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Texas Construction

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Green Hospital Has High Hopes

Dell Children's Center Takes the Health Care Lead in LEED

A new $200 million children's hospital rethinks hospital design and crowns the site of Austin's Mueller Airport redevelopment with a place of healing that may become the first health-care facility in the U.S. to achieve a platinum LEED rating.

by Rob Patterson

An innovative 470,000-sq.-ft. hospital for children is rising where airliners once took off and landed on the edge of Austin's center city.

Metal panels and limestone sheathe the exterior of the inpatient room wings. The curved shape will enable views of the outdoor healing garden. (Photo courtesy White Construction.)

The design of the $200 million Dell Children's Medical Center of Central Texas, built by White Construction Co. of Austin for Seton Healthcare Network, incorporates healing elements into the building and aims for certification as the first platinum Leadership in Energy and Environmental Design health-care facility in the nation. LEED is national standard for developing sustainable buildings overseen by the U. S. Green Building Council. The hospital is being funded in part by a charity drive that was spurred by a $25 million grant from the Michael and Susan Dell Foundation and an additional $50 million in donations. Seton is paying the remaining $125 million.

The cast-in-place concrete structure is the commercial anchor tenant in the redevelopment of the 750-acre site that formerly was the Robert Mueller Municipal Airport. White broke ground under a construction management contract in October. The project is on an aggressive 27-month schedule aiming for a February 2007 completion. The project is 50 percent complete.

Healthy Distractions The 195-bed hospital's overall scheme breaks up the massing of its size to achieve a number of benefits. "It's a highly articulated, multilevel building with a large floor plate," said Tom Howard, senior project manager for White. "Some areas have two levels, some three and some four floors."

The goal in spreading the structure across its 32-acre site is to make it less imposing to the young patients it will serve.

"We could have stacked this hospital vertically and had a 12- or 15- story building on this site," said Tom Snearey, principal in charge for Karlsberger Architecture, an Ohio-based firm that specializes in pediatric health-care facilities. "That would have been an overwhelming prospect for children and their families. Our goal here was to break it down, compartmentalize each department with good adjacency and circulation flow and create an appropriate scale. Even though adults work in it, it's a children's building.

"That was one task that the steering committee gave us. They said 'We want this to be accommodating to children but also accommodating to the staff.' One way we make it accommodating to children is with positive distractions. When entering the front door, you really want to make it a journey of discovery. There's a distraction around every corner."

A rendering shows the hospital's hub-and-spoke design and a 145-ft. tower, a way-finding element that pays tribute to the hospital's history. Image courtesy Karlsberger Architecture. Inc.

A hub-and-spoke pattern allows for a high degree of natural light throughout the hospital. "There's research that suggests that natural light plays a healing role," Snearey said. "Our initial goal was not to have a room farther than 32 ft. away from an exterior wall. That held true for every department except for surgery."

Gaining the LEED The natural light will help the building earn LEED points. The hub-and-spoke design allows for 250,000 sq. ft. of future expansion that won't disrupt hospital operations during construction.

As a brownfield development, the hospital will earn further LEED points. White had to demolish part of the runway that ran through the site. "We removed 14 in. of asphalt and 20 in. of base under it," Howard said. "We took up 35,000 tons of asphalt and recycled that asphalt as one of the courses in our base for the parking." Reuse of the asphalt and runway fill helps up the project's LEED score for recycled materials.

White drilled and poured 477 piers across a 30-ft. slope within the footprint. "In some areas we had to go about 40 to 50 ft. to get to a bearing strata. In some areas we only had to go 5 ft."

The pouring of 41,000 cu. yds. of high-volume fly-ash concrete on the foundation and walls went quickly and added to the project's LEED points. "We got a high production on our concrete pours with more than 30,000 sq. ft. in place a week," Howard said.

The exterior is clad in four different materials - steel siding, stucco, Leuters limestone and Texas red sandstone. "The stone continues on the interior," Howard >> said. The roof is primarily TPO single-membrane with standing-seam metal in a few areas.

