Finding Common Ground

Historic preservationists have long touted the sustainable aspects of their work, but now a coalition is working to reflect this fact in the LEED sustainable rating system.

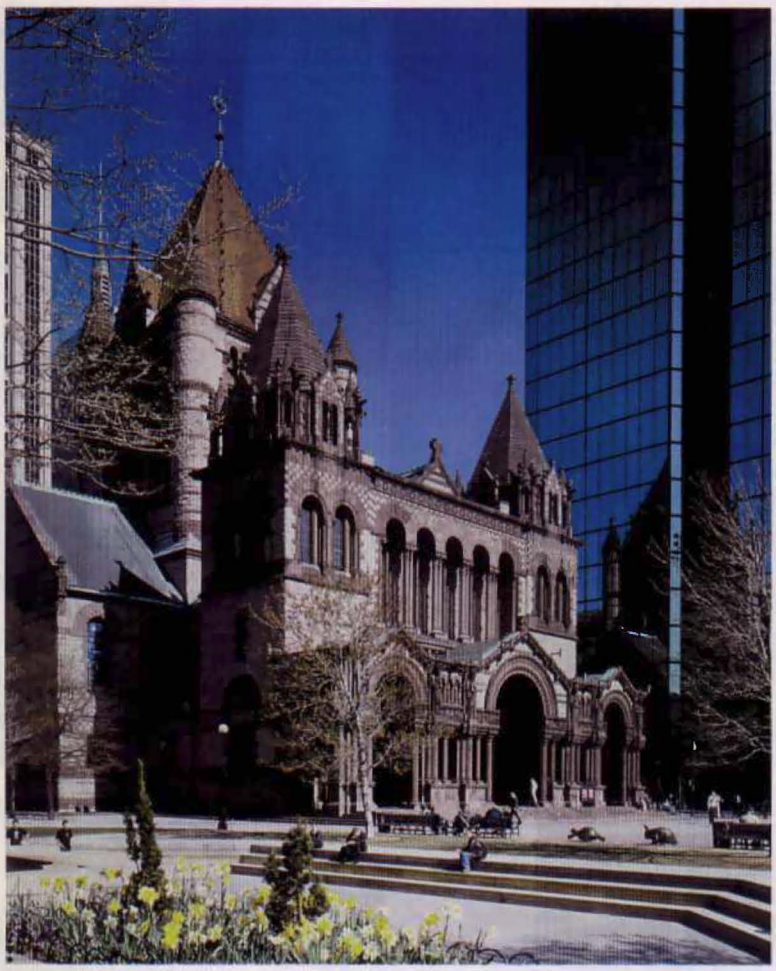
By Kim A O'Connell

Surrounded by the glass and concrete office towers, Trinity Church is a bastion of traditional design in Boston, presenting a special challenge to the architects charged with rehabilitating – in a sustainable manner – the space for offices and meeting rooms. Photo: Peter Vanderwarker

With its castellated roofline and rifle slits, the First Regiment Armory Annex in Portland, OR, retains much of the Romanesque detailing that warranted the 1891 landmark's inclusion on the National Register of Historic Places. Inside, exposed brick walls and massive trusses hewn from old-growth trees give the building an imposing presence, far different from the more typical modern office buildings nearby. Last fall, the Armory gained another distinction – becoming the first National Register-listed historic building to earn the coveted platinum designation under the U.S. Green Building Council's (USGBC) LEED rating system.

Originally erected to serve the Oregon National Guard, the building has now been transformed into the Gerding Theater, which includes a 600-seat main theater and a 200-seat studio theater, as well as a lobby, mezzanine and offices. In seeking the LEED certification, the renovation team was careful to preserve historic architectural features while incorporating sustainable elements such as skylights for natural daylighting and a displacement ventilation system to improve air flow. The project – led by GBD Architects, Green Building Services, Glumac, and Hoffman Construction – combined several disparate financing methods, including tax credits for new market development, historic rehabilitation, and energy efficiency. "We really take a whole-building approach to our built environment," says Alan Beard, FAIA, principal of Portland-based GBD Architects, "with the resulting benefits to our natural environment."

The Gerding Theater has been hailed as the latest example of how the LEED system can be successfully and rigorously applied while preserving a historic building. For years, the historic-preservation community has touted the inherently environmental aspects of saving older structures and supporting traditional construction practices. Yet a growing coalition of preservation and sustainable-design advocates is pushing the USGBC to go further to recognize the value of historic preservation in its increasingly popular LEED system.



