

C O N F E R E N C E S P E C I A L

TUNNELS TAKE TWO



Auckland's spectacular \$1.4 billion Water Connection Project (Waterview) scored a double at the Conference's glittering Concrete Awards, securing not only the Infrastructure Award but also the overall Premier Award.

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 and links 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."

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.

Two years down the track, an average of 62,000 vehicles use the tunnels every day – a figure that climbs to more than 80,000 in peak periods.

Winners in the other categories are:

■ Monte Craven Architectural Award – Wynyard Quarter Pump Station, Auckland submitted by Fulton Hogan

Judges were impressed by the building's elegant design and felt it showcased "outside-the-box-thinking" in its approach to construction. In addition to overcoming a number of technical difficulties and location challenges, the project came in on time and on budget.

■ Infrastructure Award – Waterview Connection, Auckland submitted by Beca

The complex interfacing, the modern landscaping and the detailed consideration of multi-transport modes swayed the judges when assessing this category. They noted that the Te Whitinga footbridge was an added aesthetic bonus, and that the tunnels were extremely impressive pieces of engineering.

■ Commercial/Industrial Award – University of Auckland Old Arts Building Refurbishment, submitted by BBR Contech

Judges cited the strong preservation ethos and treatment used to refurbish this heritage building. The seismic strengthening techniques were very subtle and showcased a compelling fusion of modern technology with the heritage fabric. It demonstrated a sustainable reuse of a historical building for future generations.

■ Residential Award – Tracey House, Auckland submitted by Xsite Architects Ltd

Recognised for its innovative construction techniques, the core of this project involved the finely-controlled monolithic pour for walls and roof, creating a monocast house. The result was a low-maintenance, economical build with nil construction waste. The zero energy rating was achieved by using the thermal mass of concrete for heating and cooling.

■ Landscaping Award – French Memorial, Wellington submitted by Firth Industries

This memorial combines two large concrete elements that significantly enhance the surrounding landscape. Judges commended this project for its distinctive concrete that emulates the colour and texture of the original indigenous French Caen limestone – a testament to the skills of the suppliers, design team and contractors.

■ Technology Award – Firth Ribraft X-Pod, submitted by Firth Industries / Cresco Engineering Ltd

Judges were impressed by the efficiency of this New Zealand-developed concrete placement solution. The pod design allows for easy transportation and installation, resulting in significant cost reductions. Overall, this project used less concrete and more recycled materials, contributing to environmental sustainability.

Another entry in the **Technology** category attracted a Commendation from the judges. Developed by the University of Auckland, the **QuakeCoRE-ILEE Low-Damage Concrete Building Test** uses a shake table (emulating an earthquake) to validate low-damage design solutions used on concrete buildings.

COLD BUT SUPERB



Despite Dunedin's very chilly weather, proceedings at this year's Conference hummed with warmth. The event generated plenty of positive feedback from exhibitors, patrons, sponsors and delegates – a definite thumbs up – with the excellent range of papers presented receiving particular mention.

The appeal of exhibitor space at these Conferences was underscored by that fact that it was sold out – with latecomers missing out on securing a spot. Note to self for the next Conference – Get in Early!

Many delegates also commented on the elegance of the venue, with the Dunedin Centre's magnificent 100-year old organ drawing particular admiration. A glorious piece of equipment, featuring 3,500 pipes of varying length and diameter.

As always, the Society extends its deep appreciation for the Conference Patrons and Sponsors – the event would not happen without their support.

They are:

Patrons – Golden Bay Cement, Holcim, Pacific Steel and Sika (New Zealand) Ltd

Sponsors – Ancon Building Products, BASF, Nauhria, Technical Welding Services (1998) Ltd.

The 2020 Conference will be held at Rotorua's Energy Event Centre (15 – 17 October). In response to recent feedback, it will be the first time that the Conference will be held during the school term – many delegates feel this timing is more appealing than school holidays.

PASSPORT TO AN iPad

Stresscrete's Luis Daza, from Auckland, is the winner of this year's iPad Pro and Smart Keyboard valued at \$1,700.

To qualify for the draw, Luis had to visit all of the trade exhibitors at the conference, and have his 'passport' stamped by each.



CANTERBURY POWERS TO WIN



Canterbury rowers easily over-powered arch-rival Auckland in the second Annual Concrete Canoe Race held at the Otago Rowing Club – romping home in a 2-nil victory.

The event took place in achingly cold conditions (7° with squally showers), which is why everyone was hugely relieved that a third race wasn't required to determine the winner.

Congratulations Canterbury!

