
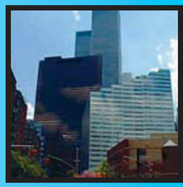

concrete

Volume 47 Issue No.2 July 2003

Something old, something new...

The opening of the new Britomart transport development this month is the first step in Auckland City Council's plan to entice Aucklanders out of their cars. At Britomart's centre is a new underground railway station, designed to last 100 years - and the newly-restored Chief Post Office, a heritage building which has already lasted 93. We talk to Downer Engineering about the challenges presented by these two very different, but equally significant concrete projects.

The long-awaited Britomart development, also known as the "New Queen Street Railway Station" opens this month, marking the beginning of a desperately-needed overhaul of Auckland's public transport infrastructure.

Occupying 5.2 hectares in downtown Auckland, the $211 million project includes an underground railway and transport interchange connecting rail, bus and ferry, as well as the future restoration of adjoining heritage buildings and the development of the surrounding area into parkland and other public facilities.

Chief Post Office alterations & strengthening showing ground floor removed and basement floor lowered.

Downer Engineering has been involved with the project since November 2001, simultaneously carrying out construction of the $95.6 million underground railway station and a $22.6 million refurbishment of the 93-year-old Chief Post Office which forms the entrance to the station, provides lift and escalator access to the platforms below, and houses the ticket office.

The construction of the underground Britomart Rail Station required excavation of a cavity in the city centre the length of three rugby fields - 46m wide and 12m deep. One major logistical challenge was removing the resulting 200,000m^{3}of soil, given the traffic density in the area, a factor which also faced Allied Concrete in transporting the 40,000m^3 of concrete required for the project to the site.

The new complex will be the connecting point for trains, buses, ferries and pedestrians - not only for the central business district, but for the whole Auckland region. Given this, the building needed to be able to withstand high volumes of traffic as well as harsh marine conditions, because of its proximity to the waterfront.

Downer's Engineer Mark Hedley said concrete's durability made it the only material to be considered for the majority of the structure. Time, cost and aesthetics were other benefits, particularly in relation to the in-situ concrete beams used in the roof.

"Because this building will form the heart of central Auckland's transport system, it was essential that it had a design life of at least one hundred years. Given this, concrete was the obvious choice," he said.

Because part of the site for the underground Britomart Rail Station is on reclaimed ground near Auckland's waterfront, a watertight secant pile retaining wall comprised of 7,400m^3 of high-slump tremie mix concrete was used to keep out groundwater.

This wall, one of the largest of its type in New Zealand, features inter-connecting bored concrete piles that extend a minimum of 4m into rock below the basement slab. The basement slab is anchored into the bedrock by 8m tension piles to counteract hydrostatic uplift pressures on the station box.

Downer used top down construction involving 17 transverse concrete beams to provide the station's roof-support structure. Poured in-situ, each beam weighs a staggering 150-160 tonnes, is 45m long and required 75m^3 of concrete.

The beams are supported by 32 column piles, some more than 40m deep. These were bored from ground level with a 1200mm pile for the bottom portion and 10m for the column pile on top. Concrete strengths were 35 MPa for the beams and piles and 50 MPa for the columns.

The main structure of the station is basically a concrete box measuring 300 x 46 x 12m, externally waterproofed using a pre-hydrated bentonite fabric. The concrete walls and floors of the

...continued on page 2

WHAT'S INSIDE....

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Upfront PRECAST FLOORING SYSTEMS

Recently expressed concern about the seismic performance of some precast flooring systems in high rise construction has led to media speculation on whether there are adequate guidelines in place to ensure correct detailing of precast hollowcore concrete floors.

There is no shortage of information available on precast flooring design. In fact specific recommendations for the support and detailing of hollowcore flooring were developed and published last year by an expert Technical Advisory Group including representatives from CCANZ, Precast New Zealand, Auckland and Canterbury Universities, NZSEE and SESOC.

These recommendations were developed as part of our industry's ongoing commitment to continuous improvement. This commitment is also why the testing at Canterbury University is being done - and why it is being co-funded by CCANZ.

