

A Dome for the Homeless: Inventor Lost Own Home While Perfecting Portable Shelter

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By BOB POOL

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Any other plumber would call it a pipe dream. Not Dennis Crabb. His campaign to design an inexpensive homeless shelter out of common plumbing pipe is an obsession that has left him homeless.

The Topanga Canyon plumber has spent more than two years cutting and bending plastic pipes in the hopes of creating a lightweight dome that can be used by homeless people.

The last six months of that has been spent in an isolated part of Topanga State Park. There, Crabb has built scale models and full-size mock-ups just outside the tent where he now lives.

"I never thought it would come to this," said Crabb, 56. "But the finished design is such an elegant structure and so simple and easy to build that I want to see it through."

Just as plumbing problems often do, Crabb's started with a trickle and turned into a torrent.

When his plumber's income started dwindling because he was spending so much time tinkering with domes, Crabb moved out of the house he was renting and into his 12-year-old plumbing van.

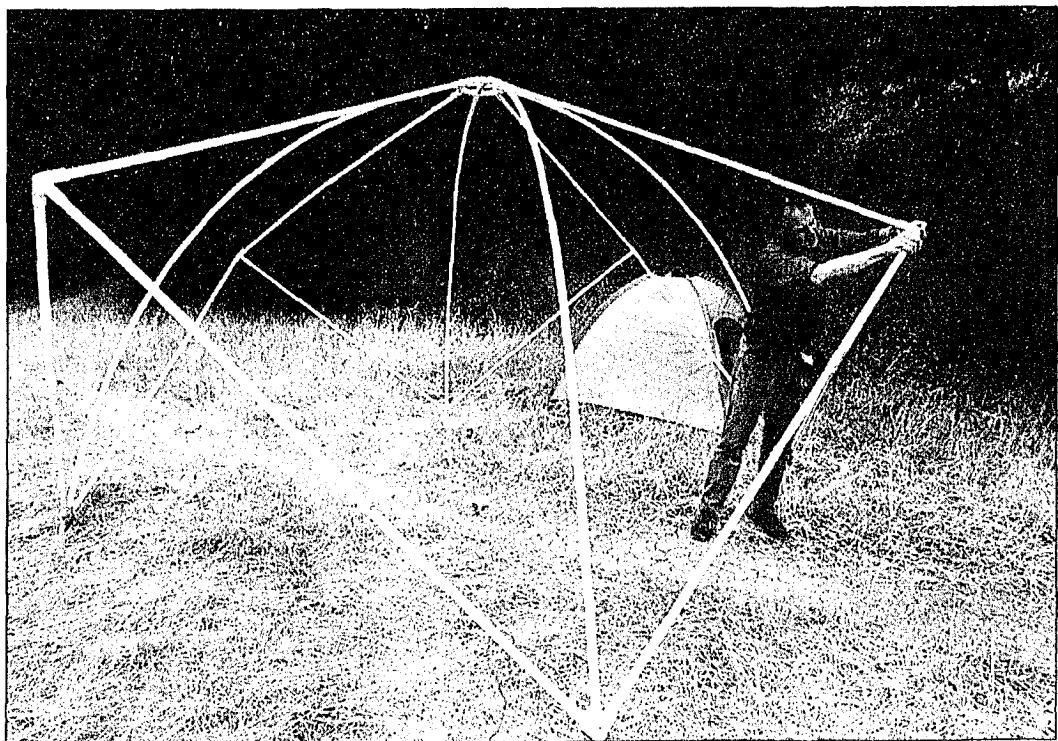
But because he no longer had a mailing address, Crabb never got the notice warning him that a 4-year-old seat belt violation fine was unpaid and that the Department of Motor Vehicles was yanking

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RICARDO DeARATANH / Los Angeles Times

Inventor Dennis Crabb assembles a prototype "Crabb Shell."



Photos by RICARDO DeARATANHA / Los Angeles Times

Dennis Crabb's concept for a homeless shelter employs a frame of PVC pipes fitted together.

HOMELESS: Dome Sought as a Shelter

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his driver's license because of it.

So when sheriff's deputies pulled him over on Topanga Canyon Boulevard on New Year's Eve because of a burned-out rear light, they ordered his van impounded because his license was invalid.

By the time Crabb paid the \$300 seat belt fine to clear up his license problem, his van had been stored for more than a month. Without the truck to carry him and his tools to plumbing jobs, he could not work to raise the nearly \$1,000 in towing and storage fees the impound lot was requiring for its release.

So the lot auctioned off his van, leaving Crabb stranded in the canyon where he has lived for 23 years.

