

# concrete

VOLUME 60 ISSUE 4



**+** LEARNED SOCIETY AWARDS  
SHOWCASE EXCELLENCE ACROSS  
RESIDENTIAL, COMMERCIAL AND  
CIVIL CONSTRUCTION

**+** CHRISTCHURCH'S STUNNING  
TŪRANGA LIBRARY BREATHES  
NEW LIFE INTO THE CITY CENTRE  
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# UPFRONT

## RESILIENCE MUST NOT BE COMPROMISED



concrete  
MAGAZINE

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**A** Advertorial

The *Climate Change Response (Zero Carbon) Amendment Bill*, which sets a target to reduce net carbon emissions to zero by 2050, recently became an Act.

Concrete NZ supported the Bill throughout and believes New Zealand should be congratulated for enacting such an important piece of legislation.

However, any desire to achieve 2050 net zero-carbon objectives must be tempered by the risk of repeating past mistakes, such as the leaky building debacle.

### LEAKY BUILDINGS SCENARIO

In his book *Rottenomics*, Peter Dyer reveals how our building industry, economy and government failed to guarantee that new buildings will not rot.

Dyer outlines the causes of leaky buildings, chief amongst which was an all-new building controls system centred around the performance-based Building Act of 1991.

He describes the legislation as an “experiment” that arrived at “warp speed”, and which allowed for/combined with high levels of workforce illiteracy, the emergence of untreated timber, monolithic cladding and miracle sealants to create a \$47 billion crisis.

There are enough similarities in terms of new legislation, a skills shortage and unproven building materials between now and the early 1990's to encourage a measured approach to realising our future built environment.

### FIRE PERFORMANCE

In addition, the enthusiasm with which the new composite structural material cross-laminated timber (CLT) is being greeted by some specifiers, including government, is concerning as serious questions have been asked recently in the UK<sup>1</sup> about its fire resistance.

### CARBON ZERO CONSIDERATIONS

Playing our part in the Paris Agreement and transitioning to net zero-carbon under the Zero Carbon Act will require new infrastructure such as increasing wind generation and public transport capacity – all of which will require concrete.

### CONCRETE PLEDGE

The New Zealand concrete industry has a track record of recent emissions reduction, despite increased demand and population

<sup>1</sup> Deeny, S., Lane, B., Hadden, R., & Lawrence, A. (2018). Fire Safety Design in Modern Timber Buildings. *The Structural Engineer*, 96 (01), 48-53.

concretenz  
BUILDING RESILIENCE

growth. This has been based on supplementary cementitious materials, alternative cement kiln fuels, and the adoption of efficient manufacturing.

I am confident that through a structured and realistic pathway, which supports long-term investment cycles, the concrete industry will achieve its target to decarbonise.

### UNCOMPROMISING RESILIENCE

As we look to address the impacts of climate change, such as extreme weather and fire events, concrete will play a crucial role in ensuring a resilient built environment.

Planning for that future currently stands at a crossroads, as the impatient desire to be net zero-carbon must be balanced with the non-negotiable need for resilience.

By favouring unproven building materials under the well-intentioned but mis-guided belief that they have superior environmental credentials, we risk repeating the mistakes of the past that led to the leaky building debacle.

Rob Gaimster  
Concrete NZ, CEO

### 2018/19 ANNUAL REPORT

Concrete NZ's Annual Report for 2018/19 summaries a pleasing 'sophomore' year for the consolidated organisation, as indicated by the majority of participating associations taking the formal step to 'dissolve' and commit to Concrete NZ as their respective Sector Groups.



Concrete NZ chief executive Rob Gaimster said that while the past year had been successful, work was well underway on the next phase of association's work programme, including an emphasis on managing issues around the climate change/zero carbon debate.

The 2018/19 Concrete NZ Annual Report can be downloaded from the Concrete NZ website – [www.concretenz.org.nz](http://www.concretenz.org.nz)

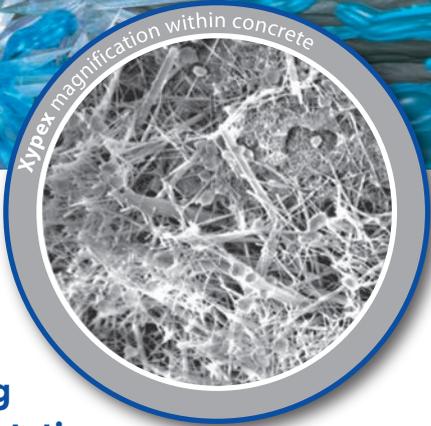
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# CONCRETE PLACER WINS 2019 APPRENTICE AWARD

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BUILDING RESILIENCE

**ZEN TAHANA OF BARTLETT CONCRETE PLACING LTD IN CHRISTCHURCH TOOK HOME THE 2019 CONCRETE INDUSTRY APPRENTICE OF THE YEAR AWARD AT THE CONCRETE CONFERENCE IN DUNEDIN.**

Describing himself as 'solutions focussed' Zen is comfortable working under pressure as he prides himself on having contingency plans at hand, backed-up by a thirst for knowledge.

Having always enjoyed concrete placing and finishing, Zen recently assumed the responsibilities of a site foreman on a commercial project.

Zen is positive and respectful in his dealings with others, communicating comfortably with everyone on-site regardless of their professional standing, technical ability, cultural background or age group.

Mark Bartlett of Bartlett Concrete Placing believes Zen is a great asset to the company - a developing leader, who is calm under pressure and always makes a constructive contribution.

Offering similar praise is Graeme Potts, Zen's BCITO training advisor, who admires Zen's communication and problem-solving skills, as well as his ability to think ahead while keeping tabs on tasks at hand.

Concrete NZ chief executive, Rob Gaimster, believes that encouraging young people to take up industry training through enrolment in a BCITO qualification is an effective way to address the current skills shortage.

"Concrete NZ and BCITO launched the Concrete Industry Apprentice of the Year in 2016 for all those enrolled in, or who have recently completed, one of BCITO's concrete apprenticeships, with the aim of celebrating outstanding individuals," says Rob.

"The quality of entrants in 2019 was tremendous, covering those who work (and train) in precast concrete, placing and finishing, concrete production and concrete construction.

"As always, the judging process was difficult, however it enabled us to gauge the high calibre



*David Fabish (BCITO), Zen Tahana (Bartlett Concreting Placing) and Dene Cook (Concrete NZ)*

of those who will play an important role in tomorrow's construction industry."

"Zen elevated himself above the other entrants through a number of qualities, including his willingness to undertake research, meaning his accuracy can always be relied upon," says Rob.

"We applaud Zen for being celebrated as the 2019 Concrete Industry Apprentice of the Year. The Award recognises a commitment to trade training by Zen and his employer, Bartlett Concrete Placing Ltd, as well as the support offered to apprentices by their whanau," says Warwick Quinn, chief executive, BCITO.

"Through his dedication and hard work, Zen is an example to others contemplating concrete contracting as a profession."

Zen is currently enrolled in the BCITO's National Certificate in Concrete Construction: Level 4.

Incredible opportunities are available across the entire concrete industry for those thinking about focusing their professional future in construction. A crucial first step on the journey is to sign-up for a BCITO concrete apprenticeship.



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BCITO and Concrete AZ congratulate

**Zen Tahana**

On being declared the  
2019 Concrete Industry  
Apprentice of the Year

  
MARKY QUINN  
BCITO Chief Executive

  
BOB GARDNER  
Concrete AZ Chief Executive



# EXCELLENCE IN READY MIXED CONCRETE PRODUCTION CELEBRATED WITH INAUGURAL GOLD STATUS

ALLIED CONCRETE'S PENROSE AND NELSON PLANTS SECURED THE INAUGURAL GOLD STATUS AT THE 2019 CONCRETE NZ PLANT AUDIT SCHEME AWARDS.



With the 2019 dissolution of the New Zealand Ready Mixed Concrete Association (NZRMCA) as part of the Concrete NZ launch, the Plant Audit Scheme moved under the new association's banner.

In doing so, the Scheme, which provides an independent audit of 188 ready mixed concrete plant's quality systems in line with *NZS 3104 Specification for Concrete Production*, assured its future as part of the wider construction sector.

Previously, the Plant Audit Scheme Committee had awarded an annual Supreme Plant Award. However, under the Concrete NZ branded Scheme a new Gold, Silver and Bronze acknowledgement system has been introduced as a simpler, more transparent way of rewarding continued excellence.

To receive an annual 'Excellence' certificate a plant must not have received any 'determinations' (i.e. corrective actions) or have its Test Frequency Requirements questioned under the Scheme.

In short, this means that plants that have demonstrated three years of continuous 'Excellence' are now recognised as Bronze, those with five years of continuous 'Excellence' as Silver and those with 10 years of continuous 'Excellence' as Gold.

