

Vertical Wall Panels impress as MMC method for infill site



Principle contractor:
Karm Homes

Project:
Construction of 5 homes using i-House method of construction

Cost of build:
£25,000 per unit for the structural frame

Location:
Christchurch

Type of contract:
Private sector

Project timescale:
52 weeks

Executive summary:

The i-House system using H+H Celcon Vertical Wall Panels has been used on a re-development of a residential site in Stanpit in Dorset. The i-House system introduced developer and contractor Karm Homes to the concept of Modern Methods of Construction (MMC) while also providing the familiarity of a traditional building material.

Project description:

Developer and principal contractor, Karm Homes, has re-developed the site of a previously detached property with large garden in Stanpit, one and a half miles from the centre of Christchurch, Dorset, to build 5 homes, comprising a pair of 3-bedroom semis and a terrace of 3-bedroom townhouses.

The full i-House system package was used for each unit, comprising the structural inner skin, insulation, floor cassettes, roof cassettes, soffits and facias. The i-House system is manufactured offsite by Roofspace Solutions who also supply a 3-person team and crane operator to create each structure.

The walls of each unit are constructed using storey-high Celcon Vertical Wall Panels that are craned into place and secured using a fast-setting mortar specifically created by H+H for use with Vertical Wall Panels.

On this build, the panels, floor cassettes and roofs went up in 10 days per house, leaving a watertight shell for interior work to begin. As soon as the shell had been completed, work began on the ground

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floor insulation, underfloor heating and liquid screed, closely followed by the timber studwork for upstairs walls and staircases. While the internal work was happening, the roof was being tiled and the bricklayers put on notice to commence the outside skin.

The already incredibly quick process of creating the watertight structures would have been expedited had there not been some logistical issues, in part due to the tightness of the site. This was also Karm Homes' first time working with i-House and they received on-site technical support from Roofspace with an H+H Building Solution Manager supporting throughout the build.

The external walls are finished with brickwork and the U-Value of the entire wall structure is $0.23\text{W/m}^2\text{K}$, similar to that of a traditional build.



Products used / aircrete specification:

H+H Celcon Vertical Wall Panels form the basis of the structure for the homes, being used for the inner leaves of all the load-bearing external walls. These Vertical Wall Panels are manufactured to the design storey height of a standard house with a width of 600mm and a thickness of 100mm.

Where the required width of the modules is less than 600mm or in cases where the panels are used under windows, they can be cut to size on site.

The knock-on effect is of less product waste on site and cleaner work environments. Celcon Vertical Wall Panels are lightly reinforced to facilitate the handling and transportation without damaging the product.

Foundations:

The foundations were built using traditional strip foundations.

External walls:

The walls are finished with external brickwork and render.

Roof:

2 roofs are a standard truss roof construction and 3 are 'Roofspace i-Roof', a panellised room-in-the roof system designed for the UK new build residential housing market.

The i-Roof by Roofspace is manufactured offsite in a controlled environment making it a faster, cost-effective construction. Safety benefits include reduced working at height and the removal of the risk of gable block work collapse.

Floor:

Prefabricated timber i-Floor Joist cassette floors are used in conjunction with the system to maintain the speed of build. Each cassette is lowered into place by crane, sitting on top of the first lift of Celcon Vertical Wall Panels.

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Product benefits:

- Rapid and accurate build
- Increased quality control
- Integrated system
- Fully managed package – design, manufacture, install, complete
- Traditional materials and familiar build
- Improved airtightness

H+H aircrete applications:

- Internal and external leaf in cavity walls
- Solid walls
- Separating / party walls
- Flanking walls
- Partitions Infill to multi-storey buildings
- Foundations

H+H comment:

“This was a great opportunity for Karm Homes to trial using MMC and Vertical Panels specifically. The i-House system provided them quality and performance, along with the quick build-time that they were looking for. We are delighted that Karm Homes want to use the i-House system incorporating Celcon Vertical Wall Panels in the future.”

Amos Rodrigues,
Building Solution Manager

Housebuilder comments:

“The i-House system is very impressive. For this project speed was key and this system delivered. You get the speed of timber construction and the benefits of a traditional masonry build without compromising on quality or performance. This was our first time using i-House, working with both Roofspace and H+H and the support we’ve received from Amos and the H+H technical team has been great. Going forward we will definitely be using Celcon Vertical Wall Panels again where possible.”

Martin Keenes,
Director at Karm Homes



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For further information about the subjects covered or the H+H products used in this case study, please visit our website

www.hhcelcon.co.uk