moline, Ill. His crew had not

worked with geofam before. "We had four concrete perimeter walls about 16 feet high. We had been looking at fill materials — specifically soil, sand, smooth rock and geofam."

foam would require settle time or compacting. "ACH Foam Technologies sent [installation specialist] Dale Mullikin to our site before we began the project," Adamson added. "Our number one concern was not to compromise the structural integrity of the concrete perimeter walls. Dale gave us a thorough understanding of why geofam would be the best fill material as well as how to install it. The installation was seamless."

The team used 3,000 cubic yards of geofam blocks and it only took a crew of four men to install the product, according to Adamson. "The geofam was so light and easy to manipulate," he explained.

"The use of geofam allowed the design team to implement the college's vision without compromising the program, function or aesthetics. Without geofam, a major redesign might have been necessary," said Whitlock.

Davenport, Iowa-based Russell Construction's project manager, Brian

Hedgren explained, "The most difficult aspect of this project was installing the fill around hundreds of pipes under the kitchen area. We used ACH's suggestion to cut the small pieces of geofam with hot wire right on the jobsite. We surrounded each pipe with small geofam pieces, leaving a trench for the pipe to fit in and then

filled that with concrete. This held the puzzle together and also provided some additional protection for the pipes.

"In the other fill areas, all we had to do is start with a nice level base, and then stack the geofam blocks right up. It was the best choice for alternative fill materials and the least expensive."

Preliminary work on the \$20 million construction and renovation project began in March of 2012. The Center for Student Life will be certified as LEED Silver — the college's first LEED Silver building. "To our knowledge, we are the first in the country to combine student dining with a library and student activity center," explained Dennis Hittle, capital projects coordinator.

Dale Mullikin is the technical products sales manager for ACH Foam Technologies. He has been in the EPS business for 15 years and has presented hundreds of educational sessions for architects and engineers throughout the Midwest. He graduated from the University of Northern Iowa with bachelor's degree in education and a minor in business.

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