



CaseStudy

Healthy Building, Healthy Healing



Wood Provides Serene Space for Herrington Recovery Center

When patients arrive at the Herrington Recovery Center, a residential facility for alcohol and chemical dependency treatment, their needs are pretty specific. They need privacy and confidentiality. They need to feel safe and comfortable. Mostly, however, they need what Herrington's clinical services manager Mickey Gabbert calls a serene and spiritual environment.

So when architects designed the new structure, a 21,000-square-foot, 20-bed treatment center for executives and business professionals, it was an obvious choice to use wood.

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New Recovery Experience

Owned and operated by Rogers Memorial Hospital, the Herrington Recovery Center is located on a picturesque lake in central Wisconsin. When it was completed in October 2009, the Center provided its patients with a completely new recovery experience.

Designed to blend harmoniously with the lakefront setting, the three-story structure combines natural materials with scenic views to create a tranquil recovery environment. In fact, one patient described his stay by saying, "There must have been some spiritual guidance when this building was being designed."

For example, the design and construction team used natural cedar and stained wood to create warmth both inside and out. Wood ceilings and soffits in the recreation room and entrances to sleeping rooms brought warmth to the space, helping patients feel more comfortable. Exposed glued laminated timber (glulam) beams allowed for soaring ceilings and clerestory windows provided natural light. Wood floor systems created a comfortable and forgiving surface underneath—just what patients need.

"It's amazing how well this project has been received—by patients, by the surrounding community and by the health care and design communities," said architect John Curran, ALA, senior vice president for TWP Architecture. "Wood provided so many benefits in terms of creating a warm, healing environment.

"At the same time, wood helped us meet the expectations of the residential neighbors and the sustainability requirements of Leadership in Energy and Environmental Design (LEED), which allowed us to build this facility in a private but environmentally-sensitive location," he added. "From the very beginning, and for many reasons, we knew wood-frame construction was the best choice for this project."

Taking the LEED

"There's no doubt, wood helps this building blend into the environment," agreed Bill Pennoyer, senior project manager with VJS Construction Services, the project's contractor. "And because wood is a sustainable and renewable material, it definitely enhanced our ability to get the LEED Silver certification."

Interestingly, the Herrington Recovery Center did not start out to be a LEED project.

While Rogers Memorial Hospital wanted to build an environmentally sensitive structure, LEED was not one of the requirements. However, the team found that a LEED Silver certification offered advantages, both in attracting patients and in generating local support for the potentially controversial project.

"Before the project even started, we heard comments from the local planning commission saying they would never allow a three-story building on that lake, since the lakeshore is otherwise all residential," said Pennoyer. "But their attitude changed completely when they learned we were doing a sustainable building."

Curran agreed. "Our decision to go with a LEED building seemed to open doors for us. They knew we would develop a project built to higher standards, and wood was a critical component of that."

Because of wood's sustainability benefits and its ability to be recycled, it offered many advantages for LEED certification. "I think people were really cautious at first, thinking that this market would not be able to absorb the extra costs that LEED requires," Curran added. "But we integrated the cost savings we realized from using wood into our ability to do more for the client on site with an environmentally-sensitive, sustainable, LEED-certified building."



Wood's Next Dimension

Wood offered so many benefits that Curran said they never really considered another type of building system.

"We knew we wanted something that felt residential, so we framed the Herrington Recovery Center like it was like a big home," he said. "Plus, we knew that a stick-framed wood structure was going to save the contractor time and save the client money, compared to doing a steel-framed or masonry building. So, our goal was to keep as much wood in there as possible."

The project made the most of locally-available wood products. Altogether, the contractor used more than 100,000 board feet of two-by Douglas-fir dimension lumber. The team also used I-joists for floor framing, laminated veneer lumber (LVL) over door and window openings, and cedar glulam beams to provide both structure and style. Inside and out, they used shiplap cedar siding, while outdoor decks used 2x6 tongue and groove Douglas-fir decking. Plywood underlayment formed the floor structure and oriented strand board (OSB) was used for the roof system.

TWP's architects also made smart use of dimension lumber. Patient rooms had shorter spans (about 12 feet wide), so they designed

all the dividing walls between patient rooms as bearing walls. This allowed them to use cost-effective 2x lumber for ceiling joists.

"Certainly from a cost standpoint, it made a lot of sense to do the whole thing on a wood frame," said Curran. "And by using wood in what some might consider an institutional setting, we were able to create a warm and familiar environment to make patients feel more comfortable and more at home."





Design Challenges Solved

The serene site on the shores of Upper Nashotah Lake was perfectly suited for a private recovery center. The location was surrounded by upscale homes, though, and Rogers Memorial Hospital was concerned about resistance from neighbors. Because they wanted to avoid an institutional looking building, a facility featuring wood finishes inside and out made sense.

"We built 3-D elevations, and actually drew the facility using brick," said Curran. "But it looked too institutional. The cedar siding helped us meet the hospital's needs for a welcoming space; it also fit the setting."

Confidentiality was also important. Herrington Recovery Center was sited to fit on a small, secluded peninsula, with a wetland on one side and the lake on the other. Unfortunately, proximity to both sensitive areas resulted in a small allowable footprint from the Department of Natural Resources. "With such a small footprint, we had to go to a three-story building to get everything the owner required," said Pennoyer.

