



The Process of Building Green

Frequently the reaction when I first suggest building green to someone is “but I don’t want to live in straw bale house!” While building with straw bale is one way to build ‘green’, it’s not the only way, and it’s sometimes not the best way. It’s about what is appropriate, both for you and the local environment.

Many people refer to ‘alternative’ building techniques, such as straw bale, cob, cordwood, etc. In straw bale the bales are stacked one on top of another and pinned in place, usually with rebar rods or bamboo spikes. The bales are then covered with chicken mesh which provides a covering to bind a coating of stucco to. In some jurisdictions straw bale walls are not allowed to be structural - that is they are not allowed to support the weight of upper floors or the roof. This is usually handled by some form of timber post and beam framing, with the bales acting as infill between them. The resulting walls have a high ‘R’ value (that is they resist heat flow well) and the stucco finish has a rounded, organic feel. Most people are surprised to find that the bales are resistant to fire since they are so dense and the stucco breathes to vent moisture.

In cob building the house is built with lumps of clay mixed with short lengths of chopped straw. These ‘cobs’ are then placed by hand to create the walls. Cob has a very organic feel but getting the right clay mixture locally can be difficult.

Cordwood houses use short lengths of wood - much as you would burn on a fire - stacked on top of each other with the gaps filled with mortar. Often colored glass bottles are laid in as well to let light through.

All of these techniques are considered green and since they are low-tech they have an appeal for people tired of our overly complicated society. However these techniques - and all other green building techniques - need to be considered carefully to decide which are appropriate for your home and the local environment.

Straw bale is very well suited to dry climates, since rot is its enemy. If you live in New Mexico or Arizona building with straw bale is easier - as long as you can get hold of sufficient bales at a reasonable cost. Here in the islands it’s still feasible but it’s going to be more difficult. Bales may be difficult to come by in sufficient quantities. While we don’t have a high annual rainfall we do have frequent winter rains and mist, so you are going to need wider eaves to keep the rain off your walls, raise the lower courses of bales higher off the ground with a higher foundation, and detail the wall openings around doors and windows very well. This requires good design and skilled trades people. Are you sure that you can find these here? How much experience do you or they have with these techniques?

Most homes these days are ‘stick built’ - they are built with 2 by 4, or 2 by 6 lumber - nailed together to create the frame. The house is then sheathed with plywood or OSB (Oriented Strand Boards) and sometimes covered with an additional cladding material such as cedar shakes, or siding. Most homes built this way are not green - but they could be.

Consider the advantages of stick building - dimensional lumber is relatively cheap and plentiful, it’s potentially sustainable, it’s easy to work with and can be worked with simple hand or power tools. There are lots of people who are skilled at working with it - they’re known as carpenters! So how do you build ‘greener’ with wood?

Start by building a smaller house - since the 1950's the average house size in the US has roughly doubled while the average family size has decreased. Then simplify the design.

Use greener techniques such as 'Advanced framing' which uses 2 by 6 framing members spaced at 24 inch centers (rather than 16 inch) and eliminates doubled up headers by placing roof joists directly over vertical wall members. Insulated headers are used over door and window openings to reduce heat loss. Lumber should be FSC certified (<http://www.fsc.org/en/>) (which proves that it has been sustainably grown and harvested.) Plywood and OSB should be low VOC (volatile organic compound) and allowed to breathe off the remaining formaldehyde on site before use. Use low VOC cabinetry in your kitchen and consider greener materials for your finishes - bamboo for floors, low VOC paints and stains, and so on. Perhaps you can eliminate some of the materials by using structural elements - the outside sheathing - as the finish surface.

This article is not trying to push one green technique over another, but is trying to get you to think about what method of green building you should use. Homes can be built green in many different ways but it's essential to consider which is the most appropriate way for you, your personal goals, your budget, and the local environment.