In a way, Crabb said, his six-month camp-out under the stars has been enjoyable, despite frequent moves to avoid park rangers.

He is an avid amateur astronomer who once dabbed luminescent paint on his bedroom ceiling to depict the stars of the galaxy. It was that, in fact, that caused him to start thinking about domes.

"I thought you could teach astronomy to kids at school if you had a dome that could be used as a portable planetarium," he said. "I went out and started reading up on Buckminster Fuller."

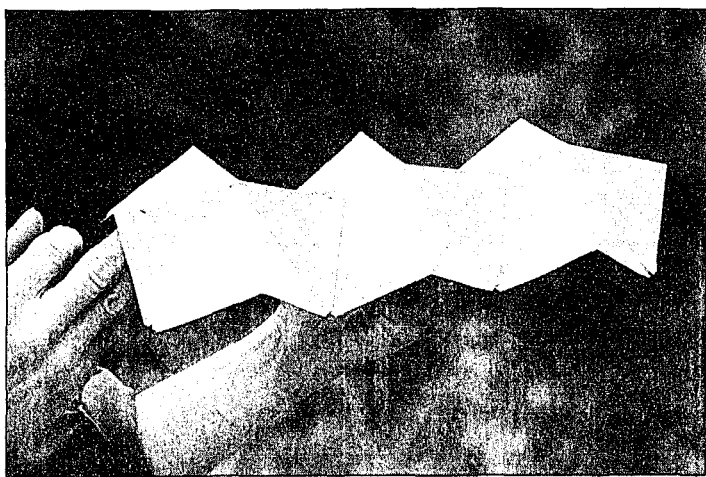
But designs by Fuller, developer of the geodesic dome, proved too heavy and too permanent to move around. "I was looking for something that could be put together and taken apart easily," Crabb said.

Although he used high school geometry formulas and 10 small-scale models to refine his design, it took four tries with three-quarter-inch PVC pipe before Crabb was able to devise a full-size dome that actually stood up.

His finished design relies on three dozen pieces of 3½-foot pipe sections to create a 15-foot-wide structure that he has nicknamed the "Crabb Shell."

The dome stands on four legs that are anchored to the ground. It balloons out at the top, where eight pipe legs meet in the center in a specially designed hub.

Crabb contends that the fragile plastic frame will become rock-solid and wind-resistant once it is



A paper model shows Crabb's idea for linking several shelters together.

covered with an inexpensive vinyl-coated polyester skin.

He said his concept calls for the hubs and lightweight covering to be mass-produced and distributed to people left homeless by floods, tornadoes and other disasters. The bulkier pipe would be easily available at hardware stores and home improvement centers.

"If they had these structures in natural disasters, families could put their lives back together again much faster. Being thrown together with other people in a place like a gymnasium can be a shock to victims," he said.

Individual shelters can be hooked together to create a structure with numerous rooms, he added.

Crabb—a music-lover who has worked as an actor in TV and local canyon theater—said he never contemplated being homeless himself until he was forced to move into his 1984 GMC van.

Topanga residents say his truck was a familiar sight in the canyon. Sometimes it would be decorated with music scores from Italian operas—which Crabb traced on the vehicle's dusty sides with his finger.

Some let Crabb build test models of his dome in their backyards. Others loaned tools and their own expertise with domes.

"It's a fascinating little structure," said 30-year canyon resident Jim Poole, an architect who specializes in the design of theme park developments. "The potential is really endless."

Poole knows about domes. In the 1960s he taught a dome class at UC Berkeley and built several geodesic structures himself.

"I haven't seen anything similar. It's a dynamic-membrane struc-

ture, so engineering is a real bear. It's a unique blend of straight and curved struts. The next step for Denny is to work out the skin. We have the bones working real well," he said.

Doug Kirby, a retired builder and woodworker and a former supervising deputy for the Los Angeles County Probation Department, said he has given Crabb free reign in his home's wood shop.

"Denny gets an idea and follows it through to the end," Kirby said. "He made arrangements with people building a house up here to use it at night when they weren't there working. He went out and bought a book to teach himself to make drawings for the Patent Office. Then he worked at night with a Coleman lantern drawing them."

Kirby said Crabb's shelter is "eminently practical and low-cost."

Crabb is broke, he added, "not because he's incompetent, but because he doesn't pay attention to his financial structure."

That may be changing. Crabb said he plans soon to temporarily move to Lake Tahoe where a friend has offered a job—and a place to stay.

He will work as a limousine driver so he can save up to hire a patent attorney, Crabb said. And living in a tent, he added, has taught him a valuable lesson.

When you're building a dome, there's really no place like home.