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Issue 004, September 2008

From the Chair

As we fast approach another spring Earthworks season, we all prepare for the hard work ahead. A changing financial and business environment provides us with new challenges to work through and to develop our business accordingly.

We are fortunate to have CETANZ moving vigorously through the some of the areas of our business that have fallen by the wayside in previous years. Our Technical working group has started into the national proficiency programme with results currently being collated. Our Society Activities working group has worked tirelessly to organise our conference which has been a resounding success. Last but not least our Careers and Training group has been assisted by work through IPENZ and Infratrains to look at professional registration and a qualification in laboratory testing.

The conference has been a great forum for us to all come together. We had papers from a variety of speakers including Dr Nick Smith, MP, various technical and business presenters and of course we all had fun at the dinner. The conference was well attended generally by management and senior staff and we look forward to providing a forum suitable for the whole spectrum of staff in 2010. A special thanks should go

to our sponsors, especially Coffey Information, our platinum sponsors. We must not forget to thank our friends who travelled from Australia, we appreciate your attendance and input and we look forward to attending an Australian conference.

I would also like to take this opportunity to thank you for your participation in our AGM with nominations of suitable candidates for our committee and voting for your preferences. Please remember, CETANZ is there to provide its members with value, we need your help to achieve this goal.

Thanks to our departing committee members.....

We need to say thank you to Claire Laybourne of Beca for her hard work as conference convenor and Society Activities leader. Claire is moving on to new challenges in Australia with her work. A big thank you also goes to Brigitte Sargent of Geotechnics who has provided CETANZ with services as Management Secretary over the last 2 years, we hope to still see Brigitte involved with CETANZ in a minor capacity.

And welcome to our new committee members.....

We welcome Jenny Dingley from Beca and Eric Paton from Fulton Hogan. It is great that we have a full committee motivated and ready to work on our goals for the coming 2 years.

All the best for the coming season, it was great to meet many of you at our conference.



From the working groups...Society Activities

Conference Report - CETC2008

Langham Hotel, Auckland

The centrepiece of CETANZ developments was held in Auckland on 24-26th September 2008. Over 100 people registered for the event with over 90 people in most of the presentations.

The event kicked off on the Wednesday evening with welcome drinks and a chance to meet colleagues in a relaxed environment. We were very fortunate to have great backing with financial sponsorship and trade stands. It was clear to see that our platinum sponsor, Coffey Information, had risen to the occasion providing all sorts of promotional equipment suitable for our site work.

The main event was to start on the Thursday as the early arrivals strained to recover from a late night, or was it an early morning? Our conference convenor, Claire Laybourne, set the scene and introduced our keynote speaker Dr Do Van Toan. I was very impressed with his presentation as it clearly provided an insight into how the testing community is closely integrated into major engineering projects. There were of course some light hearted visits to some particularly challenging projects from his career highlights.



The day continued on with breakout sessions for separate disciplines such as Geotechnical, Roding, Concrete and General Lab. These were all well attended and provide us with some great technical knowledge from some of our colleagues. I was impressed with the variety of topics and would have liked to have attended more....but time is limited.

Our first day finished off with very informative presentations from Keith Towl of IANZ fame and Joanne Crackett from MAF. A great day of learning and great efforts from the presenters.

An AGM for CETANZ was held with an election of the new committee and then it was a bit like herding cats as we all made our way to The Bluestone Rooms for an evening of

socialising and amusement. It was great to catch up with a variety of old and new faces and then to hear Ginette MacDonald provide us with her angle on Civil Testing. If I remember correctly, mentions of likening us to the Wiggles at one point gave us something to ponder.

A rousing start to the Friday with Vic O'Connor looking at the past and providing us with some ideas for the future followed by Hon. Nick Smith MP. The organising committee did not provide Nick with any brief for his presentation and I personally thought that he provided us with a great overview of how he (and National) thought the areas of testing and Standards should be developing in the future. Whether this happens...we'll find out on November 9th!!!!

The rest of Friday's presentations came from Transit, Roding NZ and we were fortunate to have Allen Bartlett from Australia. As CETANZ look at how we can develop our Careers and Training, it was great to hear how our friends from across the ditch are handling their industry.

