

A straw-bale house in Teslaarsdal in the Western Cape designed by Andy Horn of Eco Design, provides excellent thermal and acoustic insulation. Surprisingly, straw-bale buildings are fire-proof as bales do not have enough oxygen to encourage combustion.



Back to Basics

BY: Lisa Guimaraens PHOTOGRAPHY: Andy Horn

"SUSTAINABLE DEVELOPMENT IS DEVELOPMENT THAT MEETS THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS."

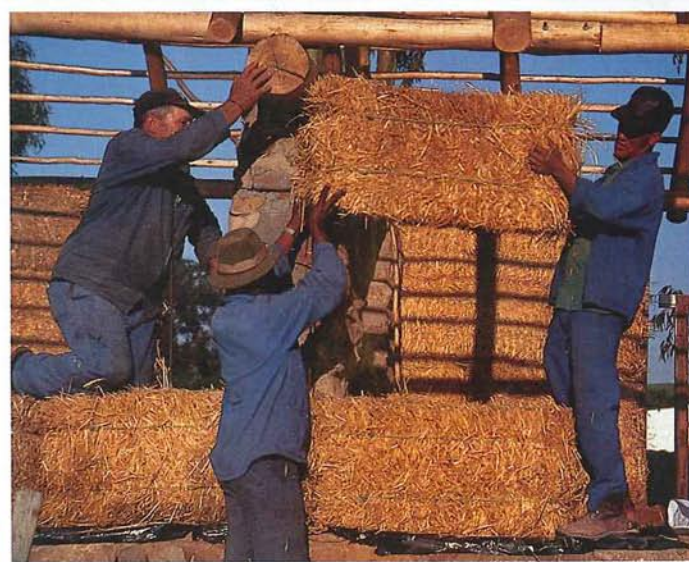
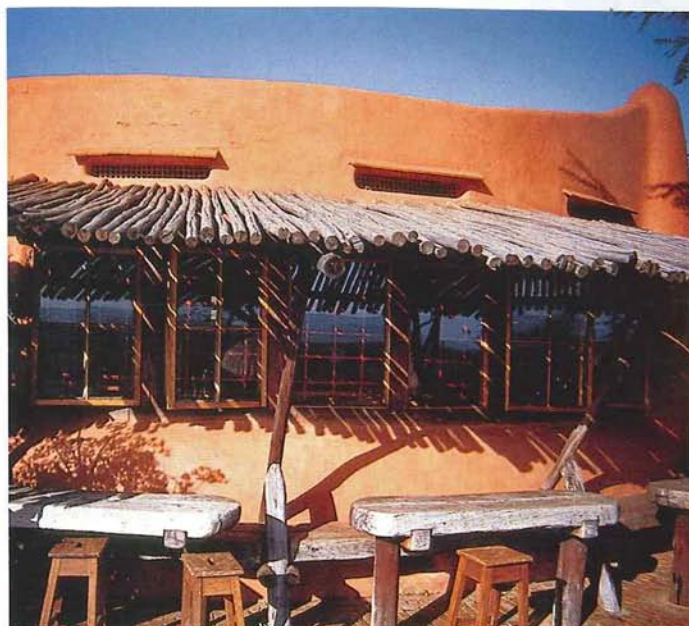
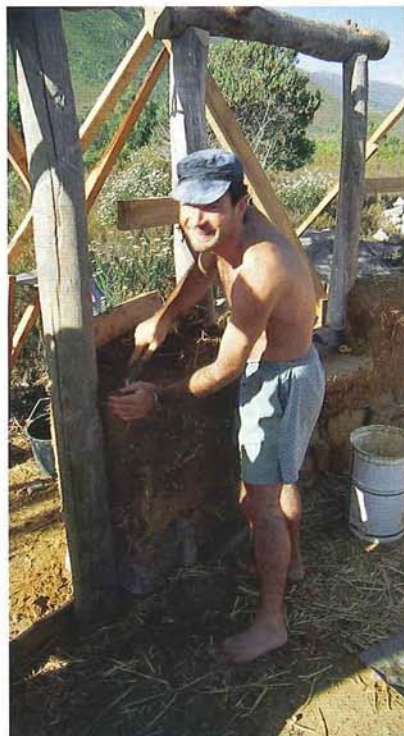
World Commission on Environment and Development (WCED), Our Common Future

AT THE HEART of sustainable, environmentally-friendly or ecological development practices, lies individual understanding and responsibility. This new mind set requires a change in existing attitudes towards design, building materials and techniques.

While it appears that a select few South Africans seeking a healthier, alternative lifestyle are familiar with environmentally friendly architectural design, says architect Jonathan Innes of Cornerstone Design, there has been some interest in a sand bag housing system, initially intended as a low-cost housing system, which he has successfully implemented.

The system has been in existence for a fair amount of time but has evolved to become an effective, alternative means of building a home. As the name suggests, brushed polyester bags are filled with pure sand which acts like a cavity wall therefore preventing water penetration. The sand bags are then plastered together within a timber framework with doors and windows in place. The exterior of the home is then plastered giving it the appearance of a normal 'bricks and mortar' residence or alternatively, 'timber cladding' can be attached to the outside walls for an attractive timber façade.

Some other sustainable alternatives include straw-bale, cob, adobe, rammed and earth houses.



Skillful Means, a Californian-based architectural and construction firm active in straw-bale construction, states: "A plastered bale wall provides a good barrier against air and water... because bale walls are highly fire resistant, this structural system comes with its own fire proofing." Straw-bales are a waste product and using them will not damage the environment or waste resources.

In his paper, "The Case for Cob", Cape Town-based architect Etienne Bruwer states: "In some form or another, [cob] is the most widely used earth construction method. The material consists of one-fifth clay, four-fifths soil, reinforced with plant fibre (usually grasses or straw - the non-food fibrous remains of grain production). It is mixed together underfoot and is either applied by hand directly onto walls, or into formwork or shuttering, or formed into bricks. It is the stuff of which a third of the world's architecture -

from Europe to the Americas to China to Africa - is made.

"Cob structures are highly adaptable and extendible. Cob has an unlimited lifespan, is totally recyclable, without waste and transformable. It is enormously health-giving - it reduces sound pollution, extracts toxins from the atmosphere and is a perfect thermal mass medium. Cob honours the first commonsense principle of green building: use what is at hand - it lies under your feet, on your own site, and does not require mechanical transport."

Adobe refers to a sun-dried, unburned brick of earth, clay and straw or the clay or soil from which this brick is made as well as a structure built with this type of brick. Adobe houses will be constructed differently according to the climate in which they are built. An asphalt emulsion, cement and lime have been known to be added to the mixture to suit various climatic conditions.

TOP LEFT: Solar panel makes the generation of energy or electricity possible without the associated waste by-products produced by coal or nuclear-generated electricity.

TOP RIGHT: A rammed earth wall has been plastered with mud.

ABOVE LEFT: Andy Horn of Eco Design in the throes of building with cob - a mixture of clay and straw.

ABOVE RIGHT: Workers construct a straw-bale holiday home on the Cape West Coast project managed and designed by Andy Horn of Eco Design. Straw-bale construction is fast and materials are cheap.

'Rammed earth' houses are just that - a mixture of soil, stones and clay are compacted into a moving formwork which, once removed leaves behind a solid earth wall. ■

With thanks to Andy Horn of Eco Design, Jonathan Innes of Cornerstone Design and Etienne Bruwer of Greenhaus Architects.