



PRACTICE MANAGEMENT NOTES

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Everyone knows what green means

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Is there anyone in the developed world who is not aware of what “green” means? The general concept of greenness is daily translated by advertising media into pitches for green products from household cleaning supplies to fashionable clothing. The message: buy green to fight forces threatening global environmental catastrophe. Arguments of skeptics are countered by a convenient truth for our economy: green sells.

So when Madison Avenue persuades billions of people to launder their Earth Day T-shirts with biodegradable soap, is the planet saved? Probably not, and here is why: Buildings and the process of constructing them are responsible for a major amount of energy use and environmental degradation. The American Institute of Architects (AIA) Web site, www.aia.org, makes the following points regarding global energy consumption. ([architectsandclimatechange.pdf](#), 2008):

- Buildings consume 48 percent of energy used each year in two ways:
 - Energy “embodied” in production and use of building materials; and
 - Energy consumed operating buildings.
- Buildings consume significantly more electrical power than other uses:
 - 76 percent of electrical power generation serves buildings;
 - 23 percent serves industrial uses; and
 - 1 percent is for transportation.

The experience of previous energy shocks has taught architects and interior designers that reductions are possible using energy-conscious design of buildings and interiors. Beyond energy consumption, problems with mold and indoor air quality have been added to the list of issues that must be addressed by building design

and construction. Green is not just about energy, it is about the environment – including buildings. Decisions people make in designing and constructing buildings will contribute to solving environmental problems. Green design includes the following:

- Energy conserving building envelopes;
- Smart, efficient mechanical and electrical systems; and
- Sustainable construction materials and finishes.

Designing a Green OMS Office

If you are thinking of building or remodeling an OMS office, your designer is likely to raise the question of green or sustainable design. Nearly every newsletter, trade magazine, or journal for architects, interior designers, and contractors has at least one article with a green focus. Designers are thinking green.

Even if you are already sold on the concept of sustainable design, it is important to start your design and construction project by defining exactly what you and your designer mean by green design and how far you are willing to go pursuing it. Wikipedia, www.wikipedia.com, provides a concise definition of “green design” that equates the terms green and sustainable. Sustainable is apt, implying performance over a span of time.

Sustainable design goes beyond assessing initial cost and short-term performance. Architects and interior designers are encouraged by countless sources to broaden the scope of their thinking to include environmental costs and long term performance:

- Minimize negative impacts on natural and socio-economic environments;
- Consider life span of a building and materials that go into it; and
- Assess long-term performance, including maintenance, repair, and replacement.

These ideas are not new; however recent weather events and spikes in energy prices have increased public awareness of a need to respect environment and conserve resources. The challenge for regulatory, design, and construction professionals is to translate such abstract ideas into specific guidelines, codes, designs, and buildings that really make a difference.

A person planning a sustainable project right now can take advantage of a regulatory environment that is relatively unencumbered by mandatory rules for sustainability. Case studies provide examples of successful design tactics that might be applied to an OMS office; however, a 2007 list of sustainable projects registered by the U.S. Green Building Council lists only one dental office and no OMS offices (www.usgbc.org, 2007). Against this background, your inventive, green OMS office of 2008 could become a prototype sustainable design of the future.

Paths to Sustainable OMS Design

Paths to a sustainable OMS office are not uncharted. There is more than one way to achieve sustainable design. Leadership in Energy and Environmental Design, LEED, certification is a formal approach that requires a high level of commitment by all involved in design and construction. Your project is submitted to an evaluating agency for certification and, if successful, awarded one of the following levels based on points accumulated: LEED Certified, Silver, Gold, or Platinum, the highest level (www.usgbc.org). In contrast, Green Guide for Health Care, GGHC, Version 2.2, 2007, is to be used as a guideline for self-certification (www.gghc.org). The GGHC format is similar to that of LEED; however, it focuses on creating healthy environments for healthcare patients, providers, and the community at large.

