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Sustainable design requires a team approach



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National Survey & Engineering, a division of RA Smith & Associates, designed a system of seven water quality ponds and three infiltration areas to provide on-site infiltration of the stormwater runoff from the roof and parking lots at the nearly 1.1 million square foot Roundy's Distribution Center on 113 acres in Oconomowoc, Wisconsin.

By Tom Mortensen and Michael Pasche

The word “sustainable” in the design profession is no longer just a compelling buzzword. It’s a process of design that requires specific action, talent and collaboration.

Looks can be deceiving, and sustainable design is no exception. You can’t really determine how sustainable a project is just by viewing it on the surface. It goes much deeper than pure observation. The aesthetic appeal of a site and building can unknowingly be interpreted as “green” design. Even a project that employs some green elements doesn’t necessarily constitute a sustainable building. To determine whether a site and a building will provide the maximum economic, social and environmental benefits of a well-designed and constructed

sustainable development, first talk to the design professionals who made it happen.

A truly sustainable project involves taking a close look at all aspects of the development including water conservation, building materials, waste management, energy efficiency, indoor air quality, site design, paving, transportation, stormwater and well-planned, natural landscapes. These same considerations are an integral component of the LEED (Leadership in Energy and Environmental Design) certification process that has been put in place by the US Green Building Council (USGBC) to recognize sustainable developments.

Anyone is free to call their building a green building after putting in a green roof, or high-efficiency furnace, or low-use water fixtures—but how many green elements make a building

green? Rating systems such as LEED provide a valuable method of comparing projects and measuring a degree of sustainability. Without them, we rely on arbitrary definitions of the sustainable elements and technique and ultimately an arbitrary decision on whether or not a project can genuinely be called sustainable.

A true sustainable project is more than just an assemblage of individual green building components. A more holistic approach is required, as each piece must be understood within the framework of the whole project. That is, the elements that go into creating a building (building program, HVAC, structural, flooring, finishes, grading, landscaping, etc.) cannot be designed or determined in a vacuum—the relationships between them are important. For example, a roof system can be designed to

integrate with the site (providing rain water for some irrigation) while complementing the indoor atmosphere (with daylighting for work spaces) and remaining energy-efficient (employing better insulation to reduce the size of the air conditioner unit, the location of which was selected so as not to interfere with drainage or skylights).

The project's overall footprint on the environment and economy is important in determining how each part is designed or selected. This can be demonstrated in the fact that without installing any special product or invoking any unique design, the choice of location of a project can have a significant impact on its sustainability by respecting sensitive sites protecting greenfields, building where basic services are located, reusing distressed sites, and reducing impacts from cars. This approach is the key to achieving sustainability for a project with little to no increase in the overall cost of the development.

Sustainable design demands a team of professionals that understand how to bring the natural and built environments together with maximum benefits to the environment, the economy and society's well being.

It's really a thought process that gets everyone from the developer to the local government authority, the architect, engineer, landscape architect and the contractors all thinking on the same page throughout the entire process. From the concept of the various systems to long-term use, from the delivery of raw materials to construction disposal, all of the design disciplines play an important role.

Team collaboration of all of the design professionals, the client and the contractor are critical to the success of the sustainable design and implementation process.

Making early design decisions as a team truly reflects the benefits of a sustainable development, including real cost savings for the property owner and developer, a higher quality of life for the end user and preservation of the environment for current and future generations. Avoiding stumbling blocks during the construction process is another critical benefit of early collaboration.

The biggest obstacle to sustainable design is the key players' non-participatory attitude and resistance to becoming educated and aware of the benefits of sustainable design. Some parties involved in the project can put up roadblocks because they do not understand these design principles. Or they simply believe it's not worth the investment because they haven't seen the benefits. This can be true of the municipalities, the developers, the design professionals and the end users. It is often dismissed as "expensive" or "unproven" without any true exploration and understanding.

Resistance is a byproduct of unawareness and unfamiliarity with trying something new. However, many sustainable site design concepts are not new. They are as old as the Earth itself. For example, treating stormwater as a resource rather than a waste product is simply looking at different strategies that allow rainwater to infiltrate the ground and be used by plants, instead of piping it immediately to the "bouncing pond of brown muck" surrounded by non-native turfgrass and urbanized geese.

This is not to say that ponds can be eliminated for stormwater management, but they should be viewed as the last line of defense rather than the first. This makes for a much more stable and aesthetically pleasing hydrologic environment.

These approaches have been used more commonly on projects in other parts of the world such as Europe, where land availability and restrictions are much tighter.

Sustainable development is very site-specific.

It's all about getting the site and building to work with nature, not against it. Using various elements such as permeable pavers, bio-infiltration swales, depressed parking islands, green roofs and vegetation that is tolerant of specific conditions are just a few of the techniques worthy of exploration.

In the buildings, using waterless urinals, recycled or renewable building materials, regional materials (extracted, processed and manufactured within a 500-mile radius of the site), low-energy lighting sources and high efficiency HVAC systems that use fresh air are just a few ways to use sustainable elements.

Some of these important elements are often overlooked when team members are not involved early in the process. A good example is waiting to involve HVAC until the project is almost complete. HVAC has a direct impact on the project's indoor air quality and energy—two very important aspects of a sustainable development. If HVAC isn't brought on board early along with the other design professionals, the project could require several untimely design revisions in order to accommodate the proper equipment and allowances.

In order for sustainable design to work, team members and approval authorities need to focus on what they can do and why their contributions are important.

Municipalities must be open to explore and allow alternatives that maybe haven't been tried in their area before. Some investigation into what is happening in communities in other parts of the country (and world) could go a long way in helping municipalities gain an understanding of these benefits for their local cities, towns and villages.

Designers need to be allowed to do creative design and not be afraid to go outside the knee-jerk, comfort level of typical design parameters. For those who are currently adopting these design principles in their work, they will inevitably bring these principles into their everyday design practices in the future, without being under the title of "sustainable." It will, and should, become the norm at some point.

End users will start demanding real sustainability and will want to be seen as "green." It makes good business sense. With energy and transportation costs rising, water resources becoming an issue, office leasing becoming more competitive, users becoming more aware of indoor air quality, and land becoming less available and more restrictive for development, many businesses are looking at sustainability as a positive marketing opportunity. Improved work environments have demonstrated positive effects on employee productivity. Retailers are also getting on board for many of these same reasons.

Sustainable product vendors have to spend time getting everyone involved comfortable with their products. They need to provide proven case studies, cost benefit analysis and installation methods to dissolve the mystery and skepticism of using their products and materials. Outreach, demonstrations and awareness of the availability of vendors' goods is a critical step in developing a rapport and comfort level with designers and helps build the confidence of the end users. The effort vendors make to get municipal reviewers comfortable with the suitability of their products is time well spent.

The meaning of green will and should continue to evolve. Individuals involved in creating the built environment must continue to come together to build consensus on the definition of sustainability, and should strive to bring a broader spectrum of participation to the conversation through groups like the USGBC and its affiliates and chapters. As more and more sustainable projects are built, we will see increased acceptance and use of these methods. Hopefully, the word "sustainable" will become an expected, appropriate standard and benchmark for all future developments.

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