Five interior courtyards provide the structure with what its architects call "lungs" for their open-air properties. One of them is adjacent to the lobby and boasts a multilevel waterfall and amphitheater. An outside healing garden with a pond and walkways will be visible from many of

the rooms in the patient wings. The interior will include a sensory gym, a therapy pool and a two-story chapel based on the Chapel of Notre Dame-du-Haut in Ronchamp, France, designed by the late famed architect Le Corbusier.

Crews work on the final touches of the structural concrete shell of the Dell Children's Medical Center and begin adding exterior finishes. (Photo courtesy White Construction.)

The facility will earn its LEED points in a number of additional categories. Its sustainable site tally includes credit for urban redevelopment, a rain and ground-water collection system for irrigation and the use of a white TPO roof that reflects sunlight rather than absorbing radiant energy. Environmental air quality points are achieved by using paints and adhesives on the interior with low or no volatile organic content, carbon dioxide monitoring and sealing the ends of the ductwork during construction.

Low-flow toilets and fixtures as well as native plants in the landscaping will earn water-efficiency points. The hospital's energy and atmosphere ratings are provided by a high-efficiency HVAC system and an adjacent 4.6 megawatt power plant with a gas-fired turbine generator that will provide steam and chilled water. White prepared the plant site by pouring its slab and constructing masonry supports and a screen to surround it.

The hospital's final LEED components include the use of or renewable content in materials and interior finishes and an aggressive construction-waste-management program. "About 70 to 75 percent of all waste is being recycled, and we have the potential of getting higher," said Alan Harbert, senior project manager for White.

"We started early in the design phase with a LEED charrette with the design team and owner and various departments to establish some goals and design parameters," Harbert said. "We had regular monthly meetings of more than 20 design professionals throughout the year of the design process and meet quarterly to review progress and refine what we are doing."

Redevelopment by Design The building's design also has to conform to the master plan for the airport redevelopment. "We are working with a design review committee for the entire 750 acres here," said Alan Bell, network construction manager for Seton. "We've had to go through an approval process and make presentations to a group of architects. Anytime that architects make presentations to other architects, you're lucky to get consensus."

The structure's design has helped keep the project on schedule. "The good thing about a building like this that's big and flat is that you can work on a lot of areas at the same time," Howard said. "And if you get held up in one area, especially the exterior, you go work in other areas."

Still, the complexity of the project has its challenges. "There's a lot of work to coordinate on a fast track," Howard said. "Even on a normal office building of this size, that kind of timeline would be difficult. It's a complex building with a lot of different systems: chilled water, heating, steam, medical gas, lots of air handling, a sophisticated security system and cabling for communications and a data center."

One holdup has been bringing in drywall. "We've been hit with some delivery problems due to the recent hurricanes," Howard said. "Where it was originally an 8- to 12- week delivery it is now more than 36 weeks."

A landmark to the project will be a 145-ft. steel tower at the entrance. "We wanted it to have some sort of representational and historical significance that references the

Catholic Daughters of Charity, which owns Seton," Snearey said. "A tensile fabric structure at its top will represent a nun's coronet, and we're also using that same icon on some of the canopy features."

It will serve as a way-finder for the hospital and the development around it. "As you're driving in off of IH-35 or anywhere from the surrounding 700 or so acres, you're going to see that," Snearey said. "Since we're the first building there, we worked closely with the developer to align the streets so it's the terminus point of one of the main boulevards."

The final results defy the usual patterns for hospital architecture. "You're not going to drive by and say, 'Ah, there's a hospital,'" Snearey added. "You're going to say there's an interesting building. And it just so happens to be a hospital."

Key Players	
Owner:	Seton Healthcare Network, Austin
General Contractor:	White Construction Co., Austin
Architect:	Karlsberger Architecture Inc., Columbus, Ohio
Structural Engineer:	Datum Engineers Inc., Austin
Civil Engineer:	Bury+Partners Inc., Austin

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