From our Editorial Board

Affordable green initiatives

Cost-effective ways to incorporate sustainable design in a challenging market

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It could be argued that there has never been a more challenging environment for developers to remain profitable and competitive than the one we find ourselves in today. Significant increases in construction costs over the last several years along with relatively flat rental rates and elevated land prices have many building owners questioning whether or not they can afford to incorporate green/sustainable design features into their next generation of projects.

In an effort to attract environmentally sensitive corporate users, several national developers and REITs have recently set themselves apart by issuing press releases announcing their commitment to pursuing LEED certification on all future projects.

Against this backdrop we find many clients asking if there is a way they can incorporate green design principles without significantly increasing their overall construction costs.

For our clients that have made the commitment to pursuing LEED certification, we have been investigating costs associated with the various LEED credits available to help them determine the most cost-effective means of doing so.

The majority of those not yet ready to commit to expending the time and dollars necessary to achieve LEED certification have expressed interest in learning about eco-friendly design features that can be incorporated into their projects without significantly impacting their bottom line.

For industrial developers there are four areas where sustainable design can most easily be incorporated. These areas are materials and resources, site design, water/stormwater efficiency, and energy efficiency.

Fortunately, inexpensive eco-friendly strategies are available across all of these categories.

Materials and resources

The U.S. Green Building Council (USGBC) encourages the use of locally sourced and regionally manufactured materials, a goal which most indus-

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trial projects here already meet through the use of locally manufactured precast wall panels, locally mined aggregates, and concrete floor slabs and foundations constructed of locally manufactured ready-mix concrete.

Recycled materials can also be incorporated into building designs without substantially impacting the project budget. Most industrial buildings in the Midwest are already being constructed utilizing structural steel containing up to 95 percent recycled content. Bituminous paving mixes commonly used in parking lots and truck courts typically include at least 20 percent recycled asphalt material.

Another cost-effective recycling opportunity lies in the use of crushed concrete in lieu of virgin limestone underneath floor slabs and asphalt paving. This material can be purchased for little or no additional cost in areas where concrete recycling operations offer crushed concrete at rates that are competitive with mined limestone aggregates.

On redevelopment sites, some municipalities permit existing concrete slabs and pavement to be crushed for re-use onsite and allow the reclamation of stone from underneath existing parking lots and building slabs for use as onsite granular fill. Implementation of these strategies can significantly lower project costs by reducing the amount of new granular material that needs to be purchased and imported to the site. In many cases, these strategies have the added benefit of eliminating or substantially reducing costs associated with exporting excess material to balance site grades.

Construction waste recycling programs can also be implemented in many areas for a relatively small premium cost to ensure that as much material as possible is diverted from local landfills.

The USGBC also encourages the use of sustainable wood products. Given the relatively small amount of lumber incorporated into most industrial buildings, lumber that has been certified by the Forestry Stewardship Council to ensure that it comes from forests that are managed in an environmentally friendly manner can usually be incorporated without substantially increasing the overall project cost.

Site sustainability

There are a number of areas where green design features can be incorporated into site planning for little or no additional dollars. In some cases, the pursuit of sustainable site initiatives can actually result in a lower overall project cost.

The USGBC encourages developers and building owners to limit the number of parking spaces on their projects to no more than what will be required by the end user. With the cooperation of local authorities, land-banking of parking stalls for future installation can give developers the ability to provide more open space while eliminating potentially unnecessary upfront costs.

Meridian Design Build worked closely with developer DP Partners to incorporate sustainable design into their latest 495,000-sq-ft speculative industrial facility within LogistiCenter at Sauk Village. Green design concepts include native landscaping, clerestory windows, T-5 flourescent lighting, low VOC paints, and construction material recycling.

Another goal of sustainable site design is to encourage alternative transportation. Priority parking stalls can be designated for those participating in car-pooling and those driving low-emission or fuel-efficient vehicles for little or no cost. Additionally, relatively inexpensive bike racks can be provided to further encourage employees to consider alternative transportation.

