

concrete

VOLUME 59 ISSUE 2



READING CONCRETE CAN
CONTRIBUTE TO YOUR
SKILLS MAINTENANCE

2016 Concrete³ Sustainability Awards

CELEBRATING A SUSTAINABLE
BUILT ENVIRONMENT

Fresh Concrete Performance Guidelines

OFFERING CLARITY AROUND
IMPORTANT FRESH PROPERTIES

Focus On Residential Concrete Projects

CONCRETE PROVES KEY TO
INNOVATIVE NEW HOMES



UPFRONT

Over recent years the *National Construction Pipeline Report* has become a key document in forecasting construction industry activity. If the latest edition proves as accurate as previous versions then National construction value is forecast to grow to a peak of \$37 billion in 2017. This report, coupled with forecasts from the banking sector and Treasury, suggest that the medium term outlook for residential and commercial construction remains positive.

Concrete volumes, often seen as a barometer of construction activity, are almost at unprecedented levels. 2016 saw around four million cubic metres of quality assured concrete produced.

A sign that momentum in the economy is strong is the cement industry's recent level of capital investment. 2016 saw the 'bedding-in' of a new cement supply model. Golden Bay Cement moved to a different distribution model, which involved a South Island supply chain that uses 500 ISO tanks; a new ship with increased capacity; and a 6,000 tonne storage silo and ship loading upgrade currently under construction south of Whangarei.

Holcim Lafarge New Zealand completed its \$100 million investment in cement storage and distribution facilities with the opening of its Auckland terminal in July, following the January opening in Timaru. The 30,000 tonne storage structures are the first of their kind in New Zealand, the creation of which saw the cessation of production from the company's Westport plant.

In other areas investment is similarly strong. The Hunua quarry in Auckland has received a \$30m redevelopment, and a new \$22m masonry plant at the quarry is due to be commissioned in June 2017. A number of ready mixed concrete plants are also scheduled to begin construction in West and South Auckland. Add to this the opening in November 2016 of a large precast factory in Pokeno and it is clear that expected levels of activity, particularly in and around Auckland, are considerable and that any concerns about capacity are being addressed.

Industry commitment to maintaining Standards will continue. For instance, Amendment 3 to *NZS 3101 Concrete Structures Standard*, and a corresponding Red Book seminar series, will soon be available to complement the recent amendment to *NZS 1170.5 Structural design actions - Part 5: Earthquake actions - New Zealand*.

From an association perspective, 2017 will see the emergence of a single consolidated organisation, to date referred to as Concrete NZ. This is an exciting development that will enable industry to promote excellence in all things concrete in a more efficient and effective manner.

There is a concern however that a skills shortage could threaten the industry's ability to maximise opportunities. One strategy is to have more people enrol in qualifications. As such we are excited that the BCITO, in collaboration with industry, has developed *Workforce Development Plans* to help create a workforce that has the capability and capacity to meet current and future needs.

The next 12-months look to offer growth opportunities for the concrete and wider construction industry in a similar manner to the last two-to-three years. CCANZ wishes all its stakeholders a safe and prosperous 2017, and looks forward to working with you.

Rob Gaimster
CCANZ, CEO



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CCANZ has recently relocated its Wellington office.

The new physical address is Level 4, 70 The Terrace, Wellington 6011.

The CCANZ postal address remains unchanged at PO Box 448, Wellington 6140.



EXCELLENCE IN RESIDENTIAL CONCRETE CONSTRUCTION

SOLAREI LTD

COATESVILLE HOUSE, RODNEY DISTRICT



THE COATESVILLE (PASSIVE SOLAR AND ENVIRONMENTAL) HOUSE IN THE RODNEY DISTRICT IS A FOUR-BEDROOM FAMILY HOME DESIGNED A BIT LIKE AN OLD SAW TOOTH-SHAPED FACTORY ROOF — BUT SMARTER!

The 270m² home, situated on a 2.4 acre property with bush and valley views, is a series of stacking saw tooth roofs designed to capture every possible bit of sunlight during winter, and naturally exhaust warm air during summer. The result is high energy efficiency and comfortable internal environments all year round.

Typically, a passive solar house works on an East-West axis following the seasonal sun path. This site has a narrow east-facing flat platform located on the downward side of a hill, meaning that the designers worked within a restricted footprint which functioned on both an East-West and North-South axis for maximised solar gain and view.

The house relies on exposed insulated concrete slabs and large insulated vertical precast concrete walls for optimised passive solar

gain and heating during winter. The roof shapes and windows allow a natural stack effect to cool down the interior and naturally ventilate the bedrooms and living spaces over summer. This is further assisted by the summer winds which enter the house from the North-East.

A commitment to sustainable construction is clearly evident in the passive solar design components — 140mm-thick insulated concrete slab (thicker slab than normal) with an R-value of 8, 240mm-thick insulated precast exterior concrete walls with an R-value of 7, 240mm uninsulated precast interior walls, roof insulation with an R-value of 5, wall insulation (140mm framing) with an R-value of 3.2, and U.44 insulated glass windows. The house also boasts an array of other 'green' features that align with the overall pledge to sustainability.

From the period June 20, 2015 to June 20, 2016, internal temperatures passively peaked at 24° Celsius during late afternoon in mid-winter, with the extreme low being 17° Celsius during early morning. So far the house has thermally performed as calculated, and will be further monitored.

JUDGES' CITATION

This modest family home offers (and superbly executes) a core design principle entirely accessible and applicable to the vast majority of yet-to-be-built homes. Passive solar design, built around the thermal mass of concrete, in this case exposed interior slab-on-grade and precast panels, has the huge potential to enhance future building stock through "built-in" energy efficiency. The merit of Coatesville House is elevated in that it achieves its sustainable objectives despite a challenging site, managing to secure a pleasant outlook while at the same time optimising the sun's energy to replace active heating and cooling mechanisms. In principle, passive solar design is relatively simple, yet to accomplish it as well as Coatesville House has deserves applause.

SUBMITTED BY	Solarei Ltd
CLIENT	Home Owner
DESIGNER	Solarei Ltd
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