

A Sustainable Environment: Our Obligation to Protect God's Gift

by
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How "Green" Buildings Can Contribute to Energy Efficiency

In last month's column, I mentioned my experience in France about thirty years ago when I first noticed light sensors in an office building controlling the amount of artificial lighting to supplement natural lighting. There have been a few architects in the U.S. that have incorporated energy efficiency in their designs, but until recently there has not been a concerted effort to incorporate new ideas and technologies in most of the commercial and residential construction. The real question was how to establish some standards and incentives for improving the energy efficiency as well as water efficiency, indoor air quality, and materials and resources.

In 1993, a small group of people from the construction, real estate, environmental, engineering consulting, furnishing, and equipment industries along with environmental attorneys found the U.S. Green Building Council (USGBC). Its first goal was to create a sustainability rating system, subsequently called LEED (Leadership in Energy and Environmental Design), for improved building designs. This rating system is divided into five categories related to siting, water conservation, energy, materials, and indoor environmental quality, plus an innovation and design category. Each category contains a specific number of credits with each credit carrying one or more possible points. A project that earns enough points (26) can become "LEED Certified", on up the ladder to Silver (33), Gold (39), and Platinum (52 or more) out of 69 possible total points.

LEED 1.0 was introduced in late 1998 and within a short period of time it was upgraded to LEED 2.0 in 2000 to correct some shortcomings. Some of the credits in LEED 1.0 could be earned from already standard practices or some energy-related credits that were not sufficiently related to performance. Further improvement of the rating system was introduced in 2003 as LEED 2.1. But questions were raised as to how one can achieve a LEED rating for an existing building if the categories were primarily for new construction. Consequently, the USGBC developed a rating system for existing buildings as well as several other segments of the building industry. LEED standards are currently available or under development for new construction (LEED-NC), existing buildings (LEED-EB), commercial interiors (LEED-CI), core and shell projects (LEED-CS), homes (LEED-H) and neighborhood development (LEED-ND). More details on these standards can be found at www.usgbc.org.

Besides the environmental benefits, buildings with features recommended by the LEED rating system seem to provide also human and social benefits. Studies have documented productivity gains from natural lighting and access to windows that can be opened. In several studies of school buildings, students with the most natural lighting in their classrooms progressed 20% faster on math tests and 26% faster on reading tests than

those with least natural lighting. In another study, stores with skylights would likely have 40% higher sales than those with all electric lighting.

I am very surprised that the movement to LEED-rated buildings is not faster. Some people may feel that the additional cost may not prove to be that beneficial. A 2003 study of 33 LEED rated buildings showed a “green premium” of less than 2% compared to conventional design. These ranged from a 0.7% premium on Certified buildings to 6.5% for one Gold building. The financial payback period on some of these LEED rated buildings can be as low as two years, so it does not make sense for anyone not to consider designing a “green” building. A north suburb of Chicago is currently building a new police station without consideration of achieving any kind of LEED rating. The village officials either could not afford the slight premium, which is unlikely, or the architect was not LEED accredited. On the other hand, with Mayor Daley’s commitment to make Chicago the greenest city in America, it would not surprise me that all new City of Chicago buildings will be required to meet LEED Certified or Silver ratings. Maybe we’ll hear something later this month on Earth Day, an appropriate time to make an environmental announcement.

I highly recommend that anyone associated with the building industry should become very knowledgeable of USGBC’s LEED rating system and the associated benefits.

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