ISSN 1178-5888

CETANZ

Civil Engineering Testing Association of New Zealand

CETANewZ

The official newsletter of the Civil Engineering Testing association of NZ

Issue 009, April 2010

In this issue...

From the Chair...

As the daylight draws in we find ourselves looking towards another winter, however this year the winds of financial change seem less harsh than 2009. I am sure we have all felt the impacts of the global financial crisis/circus (delete whichever you feel more suits your mood) in some way and we now need to look forward with positivity at developing our business' and industry for the future.

CETANZ has been moving along with the squall at a great speed and we will see some turning points for your industry through 2010. We have a well developed conference programme on the theme of "Careering Ahead". This will be an excellent event to attend, learning, catching up and finding out what the future holds.

We have had many committed members of our committee and others involved in producing a qualification for our industry. This is now at the stage of producing learning resources in association with Infratrain. I must congratulate and thank the Industry Advisory Group for all their hard work, our industry will definitely benefit in the future.

Our work to launch this qualification at our conference will coincide with our sponsorship and participation in producing a television programme "Just the job" in conjunction with Infratrain. This will be aired around the time of the conference and DVDs will be distributed to all secondary schools. More to follow in future newz. These tasks have only been achieved with the hard work of the committee and other volunteers, well done!

Over the last few months we have seen Committee and Technical group member Howard Jeffrey-Wright moving to Australia to develop his career, thank you Howard for your hard work and commitment . We will miss your input and hope to hear about the inception of CETAU?

On a sadder note we regret to inform you of the passing of John Evans. John was a very keen committee and technical group member from the start of CETANZ in 2006. Our thoughts are with your family. Please see article later in this issue to understand more about John's life and work.

I hope you enjoy this issue of CETANewZ, I am sure there is an article that will help all of us somewhere in the midst. Please remember that we will be having an AGM at the upcoming conference and we will be keen to see nominations for committee. If you feel like you'd like to be a part of the CETANZ success, get involved!

Paul Burton

Chairman—CETANZ

From the working groups | Technical

New Technical Group Members

With the passing of John Evans and the departure of Howard Jeffery-Wright it was decided to invite several new members to join the technical group. Recently the group has found it difficult to make progress on current initiatives and so has extended the invitation to include two extra technical group members.

Welcome to our new Technical Group members:

Frank Hu - Downer EDI
Cheryl Bycroft - Downer EDI
Sarah Amoore - OPUS Hamilton.
Wayne Campton- Babbage

NZ Vib Hammer Test Method Review - Update

An Industry meeting was held with (RNZ, AQA, CETANZ and NZTA) on the 9th of November 2009. All agreed that a form of Ruggedness testing needed to be undertaken to assess areas that contributed the most to the variability of the test.

Robert Patience (RNZ) and Jayden Ellis (CETANZ) were asked to formulate a proposal to the sub group along with budget for funding.

JSE and RP proposed that a University will be needed to undertake ruggedness part of analysis. The sub group agreed.

Two universities were approached, Massey and Auckland. Both cam back with different research proposals. RP and JSE recommended to the group that both proposals be accepted.

One looks at actual ruggedness testing varying factors such as hammer type etc, the other looks at current overall test repeatability. NZTA agree to put up $20k towards the project. This will cover University costs and costs for moving equipment and materials around. It will not cover the cost for the five Laboratories that will need to carry out ~30 to 40 tests for the project. These Laboratories will need to volunteer there time to secure the in kind funding from NZTA. Currently Stevenson and Winstone Aggregates have volunteered and the group is now looking for three more labs to take part.

CETANZ Proficiency Testing Program

Weathering Quality Index - As some of you will know the Weathering Quality Index proficiency samples were distributed in the last weeks of 2009. 25 out of 30 labs have returned results, once all are in Greg Arnold of Pavespec or Robert Patience of RNZ (Higgins) will carry out analysis and produce final report.

Soils – Liquid Limit, Plastic Limit, Plasticity Index and Linear Shrinkage – John Evans from OPUS Auckland had volunteered to design and organise a national proficiency covering these tests. The Technical Group will now have to find a new volunteer Lab to prepare, organise and distribute samples.

PSV – Robert Patience from RNZ and Higgins has taken over from Howard, the proficiency will now only be carried out by NZ labs.

Bitumen - Martin Clay of Fulton Hogan Canterbury Laboratory has volunteered to design a proficiency trial for Max Specific Gravity and density, Bulk Specific Gravity and density of non absorptive compacted bituminous mixtures, % air voids in compacted bituminous paving mixtures, Preparation of Marshall blocks, Marshall Stability & Flow and Bitumen Content by extraction. The scheme is currently being reviewed by the Technical Group, will also be past to RNZ Lab Group, Request for those Interested in taking part should appear soon.

Steve McCone has also volunteered to design and organise a scheme covering Kinamatic viscosity and presence of adhesion agent. Jayden will work with Steve to design the scheme for submission to Technical Group.

Sand Equivalent and Clay Index Winstone aggregates have run into some problems caused by Sand Equivalent testing issues. (Washed v's Air Dried and Brushed) They have asked CETANZ help them to produce a "Best or Proper Practise" for the News Letter and have also volunteered to organise and design a Sand Equivalent and Clay Index Proficiency.

NZ Standards Review

Update

Survey was completed – Membership indicated that NZS 4407 was top priority followed by NZS 4402.

