

Small Affordable Houses

Here are some useful strategies for creating high quality, small, affordable houses.

- Use the basement to provide a "supplementary living space" for kids play and watch TV so that the living/dining/kitchen space on the first floor is not a combat zone of conflicting adult's and children's interests. This means ensuring a dry basement and providing generous windows, ideally with splayed jambs to facilitate the penetration of sunshine. Always install at least 1" of rigid insulation under the concrete slab.
- Use a U-shaped stair and design techniques to ensure that the basement living space is high quality space.
- Make the upper floor bedroom spaces unequal so that at least one bedroom is "large".
- Make a loft space in the very small upper bedroom to compensate for its ships-cabin size - and maybe build in a (bunk) bed.
- Make a roof steep (12:12) with a cathedral ceiling to generate the required loft space. (This also allows the upper exterior wall to be 6' high instead of 8', which saves some exterior cladding costs and reduces the vertical scale which seems necessary to prevent such small structures from looking like rocket ships.)
- Provide for a third bedroom (now or later) as a single story addition to the first floor. This makes a much more flexibly useful building. The room can be used as master bedroom, a study, or an office. It makes it possible for people with limited mobility to live (or to continue living) in the house.
- Provide an outdoor deck or courtyard to the first floor bedroom - to increase the sense of size and amenity in what might otherwise be quite a modest interior space.
- Use a bay window, built-in seating and shelving, well-designed and controlled lighting to create a special quality to the compact interior space.
- Keep the south facing (and it should be south facing) slope of the 12:12 pitch roof available for future solar collection - probably for PV. That means for example, keeping the plumbing vents to the north.
- Invest in a tight, well-insulated envelope. 2x6 internally strapped (2x3) and rigid foam sheathing is the best option as it allows for cellulose to be blown in, and for a relatively simple air/vapor barrier to a high standard of tightness. We recommend this additional effort, even and especially for affordable housing, because adding thermal integrity to a structure is really difficult and messy to do later on - and folks on smaller incomes really

notice the benefits of lower utility bills. In addition, on small, really geometrically simple structures the upcharge is quite small.

- Install a simple central exhaust/ventilation system.
- Choose the 'Fibertherm' windows, which are comprised of a pulltruded polyester frame and sash. These windows are stronger, less prone to thermal movement, and are capable of accepting up to quadruple pane glazing panels. It is a system that enables the future on-site replacement of glazing panels. There is no wood, so their durability is superior. (The absence of wood also eliminates the opportunity for condensation-saturated sash sills to breed mold.)
- Back off from a complete heating (cooling) distribution system. A superior thermal envelope takes a great load off the mechanicals - so why distribute the heat to the perimeter when you no longer have to compensate for draft-inducing cold exterior surfaces? With an open planned, small, well-insulated 2-story house, a single space heater on the first floor (or basement) may be all that is required. The savings by completely eliminating the distribution ducts (or pipe and radiators) will half the cost of the heating system.