This research, which is ongoing, identified some improvements which could be made to end-fixing details and hollowcore unit layout. These were incorporated into last year's recommendations - which are available from Dene Cook at dene@cca.org.nz.

This is a long term commitment - the Canterbury University research began over five years ago - long before the "Scarry report" - and is on a scale of testing which is a world-first. The fact that this research is being done is a sign of New Zealand's leadership in concrete structural research and seismic design knowledge.

Ultimately, no structure - however well designed and built - can guarantee your safety in a serious earthquake. However, in the same way that buildings constructed within the last 25-30 years are likely to perform better in an earthquake than those built before 1950, ongoing research and advanced technology will be incorporated into concrete structures of the future which will enable them to perform better still.

These are the realities of any industry genuinely committed to continuous improvement. Our solid international reputation for concrete structural design is based on this principle, as is our current research. Through this discipline and effort precast flooring systems will remain a safe, efficient and economic construction solution.

…continued from page 1

station involved slab pours of up to 800m^3 of a high strength mix containing Holcim Duracem to produce a durable long-lasting concrete. Four acres of precast hollowcore was used in the station roof and intermediate floor structure.

The roof features 12 concrete 'volcanic' cones constructed from shotcrete and reinforcing steel on the ground, then jacked up 12m into the ceiling over the platforms to form skylights which protrude up into the pavement above. Each 3.5m high cone used 13m^3 of shotcrete, tapering from a base diameter of 10m to 2m across the top.

The station's stately neighbour, the Chief Post Office building, presented a different challenge altogether. The original heritage-protected building featured a concrete roof and basement and brick walls with a plaster finish.

Downer's engineer Mark Hedley said the major challenge was to create a 20m wide, 10m high hole in the wall to form the connecting entrance to the underground rail station. To do this, a dozen piles were taken out, which meant 350 tonnes of building had to be supported while a new concrete lintel beam was cast in place. To solve the problem, Hedley decided to cast the beam in two stages - half internal and the other external, using a 50 MPa mix.

"The second part of the beam was completed on Friday 13th, so we were relieved when it all went without a hitch," Hedley laughs.

Downer also removed piles, in order to build the tunnel under Queen Street which links to the bus interchange. The tunnel which runs under the front steps was lined with precast concrete panels and in-situ joints.

Extensive wall strengthening was also needed and this was done by pouring concrete in- situ at the base of the interior walls, with shotcrete being used for the higher levels.

Constructing the tunnel under the front steps…

The steel reinforcing in the 93 year-old concrete roof had deteriorated significantly over the years. Given this, extensive repair and strengthening work needed to be carried out by a specialist concrete repair company. Seismic strengthening of the building's top three levels was also carried out, as well as refurbishment of the external facades and restoration of windows and internal doors to their former glory.

The result? A new lease of life for a grand old lady which, together with the new underground railway station, will form the enduring heart of a vibrant and sustainable Auckland for decades to come.

Britomart Station Roof Beams

…with temporary retaining (background & secant piles to right

News...

The answer is blowing in the wind...

In the wake of the recent power crisis, finding new energy sources would seem key to New Zealand's future.

One answer to the energy shortage could be literally blowing in the wind. In Europe where electricity has long been a valuable commodity, wind power farms are widely used to generate energy.

Steel has traditionally dominated this niche market because the height of the towers and the need for high stability under load. However Germany's WEC-Turmbau tower construction company has now set up a plant to fabricate precast concrete sections for the standard E-66 wind power generator developed by leading wind energy company Enercon.

The mast of the type E-66 wind-power plant is 98 meters high and is made up of 23 structural segments, eight of which are fabricated in two halves. To deliver four preassembled towers every week, WEC-Turmbau produces more than 20 tower sections a day.

WEC-Turmbau officials say concrete tower structures have proven their worth in series production and are now a technically advanced and cost-effective alternative to steel!

Concrete comes top in Auckland pavement survey

Auckland residents prefer concrete footpaths over asphalt or clay pavers - according to a recent survey by the Auckland City Council.

In April, Auckland City Council held a public footpath trial in which a range of different footpath surfaces were laid out in a vacant lot in Sandringham. Interested residents were given a feedback brochure which contained estimated costs for each option over a 50 year period (see below) and asked to comment on the type of paving they preferred.

