

Element

Award winning home features Firth products

Life at Home – Karaka Harbourside Estate

Polished glamour at Air New Zealand

Finishing touches at Eden Park

The logo for Firth, featuring a stylized house icon above the word "Firth" in a serif font, with a yellow and red horizontal bar underneath.

Firth

**Autumn
2011**

Infrastructure update

Tunnel goes to ground

Progress on Auckland's new Victoria Park Tunnel (VPT) project is forging ahead with the alliance team of the NZ Transport Agency, Fletcher Construction, Beca, Parsons Brinkerhoff and Higgins looking to deliver the project well inside the 48 month scheduled timeframe. Firth was awarded the contract to supply approx 38,000m³ of concrete for the main tunnel structure.

"All tunnel walls are now complete, the roof is on and 80% of the tunnel excavation is complete with the interior fit out underway," said Helen Cook, NZTA Communications Manager for Victoria Park Alliance.

"The Birdcage is also on the move back to its original location above the new section of completed tunnel and will be in place before Easter."

"We still have a steady supply of concrete being delivered to various locations within the work zone with 6 to 10 different jobs per day with multiple deliveries per job," says Trevor Van Egmond, Operations Manager [Auckland] for Firth.

Firth has supplied 9,900m³ of concrete to the project this year, keeping the team at the Hamer Street plant extremely busy.



Touch down on the Western bank

The new NZ Transport Agency Kopu Bridge on SH25 South of Thames is another step closer to completion with the bridge touching down on the Western bank of the river.

"Progress has been extremely good by the guys at HEB," said Murray Finer, Supply Manager (Thames) for Firth. "We still have one deck pour to finish the Western side of the bridge, but it is mostly complete."

"There are four of the 15 piers still to go and we have started both abutments," said Scott Vallely, Project Engineer for HEB Construction. "Firth turn up when we need them. Everything is going very well with completion still expected by mid 2012."



Turning turbines

Stage one of the Lake Mahinerangi wind farm, 35kms west of Dunedin, is now complete with all 12 of the 3MW Vestas V90 wind turbines now running and producing power.

Due to the remoteness of the site and the speed with which supply was required Firth installed two plants to supply the farm. "We started concrete supply in October 2010 and completed 12 pours of 400m³ by mid December," said Aaron Charteris, Area Operations / Sales Manager (South Canterbury / Coastal Otago) for Firth. "At one point we batched 1,200m³ in three days. We were able to call on support from Cromwell Certified, Dunedin, North Otago and South Canterbury. It was another great team effort by Firth."

The long term annual output from the wind farm is forecast to be 105 Gigawatt hours per annum, which is enough power to supply around 13,000 Dunedin homes.

Putting on the finishing touches at Eden Park

With Eden Park all but complete the finishing touches are being made to the carparks and walkways surrounding the revamped facility.

Final touches include the Wairepo Swamp Walk linking Kingsland township and the stadium. The Walk is a striking entrance to Eden Park, New Zealand's main Rugby World Cup venue, and is a combination of great design and great execution, thanks to designer Billy Apple, Contrax Ltd (concrete contractor), colours from Peter Fell and concrete from Firth.

Billy Apple was engaged to develop a concept for the walkway utilising New Zealand's two most famous sporting colours, creating a walk that sets the scene for those on their way to an Eden Park experience.

"Grant and his team at Contrax Ltd did a marvellous job on this project, everything from designing the mixes to the laying method," says Paul Martinovich, Customer Development (Auckland) for Firth. "We were able to supply an electric conveyor belt to load the white cement, and some of the aggregates for the white concrete, to assist Grant when loading the trucks."

"Contrax Ltd also designed the formwork and stainless edge system to achieve the accuracy in construction," said Cameron Greig from Peter Fell. "It was a very well executed process that required exacting standards every step of the way, from the colours used, the special mix designs and the post pour processes that were required. It looks fantastic – a great job was done by all."



