

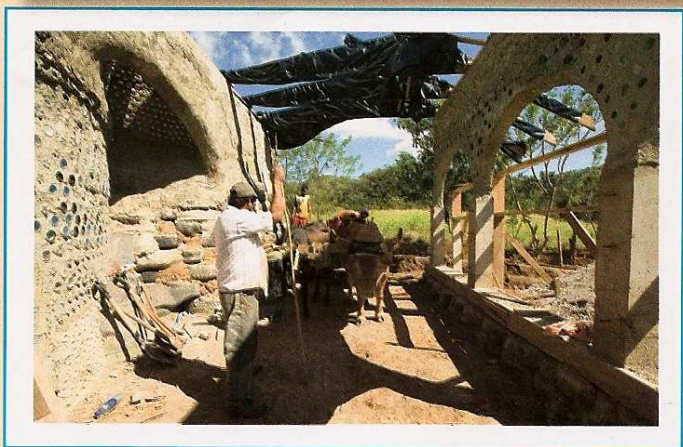
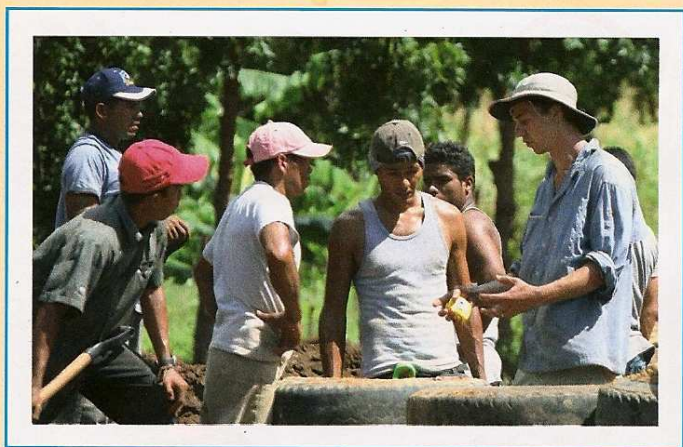
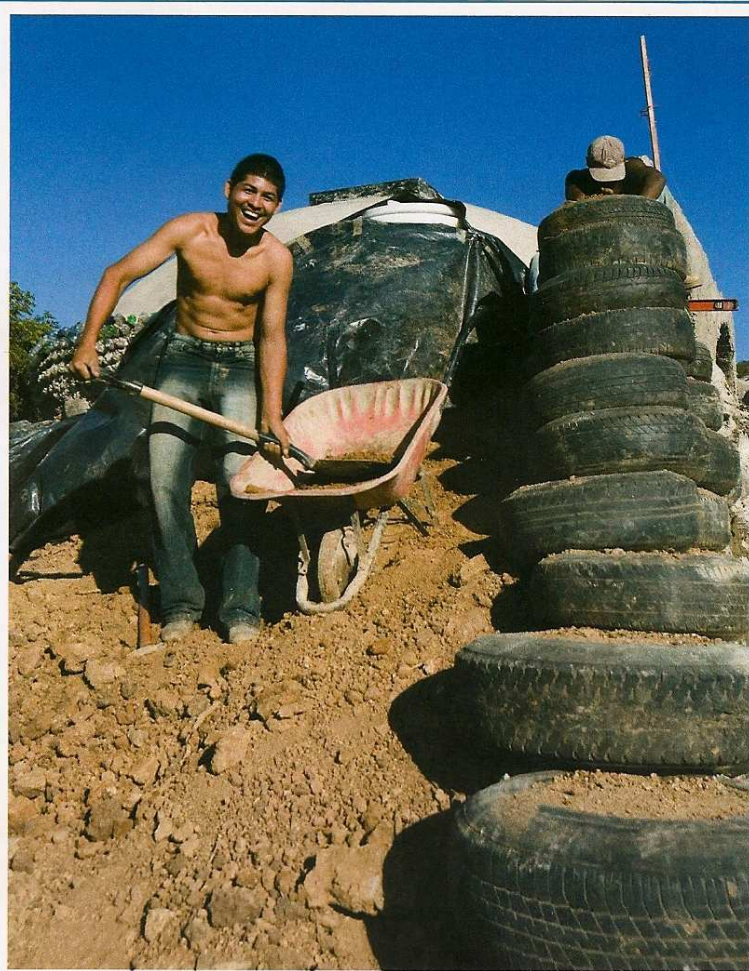
# Cool House

## A down to Earth idea

by Corey Keegan

Dave Kniffin is running to find someone to tell what needs doing in the morning. He stops in the middle of the street on a feathery night in San Juan del Sur with the air of a half-time quarterback from the team that's winning. There's a confident grin, effervescent with optimism; he knows he's leading, but there's lots of work ahead. You might get the sense that his only disappointment is that the sun has set and he will have to wait for tomorrow to resume work. Dave is trying to build a house in two weeks. Not a huge house. And not just any house. Dave, along with a crew of American and Nicaraguan workers, is trying to build an Earthship.