Given nine different footpath materials to choose from, the preferred option was red chip concrete (29%), followed by black pebble concrete (20%).

The results of the trial are being considered by the Transport Committee in conjunction with the recommended footpath material by street type, from the draft footpaths policy.

Auckland City owns 2,114 km of footpaths across the city, many of which are in a poor condition. Recent citywide footpath condition surveys have revealed that 21%, or 452 km of footpaths are assessed as poor and very poor. Work is expected to start on footpaths rated poor to very poor this month.

How concrete compares costwise (per square metre over a 50 year period):

Red chip concrete	$64
Oxide concrete	$55
Clay pavers	$201
Asphalt with red chip	$112
Black asphalt	$106
Stone pavers	$275-350
Red slurry asphalt	$192
Ordinary concrete	$51
Black pebble concrete	$64

New WTC-7 to Use More Concrete

As alarming as it was to see the twin towers of the World Trade Center collapse, from a building performance perspective, it was similarly disturbing to see the collapse of World Trade Center building number 7 (WTC-7). That 47-story structure became the first high-rise known to collapse as a result of a fire.

While the trade center towers suffered significant structural damage on September 11, 2001, that, along with the intense fire created by jet fuel, contributed to their progressive collapse, WTC-7 suffered no such impact. Located adjacent to the north tower, it was impacted by some falling debris from the towers, but little under the circumstances. Fire did break out in WTC-7, however, and it was the fire that caused the ultimate demise of the structure. For this reason, the National Institute of Standards and Technology (NIST) has taken a particular interest in documenting its performance as part of a federal grant from Congress.

The US concrete and masonry industry was disappointed to see that WTC-3 was not included in this initial study by NIST. WTC-3 experienced similar impact and fire conditions as that of WTC-7. However, the predominantly concrete frame structure of WTC-3 remained standing after all was said and done, while the steel frame structure of WTC-7 fell to the ground.

On the other hand, the concrete and masonry industries can take some relief in the announcement that the replacement building for WTC-7 will include many of the features that our collective industries have been recommending. The new 52-story building is expected to include a core, lobby, stairwells and elevator shafts that will be protected by walls of reinforced concrete materials.

The National Concrete Masonry Association (USA) continues to monitor the developments of studies by NIST related to the World Trade Center, and is continuing to work to encourage their attention to the benefits of passive fire systems and non-combustibility that concrete masonry can provide.

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All about Angelique

Before Angelique Van Schaik became CCANZ's Front of House Manager in February 2003, her experience of concrete didn't go much beyond driveways and retaining walls.

"I'd done a bit of concreting in the past - but I didn't know there was a concrete association. When I heard about CCANZ, I thought 'concrete is everywhere - who needs to promote it?'" Angelique jokes.

Since then, she's learned a lot more about the concrete industry - so we thought it was time for us to learn a little more about Angelique.

Born and bred in Wellington's Hutt Valley, Angelique originally thought about a career in the health sector and so signed on for a Health Service Receptionist course at Petone Polytechnic.

However, after completing a New Zealand Institute of Management certificate, her career took quite a different direction - accounts and administration. Her first job was as a receptionist for the Local Government Training Organisation.

"It was a while ago, but we must have trained groundsmen - because I remember working on a booklet on how to prepare a cricket wicket!"

Since then, Angelique has worked for Electrolux, New Zealand Jaycees and part-time for the New Zealand Free Kindergarten Association, while raising her daughter Chantal, now 12.

After moving from the Kindergarten Association to Wilford School, Angelique met her partner Neil who has three children of his own. The amalgamation of the two households meant a move to a bigger house at Te Marua, by the speedway.

The location was purely coincidental - Angelique's no car racing fan, preferring to relax with a good non-fiction book - especially crime/forensics stories.

A keen home decorator and handywoman, Angelique's DIY skills are put to good use maintaining their two former houses in Stokes Valley and Wainuiomata as rental properties, as well as their house in Te Marua.

"One thing I do know is it's hard to find a blockie these days!" she says.

