

EMERGENCY HOUSING SYSTEM

Footings for walls

100 x 100mm Prefabricated concrete strips laid level on compacted earth. Walls tied to footings with galvanized hoop iron straps.

Floor

450 x 450 x 50mm thick concrete blocks laid on compacted soil with 250 micron plastic sheet waterproofing in between. Floor level a minimum 150mm above natural ground level.

Walls

60mm Glass Reinforced Cement (GRC) panels, consisting of two 8mm outer skins and 44mm polystyrene beaded cement core, held together with 10mm galvanized mild steel post-tensioning rods. Bottom of panels waterproofed with bitumen paint.

Roof

0.5mm Corrugated Galvanized Iron roof sheets (Z275) on 50 x 150mm SA pine beams and 50 x 76 wallplate with Bubble Foil insulation. Openings closed with corrugated poly closures and 50 x 30mm bitumen strips.

Windows

Meranti top hung size 900 x 900mm high with 3mm clear glass

Doors

External - Meranti door frame with FL&B door with three lever lockset.
Internal - Masonite hollow core door on Cozy sliding track.

Paint

Walls: Joints between panels sealed with acrylic sealer and one coat alkali resistant plaster primer with two coats acrylic PVA paint applied to walls.
Window frames, doors and door frames: one coat linseed oil and two coats exterior varnish.



Durability, Lifespan and Re-use

All the components can be dismantled and be re-used, given that proper care is taken to handle, transport and store all the material.

SPECIALIZED CONCRETE PRODUCTS CC

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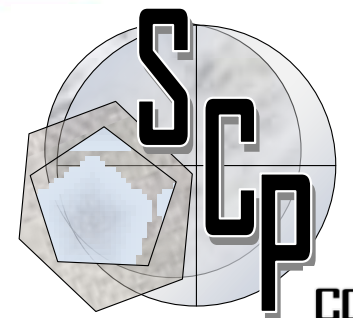
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SPECIALIZED CONCRETE PRODUCTS cc

- Glass-Fibre Reinforced Concrete
- Decorative Precast Concrete

The CEMFORCE Emergency Housing System (CEHS) is a modular building system, consisting of factory made lightweight cement panels.

It has the look and feel of a conventional plastered brick building with superior insulating properties to bring dignity to people when tragedy leaves them at their most vulnerable.

- The design is based on the Cemforce GRC Building System which bears an Agreement Certificate (2008/346).
 - The building has a conventional look and feel with a comfortable atmosphere inside
 - Manufacturing of panels under factory conditions, result in high production volume and consistent good quality.
 - Panels are easily handled by hand and economically transported even to remote and rural sites.
- On site, an uncomplicated assembly process simplifies management and enables local unskilled labour to quickly build houses of good quality.

MATERIAL, DESIGN AND CONSTRUCTION



The panel construction resembles a sandwich of two 8mm Glass Reinforced Cement (GRC) skins and a polystyrene beaded concrete core. The panels are 60 mm thick. The glass fibre should not be mistaken for asbestos and is completely safe and harmless.

The wall panels are placed in position, starting from a corner while mild steel post tensioning rods are threaded through PVC sleeves, running horizontally at the top and bottom of the panels to one-another.

Prefabricated reinforced concrete strips (lintels) form the foundation for the walls or alternatively, for a more permanent solution a reinforced raft foundation can be used. The panels are secured to the foundation by galvanised steel anchor straps.

Wooden windows and door frames are bolted onto the panels in the openings left in the walls. The recessed joints between the panels are sealed with an acrylic sealer and the in and outside surfaces of the panels are painted.

The walls have a solid feel and look like conventional painted and plastered brick walls, only thinner. The panels of up to eight houses can be loaded on a single 35t truck. Offloading and handling of the panels on site are all done by hand.

USE OF LOCAL LABOUR ON SITE

On site, the construction of each house is broken up into separate smaller elements or tasks, like the placing of platforms, erection of the superstructures, roofing, painting etc. These separate tasks are carried out by different teams specializing only in specific tasks. The repetition of these uncomplicated tasks enables local unskilled labour, both male and female with minimal training and tools to productively build houses of good quality.

QUALITY AND DURABILITY

The panels are made from a durable cement based material that cannot corrode or rot. Only alkali-resistant glass fibre is used. The glass fibre should not be mistaken for asbestos and is completely safe and harmless.

The walls are classified non-combustible, while the thermal performance, water penetration, condensation and acoustic performance all fall within set national norms.

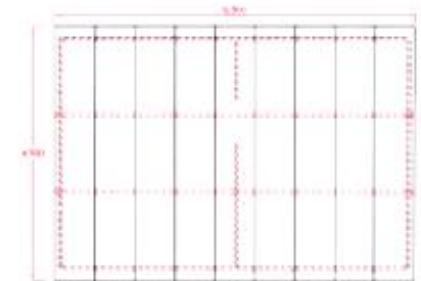
The Cemforce GRC Building System has been tested by the CSIR and granted a Agrément certificate (2008/346) This confirms the overall quality and durability of the system. Given regular and adequate maintenance the durability of the buildings will be similar to that of conventionally constructed buildings.



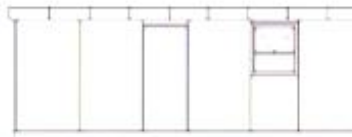
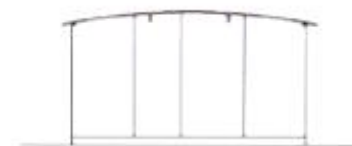
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Plan and Roof Plan
CEMFORCE 30m Emergency House



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