Earthships are homes designed to be self-sustaining – cooling themselves, creating their own power, catching their own water, growing food, and relying heavily on recycled material for the building's structure. This, in the case of Kniffin's "Casa Llanta," includes about 800 used tires that were procured from behind garages around Rivas. The tires are packed with dirt – earth pounded in with sledge hammers – and then stacked like bricks, often with plastic or glass bottles providing windows and flexibility in the walls. Finally, the walls are plastered into adobe-like buildings. Despite the curiosity of the building materials, the finished product retains a unique, cozy elegance. It's a stylish manifestation of environmental consciousness in action.



Earthships are nothing terribly new, but they are new to Nicaragua. Long before the mass media reported on global warming or oil companies ran ads about "green energy," vanguard builders in the United States were developing ways to create self-sustaining homes. It was in Taos, New Mexico about two years ago that the congenial, ever-smiling Kniffin, the 27-year-old volleyball coach at the University of California at Irvine, first did an internship in Earthship Biotecture. He inherited his interest in construction and sustainable living from his grandfather, a lifelong construction worker in Northern California. His father, a former US Marine, dreamed of building a house that was completely "off the grid."

Though it was in Taos that he learned the specific building method, it wasn't where his idea for the project here started. The opportunity presented itself two years ago when a friend of his who had purchased some land here offered him a site for the endeavor.

"This story started way before I was here, and hopefully will end way after I'm gone. It's easy enough to say it, but it's quite another thing to live it," says Kniffin. "The real fun is teaching locals how this can be done and hoping they can use it in the future."

And that's the other half of the story. In a country like Nicaragua where one of the few things in surplus is labor and good affordable housing is in demand, the Earthship model would seem to be a good fit. So the hope is that the crew of 13 locals working for Kniffin will be able to apply what they learn to future projects.

Like many other well-intentioned projects, the idea that the local workers will carry forth with the building principles they are learning attracts a few snickers in some quarters. But buoyant and without the convenience of cynicism, Kniffin retains sun-bright optimism. Asked if the local workers will actually learn, or if the goal to build his

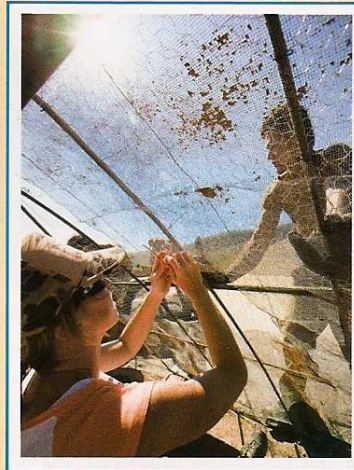
structure in two weeks will happen, or if Earthship can be an effective building technique for Nicaragua he says, "I'm not sure, but we're going to go for it, and it's going to be fun."

The odds may be long, but Kniffin has lots of help. To start the project in December, a crew of ten of his fellow citizens flew in from Taos to help and team up with local laborers, who they would coach through the process. On site, it's obvious that the gang of US visitors is here to work as seen by the productive violence with which they haul the dirt and pound it into the tires to make the house walls.

Among the visiting workers is Mike Reynolds, the progenitor of Earthships about 30 years ago. Earthship believers like to promulgate their message – spreading word of the virtues of their team and techniques and sustainability. Reynolds is obviously the authority. About ten days into the project, San Juan del Sur Mayor Eduardo Holmann comes to the site, inspects the project, and meets Reynolds, who explains the benefits of the systems and technique to him. The mayor cuts to the chase: he wants to know how much it costs. The answer is not definitive. "The first one always costs more," says Reynolds, with reference to costs and material in different parts of the world. As for Nicaragua: "I'm learning," he says.

He has a lot to draw on from a long list of projects and accomplishments in all corners of the world. From his home base in Taos to the Himalayas, including consultation and building projects in Canada, Venezuela, Mexico, Bolivia, and Japan, along with a few more novel accomplishments including addressing the Scottish Parliament on the application of sustainable concepts and having his drawings displayed at the Louvre in Paris.

After a Christmas break, Kniffin is back in Nicaragua. It is Day 24 of construction and there has been very demonstrable progress. The two-week timeline for building it passed some time ago and the work continues. Did some things take a little longer than planned? That goes without saying. Did some things cost a little more than hoped? Possibly. Does Dave Kniffin still look like he's having fun? Definitely. 🐼



**Earthship systems**

**Water:** Earthships catch water from the sky, otherwise known as rainwater harvesting. They contain, use, and reuse all household sewage in indoor and outdoor treatment cells resulting in food production and landscaping with no pollution of the groundwater. Toilets flush with gray water that does not smell.

**Electricity:** Earthships produce their own electricity with a prepackaged photovoltaic / wind power system. This energy is stored in batteries and supplied to electrical outlets. Earthships can have multiple sources of power, all automated.

**Comfort:** Earthships maintain comfortable temperatures in any climate. The planet Earth is a thermally stabilizing mass that delivers temperature without wire or pipes. The coolness in the Earth keeps the house itself cool by means of a system of pipes that draw cool air from the ground up that is vented through the roof.



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