Standards have agreed to let a small industry group draft a new version of the NZ standards NZS 4407 and NZS 4402 before submitting to Standards NZ, the idea being that the industry will select the appropriate people (volunteers) to write the draft thus reducing NZ Standards Costs.

RNZ, AQA, IPENZ and CETANZ reps (Alan Stevens, Jason Lowe, Charles Willmot and Jayden) will meet to discuss initial proposal in late March.

Scope may cover the following?:

- update some of the references and terminology
- remove some of the grey areas that are open to too much interpretation
- add commentary regarding test result use and meaning
- add info from NI & SI Aggregate inventory reports
- tighten up on some things like sample preparation
- consider new or better sampling techniques
- adopt newer versions of overseas standards, especially where we have duplications.
- actual indices used for calculations as apposed to rounded figures
- add in estimated r and R values ???
- added instruction to help labs arrange proficiency testing?

Industry Participation

As reported in the last general committee meeting Jayden has been asked to represent CETANZ in the NEW Technical Pavements Group" initiated by NZTA . The aim of the Group will be to assist with the revision of national aggregate specifications such as TNZ M/4, M/3, B/2 and the Supplement to Pavement Design and Rehabilitation Design. This group will replace the Stabilisation Working Group (SWG) which has been working for NZTA to create new national specifications around Insitu and Pugmill Stabilisation/ Modification. Jayden is joined by Jason Lowe of the AQA, and Graham Salt of T&T. The original members of the SWG will make up the rest of the New Group and comprises NZTA, RTA's, RNZ members (FH, Downers, Higgins, Leighton's, Transfield, Highway Stabilisers) various consultants, researchers and material suppliers. The first meeting is later in the month.

Jayden also attended the last AQA technical group meeting, RNZ and CCANZ have asked if they can join the group.

PPAC – Keith Towel sits on Technical Group and reports back from PPAC – to date several issues have been brought to the technical group by PPAC, namely "Rubber Caps" and "Uncertainty Workshops"

Technical Support

Rubber Caps

A joint letter from CETANZ and IANZ has been sent to Standards NZ and the Readymix Association of NZ, informing them about the current issues around rubber capping in the NZ Standard NZS 3112:Part 2: clause 4.4.3.1
- Rubber Hardness tolerances (now agreed as ±5) are causing concerns and confusion in the industry.

NZRMCA replied .. They are caring out research around this issue and several other related testing problems, CETANZ have extended a commitment to help where it can. Standards asked if we should wait for NZRMCA results before making any review, CETANZ advised Standards CETANZ still believe that the standard should be changed …i.e. wording around rubber hardness changed to clear up confusion.

Uncertainty Workshop – Civil Eng Lab Examples

No progress has been made on this …. New Technical Group members will be asked to look at this

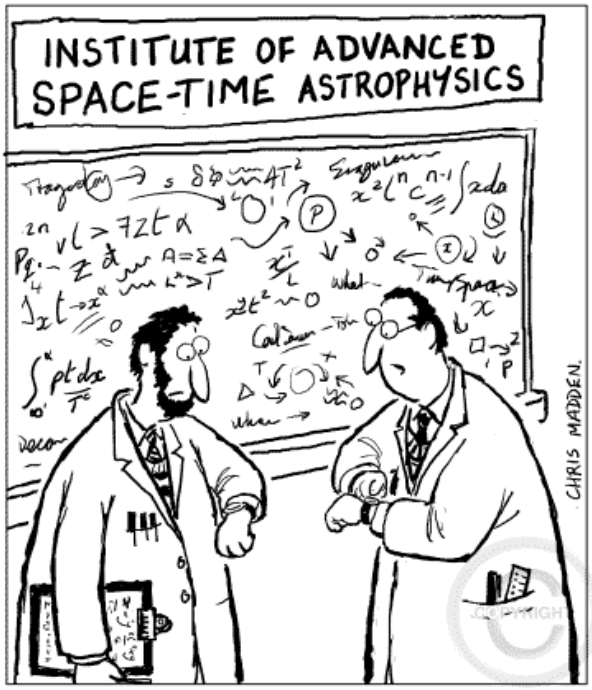
Scala Tip Calibration

Steve A presented his findings on apparent incorrect sizing of scala cones due to lack of detail in NZ Standard diagram and suggestions on how one might calibrate tips in the future.

Group asked Steve to carry out literature review to-confirm differences with overseas and original research equipment. Steve completed this, findings confirmed Stevens suggestion.

Steve A will draft letter to NZ Standards, IPENZ and Geotechnical Society asking NZ Standards to revise detail on drawing. Recommendation will suggest we adopt 3mm shoulder.

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



I can never remember either.
Is it 'Spring back, fall forward'?

From the working groups | Careers & Training

Sadly I must advise that John Evans has passed away after a short illness. My deepest thanks for his hard work during this project, and I'm sure I speak for the whole team in expressing my condolences to his loved ones. Rest in Peace John.

Also I would like to thank Howard Jeffery- Wright for his participation on this project. He has now ventured across the Tasman. Good luck Howard.

Well the Careers & Training group have been extremely busy over the last few months attending meetings with InfraTrain. We have now developed 5 strands in the materials industry Asphalt, Concrete, Aggregates, Soil and Site work. The AIG team are busy putting together the correct wording for the student text books. We have 2 professional writers and a senior editor to help with this process. Although there still seems to be a lot of work to finish this project, we have been told by InfraTrain that it will be finished in time for the CETANZ conference which is in September.

We are looking for some interesting photos of some lab testing, so if think you have some that you may think would be useful for our text books and you have the consent from the person in the picture, then please forward them to the CETANZ careers and training group.

