
Superior Buildings for the 21st Century:

A NEW Millennium Resolution

**It's time to debate the deeper problems
plaguing our industry openly and
begin to resolve them. Only then can
we raise our national building stock to
a superior level of performance.**

SUPERIOR BUILDINGS

Beyond green

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Ask 10 mechanical/electrical engineers to define a green building and you are likely to get a dozen divergent definitions. Certainly, energy conservation will be included and probably indoor air quality as well, but beyond those there is little consistency. One of the problems with the term *green* is that it is so amorphous, and applied to green building discussions, it does little to convey the complexity of the concept adequately and the skills needed to achieve a truly green building. Indeed, on the scale of things, energy conservation and IAQ are barely beyond kindergarten.

The engineering community still tends to think of green building ele-

ments as individual things instead of integrated components or replacement construction elements. This approach biases evaluations against potential green strategies. It often surprises designers to learn that owners expect green designs at the same cost as conventional design or at best with only a slight premium. How can this be? Well, consider the economics of a photovoltaic cell based on the collector as a "thing" hung on a finished building, which yields one type of outcome. Alternatively, if the photovoltaic collector also doubles as the roof, or the spandrel panel (the integrated approach), then the saving of roof or wall materials and installation applied to lowering the effective cost of the collector produces an entirely more favorable result.

HVAC engineers cut their design teeth on energy issues, so a concentration on energy conservation strategies is

understandable. However, even conservation efforts that achieve significant reductions of 30 to 40 percent produce real savings that are minuscule compared to the impact of improving the productivity of the occupants of buildings. In fact, an increase of productivity of 1 percent in an office building has an economic value of over 125 percent of the total energy cost for the buildings heating, cooling, and electrical equipment power consumption. Clearly, we should not de-emphasize energy conservation efforts, but these must be viewed in the larger perspective of the total building environment.

Succeeding with environmental design means acquiring new skills—especially financial for understanding the needed analytical techniques of the expanded building reality, and political/communication for moving these exciting new concepts from casual discussion to occupied reality. But more important, we need to move beyond the "green" label to a nomenclature

representative of this vastly expanded horizon. The current popular suggestion is "Environmentally Responsive Sustainable Design." While better than green, it still does not do justice to this 21st century revolution.

Engineers tend to be happy with things they are familiar with and which they know will work. Environmentally responsive sustainable design requires new thinking, approaches, equipment, and materials. Most importantly, it requires believing in this ecological approach as well as a much greater degree of cooperation and integration with the architecture and structure. To make the transition a reality, several steps are needed. These include widely publicizing successful demonstration projects; developing educational material on the fundamentals and advanced techniques of environmentally responsive sustainable design; and opening new dialogue with our fellow building design professionals. Finally, an educated client is the design professional's best asset, and it becomes the responsibility of all to educate their clients in the perils of "payback criteria" and the joys of innovative thinking. ■