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Sustainability & Community

Early starts & huge volumes

The New Zealand Defence Force has awarded a \$30 million contract to Mainzeal Property and Construction Ltd to build additional infrastructure at the Ohakea Air Force Base in the Manawatu. Construction includes separate Air Force engineering and maintenance workshops covering 11,000m² and large volumes of concrete from Firth.

"It is a considerable sized project which we started in February this year and will take till May 2012 to complete," said Allan Greig, Manager for Mainzeal Palmerston North. "The largest of the new buildings is known as the MSB, Maintenance Support Building, and will be the first building to obtain a Green Star* rating in the Manawatu and the first Industrial Building to achieve a 5 star Green Star rating in the country."

"We started concrete supply to this project for Mainzeal in February," said Graeme Cooley, Supply Manager for Firth Palmerston North. "To obtain a Green Star rating the mixes are required to have 20% flyash and 25% recycled aggregates. We are supplying mixes from 15 – 40MPa depending on what Mainzeal require."

Although supply to the base has been steady, the Firth team recently had an exceptionally busy day when more than 350m³ of concrete was required for foundations – the base of a 14m high parachute drying tower. Graeme explains, "we started at 3am to batch the concrete to enable the first loads to reach the site for a 4am start. It's a 35 minute drive from our plant and we needed to be sure there was a steady supply of concrete arriving at the base."

"We are in the early stages of construction of this project with a fair bit still left to do," said Allan. "Next month we have an interesting task when we will be pouring in situ concrete between pre-cast concrete columns for 12m high walls for the AFS building. Firth will be assisting us with supplying their self-compacting mix for these walls which will be 150mm thick."

Over the next year approximately 6,500m³ of concrete is expected to be delivered to the Air Force Base which will mean a few more early starts yet for the Palmerston North Firth team.



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* What is Green Star?

Green Star New Zealand is the country's first comprehensive environmental rating system for buildings and was created to:

- Establish a common language and standard of measurement for green buildings
- Promote integrated, whole-building design
- Raise awareness of green building benefits
- Recognise environmental leadership
- Reduce the environmental impact of development

For more information on the Green Star rating system go to the Green Building Council website www.nzgbc.org.nz



World War II veteran still in operation

Research for his upcoming book on historic buildings of the rural south led David Teele, author, to speak with many people about topics dear to his heart, in this case Firth's Queenstown concrete plant.

David explains, "virtually every male over the age of about 40 knew something about the history of our local concrete plant. Each one would say something like, 'You do know, don't you, that the batching plant came from Pearl Harbor after World War II?' We didn't, but we do now."

In 1939 the U.S. Navy recognised that support facilities at its bases in Hawaii were inadequate. Gigantic efforts were made to rush these works to completion. Amongst the equipment used were at least two huge concrete batching plants. Their job was to build new dry docks and supporting buildings at Pearl Harbor. In many of the iconic photographs showing the devastation of the Japanese attack, close inspection reveals a concrete plant standing sturdily amid the smoke and flames.

Shortly after the war ended, one plant from Pearl Harbor (or nearby) was sold to New Zealand, specifically to build the dam at Roxburgh. The plant could mix 6.1 m³ of concrete in four minutes; no such equipment had been seen in New Zealand before.

What the plant did en route to its present home in Queenstown is an important part of New Zealand's history. Briefly, it mixed the concrete for virtually all of the South Island's major hydroelectric dams, save for the Clyde Dam. When the projects and the upper Waitaki valley were complete the New Zealand government deemed the plant surplus to requirements. The plant was purchased 'for a song' and fortunately the decision was made to keep it intact. It still operates for Firth Queenstown today.



A Veteran of Pearl Harbor, Roxburgh, Benmore, Aviemore, and the upper Waitaki: still at work in Queenstown in 2011



The forward magazine of the destroyer, the U.S.S. Shaw, explodes during the attack. A concrete plant stands sturdily to the right, beneath the plume of fire and smoke (see arrow).