CETANZ has been approached by InfraTrain to see if we would be keen to participate in a television careers programme called (Just the Job), which some of you may be familiar with. It has run for four series and now series five will soon go into pre-production with filming scheduled to start next month.

The group has put forward a proposal to participate in this project and hopefully soon we can get to promote this great industry we work in.
We thought this would be a good opportunity to feature the role of civil laboratory technicians in one of the segments. The producers have indicated that this segment could be scheduled for the end of the ten week series, which would be in September, well timed for the launch of the qualifications and also the CETANZ Conference.

Eric Paton
CETANZ Careers & Training Leader

IANZ
ENDORSED

The Measurement
& Calibration Centre

MCC is now IANZ endorsed for balances and concrete compression machines.

calibration laboratory

We are also able to offer on site servicing and repair of civil testing equipment.

Contact Brigitte or Tim with enquiries on **09 362 1720** or go to **www.themcc.co.nz**

Breaking News! — A case for more beer!

A herd of buffalo can move only as fast as the slowest buffalo, and when the herd is hunted, it is the slowest and weakest ones at the back that are killed first.

This natural selection is good for the herd as a whole, because the general speed and health of the whole group keeps improving by the regular culling of the weakest members.

In much the same way the human brain can only operate as fast as the slowest brain cells. Excessive intake of alcohol, we all know, kills off brain cells, but naturally it attacks the slowest and weakest brain cells first.

In this way, regular consumption of beer eliminates the weaker brain cells, constantly making the brain a faster and more efficient machine.

Member Profiles—Sarah Amoore | Opus

Who do you work for and what is your role?

I am Sarah Amoore and I work for Opus Consultants as the Hamilton Laboratory Manager. I am engineering geologist by training, and most of my experience is in the soils and field testing side of laboratories.

What is the most enjoyable part of your role?

The most enjoyable part of my role is seeing the staff develop to their full potential and learn new things; I also find placing together all the information of site and laboratory testing into one big model and understanding how it all works very fascinating and interesting.

What is the best piece of advice you've ever been given?

My best advice is be true to your word – be trustworthy.

What do you enjoy doing outside of work?

A lot of my spare time is spent with my 8 year old son, I am also a surf lifeguard currently at Waihi beach and race inflatable rescue boats for them. I am active in netball, playing three times a week with trainings on top of that. I also enjoy spending time at the beach, and with a good glass of wine with my partner.

If you won Lotto next Saturday what would you do?

I would take the Monday off, then I would pay my mortgage, and continue to work at Opus as I really enjoy my job and when I do get my 4 weeks leave a year, I would make sure I spend my money and go to a different country every time.

CALL FOR PAPERS NOW OPEN
Deadline is 15 June 2010

CETANZ
Civil Engineering Testing Association of New Zealand

23-24 SEPTEMBER

CETANZ CONFERENCE 2010

AUCKLAND
NEW ZEALAND

Careering Ahead

www.cetanzconference.org.nz

Getting your NDM to Site- Avoiding Penalty and Delay

A Nuclear Density Meter (NDM) contains radioactive material and requires specialist training before use and whilst it's important that users gain training and licensing before onsite use, it's equally important that their transportation and storage requirements are successfully met to avoid any penalties.

Users must be licensed through the National Radiation laboratory (NRL) under the *Radiation Protection Act 1965,* This includes anybody working under instruction of a licensee and is to be seen as carrying goods as "tools of the trade".

Before an NDM is transported there are a few requirements that the user/owner is obliged to have met.
He or she must have a completed and signed *"Road/Rail/Marine Shipper's Declaration for Dangerous Goods"* – sometimes referred to as a "candy form" – and must be included with all transportation documentation which must be carried in the cab of the vehicle, preferably in the driver's door pocket. Copies of this form are available from the NRL www.nrl.moh.govt.nz

The NDM special form certificates must also be kept with the candy striped form and have a valid date. However, a copy of the special form certificate is not required if the special form certificate number is written in the appropriate box on the shippers declaration form. www.nrl.moh.govt.nz
An NDM must be transported in the correct type A box which is clearly labelled on each side with one of the following labels illustrated below. The labels must be legible, failure to have easily read labels will result in a fine. The proper shipping name must also be recorded. If the label does not have provision for the UN# on it, a separate label must be stuck to the top of the package stating this
Each package is clearly marked with the consignor and/or consignee name and address, the appropriate UN number and the gross mass of the package if it exceeds 50kg. www.nrl.moh.govt.nz

NDM signs, also illustrated on page 9, must be displayed at the front and rear of the vehicle in a position easily visible to from 25 meters. The placards must be vertical, not stuck on the bonnet, and not obstructing the number plate or vehicle lights. Displaying these signs on the side of the vehicle in addition to the front and rear is also accepted.

Packages must be fixed securely in each vehicle; either tied down or strapped in and must be positioned as far away from the driver as feasible.
Emergency Response Information is carried to comply with section 8.3 of the *Dangerous Goods Rule.* www.nrl.moh.govt.nz 2010
Owners details must be permanently on the package

It's also important that no other person other than the driver and his or hers co-worker travel in the vehicle carrying the radioactive material and that the Front and rear NDM signs are removed immediately after the packages have been unloaded.

Having met the above criteria you can be confident of only having to worry about the testing itself and not the implications of improper transportation. For any further information please contact Geotechnics on 0508 GEOTECHNICS who have signs and placard holders available. Happy NDM transportation and testing!

