

# Medical Construction & Design

## Green is the

Why hospitals should  
make the transition to  
sustainable design

BY SCOTT T. CLEIN

# NEW BLACK



**F**or anyone whose formative years included the 1970s, sustainability should be as recurring an image as Kermit the frog. The long gas lines of the oil embargo and the economic recession that gripped the United States during that period left an indelible imprint on the children of that time.

But regardless of what Kermit said decades ago, being green is easy. Convincing hospital facility managers of this can be the hard part.

Healthcare centers should embrace the trend of sustainable building and low-impact design because not only is it good for the environment, but it reduces operational costs in the long term, supports the use of local building materials and enhances the patient experience. In this way, going green helps alleviate both the carbon crisis and economic crisis.

### Being green shouldn't mean in the red

This is likely the crux of all arguments over the decision to go green. To be fair, the capital cost of constructing a building that is LEED certified is more expensive. But as technology continues to become more popular, the cost of energy-efficient equipment and materials continues to come down.

In 2009, basic LEED certification generally can be achieved within 5 percent of baseline costs. In many

cases it costs even less. A 2003 report issued to California's Sustainable Building Task Force revealed that an upfront investment of about 2 percent of construction costs typically yields life cycle savings of more than 10 times the initial investment.

In fact, some aspects of construction can be less expensive. This

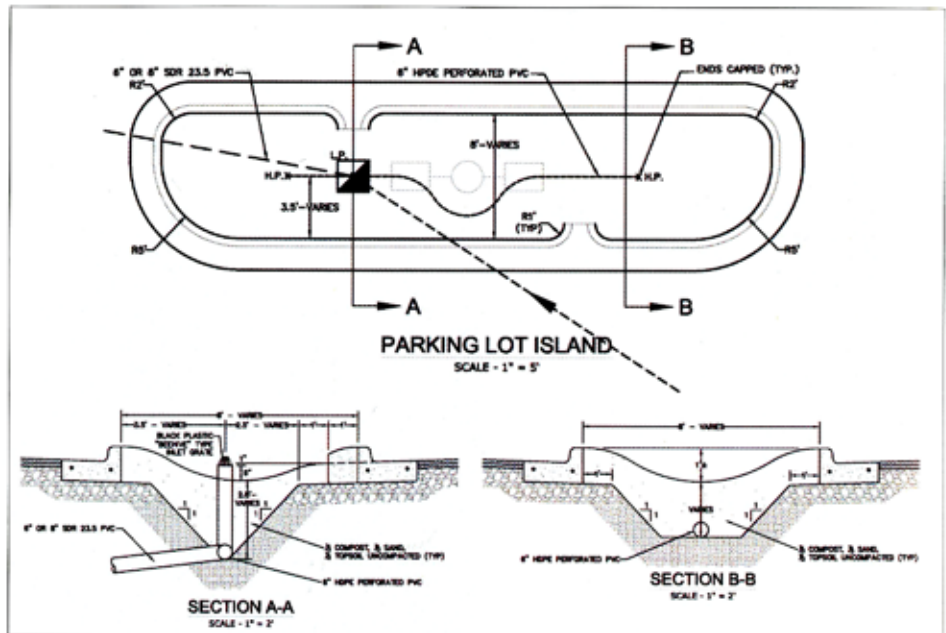
includes site development costs when parking areas are minimized. Sewer costs are further reduced through the implementation of innovative storm water management techniques, such as bio-filtration and porous pavements.

However, this sort of analysis is much too nearsighted to truly gauge the value of sustainable design. The

reality is that some of the biggest financial gains are realized by a facility after examining operating expenses.

Smaller parking lots or fewer sewer pipes cost less to maintain down the road. More significantly, high-efficiency heating and cooling systems such as geothermal and photovoltaic electrical systems cost less to operate. This is further compounded by significant cost savings when green roofs and passive solar design principles are employed to save on heating and cooling, and electrical expenses.

When combined with tactics to reduce a facility's water and sewer fees through the creative storm water management techniques, payback can come as quickly as five years. Once payback is achieved, the resulting cost reductions are pure profit.



### Committing to the community

Building green also shows a commitment to the local economy. The material and resource credits partly are based on locally harvested and manufactured materials. A health system that strives for a more sustainable facility therefore strives to support lo-

**A schematic of a small rain garden. This storm water management technique replaces traditional catch basins and filters the rain water prior absorption into the ground.**

cal products and companies. In a way it allows a hospital to be a bigger part of the local community it serves.

Healthcare systems often operate by a mission and set of values that communicate their commitment to their community and patients. Further carrying out these beliefs via green design helps support and validate these socially responsibility efforts.

The national sentiment is that a more sustainable world is a better world. The majority of people believe that building in a more sustainable manner is indeed what all industries should do.