### **GOLD STATUS**

- Allied Concrete Limited's Nelson Plant (Zone 1)
- Allied Concrete's Penrose Plant (Zone 3)

### **SILVER STATUS**

- Allied Concrete's Horotiu Plant (Zone 4)
- Allied Concrete's Tauranga Plant (Zone 4)
- Allied Concrete's Whakatane Plant (Zone 4)
- Allied Concrete Limited's Alexandra Plant (Zone 1)

- Allied Concrete Limited's Wanaka Plant (Zone 1)
- Allied Concrete Limited's Washdyke (Timaru) Plant (Zone 1)
- AML Limited's Christchurch North Plant (Zone 1)
- Allied Concrete's Setters Line, Palmerston North Plant (Zone 2)
- Firth Industries' Aotea Quay Plant (Zone 2)
- Terry's Concrete Limited's Te Horo Plant (Zone 2)
- Allied Concrete's Bombay Plant (Zone 3)
- Allied Concrete's Silverdale (Furnace Road) Plant (Zone 3)
- Allied Concrete's Whangarei Plant (Zone 3)
- Atlas Concrete Limited's Takapuna Plant (Zone 3)
- Atlas Concrete Limited's Wiri Plant (Zone 3)

### **BRONZE STATUS**

- Allied Concrete Limited's Rangiora Plant (Zone 1)
- Cromwell Certified Concrete Limited's Cromwell Plant (Zone 1)
- Firth Industries' Invercargill Plant (Zone 1)
- Higgins Concrete Limited's Richmond Plant (Zone 1)
- Allied Concrete's New Plymouth Plant (Zone 2)
- Firth Industries' New Plymouth Plant (Zone 2)
- Allied Concrete's East Tamaki Plant (Zone 3)

Concrete NZ chief executive, Rob Gaimster, believes that these plants epitomize a commitment to quality across all aspects of production.

"As identified by the Concrete NZ Plant Audit Scheme, Allied Concrete's Penrose and Nelson plants absolutely deserve applause, and are an example to other ready mixed concrete plants across New Zealand," says Rob.





# CRITICAL AUCKLAND INFRASTRUCTURE WINS TOP 2019 CONCRETE NZ LEARNED SOCIETY PRIZE



**AUCKLAND'S SPECTACULAR WATERVIEW CONNECTION PROJECT (WATERVIEW) SCORED A DOUBLE AT THIS YEAR'S CONCRETE AWARDS IN DUNEDIN, SECURING NOT ONLY THE INFRASTRUCTURE AWARD BUT ALSO THE OVERALL PREMIER AWARD.**

Amid one of the strongest entry fields in the event's history, the Waterview project was recognised for its extraordinary scale and complexity – and particularly for its immediate impact on, and benefit to, Auckland's transport infrastructure.

When it was completed in 2017, declared the judging panel, "Waterview delivered something of real value both to the community and to New Zealand as a whole. It has reduced travel times for vehicles and facilitates other modes of transport, linking them in unique and artistic ways."

"The finished product – an outstanding achievement – is a celebration of concrete. It incorporates many elegant components and complex features and addressed a multitude of technical and logistical challenges. It has significantly boosted the resilience and capacity of the city's motorway network. It is truly a deserving winner of our Premier Award."

Held every two years, the Concrete Awards recognise innovation in the development and understanding of concrete and celebrate its appropriate use in the natural and social environment. Entries are assessed in six categories – Architecture, Infrastructure, Residential, Landscaping, Technology and Commercial/Industrial – with the Premier Award going to the top project among them.

Waterview entailed the construction of twin 2.4km tunnels and extensive sections of motorway – as well as significant retaining

walls, large multi-level ventilation buildings and 1.8km of interchange bridges to connect two existing motorways (SH16 and SH20). Together, these components contributed to the completion of the 48km Western Ring Road.

The project's major challenge was its twin tunnels. At the time of construction their 14.4m outer diameter qualified them as the largest diameter tunnels in Australasia, and the world's 10th largest diameter earth pressure-bearing bored tunnels. They are supported by a precast concrete segmental lining comprising more than 24,000 precast units, fabricated at a purpose-built yard in Auckland.

Delivered by the Well-Connected Alliance, the Waterview project team comprised the NZ Transport Agency, Fletcher Construction, McConnell Dowell Constructors, Beca, WSP, Tonkin + Taylor and Japanese construction company Obayashi Corporation.



*Andrew Dickson (Beca) and Nic Brooke (Concrete NZ Learned Society)*

## MONTE CRAVEN ARCHITECTURAL AWARD

*Fulton Hogan - Wynyard Quarter Pump Station, Auckland*



*Wynyard Quarter Pump Station in Auckland*

Watercare's new Wynyard Quarter Pump Station is critical for managing the wastewater generated by the extensive development in Wynyard Quarter. This project saw the establishment of a deep, wet-well pumping station with a 24-hour storage capacity for wastewater.

Within the architectural revitalisation of Wynyard Quarter, building a conventional 'green block' control room was aesthetically unacceptable. It had to complement the surrounding environment.

As such, the team created a 12m semi-egg-shaped, tank-like structure that housed public toilets on the lower level, the pump station's electrical and control equipment on the second level, and a rooftop area that's available for occasional events. The result itself was a unique, original building that complements its surroundings.



*Andre Van Wonderen (Fulton Hogan) and Nic Brooke (Concrete NZ Learned Society)*

### PROJECT PRINCIPALS

**Submitted By:** Fulton Hogan

**Owner:** Watercare Services

**Contractor:** Acrow Ltd

## COMMERCIAL/INDUSTRIAL AWARD

*BBR Contech - University of Auckland Old Arts Building Refurbishment, Auckland*



Listed as a Historic Place Category 1, the 100-year old Arts Building – resplendent in its Oamaru stonework – needed a seismic upgrade. The project, undertaken between 2015-2018, used a variety of strengthening techniques – with particular care taken to preserve the building’s historic fabric while delivering a functional, modern space.

The seismic upgrade incorporated new, reinforced concrete foundations, reinforced concrete blockwork masonry walls, bonded post-tensioning bars, concrete repair and FRP strengthening. It also required the mechanical pinning of the decorative Oamaru capping stones, parapets and façade.

The project also comprised the refurbishment of internal spaces including the updating of electrical, HVAC and fire services to meet the requirements of a modern teaching space. Many of the techniques were selected for their ability to be hidden within the existing fabric of the concrete structure, thus protecting the building’s heritage features.



### PROJECT PRINCIPALS

**Submitted By:** BBR Contech  
**Owner:** University of Auckland  
**Consulting Engineer:** Structure Design  
**Contractor:** Argon Construction

## RESIDENTIAL AWARD

*Xsite Architects - Tracey House, Auckland*



*Tracey House in Auckland*

### PROJECT PRINCIPALS

**Submitted By:** Xsite Architects

Architects

**Owner:** Colin & Doris Tracey

Architects

**Architect:** Xsite Architects

Architects

**Consulting**

**Engineer:** Slab Specialists

Specialists

**Contractor:** Slab Specialists

Specialists

**Other Firms:**

Rimpac

Tracey House is a design/build project between Xsite Architects & Monocast (QS Building Ltd).

Monocast is an in-situ concrete building system that uses existing hand-set aluminium concrete formwork technology to construct houses and apartments. It's specifically designed for use in a residential environment where the required shapes are often too complex/costly for other concrete systems.

As the first full Monocast house built in New Zealand, this project incorporated several new

techniques, including the walls and roof being created in one monolithic pour. In addition, a new in-situ concrete cladding was developed – designed to be structurally independent of the inner structural wythe. The inner structural wythe stays at a constant temperature even though the cladding can change greatly over 24 hours.

Services are installed ahead of time, prior to pouring of the walls and ceilings, which creates silent plumbing. The house uses the thermal mass of concrete for heating and cooling.



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## LANDSCAPING AWARD

*Firth Industries - French Memorial, Wellington*



*French Memorial in Wellington*

The French Memorial – Le Calligramme – is a gift from France to New Zealand and is testimony to the friendship forged between the two countries following WW1.

Its design – selected from 43 submissions – is a striking plinth with a pair of tabula forms which was to be carved out of Caen stone – a light creamy-yellow Jurassic limestone indigenous to north-western France.

However, importing a slab of Caen stone of the required size wasn't feasible. Instead, the team sought a concrete solution to emulate the colour and texture of the stone.

Firth Industries researched the full suite of sands and aggregates available in New Zealand, while Peter Fell Ltd developed a proprietary oxide blend to develop the desired colour of the mix, and supplied white cement to act as a blank canvas for the oxide to do its work.

Both in-situ and precast elements were used in the design. The precast structures were produced in Whanganui by Emmetts Civil Construction.

La Calligramme showcases the New Zealand industry's ability to meet the demands of highly detailed architectural concrete.



*Alistair Bennett (Firth Industries) and Nic Brooke (Concrete NZ Learned Society)*

### PROJECT PRINCIPALS

**Submitted By:** Firth Industries  
**Owner:** Ministry for Culture & Heritage  
**Client:** Embassy of France  
**Architect:** Patterson Associates  
**Contractor:** Naylor Love  
**Other Firms:** Peter Fell Ltd, Emmetts Civil Construction

## TECHNOLOGY AWARD

*Firth Industries/Cresco Engineers Ltd – Firth Ribraft X-Pod*



A collaborative development between Firth Industries and Cresco Engineers NZ Ltd, the Firth RibRaft X-Pod system's key features include minimal wastage, construction efficiency and suitability for a variety of ground conditions.

Initial research employed finite element analysis to develop the optimal shape for the pod which provided the required strength while minimising the concrete volume.

To enhance sustainability, the pods are manufactured with 80% recycled plastic content. To minimise concrete volumes, an innovative adjustable pod system was developed to allow for dimensional flexibility of the foundation system.

The pods are designed for compact stacking to optimise their transportation – all the components for a house floor can be delivered on a residential trailer.