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Firth to the rescue

Heavy rain caused widespread surface flooding across areas of Edgecumbe and Whakatane at the end of January, with rainfall of more than 270mm causing the Whakatane River to peak at 7.1 metres. This created a significant issue for local Civil Defence staff and Whakatane's Mayor, Tony Bonne, called for 'all hands' to help contain the river.

"Our guys were put on standby on the Saturday night, with our help required on the Sunday," says Ian Kamo, Area Manager (Rotorua) for Firth. "We supplied the truck, labour and sand free of charge as our contribution to the community effort."

The river rose within millimetres of the wharf and its businesses and, while it did breach the stop banks downstream causing damage to crops, overall Tony Bonne thought the Council and Civil Defence team "coped quite well". The team at Firth were just happy to be able to lend a hand in what could have been a much more serious situation.

"It's actually a really quick and easy way to fill the sand bags," says Ian. "We just load up the truck with sand and take it to where it's needed. All the volunteers line up with the sand bags and we discharge via the chute directly into the bags... no shovels needed!! We still got pretty wet though..."



Award winning home features



An idyllic vantage point overlooking Lake Rotokauri is the location of a Greg McGovern Construction-built house that has won two awards – the New Home (\$1 – \$2 million) and the Sustainable Homes (over \$1 million) categories – of the annual national 2010 Registered Master Builders Awards announced last November.

Firth products



**For more information
about Firth products:**

Call now on **0800 800 576**,
email info@firth.co.nz or
go to www.firth.co.nz



“All the masonry used in the house was supplied by Firth,” said Greg McGovern, Director of Greg McGovern Construction. “This included the 20 series blocks used for the external walls of the garage, the internal feature walls, the planter boxes and garden walls, and the exposed aggregate ‘Manorfield’ used in the driveway. I have always used Firth for all my masonry and concrete requirements and their people are very knowledgeable and easy to deal with.”



Polished & beautiful



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Designer Concrete:**

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Polished glamour for Air New Zealand

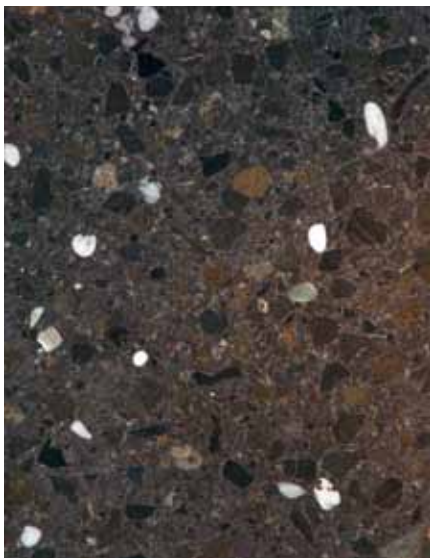
The new Regional Lounge at Christchurch Airport, project managed by Octa Associates, is a joint venture between Air New Zealand and Christchurch International Airport (CIAL) and is one element of extensive work being carried out that includes a new check-in hall, baggage handling system, passenger lounges, improved passenger flows and enhanced retail and cafe offerings.

Situated to the east of the main terminal, the new building will service Air New Zealand turbo propeller aircraft and their passengers on flights predominantly throughout the South Island.

The new building includes a large hall area of approximately 1,800m² featuring a striking black polished concrete floor with white quartz aggregate sprinkled throughout, that will serve as the main departure and arrivals hall for regional passengers.



“We worked very closely with Firth to get the test mixes just right,” said Des Allred, Site Manager for Mainzeal. “They were very knowledgeable and helpful throughout the process and we are very happy with the result.”



“The project architects, Bligh Voller Nield, chose from a range of samples that mixed different shades of black and incorporated varying percentages of white quartz pebble,” says Dominic Sutton, Regional Sales Manager (Southern) for Firth. “Control and repeatability of the mix was very important as multiple concrete pours were required by the program.”

