

Alberici Corporation Corporate Headquarters

St. Louis, Missouri

Building Type:	Office low-rise, Parking
Recognition Status:	LEED for New Construction v2.0/2.1 Platinum, 4 Green Globes
Completion Date:	2004
Gross Square Footage:	110,000 sq. ft. (10,000 sq. m.); 2 stories
Total Project Cost:	US\$20.9 million (land included)
Cost Savings:	US\$78,000/yr (projected); 14% ROI
Energy Use:	34 kBtu/sq. ft./yr (110 kWh/sq. m./yr) projected
Indoor Potable Water Use:	288,000 gallons/yr (1.09 million liters/yr) projected
Outdoor Potable Water Use:	0 gallons/yr
Occupancy:	200 staff, 150 visitors per week
DOE Climate Zone:	Zone 3 (5000 HDD, 1400 CDD)



High ceilings facilitate daylighting
© Rocky Mountain Institute

PROJECT OVERVIEW

As Alberici Corporation, a global construction services company, outgrew its existing office facility, Chairman of the Board John Alberici endeavored to create a new headquarters “that fosters teamwork and creativity.” After an extensive site selection process, Alberici chose to renovate a 485-foot-long (148-meter-long) manufacturing plant to create Class-A open office space, structured parking, and exercise and dining facilities for 200 full-time staff. The desire to convey innovation, collaboration, and corporate responsibility drove the project toward Leadership in Energy and Environmental Design (LEED) Platinum certification, earning a record 60 points.

THE BOTTOM LINE

Alberici sought to lead the transformation of the design and construction industry through the establishment of their new headquarters. All measures incorporated into the project have a financial payback of less than eight years (14 percent return on investment). The building, completed within Alberici’s US\$150-per-square-foot (US\$1615-per-square-meter) budget, features a 78 percent reduction in potable water consumption and a 60 percent reduction in energy use (US\$78,000 annual energy costs savings). An on-site wind turbine and solar thermal panels provide nearly 20 percent of the building’s annual energy requirements. Fully 93 percent of the project’s construction

and demolition waste was recycled. Also, recovery of the surrounding brownfield created indigenous habitats that now function as a regional seed bank for native ecosystem rehabilitation and propagation throughout the Midwest.

The design, construction, and operation of the new headquarters was so successful that project manager Thomas Taylor won the support of company Chairman John Alberici to start a new sustainable consulting branch of the company called Vertegy. The project not only stimulated the new consulting arm, but also influenced corporate environmental policy and employee behavior at Alberici. Waste reduction plans and company-wide recycling programs were instituted, while communal resources including common storage, a healthy cafeteria, and outdoor walking paths were provided. The cost-effective building is well-used, well-operated, and has increased in valuation since its construction.



South-facing “saw-tooth” addition
© Debbie Franke

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Courtyard links office and garage / © Rocky Mountain Institute

PASSIVE DESIGN ELEMENTS KEY TO DRASTIC ENERGY DEMAND REDUCTION

The strategies for re-use of the clear-span manufacturing plant also accomplished many green objectives. “Saw-tooth” additions to the SW façade effectively re-oriented the building to the south and east. This strategy controls unwanted solar heat gain, blocking western sun with opaque walls. At the same time, high-performance glass and overhangs on the south walls facilitate daylighting and help provide 100 percent of the building’s occupants with views to the outdoors.

The removal of roof decking in the truss bays between the garage and office buildings created the entry courtyard to the buildings, an architecturally interesting, semi-outdoor space that provides daylight to the interior offices. At the same time, the courtyard strategy uses the garage to shelter the courtyard from cold northern winds and provides maximum solar access to the office spaces.

The design strategy for the building’s interior features second-level mezzanines, open floor plans, and three interior atria. These open spaces improve the quality of the office space, while facilitating passive

“In this facility—110,000 square feet—our utility costs are half of what they were at our old facility at 70,000 square feet.”

— Christy Cunningham Saylor, Environmental Specialist, Vertegy, An Alberici Enterprise

ventilation and daylighting of 75 percent of all spaces. Air stratification occurs throughout the building, improving the climate at the horizontal strata that are occupied. The atria function as vertical shafts that facilitate vertical air movement and drive passive ventilation. The passive system can be used exclusively to condition the building and can be assisted by the mechanical systems.