Pods clip together using a RibRaft Keystone, holding them firmly in place during construction. The risk of polystyrene pods floating during concrete placement is eliminated. As the pods



*Dene Cook (Firth Industries), Fabio Parodi (Cresco Engineers) and Nic Brooke (Concrete NZ Learned Society)*

### PROJECT PRINCIPALS

**Submitted By:** Firth Industries/Cresco Engineers Ltd

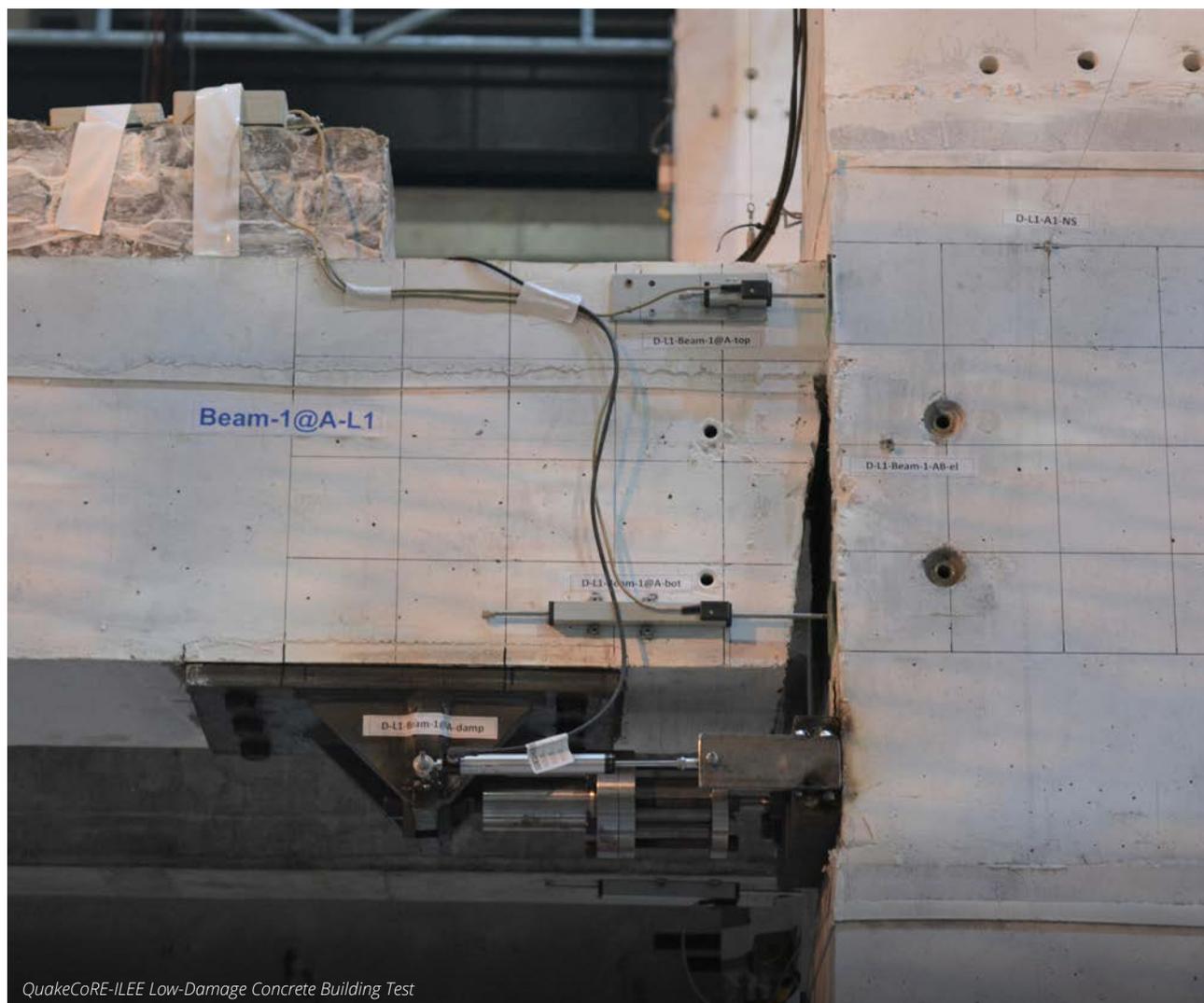
**Owner:** Firth Industries

**Consulting Engineer:** Cresco Group

are adjustable, there is minimal need for cutting. This accelerates construction and eliminates the potential for polystyrene beads to contaminate the concrete or the site.

## TECHNOLOGY AWARD COMMENDATION

*University of Auckland - QuakeCoRE-ILEE Low-Damage Concrete Building Test*



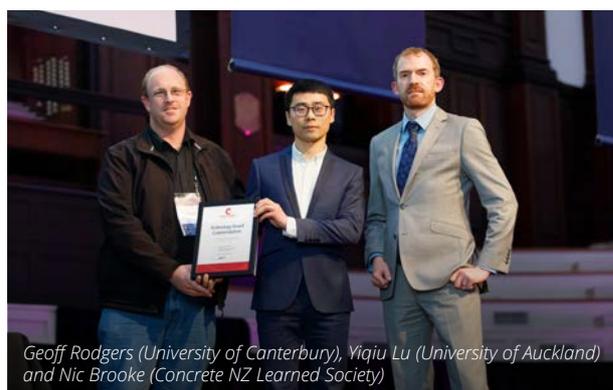
*QuakeCoRE-ILEE Low-Damage Concrete Building Test*

A shake table was developed to conduct tests on a full-scale, two-storey, low-damage concrete building.

Compared to smaller-scale component tests and simplified loading protocols typically used to develop/validate building designs, this technique sees an entire building subjected to real earthquake ground motions. It is the largest shake table test ever conducted on a representative New Zealand building system.

The test gives engineers the confidence to implement low-damage concrete systems, and demonstrates examples of alternative connection detailing that can be used to suit different design requirements.

The results are now being used to refine and update design guidelines for low-damage concrete buildings.



*Geoff Rodgers (University of Canterbury), Yiqiu Lu (University of Auckland) and Nic Brooke (Concrete NZ Learned Society)*

### PROJECT PRINCIPALS

**Submitted By:** University of Auckland  
**Client:** MBIE (Building System Performance)  
**Consulting Engineer:** QuakeCoRE  
**Others:** University of Auckland, University of Canterbury and ILEE Tongji University

# RETAINING WALL SECTION OF MASONRY MANUAL UPDATED



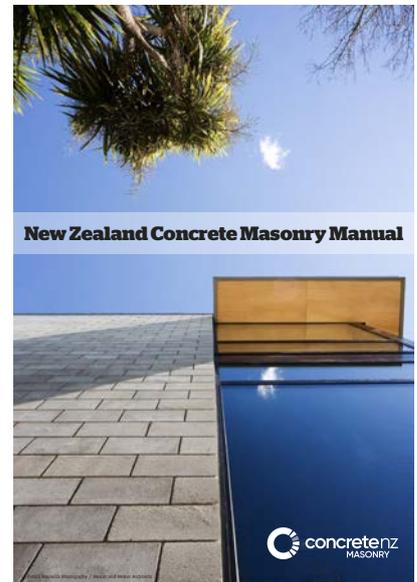
**THE NEW ZEALAND CONCRETE MASONRY MANUAL, WHICH WAS CREATED IN THE LATE 1970S AS A GUIDE TO THE DESIGN AND CONSTRUCTION OF CONCRETE MASONRY, HAS BEEN UNDERGOING REVIEW OVER THE PAST SEVERAL YEARS.**

An update of *Section 6.1 Masonry Retaining Walls* is now available for free download from the Concrete NZ website.

The retaining wall section, updated from the 2012 edition, provides standard details for reinforced concrete masonry retaining walls. 2019 changes include:

- Designs are now aligned to the provisions of the Ministry of Business, Innovation and Employment's (MBIE) publication *Earthquake Geotechnical Engineering Practice, Module 6: Earthquake Resistant Retaining Wall Design*.
- Walls are stand-alone, and not part of, or supporting, any building structure.
- Designs cover the three most-populated of the four earthquake zones defined in *NZS 3604 Timber-Framed Building* - with the Zone diagram in Figure 2 having been updated.

- Typical soil parameters have been updated and are generalised.
- The applied surcharge case has increased load values to provide greater applicability across boundaries.
- Wall and foundation detailing has been revised to reflect the above.



Updating the retaining wall section ensures the Manual remains relevant and reflects current building code requirements.

All sections of the *New Zealand Concrete Masonry Manual* can be downloaded from the Concrete NZ website - [www.concretenz.org.nz](http://www.concretenz.org.nz).

## **2020 CONCRETE NZ CONFERENCE** NEXT YEAR'S CALL FOR PAPERS IS OPEN UNTIL 30 MARCH 2020.

Authors are asked to submit the following to the Conference Secretary:

- A one-page synopsis of their proposed paper.
- A short paragraph detailing career history and a written commitment to personally attend and present the paper at the conference, if the paper is accepted.

A six to ten-page paper is required from authors of accepted papers. Papers will be published in the conference proceedings.

The 2020 Concrete NZ Conference will be held at The Energy Event Centre in Rotorua 15 - 17 October 2020.

Contact the Conference Secretary - [learnedsociety@concretenz.org.nz](mailto:learnedsociety@concretenz.org.nz) or +64 9 536 5410.





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# DZ 3104 OUT SOON FOR PUBLIC COMMENT



**NZS 3104 SPECIFICATION FOR CONCRETE PRODUCTION IS UNDERGOING REVISION AND WILL SOON BE AVAILABLE FOR PUBLIC COMMENT.**

NZS 3104:2003 prescribes the minimum requirements for the production of fresh concrete.

The principal considerations during the revision have been as follows:

1. A new approach to evaluating compressive strength results for concrete mixes that can demonstrate excellent statistical control.
2. Technical controls to tighten concrete production.
3. Updated content that acknowledges the influence of new materials, technologies and practices, as well as other Standards and technical guidelines.