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The Firth RibRaft® floor system, specified by engineers Buller George Turkington, was also used to ensure this glamorous floor will stand the test of time. The RibRaft® system is an innovative method of concrete floor construction, offering an insulated floor with a quick, practical and efficient construction method providing high strength, durability and affordability.

“The floor has stood up very well to the recent seismic events and part of the building was opened early to facilitate passenger access during the completion of the final stages of the works,” adds Dominic. “It is a beautiful floor.”

For more information on RibRaft® flooring systems and Designer Concrete visit www.firth.co.nz or contact us on info@firth.co.nz or 0800 800 576

Firth’s Paving Planner

The Internet is being used more and more by people wanting to investigate and research products, services, facts and figures. Just about anything you want to know can be found on the web – including how many pavers will be required for a project, using Firth’s online Paving Planner. This online tool assists with:

Product information:

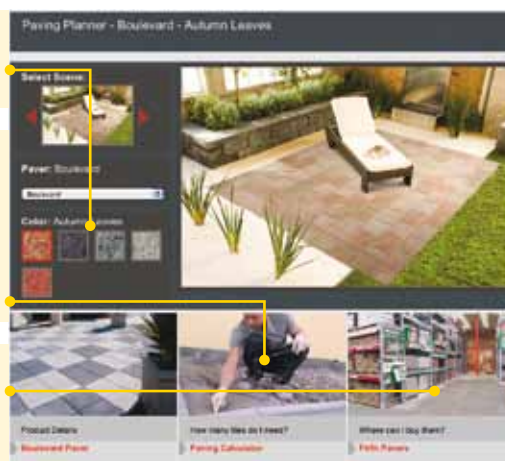
Colour, size and shape

A paving calculator:

To accurately calculate how many pavers are required and what other relevant materials would be required to complete the project

Where to buy them:

With a detailed map showing Firth’s distributor customers’ locations



“We saw this as an opportunity to assist our customers when making choices for their paving requirements,” said David Adams, National Sales and Marketing Manager for Firth. “It is quick and easy to use and hopefully will help people be more informed when selecting our products for their projects.”

Go to www.firth.co.nz to find out more

Technical & Industry

Design efficiencies deliver an affordable & comfortable home

The A+ Home design was created by CCANZ to demonstrate that an affordable, comfortable and strong residential dwelling can be delivered, through design efficiencies, to meet New Zealand's growing demand for reasonably priced housing.

A distinguishing feature of the A+ Home is that it incorporates two concrete masonry walls whose thermal mass properties ensure energy and financial savings as well as the added benefit of a moderate, comfortable internal temperature.

By taking advantage of concrete's thermal mass, combined with an appropriate level of insulation and glazing, the masonry walls regulate internal temperatures to provide a healthy and energy efficient living environment throughout the year.

For a more detail on the A+ Home visit:

www.cca.org.nz/concrete-magazine.aspx



In summary

- Building cost estimates show that the A+ Home, with its two concrete masonry walls, is an affordable option
- Thermal modelling illustrates that by using the thermal mass of concrete masonry, in conjunction with appropriate levels of glazing and insulation, the A+ Home harnesses the sun's solar energy to help reduce energy demands (heating and cooling) throughout the year
- By lessening internal temperature fluctuations, concrete masonry's thermal mass also helps reduce the potential for mould, fungi and dust mites to create a healthier living environment
- The maintenance costs associated with the A+ Home's concrete masonry are lower compared to alternative lightweight materials. It does not require painting and will not rot, making it essentially maintenance free
- Concrete masonry is also inherently fire resistant
- High mass concrete masonry walls repress sound transmission from one side to the other, specifically low frequencies are significantly better absorbed with high mass walls in comparison to light weight walls



Repair & reconstruction guidelines for Canterbury

An evaluation and analysis of systems, in relation to housing structure, was conducted by the Department of Building and Housing in consultation with technical experts following the 4 September earthquake. "Guidance on House Repairs and Reconstruction Following the Canterbury Earthquake" is a guide on the repair and rebuild of houses in land-damaged areas of Canterbury and it is hoped it will help safeguard people and homes in future earthquakes.