Both approaches can result in healthier buildings and long-term savings in operating costs. LEED certification may also qualify your project for tax incentives and rebates. The two approaches are not mutually exclusive. If you pursue compliance with GGHC guidelines, documentation of your efforts can provide a basis for LEED certification.

GGHC guidelines emphasize indoor environmental quality: the goal is to create healthcare environments that do no harm. This means paying close attention to chemical constituents of building materials, finishes, and maintenance supplies. Guidelines are divided into sections on construction and operation.

The construction section identifies specific materials that may be hazardous to occupants and lists agencies that certify products free from hazardous materials. In this way GGHC offers more direction than LEED in selecting materials and products suitable for an OMS office, particularly interior finishes.

The simplest approach to sustainable design is to select materials and products certified as green by a reputable agency, preferably one referenced by USGBC or GGHC. It is also important to recognize that there may be sustainable products and processes not yet formally identified by these agencies. With the help of your designer, you can exercise your own judgment on some questions of sustainability. A designer helps by explaining what various certifications and product claims mean, also comparing appearance, performance, and cost consequences.

Sustainable Interior Finishes for an OMS Office

Whether you approach sustainable design in a simple or complex way, choosing appropriate materials will be a significant part of your decision-making. Let us focus on identifying sustainable interior finish options appropriate for an OMS office. While you may construct a building once over the life of your practice, you are likely to replace interior finishes such as carpet and wall finish every five to ten years. Acoustical ceilings and resilient flooring such as sheet vinyl can be replaced less often. Standard finish material types have sustainable alternatives; however, sustainable alternatives may not be appropriate for every room in an OMS office. For

Flooring	Standard	Sustainable
Carpet	Broadloom Carpet Nylon	Wool Carpet Recycled Content Carpet
Resilient Flooring	Sheet Vinyl Vinyl Composition Tile	Sheet Linoleum or Rubber Linoleum or Rubber Tile
Ceramic Tile	Ceramic Tile	Ceramic Tile
Wall Finish	Standard	Sustainable
Paint/Coating	Acrylic	Low/No VOC (Volatile Organic Compound): Acrylic
Wall Covering	Vinyl Wall Covering	No PVC Wall Covering Wood Veneer Natural Fiber
Ceiling Finish	Standard	Sustainable
Paint/Coating	Acrylic	Low/No VOC Acrylic
Ceiling Tile	Acoustical Ceiling Tile	Recycled Content Tile

example, you may choose sheet vinyl over linoleum for treatment room floors based on your specific requirements for performance. Generic materials listed here are drawn from case studies of sustainable projects:

- Healthy Building Network: *Green_Healthcare_Case_Studies.pdf*, www.healthybuilding.net, 2005
- U.S. Green Building Council: *LEED Project Profiles: 2006, 2007*. www.usgbc.org
- American Institute of Architects: www.aiaopten.org, 2007

Select specific sustainable products for your project based on recommendations from your design professional. A place to start is certifying agencies referenced by www.usgbc.org and www.gghc.org. Some readily accessible sources of specific sustainable products follow:

- Greenguard Environmental Institute, www.greenguard.org
- Greenspec-Listed Green Building Products, www.BuildingGreen.com
- Scientific Certification Systems, SCS, www.scs-certified.com
- Green Seal, www.greenseal.org

Pricing Sustainable Interior Finishes for an OMS Office

The price of sustainability is discussed in a general way in media articles for architects, interior designers, and contractors. Comments range from the expectation of a significant percentage increase to the view that sustainable design should not cost more. Case studies published in a variety of sources suggest both statements can be true—depending on your time horizon. It is common knowledge that some items initially expensive prove economical over the long run. You must balance the promise of long-term value with funds available for a building project; your budget may limit selections to some, not all, long-term values.

In order to make educated decisions early in the design process, it is helpful to know approximate pricing when you select a material or product. *R.S. Means Construction Cost Data, 66th Edition*, 2008, includes generic costs for labor and material. Sustainable products are not identified as such; consequently estimating the price of sustainability requires interpretation.

