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LEAD BY EXAMPLE

A CONSERVATION ORGANIZATION BUILDS A GREEN HEADQUARTERS

By Kate Gawlik

It was only natural for a conservation organization that preserves land in Massachusetts to build a green headquarters. But the idea to go green was spurred by an anonymous donor, not the organization's board or members or others involved with the organization. Upon giving the donation, the donor challenged The Trustees of Reservations, Leominster, Mass.,

to work with an exceptional green team to develop an environmentally sound building with statewide significance. The result is the LEED™-certified Doyle Conservation Center.

"The center was a great collaboration among donor, client and designers. You can't point to any one thing and say it was the result of just one person — it was the team," says The Trustees of Reservations' Regional Director Dick O'Brien.

The organization worked with HKT Architects Inc., Somerville, Mass; landscape architect Hines Wasser & Associates, Brookline, Mass.; and a team of engineers and builders to create an 18,000-square-foot (1,672-m²), \$5 million facility that is expected to achieve a LEED Gold certification from the U.S. Green Building Council.

Andrew Kendall, The Trustees of Reservations' executive director, says: "We could not be more

proud of the new Doyle Conservation Center. Because this building will be used as an office for the trustees, as well as a resource for conservationists around the state, it was imperative we lead by example and build in an environmentally responsible manner."

THE TRUSTEES

The Trustees of Reservations, one of the oldest

conservation organizations, was founded in 1891. It is a nonprofit organization funded by visitors, supporters and more than 40,000 members. The organization's focus is conservation, saving the best of the Massachusetts landscape; stewardship, caring for scenic, historic and ecological resources; and people, sharing special places with the public.

As part of its statewide system, it acquires properties that are turned into reservations, as well as some land that surrounds reservations. It also helps landowners protect their land and works with government agencies and nonprofit groups to protect Massachusetts' land. It does all this to research, preserve and exhibit historic buildings, landscaping, arts and other structures. Since being founded, The Trustees of Reservations has helped protect more than 53,000 acres (21,448 hectares) of land. And it cares for 23,612 acres (9,555 hectares) on 94 reservations, which are open to the public.

SUSTAINABLE ASPECTS

Because the organization is devoted to preserving land and land's resources, it was determined to incorporate those principles into its headquarters. "The Doyle Conservation Center is an outstanding example of renewable energy, high-performance building design, and energy efficiency working hand in hand to produce a cleaner, better, less expensive, healthier and more productive working environment," says Mitch Adams, executive director of the Massachusetts Technology Collaborative, Westboro. "It's a shining example of green design and construction that can serve as a model for other projects."

The building process began with site selection. A previously disturbed area was selected, and the team agreed the headquarters would leave a small building footprint to maximize open space. The

team added a bioswale for storm-water treatment and management. To keep the land open, minimum parking spaces were included. But parking shouldn't be a problem because the center encourages alternative transportation. In fact, a bicycle-storage area and changing rooms were incorporated into the building.

To conserve water, the building features composting toilets, which use 80 percent less water than conventional toilets. The toilets flush with a thin layer of foam, and the waste is composted on-site. Plans are underway to reuse the building's greywater to water flowers and landscaping. The landscaping was designed with native vegetation, which means no manicured lawns and no need for irrigation.

O'Brien adds, "The landscape design accentuate[s] the best qualities of the building and also blends the building into its landscape — a sign of good design architecturally and horticulturally."

Energy efficiency also is apparent in the building's roof-mounted photovoltaic (PV) cells, which provide 25 percent of the building's electricity. This prevents the use of batteries to store solar energy. The 2,000 feet (608 m) of cells is connected to an electric grid, so unused energy can be sold back to the power company. Attention to lighting may make that resale happen. Ninety percent of the building receives daylight. The building also has compact fluorescent smart lights that automatically adjust to lighting needs.

To provide energy to heat and cool the building, two 1,500-foot (456-m) geothermal wells were installed. This eliminates the need for on-site fossil fuels. A heating-management system regulates the indoor air temperature, and some windows automatically open to allow for ventilation.

"Overall, including the PV system, the building shows an annual energy savings of

THE CENTER WAS A GREAT COLLABORATION AMONG DONOR, CLIENT AND DESIGNERS

61.2 percent, which amounts to an annual savings of approximately \$6,000 per year," explains Chris Schaffner of Arup, Boston.

Sustainable products were used throughout the building. For example, the building's siding resembles wooden clapboard siding. But the product, created for the furniture market,



Ninety percent of the building receives daylight. The building also has compact fluorescent smart lights that automatically adjust to lighting needs.

is made of hardwood particles from hardwood timber harvestings. There are no toxins in the product, and it reportedly will not warp, buckle, blister, flake or peel. It also won't need a coat of paint for 10 to 15 years.

