

From Mold to Gold

How a crumbling Cambridge landmark earned a LEED rating

BY JENNIFER WEEKS

Paying a parking ticket isn't much fun, but stepping into the light-filled lobby of the Cambridge City Hall Annex elevates the experience. Home to the parking department and other offices for Cambridge, Mass., the annex reopened in 2004 after a \$10 million green restoration. At 136 years, it is the oldest building in the nation to earn a gold rating from the Leadership in Energy and Environmental Design program, administered by the U.S. Green Building Council.

Known as LEED, the system was developed in 2000 to provide a quantitative yardstick for sustainable design projects. It awards points in six categories, including water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Successful candidates receive basic certification or silver, gold, or platinum ratings based on their scores. The Green Building Council does not have standards for historic buildings, so the annex makes a good test case in how to apply LEED standards to preservation projects.

The annex, a four-story, red-brick building built as a school in 1871, underwent several transformations before its green makeover. After a fire destroyed its original mansard roof in 1899, decorative brick parapets were added. The building was converted to offices in 1939, and the parapets were removed in the 1950s to make a flat roof.

Occupants were evacuated in 2000



The annex was built as a school in 1871. Opposite: the restored lobby

after a steam leak spread mold throughout the building. Remediation soon turned into a full-scale renovation, funded in part by a \$337,500 grant from the Massachusetts Renewable Energy Trust, which supports alternative-energy projects. "When we started to take it apart," says the project principal, William Hammer of HKT Architects in Somerville, Mass., "we were amazed that the building was still standing. Load-bearing walls were crumbling."

The city of Cambridge was concerned at the time about global climate change and decided that all municipal building projects should follow LEED standards, starting with the annex. (Cambridge's planning board and city council are now debating whether private buildings larger than 25,000 square feet should

be required to register with LEED and earn official certification.)

The annex renovation team achieved a gold rating by earning 39 of 69 possible points. One-third of these credits were for energy improvements, which included placing solar panels on the roof and substituting underground geothermal heat pumps for the existing boiler system. The pumps, which heat and cool the building, bring up groundwater from a depth of 1,500 feet, where it remains at a relatively constant 55 degrees Fahrenheit year-round. The system is 50 to 70 percent more efficient than traditional furnaces and 20 to 40 percent more efficient than conventional air-conditioning. With the boilers gone, architects converted the basement—partially above ground—to office space and built a new



two-story entrance to replace the old one that opened up into a stairwell.

The design team also used recycled and locally sourced materials (requiring minimal transport) and wood from forests certified for sustainable practices. The chosen paints, carpets, and adhesives emit low levels of volatile organic compounds, and carbon dioxide sensors regulate fresh airflow.

The annex, located at a busy intersection near Cambridge's Central Square, is close to bus and subway lines; both employees and visitors can use mass transit. The architects added more transportation options by including a bicycle room with racks and showers, plus space for city-owned bikes that employees can pedal to nearby meetings. And Zipcar, a car-sharing service, has a vehicle nearby.

All the while, the architects maintained the historical integrity of the annex's exterior, even restoring the brick parapets and decorative work that had been removed 50 years ago. But adding green features to secure LEED points can sometimes put one at odds with historic preservation. The solar panels, for example, threatened to disrupt the original roofline. So the architects made the panels less visible by installing them flat instead of at the optimal 40-degree angle for Boston's latitude.

Another potential conflict involves replacement windows. To help with energy efficiency, a central aspect of

LEED ratings, some projects incorporate modern high-performance windows that allow less heat transfer through the panes. But the Interior Department guidelines recommend against replacing windows when rehabilitating properties listed in or eligible for the National Register of Historic Places. The annex is in a historic neighborhood but not listed in the register, so it didn't have to follow Interior's guidelines. "Some historic buildings are actively used, like this one, and others are museums," says Hammer. "You wouldn't replace the windows on Paul Revere's house, but here it makes sense."

The annex's large windows were replaced with aluminum-clad wood replicas with double-glazed panes to minimize heat gain and loss. Skylights and transoms were added in interior offices, giving 90 percent of the building's workspaces access to sunlight (another LEED element). Occupants now use less artificial lighting and, as a result, less electricity.

Although architects can find creative solutions for adding green features without damaging a building's historic character, critics of LEED have argued that the system does not do enough to reward historic preservation. Reusing an existing building counts for up to three points of the maximum 69, a proportion that critics say does not accurately reflect the savings in embodied energy (the materials and energy that

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went into the building's construction), not to mention the environmental benefit of not dumping those materials into a landfill. The National Trust, among other organizations, is working with the Green Building Council to revamp its standards.

Hammer agrees that the LEED system could reward preservation projects more directly, but praises it for raising awareness of sustainable design. And, as he notes, the annex did earn a point for reusing at least 75 percent of the build-

ing's original structure and shell.

In the end, earning the gold rating for the annex was worth the considerable paperwork, says John Bolduc, a planner with Cambridge's Community Development Department. "Lots of people from the neighborhood came," he says of the reopening. "We thought they would all zero in on how much money we'd spent, but everyone said how happy they were that the building had been restored and how much they liked the 'new' version."

TRANSITIONS

Lost **1942 New Frontier casino-hotel**, Las Vegas, Nev.: 16-story hotel on Strip, once owned by Howard Hughes and host to such stars as Elvis Presley and Wayne Newton, imploded in November to make room for condominiums and hotel
> 1950 Maryville College Fine Arts Center, Maryville, Tenn.: modernist gem designed by famed Chicago architects Schweikher and Elting razed to make room for \$47 million civic arts center on college campus

Threatened **1912 Tiger Stadium**, Detroit: city officials plan to level 90 percent of stadium, in disuse since Tigers moved to new ballpark in 2000, and turn remaining portion into community center and stadium memorial
> 1912 Herkimer Arms apartments, Pasadena, Calif.: only known example of apartments by Greene and Greene architects may be moved or demolished by landowner, Fuller Theological Seminary, to make room for new chapel
> 1906 Elmhurst Library, Queens, N.Y.: Carnegie Institution-funded library needs more space; city officials propose demolition of Georgian revival structure, with its rock garden and pools, instead of restoration and expansion
> 1897 Dunminning Mansion, Newtown Square, Pa.: 15,000-square-foot Normandy-style mansion, built by Theophilus Parsons Chandler Jr., founder of University of Pennsylvania's architecture department, will be razed by developer Bentley Homes to build 17 luxury houses on site

Saved **1942 Landing Ship Tank Building**, Fort Knox, Ky.: building where equipment was tested during World War II removed from U.S. Army's demolition list thanks to preservation effort led by veterans
> 1895 Masonic Building, Greenfield, Ind.: one of Greenfield's oldest downtown landmarks to be renovated as Creative Arts Center of Greenfield, providing gallery and studio space for local artists

Restored **1906 Hotel Chauvet**, Glen Ellen, Calif.: Italianate brick hotel in National Register languished for years until three-year, \$5 million restoration converted building to condos
> 1887 Eldridge Street Synagogue, New York: after massive \$18 million, 20-year restoration, one of first synagogues in America built by Eastern European Jews reopened late last year; National Historic Landmark now includes museum celebrating Jewish life in America

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