The Standard's text will have been amended throughout, meaning clause numbers will have changed from the 2003 version.

The draft will be available for public comment in early 2020.

Standards New Zealand and Concrete NZ (e.g. *Grey Matters* e-newsletter and *Readymix News*) will communicate when public comment opens, along with the closing date for comments.

You will be able to view and download DZ 3104 on the Standards New Zealand website.



*DZ 3104 Specification for Concrete Production*  
**Out for Public Comment Soon**



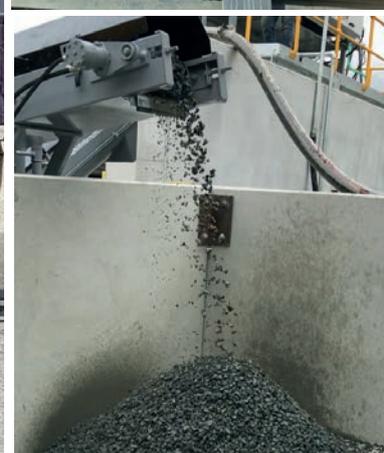
## **DAVID BARNARD STEPS DOWN FOR PLANT AUDIT SCHEME**

David Barnard retired as the Chair of the Plant Audit Committee in mid-2019 after 20 years. Over the past five years David's work has been exceptional, with his management of the project to digitise the Plant Audit Scheme, and therefore future proof the auditing of quality systems at concrete plants, deserving special mention.

Concrete NZ, its Sector Groups and Learned Society, wish David and Ann all the very best for the future.



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# CONCRETE NZ WELCOMES REINFORCING PROCESSORS STAKEHOLDER GROUP

**CONCRETE NZ RECENTLY ANNOUNCED THE FORMATION OF A REINFORCING PROCESSORS STAKEHOLDER GROUP TO BROADEN THE ASSOCIATION'S MEMBERSHIP BASE.**

Members of the Group include companies that process steel reinforcement for use in reinforced concrete construction.

Meeting for the first time in Auckland during late November, the Group declared its intention to advance the interests of the 'steel reinforcing' industry at a time when construction in New Zealand is forecast to grow steadily to a high in 2023.

Rakesh Nauhria, of Nauhria Reinforcing, was appointed Chair at the November meeting, and is eager to progress a number of strategically important issues on behalf of the members of the Group.

"In terms of our immediate concerns, Standards development, industry training and monitoring/ responding to current government consultations are a priority."

"At a time when the implications of the Ministry of Education's Reform of Vocational Education

(RoVE) are not yet fully understood, and the Building and Construction Industry Training Organisation (BCITO) is reviewing its concrete qualifications, it is important that our industry's training needs are accounted for," says Rakesh.

"Add to these issues the *Construction Sector Accord* and recent changes to the government procurement rules, which are both of tremendous relevance to the Group's members, and I wonder why we hadn't taken this step sooner," says Rakesh.

Concrete NZ chief executive, Rob Gaimster, is delighted that Concrete NZ has expanded its membership reach relatively soon after its launch, and believes it is an indication of the value industry places in Concrete NZ's work.

"The inclusion of the hugely important steel reinforcing processing industry under the Concrete NZ umbrella extends our mandate and enables us to target our objectives with greater vigour."



Members of the Concrete NZ Board and Reinforcing Processors Stakeholder Group.

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# FUTURE DIRECTIONS: RATIONALISING NEW ZEALAND'S CONCRETE INDUSTRY STANDARDS

## AS NEW ZEALAND STRUGGLES TO MAINTAIN ITS SUITE OF STRUCTURAL DESIGN AND MATERIAL PRODUCTION STANDARDS, IS IT TIME TO CONSIDER A NEW MORE STREAMLINED FRAMEWORK FOR THESE CRITICAL DOCUMENTS?

New Zealand operates a performance-based building code system that permits users multiple ways to demonstrate compliance with the *New Zealand Building Code*. Standards are one way to demonstrate compliance, but their use is not mandatory under current building legislation.

Notwithstanding this, the concrete industry is a Standards-centric industry and is expected to remain so, where the use of Standards is encouraged to achieve consistent outcomes for the design and construction in concrete.

As it stands, there are numerous New Zealand Standards for the design, production and testing of concrete and some have not had any maintenance for several years. The average age of concrete related Standards since their last revision or amendment is 18 years. This presents an opportunity for the New Zealand concrete industry to consider developing a new framework of Standards that support design and construction in concrete.

*Table 1. - Existing Concrete Standards and Proposed New Framework* indicates the current state and a potential future framework. The existing suite of concrete related Standards are listed on the left-hand columns. The right-hand columns propose a reduced number of concrete related Standards, with rationalization and amalgamation of the existing Standards into four of five 'primary' concrete Standards that will still provide the same coverage for the aspects of concrete design, production and testing.

### MAINTENANCE OF STANDARDS IN NEW ZEALAND

New Zealand is battling to maintain its collection of structural design and material production Standards and the timely delivery of amendments

to structural Standards is proving challenging. Several factors contribute to this situation:

- There is very limited investment and support coming from relevant central government agencies to develop and maintain the Standards that support regulatory aspects such as building code compliance – previous initiatives in 2016/17 by the Building System Performance (BSP) branch in the Ministry of Business, Innovation and Employment (MBIE) to implement a long-term Standards development programme have stalled.
- Participating in Standards Committees is a voluntary and unpaid process – with key people often in demand for paid commissioned work, the willingness of potential committee members to get involved in a process that is not financially rewarded is challenging. Some consideration to rewarding committee members who are giving up commercial time may be necessary to encourage key people to participate.
- New Zealand does not operate Standing Committees that provide continual monitoring on the maintenance and development needs of Standards. The existence of Standing Committees can facilitate succession planning and better inform the ongoing research needs that need to be undertaken to support future Standards amendments.

In comparison, other jurisdictions routinely maintain Standing Committees and issue updated versions of Standards on regular cycles. For example, the American Concrete Institute document *ACI 318 Building Code Requirements for Structural Concrete* is routinely revised and re-issued every three to four years providing confidence to users that the document is being maintained.

**TABLE 1. - EXISTING CONCRETE STANDARDS AND PROPOSED NEW FRAMEWORK**

Existing Concrete Standards		Proposed Concrete Standards Framework	
NZS 3101.1&2:2006 - (2017)	Concrete structures Standard	NZS 3101	Design of Concrete Structures
NZS 3106:2009 - (2009)	Design of concrete structures for the storage of liquids		
NZS 3104:2003 - (2010)	Specification for concrete production (currently being amended)	NZS 3104	Concrete production (incorporating methods of testing concrete)
NZS 3112.1:1986 - (2007)	Methods of test for concrete - Tests relating to fresh concrete		
NZS 3112.2:1986 - (2000)	Methods of test for concrete - Tests relating to the determination of strength of concrete		
NZS 3112.3:1986 - (1986)	Methods of test for concrete - Tests on hardened concrete other than for strength		
NZS 3112.4:1986 - (1986)	Methods of test for concrete - Tests relating to grout		
NZS 3109:1997 - (2004)	Concrete construction	NZS 3109	Concrete Construction (incorporating specification for surface finishes NZS3114)
NZS 3114:1987 - (1987)	Specification for concrete surface finishes		
NZS 3124:1987 - (1987)	Specification for concrete construction for minor works		
NZS 3122:2009 - (2014)	Specification for Portland and blended cements (General and special purpose)	NZS 3122	Specification for cements
NZS 3123:2009 - (2009)	Specification for pozzolan for use with Portland and blended cement		
NZS 3125:1991 - (1996)	Specification for Portland-limestone filler cement		
NZS 3121:2015 - (2015)	Water and aggregate for concrete	NZS 3121	Specification and tests for water, sands and aggregate for concrete production
NZS 3111:1986 - (1988)	Methods of test for water and aggregate for concrete		
NZS 3103:1991 - (1991)	Specification for sands for mortars and plasters		

**Notes**

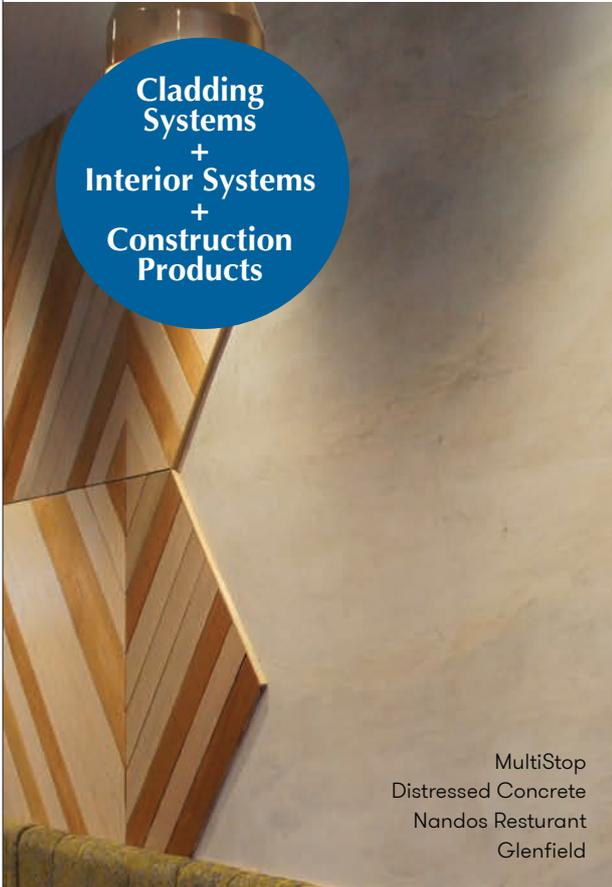
1. Bracketed years indicate the year the most recent amendment was published.
2. Standards that relate to concrete masonry and reinforcing are not included.