"But our height was limited by local ordinances. Our challenge was to not sacrifice ceiling heights yet construct a building that would allow all the mechanical, electrical, fire protection and other utilities to fit within the ceiling cavity. Wood allowed us to do that."

Another challenge came from the local fire department, which typically requires a fire truck turnaround for access. However, the site did not have space for that level of access. Curran and the architects at TWP Architecture designed the building to provide the level of fire protection

needed by using sprinklers throughout and by providing staging areas for any potential fire fighting needs.

From a structural standpoint, VJS used Building Information Models (BIM) to make sure all the utilities would fit through the building components. "We used open web wood trusses, specifically designed to accommodate each pipe and mechanical item that needed to fit," said Pennoyer. "Plus, wood's versatility allowed us to make field modifications when required. We could not have done that with steel trusses."



Wood provided another benefit—acoustical privacy. "We wanted to make sure we could maintain the confidentiality that is so important in a program like ours," said Gabbert, Herrington's Clinical Services Manager. "We have group rooms located next to each other, and you cannot hear what is being discussed next door."

Construction Versatility, Even in the Extreme

A number of challenges arise when you start construction in Wisconsin in November.

"Contractors and their subs had to work on the project when it was 10 to 15 degrees out, if not colder," said Curran. "I've seen projects where they had to stop work or had some dramatic slowdown before they could begin construction again. But there were several days when we had six guys out there framing the building in below-zero weather. They could do that because we used wood."

Wood components also provided logistical benefits. Smaller wood components could be delivered within the site's access limitations.

Curran applauded wood's versatility in terms of making modifications on site. "Wood is a versatile building material, especially when we were dealing with issues during construction. Wood framing is one of the more adaptable types of systems that you can use when you need to deal with discrepancies in architectural drawings. When we needed to make changes, it was fairly easy to modify things in the field and still get the structural capacity that was required."

Healing Aesthetics

The building itself and the environment around the Herrington Recovery Center was developed as a natural complement to the behavioral health work performed at the center. The typical patient stay is 30 to 45 days, so first impressions are critical.

"We needed to create a serene space and a spiritual, healing environment," said Gabbert. "We tried to use as many natural building materials as possible, including wood, to incorporate that feeling of serenity and spirituality."

A number of scientific studies have proven the stress-reducing benefits of natural building materials. A recent study at the University of British Columbia and FPInnovations found that the visual presence of wood in a room lowers sympathetic nervous system (SNS) activation in occupants, further establishing the positive link between wood and human health. The study supports wood's value as a tool in evidence-based design (EBD)—a growing field that seeks to promote health and other positive outcomes such as increased productivity and well-being based

on scientifically-credible evidence. So far, EBD has focused largely on healthcare and, in particular, patient recovery.

The Art of Healing

There is a strong design movement to give health care facilities a less institutional look.

In fact, studies surrounding biophilia, the innate attraction that humans have to living organisms and life-like processes, support the use of wood and natural building products in a healing environment.

One study by R.S. Ulrich (*Science* 27, April 1984) found that patients recovering from similar surgeries differed in their recoveries and demands for pain medication based on their window view. Those with a view of another building recovered more slowly and required more pain medication than those with views of a park. Studies by other researchers support Ulrich's findings.

"Whether people acknowledge it or not, when they see the same wood finishes and natural products at Herrington Recovery Center that are used in their own homes or found in natural settings, it helps them feel more comfortable," Curran said.

"Our goal is to help people feel happy and safe," emphasized Gabbert. "We love the sense of warmth and sense of space this building provides. We couldn't be happier; our architect and builder really outdid themselves with this."



Carbon Benefits

Wood lowers a building's carbon footprint in two ways. It continues to store carbon absorbed during the tree's growing cycle, keeping it out of the atmosphere for the lifetime of the building—longer if the wood is reclaimed and used elsewhere. When used in place of fossil fuel-intensive materials such as steel and concrete, it also results in 'avoided' greenhouse gas emissions.



Volume of wood used:

9,500 cubic feet of panel and engineered wood products



U.S. and Canadian forests grow this much wood in:

1 minute



Carbon stored in the wood:

230 metric tons of CO₂



Avoided greenhouse gas emissions:

480 metric tons of CO₂



TOTAL POTENTIAL CARBON BENEFIT:

710 metric tons of CO₂

EQUIVALENT TO:



135 cars off the road for a year



Energy to operate a home for 60 years

Source: US EPA

Estimated by the Wood Carbon Calculator for Buildings, based on research by Sarthre, R. and J. O'Connor, 2010, *A Synthesis of Research on Wood Products and Greenhouse Gas Impacts*, FPInnovations. Note: CO₂ on this chart refers to CO₂ equivalent.

Project Overview

Name:
Herrington Recovery Center

Location:
Oconomowoc, WI

Owner:
Rogers Memorial Hospital

Architect:
TWP Architecture

Structural Engineer:
Pujara Wirth Torke, Inc.

General Contractor:
VJS Construction Services

Completed:
2009

Awards:
WoodWorks 2010 Green Building Award
Environmental Design + Construction 2010 Excellence in Design Non-Profit Healthcare Finalist
American Society of Interior Designers Wisconsin Chapter Silver Award for the Healthcare Category
SE² Award (Sustainability Energy Efficiency) Special Citation from the Wisconsin Green Building Alliance

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