

Ferrocement

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KEYWORDS

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CORE BUSINESS

Ferrocement constructions utilizing steel reinforcement have been used for many years. Although use of organic fiber to reinforce concrete is not a new idea on the planet, it is often an unexplored concept individually.

The internal structure of concrete looks like a mass of sea urchins with their spines tangled together. Concrete expands and contracts with heat and cold without damage, assuming one side is about the same temperature as the other. Ferrocement is simply utilizing fine steel to spread forces throughout the crystalline matrix so that no particular concrete crystal is distorted beyond what it can stretch or compress due to a change in temperature. Use of organic fibers allows reinforcement at a scale so fine that we encounter a very interesting composite which reinforces the matrix almost to the crystalline level.

Structures made from, for example, bamboo, burlap, cement and acrylic are completely impermeable to water, do not decompose in sunlight, are not subject to rot or insect infestation, and are as easily repaired as fiberglass. Borax is a known added preservative. I have worked with these materials from the point of view of industrial mass production and small scale production, the shelter I propose is suitable for both methods. Discussions with fiber suppliers indicate that automobile and airplane manufacturers are among the enterprises which are familiar with requirements to mass produce millions of components manufactured with fiber reinforced composites.

The other mode of production is utilizing millions of people to produce millions of shelters. When the techniques are well known, and material costs are a minor component given reality by extensive labor, it is entirely reasonable to propose a rapid increase in architecturally beautiful and functional shelter for the rural poor. Techniques for this type of structure are similar to smearing mud on sticks, known as mud and wattle. This direction reveals a quality and range for artistic expression needed for cultural fullness and stability.

MOTIVATION

The problem addressed is improvement of shelter for the rural poor, who account for approximately seventy percent of the total poor. The topic of concern addressed at the conference is shelter for those displaced by disaster. I look forward to discussing issues associated with mass production of suitable accommodations subsequent to major disasters.