

African solution to low-cost adobe roofs

Barrel vaults and domes dress up traditional Texan building method

By BARBARA NOVOVITCH
PRESIDIO, Texas (Reuters) To the north and south of this hot, dusty town on the U.S.-Mexican border, ruins of early settlers' adobe homes are a testimony to housing made just with dirt, straw, sun and sweat.

Designer and builder Simone Swan is trying to revitalize these adobe traditions by adding the low-cost fillip of roofs from Africa: catenary-curved Nubian barrel vaults and domes.

Adobe architecture may once have marked the homes of the poor in Latin America and the U.S. Southwest, but in recent years, in the United States at least, it has become the domain of the rich. Now Swan wants to draw on adobe techniques and extend them to those most in need: the unemployed or underemployed crammed into *colonias* (border settlements).

The Presidio area, where rugged mountains frame incredible sunsets, lies at the northern tip of the Chihuahuan Desert, whose arid climate is similar to Egyptian and African deserts.

As in Africa, radical temperature swings in the Chihuahuan Desert can range over 40 C in 12 hours, but thick-walled adobe structures retain warmth in winter and protect against summer heat that can hit 50 C. Presidio City Hall has meter-thick adobe walls, and many homes use interior courtyards to catch vagrant breezes.

Nubian vaults and domes are something new for the area. They require no wood, preserving the area's sparse resources, yet provide better climate control and are cheaper than tin-roofed cinderblock homes.

The French-educated designer, a founding director of Houston's prestigious Menil Foundation, spent her childhood in Belgium, New York and the Belgian Congo, and

was educated in France. While at the Menil Foundation, she read about the work of the late Egyptian architect Hassan Fathy, author of "Architecture for the Poor." Fathy, 1980 recipient of the Aga Khan Architecture Award, dreamed of serving the 800 million people of the Third World who lack decent housing. Inspired, she left the foundation, spent three years as Fathy's apprentice and then studied Islamic history and architecture at Yale University.

She discovered Presidio and the Rio Grande border area in 1991 while visiting nearby Big Bend National Park. Swan, then in her early 60s, decided to move there and try out Fathy's ideas.

Just as his architectural legacy was often frustrated by government regulations and rigid financing, though, Swan's nonprofit Adobe Alliance has stalled after building one demonstration home south of the border and her home/office/experimental workshop outside Presidio.

The alliance's aim is to use the sweat equity of the poor — the builder's own labor — along with dirt and straw to

make mud bricks for cheap, low-maintenance housing that incorporates its own cooling and heating.

Fifty women signed up for the program after a demonstration house was built across the border in Ojinaga, Mexico, but the cheapest financing Mexican banks could offer was 48 percent. "We can't proceed there until we find someone who will make microloans," says Swan.

In Presidio, where low-cost housing is desperately needed, efforts to get federal government grants have been delayed by Texas engineering codes that have not validated the structural strengths of the Nubian vaults.

"The only reason I have to bring the vault here, instead of a roof, is economic. It's cheaper for everybody and it does not contribute to the devastation of the trees," Swan explains.

She has carried on her crusade for low-cost adobe housing almost alone except for an eight-person crew of *adoberos* (adobe masons) who helped build the 50-sq.-meter prototype home of Daniel Camacho in Ojinaga, with seed money of \$23,000 from the Jacob M.

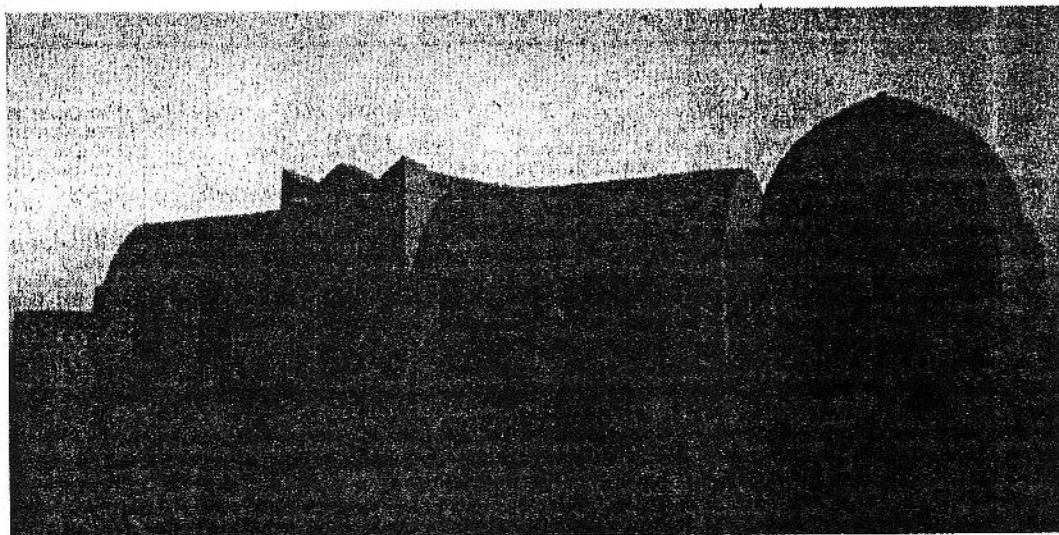
Kaplan Fund of New York, and La Mesa, Swan's home/office, on Casa Piedras Road outside Presidio.

Camacho's house cost \$5,000 to build, or \$9.25 a square foot (.09 sq. meter). Swan estimates that her home/experimental lab cost \$44 per square foot, but she believes she has experimented enough with plasters and finishing techniques to further cut the cost for low-income housing and meet U.S. government regulations.

Swan got unexpected encouragement last year from Britain's Prince Charles. Charles invited Swan, along with about 40 other designers, planners and architects, to his High Grove conference center. "I was invited as a practitioner of traditional building crafts," she says, adding, "but that doesn't mean I'm a traditionalist."

To support the Adobe Alliance, Swan and her crew have done some private commissions: currently an adobe home with two courtyards and five barrel vaults for a Houston mathematician who wants to retire to Presidio.

For more information, see the Web site at www.adobealliance.org



MUD BRICK DREAMS — The Nubian barrel vaults and dome of architect Simone Swan's home and office in Presidio, Texas, illustrate her ideas for inexpensive, practical adobe housing.

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