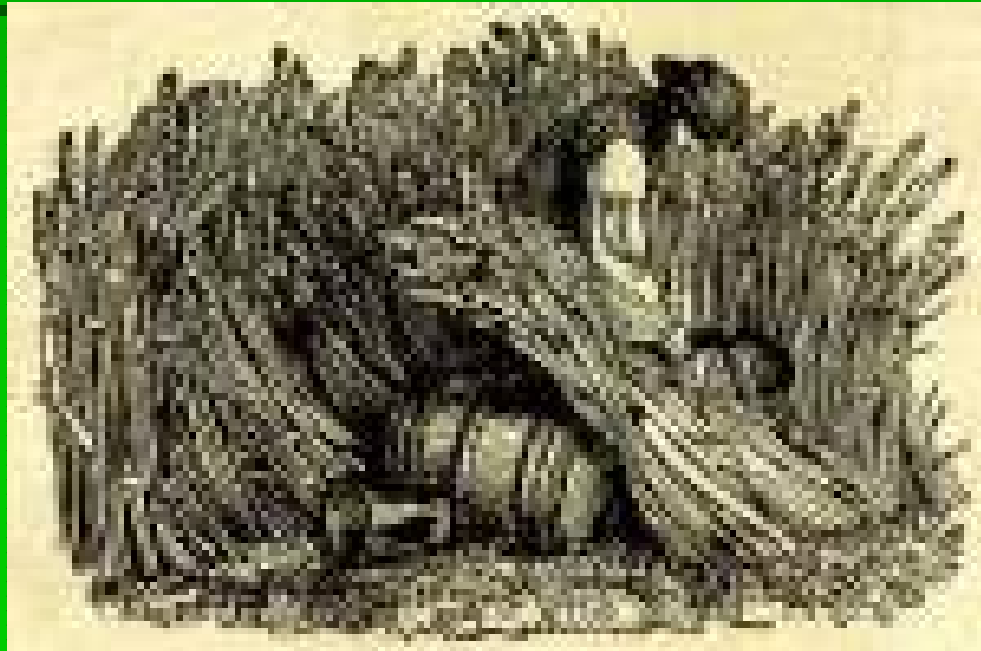


Straw Bale Comforts: The Three Little Pigs Were Right

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ENVS 634-660
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Up Ahead

- History
- Where Are They?
- Advantages
- Environmental Sense
- Misconceptions
- Methods of Building
- Design
- Endorsers
- Potential Risks

History

- Really, really old building method
 - Homes have been made using grasses, weeds, and hay for thousands of years
- In the U.S., the oldest standing straw bale house was built in Nebraska in 1903, the Burke Homestead outside Alliance.
- Straw not hay—hay is food, straw is leftover cellulose base of harvested seed heads
 - Wheat, oats, rye, barley, rice, or flax straw are all okay.

Burke Homestead,
Nebraska



Nebraska Sandhills area

Where Are They?

Top 10 States & Top Countries

Country	Number of structures
Australia	20
Canada	33
China	597
France	7
United States	286

State/Province	Number of structures
Arizona	24
California	50
Colorado	23
Idaho	8
Montana	7
New Mexico	18
Pennsylvania	9
Texas	29
Vermont	7
Washington	14

International Straw Bale Registry

<http://sbregistry.greenbuilder.com/search.straw>

Advantages



- Superinsulated walls: R50 value vs. R19 wood frame
 - Walls account for +/- 20% of heating load
- Soundproof
- Storm proof
 - ┆ In Wyoming houses have consistently withstood severe weather and earthquakes
- Exceptionally Fire proof
 - ┆ Canada Mortgage and Housing Corporation
 - ┆ Enough air for insulation, but not combustion.

Advantages



- Pest proof
 - Wood attracts and houses more pests
- Easily built by non-professionals
 - Community involvement
- Reduces lifetime energy costs (construction costs are roughly equivalent)
- Reduces agricultural waste
 - American farmers produce enough straw each year to build 4 million 2,000 sq. ft. houses—four times houses currently constructed (US Dept. of Agriculture, 1995)

Environmental Sense

Resource Efficiency:

Energy expended in the extraction, refinement, and transportation of building materials to the site. Affects housing design, materials, and building practices.

- Equal Empowerment
- Plentiful and inexpensive resource
- Found locally in majority of cases
- Reduced transportation costs of bringing materials to construction site
- Preservation of forests



Misconceptions

- Does size matter?
- Rot
- Allergy Asthma Sufferers
- Fire
- Pests
- Permit Approval
- Acts of God
- Longevity
- Post & Beam construction
- Pinning



Methods of Building



- In-fill or non-structural bale
- Structural bale (plaster & Stucco, no wood)
- Straw-clay building (timber frame, double sided wood form) In Europe, similar structures are 200+ years old
- Mortar bale (between bales, lattice supports building if bales fail)
- Presses straw panel, works on all house surfaces

Designs



Montreal Canada, built 1992



Belarus



Navajo Nation Prototype, Ganado, Arizona 1992

www.greenbuilder.com/sbat/2001_Home_Tour/

<http://www.azstarnet.com/~dcat/slides.htm#HYBRIDS>



Villa Millenium, Bee Creek Texas
Under Construction 2001

Endorsers

- U.S. Department of Energy
- HUD
 - Building Innovation for Homeownership award winners 2000: Tucson AZ (Super Insulated Straw Bale Affordable Housing Project)
- Navajo Nation
- Nonprofits involved in fair, sustainable housing (Sierra Club, Habitat for Humanity, DCAT)
- Housing projects underway in California
- 23,000+ websites “Straw Bale Homes”

Potential Risks

- The biggest threat to Straw Bale homes is moisture.
 - Rot can set in, and fungi and mites can thrive
 - Construction design must prevent water from gathering where the first course of bales meets foundation.
 - Roof construction—more steep
 - Buying and storing hay—dry problem again
- Housing codes: city, county and state codes can differ
 - Finding necessary experts if your design is more sophisticated (resources concentrated in West, Canada)
 - The mental shock