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ALBERICI CORP. RENOVATES A STEEL PLANT INTO A STATE- OF-THE-ART OFFICE

BY CHRISTINA KOCH



ALBERICI CORP., ST. LOUIS, began as a construction firm in 1918 and now consists of many construction-related businesses around the world. In 2001, Alberici's existing headquarters had become too cramped, and the firm's officers considered whether to expand or move. Because it was questionable whether the company would receive a return on investment by expanding its office of more than 40 years, several Alberici representatives began viewing properties. The firm's officers had no interest in a typical office space with 9-foot (3-m)

ceilings and fluorescent lights. Instead, they wanted a unique office building located on a campus.

Situated on 13.86 acres (5.61 hectares) of land in St. Louis, Alberici employees discovered a 150,000-square-foot (13935-m²) metal-shed structure that had been used as a distribution and manufacturing plant for a small metal-goods company. The property conveniently is in close proximity to all major St. Louis highways and the airport.

"When the team found this property and we walked into that

ABOVE AND BEYOND

Alberici Corp., St. Louis, achieved 60 points to receive LEED® Platinum status from the U.S. Green Building Council (52 points are required to be considered for Platinum). The following are green aspects for which the headquarters received points:

- + A 65-kilowatt wind turbine that is expected to contribute up to 20 percent of the building's power per year
- + A rainwater collection system that is expected to save 294,000 gallons (1 million L) of water per year and virtually eliminate the use of potable water for sewage conveyance
- + Low-VOC finishes
- + Rapidly-renewable materials or those containing recycled content or that are recyclable
- + All materials were purchased within a 500-mile (805-km) radius of the project
- + Low-flow fixtures, dual-flush toilets and waterless urinals
- + More than 50 percent of the wood in the building is Forest Stewardship Council certified, including trim woods, doors and frames, and borrowed light frames
- + More than 250 native Missouri trees and 4,200 perennial plants and bushes were planted on the site
- + During construction, the project team recycled more than 93 percent of its construction and demolition waste
- + Roof systems: 68,100 square feet (6327 m²) of a proprietary soy-oil polymer made from regional crops on the garage (manufactured by Green Products LLC, Romeoville, Ill., www.greenproducts.net) and 60,235 square feet (5596 m²) of an ENERGY STAR®-compliant thermoplastic polyolefin membrane on the office (manufactured by Versico, Akron, Ohio, www.versico.com)



space, it was really breathtaking," remembers John Guenther, AIA, LEED-AP, a principal at Mackey Mitchell Associates, St. Louis. "There were four structural bays, clear spans from column to column. The first one was 90 feet [27 m], and the next three were 70 feet [21 m] each. In terms of length, it was around 505-feet [154-m] long, and in terms of height, it was 28 feet [9 m] to the underside of the trusses that span these 90-foot [27-m] and 70-foot [21-m] distances. This was literally a cathedral of steel, and if you think



about a contractor working in an environment like this with its incredible structure exposed and this great freedom to convert this space to adapt to his needs, it was a great challenge."

Alberici had several goals for its headquarters. Among them was achieving the U.S. Green Building Council's (USGBC's) LEED® Platinum rating because, as John

Alberici, chairman of the board, asked, "Why would anyone set a goal for less than the highest achievement?" In addition, the company would serve as general contractor for the project and wanted to change the construction marketplace in St. Louis by producing a high-quality, innovative sustainable project that did not cost more than a conventional building.

Once site selection was complete, it took just

14 months for the design and construction teams to achieve their goals.

RENOVATION

In September 2003, construction began on the building. One of the initial design challenges was how to utilize the existing uninsulated metal shed.

"This was a 50-year-old building,"

Guenther explains. There actually were pin holes in the metal and little dots of daylight making their way through the façade. We literally had no choice but to remove that skin and come in with a new skin of steel studs and insulation, corrugated metal siding, brick and insulated glass.”

About 11,193 square feet (1040 m²) of CENTRIA's FormaBond Metal Composite wall panels with a platinum coating were installed on the headquarters' top perimeter and entrance. The wall panels, which feature Rain Screen, Pressure Equalized join-

ery, are 60 percent thicker than other ACM materials. The aluminum for FormaBond is produced from 80 percent recycled material, and scrap created in fabrication is less than 10 percent.

In addition, 21,621 square feet (2009 m²) of CENTRIA's Style-Rib panels with Durallure were installed horizontally on the headquarters' east and west elevations. The single-skin panels also wrap the garage and are visible on the interior and exterior. Durallure is unpainted steel that resembles bare metal.



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[BUILDING GREEN]

The team also employed CENTRIA's Profile Louvers, which match the corresponding profile panels and blend into the wall, and MicroSeam Corners, seamless corners that don't require welding or pop rivets.

The design team used clues from the existing architecture to help guide design decisions. For example, the entire space was not needed for offices. Instead, the team used two of the northern 70-foot (21-m) bays for two-tiered covered parking that accommodates 300 vehicles.

"Immediately we had the ability to decrease the heat-island effect created by surface parking lots," Guenther says. "With the structure's height, we were able to insert a parking deck to increase the parking count for the client. Basically we were able to take offline an asphalt-surface parking lot and put the cars under roof, under shade."