It was great to have Bryan Pidwerbesky (one of CETANZ's great supporters) from Fulton Hogan talk to us about recycled materials being used for roading projects and we closed out the day with a Panel discussion with questions from the floor.

We must say a big Thank You to Claire Laybourne and Beca who have supported Claire and Cetanz in this venture. The sponsors and trade stands made this event possible for our industry to develop and we look forward to the next event. Last but not least, the attendees deserve a big thank you for making the event so successful, especially our Australian friends who travelled over and continue to be a part of our success.

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From the working groups...Technical

At present most of the time and resources of the group is directed towards planning and running the Proficiency Rounds, but please feel free to contact the Technical Group with any technical enquiries or comments you might have. info@cetanz.org.nz

NZ Vib Hammer Test Method Review

As many of you will be aware 34 New Zealand Laboratories are participating in the

CETANZ NZ Vibrating Hammer Proficiency Round. Results are being collected by George Ball of OPUS and laboratory identity is controlled by Keith Towl of IANZ. All testing should be completed and submitted before the end of August. Once all the data is collected George will start the analysis process, around the 8th of September, working towards a report for CETANZ that hopefully will be distributed to participants before the start of the conference.

Thanks to all those who have participated and to George and Keith for their tireless effort and contribution.

Benkelman Beam Proficiency

In Mid June 9 Laboratories took part in the CETANZ Benkelman Beam Proficiency, Auckland Round. 3 Sites were selected based on their stable nature, and 10 tests were carried out on each spot by each Laboratory's Beam Truck. Data has been collected and is currently being analysed in preparation for a report.

Again, thanks to all those Laboratories that took time out from their busy schedules to be a part of the Trial Proficiency Round, and a special thanks to Steven Anderson of Geotechnics for organising and coordinating the round. All going well, more Benkelman Proficiency Rounds will be organised for your area next year.

CETANZ Proficiency Testing Program

The next Proficiency Rounds that are in the planning stage are:

Soils Plasticity and Linear Shrinkage. Coordinated by John Evans at OPUS Auckland.

Aggregates Weathering Quality Index and Crushing Coordinated by Stevenson Laboratory.

Future Rounds will require participating Laboratories to contribute to covering the cost of running the program and distribution of samples. A participation fee will need to be paid before samples can be sent.

The Technical Group are keen to organise more rounds, but we need your help. Anyone who is interested in Coordinating and Preparing samples should contact me at Stevenson Laboratory.

Aggregates and Quarry Association (AQA)

Recently I was invited to sit on the re-formed AQA technical committee representing CETANZ and Aggregate Manufacturers.

“The Technical Group are keen to organise more rounds, but we need your help.”

Aggregate and Quarry Association vice-president Jason Lowe says the AQA wants to ensure it keeps a watching brief over any developments that may have an impact on the aggregates industry and its members.

The responsibility for this more pro-active approach has seen the reconstituting of an AQA Technical Committee.

Its task is to proactively offer advice and assistance on projects involving aggregates, R&D, members' technical issues, Aggregate Standard reviews and developments.

"We want to work more closely with other industry bodies that have synergies with our industry, to provide and share research and information," said Jason Lowe.

These organisations include the Civil Engineering Testing Association of New Zealand (CETANZ), Cement and Concrete Association (CCANZ), the New Zealand Ready-Mix Association (NZRMCA), Roading New Zealand, and the New Zealand Transport Agency (formerly Transit and Land Transport).

Jayden Ellis
CETANZ Technical Group Leader
jse@stevensons.co.nz

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2008 Beijing Olympics and the Vibrating Hammer

I've no doubt that many of us over the last few weeks have enjoyed the Olympics held in Beijing. And I'm also sure that most of us were amazed with the military-esque precision that the games we're run in.

It is also quite apparent that we have witnessed one of the most hypocritical games ever! By this I mean that we exposed the world's best athletes to an environment that was equivalent to smoking 70 cigarettes a day – this even beats my grandmothers' record of 50 fags a day, and I can assure you that she couldn't even walk a 100m, let alone run it under 10 seconds!

Some would say that the atmosphere during the games was translucent rather than transparent.

Somehow the games managed to set over 30 new world records, and maybe this is a reflection of human society and the fact that we may whinge and moan, but in general, we just get on with things.

