

## Save These Dates . . .

**March 13, 2002\***  
Computing Outside the Box: Connecting Multiple Offices, Computer and Computing Philosophies

**March 28, 2002**  
ConstruCT 2002, 4th Annual Construction & Facilities Management Conference and Exhibition: Making Green from Green

**March 28, 2002\***  
The Final Frontier: What Have We Learned?

**April 25, 2002**  
Western Region Outlook

**May 30, 2002**  
Eastern Region Outlook

\*Technology Breakfast Seminar Series

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## Sustainable Design Basics

According to the Worldwatch Institute, “Buildings consume 40 percent of the energy, and 16 percent of the water used annually worldwide. In the last hundred years, the amount of heat trapping carbon dioxide in the air has risen 27 percent, of which one quarter has come from the combustion of fossil fuels to provide energy for building. This build-up threatens ecosystems and agriculture and human settlements with higher temperatures, and has changed weather patterns. Moreover, up to 30 percent of new and renovated buildings suffer from sick building syndrome.

Green design, green architecture or sustainable design is one way we, as professionals, can make a difference. Sustainable architecture is design that meets the needs of the present without compromising the ability of future generations to meet their own needs. It is an entire approach to creating buildings that take environmental concerns into account at each phase. There are three major components of green design: energy, material selection and waste management.

### Energy

Energy use in a building is in some ways the most critical component of sustainable design because it has an ongoing effect over the life of the building. Poorly designed or energy inefficient structures continue to waste precious resources and pollute our atmosphere over time. According to Nancy Cole of the Union of Concerned Scientists, “The burning of fossil fuels for energy accounts for 60 percent of all greenhouse gas emissions.”

New techniques should be considered, such as super insulation, selection and placement of window glazing, and passive solar and fuel cell heating and cooling systems.

In addition, daylighting of interior spaces reduces electric demand and creates a more pleasant environment. New energy efficient mechanical equipment, lighting and appliances can also be considered. Most utility companies now have rebates, technical assistance and training seminars to encourage the efficient use of energy.



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*Duracell World Headquarters in Bethel, CT, designed by Herbert S. Newman & Partners, blends natural characteristics of the site, habitat management plan, energy efficient, use of recycled materials, and low VOC paints and adhesives.*

### Construction Materials

Architects and builders have traditionally based their material selections on cost, aesthetics, maintenance and availability. Now, environmental impacts and life cycle costs are entering the equation. There are numerous guides that review issues such as natural resource depletion, energy consumption,

(please see Green Design on page 3)

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## Reduce Operating Costs and Improve Employee Productivity With Sustainable Designs

From an engineering perspective, building systems based on sustainable design principles have been available for many years. However, the ability to create overall building designs that integrate the mechanical, electrical and plumbing systems utilizing these technologies requires a special knowledge in sustainable design principles, and a true team commitment



*Belmar Redevelopment, Lakewood, CO, Elkus / Manfredi Architects Ltd., recreates a 5 million square foot city grid and is hoping for a LEED™ Silver certification.*

to the sustainable design philosophy and process. But cost effective integration of building systems that satisfy sustainable design goals can only be achieved through a comprehensive team process which begins at the earliest stages of design.

Architects and engineers, working closely together in the schematic design phase, can optimize the building architecture in terms of siting, envelope construction, and glazing to minimize the loads imposed on the building systems. This optimization is carried out through a computer modeling process that tests various building design options to determine those yielding the greatest benefits. This process typically results in significant reductions in peak building loads, reducing both initial capital costs and long-term energy consumption. The reduction in capital cost is used to offset the initial increased cost of high efficiency systems, reducing energy consumption even further. In optimal sustainable designs, it is not uncommon to yield energy cost reductions of 40% or more over a traditional facility, with little or no increase in capital cost.

Reduced energy cost represents only one goal of the sustainable design process. Equally important is the goal of providing a healthy, pleasant indoor environment.

While indoor environmental quality goals can sometimes be in conflict with low energy use standards, proper utilization of building systems technology can satisfy both requirements. For example, high indoor air quality levels usually require increased ventilation rates, which can result in increased energy use. However, high air quality and reduced energy use can be achieved through the application of air-to-air heat recovery, or specialized high-efficiency filtration technology.

Building lighting systems represent the greatest single component of overall building energy costs and have a major impact on the environment within the facility. Use of high-efficiency indirect lighting combined with daylighting technology can result in a vastly improved visual environment, while reducing both direct energy costs for lighting and indirect costs for the building cooling systems due to lighting loads.

The holistic approach embraced in the sustainable design process can provide for both reduced energy cost and an improved building environment.

(please see Reduce Operating Costs on page 4)

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## eBiz On-Line

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waste generation and indoor air quality. There are also reviews of specific products and showrooms that feature non-toxic alternatives to conventional materials.

Due to major recent recycling efforts, there is an abundance of building materials with varying degrees of recycled content. Recycled siding, roofing, tile, carpeting and wallboard are available and should be seriously considered in all construction projects.

Although initial cost for this approach is often higher, the life cycle cost that includes replacement and maintenance costs, are usually much lower. And, natural materials add value to a project because occupants think they look and feel better.

**Waste Management**

The final component of green design is waste management. Construction and demolition waste makes up roughly 25% of what goes into municipal landfills in the U.S., with approximately 90% being recyclable. Reduced waste generation saves money in disposal costs and salvaged materials can often be sold for a profit.

It is our responsibility to consider the environment in both the big and little decisions that we make daily, but also to take a leadership role in educating the public and our clients as to the choices that are available. ▲

## F O C U S

**ConstruCT2002 Expo Focus is Green Design***Making "Green" From Green**Agenda*

- 11:00 a.m. ConstruCT 2002 Registration and Exhibition Hall Opens
- 11:30 a.m. Buffet Luncheon
- 12:30 p.m. Opening Remarks: Arthur H. Diedrick, Chairman of Development, Office of the Governor, State of Connecticut
- 12:45 p.m. Keynote Address: Christine Ervin, president and CEO, U.S. Green Building Council
- 1:45 p.m. Panel Discussion:  
What does it mean to be Green; Why Green As Part of your Business Philosophy; The LEED™ Criteria; Cost/Benefit Analysis; Incentive Programs for New construction & Renovation
- 3:00 pm. Conference Break and Exhibition Hall
- 3:30 p.m. Green Design Testimonials: Building Green in Pennsylvania; Harvard University's School of Public Health at Landmark Center
- 5:00 p.m. Reception in Exhibit Hall



*Christine Ervin, president and CEO of the U.S. Green Building Council, will be the keynote speaker for the ConstruCT 2002 Facilities Management and Construction Expo. She is former director of the Oregon Department of Energy and assistant secretary at the U.S. Department of Energy.*

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## Reduce Operating Costs and Improve Employee Productivity

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While energy costs represent a significant component of building operating costs, they typically represent only a small fraction (less than 2%) of the salary costs for the personnel occupying the facility. The indoor environmental benefits of a “green” facility can result in improved staff productivity and reduced absenteeism. If the improved quality of the indoor environment results in even a one percent increase in overall staff productivity, the firm occupying the facility realizes major economic benefits. Significant marketing benefits can be realized in

competitive leasing markets through effective use of sustainable design practices.

An engineering focus on maximum performance includes full implementation of processes that improve the environmental performance standards and reduce the life cycle cost of building operating systems. Engineers trained in sustainable design practices create innovative building systems that are healthy, comfortable, and energy efficient. ▲

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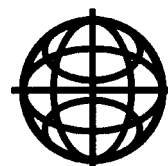
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