Home-Grown Homes: Safety In Straw

Brad Kottkamp: Dan Dyson: Brad Fairchild: Amy Lewis: Justin Russell: Mike Shulte

intro

The purpose of this project is to inform the general public of the practical, economical, and environmental benefits associated with straw bales as a sustainable building material. Straw bales have proven to be an affordable alternative building material just as much for the developed world as it has been for the developing. With an incredible insulating capacity and a low investment for material, they are also a top-of-the-line solution for reducing both the short-term and long-term costs associated with building and maintaining a home. Furthermore, straw bale construction lends itself to aiding our diminishing world resources, in that straw is a renewable building material that can easily biodegrade without harming the environment.

Straw bale homes transcend the boundaries that have been established by modern architecture. Homes can be built to show off their unique quality or can easily be made to fit the accepted image of modern architecture. Unlike homes of brick, mortar, stone, and wood, straw bale homes can be disassembled and demolished easily, allowing for upcoming generations to easily reuse housing property. What's more, they uphold homeland agriculture, making straw a great supporter for a growing economy while still being a cheap and efficient building material. Subsequent generations will no doubt benefit from this alternative and environmentally uplifting construction material.

d i a g r a m

Figure 1: Straw-bale Construction Process

Step1: Grow grain in field until ready for harvest

Step2: Harvest the grain

Step3: Bale the leftover grain

Step4: Use bails for walls as replacement of insulation

Step5: Add earth based plaster to seal from moisture and add aesthetic

Step6: Completed Straw-bale building

Q&A

Frequently asked questions about Straw bale construction:

1. Won't the straw decompose?

As with most organic materials, straw requires moisture to decompose. If the bales are kept dry, there is little risk of decomposition and rot. Proper construction techniques will help to ensure that moisture does not affect the bales.

2. Isn't there a greater risk of fire?

Straw bales are in fact more resistant to fire damage than the standard commercial building materials. Straw bales will burn individually but when used in construction they are compressed enough that oxygen is limited. Studies done on a plastered straw bale show that it easily passes the two-hour fire rating required for commercial construction.

3. What about insects and pests?

Straw has no nutritional value for insects and pests because the seeds have been removed during harvest. Also, the bales are too compressed for mice and other pests to burrow into. As long as the walls are properly sealed, there should be no problem with pests.

4. How does it compare to traditional construction?

Using straw bale construction can save up to 70% in heating and cooling costs because of its superior insulating properties. These thick walls also provide great sound proofing. Straw bales also help to provide cleaner indoor air by allowing the walls to breathe.

5. Do straw bale houses cost less to build?

The finishes are really the determining factor in the overall budget. It can be built for less than a traditional home if you do most of the work and use salvaged material. If you want the plumbing and appliances of a typical house and you want a contractor to build it, then the costs will be pretty much the same. However, the life-cycle costs will be much less with a straw bale house.

6. Is there insurance and financing available?

Some insurance groups have insured bale homes at preferred rates. The costs of building a home out of alternative materials are now incorporated into standard cost-estimating books, so insurers and appraisers are able to calculate their value. Straw bales are often selling for up to 10% above the local market price.

Figure 2: Wall Section of Straw Bale Building