If you choose to pursue sustainable design, you and your designer should evaluate individual prices as well as overall construction cost throughout the design process. Standard AIA contracts obligate an architect to provide an opinion of construction cost at each phase of a project. Typically, architects, interior designers, and contractors

are able to form an opinion based on estimating manuals, historical prices from past projects, or current price estimates and quotes from subcontractors, suppliers, and manufacturer representatives.

You can get a preview of the initial price of sustainability even before plans and other drawings are complete. Your designer can compare prices using preliminary design information:

- Price per square foot of floor, wall, or ceiling;
- Price per standard size room of a particular type (for example, treatment or office); and
- Price per material based on percentage of a total office.

You can take your analysis beyond initial price by comparing life cycle cost, LCC. This kind of cost analysis may not be within the scope of services offered by every designer; however, online tools are available and may become accessible on manufacturer Web sites. It is worth discussing with your designer at the beginning of a project what efforts will be made to address initial and long-term cost of all major design decisions. A project is pushed over budget one decision at a time. Each decision should be made with some recognition of price.

An extension of life cycle cost analysis is life cycle assessment, LCA, which broadens the concept to encompass environmental costs. LCA is used in certification standards for sustainable materials. There is a structured assessment of environmental impacts that must occur before a material is given a certification by agencies listed above.

Starting with Sustainable Carpet for an OMS Office

Selection of finishes often starts with flooring, carpet in particular. Carpet sets the tone for a space and other finish selections are based on how they relate to the carpet. The discussion that follows focuses on carpet as an example of how finishes for an OMS office may be selected for sustainability.

In an OMS office, carpet is a finish likely to require replacement during your occupancy. A standard choice is medium/high grade nylon sheet carpet. A more sustainable alternative is an equivalent grade carpet tile. Compared to sheet carpet as currently installed, carpet tiles can be more readily recycled; this along with recycled content, classifies them as sustainable. Wool carpet composed of natural materials is also considered sustainable.

Recommendations for manufacturers and specific products can be found in Green Seal's "Choose Green

Report” (CGR_carpet.pdf, 2001, www.green seal.org). The report also explains manufacture of carpet in the context of sustainability. Although some of the information on manufacturers is dated, recommendations provide a place to start. A “Shopping for Green Carpet” checklist in the report identifies qualities applicable to an OMS office:

- High percentage of recycled content (post-consumer preferable to post industrial)
 - Face fiber 25-100% recycled, typically nylon
 - Backing 100% recovered of which 35-70% is post-consumer content, typically vinyl
- Solution dyed fiber
- CRI Green Label compliant: low/no VOC carpet and adhesives
- Environmental leasing or take-back program available
- Natural fiber such as wool

The most sustainable form of recycling is the “closed-loop” in which carpet is recycled into carpet rather than another product such as carpet backing. Closed-loop recycling reduces demand for materials such as Polyvinyl Chloride, PVC, which has a negative environmental impact. Well illustrated information on closed-loop recycling of carpet is found in “Choose Green Report” as well as “The Little Green Book” by Tandus (TheLittleGreenBook.pdf, www.tandus.com). The following LEED linked sources provide listings of certified sustainable carpets:

- BuildingGreen.com, www.buildinggreen.com
- Sustainable Carpet: Scientific Certification Systems, SCS, www.scs certified.com
- Carpet and Rug Institute, CRI, Green Label Plus, www.carpet-rug.org

Pricing Sustainable Carpet for an OMS Office

Even before you select a particular carpet, you can preview pricing of a standard choice versus sustainable alternatives. *R.S. Means Building Construction Cost Data, 2008* contains generic pricing for sheet carpet, carpet tiles, and wool carpet. The rounded figures below include material and labor.