References

http://www.nrl.moh.govt.nz/regulatory/transportofradioactivematerial.asp (2010) *Radioactive Transport of Radioactive Material* retrieved from *http://www.nrl.moh.govt.nz/regulatory/transportofradioactivematerial.asp*

Written by Michael McGlynn—Geotechnics Ltd

Package labels

Figure 1
Category I - WHITE label

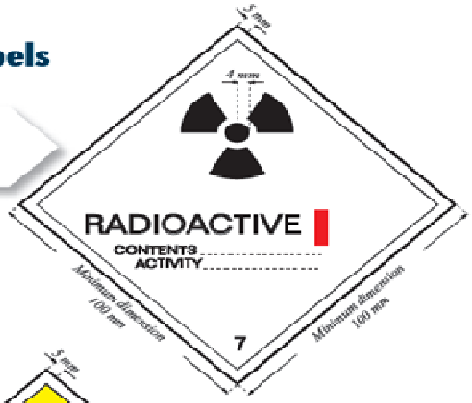


Figure 2
Category II - YELLOW label

Figure 3
Category III - YELLOW label

Vehicle placard

Figure 4
Placard.

Minimum dimensions shall be as shown, except when the design of the vehicle or the load does not allow this, in which case the placard must be as large as practicable so that the nature of the load can be readily identified from a distance of 25 metres in daylight. When different dimensions are used the relative proportions must be maintained. The number '7' shall not be less than 25 mm high. The use of the word "RADIOACTIVE" in the bottom half is optional to allow the alternative use of this placard to display the appropriate United Nations number for the consignment.

Situations Vacant

STEVENSON

LAB TECHNICIANS (fixed term x 2)

Masonry, Paving, Aggregates, Concrete, Soils/Earthworks Testing.

Our IANZ accredited laboratory based in Drury is seeking applicants for up to two fixed term positions as Lab Technicians. The roles will see you undertaking quality control testing of civil engineering materials as part of a significant project the Company has taken on. It is anticipated that the positions will be needed until the end of June 2010

Ideally you will:

- Have experience working with quarries, earthworks roading or cement products
- Be physically fit & mobile, as the job involves some heavy lifting
- Have good mathematical, oral and written communication skills
- Have experience with computers, specifically with using Word and Excel
- Have the ability to work in a team, and on your own
- Enjoy the challenge of meeting deadlines even if it means working additional hours

Candidates that have the appropriate experience in a civil engineering laboratory or qualification such as a Diploma in Engineering will be given preference. It is essential that you are legally able to work in New Zealand.

For the right person, we offer an interesting and varied work environment coupled with an attractive remuneration package. If this sounds like you, then please forward your CV to the General Manager, at the following address, quoting Job Ref LB194. Please note that a pre employment medical examination including a test for illegal drugs will be required.

Stevenson Laboratory Limited
Quarry Road
RD2
Drury 2578
Auckland, New Zealand
FAX: 09 984 8599
EMAIL: jse@stevensons.co.nz

STEVENSON

SENIOR LAB TECHNICIAN

Aggregate, Earthworks & Concrete Testing.

Our IANZ accredited laboratory based in Drury, is seeking applicants to undertake a Senior Technician role responsible for the testing and sampling of Aggregates. We are looking for someone who can supervise & coach staff and who has knowledge of civil engineering construction materials or Aggregate testing.

Ideally you will:

- Have completed a Civil Engineering or Science based qualification;
- Have held an IANZ Signatory in a Civil Engineering laboratory
- Have 3yrs minimum experience in a testing laboratory.
- Have knowledge of Construction materials and Concrete testing.
- Have good mathematical, oral and written communication skills;
- Have experience with computers, specifically Word and Excel;
- Have experience with supervising & coaching staff.
- Be physically fit & mobile, as the job involves some heavy lifting;
- Enjoy the challenge of meeting deadlines even if it means working additional hours.
- Be legally able to work in New Zealand.

We offer an interesting and varied work environment coupled with an attractive remuneration. If this sounds like you, then please forward your CV to Jayden Ellis, at the following address, quoting Job Ref SenTech. Please note that a pre employment medical examination including a test for illegal drugs will be required.

Stevenson Laboratory Limited
Quarry Road
RD2
Drury 2578
Auckland, New Zealand
FAX: 09 984 8599
EMAIL: jse@stevensons.co.nz

GEOTECHNICS

Are you interested in Construction Materials Testing in Melbourne/Victoria – Australia?

Our sister company Chadwick T&T has won several large projects and is looking for entry level, intermediate and senior technicians. If interested please send your CV in confidence to Vic O'Connor by either email voconnor@geotechnics.co.nz or mobile 021 313 659.

Independent Testing Services

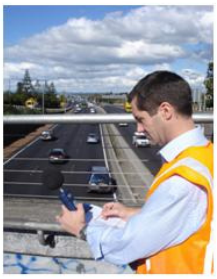
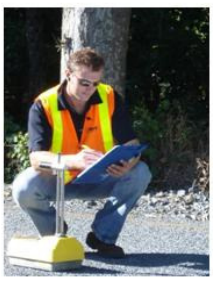
THE AUCKLAND LABORATORY

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**.

The laboratory is **IANZ accredited to NZS/ISO/IEC 17025** for mechanical testing under the areas: 4.01 Aggregate, 4.02 Bituminous Materials, 4.08 Soils, 4.15 Operations by Seconded Personnel and 4.20 Pavement Testing; the scope covers a wide range of national and international test methods. The separate specialist laboratory in Tauranga offers a comprehensive suite of performance assessment and test methods for emulsions and binders.