LEED WELL-INTEGRATED INTO BOTH DESIGN AND CONSTRUCTION PROCESSES

Alberici’s expertise in the construction field allowed for the nearly seamless integration of LEED principles into both the design process and the construction phase. The project team credits much of their success to the integration of LEED requirements into contract specifications. Once subcontractors understood the intent and requirements of the rating system and accepted their environmental responsibilities, workers quickly embraced LEED. Healthier materials translated into a noticeably healthier working environment and workers actually stopped one another from using toxic materials or processes, creating a bottom-up as well as a top-down commitment to LEED.

“[Building of our headquarters sustainably] is going to pay dividends for a long time because it has reduced the costs — but it has more dividends in how it’s perceived by the people we do business with. It also sends a great message to our own employees.”

— John Alberici, Chairman, Alberici Corporation

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Site restoration concept
© John Guenther

The construction team sought to eliminate construction waste by creating a comprehensive waste management plan. Upon completion, 93 percent of the project's construction and demolition waste was diverted from landfills. Additionally, the team created a Stormwater Pollution Prevention Plan, based on Environmental Protection Agency guidelines. Under the plan, constructed wetlands and swales treat all stormwater on site until precipitation exceeds 15 inches of precipitation (two back-to-back 100-year storm events) in 48 hours; additional precipitation will generate runoff, which will be buffered by the wetlands to remove toxins.

BUILDING GREEN ISN'T OVER WHEN CONSTRUCTION IS COMPLETE

Initial building operation fell slightly short of expectations. Fortunately, the team had included a commissioning agent from the outset and had integrated an advanced energy management system into the building. The system tracks a range of data from gas, electricity, and water use, to wind speeds and rainfall. In addition, the system centrally controls and monitors building functions including lighting, ventilation, the solar hot-water system, and the rainwater collection system. The information collected through this advanced energy management system drove the formulation and implementation of a plan to optimize the building's systems and to educate the building manager about how to improve operating efficiency. A post-occupancy staff survey generated additional information. In response to collected data, the team made operational adjustments to the building as well as minor modifications such as adding photo sensors to the parking garage lighting. While it took almost two years to fine-tune the building's performance, Alberici and other project team members now use what they learned from this process to enrich their client services. Moreover, the facility manager and other parties involved in the mechanical design and operation of the building are constantly reviewing data from the building's measurement and verification system. The team continually strives to meet and surpass design efficiency goals.



The building's "Main street"
© Alise O'Brien

"It isn't a matter of how much more is it going to cost, it's a matter of what's the best building I can get for the money I have. It's a subtle difference, but it's an important one."

— Thomas Taylor, General Manager
Vertegy, An Alberici Enterprise

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FORMER BROWNFIELD BECOMES A REGIONAL SEEDBANK AND FUNCTIONING WETLANDS

Initially, of the 13.6-acre (5.5-hectare) Alberici Headquarters site, nine acres (3.6 hectares) were covered by impervious materials, including 3.7 acres (1.5 hectares) of building footprints. The rehabilitated site features substantially less built and paved areas. These reductions provided space for six acres of active wetland – an area equivalent to the previous total permeable acreage. The wetlands form a stormwater filtration system, removing 80 percent of solids and 40 percent of phosphorus on site, while providing habitat for fish, frogs, and predacious invertebrates. The aquatic and terrestrial flora were specified to tolerate drought and emphasize native species. The creation of indigenous habitats was so successful that the headquarters now functions as a regional seed bank, facilitating the rehabilitation and propagation of native ecosystems throughout the Midwest.



Energy efficient open-office lighting / © Rocky Mountain Institute

The integrated strategies to convert the brownfield into a healthy watershed extend beyond the retention ponds. Over half of the garage's roof drainage is collected and filtered. This collected rainwater is used in the building cooling tower as well as to convey all of the building's sewage. When rainwater collection exceeds demand, excess water is diverted into the retention ponds. These strategies, along with water-saving fixtures, reduced the project's potable water consumption by 78 percent!

Open-office floor plan / © Rocky Mountain Institute



PROJECT TEAM

Owner/Developer:
Alberici Corporation

Architect:
Mackey Mitchell Associates

Civil Engineer:
Stock & Associates Consulting
Engineers, Inc.

Structural Engineer:
Alper Audi, Inc.

**Mechanical and Plumbing
Design-Build:**
Corrigan Company

Electrical Design-Build:
Guarantee Electrical Company

**Low Wattage and Communication
Design:**
Payne Electrical

**Landscape Architect and Native
Landscape Consultant:**
Missouri Botanical Garden
& Shaw Nature Preserve

**Sustainability and Environmental
Building Consultant:**
Vertegy

SOURCES

Department of Energy,
High Performance Buildings
Database