



architecture & environment

Environmental Design Checklist for Building Owners

As an owner, you play a critical role in the design process. Make your architect aware of your environmental concerns early. This brochure will help you begin.

You, Your Architect, and Your Project

The AIA Minnesota Committee on the Environment presents this Environmental Design Checklist as a tool to help clients achieve designs that are not only responsive to program needs, but also contribute to the creation of healthy and sustainable environments. As an owner, you play a critical role in the design process. Make your architect aware of your environmental concerns early.

Green Design Can Save You Money and May Improve Performance

Designs that minimize environmental impact can offer economic benefits, especially in the long term. Energy efficient design of lighting, cooling, and heating systems contribute to lower operating costs and sometimes reduce initial capital investment if equipment can be downsized.

A study by the Heschong Mahone Group for Pacific Gas and Electric

Company showed that daylight in classrooms was strongly correlated with 20% higher test scores among elementary students. Another part of the study showed that retail sales were as much as 40% higher in stores with skylighting.

Frequently, buildings designed in accordance with environmental principles offer increases in occupant productivity and sense of well being. Numerous case studies support the correlation of improvements in indoor environmental quality with **increased productivity, output quality, and decreased absenteeism** - savings which can quickly offset any increase in initial investment.

The way you furnish and operate your building influences how well it performs and maintains a healthy environment. Educating building users and staff on how the building is meant to work and encouraging their contributions (for example, turning off lights and equipment) can have a real impact on your utility bill.

Choosing an environmentally responsible alternative can raise your initial investment. **You and your architect must decide which measures offer the best value in the long term.** Utility sponsored rebates may be available to offset costs of some energy savings measures.

A Checklist of Issues to Discuss With Your Architect

Site & Land Planning

Transportation accounts for 15-20% of the annual 6 billion tons of carbon emissions from human activities that are leading to climate change.

— *Worldwatch Institute, State of the World 1999*

How can my site be best used to encourage building design that:

- Takes advantage of solar access and existing vegetation?
- Has minimal impact on ecosystems?
- Supports use of alternative transportation?

Energy

Building construction and operation constitutes over 40% of the energy consumed in the world.

— *Worldwatch Institute, Worldwatch paper #124*

- What are cost-effective energy performance targets for my project?
- Will initial investments for design and construction be offset by reduced capital costs in heating and cooling equipment?
- How long will it take to receive payback on my investment?
- Are utility-sponsored rebates or design-assistance programs available?
- Is lighting, including daylight, designed to optimize comfort and minimize energy use and peak electric load?

Recycling & Waste Management

In Minnesota, approximately 46% of the waste in the landfills is construction and demolition debris.

— *1997 landfill receipt data from the Minnesota Pollution Control Agency*

- Have the construction materials specified been considered for their durability, recycled content or ability to be recycled?
- Have the benefits (economic and otherwise) of recycling vs. land-filling construction waste materials been considered?
- Are plumbing systems, fixtures, and landscaping designed to minimize the use of water?
- Does the design accommodate occupants' recycling programs?
- Does the design anticipate future expansion or reuse to minimize waste?

Healthy Building

1.2 million commercial buildings are believed to be affected with "Sick Building Syndrome."

— *OSHA*

- What are the nontoxic or least toxic materials to use for each part of my project?
- What are the cost implications of using such products?
- Will improved indoor air-quality increase productivity and user satisfaction?
- Are ventilation systems, including natural ventilation, designed to minimize air-quality concerns?
- Can a pre-occupancy "commissioning" period be incorporated to help rid the building of pollutants?

Materials

Over a third of the virgin minerals consumed each year are used in the building construction industry.

— *Worldwatch Institute, Worldwatch paper #124*

- Can I use materials that minimize the ecological effects of mining or harvesting raw materials, transportation, manufacturing and packaging?
- Are local sources available?
- Are materials available that use less raw material, such as those made from recycled or waste products?

For More Information

This checklist merely touches on the range of environmental design issues. If you would like further information, please contact the American Institute of Architects Minnesota, Committee On The Environment (AIA-MN COTE) at 612-338-6763

This brochure was created by the AIA Minnesota, Committee on the Environment with some material adapted from earlier publications by the National AIA Committee On The Environment.

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