We are available for **Research and Development** work for both design of and assistance with projects for clients. We have the expertise to arrange and provide advice on a wide range of materials testing and assessment requirements, not covered on our standard scope, either in house or through collaboration with other test facilities, these could be: accredited / non accredited testing or **bespoke options** designed specifically for the client. We are happy to discuss individual requirements.



For more information or to arrange a visit, please contact;
Frank Hu & Ewan Cameron (Laboratory) and or Phil Archer (Technical Services).

Phone: Office +64 (0) 9 580-2494

Mobile: Ewan +64 (0) 276 837 681
Frank +64 (0) 272 427 240
Phil +64 (0) 272 434 813

Email: Aucklandlaboratory@downerediworks.co.nz

new zealand accredited laboratory

Proudly Supporting

CETANZ
Civil Engineering Testing Association of New Zealand

Geotechnics

Field testing equipment

We can supply you with all your field equipment requirements from Nuclear Density Meters to Scala Penetrometers. For sale and hire **call our friendly team on 09 356 3510.** If we don't have it we will tell you who does.

Heavy Duty Scala Penetrometer

- Available in Standard or Heavy Duty models
- Heavy Duty scala has components made from higher tensile material. Available in Heavy Duty upper assembly only or Heavy Duty to 1 m
- Suitable for investigations up to 5 m (material dependant)

Auger

- T-handle, extensions and Auger head in a canvas carry bag
- Standard auger head is 50 mm Ø
- 70 mm and 100mm heads also available

Geotechnics Impact Tester

- Meets internationally recognised ASTM and AS standards
- Extremely useful tool which can be used on wide range of construction materials
- Simple correlation from the impact value to an inferred CBR

Shear Vane - Geovane

- Determines strength of cohesive soils
- Reading in kPa and Nm
- Measures up to 240 kPa
- 19 mm or 33 mm vane blade for different strength materials
- Widely accepted engineering tool

Nuclear Density Meter

- Quickly and accurately measures density and moisture content of soils and aggregates
- Can be used for asphalt thin lift measurements
- Plateau tests to determine ultimate number of roller passes
- Automatically calculates moisture, air voids and % compaction
- Simple to use
- Full assistance on any use, safety or licensing requirements

GEOTECHNICS

Auckland p. +64 9 356 3510 | **Tauranga** p. +64 7 571 0280 | **Wellington** p. +64 4 381 8584

enquiries@geotechnics.co.nz | www.geotechnics.co.nz

The Measurement & Calibration Centre

Auckland p. +64 9 362 1720

www.themcc.co.nz

SALES
TESTING
TRAINING
CALIBRATION

Standard Alert!

Overseas Standards of Interest

River water quality – guidance Standard

A European Standard, *Water quality. Guidance Standard on determining the degree of modification of river hydromorphology* BS EN 15843:2010, enables consistent comparisons of hydromorphology between rivers within a country.
BS EN 15843:2010:

- provides a method for broad-based characterisation across a wide spectrum of hydromorphological modification of river channels, banks, riparian zones, and floodplains
- aims to assess 'departure from naturalness' as a result of human pressures on river hydromorphology
- suggests sources of information to help characterise the modification of hydromorphological features.

The Standard does not replace methods that have been developed for local assessment and reporting.

ISO/IEC Standard to keep laboratory testers on their toes

A new ISO/IEC Standard establishes internationally harmonised requirements to verify the competence of organisations that carry out proficiency testing of laboratories. *Conformity assessment – General requirements for proficiency testing* ISO/IEC 17043:2010, specifies general requirements for the competence of providers of proficiency testing schemes and for the development and operation of proficiency testing schemes.
The need for confidence in the competence of laboratories is essential for laboratories themselves and their customers, and stakeholders such as regulators, laboratory accreditation bodies, and other organisations.

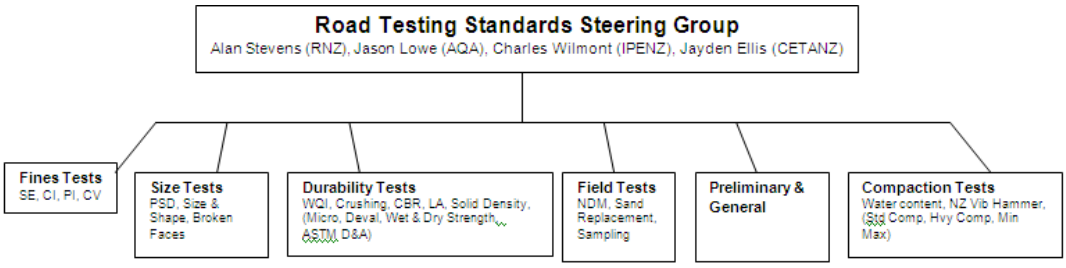
New Zealand or Joint NZ Standards

Acoustics – Road traffic noise – New and altered roads
Committee: P6806
Project Manager: Stuart Ng
Estimated Publication Date: April 2010
Comments: The ballot of the Standard has concluded and final concerns are being addressed. Editing and layout of the publication draft is underway and publication is expected in April 2010
DZ 4404 Land development and subdivision
Committee: P4404
Project Manager: Bruce Taylor
Estimated Publication Date: June 2010
Comments: The draft revised Standard was released for public comment between November 2009 and February 2010. The committee met on 3 and 4 March 2010 to consider each comment and make any necessary changes to the draft Standard. A final version of the revised NZS 4404 is being prepared for committee ballot in April 2010.

