

Earth Shelter Project Michigan

PROJECT: Earth Shelter

CHALLENGE: Largest Michigan underground self-sustaining home environment

SOLUTION: Shotcrete Concrete Mix with 3/8" peastone for exterior wall

An underground earth dome shelter built in Mt Pleasant, Michigan used more than 860,000 pounds of Team Elmer's concrete to complete the shelter's facade.

Earth sheltering is the architectural practice of using earth against building walls for external thermal mass, to reduce heat loss, and to easily maintain a steady indoor air temperature.

Known as "Earth Shelter Project Michigan," the project is the largest of its kind in the nation at nearly 13,000 square feet. It features five domes that include a residence, guesthouse, barn, greenhouse and connecting units. Animals in the barn range from chickens and turkeys to a few Scottish Highland cattle.

"Our goal is to be completely self-sustaining," said Basheen Baker, owner of the residence. "We're off the grid completely — we make our own food, make our own power. We're going to do a lot of teaching and knowledge to share our experience."

The project was being led by Adam Bearup of Hybrid Homes LLC, a sustainable builder who has been recognized by Michigan's governor as serving as a leader in renewable energy and sustainable building.

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The concrete mix design was a standard shotcrete mix with 3/8" peastone. The mix, dryer than usual at a two inch slump, was applied with a shotcrete pump/gun over a rerod mat covered with burlap mesh. A long, slow, and steady process, the material was placed four to five inches thick, similar to an inverted swimming pool.

The underground complex is buried in some areas under 22 feet of earth. The exposed south facing walls will be ICF and the outside will be Certainteed Fiber Cement siding in a color that matches the landscape, to keep it from standing out where it is located and to have an organic feel.

A video documenting the concrete application is available by [clicking here](#). A documentary about the process of building the residence is planned for release in 2011.

To say this project is unique would be an understatement. Team Elmer's has never been involved with a project quite like this, but as always, we welcome the challenge!