This brings me rather neatly on to the 'NZ Vibrating Hammer'. How? I hear you say.....well it works a little like this. In NZ most roads are built to a density which is determined by a standard test known as the vibrating hammer. Some of us will be well aware that this test is riddled with problems and this test sets the benchmark for the contractor. This to me, reflects something that is similar to the atmosphere in Beijing....translucent rather than transparent.

I talk to many contractors in my day-to-day role about compaction and I often hear the same things...."we managed to achieve a 110% - isn't that brilliant". But the question is a 110% of what? It also goes the other way too where some contractors find it difficult to achieve 95 – 98% compaction and in some cases will actually over compact the road to achieve this target density. We potentially have quite a significant problem.

Many contractors in this country do not know how a lab generates OWC and MDD, where MDD values tend to form the benchmark for field compaction.

The contractor at this point can be at the mercy of the lab, and, like the Beijing Olympics, have to work within this environment. And like the athletes', many of our contractors 'just get on with it' and do the best they can. And, in some cases they may 'break records' by achieving more than the lab density which many contractors will think is great – they get the gold medal ! But if one looks at this it could simply be down to the fact that the lab that did the testing may have a lighter hammer than the other lab down the road. Or it can go the other way too.

If you want my advice, take an interest in this test and other tests that your lab may be involved in. Understand the 'Standards' for these tests and the tolerances involved with 'calibrated' gear. By doing this you are helping the industry as a whole and improving communication between all sectors of our industry. But don't worry, CETANZ are on the case and our technical group, headed by guru Jayden Ellis, are highlighting these problems with a vision to change things for the better.

By Stuart Moulding

info@civiltrain.co.nz





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The Auckland Laboratory rigorously maintains an **independent** and **unbiased** testing facility for our clients as part of our IANZ requirements where: accuracy, confidentiality and customer service are of the utmost importance to us. We have a broad range of clients in both private and public sectors and are happy to assist even if only for **impartial advice**.

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For more information or to arrange a visit please contact either, Phil Archer, David Aubrey or Howard Jeffery-Wright at *The Auckland Laboratory*—

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Mobile: Howard +64 (0) 276 837 681

David +64 (0) 272 427240

Phil +64 (0) 272 434813

Email: Aucklandlaboratory@downerediworks.co.nz



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Test Focus - Atterberg Limits

The test focus for this issue is the set of standard tests that determine a soils 'Atterberg Limits' or how cohesive soils (or cohesive fractions of aggregates) behave under different moisture regimes.

Here goes...

The **Atterberg limits** are a basic measure of the nature of a fine-grained soil. Depending on the water content of the soil, it may appear in four states: solid, semi-solid, plastic and liquid. In each state the consistency and behavior of a soil is different and thus so are its engineering properties. Thus, the boundary between each state can be defined based on a change in the soil's behavior. The Atterberg limits can be used to distinguish between silt and clay, and it can distinguish between different types of silts and clays. These limits were created by Albert Atterberg, a Swedish chemist. They were later refined by Arthur Casagrande.

Plastic limit

The plastic limit (PL) is the water content where soil starts to exhibit plastic behavior. A thread of soil is at its plastic limit when it is rolled to a diameter of 3 mm and crumbles.

Liquid limit

The liquid limit (LL) is the water content where a soil changes from liquid to plastic behavior. The original liquid limit test of Atterberg's involved mixing a pat of clay in a little round-bottomed porcelain bowl of 10-12cm diameter. A groove was cut through the pat of clay with a spatula, and the bowl was then struck many times against the palm of one hand.

Casagrande subsequently standardized the apparatus and the procedures to make the measurement more repeatable. Soil is placed into the metal cup portion of the device and a groove is made down its center with a standardized tool. The cup is repeatedly dropped 10mm onto a hard rubber base until the groove is closed for 13 mm (½ inch). The moisture content at which

it takes 25 drops of the cup to cause the groove to close is defined as the liquid limit. Another method for measuring the liquid limit is the Cone Penetrometer test. It is based on the measurement of penetration into the soil of a standardized cone of specific mass. Despite the universal prevalence of the Casagrande method, the cone penetrometer is often considered to be a more consistent alternative because it minimizes the possibility of human variations when carrying out the test.