The third 70-foot (21-m) bay was opened into a courtyard with its trusses left in place, allowing daylighting into the parking garage and 90-foot (27-m) bay that became the office. A mezzanine level was constructed in the office area to provide a 2-story space.

"Given the dimensions, we realized we could insert a mezzanine level at 14 feet [4 m] off the ground within the 28-foot [9-m] clear vertical height of the structure," Guenther notes.

Because of the building's orientation to the southwest, the design team was challenged to mitigate the low angles of the setting sun.

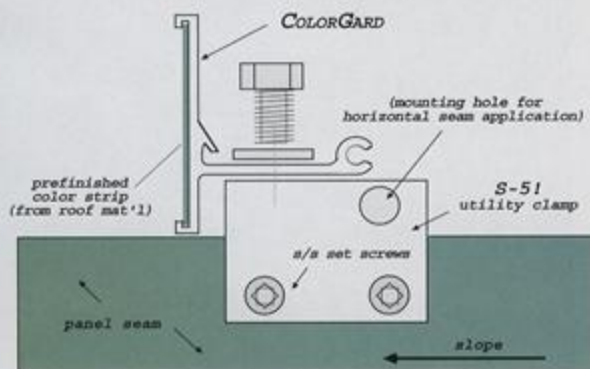
"We reoriented the building in place by designing a saw-tooth addition, or serrated edge. Basically, the saw tooth allows the vision glazing to face due south," Guenther explains. "We can control sunlight with overhangs."

The saw-tooth addition, which has a lower roof height than the main rooftop, created a clerestory window along the length of the building, which is called Main Street. Because of reflective roofing materials, sunlight bounces off the lower roof and up to the underside of the main roof and back into the space.

In addition, the building envelope features many insulating windows to provide employees with naturally day-lit spaces. The entire northeast elevation of the building is glass from ground level to truss. The saw-tooth

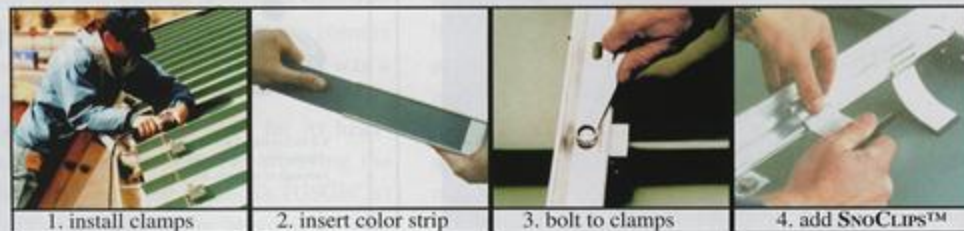


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area features glass at 34 inches (864 mm) from the finished floor to the ceiling height. On the east and west sides of the building, windows were punched into the metal façade to increase views to the outdoors and conform to the team's natural ventilation strategy. Ninety-nine percent of employees have a direct view to the outdoors while seated at their workstations.

HVAC

Along with program requirements for Alberici's headquarters, mechanical requirements played a role in the building's design. In fact, the HVAC system the team chose required the team to consider the entire layout for maximum efficiency.

"We planned into our project three large atrium spaces that would help distribute the

air into the space," says Maren Engelmohr, AIA, LEED-AP, a Mackey Mitchell interior designer and LEED specialist for the project. "The HVAC system really played a big part in the design of the project."

The atrium spaces and three mechanical rooms are located alongside the building's Main Street. The atriums, which open views from floor to floor to provide a sense of col-

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laboration, serve as a thermal chimney that allows hot air to rise to the highest point in the building.

Instead of installing ductwork and pushing air down into the space, the design

team chose to put in an underfloor air-distribution system, which gives employees control of the heating and cooling in their workspaces and is part of the overall strategy for energy efficiency in

the building.

"Our system is constantly charging the plenum with cool air; we don't have those variable loads coming on and off on the HVAC's motor," explains Thomas Taylor, LEED-AP, Alberici Constructors' vice president and lead project manager for the headquarters. "We've tuned the ventilation system to run at maximum efficiency."

In addition, the system delivers a higher quality of breathing air. When air is pushed in from overhead, it must go through a stratum of contaminated stale air, leaving the best-quality air about 2 feet (0.6 m) from the ceiling. In the underfloor system, air comes in from underneath at a cool temperature. As it heats through natural convection, the air rises to the seated level of building occupants. Hot air occupants breathe rises above their heads to the highest point in the building. As it rises, the air attracts more particulate matter and contaminants and continues heating before it is run through an energy-recovery system

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and exhausted out of the building. (To learn more about the headquarters' sustainable aspects, see "Above and Beyond," page 89.)

SUCCESS

The success of the headquarters project prompted Alberici to create a new business unit—Vertegy, which comes from the Latin root for green combined with strategy. Vertegy now is run by Taylor who describes the unit as one that works with companies to provide services for sustainable building.

In early July, Alberici's headquarters was awarded USGBC's LEED Version 2.0 Platinum rating. The building is the only Platinum-rated building in Missouri and one of nine Platinum-rated buildings in the world.

"We aimed for Platinum from the very beginning and felt it was the right thing to do," says Bob McCoolle, president of Alberici. "We are very proud of this designation, but, more importantly, we are extremely proud of the Alberici team that made this possible." ■

GREENTEAM

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