

GREEN ARCHITECTURE CHECKLIST: RESIDENTIAL

Make your buildings green, or sustainable: walk the talk. Please do copy this checklist and distribute it.

Colorado AIA Committee on the Environment Thomas Doerr, Editor www.BuildSustainably.org

GREEN SITING & LAND USE

□ **Build within already developed areas:** in-fill development. As opposed to urban sprawl, in-fill development preserves wild lands and agriculture and raises density thereby enabling neighborhood shops and services and alternative transportation.

□ **Design mixed-use projects,** in which residential and commercial uses are intermingled, to help create lively communities and reduce the biggest source of pollution, automobile use.

□ **Locate buildings to provide access** to public transportation, bicycle paths, and walking access to basic services. This minimizes automobile use. Driving can also be reduced by working at home, therefore consider home office needs with layout and wiring.

□ **Renovate older buildings.** Renovation of existing buildings is the most ecological construction.

□ **Locate buildings to minimize environmental impact.** Cluster buildings or build attached units to preserve open space and wildlife habitats, avoid especially sensitive areas including wetlands, and keep roads and service lines short. Leave the most pristine areas untouched, and build on areas that have been previously damaged.

□ **Situate buildings to benefit from existing vegetation.** Deciduous trees on the south, the east, and especially the west sides of a building can dramatically reduce cooling loads while allowing some solar heat gain in winter. Dense hedgerows and shrubbery can block cold winter winds or help channel cool summer breezes into buildings. Landscape with drought-resistant native plants and perennial groundcovers.

GREEN BUILDING DESIGN

□ **Smaller is better.** Optimize use of interior space with good design so that the overall building size and resource use in constructing and operating it are kept to a minimum.

□ **Design an energy-efficient building.** Use high levels of insulation, high-performance windows tuned to the sun (heat reflective in east & west), and tightly sealed construction. Attached buildings minimize expensive inefficient exterior envelope.

□ **Comfort for free.** Passive solar heating, daylighting, and natural cooling can be incorporated cost-effectively into most buildings. Orient buildings with long sides within 15 degrees of south with garages and storage on west and east. On southern windows, block sunlight greater than 65 degrees. Glaze areas of southern façades equal to 8% of total floor areas. If thermal mass (ex. tile, masonry, concrete) is used, glaze south up to 12% of floor area. Provide cross ventilation and heat chimneys.

□ **Get free energy.** Design buildings with solar water heating and photovoltaics or for future solar installations. Slope southern roofs 40 to 55 degrees for optimal solar energy absorption.

□ **Optimize material use.** Minimize waste by designing for standard ceiling heights and building dimensions. Avoid waste from structural over-design. Simplify building geometry.

□ **Make it easy for occupants to recycle waste.** Make provisions for the processing of recyclables such as recycling bins near the kitchen and under-sink compost receptacles.

□ **Rooftop water catchment systems** should be considered for collecting rainwater and using it for landscape irrigation. Look into the feasibility of using graywater: used water from sinks, showers, or clothes washers.

GREEN MATERIALS

□ **Avoid ozone-depleting chemicals** in mechanical equipment and insulation. HCFCs should be avoided where possible. Avoid foam insulation made with HCFCs. Consider cellulose.

□ **Use locally produced building materials.** Transportation is costly in both energy use and pollution generation. Look for locally produced materials such as stone. Local hardwoods, for example, are preferable to tropical woods.

□ **Use salvaged building products** or products made from recycled material such as cellulose insulation, Homosote, Thermo-ply, floor tile made from ground glass, and recycled plastic lumber & carpet.

□ **Seek responsible wood supplies.** Use lumber from independently certified well-managed forests. Avoid lumber products produced from old-growth timber unless they are certified. Engineered wood can be substituted for old-growth Douglas fir. Don't buy tropical hardwoods unless the seller can document that the wood comes from well-managed forests.

□ **Avoid materials that will offgas** pollutants: Solvent-based finishes, adhesives, carpeting, particleboard, and many other building products release formaldehyde and volatile organic compounds (VOCs) into the air. Minimize use of pressure-treated lumber: use detailing that will prevent soil contact.

GREEN EQUIPMENT

□ **Use high-efficiency lights and appliances.** Fluorescent lighting has improved aesthetically and is much less expensive than incandescent. Downsize furnaces if passive solar is used.

□ **Use water-efficient equipment.** Water-conserving toilets, showerheads, and faucet aerators not only reduce water use, they also reduce demand on septic systems or sewage treatment plants. Centrally locating fixtures reduces hot water cost.