Angelique's role at CCANZ includes reception, general administration, processing orders for CCANZ publications, and library and accounts support. She can be contacted at admin@cca.org.nz or on (04) 499 8820.

Hollowcore passes fire tests with flying colours

In recent UK fire tests, precast hollowcore flooring slabs performed well under severe fire conditions.

The test results, conducted in the Building Research Establishment's test facility in Cardington, proved hollowcore slab performance met the criteria of the UK's Building Regulations for integrity and insulation.

The work was undertaken following an initial test where the slabs had not behaved as expected. It was subsequently found that the test units were not properly conditioned and stored, and were therefore tested at too high a moisture content.

Details of the background, the test procedures and data, a discussion, and the conclusions were published in a paper by Tom Lennon, a Principal Consultant with the British Building Research Establishment, in the March 2003 edition of The Structural Engineer - the journal of the Institution of Structural Engineers (UK).

Note: a copy of this article is available from the library of the Cement and Concrete Association of New Zealand - please contact Nancy at library@cca.org.nz or download from our website on www.cca.org.nz.

In summary, key points outlined in the paper were as follows:

- Spalling of the underside of the hollowcore units was not a problem in either test.
- There was no evidence of premature shear failure of the units in either of the fire tests. [Measures taken to mitigate this behaviour, in accordance with suggestions from the European Commission on Prefabrication (fib), were successful.]
- The precast hollowcore floor units used in these tests performed very well under severe natural fire conditions.
- In terms of the performance of the slabs, in relation to the requirements of the UK's Building Regulations, the criteria for integrity and insulation were met.

NZS 3101 Update

The head committee for the NZS 3101 rewrite met for the second time on 11 June 2003.

The committee is working on rearranging the Standard so that it is based on components rather than forces. This means that if you are designing a beam you can consult the chapter on beams and all the information you need should be contained within that chapter. The revised format should make it easier to find your way around the Standard.

Sub-committees are currently working on various technical aspects of the standard.

The leaders of the sub committees are-

WG1	Durability	Derek Chisholm
WG2	Fire	Andrew Buchanan
WG3	Properties of Materials	Len McSaveney
WG4	Structural Analysis	Ashley Smith
WG5	General Design	Richard Fenwick
WG6	Beams columns and Joint	Dene Cook
WG7	Slabs	Bob Park
WG9	Foundations	Dene Cook
WG10	Precast	Bob Park/Ashley Smith
WG11	Walls	John Mander
WG12	Grade 500	Richard Fenwick
WG13	Scarry issues	Dene Cook

Cook's Clinic...

Formwork

Designers have unlimited artistic potential when using formed concrete in construction. While almost any effect can be created on the surface, physical defects need to be avoided to realise the full potential of the design.

In order to minimise the chance of defects occurring on formed surfaces, you need to understand the probable causes of the defect. This will enable you to develop details and construction methods to lessen the risk of it happening.

In this article, we only consider physical defects and leave the exploration of colour variations to the next issue. Nor do we discuss the occurrence of thermal cracking in thick restrained concrete sections as this was treated previously (refer Cooks Clinic, March 2001).

Other references on the topic of formwork include:

CCANZ IB 29, Formwork, gives information on form pressures and the structural design of formwork.

The Guide to Concrete Construction, Chapter 14, provides a summary of good formwork practice.

NZS 3109, Concrete Construction, provides information on design, tolerances, and stripping times. A copy of NZS 3109 should be on every construction site.

Table 1 provides a summary of some physical defects and their causes.