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.

Roading Testing Standards Steering Group (RTSSG)
CETANZ, RNZ, IPENZ and the AQA have formed a steering group called the Roading Testing Standards Steering Group (RTSSG), this group will initially look at forming smaller working groups to undertake the review and rewrite of the NZS 4407 set of aggregate set of standards. This is our opportunity to adopt overseas methods, change old poorly written or understood methods and improve standardisation of testing methods.
The thinking at this time is that with sufficient voluntary industry representation costs can be kept at a minimum, in other words we, "Industry" will do all the technical grunt work for Standards NZ leaving only the review and publishing to Standards NZ. At this stage it is envisaged that the working groups will be made up of industry experts with knowledge of the specific tests. Once revision is complete the rewritten standards will be submitted to Standards NZ. Standards NZ will then organise sponsorship and committees to finalise review and publication.

Draft Steering and Working Group Structure
Working groups will be arranged by family of tests methods as below.



Standard Alert! - Continued

Draft Working Group Goals

- Compare Standard against latest overseas versions, adopt if necessary.
- Update terminology and definitions.
- Update drawings, calibration requirements and apparatus specs to cover new available technology.
- Include new commentary – relevant informative text, describing use and limitations of the test??? (North and South Island Aggregate Inventory paper??)
- Clarify grey areas open to too much interpretation, add more procedure if needed or change troublesome areas that create confusion.
- Identify current industry practices and assess for best practise.
- Add in relevant r and R data or estimation of???

Over the next 6 months the RTSSG will be looking for Laboratory experts to volunteer their services for particular working groups. This is your chance to have your say and get standards changed. Please contact Jayden Ellis at CETANZ if you would like to be a part of this unique opportunity to have an effect on the industry we work in.

Thanks to Jayden Ellis for this article

Test Focus—Sand Equivalent

Development of the Test

[1]FN Hveem developed the Sand Equivalent test as a relatively quick test for use in the field in 1953. Hveem stated in his report to the Highway Research Boards, 32nd Annual Meeting in 1953, that "It is essential that the resident engineer or inspector in charge of construction should have some ready and convenient tests for detecting the presence of excessive amounts of adverse clay or fine materials in base or subbase material"

As Hveem saw it, the ability of soils to resist deformation depended largely upon internal friction, and while wet clay had the ability to add cohesion, this did not compensate for the loss due to reduction in friction, Hence the importance of a quick test to help the field staff.

The need for an oven was obviated, as was the need for scales in the development of the sand equivalent test. All measures are taken by observation of a measuring cylinder. The behaviour of the clay fraction was sped up by flocculating it, Economics were considered here, and the relatively low cost, stable and chemically neutral calcium chloride chosen as the flocculant. Glycerine was added to help stability, and formaldehyde added to prevent the growth of mould in the calcium chloride glycerine.

What does it do?

Its interesting to note ….**ASTM D7419-02 says** "The 'sand equivalent' expresses the concept that **most** …. fine aggregates are mixtures of desirable coarse particles, sand, and generally undesirable clay or plastic fines and dust." The sand equivalent is the ratio of the height of the sand column to the height of the sand plus dispersed clay material expressed as a percentage. Neither the density of the suspended material nor the composition of the material in the suspension is known. Thus the test provides no information about percentage of the clay size fraction or the presence or proportion of clay minerals in it.

What do the experts say?

Also a recent paper [2]from Professor Black of Auckland University Geological department says" There are **several problems with this test**. First, the height of the sand column will be related to the shape of the "sand" particles since shape to a large extent determines sediment packing and thus the volume (height) of the accumulated "sand". Second, neither the density of the suspended material nor the composition of the material in the suspension known. Thus the test provides no information about percentage of the clay size fraction or the presence or proportion of clay minerals in it.

The settling velocity of sediment in a static environment (like that of the test cylinder) is simplistically related to the density, size and shape of the sediment particles. Clay minerals, which have a platy shape and a very small grain size will settle very slowly in spite of their relatively high density (comparable with that of rock flour composed of quartz and feldspar at c.2.6) and need to be flocculated to increase their settling velocity.

However other minerals which are relatively common in some types of aggregate have very low densities (in the 2.2 range) and also very small grain size – these are zeolites (in altered volcanic rocks and some types of greywacke) and the two silica-minerals tridymite and cristobalite (common in silica-rich volcanics which are/were very glassy). These minerals can not be flocculated and rock flour containing them may stay in suspension for long periods and will therefore be included in the "clay column" thus lowering the sand equivalent value"

From the editor…

We're always on the lookout for something interesting for this part of the newsletter. If you have any relevant articles that relate to testing then fire 'em through to…

Test Focus—Sand Equivalent—Continued

How is it used today?

Today the Sand Equivalent test is specified as a production property type test along side of Grading, Broken Faces and the sometime alternatives to Sand Equivalent, Clay Index and Plasticity Index. Many contracts specify this as a "Must Comply", some more sensibly take a more logical approach where sets of data are assessed in conjunction with a suite of fines tests, local knowledge and service history.

What do my customers need to know?

Anecdotally Uncertainties have been measured as anywhere between 5 and 10. This in its self indicates a relatively high uncertainty, most likely due to some difference in method interpretation and the dependence on technician technique. The industry has over time become reliant on this test as more than just a "possible Indicator" and now more as gospel …….
Work is underway to review the NZ 4407 set of standards, Sand Equivalent was one of the top 20 standards voted as needing review by CETANZ members.