Derived limits

The values of these limits are used in a number of ways. There is also a close relationship between the limits and properties of a soil such as compressibility, permeability, and strength. This is thought to be very useful because as limit determination is relatively simple, it is more difficult to determine these other properties. Thus the Atterberg limits are not only used to identify the soil's classification, but it also allows for the use of empirical correlations for some other engineering properties.

Plasticity index

The plasticity index (PI) is a measure of the plasticity of a soil. The plasticity index is the size of the range of water contents where the soil exhibits plastic properties. The PI is the difference between the liquid limit and the plastic limit ($PI = LL - PL$). Soils with a high PI tend to be clay, those with a lower PI tend to be silt, and those with a PI of 0 tend to have little or no silt or clay.

Source: http://en.wikipedia.org/wiki/Atterberg_limits

Did you know...

"The plasticity index (PI) is a measure of the plasticity of a soil. The plasticity index is the size of the range of water contents where the soil exhibits plastic properties."

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- Sampling in soils to very weak rock, $N < 35$
- Concrete & Asphalt coring attachment

- Dynamic Probing (Fixed cone)
 - Dynamic probing to 30m in suitable ground
 - Excellent for locating voids, or obstructions
- Standard Penetration Test (SPT)
- Instrumentation installation – piezometers, gas & water wells

Depth (m)	Reading (kN/m ²)	Diameter (mm) Values					Notes
1	1	1	1	1	1	1	
2	2	2	2	2	2	2	
3	3	3	3	3	3	3	
4	4	4	4	4	4	4	
5	5	5	5	5	5	5	
6	6	6	6	6	6	6	
7	7	7	7	7	7	7	
8	8	8	8	8	8	8	
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99	99	99	99	99	99	99	
100	100	100	100	100	100	100	

Horizontal Wt. (kg)

100

Horizontal Drop (mm)

250

Cone Dia (mm)

100

Cone Type

DPR

Diameter

100

GENERAL REMARKS

Dynamic Probe Log

Dimensions

Working height	2.85m
Width	0.8m
Overall height mast down	1.5m
Overall length	2.7m
Total weight	1300kg plus a 7000kg reaction load
Terrier Rig ground bearing pressure	33 kPa

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Dimensions

Working height	2.85m
Width	0.8m
Overall height mast down	1.5m
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Member Profiles

This issue....Ross Lambert from Fulton Hogan Waikato

What is your current position, who do you work for and briefly describe your role?

I am the Assistant Laboratory manager for Fulton Hogan Ltd, Waikato Branch. My role includes management of the technical and IANZ requirements for the laboratory and training of staff. The laboratory offers testing services for Aggregates, Asphalt, Bituminous Materials, Soils and Field testing. The range of testing services includes foam bitumen and road surface friction testing.

How do you see CETANZ benefiting your business?

I see that CETANZ can provide a forum for the exchange of ideas. It gives the presentation of an industry wide approach and can also act as an independent body that can organise inter-lab testing over a wide spread of laboratories

How many gold medals will NZ win at the Olympics in Beijing?

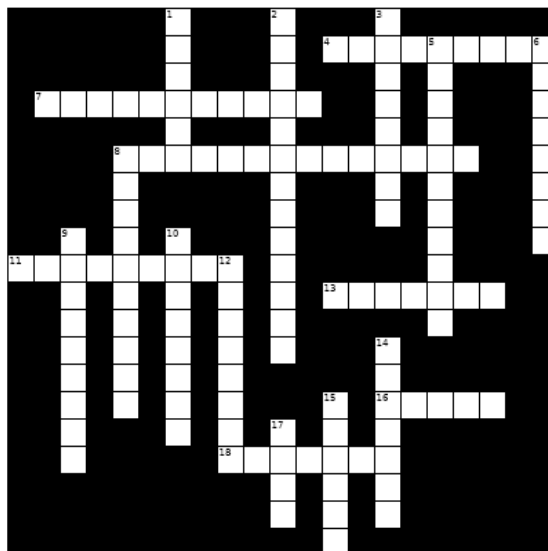
I am not sure how many gold medals we will win. All the competitors deserve a medal for the time and effort put into their training though.