**ADOPTION OF INTERNATIONAL CONCRETE STANDARDS**

Acknowledging that New Zealand struggles to develop and maintain structural Standards, and with a focus on the concrete structures design Standard, adopting a concrete structures design Standard from another jurisdiction for New Zealand application (with modifications if required) could also be considered. Three



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potential options as an alternative to amending NZS 3101 are:

- *ACI 318: Building Code Requirements for Structural Concrete* - cited in the International Building Code, used widely across the United States, Asia and South America
- *Eurocode 2: Design of Concrete Structures* – used across European nations and some Asian countries
- Develop a joint AS/NZS concrete structures Standard

An overarching objective should be to maintain consistency with the other primary structural design Standards used in New Zealand and this could point to a joint AS/NZS for concrete design as a logical option. The Loadings (AS/NZS 1170), Timber Structures (NZS/AS 1720.1), Composite Structures (AS/NZS 2327) Steel Structures and Aluminium Structures Standards (AS/NZS 1664.1) are either jointed, going through the process of being jointed, or are giving serious consideration to being joint Standards.

If New Zealand concrete and/or masonry Standards end up having a different approach to their development it should not present a disadvantage to the concrete industry as long as the particular Standard provides a user-friendly method of demonstrating compliance with the New Zealand Building Code.

It could however lead to a lack of coordination and consistency between the different families of Standards that designers and material suppliers need to use, and the concrete industry Standards may require a different funding mechanism for their ongoing development and maintenance.

It is suggested that an options analysis be undertaken to test the merits of adopting documents that are used in other jurisdictions such as ACI 318 and Eurocode 2, developing a joint AS/NZS concrete structures Standard or justify if maintaining NZS 3101 is an acceptable approach.

The author will be seeking stakeholder feedback via an online survey in early 2020 on the concepts presented in this article.

This article is based on *The Building Code System and a Future Direction for Standards That Support the NZ Concrete Industry* by Dave McGuigan presented at the 2019 Concrete NZ Conference, Dunedin, New Zealand.

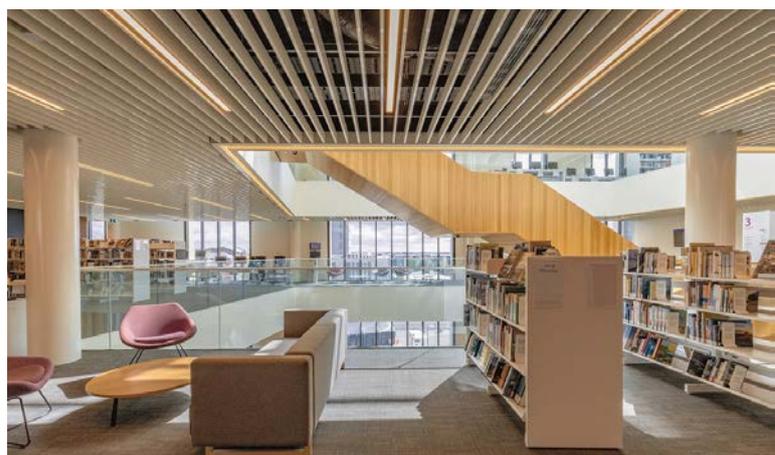
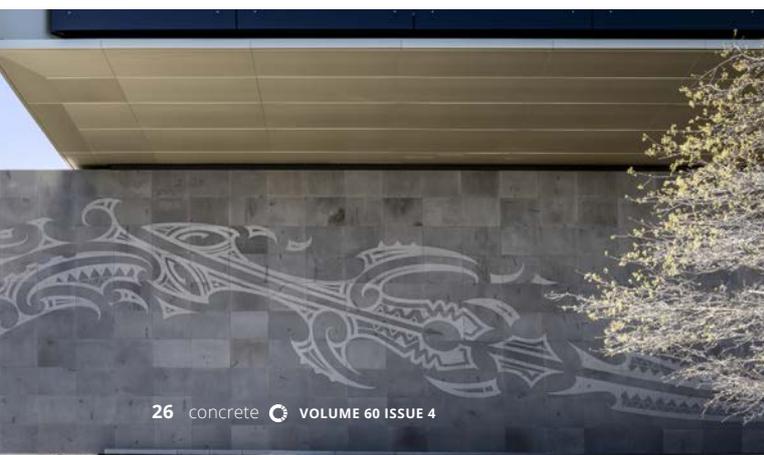
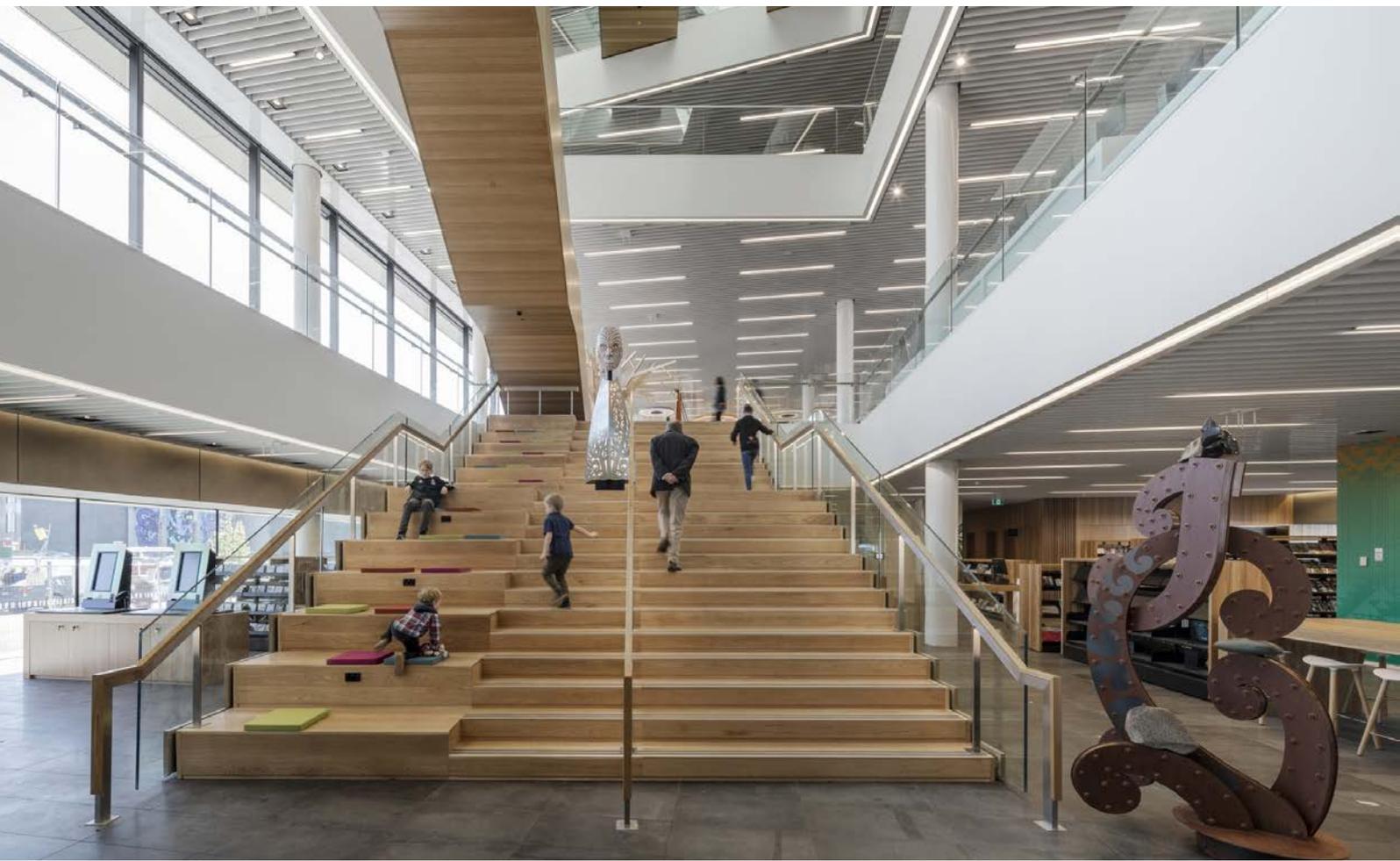
The paper can be downloaded from [www.concretenz.org.nz/page/Conference\\_2019](http://www.concretenz.org.nz/page/Conference_2019)



# TŪRANGA: STUNNING AND BUILT TO LAST

TŪRANGA, CHRISTCHURCH'S NEW PUBLIC LIBRARY, HAS BEEN THE FOCAL POINT OF DISCUSSION SINCE ITS UNVEILING IN OCTOBER 2019. THIS FLAGSHIP CIVIC BUILDING CELEBRATES DIVERSITY, HERITAGE, INNOVATION, AND COMMUNITY.

Images: Adam Mørk



Tūranga's design was led by New Zealand company Architectus in partnership with Danish library design experts Schmidt Hammer Lassen. It is one of nine anchor projects integral to the redevelopment of Christchurch's City Centre after the 2010 and 2011 earthquakes.

Thousands have already visited this \$92 million community space, exploring more than 180,000 pieces of literature and technology, as well as enjoying the seven-meter-long interactive 'Discovery Wall', which displays the city's history, geography, and environment.

