What it Takes to LEED

The LEED process is detailed and comprehensive. Here is what it takes to make a building green.

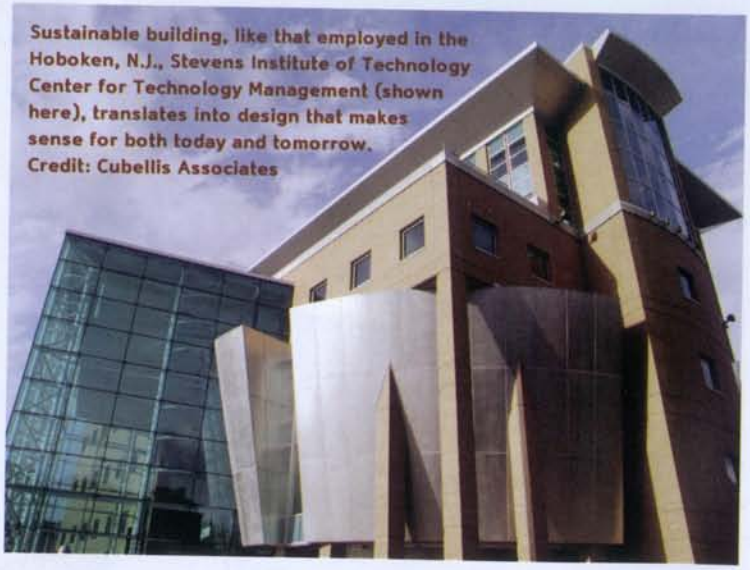
BY JOHN M. ROSSI, AIA

The statistics are staggering: In the United States, buildings account for an estimated 40 percent of our total energy consumption, 40 percent of our landfill waste and 50 percent of ozone-depleting chlorofluorocarbon production. Americans use more than five billion gallons of purified water each day to flush toilets while many countries struggle to supply enough clean water for drinking. And from 1982-1992, more than 1,000 acres of prime farmland were destroyed every day by sprawl.

A century ago, Earth was thought to be infinitely resilient and boundless in resources. Today, ecological crisis and decline has shattered this misconception and forced us to check our use. As a result, a growing segment of the building industry, including architects, engineers and contractors, have recognized our nation's shared responsibility to limit, conserve and ultimately create a more sustainable world.

For an architect, client, owner or other building professional, sustainable building translates to design that makes sense for today and tomorrow. Sustainable building is the ultimate form of user-friendly design for both construction and renovation. Sustainable building cost-effectively fulfills its purpose today while respecting the world of tomorrow.

In order to help architects and construction firms achieve sustainable building practices, the U.S. Green Building Council (USGBC) developed the Leadership in Energy and Environmental Design (LEED) system. The LEED initiative has already begun to achieve broad recognition across the country for advancing sustainability in architecture.



Sustainable building, like that employed in the Hoboken, N.J., Stevens Institute of Technology Center for Technology Management (shown here), translates into design that makes sense for both today and tomorrow. Credit: Cubellis Associates

LEED presents a valuable framework of carefully chosen guidelines for sustainability. The client, architect and consultant set goals based on building program, design intent, budget and desired social message. The team then uses LEED certification guidelines to receive points in various categories. The point system allows for flexibility in design while still enforcing a recognized standard of sustainability. LEED can be implemented, in part or in whole, for any building project. By making sustainable design a priority early in the planning process, we can achieve long-term benefits to ourselves and our planet without adding significant cost.

UNDERSTANDING LEED

The LEED system can be confusing to those trying to understand how they can integrate LEED certification into their building projects; the following is designed to explain the system. The LEED certification system is based on a maximum of 69 possible points, and is evaluated based on the following criteria:

26-32 points: Certified
33-38 points: Silver
39-51 points: Gold
52-69 points: Platinum (best)

Sustainable Sites (14 possible points): Sensitive siting of the building is an essential part of the conservation of natural resources and the preservation of ecological diversity. This includes preventing untreated stormwater from discharging into rivers and lakes. High-albedo or vegetated roofs, along with shading, porous paving and ample green space can help avoid unwanted heat island effects. Provision for and encouragement of alternative transportation is an important facet of sustainabil-

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WWW.CUBELLIS.COM

UNITED STATES GREEN BUILDING COUNCIL
WWW.USGBC.ORG

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ENVIRONMENTAL DESIGN + CONSTRUCTION
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THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS
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FORESTRY STEWARDSHIP COUNCIL
WWW.FSC.ORG

MINNESOTA BUILDING MATERIALS DATABASE
WWW.MOEA.STATE.MN.US/GREENBUILDING/PRODUCTS.CFM

GREEN RESOURCE CENTER
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ity while shielded exterior lighting can be used to eliminate light pollution, ensuring starry skies without compromising safety.

Water Efficiency (5 possible points):
Reducing water use can greatly lower costs while easing the burden on municipal water and sewer systems. Low-flow fixtures, dual-flush toilets, waterless urinals and automatic shut-off sensors can save a building's lifetime water usage by millions of gallons. Some advanced systems collect rainwater or reuse greywater for flushing or irrigation. Landscape architects can be called on to find drought-resistant plantings to eliminate irrigation or institute low-volume drip irrigation.

Energy and Atmosphere (17 possible points):
Proper insulation and energy-efficient windows help to reduce a project's costs while conserving non-renewable fuels. HVAC systems can often be downsized by decreasing heating and cooling loads. Passive solar designs use glass and heat sinks to capture and appropriately distribute the sun's heat. Roof openings, skylights and windows allow sunlight to filter deep into the interior spaces while modulating glare. In some instances, on-site renewable energy generation using photovoltaic panels or wind turbines can reduce dependence on fossil fuels. Ultimately, a smart, holistic approach to insulation, heating, cooling and illumination can significantly reduce energy use and pollution over the life of the building.

Materials and Resources (13 possible points):
Keeping track of how building products are harvested, processed and disposed of can greatly impact sustainability. Specifying renewable or recycled materials greatly reduces the already strained demand on natural resources. Bamboo is an alternative to wood that grows quickly and gives a high-quality appearance. Substituting wheatboard for composite wood and wool or post-consumer-recycled carpet for standard petroleum products are just two of the dozen ways we can help limit waste. Waste management programs often pay for themselves by recycling, salvaging or donating materials rather than transporting them to a landfill.

Indoor Environmental Quality (15 possible points):
The quality of the indoor air we breathe can dramatically impact our health and productivity. Poor ventilation, mold spores and dust, and volatile organic compounds (VOCs) from carpets, paints, adhesives and sealants can contribute to asthma and allergies. Even at low levels, indoor air pollutants can diminish a worker's productivity and increase their sick days. Techniques shown to significantly reduce these problems include increasing ventilation, protecting HVAC ducts and utilizing low-emitting materials.

Innovation and Design Process (5 possible points):
Creative thinking is what makes sustainability possible. To encourage ongoing progress, LEED awards points for innovation and design techniques not captured in the other categories. A point is also awarded for including at least one LEED-credited professional on the project team.

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