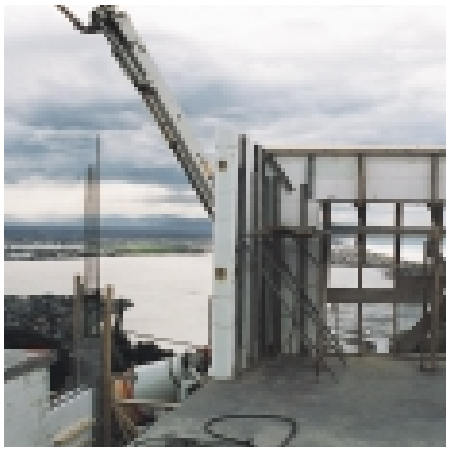
Tricks of the trade

Building with insulated concrete framework



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Easy to handle on site, with finish qualities that include strength, good fire rating and STC: insulated concrete formwork, or polyblock, is becoming increasingly popular as a construction system. In this article *concrete* talks to a couple of builders who are currently using polyblocks on site.

Case Study 1: Christchurch house

Polyblocks were chosen as the main construction material for this new home on the Port Hills in Christchurch both for their insulation qualities and because of the desire for solid concrete construction. They were also very suitable for this particular site which, elevated above the road, dictated the design of the house. Three bedrooms and two living areas sit on top of basement garage and open out to ground level terraces - a rear east courtyard and a north side-yard. Steve Brown Builders is building the Clifton Hill house and site foreman Richard Stedman is an enthusiastic proponent of the ICF system.

"Construction with polyblocks is quick and easy. The lightness of the blocks is great, and makes laying the unit an easy task. The NorWest wind was blowing when the blocks were being placed on this job - as it is an exposed site, extra props were used to provide additional security, but work continued even though the wind was quite strong."

Richard says that it is important to plan ahead with an ICF home. "It is easy to incorporate a duct for an air vent, toilet pipe or electrical distribution board prior to pouring the concrete core. It's a big job if you have to come back and drill holes through solid concrete. A little thought upfront can save a lot of time later on.

"Although polyblocks can be easily cut to any size, it helps if the designer has thought about the module layout. "There is less waste if the wall lengths correspond to full block modules. In this project, the architect, John Chaplin, did a good job in dimensioning the residence.

"Pouring the concrete is a simple task but a full-on activity. Working around the project, the forms are filled and vibrated to the manufacturer's recommended height. By the time you have worked around the building, the start point is ready for the next lift. When the concrete is poured, and before it has set, it is worth checking the trueness of the walls again and making slight adjustments to the props if necessary. If the interior lining is gib board, the walls will need to be shaved to provide a true finish, the same as for a timber framed wall. So, the truer the wall, the less shaving."

As the plaster systems used with polyblocks are typically quite thin, Richard recommends ensuring that windows are a good fit. "Before getting the window manufacturer in to measure the window openings, it's worth checking the opening, and shaving it if necessary, to make sure that the opening is square and not bowed through the thickness.

1 The site commands views over Christchurch.

2 Bracing in place prior to pouring. Additional supports were used for this project as the site was very exposed to the wind.

3 Concrete being pumped into place.

4 Electrical distribution box in place prior to pouring concrete.

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An ICF checklist

- Ensure that the bracing system used to hold the walls straight while pouring the concrete is easily adjustable.
- Check that the walls are straight prior to pouring the concrete infill.
- Check the walls again immediately after placing the concrete and adjust if necessary.

Polyblocks are now being manufactured by a range of companies, and the system's qualities - ease of construction, high fire rating, STC capabilities, and strength - make it appropriate for both domestic and commercial projects.

For more information on different ICF systems, contact the CCANZ, library@cca.org.nz

Thanks to the following for their help with this article:
Steve Brown Builders,Hawkins Construction, Superform Building Systems, Insulform NZ Ltd

Case Study 2: Christchurch church

A substantial new church building using ICF is currently being completed for the Samoan community in Christchurch. The client had built using ICF several years ago and having liked the result, ICF was their preference for the new church.

ICF has excellent STC rating, ideal for 'quiet zones'; the acoustic qualities of this form of construction are well suited to churches - singing doesn't need to disturb the neighbours, and churchgoers are not distracted by traffic (or other) noise when at prayer.

Site Foreman, Barry Nuttridge from Hawkins Construction, is impressed with how the building has gone up. "This is the first time I have used [ICF]," said Barry "and I would use it again. The end result was good with nice straight walls." He reported "very few" problems during construction.

Barry's advice for first-time ICF users is to use a registered fabricator, "as it ensured that the project stayed on track and avoided any trial and error". And ICF was "ideal for the project's curved walls".

Above: Curved walls can be achieved using ICF. *Below:* Aerial view of church.