Other cost-saving opportunities exist in the area of site lighting. In the past, more lighting has been perceived by building owners and tenants to be better. By reducing the number of exterior light fixtures on a project, construction and long-term operating costs can be lowered while significantly reducing or eliminating light pollution. Photocells and timers can also be utilized to ensure exterior lighting levels are reduced appropriately during unoccupied hours.

Water and stormwater efficiency

One of the most critical environmental challenges on any project is the effective management, diversion, and filtration of water and stormwater. Runoff that can potentially introduce contaminants into public water systems poses a significant environmental threat that can be minimized through good design.

One relatively inexpensive means of reducing the possibility of such contamination is the incorporation of bioswales - man-made drainage ditches integrated into the landscaping plan that collect silt and rainwater runoff. Bioswales work by harboring runoff onsite for an extended period of time. In doing this, they trap pollutants and silt and encourage the absorption of a large percentage of the stormwater before it reaches detention ponds and public waterways. Side benefits of bioswales include their aesthetic value and the natural habitat they provide for wildlife.

Bioswales should be considered early on in the site design process as perimeter setbacks may need to be increased slightly to ensure that

adequate side-slopes can be maintained. Premium costs associated with the installation of bioswales can often be offset with savings resulting from reduced quantities of underground stormwater piping.

Another means of improving water efficiency is through the installation of drought-tolerant and low-maintenance plantings and grasses. While this type of landscaping can be more expensive, the incremental costs can typically be paid for with construction and operational cost savings resulting from reductions in artificial irrigation.

Energy efficiency

There are a number of areas where payback periods have been reduced to a point where the expenditure of additional dollars on the front end to increase a building's energy efficiency is starting to make sense for many of our clients.

Rather than - or in addition to - spending dollars upgrading to alternative roofing membranes, many developers and users are taking a hard look at increasing the thickness of roofing insulation on their buildings to reduce energy consumption and long term operating costs. We've also been working with local precast manufacturers to assist our clients in evaluating at the cost and payback associated with providing additional insulation in the exterior wall system.

Given the relatively small percentage of exterior glass on most large industrial buildings, low-emissivity (Low-E) window coatings can often be incorporated for minimal additional cost. These coatings are certainly worth considering as they've been shown to reduce energy loss by up to 50 percent.

On projects where smoke evacuation is required by local code, we've been encouraging clients to look at utilizing drop-out skylights in lieu of mechanical ventilation systems in order to take advantage of the natural daylighting benefits that these skylights can offer.

Clerestory windows (perimeter warehouse windows located near the roof line) are already being incorporated on many projects. On projects where clerestory windows are not already being used, we're suggesting that building owners consider adding them to bring natural light into warehouse and manufacturing spaces. These windows are typically much less expensive than skylights and can be utilized as architectural accents to significantly improve the look of the exterior building facade.

T-5 high-bay fluorescent lighting systems, although still a bit more expensive than traditional metal halide lighting systems, also make sense on many projects. More and more users are indicating a preference for this type of lighting and the payback in energy savings can be as little as two to three years depending on the application. Motion sensors and daylight sensors can also be installed on these fixtures to further reduce energy consumption.

The bottom line of green design

Most of us are in favor of incorporating some degree of environmentally responsible design into our future projects, particularly if it can be done in a cost-effective manner that results in long-term operational savings and reduced energy use.

The key to developing budget-conscious green building programs is to make sure that a knowledgeable design firm and general contractor are brought in to assist in identifying opportunities and evaluating corresponding costs early on in the process.

With a little up-front planning there is no question that we can all work together to design and construct facilities in a manner that minimizes negative impacts to the environment without adversely impacting the bottom line.

Howard Green, as executive vice president of Meridian Design Build and one of two founding principal owners, has been personally involved in the planning, design, and construction of more than 125 facilities with a total square footage in excess of 25 million sq ft.