Natural builders raise bale walls

NATHALIE ROSA BUCHER
Staff Reporter

HIDDEN away in the scenic mountains near Ceres, a group of builders and architects are building the Wolwekloof Academy using sandstone, soil and straw bales.

Cape Town-based architect Andy Horn recently spent two days sharing his knowledge of straw bale building with 12 men and women from the area, who then assisted him in building a wall to be added to an existing structure on the site.

Bale buildings are considered climactically adaptable and energy-efficient. Several houses have been built in North America, Australia and Europe using the technique.

There are about 40 such buildings in South Africa. Horn recently completed a school building project in northern KwaZulu-Natal and advised a woman in Betty's Bay on how to build her own home.

His latest project is the academy, commissioned by the Cape Winelands District Municipality; the Department of Public Works; and the Western Cape government departments of social services and poverty alleviation, local government and housing.

Located at the end of a steep kloof, the 71-hectare site is the base for training in entrepreneurship, business, environmental education, natural resource management, and community development, as well as sector-based training in agriculture, food and beverage and tourism.

The academy was inspired by Swedish folk high schools, a non-formal and voluntary educational system for all ages.

According to Graeme Sher, project architect, the Swedish model promotes environmentalism and sustainable building, hence the straw bale walls and the huge dining hall building to built with mud bricks and cobs.

Sher said that the aim was to train 24 people in cob and straw bale building in the first phase. The trainees would receive valuable skills and the project aimed to register the trainees with the government's construction Education and Training Authority (Ceta) for accreditation.

Trainees Maya Sigila and Glorious Mtlomelo, both from Worcester, said they felt good learning to build a house. The trainees were enthusiastic, standing knee-deep in clay slip, balancing wheelbarrows filled with bales and handling tools, shovels and hammers.

The wall built by Horn and his team is non-load-bearing, as the roof will be carried by a wooden structure, but there are examples of load bearing systems resting on straw bale walls.

The first step in building the wall was to create a drainage layer on the stone base, filled with gravel. Once the drainage layer was filled, straw bales were fitted. It does not matter whether the straw is wheat, rye, oats or barley, but it is crucial to use tightly stacked bales and straw that is not too short and is, most importantly, dry.

After a "dry run" during which the straw bales were fitted to make a wall, they were disassembled and lined up on the ground in correct formation. One by one and only on the sides that would be exposed, the bales were dipped into a tub filled with the clay slip. They were then left in the sun to dry and reassembled.

Someone stood on top and stomped, compressing each layer, to make sure the bales were well-fitted. Timber saplings were then driven through the bales to stabilise the walls. The final step was to plaster the walls, using Horn's favoured method of hand plastering

"People often regard earth buildings as primitive, inferior in quality and structurally weaker", said Chris Herselman, a consultant and trainer on natural building overseeing the construction of the large dining hall.

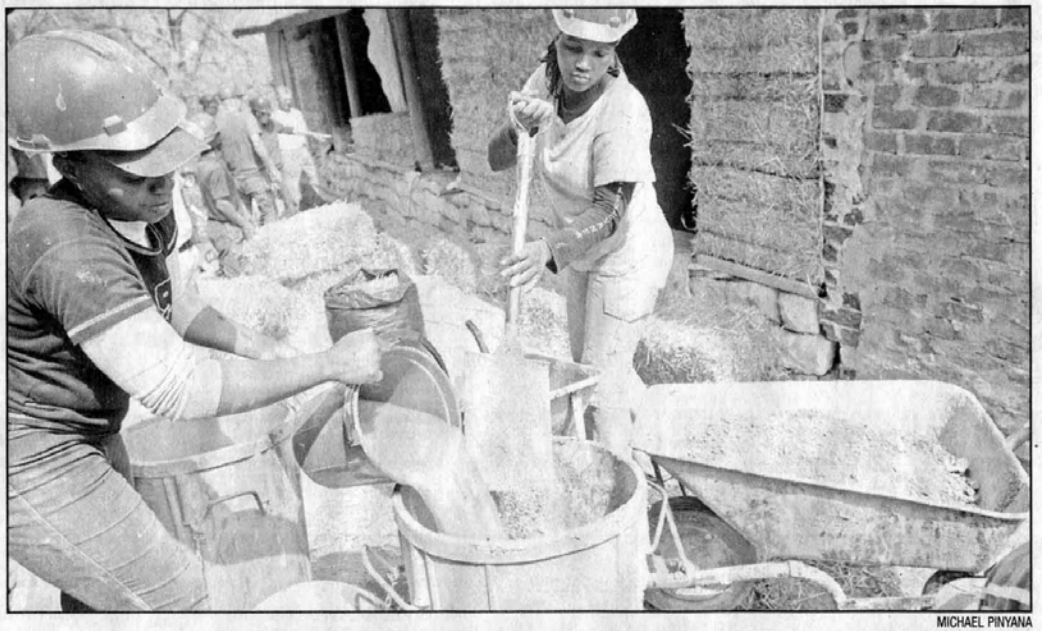
"These buildings are superior in terms of comfort, insulation and acoustics. The air quality is better as cement dries out, whereby the walls of a mud edifice naturally breathe," he said.

Horn is convinced that natural building methods hold massive potential for low-cost housing, "but there clearly is a stigma attached to earth-building".

An obstacle straw bale construction faces is that all newly built houses must be registered with the National Housing Building Regulatory Council (NHRBC) and the council does not make provision for natural building methods. Wolwekloof Academy is an educational facility and does not need the council's stamp of approval.

For more on straw bale building visit www.thelaststraw.org or www.ecodesignarchitects.co.za.

nathalie.bucher@inl.co.za



MICHAEL PINYANA

Right ingredients: members of green architect Andy Horn's straw bale building troupe mix mud and water to be added to the dip.

MICHAEL PINYANA

Mudding it: Glorious Mtlomelo, 28 attends to a bale in a mud-bath. In the foreground is Maya Sigila, 22 who stood in the bath tub, stomping and squashing the dip.