Papers like that of Professor Blacks, remind us that we need to remember the initial intentions of some of the tests we use every day ….. we should know where they came from and why they were developed. The Sand Equivalent is a good example of one of those tests that was developed in another country with substantially different geology and age of formation.

What should testing Laboratories be aware of?

Recently it has become evident that laboratories carrying out this test are interpreting the standard differently from one another. In essence some Laboratories are washing, some are brushing …. Customers are unaware there is a difference in preparation methods and further more would not know of likely differences in the end result caused by the two different interpretations.

CETANZ would draw your attention to the 4407 Test Standard as it stands today ….

Take particular note of the following clause: **3.6.7.2 Preparation method**

"Air dry the material retained on the 4.75mm and all protecting sieves using a low speed fan or by other suitable means that ensures evaporation at less than 30°C. Gently rub and brush the large particles clean of fine material, taking care that particle breakdown does not occur and that all brushings passing the 4.75mm sieve are collected and added to the material already passing the sieve. ***If the fine material cannot be removed by rubbing and brushing without particle breakdown, then wash the particles clean with a minimum amount of distilled water…..***

The CETANZ technical group have discussed this clause and agree that it is ambiguous and requires further clarification. **Does the clause say that washing is the best approach … or that you should ONLY use water if particle breakdown is evident???????**

We believe that each Laboratory should be taking steps to ensure they do the following:
1. Report how the test sample was Prepared …i.e. *Air Dried, and Brushed … or Air Dried, Brushed and Washed.*
2. Understand the difference obtained between using wash water and not.
3. Ensuring they are Air dying and brushing, and only using water if particle breakdown is evident.

CETANZ will endeavour to clarify these issues and others like it during the planned review of NZS 4407 with RNZ, IPENZ and the AQA.

Prepared by Jayden Ellis.

Reference:
Information from this article was gathered from two main sources.

Quality Assurance of Basecourse Materials (Stage 1) Dr D. Hutchinson – Works Development and Services Corporation (NZ) Ltd, Mr L Saunders – Transit New Zealand Authority
Geologic Inventory Of North Island Aggregate Resources: Influences On Engineering Materials Properties. Prof. P. Black University of Auckland

A tribute to John Evans

CETANZ

Civil Engineering Testing Association of New Zealand

John was attending the CELC 2006 conference in Auckland when I approached him to see if he would be interested in helping to set up an organisation to serve the industry that John has worked in for his whole career. John was keen to share his experience and knowledge for this development with the support of Opus, his employers. John joined the inaugural committee to create CETANZ, Civil Engineering Testing Association of New Zealand.

John was a keen participant in the technical side of our organisation, providing input to the Technical Issues Working Group. His immense experience and willingness to share both the successes and failures of our industry was a key part to the development of CETANZ. He was willing to help others to develop using his experience as a guide.

In more recent times, John has played a key part in developing a qualification for our industry. John provided technical advice on the Industry Advisory Group and we will see the fruits of his labour later this year with a new qualification for technicians in our industry. John was keen to ensure that the younger members of CETANZ had some way of quantifying their efforts with a recognised qualification.

John will be, and already has been missed for his participation in our industry organisation. There are very few people left in our industry with the skills, experience and willingness to get involved that John provided to CETANZ and our industry.

