

Building Codes for a Small Planet

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It is a great pleasure to introduce the third *Building Standards*[™] feature on green building and alternative materials and methods. The first feature appeared in the September–October 1998 issue and the second in the January–February 2000 issue. Articles from both are available online at www.icbo.org/Building_Standards_Online.

These recurring features demonstrate the International Conference of Building Officials' commitment to sharing the context and details of alternative building approaches with its members. The information imparted has helped better equip the code community at large to deal with both the growing concern about and increasing number of solutions to the large, mainly negative impact the built environment has on the natural environment.

For example, consider the following. According to an annual survey conducted by *Building Operating Management* magazine, as of 1995 there were 4.5 million facilities in the U.S. occupying 58 billion square feet. New Buildings Institute reports that commercial and residential buildings combined consume over 35 percent of the total energy and over 65 percent of the total electricity in the U.S., incur energy costs of over \$228 billion per year, and are responsible for over 35 percent of total U.S. carbon dioxide emissions.

The impact extends beyond the day-to-day operation of buildings. Maintenance and upkeep also require a

large input of materials and energy—about 71 percent of existing buildings are 20 years old or older and in need of some level of renovation or repair (the *Building Operating Management* survey reports that improvements to existing buildings amounted to \$141.5 billion in 2000). Further significant environmental effects result from the disposal of the demolition waste at the end of the useful life of buildings. The EPA estimates that each year 45,100,000 tons of non-residential demolition debris enters the waste stream. The majority of this waste flows to landfills, and a significant percentage is toxic to humans and the environment. Facts like these demonstrate the need for lower-impact materials and methods of construction.

The organization that I head, The Development Center for Appropriate Technology (DCAT), works at many levels to seek alignment and compatibility between green building and building regulations. DCAT recently conducted a survey—which a number of you probably participated in—assessing regulatory issues related to green building in order to obtain some quantitative data to complement our several years of experience in this arena. We are pleased to announce that the results have now been compiled.

The survey collected information from people who work on both sides of the counter: those seeking approval for their plans (code users) and code officials. Intended to assess both groups' experiences with green building and building codes, the survey produced some obvious and some less anticipated results. For instance, it revealed that building codes frequently present both technical and nontechnical challenges to the approval process of green building alternatives, including the following:

- applications are more likely to be denied if they include items that appear to clearly conflict with the intent of the code or lack sufficient supporting information about the green product, material, system or design to satisfy safety concerns;
- both code officials and code users consider an existing code provision more likely to contribute to the approval of a green product, material, system or design application, but only code users believe that code provisions contribute to the denial of such applications; and
- practitioners sometimes avoid including green alternatives in their plans because they expect that adequate supporting information will take too long to acquire or does not exist.

On the positive side, the survey results revealed strategies for green building practitioners to enhance the

approval rate of green building approaches. Both groups overwhelmingly indicated that supporting information for alternatives accompanying plans was the most significant factor in gaining code approval. Additional strategies respondents found helpful in gaining code approval were:

- providing information such as case studies of successful uses of the proposed alternative and contact information for building officials familiar with the alternative,
- starting the whole process early,
- involving building department staff early, and
- being persistent and patient.

The complete survey report is available on the DCAT website, located at www.dcat.net. We hope it proves a useful tool in helping the building community better understand the challenges and opportunities inherent to sustainable building and codes.

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The views expressed here are those of the author and do not necessarily reflect the opinion or agreement of the International Conference of Building Officials.

Our experience and the results of the survey demonstrate the need to provide the code community with educational opportunities to increase both general and technical understanding of alternative and sustainable building approaches. Toward this end, this issue of *Building Standards* presents more of that information. Unlike the two previous alternative building features, the focus of the articles in this issue look beyond specific alternative materials to overarching issues that relate more to design and process, as well as green building programs and rating systems.

Peter Yost, of the Building Science Corporation in Westford, Massachusetts, provides an overview of green building programs and the U.S. Green Building Council's Leadership in Energy and Environmental Design's LEED Green Building Rating System™. A leading expert on dark sky ordinances and natural lighting for buildings, Nancy Clanton examines these issues in her article. Bill Reed, an internationally known architect from Chevy Chase, Maryland, writes about the integrated design process and the vast potential it presents for improved design and performance of buildings. Finally, David Confer, an environmental engineer in Tucson, Arizona, describes how an integrated approach to designing water systems contributes to the responsible use of water resources.

I hope you find the articles and information presented both stimulating and useful to you in your ongoing work. ♦