Engineering Firm Delivers Medical Facility for Veterans

Why build an $8.7 million facility that's scheduled to close down in just a few years? A/E firm Ellerbe Becket did just that with the Military Advanced Training Center at Walter Reed Army Medical Center in Washington, D.C.

The 31,000-square-foot center that opened last fall provides medical care and state-of-the-art rehabilitation for veterans of the wars in Iraq and Afghanistan who have lost limbs. But the Walter Reed hospital and medical facility are scheduled to be relocated to the National Naval Medical Center in Bethesda, Maryland, in 2011.

However, Walter Reed officials explain that despite the scheduled closing of the hospital, the increasing number of amputees needing treatment made the center's construction necessary. And it was built with the ability to relocate equipment in mind, they say.

MARCO ROBLEDO OF THE ARMY NATIONAL GUARD PRACTICES WALKING INDEPENDENTLY USING THE SOLO-STEP SYSTEM, UNIQUE TO THE MILITARY ADVANCED TRAINING CENTER AT WALTER REED ARMY MEDICAL CENTER.

In addition to offices for physicians, psychologists, benefits counselors, and other staff, the center has many other features to assist in rehabilitation. A gait lab with a treadmill built into the floor helps ensure proper prosthesis fit, and simulators help veterans practice driving and firing weapons. There are also climbing and rappelling walls, an uneven-terrain modeler, a computer-assisted "virtual" rehabilitation environment, and a 225-foot indoor track with the world's first support harness that allows veterans with prostheses to practice walking independently.

Ellerbe Becket competed and won the project after the initial design by another A/E firm ran over budget, explains David Tash, P.E., mechanical, electrical, and plumbing director at Ellerbe Becket's Washington, D.C., office. "Our team was selected for redesigning [the center], partially based on the fact that we, as a team with Turner Construction, managed to do enough value engineering at the start to bring the project in line with the budget," he says.

The Ellerbe Becket team found some decisions made by the original designer were unnecessary. "[They] didn't match with the intent of the building and as a result drove the cost beyond the available budget for the project," Tash says. Ellerbe Becket reduced the building design to two stories from three stories, changed the shape from an "L" to a rectangle, and eliminated deep excavations.

The grand opening took place September 13, 2007, two months ahead of schedule for the project team of Turner Construction and Ellerbe Becket.

"We do many fast-track projects, but this one beat almost any other project I've done, because we all realized the importance of this building," says Tash, explaining the pressure on the government to get the center up and running. Prior to the building's opening, Walter Reed had treated more than 500 amputees from Iraq and Afghanistan.

One strategy that helped improve efficiency was to have all the subcontractors on board from the early stages, Tash explains. "We designed together. There were no surprises; everyone knew what was coming up."

The site provided challenges because of its steep slope and tight footprint bordered by a roadway and the existing hospital. In addition, the team had to cope with new federal guidelines on the proximity of structures to the road, developed to help thwart terrorist attacks.

Inside the building, the Ellerbe Becket team put in two energy-efficient rooftop variable air volume systems with frequency drives, and many rooms have dedicated temperature sensors for better comfort. The Ellerbe Becket team changed the design from one VAV unit to two, not only for added redundancy but also to lower the building height. "Larger ductwork associated with larger air distribution systems typically requires higher building elevations," explains Tash.

In addition, the team used glass to take advantage of daylighting in training areas as "a positive influence on healing," according to Ellerbe Becket Principal Tom Anglim.

The U.S. military has only one other facility similar to the Military Advanced Training Center, in San Antonio. Thus, amputees don't have many places to go to recover, Tash says. "So that in itself is enough to make any project pretty exciting."

In addition, the building's purpose alone helped motivate those who worked on it. "These are war veterans coming back," says Tash. "So everyone felt to some extent that the least they could do was their best job on the project."