Laying the Foundation

Launched in 2000, LEED, which stands for Leadership in Energy and Environmental Design, is a third-party rating system designed to encourage the implementation of green-building practices in commercial, institutional and residential structures. LEED criteria emphasize sustainable site development and maintenance, water efficiency, energy conservation, renewable or recycled materials and resources, indoor environmental quality and design innovation. These criteria are broken down into checklists through which projects can earn basic certification or silver, gold and platinum ratings. Currently, LEED standards are available for new construction and major renovation projects, existing building operations, commercial interiors, core and shell projects, homes and neighborhood development.

In the past, historic preservationists have supported the general concept of sustainable design – noting that reusing an older building is the ultimate kind of recycling – while remaining wary of the green-building community's emphasis on new technologies and novel materials. Green builders, they have argued, often miss the forest for the trees – touting the reuse of salvaged materials, for example, while discounting the economic, environmental and cultural value of saving an entire structure from demolition. By contrast, sustainable-design advocates have been frustrated by preservation standards and guidelines that they feel are rigid and outdated.

Without clear guidance, projects run the risk of becoming a mish-mash of quasi-historical green design. In Seattle, for example, the developers of the LEED-eligible Alley24 office/apartment building thought they were being sensitive when they incorporated the shell of the 1920s-era Richmond Laundry building, a city landmark,

The design team from Goody Clancy needed to install updated mechanical systems to heat and air-condition the new meeting spaces, but the steep roofs and spires of the church – designed in 1877 by H.H. Richardson in the Romanesque style named for him – prohibited a typical roof-mounted cooling system. Photo: Peter Vanderwarker

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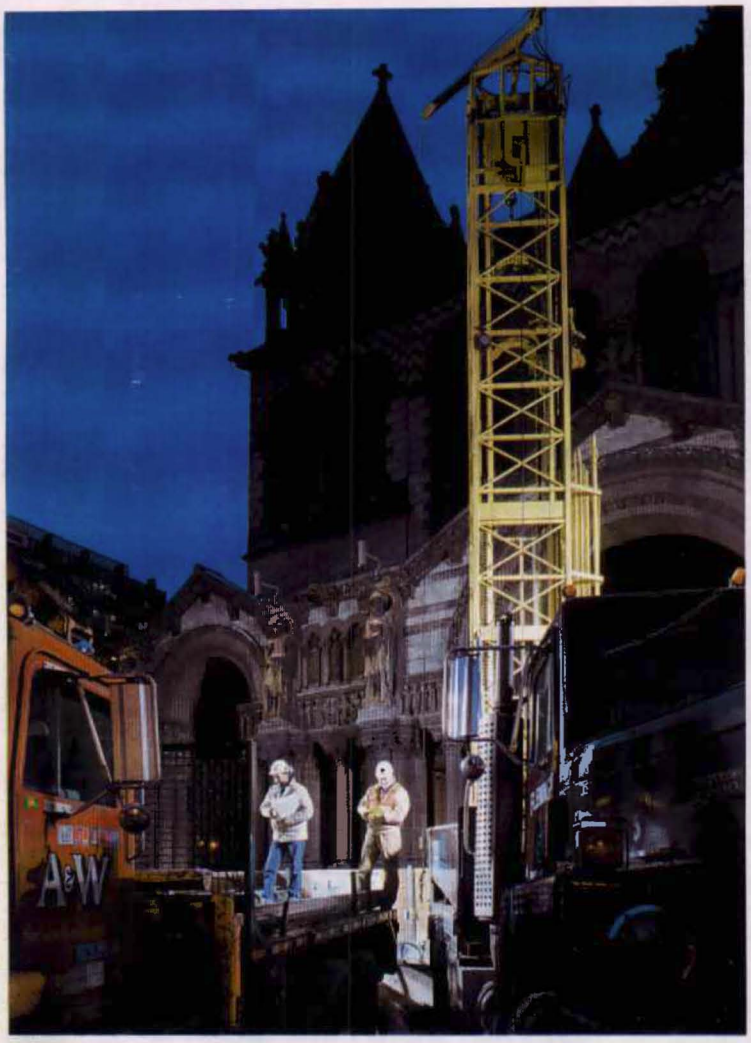

Workers get ready to install a subterranean geothermal energy system at Trinity, in which water is pumped through four-in.-dia. tubes at a depth of 1,500 ft., providing a constant source of 50- to 55-degree water for heating and cooling. Photo: Peter Vanderwarker

into the new façade. In the process, however, the building's distinctive sawtooth roof was removed and the original windows replaced with energy-efficient double-paned glass. Although the local landmarks board required the developers to partially reconstruct the roof, preservationists felt the damage had been done.

