

A Cambridge Classic

A City Annex is a Demonstration in Green Preservation

By Christina Koch

In 1630, a group of Puritans landed on the north bank of the Charles River in what is now Massachusetts Bay. They built homes and perfectly grid streets in a place they dubbed Newtowne. After Harvard was founded there in 1636, the town merged with three nearby localities and changed its name to Cambridge in 1638.

One of the structures built for Harvard in 1871 came under the city's possession in 1939 becoming the Cambridge City Hall Annex. Since then, the building has held offices for community development; traffic, parking and transportation; and other public departments. However, it had never been reconfigured from a school to an office building.

In 1999, mold and airborne pathogens were discovered, and the building immediately was evacuated. Rather than tear down the 33,216-square-foot (3086-m²) annex, Cambridge city officials desired to maintain its history and continue to use the 4-story brick and brownstone building for offices. They also wanted to demonstrate that a municipality could be held to the same "green" standards as private-sector developers and individuals.

To achieve their goal, city officials decided to follow the U.S. Green Building Council's Leadership in Energy and Environmental Design™ (LEED) guidelines with the intent to receive Silver

certification. (Currently, city officials still are waiting for official recognition.)

While interior demolition and mold remediation were in progress, the design for the restoration also was taking place. HKT Architects, Somerville, Mass., was hired as the lead architect. Bill Hammer, the firm's co-founder and principal in charge, says at the time, there were no LEED-certified buildings in the state. However, the city officials' high goals were met because Hammer was up for a challenge.

Strengthening the Exterior

Although the annex is not listed on the National Register of Historic Places, it is located in a neighborhood conservation district. Therefore, the Mid-Cambridge Neighborhood Historic District Commission had to approve any changes to the building's exterior.

When renovation began in October 2002, crew members handled the exterior delicately. As walls were opened, they discovered several structural problems.

Hammer remembers: "There were so many brick walls, and many of them had no mortar. It's amazing the building stood as long as it did. We needed to add a lot of structural reinforcement that we hadn't planned on."



Once reinforcement was complete, the crew replaced existing windows with energy-efficient aluminum-clad windows that resembled wood and maintained the historic look.

"The outside really worked to our advantage because these old Victorian buildings have enormous windows so we had the ability to bring lots of light in the building," Hammer says. "Ninety-six percent of spaces inside the building now have some form of natural daylight."

Photographs and original construction drawings were referred to for restoration of the brick parapets; skilled masons replicated the ornate designs.

Although the historic commission gave the construction crew limited feedback, it did have comments about the 3,000 square feet (279 m²) of 27-kilowatt solar panels being installed on the roof.

Hammer explains: "We couldn't put the panels at a typical angle because the commission didn't want them seen from the street. So we laid them flat, which was difficult because the roof is only about 5,000 square feet [465 m²] and we had a lot of mechanical equipment up there. Steel racks were made that allowed the panels to be laid on top of the mechanical equipment."

Making a First Impression

Another major renovation to the building's exterior was the entrance, which HKT modified from boring to beautiful.

Hammer notes: "The main entrance into the building was a stair-hall. You either walked up half a level or down half a level. There was no real sense of arrival, and it was a nightmare for accessibility."

To resolve this issue, the designers renovated what had been the handicap entrance that led into the basement and opened it to make a 2-story atrium with plenty of natural daylighting. Visitors now entering the building would never recognize that the first floor formerly had been the basement.

Maintaining Character Inside

Although the exterior had to be handled delicately, the interior was a different story. The construction crew basically gutted it.

"There was nothing of any historic value on the inside," says Hammer. "We had a lot of freedom. Although we didn't save anything on the interior, we restored it in an aesthetic that was typical of a 19th-century Victorian building."

Forest Stewardship Council-certified American cherry wood was used in details throughout the building, including doors, doorframes and window frames.

"It's gorgeous but expensive," Hammer says. "That's one of the things the city was willing to do to maintain the character of the building."

The lighting system features high-efficiency fixtures that are computer-monitored so the light level automatically adjusts to the amount of sun coming into the space. It also adjusts for room occupancy, turning off when no one is there. In addition, individuals can adjust the lighting to their requirements from their individual computers.

Heating is maintained by a ground-source heat pump system. Three wells that are 1,500-foot- (456-m-) deep pump 50- to 55-F (10- to 13-C) water. The water-to-water system eliminates condensers, which also removes sound pollution.

Adjustments to the lighting system, solar panels and heating system still are being made, but energy use is projected to be 56 percent of a conventional-built building.

Finishing Up

It was important to the team to recycle as much waste as possible. The general contractor, Consigli Construction Co. Inc., Milford, Mass., has been active in a Massachusetts pilot program for waste recycling.

"They were really gung-ho," Hammer says. "We had a 50 percent goal for waste recycling, and we achieved about 90 percent."

Other green characteristics of the annex include landscaping that reduces watering by 50 percent and alternative transportation options. Subsidized public transportation passes are available for city employees and designated parking spaces are reserved for carpoolers. Indoor bicycle racks and shower facilities accommodate those who choose to cycle to work, and outdoor bicycle racks also are available for visitors.

Cambridge city employees moved into the annex in February 2004 and are passionate about their new building and working environment.

"Every time I take visitors through, employees come up and say they just love the space and love working there. That's very gratifying to me," Hammer acknowledges.

Because this was the team's first LEED project, Hammer admits it was more time consuming than

typical renovation projects. However, he says the more often you follow LEED guidelines, the less research must be done. He also says, at \$7.1 million, the project initially cost more money than a typical renovation, but he believes it will pay for itself quickly in energy savings.

Hammer relates: "In my opinion, if it's not the best-run city in the commonwealth of Massachusetts, it's right up there. Cambridge officials spent a lot of money other municipalities wouldn't have spent to ensure everything counted for the building's longevity. The officials also believed that a proper work environment, including lighting, air quality and ambience, would make people more productive." ◆

Green Features

Roof-mounted photovoltaic system, Evergreen Solar, Marlboro, Mass., www.evergreensolar.com
circle no. 53

Geothermal well system, Water Energy Distributors Inc., Atkinson, N.H.
www.w-esco.com
circle no. 54

Low-E double-glazed windows, Eagle Window & Door Inc., Dubuque, Iowa
www.eaglewindow.com
circle no. 55

Operable skylight louvers, Construction Specialties Inc., Lebanon, N.J.
www.c-sgroup.com
circle no. 56

ENERGY STAR®-rated roofing, Versico Inc. Akron, Ohio, www.versico.com
circle no. 57

Linoleum flooring, Armstrong, Lancaster, Pa.
www.armstrong.com
circle no. 58

Low-volatile organic compound paint, Sherwin-Williams Paints, Cleveland
www.sherwin-williams.com
circle no. 59

Computer-monitored lighting system, Ergolite by Ledalite, Vancouver, British Columbia, Canada
www.ledalite.com
circle no. 60

Carbon dioxide sensors, Johnson Controls, Milwaukee, www.johnsoncontrols.com
circle no. 61

Photos by Dan Gair/Blind Dog Photo Inc., Kittery, Maine.

The Team

Architect

HKT Architects
Somerville, Mass.
www.hktarchitects.com

General Contractor

Consigli Construction Co. Inc.
Milford, Mass.
www.consigli.com

Mechanical, Electrical and Plumbing Engineer

ARUP, Boston
www.arup.com

Structural Systems Engineer

Weidlinger Associates Inc.
Cambridge, Mass.
www.wai.com

Civil Engineer

Beals & Thomas Inc.
Southborough, Mass.
www.btiweb.com

