



The Carl R. Darnall Army Medical Center at Fort Hood looks stunning with its façade of precast concrete and two-tone embedded thin brick. Photo: Nick J. Cool/The Image Works.

CARL R. DARNALL ARMY MEDICAL CENTER FORT HOOD, TEXAS

When the U.S. Army Corps of Engineers set out to replace the existing hospital at Fort Hood, Tex., using precast concrete was a no-brainer. Gate Precast Company produced a brick-inlaid, architectural precast concrete exterior wall system in its Hillsboro, Tex., facility for the new Carl R. Darnall Army Medical Center. The mammoth project tops out at nearly 1 million ft² and uses nearly 1000 precast concrete insulated panels embedded with thin brick.

The hospital first opened in 1965 and underwent an expansion in the mid-2000s; however, the project involved compromises that did not serve patients well, says architect John Bienko, principal and senior project manager in the Dallas office of HKS.

“The Army required a brand-new facility with expanded services that would meet the Department of Defense [DOD] standards for care at the largest U.S. military base in the world,” Bienko says.

Darnall serves approximately 45,000 active-duty personnel and nearly 125,000 military family members and retirees within a 40-mile radius. The new hospital, which is sited on 72 acres, includes a six-story, 122-bed hospital tower; two two-story outpatient clinics; a three-story outpatient specialty clinic; an ambulance garage; a logistics building; a central utility plant; and three parking structures.

PROJECT SPOTLIGHT CARL R. DARNALL ARMY MEDICAL CENTER

Location: Fort Hood, Tex.

Size: 944,000 ft²

Cost: \$534 million

Owner: U.S. Army Corps of Engineers, Fort Worth, Tex.

Architects: Joint venture of HKS, Dallas and Wingler & Sharp Architects & Planners, Wichita Falls, Tex.

Contractor: Balfour Beatty | McCarthy Joint Venture, St. Louis Mo.

Structural Engineer: Cagley & Associates, Rockville, Md.

PCI-Certified Precast Concrete Producer: Gate Precast Company, Hillsboro, Tex.

Precast Concrete Components: 911 pieces, including 9-in.thick insulated panels

The three clinics in the main hospital are interconnected, giving the building a variety of irregular elevations, says Norm Presello of Gate Precast Company. "There's not a simple, square or rectangular box or a north/south/east/west elevation," he says. "Also, the building steps back as it rises to the upper levels. The cranes setting the precast walls had to reach higher and farther with every increase in level." There were three cranes on the job-site: two rentals and the contractor's tower crane.

"It took juggling—walking all the way around these structures and plugging in different cranes based on the capacity," Presello says.

Balfour Beatty | McCarthy, a joint venture of Balfour Beatty Construction in Dallas, Tex., and McCarthy Building Cos. in St. Louis, Mo., was the design-build team for the medical center.

Safety First

The blast-resistant precast concrete walls, which are also thermally efficient and preinsulated, are among several features designed to earn the medical campus LEED gold certification. One of the sustainable measures includes a 30% reduction in energy use over ASHRAE Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*. The wall panels feature a continuous layer of insulation between the building's interior and exterior, preventing thermal bridging that can nullify the effect of the insulation, says Presello. Insulating the walls is effective in eliminating moisture transmission, which can cause mold, a huge concern for hospitals.

The project was also subject to progressive collapse criteria developed by the DOD. These design requirements reduce the potential of progressive collapse for new and existing facilities that experience localized structural damage due to normally unforeseeable events. Buildings of three or more stories are subject to greater risk of progressive collapse and must therefore comply with these standards, regardless of the standoff distance provided. Standoff distance is needed to keep threats away from the building and can be achieved through such deterrents as benches, fences, lampposts, and bicycle racks.

PROJECT SPOTLIGHT

CARL R. DARNALL ARMY MEDICAL CENTER

Location: Fort Hood, Tex.

Size: 944,000 ft²

Cost: \$534 million

Owner: U.S. Army Corps of Engineers, Fort Worth, Tex.

Architects: Joint venture of HKS, Dallas and Wingler & Sharp Architects & Planners, Wichita Falls, Tex.

Contractor: Balfour Beatty | McCarthy Joint Venture, St. Louis Mo.

Structural Engineer: Cagley & Associates, Rockville, Md.

PCI-Certified Precast Concrete Producer: Gate Precast Company, Hillsboro, Tex.

Precast Concrete Components: 911 pieces, including 9-in.thick insulated panels

