



# Energy Efficient Habitats

Concrete homes built in the US by international non-profit organisation Habitat for Humanity are sending a strong message about the material's suitability for quality affordable housing.



Portland Cement in conjunction with local suppliers and builders in New Orleans, recently joined forces with Habitat for Humanity (HfH) to build concrete houses for participants in a programme that makes home ownership a reality for low-income families.

HfH describes itself as a "non-profit, non-denominational Christian housing organisation, which builds simple, decent, affordable homes in partnership with those in need of shelter."

Habitat houses are purchased by low-income families who must commit to labouring on their own and others' projects in lieu of a cash deposit. Houses are built by the homeowners and other volunteers, under trained supervision, with financial (and material) support provided by individuals, corporations, faith groups and other organisations. The houses are sold at no profit, and no interest is charged on the mortgage.

Since 1976 Habitat has built more than 100,000 houses in more than 80 countries, including some 30,000 houses in the US.

This project involved concrete interests working with the New Orleans Area HfH on a wall system appropriate for the wind and other extreme climatic elements

common in Louisiana. The result? An innovative concrete foam sandwich panel that has been used in the construction of four houses, with a further 10 planned for completion this year. The New Orleans homes achieve high levels of energy efficiency with this concrete wall system, which combines the insulating power of foam with the strength, durability and thermal properties of concrete.

The system used a concrete slab foundation and floor (common in conventional New Orleans home construction) combined with vertical reinforcing-steel cages around the slab to create the perimeter walls. Foam panels were then placed inside the reinforcing steel, and aluminium forms for the concrete locked into place on both sides of the steel-foam assembly.

Concrete was poured into the aluminium forms on both sides of the foam, creating a 203mm thick, reinforced concrete-foam-concrete sandwich. The forms were later stripped away and used on the next house.

The resulting exposed concrete can be finished to the homeowner's preference, with options including finishing the concrete to look like brick, or adding vinyl

siding, stucco or real brick. For the Habitat houses, the formwork was set with brick motif liners for the exterior face.

Construction costs for the project were comparable with those for traditional wood-frame houses, but with significant additional benefits thanks to high levels of energy efficiency. Project officials note that concrete homes are 66% quieter than comparable wood-frame units and can save owners up to 44% on energy bills.

"New Orleans Habitat is especially pleased with the energy efficiency and durability of concrete homes," says Jim Pate, Executive Director of New Orleans HfH. "Every dollar saved in energy or maintenance costs by our Habitat homeowners is another dollar they can save for family emergencies or educational opportunities."

Homeowners have seen a more immediate saving thanks to a Louisiana Department of Natural Resources programme designed to promote energy-efficient building practices. The concrete homes qualify for US\$2000 Home Energy Rebates, by easily exceeding the requirement of 30% more energy efficiency than the 1995 Model Energy Code.

The homes are part of a national effort by concrete home interests to collaborate with the Habitat organisation. Other concrete homes have been built – or are planned – in Atlanta, Houston, Las Vegas and Omaha.

In New Zealand, Habitat for Humanity has built nearly 150 homes since its establishment in 1993.

For more information, visit [www.habitatnz.co.nz](http://www.habitatnz.co.nz)