Despite these potential hurdles, several recent renovations of historic buildings have become pioneering projects in the field. Jean Carroon, AIA, a LEED-accredited preservation principal with Goody Clancy in Boston, MA, estimates that nearly two dozen old and historic buildings have been certified through the LEED system. Two of the best-known projects are the Jean Vollum Natural Capital Center and the Balfour-Guthrie building, both historic warehouses in Portland, OR, that were sustainably rehabilitated to earn the gold and silver ratings, respectively (*Traditional Building*, July/August 2003).

Other projects have not necessarily followed the LEED system while crafting careful solutions to tricky sustainable design problems. In Boston, Goody Clancy has undertaken a difficult rehabilitation of Trinity Church, an 1877 landmark designed by H.H. Richardson in the rugged Romanesque style for which he is known. There, the design and engineering teams created a new undercroft meeting space beneath the sanctuary, but they struggled with where to put the new mechanical systems to condition the space. The church's steep roofs and spires prohibited a typical roof-mounted cooling system. Instead, the team conceived of a subterranean geothermal energy system in which water is pumped through four-in.-dia. tubes at a depth of 1,500 ft., providing a constant source of cool (50- to 55-degree) water as a source of heating and cooling.

"The Trinity Church project is the essence of sustainability without ever winning a sustainable award or following a checklist," says Carroon. "It was finding space below the building in the old basement [instead of adding on to the building]. Geothermal wells were really driven by the idea that we needed air conditioning in the new space, not the old space. Traditional mechanical systems would have had a severe architectural impact, so the geothermal system evolved out of an attitude of stewardship for the building. It was finding the appropriate solution."

Conflict and Consesus

Although green preservation projects have been undertaken for more than a decade, the last two years have produced particularly thoughtful dialogues, beginning with a groundbreaking symposium in Halifax, Nova Scotia, in September 2005, hosted by the Association for Preservation Technology International (APT). Meetings on the subject now occur across the country, all year long. In December 2006, for example, the U.S. Department of Energy hosted a two-day workshop on historic preservation and energy efficiency in federal buildings.

The groundswell reached a high point last October, when more than 80 practitioners participated in the Greening of Historic Properties National Summit in Pittsburgh, held just prior to the National Trust for Historic Preservation's annual conference. Afterwards, the Pittsburgh History & Landmarks Foundation and the Green Building Alliance circulated a draft white paper among interested groups, summarizing the key points of the summit.

To the chagrin of some observers, the paper expends considerable space discussing the challenges to green preservation and the conflicts that its authors contend are inherent between the two disciplines. "The standards governing historic preservation projects have been questioned – or even disputed – by a number of groups throughout the years," the authors write. "Within the past 15 years, green building initiatives have challenged existing historic preservation standards with new approaches to building reuse, restorations, materials selection and system retrofits."

Major challenges, according to the authors, include the lack of coordinated public policy encouraging green/historic initiatives; the lack of significant public investment and interest in these undertakings; the inflexibility between green-building guidelines and preservation standards; the cultural focus on short-term

The new undercroft at Trinity Church makes the most of "found space" beneath the sanctuary. The structure's mammoth stone foundations are still visible in the completed space, which has a contemporary feel in keeping with its less formal purpose. Photo: Peter Vanderwarker

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Now surrounded by modern buildings, the First Regiment Armory Annex in Portland, OR, has changed little – at least on the exterior – since it was built in 1891. Now home to the Gerding Theater, including office and meeting spaces, the building is the first structure listed on the National Register of Historic Places to earn a LEED platinum certification. Photos: courtesy of Green Building Services; Oregon Historical Society (historic photo)

gains and "disposal architecture"; and the costs of green preservation as opposed to new construction.

Several groups have already commented on the white paper or are preparing to do so, including APT and the National Trust. APT, for its part, found the white paper to be "off message" and charged that the paper calls for only "one-dimensional" remedies, such as changes in the decades-old federal preservation standards. "By dwelling on the purported conflicts, the white paper underemphasizes the fundamental challenge facing both the green building and historic preservation communities: defining strategies to sustain the existing building stock," wrote Carl Elefante, AIA, and Susan Ross, co-chairs of APT's technical committee on sustainable preservation. "Green preservation flourishes today without dramatically altering preservation standards, including the Secretary of the Interior standards [on rehabilitation], or restructuring green building rating systems, particularly LEED."

Elefante and Ross cite a recent assessment of the LEED rating system for new construction that concluded that 20 possible credits are "existing building neutral," meaning that they could apply equally to new construction or existing buildings. Another 11 credits were categorized as supporting preservation directly, such as site selection and building reuse.

