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## Texas Construction

### Cover Story - February 2007

#### Green Guidelines Take Root in Austin

Central Texas hospital inspires new sustainable standards for health care building

*by Eileen Schwartz*

New high standards in environmentally sound building design and in the compassionate care and treatment of ill children will be on display in Austin – for the world to see – when the Dell Children's Medical Center of Central Texas opens this spring.

The \$200 million medical center on 32 acres of the former Austin Mueller airport site is a likely candidate to be the nation's first hospital to achieve platinum LEED certification.

It's also a pilot for the Green Guide for Health Care, which in turn is a model for developing new LEED for Health Care documents.

The medical center, which will serve a 46-county Central Texas area, is a facility designed to create a healing environment with features such as natural light and pollutant-free, fresh air as well as six generous inner courtyards.



*Rendering courtesy Karlsberger Architecture Inc.*

"You're never more than 32 ft away from daylight," says Joe Kuspan of Columbus, Ohio-based Karlsberger Architecture Inc., the project's architect.

Tom Sneary, principal in charge with Karlsberger adds, "You didn't see this in hospitals 10 years ago."

White Construction Co. of Austin broke ground on the facility in October 2004. The four-

story, 480,000-sq-ft, full-service pediatric hospital is more than 90% complete and the owner, Seton Healthcare Network, will start moving in by the end of April, says Tom Howard, project executive for White Construction.

A highlight of the four-story building is an unoccupied 145-ft-tall, steel-frame tower clad in glass, stone and metal, which will serve as a wayfinding element and landmark for the city. "If it weren't for the tower, you wouldn't be able to see the building from IH-35," Howard says. The tower's LED light fixtures can be programmed to change colors and patterns.

The aesthetics of the facility are enhanced by carefully selected materials that also serve as wayfinding elements within the hospital. In addition to Leuters Limestone, a local material, the facility features a Texas red split-face sandstone mined from a West Texas ranch. "It's a distinctive material that can be found on a lot of courthouses in Texas built around the turn of 19th Century," Howard says. A wall of the sandstone extends from one exterior end of the building, to the other. "You'll see it on every level of the building and exposed in all courtyards," Howard adds. The material qualifies for LEED points as it originates from within 500 mi of the job site.

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### **Getting the Green, Going for Green**

To kick start the capital campaign to raise funds for construction of the center, the Michael and Susan Dell Foundation (of Dell computer fame) provided a \$25 million grant, the largest the Seton Foundation has ever received. "Michael and I are extremely pleased to see the hospital near completion," says Susan Dell, co-founder of the Dell Foundation.

"The medical center not only boasts state-of-the-art facilities and equipment to better meet the health care needs of Central Texas children, but through its modern design concepts, it is among the most energy efficient and environmentally advanced."

She adds that the design also incorporates elements that are unique to the Central Texas environment.

"Open-air healing gardens and courtyards throughout the hospital each represent one of the seven eco-regions found within Central Texas," Dell says. "We hope that these details will help children feel at home and help nurture – and even nature – them back to health."

For its unwavering commitment to sustainability and healthy building practices, the Dell Children's Medical Center is expected to become the nation's first hospital to achieve a platinum status under the LEED program sponsored by the U.S. Green Building Council.



*Photo by Eileen Schwartz*

This is true, although the LEED concept was not developed with a health-care facility in mind. "And the challenges, as a result, were enormous," says Kuspan.

“LEED itself, and the USGBC, are not geared toward a hospital environment, simply because it is one that runs 24 hours a day, seven days a week, 365 days a year,” Sneary says.

He adds that LEED certification is mainly for buildings that operate in a standard 8 to 5 environment and in which power consumption can be reduced or shut down during off-hours.

“With a hospital you can’t do that and there are other more restrictive codes that pertain to health care as well,” he says.

### **LEED by Example**

Originally, the new children’s hospital was to have been built at a different location in north Austin. But the more centrally located Robert Mueller Municipal Airport redevelopment needed an anchor tenant, “so we basically switched sites to become an anchor at the RMMA property,” says Alan Bell, project manager for Seton.

Bell says that to be part of the development, “you had to meet the standards the city of Austin had set for development on the RMMA site. These require that any project on the site be a sustainable project.”

And that means either going through the city of Austin Green Building program or complying with LEED certification.

Seton opted to seek a platinum LEED rating to set the highest possible standard, Bell says. “The building owes it to the community to be the best steward of resources,” he adds.

The courtyards, integrated throughout the building, enhance the health and comfort of future occupants, increase natural lighting and create a healing environment that responds to the stress the staff is put through on a daily basis. “We developed as many courtyards as we could,” Sneary says.

“Courtyards are not anywhere near being close to a new thing,” Cuspeth adds. “We can look at the ruins of Pompeii and see that every house there had a courtyard.”

Improving indoor air quality was a priority for the project and its architects. “One of our initiatives is to eliminate any use of PVC in children’s hospitals,” Sneary says.

He points out that the manufacturing of PVC produces dioxins, which have the most negative impact to newborns, the unborn and children through adolescence.

There is no PVC on any finished materials in the new center, including wall protection. “Ten years ago most of that would be PVC based,” Sneary adds.

The use of fly-ash in the concrete “was pretty much a no-brainer,” he says. “We all understand that when you substitute fly-ash for Portland cement, you’re reducing the amount of CO2 emissions on a pound-for-pound basis.”

The project achieved a substitution rate of 32% fly-ash for Portland cement.

So that the construction schedule wouldn’t be impacted, the team brought in professors from the University of Texas at Austin – experts in construction materials – during the concrete pouring.

