

Put "Green" in Your Offices



"In five years, if your office building is not a green building, you won't be competitive in the marketplace." That remark was made by a senior executive from one of the nation's top real estate firms at a recent educational program presented by the Corporate Realty, Design & Management Institute, Portland, OR. The interesting part was that he wasn't referring to the social aspects of sustainability. He was talking about the impact of sustainability on a building's financial performance.

Whether you are seeking LEED or Green Globe certification or you just want to increase the return on investment on your next project here are six areas that, if approached in an integrated manner, can reduce your initial costs, lower operating costs, and increase the value of your property.

1 Roofing. More than half of the American population now lives in an urban heat island, where the temperature is at least 6 to 8 F warmer than the surrounding area. Dark roofs account for 38% of this heat-island effect. These higher temperatures bring with them increased energy use. For example on a warm afternoon in Los Angeles, the demand for electricity rises nearly 2% for

every degree that the daily maximum temperature raises. Additionally, the probability of smog increases by 5% for every half-degree rise in daily maximum temperature.

It is because of these factors that California now requires cool roofs on commercial buildings with low-slope roofs. The new law applies to all new construction and to most re-roofs of existing buildings.

Cool roofs reduce the typical roof surface temperature by 50 F or more, resulting in several benefits. These include improved occupant comfort, lower energy bills for air conditioning, reduced air-conditioning capacity, lower roof-maintenance costs, and longer roof life. The best part is these benefits typically come with no cost premium.

2 Windows. The ubiquitous double-pane window, with its R2 rating, is no longer the standard for energy efficiency. Today, three- and four-element windows, with R5 and R7 ratings, allow savvy developers to significantly reduce the size of their building heating and cooling systems, saving money in both overall construction costs and ongoing energy costs. Additional benefits include the ability to use larger glass areas to in-

crease daylight harvesting and improved sound attenuation for quieter interior spaces.

3 Insulation. Heat equals money. In the winter, heat moves from heated spaces either directly or indirectly through walls, floors, and ceilings, *i.e.*, wherever there is a temperature difference. During the cooling season, heat moves from the exterior to the interior. To maintain comfort, the heat lost in the winter must be replaced by the heating system and the heat gained in the summer must be removed by the air-conditioning system. Increasing a building's thermal efficiency allows use of smaller heating and air-conditioning systems which reduces initial and operating costs.

4 HVAC. Under-floor air distribution (UFAD) is quickly becoming the HVAC system of choice. In addition to superior indoor air quality, improved temperature control, and lower operating costs, UFAD reduces the time and costs associated with power, voice, and data cabling during initial tenant fit out and during changeover. Currently, UFAD systems are being installed with little or no cost premium. With rigorous use of

“Green” office buildings are becoming essential. Here are **six** strategies you can use to put some “green” in your new or existing buildings.



an integrated-design approach, it is possible to reduce slab-to-slab heights, downsize the size of the chiller plant, and eliminate the need for perimeter heat.

5 **Lighting.** According to the Building Owners & Managers Association, Washington, the average office building spent \$1.52/sq. ft. for electricity in 2004. Lighting accounted for 38% of that cost, or \$0.58/sq. ft. Effectively managing energy costs requires efficient lighting control. A lighting-control system has four basic parts:

- Automated occupancy controls slowly dim lights or turn them off when a space is vacant. They also automatically turn lights on when someone enters the space. Enclosed areas such as restrooms, meeting rooms, storerooms, corridors, and private offices are excellent candidates for these devices.
- Daylight-harvesting systems take advantage of natural sunlight by continuously adjusting electric lighting in a smooth and unobtrusive manner to maintain a preset light level. Some daylight-harvesting systems also adjust shades/blinds to maintain the required light level. Commercial buildings with large exterior windows or skylights, such as perimeter offices, classrooms,

atria, or retail centers are good candidates.

- Manual dimming control offers personal choice and control of light levels to adapt the space to varying tasks and activities. Recent studies have shown that many people prefer less light than the recommended levels. Meeting rooms and offices are good candidates for manual dimming controls.
- Timers are effective when lighting can be controlled on a schedule. Exterior- and security-lighting systems are often designed to allow specific on/off setpoints based on required lighting levels. Typically this is triggered by photocells.

In addition to controls, another hot trend is the move toward low-mercury fluorescent lamps. Mercury is a toxic, but necessary, material used to manufacture fluorescent lamps. Responsible lamp manufacturers have worked hard to develop technologies that reduce the mercury levels in their lamps and, along the way, have also been able to extend lamp life.

6 **Commissioning.** The easiest way to understand the commissioning process is to think about it as a performance audit, or acceptance test. The objective is to confirm that the building's equipment was installed and calibrated properly and

is performing according to the designed intent. In a study of 75 new buildings, an average of 28 deficiencies per building were uncovered, providing a non-energy benefit of \$1.24/sq. ft., and a 10% to 15% reduction in annual energy use, at a commissioning cost of less than \$1/sq. ft. In addition, a typical commissioning report can ensure that building management and operators have access to correct information about the building's operating systems. This also helps the operators use the building-control systems as a tool to maintain an efficient and comfortable environment.

B. Alan Whitson, RPA, is president of Corporate Realty, Design & Management Institute, Portland, OR. Whitson's experience encompasses more than 40 million sq. ft. of facilities in a variety of capacities. He speaks frequently on high-performance buildings including at Turning Green into Gold seminar programs.

Commercial Building Products and the Institute are presenting two seminar series throughout North America on the construction of high-performance low- and mid-rise buildings and on renovating for maximum return on investment. To see the schedule and register for a seminar, visit www.cbpmagazine.com.