Perhaps the greatest bone of contention between the two groups, however, involves the treatment of windows. Replacing older windows with supposedly more energy-efficient modern replacements is one of the most oft-repeated mantras of the sustainability movement – a suggestion that was even included in Al Gore's smash global-warming documentary, *An Inconvenient Truth*. But the claim that insulated glass replacement windows save energy and money ignores the embodied energy in old windows, as well as the energy and costs involved in removing and disposing of existing windows and installing new ones. This does not even begin to address the cultural aspects of historic windows and how they contribute to historic buildings and communities.

"It's a crazy statement to say that people will save energy by replacing windows," says Walter Sedovic, AIA, principal of Walter Sedovic Architects in Irvington, NY. "The performance life of vinyl replacement windows is very short, and even if you were to replace older windows with wood, the quality of fertilized wood from tree farms is nowhere near what the quality of wood was years ago. It's a marketing nomenclature people have bought into – we don't have 'replacement doors' or 'replacement light fixtures,' for instance."

Sustainability is too often boiled down to simply energy conservation, Sedovic adds. "But energy conservation," he says, "simply plays a function within the three realms of sustainability – environment, economy, and social equity and community."

Realizing the Potential

In late 2005, the National Trust for Historic Preservation, the National Park Service, the American Institute of Architects (AIA), and APT wrote a joint letter to Richard Fedrizzi, USGBC president, to seek common ground. "We need to ensure that the full potential of older buildings can be realized in the green building rating system," the signatories wrote. "Older and historic buildings comprise more than half of the existing buildings in the United States and the retention and reuse of these buildings preserves the materials, embodied energy, and human capital already expended in their construction." But historic preservation also has even greater value than this. By defining streets and neighborhoods, reducing waste and encouraging downtown reinvestment, historic buildings help localities to limit the worst effects of sprawl – something preservationists say ought to be recognized by LEED. "Historic buildings conserve the materials and embodied energy," says

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In one of the boldest moves in the interior, the armory renovation team designed a large oculus in the second floor that preserves views from the first floor to the building's historic wood roof trusses. Other sustainable elements included new skylights for natural daylighting, which were actually part of the building's original design. Photo: courtesy of Green Building Services

Rhonda Sincavage, a public policy associate at the National Trust, "but we also want people to think about the impacts avoided by not disposing of these buildings."

The joint letter requests that the coalition formalize its relationship with the USGBC through the creation of an historic-projects committee, which would work to devise a guideline for applying existing LEED standards to older structures or to develop an entirely new LEED rating system for historic buildings (although this latter point may not be necessary, some say). "We're creating policy that we can all agree to," says Barbara A. Campagna, AIA, the Graham Gund architect of the National Trust and current president of APT. "There doesn't necessarily have to be a LEED-HB for historic buildings. By 2030, there will 54 billion square feet of buildings that will need renovation. They will not all be so-called historic buildings. It's important that we be able to address all the existing building stock."

"This is a significant group of interested parties wanting to engage the USGBC and come up with the best solution," echoes Ralph DiNola, Assoc. AIA, a LEED-accredited professional and principal with Portland-based Green Building Services, who worked on the Jean Vollum Natural Capital Center, the Balfour-Guthrie building, and now the Gerding Theater. "But we're not going to say it definitely has to be this or definitely that. Whatever the outcome is, it's going to provide guidance and education to project teams that are pursuing LEED for their historic projects."

When it comes to the future of LEED, the question remains whether the value of an historic building – or any building, really – can be divorced from an understanding of how it contributes or detracts from the society at large. Historic buildings embody energy, yes, but they also embody the hopes and ideals of the communities that produced them. Until that fact is somehow reflected in the LEED rating system, preservationists may have reason to be concerned about whether true sustainability can ever be achieved.

Going forward, Jean Carroon offers three tenets that she says should support every sustainable preservation project. "First, it's about more than buildings," she says. "You have to think big and you have to think about the global community. Secondly, you should be skeptical but optimistic. I'm skeptical that replacement windows are really greener than existing windows, but LEED has given me, as a preservation architect, more options and more ways to be green. Because of LEED, there is so much awareness and ability to do creative things. Finally, we need to believe that we can really change things. We have to believe and we have to act."

Above: Massive trusses hewn from old-growth wood are among the most character-defining elements of the historic 1891 building and were carefully preserved even in the tricky modern office spaces. Photo: courtesy of Green Building Services

Left: The lobby is the most dramatic space in the new Gerding Theater, with its open design that maximizes the full height of the historic building. Sustainable features throughout the building include a natural air flow and ventilation system in the theater, a rainwater collection system for use in the building's toilets, and locally produced and recycled-content products. Photo: courtesy of Green Building Services