In collaboration with Mataporpore Charitable Trust and Ngāi Tūāhuririri, Tūranga incorporates Maori heritage throughout. The exterior design derives from the native Harakeke flax fonds and reflects the warm colours of the surrounding Port Hills of Christchurch's wetlands. The interior design embraces a strong sense of community with the help of local Maori artist Morgan Matthews-Hale and master carver Riki Manuel. Upon entering this community hub, visitors are greeted by the statue of Maori legend, Tāwhaki, a supernatural being in pursuit of knowledge.

While ascending the winding staircase visitors can discover areas to read, create or collaborate. Each

floor offers up to 100 computers, 3D printers and laser/vinyl cutters. Creative and entertainment spaces are available for the public to enjoy, along with bookable spaces and meeting rooms.

Tūranga is a hugely impressive example of modern architecture that enriches Christchurch's built environment. However, along with its aesthetic accomplishments, an innovative structural design by Lewis Bradford Consulting Engineers (see pages 28-32) ensures a level of resilience that means Tūranga is built to last.

#### Project Principals

**Owner & Developer:** Christchurch City Council  
**Construction Company:** Southbase Construction  
**Architect:** Architectus & Schmidt Hammer Lassen  
**Service & Mechanical Engineer:** Powell Fenwick Consultants  
**Structural &:** Lewis Bradford Consulting Engineers  
**Quantity Surveyor & Project Manager:** AECOM

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# TŪRANGA DESIGN MEETS SEISMIC AND AESTHETIC TARGETS

AN INNOVATIVE STRUCTURAL DESIGN BY LEWIS BRADFORD CONSULTING ENGINEERS DELIVERED VITAL BALANCE BETWEEN ACHIEVING SEISMIC PERFORMANCE AND RESPECTING THE ARCHITECT'S AESTHETIC, AND WAS KEY TO PARTNER SOUTHBASE CONSTRUCTION WINNING A COMPETITIVE TENDER.



Image: Adam Mørk

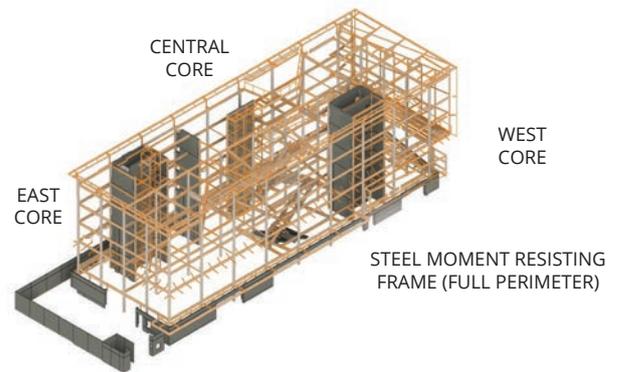
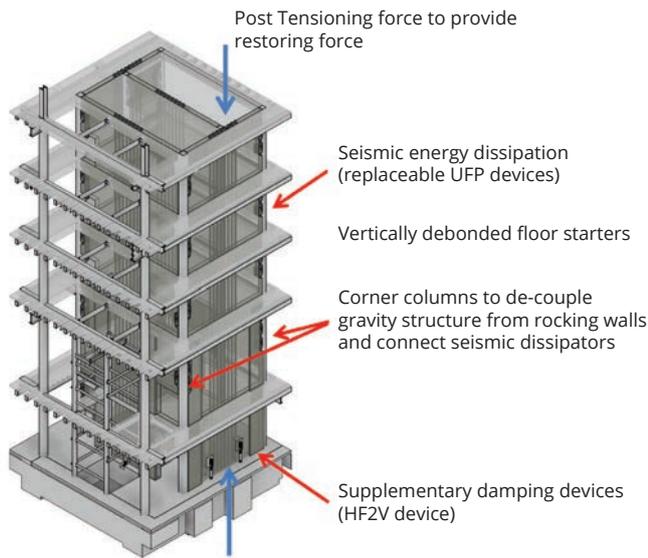
While also needing to meet demanding budget restrictions in what has become the largest public library in the South Island, the Tūranga project was approached from the outset as requiring “something special” from a structural engineering perspective.

The specimen structural design provided to all of the design-build tenderers included steel moment-resisting frames with diagonal viscous

damped braces and a composite steel deck floor system.

Additionally, the foundation system consisted of a basement structure with deep piles, founded approximately 20 to 30 metres below ground level.

Having advanced to the concept design stage in partnership with Southbase Construction, as one of three preferred tenderers, Lewis Bradford developed an alternative structural solution within the stipulated eight-week timeframe.



Left: 3D View of Column – Wall – Column Core Structure  
Right: Hybrid walls and perimeter steel moment resisting frames

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Image: Adam Mørk

The specimen structural design was replaced by concrete hybrid rocking walls located in the central cores with supplementary steel moment-resisting frames around the perimeter.

Removal of diagonal cross bracing (or solid wall elements) from the perimeter of the building had significant architectural merit by enhancing aesthetics by providing greater long-term flexibility of the internal built space. The concrete cores also provided significant benefit including a fire-rated egress path.

In collaboration with Southbase Construction, Tonkin and Taylor geotechnical engineers and

the services engineers Powell Fenwick, an early decision was proposed by Lewis Bradford to remove the planned basement from the building and relocate the entire plantroom to roof level.

While this was challenging for the building services team, it provided significant cost savings and meant the building could be founded with shallow foundations on a robust near-surface gravel layer – this mitigated the complications, risks and expense associated with deep piles in Christchurch.

The Lewis Bradford team notes that an “especially-high” level of structural resilience was



Left: UFPs installed between the corner columns and walls; Middle: HF2V Damper; Right: Concrete tilt panels

required to meet Christchurch City Council's stringent performance specifications for the library located adjacent to Cathedral Square.

A key feature of the structural design of the building – which is five storeys high and has about 10,000 square metres of total floor area – was the incorporation of a dual seismic-resisting system. Primarily this entailed an integrated, self-centering mechanism in the form of hybrid concrete shear walls that can rock to isolate the building from peak earthquake accelerations.

Each wall has high-tensile, unbonded, post-tensioned steel cables that clamp the wall to the foundations with approximately 10,000 kN of force per wall. When the walls rock, the stretch of these cables increases the restoring force and returns the building to its original position after an earthquake.

Thanks to the post-tensioning, seismic energy-absorbing devices – called high force to volume lead dampers (or HF2V dampers) – attached to the wall bases and steel U-shaped flexural plates (UFPs) at each end of the walls, the rocking motion occurs in a controlled manner.

The second component of the seismic resisting system was a steel moment-resisting frame

around the building perimeter with rocking connections at the base.

These frames enhance the building performance and provide the added assurance of a building with two independent seismic-resisting systems acting together.

The combination of the dual system, replaceable energy-absorbing devices and the self-centering mechanism of the building provides a seismically resilient structure – delivering the performance level required to ensure property protection is achieved.

Structural analysis consisted of preliminary direct displacement-based design by hand calculation using established displacement-based design principles for rocking structures. A non-linear pushover analysis was then undertaken in Etabs to assess seismic compatibility of the mixed column-wall-column and MRF systems.

This was followed by an extensive verification process using non-linear time history analysis to demonstrate key performance criteria against the performance specification.

Simple two-dimensional time history models were used first to validate key model assumptions,



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Image: Adam Mørk

followed by full three-dimensional models to verify overall building performance.

A key illustration of the teamwork shared on the project was the successful implementation of the engineers' suggestion to cast the large concrete shear walls for the stair cores on site full height.

Several of these panels weighed over 140 tonne and are some of the heaviest tilt panels attempted anywhere in the world.

Final installation of the panels was near perfect – cast and erected to extremely-accurate tolerances – eliminating multiple horizontal joints in these key elements and effectively self-bracing a significant amount of the structure from early on in the construction sequence.

Paying tribute to the work of Southbase Construction and all subcontractors and consultants, the Lewis Bradford team emphasises

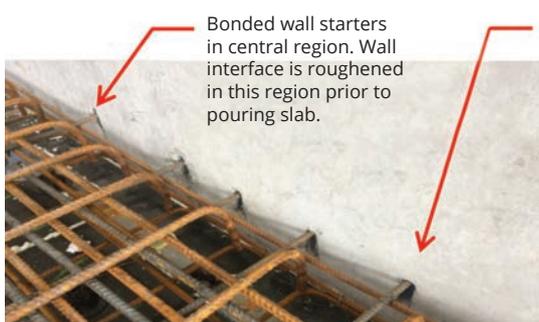
this large, complex and challenging design/build project was successfully delivered on time and within budget.

It is a key anchor project redefining Christchurch following the destructive Canterbury earthquake sequence.

The structural solution provided the architect with clean unencumbered external elevations – so important for their stunning façade design – which, coupled with the long span floor system and striking feature atrium stairs, makes for a breath-taking and significant community asset.

*Article based on Tūranga Library Christchurch – Hybrid Rocking Precast Concrete Wall Panels* by Tim Shannon, Dr Jamaledin Borzouie and Helen Trappitt presented at the 2019 Concrete NZ Conference, Dunedin, New Zealand.

The paper was the recipient of the Sandy Cormack Best Conference Paper Award, and can be downloaded from: [www.concretenz.org.nz/page/Conference\\_2019](http://www.concretenz.org.nz/page/Conference_2019)



Bonded wall starters in central region. Wall interface is roughened in this region prior to pouring slab.

Vertically debonded starters in end region. Wall face is debonded here and holes are plugged prior to pouring slab.