Table 1. *Physical defects and their causes*

Defect	Description	Most probable causes			
		Formwork	Concrete Mix	Placing Methods	Other
Honeycombing	Coarse stony surface with air voids, lacking in fibres	leaking joints	insufficient fines workability too low	segregation inadequate compaction	*Design* highly congested reinforcement section too narrow
Blowholes	Individual cavities usually less than 12mm diameter. Smaller cavities approximately hemispherical; larger cavities often expose coarse aggregate	form face impermeable, with poor wetting characteristics face inclined, face too flexible	too lean too coarse sand workability too low	inadequate compaction too slow rate of placing	*Release Agent* heat oil with surfactant
Mortar loss or grout loss or scouring	Sand textured areas, devoid of cement. Usually associated with dark colour on adjoining surface. Irregular eroded areas and channels having exposed stone particles	leaking at joints, tie holes, and the like	excessively wet insufficient fines too lean	water in forms, excessive vibration of wet mix low temperature	
Misalignment	Step, wave, bulge or other deviation from intended shape	damaged, deformed under load joints not securely butted		too rapid or careless	
Plastic cracking	Short cracks, often varying in width across their length. On vertical faces, cracks are more often horizontal than vertical	poor thermal insulation form profiles or reinforcement which restrain settlement of the concrete	high water-cement ratio low sand content excessive bleeding of mix		*Ambient Conditions* Conditions leading to high evaporation of moisture from concrete
Scaling, spalling or chipping, and form scabbing	Scaling is the local flaking or peeling away of a thin layer of mortar from the concrete. Spalling or chipping is the local removal of a thicker layer or edge of mortar. Form scabbing is the adhesion of portions of form surface, including sealant or barrier paint to the concrete	inadequate stripping taper inadequate stiffness movement of form lining due to change of hydrostatic pressure of concrete with depth keying of concrete into wood grain, saw kerfing, and interstices in form surfaces local weakness of form face			*Ambient Conditions* Frost action may cause spalling *Stripping* Too early stripping may cause scaling Too late stripping may cause scabbing
Crazing	A random pattern of fine shallow cracks dividing the surface into a network of areas from about 5 to 75mm across	form face of low absorbency, smooth or polished	a high water-cement ratio combined with a cement-rich mix can be a contributory cause		*Curing* inadequate

Specifying Concrete using NZS 3109 and NZS 3104

Types of Concrete Specification

The new Standards documents nominate 3 types of specification methods for concrete mixes.

- Prescribed Concrete
- Normal Concrete
- Special Concrete

The choice of concrete specification is the prerogative of the design consultant. The detailed production requirements of the three concretes are contained in NZS 3104.

The terms used previously like Ordinary, High and Special Grades have all been dispensed with. These terms broadly related to the accuracy to which concrete could be produced.

The term 'grade' has been reused to mean strength of the material, in the same way that the term was used for reinforcing steel e.g. Grade 300.

Prescribed Concrete

The prescribed concrete permitted by NZS 3109/3104 ranges from 17.5 MPa to 25 MPa. As such, the concrete application fits with concrete used in NZS 3604 and NZS 4229. The mix quantities are fully listed in Part 3 of NZS 3104 and this part sets out the production requirements for the concrete.

This concrete is not tested for strength but by checking that the materials used are batched correctly.

Because of the limited checking requirements, the cement contents of the mixes are significantly higher than those where testing for strength is a routine requirement e.g. Normal & Special Concretes.

The Specifier's final control over these mixes is by way of checking cement contents. It is difficult to carry out this test at the fresh concrete stage and it is more usual to test hardened concrete for cement content by chemical analysis. (BS 1881 Part 124). Some allowance for the test accuracy has to be allowed and hence Clause 3.2.3.1 of Part 3 states that the concrete shall be liable for rejection where the average cement content from two samples is more than 25 kg below the prescribed limits.

Typical use of Prescribed Concrete would be on small remote projects outside the operating areas for ready mixed concrete plants and where concrete strength is not required over 25 MPa.

Normal Concrete

Specifications calling for the use of Normal Concrete 17.5 - 50 MPa in accordance with NZS 3109/3104 should be used where the structural designer's primary concern is the compressive strength of the concrete.

The Normal concrete permitted by NZS 3109/3104 ranges from 17.5 to 50 MPa. This is the predominant range of strengths used for most structural projects - as such, it probably represents 80% of all production. It is also the range of concretes that has been subject to a statistical quality assurance programme in NZ for 35 years.

Prior to the revision to NZS 3109, the structural designer was required to approve concrete mix designs put forward by the Contractor or Concrete Producer. This stemmed from the days of project site mixing where each project might have a series of special concretes and where there was often a Resident Engineer or Clerk of Works. It was quite normal at that time for checking to be undertaken.