The recommendations focus on foundation and floor elements but also cover common areas of 'above the floor' damage such as chimneys.

For a copy go to www.dbh.govt.nz/guidance-on-repairs-after-earthquake

The guideline provides suggested floor solutions where severe liquefaction can occur. One of the solutions provided is a variant of the RibRaft® system. "Foundations in liquefiable areas require a specifically designed solution," says Dene Cook, National Technical Manager for Firth Industries. "Cost analysis has demonstrated that a solution using RibRaft® components is the most cost effective option of obtaining extra protection against the damaging effects of liquefaction." The Firth RibRaft® floor system is a tried and true system supported by considerable technical information. Dene explains, "the RibRaft® system has attributes that make the floor considerably stiffer than a standard floor. The stiffness means that when ground

movement occurs a RibRaft® floor is less likely to sag (dip in the middle) or hog (hump in the middle) than a conventional concrete floor slab. Ground movements may be caused by moisture changes in the foundation soils or, at the severe end of the scale, by earthquakes. I would strongly recommend that if you are looking at a new floor slab you explore the Firth RibRaft® solution."

For more information on RibRaft® flooring systems, go to www.firth.co.nz or contact us on info@firth.co.nz or 0800 800 576



Life at Home – Karaka Harbourside Estate

'Life at Home' is a destination similar to a 'home show' or 'home ideas centre' where consumers can obtain useful product information and knowledge.

"There was a need in the New Zealand residential building market for an innovative campaign that would invigorate the building industry," said Kim Ellett, co-founder of Life at Home with Rob Dines from Eden Homes. "This is even more evident as we foresee a housing shortage in New Zealand compounded by the Canterbury earthquakes."

Karaka Harbourside Estate, just 15 minutes south of Auckland's CBD, is the location for Life at Home's eight show homes which are expected to generate foot traffic of around 50,000 people.

The destination includes:

- Architecturally designed homes
- Eight different designs
- Energy efficient and durable homes
- Fully furnished and landscaped sites
- Open 7 days a week for a year

"We have been working closely with chosen companies to establish our supply partners and Firth is one of these partners," said Kim. "This model offers a one-stop-shop information resource for the public with regards to residential design and building. Sales leads will be generated for all partners and will be monitored by swipe card technology which will track the brand's interest and provide quality sales leads which will be electronically forwarded to the respective partners to follow up."



Karaka Harbourside Estate is situated 15 minutes south of Auckland's CBD

Under development, the Life at Home website will be linked with all partners' websites and create a substantial database and sales tool.

"All the house designs are complete and we are currently aligning our building partners and home designers," adds Kim. "Building consents should be through in April with the street expected to open in spring of this year. We see this as an amazing opportunity for the partners involved in Life at Home to generate a much-needed boost to the building industry."

EsiBloc® saves time & money for Ryman Healthcare

The Hilda Ross retirement village in Claudelands, Hamilton is well equipped with an extensive range of facilities. Demand in the Waikato required the construction of a new, fully equipped hospital so, using their own construction crew, Ryman began work on an 80-bed hospital and dementia unit in November 2010 to complete the full range of facilities on offer.

Des Smith, Director from Ultimate Cladding was contracted to lay the thousands of blocks required for the development. With time a key factor for laying the 20,000 standard 20 series blocks originally specified for this project, Des recommended the use of Firth's mortarless EsiBloc® system to Matt Smith, Project Manager for various Ryman Healthcare projects around the country.

"Being a new system it took us a few days to get into a laying rhythm before we got up to speed," said Des. "Firth's EsiBloc® system can be laid in about half the time of the standard block. We also normally would be required to have clean-out ports at the base of the block work but with EsiBloc® these are not required and we were able to request a redesign by the engineers of this process, which offered additional time and cost benefits through eliminating some of the tasks associated with the traditional block and mortar methods."