SANDY CORMACK AWARD WINNER

A paper outlining the *Hybrid Rocking Precast Concrete Wall Panels* used at Christchurch's Turanga Library secured the prestigious Sandy Cormack Award. It was presented by Tim Shannon from Lewis Bradford Consulting Engineers. Sterling stuff Tim!

Tim's reward includes a \$1,000 prize and a scroll.

Two other paper received commendations: *Development and testing of retrofit solutions for hollow-core floors in existing buildings* – by Michael Parr, et al, and *Low-Damage Concrete Wall Buildings: Do expectations meet reality?* by Yiqi Lu, et al.

The Sandy Cormack Award was established in the memory of HW (Sandy) Cormack to recognise topics relevant to the development of the concrete industry in New Zealand. It was inaugurated in 1998.





COLLABORATION IS KEY

One of the Society's major focus points over the coming year is collaborating with CNZ and the sector groups to formulate plans to ensure the currency of New Zealand Standards related to cement and concrete.

So says Nic Brookes, the Learned Society's newly-elected President. "Consolidation of the former associations is now complete – and though this has been a significant change, we must also maintain a sense of 'business as usual'."

"We will continue to be an independent voice and source of technical guidance on topics related to cement and concrete."

In his acceptance address Brooke also thanked James Mackechnie for his leadership over the past two years, as well as Jeff Matthews for his long service to the Society.

Jeff has served for 13 years. He has been Vice President, President and Immediate Past President, and served on the Concrete NZ board as the Learned Society representative. Jeff was also heavily involved with the industry consolidation process as the Learned Society representative on that team.

Thank you for your unwavering commitment Jeff!

Alessandro Palermo is the new Vice-President. James Mackechnie becomes the Immediate Past Present. The rest of the new Council is as follows:

Business members – Dene Cook, Firth Industries

Individual members – Moustafa Al-Ani (CompuSoft Engineering), Carl Ashby (WSP Opus), Rick Henry (University of Auckland) and Alistair Russell (Holmes Consulting LP).

Co-opted – Paul Dillon, BBR Contech (Business member) and Dave McGuigan (Concrete NZ).

FRP SEMINARS IN NOVEMBER

FRP seminars have been scheduled for November – and will be held in Christchurch, Wellington and Auckland. A brochure outlining venues and dates is being finalised and will be emailed to the industry shortly.

FRP is gaining increased appeal as a material to help improve the structural performance of existing concrete buildings – particularly buildings that have been identified with seismic vulnerabilities. It is relatively easy to apply, unobtrusive and light-weight, but correct design and installation is critical.

Presenters

Dr Enrique del Rey Castillo –

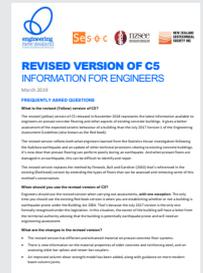
Concrete NZ Fellow and lecturer at the University of Auckland.

Rhys Rogers –

Formerly from BBR Contech and a past Learned Society Council member.

HOW TO TALK ABOUT %NBS

Engineering New Zealand has developed a Factsheet providing guidance about using the revised (yellow) version of C5 when giving a %NBS rating.



A building that has a rating of less than 34%NBS points to a definite need to address its vulnerable structural features within a reasonable period of time. Still, a rating of less than 34%NBS does not mean the building is dangerous or poses an imminent risk.

In most cases, from an engineering risk perspective, it can continue to be occupied. Decisions around the continued occupancy of a low-rating building are the responsibility of the owner and tenants.

Issues covered by the Factsheet include:

- what can and cannot be inferred from a %NBS rating
- the role of %NBS ratings in determining whether a building is earthquake-prone
- the relationship between risk and %NBS ratings
- who is responsible for making decisions based on %NBS ratings, and
- health and safety considerations associated with %NBS ratings.

Download the PDF at:

<https://engineeringnewzealand.cmail19.com/t/t-i-bkyjig-l-j/>

WEBINARS NOW AVAILABLE



Society members in some of the country's smaller regions are now able to 'attend' seminars – thanks to the production of a series of webinars.

The creation of the webinars addresses a cost/availability issue that has long plagued the annual seminars series run by the Society: it is difficult to stage them in smaller regions such as Dunedin, Nelson, New Plymouth and Hawkes Bay. Largely because it is uneconomical but also because the presenters are not always available for additional seminars.

Beginning with the last two seminars, however (*Strut & Tie and the C5 Guidelines*), webinars have now been professionally produced and are of excellent quality. Viewing them online is, of course, much more cost-effective than attending the seminars – it eliminates flight and accommodation costs and minimises disruption at work.

Companies and/or regions interested in accessing these webinars should contact the Secretary for pricing.