Left: Post tension anchors in foundation pocket at base of wall; Right: Vertical debonding in higher movement regions of the rocking walls.



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# NOT A STRAIGHT LINE IN SIGHT

Iain MacIntyre

**ONE OF THE MOST UNUSUAL AND TECHNICALLY DEMANDING BUILDINGS EVER TO BE CONSTRUCTED IN THIS COUNTRY IS TAKING SHAPE, AS WHANGAREI'S HUNDERTWASSER ART CENTRE REACHES THE HALFWAY STAGE OF ITS TWO-YEAR BUILD.**

Understood to be the last design of internationally renowned artist Friedensreich Hundertwasser prior to his death in early 2000, the building will boast the largest afforested roof in the Southern Hemisphere among its many features, all of which are heavily reliant on the properties of concrete.

Greg Hay, who is the project's communications manager, emphasises there are many other striking attributes to the concrete building, which will have a floor area of 800 square metres over four storeys.

"Hundertwasser did not like straight lines at all, so everything will be unique," says Greg.

"It's not like you can go to the shop and say, 'we'll have 20 doors please' – every single door will be different, every single chair will be different, and all made out of recycled materials as well."

"None of the floors in the building will be even – they will all slope and undulate slightly, as was Hundertwasser's style."

"The use of coloured ceramic tiles, manufactured in Germany, to wrap the columns, is striking. Add to that the onion dome on the top of the skylight, which will be covered in gold leaf, and you begin to understand what an intriguing building this will be."

Greg says Hundertwasser, who was born in Austria and emigrated to New Zealand in the 1970s, "did not like demolishing things". Hence, even with failing piles putting paid to the original plans of adding to the old Harbour Board Building on site, the design has encompassed "deconstructed recycling."

"Over 20,000 bricks from the former Harbour Board Building and around the region have been recycled, while close to three kilometres of timber was salvaged and de-nailed. People also generously donated slabs of kauri for

bench tops and doors, as well as numerous brass fittings."

## CHALLENGES OVERCOME

Trigg Construction contract/project manager Bronson Brown notes that the build has presented numerous technical challenges, beginning with connecting 70 new 35 to 40-metre-deep piles to the concrete foundation beams.

This degree of engineering proficiency and careful planning is apparent in linking the structure's various elements, including slab, in-situ walls and columns, as well as precast beams and floor members on which the topping is being poured.

"The engineering involved in supporting the weight of the structure has been quite enormous," says Bronson.

"It is a four-storey building when counting the viewing tower, but with the weight of the roof, it equates to about a six-storey building. So, we even have a special design for the internal framing and ceilings – when the roof gets heavier, the precast members will deflect about 15mm."

In addition to the inherently complex nature of building concrete in curves, Bronson says the non-conforming nature of the window locations in particular has necessitated development of a bespoke construction solution.

"The in-situ walls are 240mm thick, and the first pour of the walls was to around 3.5 metres high. However, with the irregular layout of window elevations there was no obvious position for the control joints. Therefore, additional reinforcing steel was required."

"However, the resulting reinforcement congestion meant the specified 30MPa mix did not flow adequately, especially under the window box-outs. So, we custom-designed a



concrete mix that could flow easily (achieving a flow rate of 680mm spread) and, along with a purpose-built chute that allows the concrete to fall between the reinforcing and wall shuttering, we managed to eliminate segregation.”

“It pretty much has the properties of a Self-Compacting Concrete mix,” says Bronson.

### BACKGROUND

Emphasising the “hundreds of hours” that volunteers have already dedicated to the project, Greg describes it as “one of the largest

community fundraising” initiatives ever seen in this country.

A review of *YES! Whangarei* website ([www.yeswhangarei.co.nz](http://www.yeswhangarei.co.nz)) reveals that Friedensreich, who had lived in the Bay of Islands since the 1970s, was in 1993 invited by the Mayor of Whangarei to design an art centre for the city.

It then appears that the enthusiasm to bring the artist’s drawings and architectural concept to fruition waned, was revived momentarily in 2008, but was then ultimately shut down by newly elected Whangarei District Councillors in 2014.



In response, local citizens formed the Prosper Northland Trust and championed Friedensreich's vision for the site in a landslide binding referendum in 2015. The Trust has since raised the full \$20.97 million estimated cost of the project.

### ANTICIPATED RESPONSE

Upon expected completion in March 2020, Greg says "there will not be anything even remotely approaching what this building looks like or how it was made, anywhere in the country".

"Obviously the Kawakawa Toilets are an example of Hundertwasser's work, but this is 50-times as big. It really will be something quite remarkable and I think the community here are just starting to get the sense of that as it rises from the ground – people are saying 'oh my gosh, we're having something here that is going to really provide a boost to the identity of Northland and Whangarei."

"Now there will be an internationally-recognised attraction to attract tourists. The impact it will have will be enormous on the city and the region."

Council-controlled organisation, the Whangarei Art Museum, will manage the completed centre,

which will feature both the work of Friedensreich himself as well as the Wairau Maori Art Gallery.

"This will be the only permanent display of his work outside Vienna, so it is something quite special. He was a significant international artist – his paintings sell for millions."

"It will also house the national gallery of Maori conventional art – which will be another first as no such facility currently exists."

### REFLECTION

Bronson says he has very much enjoyed the prominent role concrete is playing in this project.

"What I like about concrete is you can fully appreciate the fruits of your labour. You put up some boxing, you pour and in the next couple of days you take the boxing down and you have something that is on the drawing."

"It is a really good substrate for the plastering and tiling, and because it is 40MPa mix – required by the engineering and construction practicalities of realising the design – the building is basically waterproof."

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# PRECAST STARS IN PROMINENT RESIDENTIAL BUILD

**Iain MacIntyre**

**PRECAST CONCRETE IS PLAYING A PROMINENT ROLE IN A UNIQUE COSGROVE GOODWIN ARCHITECTS-DESIGNED HOME BUILT RECENTLY IN KAIWHARAWHARA (WELLINGTON) BY HOMESTEAD CONSTRUCTION.**

Providing a stunning 180-degree view of Wellington Harbour, the Satchell Way newbuild has been enriched with an array of architectural features, including an overall precast look complemented by stained plywood.



## CHALLENGING BUILD

Delighted with the outcome, Homestead Construction project manager Darcy Currie describes the 14-month project as “definitely one of the most challenging residential builds we’ve been involved with.”

“It is very architecturally focused. There are so many bespoke elements involved in the build; a huge amount is going on,” says Darcy.

“The smart systems in the home are impressive. You can pretty much control the entire house from Canada if you needed to!”

Among the project challenges was operating on a completely undeveloped site, which drops away from the roadside.

“Access proved difficult. Getting the precast panels in place was problematic with the site being so steep. However, these challenges were overcome as Homestead is well equipped to deal with these constraints.”

“We needed to cut into the hillside. It was all covered in scrub, gorse and blackberries – you would have hardly known a section was there before we started. In fact, it was one of the last houses to be built in that subdivision.”

Consisting of two concrete floors and a lower service area, the home’s 140 square metre ground floor is a combination of slab-on-grade and a suspended concrete tray floor system, with the 80 square metre top floor being entirely suspended.

“One of the key benefits of using concrete is we have the hydronic underfloor heating in both levels (hot water piped through the slab). The top floor is also polished concrete.”

Another notable design feature is a unique ‘linear crank’, meaning the whole house is on a 13-degree twist that runs through the centre of the dwelling, “so there were some interesting angles to work with.”

“We had to construct the precast panels with integrated electrical componentry, such as the wall lights up the stairs, which needed to be set out perfectly.



“The internal stairs are also precast concrete and are polished. They look fantastic and seem to almost float.”

In addition to the steep fall of the section, Darcy says the street itself slopes in another direction.

“The garage door is not even a square and the garage floor is actually sloping, which is the first of those I have encountered.”

While Darcy notes that speed of construction is often a key driver in the decision to use precast concrete construction, in this case it also delivered on the client’s vision of a ‘natural’ and ‘honest’ look, particularly for the main entrance way.

“It has some rain wash stain, and general character, making it perfect for the type of finish the client was after. I am really impressed with the way it has turned out.”

### DESIGN INSPIRATION

Paul McCardle of Cosgrove Goodwin Architects says the design was informed by a number of considerations, including the desire to create

functional yet artistic architecture, and by the constraints of the South-East facing site.

“The concept was to create two contrasting forms – a solid core structure, anchored to the hill, that is sheltered by a floating protective shell” says Paul.

“The result was a southeast-facing precast concrete building, inspired by the early 1940s bunkers in the Wellington hills, that is enveloped by a modern angular metal roof.

Both protect the warm interior spaces, provide sculptural yet practical spaces, and frame the stunning views of Wellington Harbour.

“The roof and the concrete are the main elements of the building’s exterior form,” adds Paul.

“The concrete is also a main feature of the interior, with polished concrete floors and walls in the lower service level, and a concrete floor and balustrade to the top floor.

The other focal point of the interior is the angled timber ceiling, which works together with the concrete to create a cosy environment.”

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Paul emphasises that concrete was a calculated choice for the build.

“Concrete speaks of permeance and reflects the concept of contrast (solid vs. open and fixed vs. floating), as well as fitting within the Wellington context of a concrete fort in the hills.”

“Like most homes in New Zealand, the early thinking on the project was to go with a timber-framed house with a plaster finish to give a solid look.”

“When the house was put out for preliminary pricing we looked into both options - precast concrete vs. timber framed.”

“At the end of this process the decision was made to move forward with precast concrete due to its honesty, structure and cladding durability, acoustic performance and alignment with the design concept.”