"In commercial construction time is money," said Matt. "Not only were there hard cost savings in the use of EsiBloc® but there were soft cost savings as well. Using EsiBloc® has meant that weather delays were minimised, the site was surprisingly tidy and workable due to the lack of



Benefits of using EsiBloc® as highlighted on the Ryman development:

- Half the laying time of a mortar-based system
- Approved design changes – saving additional time/money
- All weather laying – no lost days due to bad weather
- A clean and tidy site – no mortar dropped, saving on labour costs to maintain the site
- Less tradespeople on site

mortar and water, and the system required less input from the building crew. Being faster also meant that my project kept ahead of schedule and I could rely on a level of production that is normally so influenced by the weather."

"We evaluated the risk and decided to run with Des' recommendation and it certainly has paid off for us," adds Matt. "There are considerable benefits in using Firth's EsiBloc® system and I would certainly look at using it on other Ryman projects. We work in the interests of our stakeholders and this product gives everyone a better result. We commenced construction in November and are well on track to be ready to move our new patients into the hospital in May."



Plant on the move

To improve capability and service to the region, a decision has been made to build a new Certified® plant at Firth Whangarei. The new plant will be built at the rear of the existing Masonry plant at Rewa Rewa Road, allowing Firth's Certified plant at Hewlett Street to continue operating. The new facility is due for completion by June.



New plant for Invercargill

Planning is well underway for the rebuild of Firth's Certified® plant at Mersey Street, Invercargill. Parts of the existing plant will be re-used, and others replaced. The existing plant will continue operating while the new plant is built on the same site. Works are scheduled to start in May, with the plant expected to be operational by September.



Much needed upgrade for New Plymouth

February saw work begin on a much needed upgrade to Firth's New Plymouth Certified® plant which has evolved over many years. A plan was devised whereby the central mixer was removed and all the plant above it became a transit (truck mix) plant. While the old plant required the batcher to manually operate the plant, the upgraded plant is completely computerised using a Calibre system from System Control. The new plant was fully operational in the first week of March.

Before...



After...



Tight timelines at Jellicoe Street

Dominion Constructors are in the process of refurbishing Jellicoe Street, Auckland as part of a large-scale open space redevelopment of the waterfront area known as the 'Wynyard Quarter', ready for the beginning of the Rugby World Cup in September. Firth is supplying approximately 3,000m³ of mostly 45MPa mixes for the roadways and footpaths with some high strength mixes required for other areas of the redevelopment.



Mobile plants in use at airport

After the completion of the Mahinerangi Windfarm (Otago) in December, Firth's Zengo mobile batching plant and a second mobile plant were transported to and installed at Auckland International Airport for use in the replacement of a section of the airport's taxi-way. Approximately 3,700m³ of concrete was produced in a timeframe of just two weeks during February as part of ongoing maintenance of the runways.

Firth How to Guides now available

To make it easier to select and use Firth's product range, we have recently launched a range of How To Video Guides. The guides were filmed using a respected contractor and landscaping expert and show best practice scenarios for DIY landscaping projects:

- Laying paving,
- Building a decorative garden retaining wall,
- Using pre-mix concrete to place a post in the ground

Check them out at www.firth.co.nz

Review underway to the Building Code E2

Clause E2 is the Building Code provision that stipulates buildings must be constructed to provide adequate resistance to penetration by moisture from the outside to safeguard against illness or injury. The current Building Code does not contain an acceptable solution for concrete and masonry which means that, although concrete and masonry systems are not seen as having a weather tightness issue, there is potential for delay at consent processing level.

An industry working party document was made available for public discussion with comments closing in February. The Department of Building and Housing are currently reviewing all submissions.

For more information call Firth on 0800 800 576

Re-Build Right

To assist with the rebuild of Christchurch following the earthquakes that have devastated the city, Firth has launched 'Re-Build Right' via their website to highlight engineered and approved long lasting, seismic resilient product solutions to make re-building easier.

For more information on Firth's Re-Build Right solutions call 0800 800 576, email info@firth.co.nz or go to www.firth.co.nz