With the current predominance of ready mixed concrete supply, it has been considered necessary to change the approach altogether, making the Concrete Producer fully responsible for the concrete mix and production to meet the structural designer/ contractor requirements for 28 day strength and workability at time of delivery.

The structural designer now has the following to specify:

a) Concrete Strength at 28 days.

b) Workability (Slump)

c) Maximum nominal aggregate size. The detailing of reinforcement may lead to close spacing of steel which may require a maximum aggregate size of other than 19mm to be specified.

Based on this information the Concrete Producer will design and produce the concrete. The Quality Assurance that concrete will be produced in accordance with NZS 3104 lies in requirements in NZS 3104 that require the concrete producer to have an independent audit of the plant's production capability and viability of production on a statistical basis. Essentially the concrete producer must carry out routine equipment checks e.g. cement scales are checked monthly and regularly test the concrete for strength, slump, air content and yield. The testing statistics are submitted quarterly to the auditing engineer and a full analysis of 12 month results each year.

There is also a requirement that each ready mixed concrete plant must have an assigned plant engineer who is either a Chartered Engineer or Registered Engineering Associate. This technical person is not necessarily based at the Plant but must visit and be in regular communication with the Plant Manager.

The auditing engineer(s) must not be employees of the Concrete Producer under audit.

The NZRMCA has set up for the convenience of its members an Auditing Team of Assessors, previously known as the Classification Committee, which meet these criteria. The engineering group consists of 5 independent professional engineer assessors and 2 industry assessors. There are direct appointments from the Institution of Professional Engineers and from the Concrete Society.

As part of this assessment scheme, in addition to the quarterly and annual paper assessment, plants have two plant inspections every 3 years.

The audit status on any NZRMCA plant can be immediately checked by visiting the Cement & Concrete Association Web Site www.cca.org.nz. The Audit Certificate is only issued for 12 months.

Special Concrete

As the name implies, this concrete will have performance requirements that may be outside the strength range 17.5 - 50 MPa or have special features not necessarily measured by strength such as shrinkage, exterior durability etc.

Clearly a special concrete is still most likely to be a designed concrete requiring specialist skills of the concrete producer. However the structural designer must now specify the special features required together with a test method or other means that the concrete supplier can demonstrate specification compliance.

To understand the requirements for this, the statistical evaluations of normal concrete need to be underlined. The development of the statistics is generated across the range of normal concretes in a random way on the plant's total production i.e. not all projects supplied with concrete will necessarily have had concrete on that project tested. The concrete can be related on a statistical basis to other concretes produced.

This will not be the case for Special Concretes that are project based. For this reason a testing specification has to be developed for the project. This has to be done at the time of tender because testing costs can become an important factor. For example the structural designer may require a test frequency which sees every truck tested i.e. 1 test in 5 m^3. However any regime can be specified e.g. Test for 30, 40, 50 cubic m etc.

The statistical testing routine in normal concrete is primarily 1 in 75 m^3 with plants on large daily volumes able to increase the frequency to 1 in 250 m^3.

The specifier also needs to get some prior assurance that these special mixes will perform at the time of the project. NZS 3109 requires the specifier to enter into dialogue with the Concrete Producer. Clearly if the Concrete Producer is able to produce records from a different project that satisfy the specifier then assurance may be satisfied.

If however pre-trials are going to be required, then time and resources will need to be planned for and financed.

The use of proprietary products in special concretes is also a case where the specifier may decide to include a dosage of a proprietary material based on the proprietary supplier's information i.e. there is no definite check required on the performance enhancement. However the specifier may require that the concrete producer provides dosage records of the products in the concrete.

The important issue for the specifier to realise is that for Special Concretes, not only must the special requirements of the concrete be specified, but the method of demonstrating pre/post project start compliance is needed i.e. a project-related test programme may be needed.

Acknowledments to David Barnard for supplying this article.

NZRMCA Awards - Celebrating Industry Excellence

Entries for the 2003 New Zealand Ready Mixed Concrete Association (NZRMCA) Awards are now open.

