Shelter Frame Kit

Location_Various
Date_1983–present
Organization_World Shelters
End client_Displaced populations, emergency field operations
Design team_Steven Elias, Bruce LeBel
Project partner_Buckminster Fuller Institute
Cost per unit_$365
Area_269 sq. ft./25 sq. m
Occupancy_6–8 people
Dimensions_24 x 11 x 8 ft./7.4 x 3.4 x 2.6 m
Packed dimensions_15 x 15 x 60 in./ 38 x 38 x 152 cm
Weight_66 lb./30 kg

A health clinic set up by the nonprofit International Medical Corps in Uganda using the Shelter Frame Kit
World Shelters

Interview

Bruce LeBel World Shelters

Many designers have commented on the difficulty of breaking into the relief "industry."

Underfunded, overworked aid organizations are often unwilling to take chances with new designs. In their defense not a month goes by that the major aid organizations aren't besieged by some designer somewhere offering the latest panacea to the world's housing crisis. As one aid worker deadpanned, "Sometimes enthusiasm overtakes experience."

For Bruce LeBel, however, experience has never been an issue. In this interview conducted in March 2005, he talks about the inspiration behind his and his partner Steven Elias's Shelter Frame Kit, their struggle to bring it to market, and, ultimately, their decision to produce and distribute the design through their own nonprofit, World Shelters.

How did you first get involved in providing humanitarian aid?
I started out as a high-school science teacher. I did my first disaster-relief project in 1976 in Guatemala after the earthquake there. I was part of a group from the Mohawk Nation that worked in small villages that hadn't received aid from other sources. The unreinforced adobe-block walls and tile roofs were what had collapsed and caused most of the death and injury in the villages. CARE had a program offering roofing material for anyone who could get up walls. So what I developed was a combination of Japanese and Mexican traditional building techniques. Instead of thick adobe blocks, we used posts and woven-bamboo lattice with adobe applied as stucco. Then, in 1977, I did a graduate tutorial with Bucky Fuller.

That must have been interesting. What was it like working with Bucky?
He was someone you could spend an hour with and then have a month's worth of work to do. He had an amazing way of asking the salient question. I think that was the key for me. It was just the way he would take the work I was doing and ask the salient question that would take me to the next level. I had a twofold program with him, one part of which was developing design science curriculums for high schools. The other was structural design with an emphasis on tensegrity, tensile structures.

When I finished my program with Fuller, my wife and I moved to Berkeley, and I went to work for The North Face, which was the first company that used Fuller's principles of "tensegrity" in backpacking tents. Bob Gillis, together with Bruce Hamilton of The North Face, developed the first flex-wand backpacking tent. That's the basic technology that we still use for our disaster relief shelter. We still buy clips from Bob [see "GripClips"].

How did the Shelter Frame Kit come into being? Was it something you started while you were at The North Face?
A colleague I had known through work with Fuller, Steven Elias, also had experience doing disaster relief work. He had a little business called Icosa Domes. (Note: Unrelated to Icosa Village, Inc.) The OFDA [Office of Foreign Disaster Assistance, a division of the United States Agency for International Development (USAID)] had used Icosa Domes in Guatemala, Iran, and Beirut before realizing the hard part is the logistics. And doing something that was as heavy and bulky as the cardboard Icosa Dome just didn't work logistically for relief work. The shipping and in-country handling was too difficult.

After Fuller died in '83, Steven and I got together and said, "We really ought to just do something. There's a legacy here. Let's focus on developing a lightweight, human-transportable, flame-retardant, durable shelter." So we started Dymax and began working on product design.

How did you come up with the idea of using standard relief plastic sheeting rather than supplying your own covering?
It was a phone call. We were exploring a range of different sheeting materials and decided that USAID would probably be a good contact, and we should find out what they use. We then found there was a fellow named Roy Limpitlaw, this would have been in 1984, who had done a study and a write-up for USAID on temporary shelters. This was right at the time that Fred Cuny was starting to get going, too. He put us in contact with the supplier [that] developed the specifications for the USAID sheeting material. When we found out about this material, we brought in samples and started making shelters with it. Then, when we found that USAID was distributing this to disaster sites, we thought, well, this is just real clear. Not only is it an excellent material, but it's already there. What we really need is a design that will operate as a shelter frame kit without the sheeting material and have it made in the field with the sheeting that's there. That's the seed for our work, this extraordinary sheeting material that shows up after every disaster.

We hired Roy as our sales rep, and Roy was able to make the contacts and pull the strings and get an appointment for us with OFDA. We brought in our demo shelter and demonstrated it to the program manager and to the procurement manager and the logistics officer.... And, here we are out on the front lawn of the State Department setting this thing up, and they are sort of gnashing their teeth because here are these young turks from California with this idea. And then the director of OFDA comes down while were just about to set this thing up, and it just went up so fast. It was beautiful the way it went up. And the director says, "We really need to include this shelter in the evaluation that we're doing." So there we were, and all of a sudden we were in OFDA's first national competition for emergency shelter.

"Then, we had lunch with Fast Eddy. He saw what we were doing and how dialed it was. He said, 'Tomorrow we are going to meet at my office. I am only going to take 20 percent off the top. I've got all the channels worked out, and here is how it's protected.' We looked at each other and said, 'We cannot go to this meeting. Time to get out of the country.'"
Bruce LeBel, World Shelters

What was the competition all about? Were they testing different designs?
They were doing a competition to procure tent supplies for various relief operations. After winnowing down the entries and going through a bidding process, they decided to do a field test in El Salvador and Guam and other areas. So now we're in the national competition for going globally, and after going through various filters, there were two products left: ours and one from an outdoor equipment company.

The first test site was El Salvador, back in 1985, after the earthquake there. They brought in 50 of our shelters to different distribution