If you could invite 3 people to dinner (dead or alive) who would they be and briefly why?

All three I would invite to dinner are dead so there's probably no great benefit in going into why

Science and Technology

Howard Jeffery-Wright



- Across
- 4 Study of sound
 - 7 This is measured in farads
 - 8 Process to distribute a substance evenly in a fluid
 - 11 Bar chart
 - 13 Device to convert mechanical energy into HV ac
 - 16 Intersection measured by degrees
 - 18 Substance that cannot be split into a simpler one by chemical means

- Down
- 1 Atomic number 56
 - 2 Chemical process to improve rubber compounds
 - 3 Product of mass and linear velocity
 - 5 His cat in a box was famous
 - 6 Salt of Sulphuric acid
 - 8 Instrument for measuring density of a liquid
 - 9 Means having the same physical properties in all directions of measurement
 - 10 Force on an objects surface divided by the area
 - 12 1024 kilobytes
 - 14 Geometrical repetitive figure
 - 15 Capacity for doing work, measured in joules
 - 17 That number which, when added to any number 'x' leaves that number unchanged

Arthur C. Clarke

The First Clarke Law states, 'If an elderly but distinguished scientist says that something is possible he is almost certainly right, but if he says that it is impossible he is very probably wrong.'

Standard Alert!

The following standards are up for review.....

DR008037 CP: Revision of AS 2341.27-1996 Methods of testing bitumen and related roadmarking products – Part 27 Determination of sedimentation.

CETANZ and the AQA will be making official comment on this guideline, please forward any comments or enquires you have to CETANZ.

Want more info go to www.standards.co.nz and click on the "Public Comment" Tab. Here you can download the draft version for an 8 week period and submit your comments.

New Zealand guideline for sampling and mix design testing for stabilisation of pavement layers :

With the release of the TNZ B/5: "Specification for In-Situ Stabilisation of pavement layers" in mid 2008 the New Zealand Stabilisation Working Group (SWG), a sub-committee of the Roding New Zealand's Pavements committee, decided that this guideline has become the highest priority on the to-do list. The guideline will be presented by *Thorsten Frobel* at the CETANZ conference in September.



From the Editor...

CETANewZ is the voice for our industry. If you would like to contribute in any way to this publication by way of adverts or articles - drop us a line at info@cetanz.org.nz

www.cetanz.org.nz

Situations Wanted

Name:

Sanga Palu

Phone:

(09) 257 71161 or 0273 818 209

Nationality:

New Zealander

Date of birth:

11/08/59

Qualifications:
1. NZ School Certificate

English, Mathematics, Science,
Biology

2. NZ University Entrance

Maths, Chemistry, Biology, Physics

3. NZCE (Civil)
4. City & Guilds Certificate

(Concrete Technology & Construction)

5. Diploma in Quality Management
Work History: **1. Ministry of Works (Tonga)**

October 1980 - February 1987

May 1988 - February 1989

Positions Held: Technical Officer & Road Foreman

Duties:

Laboratory testing of soils, supervision of technicians & labourers in Civil Engineering works.

2. Winstone Aggregates

February 1994 – Sept 2008

Positions Held:

1994 – Laboratory Technician

1995 – Laboratory Supervisor

1996 – Laboratory Manager

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The Measurement & Calibration Centre

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For more information please contact:

Allan Patterson or Lenice Evergreen

Ph: (09) 362-1720

or visit our website www.themcc.co.nz



Situations Vacant

Auckland Laboratory Business Manager

Winstone Aggregates is New Zealand's leading aggregate producer and sand extraction company, with operations throughout the country.

We have a great new role for an Auckland Laboratory Business Manager, who under the general direction and guidance of the national technical manager will develop the Auckland Laboratory by managing its technical, commercial, administrative and testing functions and to implement a culture of continuous improvement to achieve high levels of operational excellence.

You will be responsible for the development of the overall laboratory strategy, external marketing initiatives, financial accountability, implementation of lean laboratory principles and the day to day delivery of a quality testing service.

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If your lab or workplace has any employment opportunities that you would like to advertise to our members and newsletter recipients, then drop us a line at info@cetanz.org.nz

P.O.A