The NZRMCA Awards celebrate excellence in design and construction within the concrete industry. Projects must be New Zealand-based and have been completed within the last year. They can be of any scale and from any sector of the ready mixed concrete market.

Submissions are invited for the following three categories: Technical Excellence, for projects which demonstrate innovative technical solutions; The Extra Distance Award, for projects which show an uncompromising commitment to customer service; and The Sponsor Display Award which recognises creative, intriguing or entertaining product/service display.

Judges for this year's Awards will include representatives from the Ready Mixed Concrete Association, the Cement and Concrete Association of New Zealand and the NZ Concrete Society.

Entries close 30 August 2003, and all awards will be announced and presented at the NZRMCA annual conference in mid-September. For more information, please contact Cathy Castle on (04) 915 0386.

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DIARY:

2003

July

Jul 17-19th	Concrete Institute of Australia (CIA) Conference in Brisbane (www.coninst.com.au/)
Tue 24th	PCNZ Council Meeting Auckland

August

Tues 5th	CCANZ Board Meeting Auckland
Wed 6th	NZRMCA Council Meeting Auckland
Thu 28th	PCNZ Council Meeting Auckland (AGM)

September

12-14th	NZRMCA Annual Conference 2003, Napier
Fri 16th	PCNZ Council Meeting Christchurch

October

3-5th	NZCS Conference, Wairakei

November

Tues 4th	CCANZ Board Meeting Wellington (AGM)
Wed 5th	NZRMCA Council Meeting Wellington

2004

September

16-19th	Combined Concrete Industry Conference, Queenstown.

NZCS Concrete Awards — NZCS

At this year's NZCS Conference, the biennial Concrete Awards will have a new format. Four new categories have been added. In addition to The Concrete Award and the Monte Craven Architectural Building Award, there are awards in Residential, Landscaping, Infrastructure and Technology. This will give additional opportunities for entering projects. Entries close on 31st July, 2003. Forms are available from the NZCS Secretary.

NZCS Conference 2003 — NZCS

The Concrete Society has just completed the programme for this year's conference at Wairakei. There will be three international speakers. The keynote speaker is Alan Burden, a structural engineer and architect based in Tokyo. Alan will be giving two different presentations on concrete housing projects in Japan, and concrete bridges. The other two international speakers will speak on self compacting concrete and waterproofing admixtures. There will also be the usual mix of project papers this year including the Christchurch Art Gallery and Operation FreeFlow.

Practical Concrete Seminars — NZCS

We have had very positive feedback on the Practical Concrete Seminars held in Auckland in April. Further seminars are planned for Wellington on 25 & 26 June and Christchurch on 8 - 10 July. This is a 'hands-on' experience in making and testing concrete. Numbers are restricted - email the NZCS Secretary to register info@bluepacificevents.com.

New Standard (Highway) Precast Bridge Beams - Stage 1 — PCNZ

The industry committee comprising BECA, OPUS and Precast New Zealand has now submitted the Stage 1 report to Transfund. The comprehensive report includes a summary of all work undertaken by the project team including a NZ and International review, industry consultation followed by an analysis of research results, new standard beam shape recommendations, preliminary designs and cost estimates.

New Standard (Highway) Precast Bridge Beams - Stage 2 — PCNZ

(a continuation of the work carried out in Stage 1)
Subsequent to the submission of a Stage 2 Expression of Interest to Transfund, the committee has been advised that the Expression of Interest proposal has been accepted. During April, a further Request for Proposal was submitted to Transfund. This request outlined the proposed objectives which include the full design of a (defined) standard bridge, the production of preliminary designs and verification for the new standard beam shapes followed by standard drawings. When design and drawing is complete it is proposed that the new standard designs will be presented in a series of seminars around the country. Transfund has recently accepted Stage 2 for funding.

Canterbury University (Canterprise) Hollow Core Seating Project — PCNZ

A research report based on testing commissioned by Precast NZ and co-funded by hollowcore manufacturers, CCANZ and McDowell is expected to be released in July. The report will contain recommendations for the detailing of gravity and seismic seating connections for precast hollowcore flooring, and will be a useful supplement for building specifiers designing multi-storey buildings.

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