Sustainable products continue on the inside. Locally crafted, the desktops are made from sunflower hulls and other agricultural byproducts. The hulls are bound with wheat and natural resins and pressed to form a product that resembles burl wood. To match the center's interior frame, the desks feature a Douglas fir encasement. In addition, the sink counters are a zero-waste product. They are made of reclaimed materials, a polyester powder byproduct.

The center's sustainable floors are bamboo, cork or carpeting. The carpeting is created from recycled fibers. And when it comes time for the center to get new carpeting, this carpeting can be completely recycled; it is made with 25 percent reclaimed fiber. Bamboo was a natural choice for the center because of its environmental benefits — bamboo can be harvested in a sustainable way every three to five years. And the cork flooring, made from the byproduct of cork used for wine-bottle stoppers, originates from the bark of cork oak grown in the Mediterranean. A cork oak can be harvested when it is 25 years old. During harvest, it is stripped of its cork, which can occur every nine years for about 200 years. An 80-year-old cork tree can produce more than 500 pounds (227 kg) of cork.

AFFORDABLE DESIGN

Many business owners, homeowners and construction professionals are reluctant to join the green scene — sustainable design is viewed as too expensive for many. But the organization's ability to create this building was a result of lower green prices.

"Green is now more affordable. People were initially reluctant to pursue green design [because of] the initial capital outlay and the lack of sufficient data to prove positive return on investment," notes Eric Kluz, a principal with HKT Architects.

The Trustees of Reservations already is seeing a return on its investment with lower heating, cooling and electricity bills. And the benefits of putting its money where its mouth is certainly will continue.

eco-structure | (continued from page 35)

PROJECT TEAM

THE TRUSTEES OF RESERVATIONS,
Leominster, Mass., www.thetrustees.org

ARCHITECT: HKT ARCHITECTS INC.,
Somerville, Mass., www.hktarchitects.com
• W. ERIC KLUZ, AIA, principal architect
• ZELMO TONOC, AIA, LEED-AP, project manager/architect
• MARTA KABALIN, AIA, interior design architect

CONSULTING ARCHITECT: DAVID FERRY ARCHITECTS, Somerville

LANDSCAPE ARCHITECT: HINES WASSER & ASSOCIATES LLC, Brookline, Mass., (617) 731-0111

MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS: ARUP, Boston, www.arup.com

STRUCTURAL SYSTEMS: SOUZA TRUE AND PARTNERS INC., Watertown, Mass., (617) 926-6100

CIVIL ENGINEERING: BEALS & THOMAS INC., Southborough, Mass., www.btweb.com

ALTERNATIVE ENERGY DESIGNERS AND CONTRACTORS: GLOBAL RESOURCE OPTIONS, White River Junction, Vt., www.globalresourceoptions.com

COMMISSIONING AGENTS: SEBESTA BLOMBERG, Roseville, Minn., www.sebesta.com

GENERAL CONTRACTOR: MULLANEY CONSTRUCTION CO. INC., Leominster, (978) 537-8900



MATERIALS AND SOURCES

BAMBOO FLOORING: HOBOKEN FLOORS, Stoughton, Mass., (800) 255-1600

CORK FLOORING: JELINEK CORK GROUP, Niagara Falls, N.Y., www.jelinekcork.com

EXTERIOR SIDING: WERZALIT OF AMERICA, Bradford, Pa., www.werzalit-usa.com

GLASS BLOCK: PITTSBURGH CORNING CORR, Pittsburgh, Pa., www.pittsburghcorning.com

LAMINATED STRUCTURAL FRAME AND TRUSSES: UNADILLA LAMINATED PRODUCTS, Unadilla, N.Y., www.unalam.com

LINOLEUM FLOORING: DOMCO TARKETT, Farnham, Quebec, Canada, www.domco.com

LOW-VOC PAINT: BENJAMIN MOORE PAINTS, Montvale, N.J., www.benjaminmoore.com

PHOTOVOLTAIC PANEL SYSTEM: GLOBAL RESOURCE OPTIONS, White River Junction, Vt., www.globalresourceoptions.com

RECYCLED ACOUSTICAL CEILING: ARMSTRONG, Lancaster, Pa., www.armstrong.com

RECYCLED CARPET TILE: SHAW, Cartersville, Ga., www.shawtile.com

SKYLIGHTS: KALWALL CORR, Manchester, N.H., www.kalwall.com

STRUCTURAL INSULATED PANELS: WINTER PANEL CORR, Brattleboro, Vt., www.winterpanel.com

SUSTAINABLE COUNTERTOP SURFACING: PHENIX™ BIOCOSMITES, Mankato, Minn., www.environmentbiocomposites.com

SUSTAINABLE ENGINEERED PARTICLE BOARD: DOW BIOPRODUCTS, Midland, Mich., www.dow-bioproducs.com

WINDOWS AND CURTAIN WALL: PELLA WINDOWS & DOORS, Pella, Iowa, www.pella.com

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LOCALLY CRAFTED, THE DESKTOPS ARE MADE FROM SUNFLOWER HULLS AND OTHER AGRICULTURAL BYPRODUCTS.