Generic Carpet Price per Square Yard

Sheet Carpet, nylon	\$29 per sq. yd.	base
Carpet Tile, nylon	\$41 per sq. yd.	141% of base
Sheet Carpet, wool	\$106 per sq. yd.	366% of base

A 2000-square-foot OMS office might have approximately 50% or 1000 square feet carpeted. Converting to 111 square yards, the generic price

difference between sheet carpet and carpet tiles is \$1,332. Generic pricing suggests sustainable alternatives cost more initially than the standard choice of carpet.

Generic Carpet Price per 1000 Square Feet of Suite

Sheet Carpet, nylon	\$3,219 per 1000 sq. ft.	base
Carpet Tile, nylon	\$4,551 per 1000 sq. ft.	\$1,332 increase
Sheet Carpet, wool	\$11,766 per 1000 sq. ft.	\$8,547 increase

Generic price information for products such as carpet can form a basis for preliminary decisions early in the design process. An approximate increase of \$1,332 may be an acceptable price for choosing recyclable carpet tile over standard sheet carpet. A difference of \$8,547 for wool may eliminate this sustainable alternative from consideration. For an OMS office, performance considerations may also argue against wool in reception and traffic areas.

Sheet (or broadloom) carpet is categorized as sustainable when manufactured from recycled materials. In this context, the choice between sheet and tile carpet is between two sustainable products, tiles being more sustainable because of a higher potential for closed loop recycling.

A carpet supplier can provide pricing for comparison of sheet versus tile carpet of a similar grade, both with recycled content (Target Commercial Interiors). Numbers below represent current preliminary pricing for medium grade carpet with recycled content, including materials and labor. For an OMS office with approximately 1000 square feet of carpet the price of the more sustainable alternative, tiles, is not significantly different.

Green Carpet Preliminary Price per Square Yard

Sheet Carpet, recycled content	\$29 per sq. yard	base
Carpet Tile, recycled content	\$35 per sq. yard	121% of base

Green Carpet Preliminary Price per 1000 Square Feet of Suite

Sheet Carpet, nylon	\$3,219 per 1000 sq. ft.	base
Carpet Tile, nylon	\$3,885 per 1000 sq. ft.	\$732 increase

Considering the Life Cycle of a Product

Full analysis of alternatives requires looking beyond purchase price or first cost to assess long-term consequences—monetary costs as well as impact on the environment. Selection of carpet, which might at first seem a simple task, proves complex when you broaden the scope of inquiry to include sustainability and cost over the life cycle of particular products.

A tool for comparing life cycle costs, the ROI Calculator can be found at the Web site for a manufacturer of sustainable carpet, InterfaceFLOR, www.interfaceflor.com. The following simplified example is drawn from detailed information generated by the ROI Calculator. A LEED Calculator, which offers a measure of sustainability, can also be found at this site.

Green Carpet Comparison Life Cycle Cost per 1000 Feet

	10 year	20 year
Sheet Carpet, nylon	\$16,000	\$33,000
Carpet Tile, nylon	\$ 7,000	\$11,000
Difference	\$ 9,000	\$22,000

A view of life cycle costs shows a significant difference in favor of carpet tile. If you are interested in examining assumptions that go into this analysis, visit the Web site. By changing assumptions regarding maintenance, repair, and replacement, you can generate more or less dramatic differences between sheet and tile carpet. Regardless of exact numbers, the value of life cycle cost analysis is clear: It presents a comprehensive picture of costs associated with a design decision. It is helpful to know at the beginning of a project that you can anticipate significant savings long term by choosing carpet tile.

Next: Other Sustainable Finishes

It is not possible to cover all finishes in this discussion; however, the process of identifying, analyzing, and selecting them is similar to carpet:

- Find sustainable products from LEED-referenced certifying agencies;
- Measure manufacturer claims against a checklist from a LEED-referenced agency; and
- Evaluate life cycle cost as well as first cost using realistic assumptions.

You may wish to rely on a designer to do the above work. In that case it is advisable to discuss at the beginning of the design process your goals regarding sustainability along with the scope of services the designer offers.

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