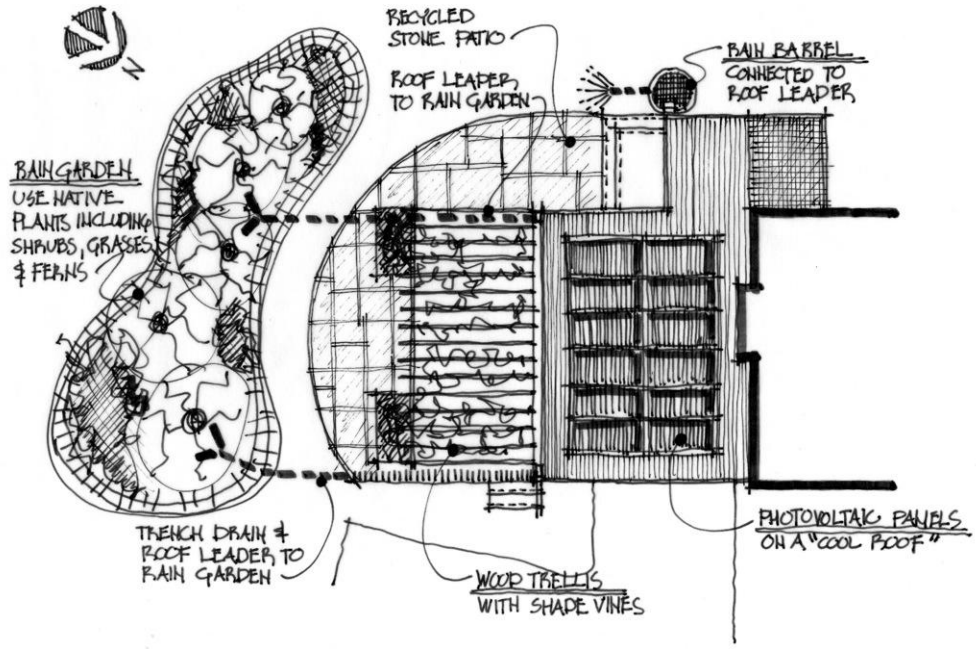

Green Building Strategies for Residential Projects

The following are practical, cost effective and environmentally friendly design ideas that can be employed for residential projects. These strategies will improve energy efficiency, reduce material consumption and in turn lower utility bills and maintenance costs for your home. *Kent Johnsson AIA*

Design Strategies

a) ***Reuse the Existing Building:*** *Whenever possible save as much of the existing structure (or a portion of it) for the new design. Too often, the entire building including the foundation is removed to make way for a new building. By keeping as much of the existing construction as possible you reuse and save on materials and labor costs. In the process, you do create some design "constraints", but often those constraints can lead to amazing designs.*

b) ***Keep the Building and Additions Small:*** *Reuse, redesign and reprogram existing spaces to meet your new needs. Make multi use spaces that open to each other and minimize circulation. By redesigning existing spaces, you can often minimize the size of new additions and meet the same program requirements. This helps keep construction cost, conditioned space, lighting, material and resource consumption, and site disturbance to a minimum.*

c) ***Building Orientation:*** *Ideally, a new building will be aligned along an east-west axis so windows and roofs face either north or south. This affords the best opportunity for passive and active (photovoltaic) solar gain strategies.*

When possible place smaller windows on the north side and large windows on the south side to minimize heat loss and maximize solar gain during the winter. It is important to shade south-facing windows during the warmer summer months to minimize solar gain during the cooling season. Overhangs, trellises and other types of sunshades can be designed to admit the low winter sun while blocking the higher summer sun. Deciduous trees are also excellent for this purpose, admitting light in winter and providing dense shade in summer.

Proper building orientation can also provide interior day lighting, which helps reduce the artificial lighting load and electrical consumption.

d) ***An Open and Flexible Layout:*** *When possible combine functions in a single space, ie a Family Room that also functions as a large Dining Room when extra space is required or a Home Office that serves as a Guest Bedroom. Break down the barriers (walls and halls) between spaces and they become more flexible. An open floor plan helps reduce construction cost, improves daylight and natural ventilation, minimizes material use, and eases reconfiguration of the space for future uses.*

e) ***Solar - Photovoltaic:*** *Consider the location and orientation of photovoltaic panels early in the design process so that they are well integrated in the architecture and do not look like a last minute addition to the design. In addition, in general, sizable rebates are available from utilities for photovoltaic installations if proper application, filing and permitting procedures are followed.*

f) ***Solar - Hydronic:*** *Consider using glycol filled roof-mounted panels to harness solar energy, which can be used to reduce water-heating costs and (assist) in heating radiant floors. Water heated by a glycol loop can be stored in an insulated storage tank or used within in an oil-fired boiler to supply supplemental heat.*

g) ***Solar – Passive:*** *Use your southern window/glass exposure to heat a masonry or tile and concrete floors during the winter months. Create an interior masonry mass (fireplace) wall that is heated by south facing windows or skylights. Passive solar strategies have been around for a long time and can be very effective but seem to have fallen out of favor for product based solar solutions. There is not even a LEED category or points for passive solar design.*

h) **Floors:** *Eliminating floor finishes reduces material/resource consumption. When practical consider using a finished concrete floor with hydronic heating in lieu of wood framed floors above a crawl space or basement. This combines a natural floor with an efficient and comfortable form of heating. In addition, many concrete finishing options are very cost effective when compared with carpet and tile, and easier to clean and maintain.*

i) **Stormwater:** *Almost every community today has regulations related to storm water runoff from new roofs, patios, driveways and other impervious surfaces and how that water is collected and then dissipated back into the ground. More often than not, this involves the use of drywells. Two more effective and environmentally friendly solutions are the collection of rainwater for use in site (plant and lawn) irrigation and the creation of "rain gardens" to collect water runoff.*