## PRECAST BENEFITS

While precast residential concrete construction has carved out a niche over the past two decades, Darcy notes that there are many who are still unaware of its benefits.

“As this project demonstrates, it is ideal for discrete homes, but it is also perfect for multi-unit residential developments as it offers excellent quality control off-site, repeatability of design, rapid construction, not to mention inter-tenancy fire separation and acoustic insulation.”

“Awareness of what precast concrete construction has to offer is definitely growing amongst developers and their clients, as evidenced by Homestead Construction’s involvement in a 56-unit development at Paetutu in Petone and an 80-unit development at Erskine in Island Bay.”

“Precast concrete also offers a great range of architectural options in terms of surface finish, whether it’s wood grain or other treatment, the possibilities are limitless.”



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# THE TRUTH ABOUT VOCATIONAL EDUCATION REFORM



**Warwick Quinn, BCITO Chief Executive**

SOME OF YOU WILL BE FULLY UP TO DATE WITH THE REFORM OF VOCATIONAL EDUCATION (ROVE), OTHERS NOT SO MUCH. THIS IS A VERY BRIEF UPDATE ON WHAT ROVE IS ALL ABOUT, WHAT STAGE IT IS AT AND SOME MYTHS THAT ARE BEGINNING TO FLOAT ABOUT THAT NEED DISPELLING.



## WHAT IS ROVE?

On 1 August the Government announced seven key changes to create a unified vocational education system. As part of breaking down the barriers between on-the-job and off-the-job training, it will disestablish the eleven Industry Training Organisations (ITOs), of which BCITO is one, and replace them with:

- (a) a new national delivery agency with a working name of the New Zealand Institute of Skills and Technology (NZIST), to deliver all classroom, digital, and on-the-job learning. This is a merger of the sixteen Institutes of Technology and Polytechnics.
- (b) Workforce Development Councils (WDCs) with a powerful oversight role, responsible for leading the development of qualifications, standard setting, skills leadership, brokerage and industry advocacy. They won't be directly involved in running on-the-job training themselves.

The WDC functions and the arranging of on-job training are current ITO activities.

## WHERE IS ROVE AT?

Government is currently consulting on the makeup and coverage of each WDC.

One option is to have WDCs based on Vocational Pathways that were launched some years ago. As one of these vocational pathways is Construction and Infrastructure, and following recent discussions with the sector, there is good support for a Construction and Infrastructure Workforce Development Council.

Once Minister Hipkins determines what coverage the WDCs will have (expected to be announced early December 2019) the industry will need to determine how it will be governed. Under current arrangements, construction and infrastructure activities span some five ITOs, and as WDCs will be industry-lead, the formation of a single Construction and Infrastructure WDC will be complex. We need to wait until the Minister announces the makeup and structure of the WDCs before we can be involved in helping them get set up.

The transition from the current regime to the new one under RoVE is anticipated to take until December 2022. By that time all WDCs will be in place and all work based training will have transferred from the BCITO to the new national institute.

# A unified system for all vocational education

Reform of Vocational Education



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#EdCravo

## MYTHS

At the moment the vocational education system is not as efficient as it could be and, if you were starting from scratch today, you would not design it how it is currently structured. BCITO has been critical of the 28-year-old framework, saying it needs modernising so we can be more responsive to employer and learner needs.

When you strip away all the noise relating to RoVE the Government is essentially undertaking a regulatory/provider split. WDCs will be accountable to Industry for the qualifications/standards it wants, and in turn WDCs will oversee the quality of that delivery by the NZIST and other providers.

This all seems simple enough, and the foundations on which the new system is based have the potential to address all of the concerns we have raised, and then some. The things that will get in the way of a successful transition are people and culture. Everything happens over the next three years, and there are already a bunch of mixed messages that, if not checked, have the potential to undermine employer confidence, at a time when skilled, qualified workers are so

desperately needed in construction...and we certainly don't want that.

### MYTH 1

One of the myths floating around is that all that is happening is the Government is creating a "mega poly" and it is only doing this to get them out of the massive financial hole some of these institutions are in. I cannot tell you if that is true or not, but I can tell you the system was creaking regardless, and it is not a system that is suitable going forward long-term. Something had to change.

### MYTH 2

Another myth is that because there is going to be a "mega poly" on-job learning (work-based learning) will be replaced by classroom learning. While one can understand how that is a natural thing to assume (as Polytechs predominantly undertake classroom learning), it is not so. The NZIST is not a "mega poly", but a new national entity with an extensive network of campuses, responsible for all vocational learning be it on-job, off-job or distance learning. Through WDCs, industry will still decide where learning takes place and what the best delivery mechanism is (on-campus, online, on-the-job, or a combination). In fact, given how rapidly the nature of work is changing, work-integrated learning is going to be an increasingly important part of making sure students are ready for the future of work.

### MYTH 3

Another myth is that there *"is no point in signing up an apprentice as they won't be able to finish their qualification"*. I don't know where that one came

from, but it is absolutely a false assumption. All qualifications remain, and everyone entering one will be able to complete it. Qualifications are controlled by the industry and are updated regularly – no change there.

### MYTH 4

We are also hearing stories of employers being told that *"BCITO isn't going to exist so there is no point in signing up with them"*. This too implies that an apprentice won't be able to complete the apprenticeship if they sign with BCITO. This is simply not true and all things being equal the only thing you may experience is the training advisor working with you may be wearing a different shirt one day. So ignore any rhetoric that says otherwise.

So, some very important takeaways:

1. Reform was needed
2. The NZIST is not a "mega poly" but a new national entity responsible for all training
3. WDCs are industry-governed statutory entities, which will give industry greater control over all aspects of vocational education –they'll get to decide whether programmes are fit for purpose and what the best way of delivering them is.
4. There is no reason to stop training for fear apprentices won't be able to complete
5. There is no reason to not sign your apprentice up with BCITO

If you have any questions about the reforms at all, please don't hesitate to discuss them with your local BCITO Training Advisor.

## WORKFORCE DEVELOPMENT COUNCILS - UPDATE

On 17 December Hon Chris Hipkins, Minister of Education announced that six Workforce Development Councils (WDCs) will be created and will cover:

- Construction and Infrastructure
- Primary Industries
- Service Industries
- Health, Community and Social Services
- Manufacturing, Engineering, Logistics and Technology, and
- Creative, Cultural and Recreation

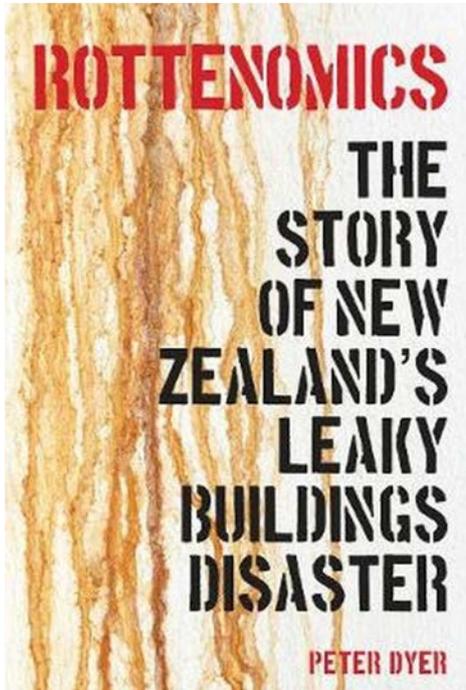
For more information visit the Tertiary Education Commission website - [www.tec.govt.nz/rove/workforce-development-councils](http://www.tec.govt.nz/rove/workforce-development-councils)

WDCs will help industry take a lead in making New Zealand's workforce fit for today, and the future. Through skills leadership plans, they will set a vision for the workforce and influence the vocational education and training system.

The establishment of WDCs will be enabled by the passing of the Education (Vocational Education and Training Reform) Amendment Bill expected by 1 April, 2020. There will then be a transition period until 31 December 2022, to allow time for functions to transfer to the new WDCs and providers at the appropriate time.

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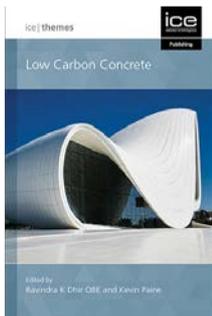
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## **ROTTENOMICS: THE STORY OF NEW ZEALAND'S LEAKY BUILDINGS DISASTER**

An exposé, Peter Dyer examines the use of untreated timber and associated building materials causing the leaky buildings disaster. Featuring personal stories of effected homeowners, Dyer uncovers the origins of the crises, exposing legislative reforms of the '90s and the failure of industrial standards

that ultimately led to the disaster, totaling a cost of leaky dwellings at over \$47 billion.



## **ICE THEMES - LOW CARBON CONCRETE**

A summary of the research and developments that have taken place in low carbon concrete technology. Researchers can find information on sustainable and environmentally friendly alternatives to concrete varieties such as blended cements, emerging cements, use of nanomaterials, geopolymers and more.

### **LIBRARY QUIZ**

To go in the draw to win **one of three** copies of *Rottenomics: The Story of New Zealand's Leaky Buildings Disaster* by Peter Dyer answer the following question:

*What nationality was Friedensreich Hundertwasser?*

Email your answer to [library@concretenz.org.nz](mailto:library@concretenz.org.nz). Entries close Friday 14 February 2020.

Congratulations to Bill Peck of Firth Industries, who correctly answered the Vol 60 Iss 3 Library Quiz to receive a copy of *Living Wall: Jungle the Concrete 2* by Jialin Tong.

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## **Concrete NZ Learned Society**

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