



Architecture

Planning

Interiors

Environmental
Design

The Blueprint for Green Building

Here at Kyle Callahan & Associates, we believe that it is our responsibility to protect the environment of the earth by reducing to the extent possible the environmental footprint of the buildings that we design. We recognize the importance of doing this while achieving the budget, schedule, and program goals of our clients. In order to provide the best service and most environmentally sensitive response to a design problem, we

- are LEED Certified and exercise the diligent approach to selections and decisions integral to the LEED process, whether or not our clients choose to seek LEED certification for their buildings;
- are longstanding members of the US Green Building Council and the local Boulder Green Builder's Guild;
- are green points certified professionals in the City of Boulder;
- have the capability to analyze the structures that we design in terms of their relative energy use;
- stay abreast with the latest developments in technology and materials available in our community;
- work with our customers to determine their level of commitment to environmental design, and adjust our design emphasis accordingly;
- support local environmental organizations;
- practice what we preach, in that we live and work in small, efficient, sustainable homes and buildings, offset the burning of fossil fuel to the extent possible, purchase locally when practical, and practice sustainability in all aspects of our careers.

The homes in which we live, and the buildings in which we work, play, shop, and entertain ourselves are responsible for a disproportionate portion of our environmental footprint on the earth. Buildings create impacts on the environment and consume natural resources through:

- their basic fabric through the use of materials to construct the building. Extraction and processing of materials for construction consume great quantities of resources for the raw material itself, and for the energy required to create a suitable product for construction.
- their construction due to consumption of materials for processing, shipping, storage, and assembly on site. Many construction materials are extracted / fabricated in distant locations, and thus require the additional expense of, and create the environmental impact due to long distance shipping.
- their operation over time (heating, cooling, lighting and equipment operation). The long term energy costs for conditioning and lighting a building can easily dwarf the relatively short term expense of energy during the construction period.
- Maintenance. Equipment needs to be serviced regularly to maintain smooth and efficient operation. Finishes, both interior and exterior, need regular cleaning and maintenance as well.
- their eventual re-tasking or demolition.

As such, the construction industry is a good place to start if we want to make the crucial adjustments in our lifestyles and habits in order to preserve the health of our planet and the viability of our society. There are many opportunities to have a real and lasting effect on the environment through conscious choices that we make in the design of new and renovated buildings, from the size of our buildings, their use, to the materials of construction and the way the systems function and are maintained.

A Green Building Strategy

All families with whom we work are unique collections of people and others, with diverse needs, goals, and capabilities. That's what we love most about what we do! We do need to recognize, as a collective, that we are all residents of planet earth and bound by her finite capacities. That being understood, we all need to do our part, within our grasp and tempered by our cultural constraints, to use what we need and preserve what we can of these finite resources. We must ensure that all inhabitants of this earth can share in the life-giving qualities that our earth has to offer. As Architects, our mission to participate in this obligation for long term sustainability is commonly referred to as **Green Building**.

Because our clients are unique collections of individuals with different needs, goals and capabilities, we recognize that we cannot simply apply a uniform approach to Green Building. A uniform plan to accomplish such may not mesh with their needs and family organization. If wrongly applied, such a plan will be unsuccessful - equipment may be disabled and removed, or simply unused; structures built could be abandoned and even sold. We believe that a green building plan is an approach to decision making, focusing first on making appropriate choices regarding things that cannot be changed, and then on selections of materials and equipment to support the family and its surroundings. A truly successful plan will not only contain systems and structures to support the immediate family condition, but will foster growth and lifestyle enhancements that augment the family for generations to come.

The benefits of green building are many: from reduced operating costs, greater durability, healthier, quieter, and more comfortable places in which to live and work. The long term advantages are enormous, including reduction of greenhouse gas emissions, improved health, and preservation of an improved quality of life for our succeeding generations. From a practical standpoint, we suggest the consideration of three basic fundamentals for the integration of green building into your project:

1. **Conservation** – simply do less – smaller construction, less materials, and so on.
2. **Efficiency** – do more with the things you have – share spaces for multiple uses, install higher performance light fixtures, and many more.
3. **Renewables** – consider how to create the things you need – solar electric systems, ground source heat systems, local food production, and others.

As a client of ours, we offer the following list for your consideration to help develop your own unique strategy for addressing the environmental footprint of your project. The following items serve as a framework for decision making that will help foster the sustainability of the planet and make your dwelling more Green:

1. Design the smallest and simplest footprint that works with your building program.
2. Design for energy efficiency by maximizing the use of site environmental factors (passive solar heating and natural cooling, active space heating and photovoltaic power generation). Adjust building orientation to capture and maximize natural heating / cooling opportunities presented by solar exposure, prevailing winds, and existing mature vegetation.

3. Design for energy efficiency in construction (maximize insulation – R38 roof/R19 wall minimum, minimize potential for infiltration, use high-performance glazing, capture and retain natural heat).
4. Design for efficient use of materials (minimize waste by working with standard units of measure, consider use of reclaimed materials, consider local sources to minimize shipping).
5. Consider alternative materials for construction – Structural Insulating Panels (SIPs), Straw Bale walls, Rammed Earth, among others.
6. Consider locally sourced building materials to reduce transportation costs, and to firmly root the building in its local environment.
7. Design landscape to conserve water and to reduce building heat gain. Specify and install natural and indigenous plant materials, and reduce turf areas to minimum. Amend soil prior to planting to conserve water in plant root zones and reduce overlot runoff. Use drip irrigation where possible. Channel roof runoff through downspouts to charge landscape zones.
8. Specify and install more efficient heating and ventilating equipment (higher first cost, lower operating and maintenance cost). Use appropriate local technology, such as evaporative cooling (in lieu of condenser air conditioning), ground coupled heat pumps, EPA rated solid fuel equipment. Where possible, use lower temperature heating equipment, such as floor-embedded radiant heating with solar supplement. Extract excess heat from plumbing and exhaust waste lines.
9. Install high efficiency kitchen, laundry and other appliances (higher first cost, lower operating and maintenance cost).
10. Install high efficiency lighting fixtures that have adequate controls and dimmers. Consider occupancy sensors to be installed in appropriate rooms (laundry, baths, etc.).
11. Avoid installing materials that contribute to ozone depletion or otherwise off-gas harmful chemicals or irritating odors. Specify and install locally-produced building and finish materials where appropriate. Use building materials made from recycled materials or reclaimed from other sources (demolition sites, etc.) or are otherwise produced and manufactured in a sustainable fashion (certified wood, bamboo / cork finishes, recycled cotton batt insulation). Avoid the use of materials that compromise old growth forests. Consider material and assembly packaging prior to procurement – local materials typically require less packaging and energy consumed in shipping.
12. Recycle all construction debris – metal, wood, and paper products.
13. Reclaim all salvageable equipment for re-use within your own development or for use by others (cabinets, doors, windows, fixtures, finishes). Be creative in adapting these reclaimed items to new uses – use old cabinets in your garage, a clawfoot tub as a planter, divided windows as room partitions for a few examples.

Thanks for your consideration of the environmental impacts of your homes, workplaces, and other buildings and structures!