“We continued to evaluate and tweak that concrete mix so that we could achieve a high level of fly ash use and also maintain the contractor’s pouring schedule,” Sneary says.

White had an aggressive schedule for the reinforced concrete frame. “Because the building is so spread out, we had two complete crews and were able to build on multiple areas at the same time,” Howard says. This helped the team achieve a high production rate for the concrete pours.

The team still maintained an aggressive concrete schedule, Howard says, despite the

high content of fly ash, which causes the concrete to take longer to reach optimal strength than does cement. "So a lot of time we had to use accelerators." The concrete forms could then be removed and moved to the next sequence to meet a production rate of about 3,000 sq ft per day per crew. "How fast you can remove forms translates into how much form material you need on a job site to hit that production rate," Howard says.

Safe and Clean The White construction team also set a high standard by reaching a 75% success rate with its robust construction waste recycling program.

One LEED point is earned for recycling 50% of construction waste; two for reaching 75%. "It's really a small component in the overall LEED program," says Alan Herbert, senior project manager for White and a LEED accredited professional. "But we were running around 72% and felt like we needed to do something to revitalize the workers' enthusiasm."

Herbert says that figures through November showed that out of 4,000 tons of construction waste, almost 3,000 tons were recycled. An incentive program offering weekly \$100 gift cards to crew members helped increase the level of worker participation. "I think it's increased the enthusiasm of the workers," Herbert adds. "They're more self-policing now."

Another worker incentive program has resulted in a low accident rate. "Our insurance carrier has stated that this has been one of the most successful safety programs that they have ever seen," Herbert says.

Promoting a worker safety incentive program was naturally a boon to the >> insurance program, which is owner-controlled. "It's a win-win for everybody," Herbert says. "The overall insurance costs are minimized by using the economies scale, and savings that are achieved in the cost of the insurance are given back to the workers who make the safety program work."

Bell says that because a green jobsite equals a cleaner jobsite, "we have had a very low instance of slips, trips and falls."

"It's anecdotal, but I think a lot of it has to do with no miscellaneous stuff laying around on the ground for somebody to trip over.

"Then you take that one step further, and because we are specifying 'healthy materials' – no high VOC paints, no solvents and such – the workers aren't getting exposed to those caustic materials. There's benefit not only to the people that are using the building after it's done, but those that are out there building it."

The construction crew did face hurdles when it came to scheduling. "We've had to demonstrate extreme flexibility," says Howard. "Maintaining the schedule amidst a continual stream of changes has been the biggest challenge."

He adds that the majority of changes were related to coordination and "program changes have been almost nonexistent."

He credits major subcontractors with contributing to the project's success. "This schedule is driven more by mechanical and electrical contractors," Howard adds. "A hospital is a heavily mechanically and electrically intense building, and those systems are sophisticated and expensive. What drives the schedule is how fast those subcontractors can move."

### **A Model Plant**

A new building earns the majority of its LEED points through its potential for conserving energy. The Dell facility gets high points here. It's designed to cut down energy consumption with solar panels, heat-recovery systems and high-efficiency equipment including an onsite combined heat and power plant. The CHP provides electricity, steam and chilled water, and will provide chilled water to the other developments on the site, Howard says.

"It's a model of what Austin Energy is doing and what other conservationists and corporate energy would like to see done through such a highly efficient power plant," he adds.



*Photo courtesy White Construction Co.*

Sneary says that while the Seton Healthcare Network allocated one acre for construction of the CHP, Austin Energy funded the design, engineering and equipment. White Construction built the slab-on-grade and above-ground masonry structures. Burns & McDonnell of Kansas City, Mo., was hired by Austin Energy to furnish and install all of the equipment on a turnkey basis.

“The cooperation between Seton with Austin Energy in creating the on-site power generation was a huge contributor to the LEED status level we’re trying to obtain” Bell says.

He adds that the team decided from the start it would not do something “stupid” just to generate LEED points unless it contributed materially to the design of the building. For example, they looked at the possibility of getting a LEED point by putting some photovoltaic cells on the roof at an extra \$200,000 expense. “But the cells would not have accomplished much,” Bell says. “So the team decided ‘OK, time out. We’re not going to spend \$200,000 to make a statement.’”

#### **Piloting a Pilot**

The hospital has served as a pilot for the Green Guide for Health Care as well as for new LEED for Health Care documents, says Gail Vittori, co-director for Austin-based Center for Maximum Potential Building Systems, a non-profit organization in Austin that served as the Dell project’s sustainable consultant.

“We were asked to participate in the design charrette,” Vittori says. “We had started to do some work in the health-care sector and it was an opportunity for us to have a project in Austin that tapped into what was an expanding body of work that we had undertaken at the center primarily focused around the Green Guide for Health Care. Our center was actually the convener of the Green Guide for Health Care going back to 2002.”

That work continued through design and into construction on the Dell facility, Vittori says. “And we think the project is a real showcase for how you begin to introduce, early on in an integrated design setting, a whole composition of ways of thinking about creating high-performance healing environments,” she adds.

Vittori chaired the committee that developed the LEED Health Care documents, anticipated to launch this year.

“Now that LEED for Health Care is in development, we have been able to take advantage of the three-plus years of development on the Green Guide for Health Care and use that as a foundational reference document for LEED for Health Care,” she says.

Anybody can say their building is green, but LEED puts everyone on the same playing field, Kuspan says.

"It's not going to be easier to get a LEED platinum on health care," he adds. "There are things now that are virtually impossible, which means overcompensating in other areas. Those will be accounted for in the health-care version; other things will be more difficult. I don't want anybody to think that because they come out with health care everyone can get a platinum slam dunk."

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