Hospitals should be leading the green initiative because at its root the quest for sustainability really is the quest for health. A healthy body depends on a healthy planet, and what better way to show a hospital's commitment to the former than to

## Follow the green-bricked road

So where does the industry go from here? The proper first step is for hospital administrators and facility managers to look in the mirror and decide what road they wish to take. In other words, do they want to continue moving along their current course or do they want to hop on to the green-bricked road. Taking the green route is a smart choice for many reasons:

- Building in an environmentally conscience manner is only slightly more expensive upfront and can reduce operating expenses over the long term.
  - It provides cost benefits related to employee productivity and patient care.
  - It can differentiate one healthcare system from another in a highly competitive market.
  - It shows leadership in the field.
- In the short term, taking the green-bricked road will result in a competitive advantage. In the very near future, not taking it will result in a decided disadvantage. While it takes a little extra effort, it can produce great results for the community, patients and bottom line.

# Top five operation cost savings by going green

Not all sustainable tactics are created equally. Here are the top five green features that will reduce operational costs in the long term.

## 1. GEOTHERMAL HEATING/COOLING:

Geothermal systems take advantage of the natural temperature of the earth, reducing the amount of external energy required to heat or cool the air in a building to room temperature. More advanced systems include individual room thermal comfort controls, which can provide benefits to patients and employees.

## 2. GREEN ROOFS: A green roof, or more specifically one covered with living

vegetation, offers numerous benefits. The vegetation on the roof filters rain water, improving the overall quality of the storm water discharged into the municipal system. It also helps keep that water cooler, as traditional roofs and pavements have been shown to increase water temperatures of receiving lakes and streams by several degrees. It also helps cool the building itself — greatly reducing the energy required for heating and cooling.

**3. WATER RE-USE:** Collecting storm water via rain barrels or other collection methods and repurposing it can be a major savings. Applications include landscape irrigation and use in toilets and sinks. More aggressive methods, such as recycling water from showers and sinks gray water for use in flushing toilets, can further that cause.

## 4. LOCATION APPROPRIATE LANDSCAPING:

Irrigation of landscaping can require a great deal of water, along with a significant investment in maintenance. Designing your landscapes with native plants can help reduce that investment. Using drought-resistant materials can eliminate it all together.

## 5. PARKING REDUCTION:

To most retail developers, parking is king. Hospitals seem to be following that mantra in lockstep by designing for the worst-case scenario. A reduction in the number of parking spaces means less capital needed for pavement installed and corresponding savings in long-term maintenance.

show its commitment to the latter.

Imagine an ad campaign that equates outdated mechanical equipment or failing infrastructure to systems of the body. The tag line could be, "You wouldn't treat your body this way, would you?"

Healthy environments oftentimes mean healthy people, so it makes sense to set an example.

It is precisely this thinking that resulted in the creation and success of the U.S. Green Building Council and the Leadership in Energy and Environmental Design rating system. By providing points in several categories for fulfilling criteria deemed to be more sustainable, this system promotes sustainable site development, water efficiency, efficient energy and a clean atmosphere, sustainable materials and resources, and indoor environmental quality.

Unfortunately, few in the health-care industry have taken the leap. According to a recent Memphis Business Journal article, less than 3 percent of hospitals are LEED certified in the United States today. Health-care, in general, lags behind every other industry in green contribution.

## Benefits to patients and employees

There are some other intrinsic qualities that can greatly benefit the bottom line and overall success of a hospital. Numerous studies have shown that healthier environments have positive benefits on healing. Indoor air quality, thermal comfort, natural light, views of landscaped areas, healing gardens and labyrinths all have been shown to help patients heal faster.

The Green Guide for Health Care, a voluntary sustainability program,

adds credits specific for "Lighting and Circadian Rhythm," noting that daytime and nighttime controls for lighting systems in accordance with circadian rhythms can improve patient sleeping and recovery. Aside for the obvious benefit to patients, a quicker healing period can reduce the time a patient stays in the hospital as well as the medical treatment needed. This can be a major cost reduction.

This also applies to employees, as other studies have shown workers in these environments experience increased labor productivity, job retention and days worked. These benefits contribute directly to a company's profits because benefits — which are about 10 times higher than rent, utilities and maintenance combined

— are the largest expense for most organizations.

In addition, more people are demanding sustainable products and services. This especially is true of the 'creative class' and other younger professionals. Sustainability is not an option to this group, it is a requirement.

Healthcare is a highly competitive industry. After the baby boomer generation, competition will be heightened — at least in the short term — by the smaller population of Generation X. A healthcare system simply can't afford to be late to the sustainable dance and risk falling behind competitively. ■

**Scott T. Clein, P.E., LEED AP, is with Giffels-Webster Engineers.**