

HEALTHCARE DESIGN

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Collaboration to strengthen sustainability

by John Oberlin, Online Editor

In February, construction began on what will be Washington state's first LEED-certified inpatient hospital. In mid-February, Puyallup's MultiCare-Good Samaritan Hospital authorized registration of the project as a candidate for LEED for New Construction 2.2, targeting a Silver rating. Construction of the new \$400 million, nine-story patient care tower is scheduled for completion by the end of 2010. Occupancy is planned for the first quarter of 2011. The 353,496-square-foot expansion includes 80 private patient rooms, floors for 80 additional rooms, a new entrance lobby and drop-off, and emergency, imaging, and surgery departments.

The project's ongoing collaboration between design firms Clark/Kjos Architects (CKA) and Giffin Bolte Jurgens Architects (GBJ)—together known as the Good Sam Design Collaborative—and Skanska USA Building has proved beneficial to the project's sustainability strategy. With the new LEED for Healthcare rating system on the horizon, each team addressed LEED NC while incorporating the *Green Guide for Health Care (GGHC)*, and then came together on a weekly basis to integrate ideas and experience.

The two design teams came together because of their unique experiences related to the project. GBJ has experience working with the hospital's network, MultiCare, a nonprofit integrated health organization based in Tacoma, Washington, while CKA has expertise on the Good Samaritan Hospital campus specifically. "We both emphasize sustainability in our own individual designs, so it was natural that it became part of our design as we came together for this project," says David Frum, principal, Clark/Kjos Architects.

"We are very compatible in that area," adds Tom Clark, principal, Clark/Kjos Architects, "and have both done sustainable projects in the past. But what was interesting here is essentially the way we split up the roles: CKA is leading the building shell and site work aspect, and GBJ is leading the internal development."

Where the building shell and interior layout meet is where the design firms found the most synergy and cross pollination of sustainable ideas. The planning of the internal layout was reflected in the building's shell form, and likewise the exterior considerations influenced the interior. For example, the orientation of the patient rooms is on an east-west axis to avoid west sun on the patient rooms. "That's a shell and core consideration but it also impacts the inside," says Herb Giffin, principal, Giffin Bolte Jurgens. "As we went through the project we had a lot more opportunity for peer review from the two firms than what we'd ordinarily have with just one firm. We could present our plans to each other and then brainstorm, and that also included our approach to LEED. The key benefit of both firms coming together was that we used each other's expertise and had basically a weekly peer review."



From the start of the design, the collaboration with construction firm Skanska provided additional input on sustainability that is saving time and money and attaining desired sustainability goals throughout construction. The firm worked under the general contractor construction manager (GCCM) delivery method. "Throughout the process of working with the team, we have studied various structural, mechanical, and electrical approaches, continually updating the overall schedule and budget," says Mark Howell, vice-president, Skanska. "This helped to keep track of how the design was developing and where we saw the cost going, so we could be adjusting the design and the program as we went through the project versus getting to the end

and then discovering whether we were in or out of budget. Tracking the project through each phase of the job allowed us to tweak here and there while maintaining the sustainable aspects of the project.”

Early in the planning process, Skanska, an ISO 14001 company, suggested using LEED and *GGHC* concepts, which the owner was not interested in pursuing at first. “As we continued through the project, MultiCare was certainly concerned about doing sustainable approaches,” Howell says. “Hence we have a very high-efficiency wall system, green roofs, and storm water capture and reuse. We are doing some of these also for economic benefit, such as to avoid the impacts of off-site storm water detention and storage and expansion of existing systems. We have also looked at different system efficiencies, whether it’s a generator, chiller, boiler, or cooling towers, to consider more of the lifecycle costs of the hospital—not just what it costs today.”

The design team and Skanska both created independent LEED worksheets and then collaborated back and forth to determine the most realistic strategies based on design and construction perspectives. “In some areas we agreed and in others we disagreed and had to come to a common understanding of how we thought we could get the [LEED] points,” Howell says. “There were times when we felt a point was a maybe and they thought it was a yes, or vice versa, and then through the collaborative process we then determined that, ‘OK, you’re right, we are probably border line, so here’s what we could do to bring it all the way over with minimal or no cost impact.’”

The integrated design team is also using building information modeling (BIM), which is creating better coordination between disciplines and fine tuning the sustainability of this high-performance building. Using BIM, the mechanical engineers can more easily create a model to study the energy needs and the heat and cooling impact on the building shell. “It also helped us to study sun shading,” says Clark. “On the south side of the building all the windows have projecting sun shades, so the BIM model has really helped to optimize that,” he explains (figure 2). BIM also aided in the efficiency of the duct layout, an ordinary challenge in a commercial project exacerbated by the fact that this facility will use a low-pressure ductwork system. The system saves energy by using less fan energy to push the air through larger-than-normal ducts. BIM has facilitated the job of threading the large ductwork banks, avoiding unexpected space conflicts with other systems during construction, and helping to minimize material usage.



“Through a very collaborative process such as this, the team was able to work together for a common cause for the overall benefit of the project,” says Howell. “There is no one vested interest, we are all looking at what we can do to really achieve the ultimate floor of the hospital.” **HD**

For more information on Good Samaritan Hospital, visit <http://www.multicare.org/goodsam>.

Sidebar

Good Samaritan Hospital sustainable strategies

Targeting LEED NC Silver

- Building orientation to minimize heat gain
- Sun shading on south face to reduce glare during summer and allow light during winter
- Light shelves on patient room windows bounce light deep into the space (figure 1)
- Ecoroofs reduce and slow storm water runoff

- Storm water treatment ponds designed to increase absorption and filter pollutants
- Efficient low-pressure duct system
- High-efficiency wall system
- Public transportation accessible from main entrance
- Vertical structure will provide more green space on the campus than before construction
- 10% of interior material to be from recycled content
- Low-flow fixtures
- Enhanced commissioning
- Currently running an 85% recycling rate on construction debris

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