



FREQUENTLY-ASKED QUESTIONS ABOUT STRAW-BALE BUILDING

What's the most important single reason for building with bales?

“We do not inherit the earth from our ancestors, we borrow it from our children.”

Are bale buildings energy efficient?

Yes. Given the superb insulating value of bales, averaging R-50, bale-walled buildings keep a very stable temperature, and require significantly less heating and cooling from other sources, than do comparable buildings with less wall insulation. Of course, other parts of the building envelope must also be thoughtfully designed, like roof insulation, window glazing, and door sealing, since the wall materials are only a portion of the total assembly.

Besides the insulation value, what's it like when your walls are 2 feet thick?

Quiet. Bale walls provide a very peaceful world inside the house. Subjectively, there is something reassuring about thick walls, and the depth also makes it easy to use window seats and wall niches in the design. At the window and door openings, flaring or rounding the walls will spread and soften the light entering the house.

How long do bale buildings last?

Careful building is required for the longevity of any structure, but some bale houses have lasted 90-100 years in Nebraska, where high wind and snowfall is common, and where the building methods were crude. Intact straw has been found in 9000-year old Egyptian tombs.

Do building codes permit building with straw bales?

There are very few places in the U.S. where one can build without a permit of some kind, but bureaucratic attitude toward bale building depends on the jurisdiction. Some counties, such as Pima County, in Arizona, have had a straw-bale addition to their codes for years, while others are still learning about it and devising their own requirements. Still other jurisdictions have never heard of it and are skeptical. Where no straw-bale code exists, the Uniform Building Code has provisions for non-standard methods of construction.

Do the bales carry the weight of the roof?

There are two different ways to make bale walls: load-bearing and non-load-bearing, where the weight of the roof is carried by a separate structural system, usually by a post-and-beam system. Although some building code jurisdictions (such as New Mexico) do not currently permit load-bearing bale walls, most others do permit it, if proper steps are taken to compress the bales, and to provide a roof bearing assembly at the top of the walls.

Do the walls decompose? Won't the straw eventually rot away inside the walls?

Just as with conventional wall-building techniques, moisture should be kept out of bale walls. The primary measures are roof overhangs, and raising the base of the wall above floor level, using a few feet of black paper or similar vapor barrier at the bottom few feet of an exterior wall, and using plastering materials which can pass moisture out of them. Intermittent periods of some moisture, however, can generally “breathe” back out of a wall, leaving the straw dry again, and unable to support fungus or other undesired growth. Successful bale buildings have gone up in the moist climates like France, Nova Scotia and coastal Washington State.

What about termites and other insect pests?

Straw (as opposed to hay) has little nutritional material in it, and bales provide fewer spaces for pests than a conventional wood-frame building. Termite research seems to show they have a preference for wood over straw. Of course, conventional pest precautions during construction will also work for bale building.

Isn't a straw wall a fire hazard?

No. Because stucco and plaster seal the densely packed straw in a wall, finished bale walls have excellent fire resistance, with little access for oxygen and no significant air cavities in which fire can spread. The few known fires in bale building projects have occurred when loose straw was accidentally ignited by something like a cigarette or sparks from a welder's torch.

What kind of finishes do you put onto bale walls? -- and how hard is it to do?

Builders generally stucco the exteriors and use gypsum or mud plasters on the interior, almost always with "stucco wire" embedded, and often with at least the first coat applied by gun. The advantage of gun application is a strong bond to the rough straw ends, and hand application of finish coats can be learned by most anyone willing to do some hard work.

How do you attach things like cabinets to bale walls?

Several methods are used for attaching cabinets, ledgers, intersecting walls, shelves, etc., depending on the amount of strength needed. These techniques include: embedded bolts and stakes, wire or string ties, flat 2 x 4's between courses of bales, and simple wall anchors. Some gypsum plasters which can be used for interior finishing are soft enough to drive a nail or picture hook directly into.

How do you put wiring and plumbing into a bale wall?

Plumbing pipes are notched into the bales, and have sleeves where they pass through to the outside. Wiring may be in conduit, or Romex-type conductors laid between courses of bales, and electrical boxes are generally secured to wooden stakes driven into the bales.

Can you really build a straw-bale house for less than \$30 a square foot?

Yes, IF all other material decisions are made cheaply, AND you put in a lot of unpaid labor. Since the walls are less than 20% of the total construction costs, a given design has to have all its costs looked at together, to find the square-foot cost. In general, straw-bale building is competitive with other methods, but by itself it will not guarantee a super-cheap house.

Will banks or other lenders finance straw-bale construction?

Occasionally, and increasingly so in areas where the success of bale building has been proven by a set of pioneering projects. In the Tucson area, for example, lenders such as Associated Mortgage are familiar with alternative methods and will make loans to qualified people for bale houses. Sometimes clients have had to educate the lenders, by getting them to see bale houses or showing videos of existing projects.

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Sources: Colleagues in bale design and construction, our own experience, and similar papers by:
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