With deepest regrets

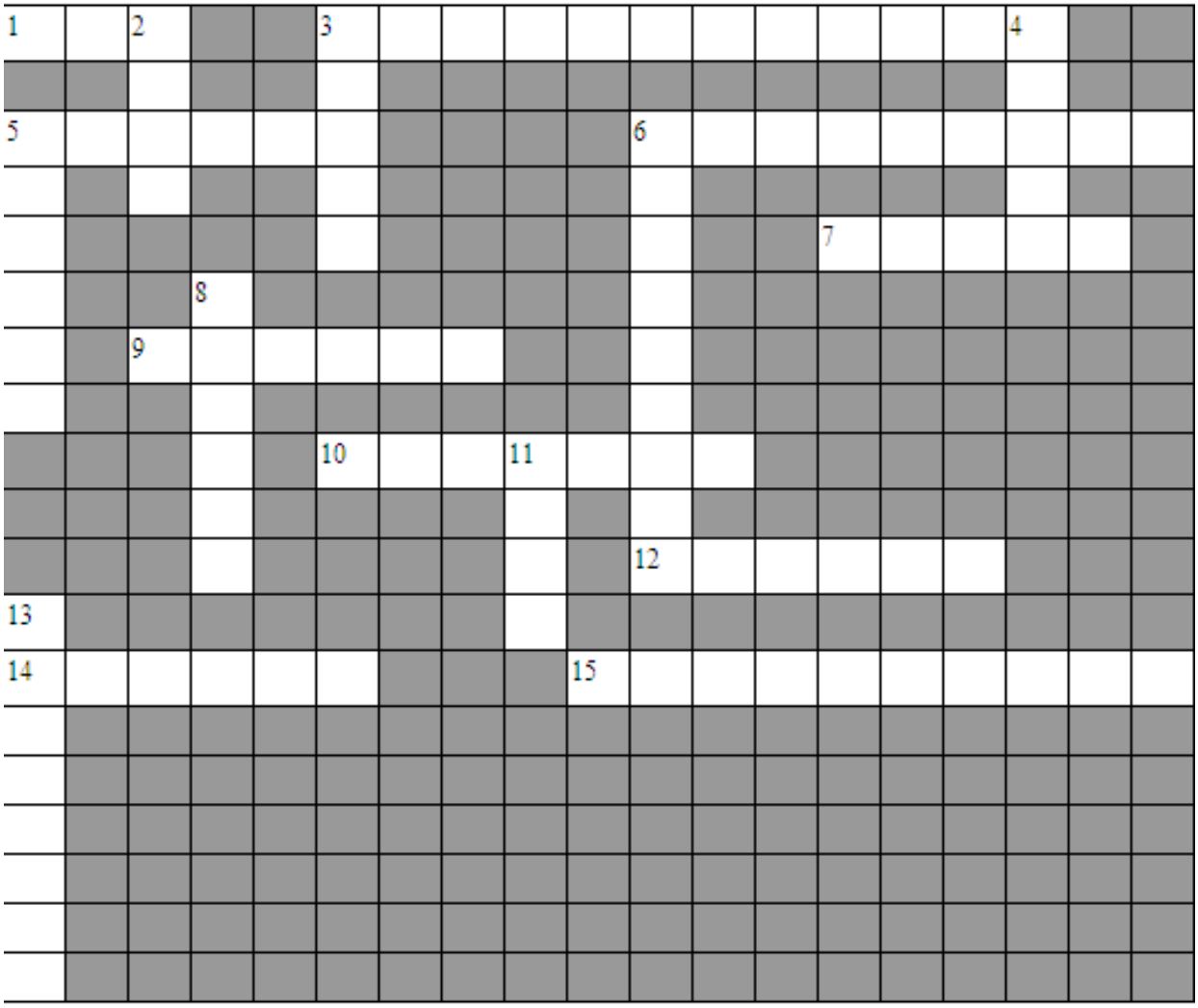
Paul Burton
Chair of CETANZ

4 Ridge Road
[illegible]
26 March 2010

To Paul Burton
Cetanz.

Dear Paul,
I write on behalf of the Evans family to thank you and Cetanz for your support & sympathy on Johnnie's passing.
Johnnie spoke with me in January and expressed profound regret that he might not live to participate in training of new industry technicians.
Thank you Howard Evans & family.

Crossword corner.... Created by Stuart Moulding



ACROSS

1. Will the All Blacks win the 2011 RWC?
3. A thunderstorm
5. Glassware used for chemistry, also a muppet
6. A clay present in soils derived from tephra
7. A Mustelid pest
9. The worlds rarest parrot
10. A huge chunk of ice that creates valleys
12. Planted on the shortest day and harvested on the longest
14. NZ's biggest fault
15. Kiwi who smashed atoms

DOWN

2. Saponification of oil yeilds...
3. A unit of radioactivity
4. Penetrometer for field testing
5. The rock type that Rangitoto is made from that is also found in Hawaii
6. A range of tests used to classify cohesive soils
8. The father of evolution, also a place in Australia
11. A soil fraction < 2 microns
13. The Maori name for Flax

Don't have a cow man—know your ism's

Socialism – You have 2 cows, you give one to your neighbor

Communism – You have 2 cows, the state takes both and gives you some milk

Fascism – You have 2 cows, the state takes both and sells you some milk

Nazism - You have 2 cows, the state takes both and shoots you

Bureaucratism - You have 2 cows, the state takes both, shoots one, milks the other, and then throws the milk away

Surrealism - You have 2 giraffes, the government requires you take harmonica lessons

Enron Venture Capitalism - You have 2 cows. You sell 3 of them to your publicly listed company using letters of credit opened by your brother-in-law at the bank, then execute a debt/equity swap with an associated general offer so that you get all four cows back, with a tax exemption for five cows. The milk rights of the six cows are transferred via an intermediary to a Cayman Island Company secretly owned by the majority shareholder who sells the rights to all seven cows back you your listed company. The annual report says the company owns eight cows with an option to buy one more. You sell one cow to buy a new president of the United States, leaving you with nine cows. No balance sheet is provided with the release. The public then buys your bull

A French corporation - You have 2 cows. You go on strike, organize a riot and block the roads because you want three cows

An American corporation - You have 2 cows. You sell one and force the other to produce the milk of four cows. Later, you hire a consultant to analyse why the cow dropped dead

A Japanese corporation - You have 2 cows. You redesign them so they are 1/10th the original size but produce twenty times more milk. You then create a clever cow cartoon image called 'Cowkimon' and market it worldwide

A German corporation - You have 2 cows. You re-engineer them so they live for 100 years, eats once a month and milk themselves

An Italian corporation - You have 2 cows, but you don't know where they are. You decide to have lunch

A Russian corporation - You have 2 cows. You count them and learn you have five cows. You count them again and learn you have 42 cows. You re-count them to find you only have 2 cows. You stop counting cows and open another bottle of vodka

A Swiss Corporation - You have 5000 cows but none of them belong to you. You charge the owners for storing them. You then loose the Americas Cup after making a dick of yourself in the International Courts

A Chinese corporation - You have 2 cows. You have 300 people milking them. You claim that you have full employment and high bovine productivity. You arrest the newsman who reported the real situation

An Indian corporation - You have 2 cows, you worship them

A British corporation - You have 2 cows. Both of them are mad

An Australian corporation - You have 2 cows. Business seems pretty good. You close the office and go for a few beers to celebrate

A New Zealand corporation - You have 2 cows. The one on the left looks very attractive