



The Office Building Link

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Green Building Guidelines

By Mike Sawchuk

In the late 1990s, the U.S. Navy and the State of California joined forces to develop a “sustainable construction policy” for all their future building projects. Based on this policy, cities such as Santa Monica, California, and federal entities such as the Air Force, the National Park Service, the Pentagon, and even the White House have adopted these policies to help Green future building projects.

In step with the government, several private facilities such as Ford Motor Company, Gap, Radio Shack, and others have incorporated these sustainable construction policies into their upcoming construction projects as well. And as we see today, this trend is not only continuing, but appears to be picking up considerable steam as well.

For those organizations planning future development, the policy developed by the Navy and the State of California provides a guideline to help establish and define the major elements that help make a building Green. The following examines two of these elements—building site selection and energy efficiency. Although there are several more, such as using Green building materials, installing Green roofing systems, or incorporating reduced-water or waterless restroom fixtures—it should be noted that no building can be *totally* Green; none will likely incorporate all of the characteristics now considered elements of a Green building.

Construction Site

One of the considerations when planning a Green building is to evaluate the construction site to take full advantage of its inherent features, such as the daily path of the sun, wind flow patterns, and so forth. If located in a cold climate, a new facility surrounded by large trees that block cold winds can potentially lower its heating costs.

If the facility is located in a warm climate, trees again can help, as long as they allow the prevailing breezes to flow through the building, creating natural ventilation.

Because radioactivity is commonly found in some igneous and metamorphic rock, caused by rock decay that releases radon, a Green building crew would ideally avoid such sites and begin construction on sedimentary rock. In addition, Green facilities should not be constructed on sites that are prone to subsidence, creep, or landslides.

Noise is another factor. It becomes difficult to “quiet” a facility when surrounding noise levels are 85 decibels or more. This means avoiding areas near highways, railways, or airports.

Energy Efficiency

Ideally, a Green building maximizes the health and comfort of building users while taking advantage of a variety of opportunities to lower energy consumption. Again, site selection, as well as HVAC systems, lighting, and building insulation, are prime considerations. For example, the orientation of the building—the direction it faces—in relation to the sun and other buildings can affect energy use considerably. A building designed to take advantage of natural lighting—for instance, having a wall of windows on the southern face—may not only decrease the need for lighting but help heat the

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facility as well.

In addition, a Green facility will use active or passive solar heating systems. Active systems involve the installation of solar panels that absorb heat, which can be used to heat water, run heating systems, and, with more advanced systems, generate electricity. Passive systems allow the structure to absorb heat from the sun, as a result of building materials selected, to help warm the facility during winter months, thus decreasing energy demands.

A simple feature discarded from many new buildings since the 1960s can help reduce the need for air-conditioning considerably. Operational windows can minimize or replace the need for air-conditioning in some climates. Some Green facilities find that building interiors with operational windows (that open and close...remember?) stay comfortable all year long without the need for air-cooling systems, except in "hot spots" such as inner corridors and computer rooms.

As to lighting, the past few years have seen the cost of reduced-voltage lighting systems drop noticeably, allowing them to be incorporated into all Green buildings along with florescent lighting, which lasts as much as eight times longer than incandescent lighting systems while using 80 percent less electricity. Two things to remember about lighting systems: First, they should be installed *into* walls and ceilings so that the heat generated is absorbed into the building and not dissipated into the work environment. And second, lights should be installed so that they can illuminate as large an area as possible.

A final but crucial characteristic of a Green building is well-insulated walls, floors, and ceilings. However, instead of using conventional insulating materials, renewable resources such as recycled paper, timber shavings, sawdust, or even recycled building materials are used. Insulating materials containing chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) are not suggested for Green buildings.

Building Operations

As mentioned earlier, there are many characteristics and elements that make up a newly constructed Green building. However, building operations must also be included. If potentially harmful cleaning chemicals, for instance, are used to maintain the facility instead of environmentally preferable products, the time, cost, and planning to build a Green facility may all be for naught. Greening a facility must always be viewed as a complete unit—from the site selected, to the building materials chosen, to the energy conservation systems employed, to the chemicals used to clean the facility—all contributing to the goal of building a facility that has less impact on the environment and is healthier for building users.

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