



News

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University of Canterbury

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Message from the Head

Welcome to another edition of CE News, edited by Ian Mason, Jason Le Masurier, and produced by Melody Callahan.

This edition comes at a time of impending change within the University. The Department of Civil Engineering will join six other departments in the new College of Engineering, to be headed by a Pro Vice-Chancellor (Engineering) in a new management structure.

The seven departments in the new College are

- Civil Engineering
- Chemical and Process Engineering
- Computer Science and Software Engineering
- Electrical and Computer Engineering
- Mathematics and Statistics
- Mechanical Engineering
- The School of Forestry

The School of Engineering will retain an identity, consisting of the four engineering departments, and there will continue to be an academic Dean of Engineering, now also responsible for Forestry degrees.

There will be no changes to the degree offerings, and many students may not see much effect of the new structure. However it will be a big change for the

departmental administrators and the Head of Department who will report to the new Pro Vice-Chancellor (Engineering) rather than to the Vice-Chancellor.

There has been a major reduction in administrative staff in the department, with some of their responsibilities moving to the College Office. We say farewell to Pat Roberts and Denise Forbes, both of whom have served the Department in an extremely able way for the past sixteen years. They will be greatly missed and we wish them all the best for the future. Other staff changes in the past year include the arrival of Dr Erica Dalziell and Dr Rajesh Dhakal, and the resignation of Dr Bente Clausen who will return to Denmark. These people are all featured elsewhere in CE News.

Within the Department we are moving to a new curriculum, with changes to the 1st Pro year in 2004, followed by the other professional years in 2005 and 2006. There are no major changes in the con-

tent, but significant changes in the size and shape of the courses and the mode of delivery. One of the main objectives of the review is to make the discipline of civil engineering more coherent to the students, and to better equip them with design, communication and self-learning skills for their future careers as professional engineers.

The Department welcomes feedback on anything in CE News, anything in the Department or any matters affecting the education of young engineers. We look forward to hearing from you.

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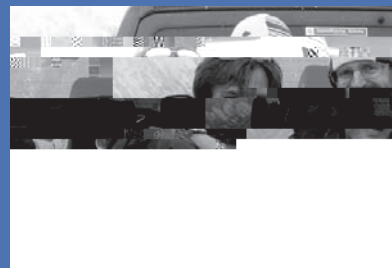
Did you say Department meeting?



Departmental ski trip - I mean meeting - attendees caught during a brief adjournment.

An Extraordinary General Meeting of Department staff was called by Stefano Pampanin for one Sunday in early September to help promote collegial bonding (and to carve up the slopes of Porter Heights). First item on the agenda was Transportation, followed by Unsealed Pavement Testing. Economics had a short airing and then it was down to the main business of the day - evaluating the frictional properties of Bluff Face. Whilst a quorum was not achieved, those that did attend were rewarded not only with a good sun-tan, but with the chance to witness some very elegant moves on

the part of Dr Pampanin and not so elegant tumbles by Dr Dantas. The allotted time was insufficient to make a full evaluation so the meeting was adjourned until the middle of 2004.



It appears that Stefano and Andy have come to some binding agreement.

Canterbury vs. Auckland in MERIT Competition

Following last year's successful initiation, the construction management 3rd Professional students again took part in the MERIT Competition. In 2003 a new dimension was added when the University of Auckland decided to join in. Fletcher Construction kindly agreed to extend their sponsorship to \$10,000, covering the entry fees for all teams from both universities, with some prize money as well. The Fletcher Construction 'MERIT Shield' was established, to be awarded annually to the winning university. The competition was fought hard over eight rounds with the final result being a first place for Deconstruction Ltd. from Canterbury, with Auckland taking the shield for their overall placings.

Organiser Jason Le Masurier explains "MERIT is a construction management computer simulation developed by the Institution of Civil Engineers (ICE) in the UK. It provides the essentials for construction professionals to augment their technical knowledge with the managerial skills required to run a modern construction company."



In teams, participants learn how to manage their own virtual construction company by making decisions that affect the various functions of the business, such as marketing, tendering, finance, personnel and project management. Operating as a board of directors, each team runs the company for 8 periods, competing in a simulated construction market, which is updated each period to reflect the changing industry conditions.

Out of the 165 teams that took part in the main 2003 UK competition, Deconstruction Ltd. were placed 12th – a very impressive result considering the UK teams mainly comprise graduate engineers from construction companies.

Teaching award is no surprise

Dr. Roger Nokes has once again been recognised for teaching excellence, receiving a University of Canterbury Teaching Award at the December 2003 graduation ceremony. The award was one of nine presented to staff in 2003. Dr. Nokes was voted best lecturer in the University of Canterbury Students Association poll in 2002.

"It is a good thing for us all to see who are our outstanding teachers and to congratulate them," said Dr John Freeman-Moir, Chairman of the Teaching and Learning Committee. "It is also important for students to know that we hold teaching excellence in the highest esteem. Students, after all, are crucial participants in the teaching and learning endeavour."

1st Professional Students Visit Local Industry

Small groups of 1st Professional students visited a number of local civil engineering organizations as part of a renewed initiative in 2003. This initiative provides students with increased exposure to the professional environment at an early stage in their undergraduate degree and fosters closer relationships between the two groups. The visits have additional benefits in terms of building student confidence and communication skills within a professional setting. There was a strong interest from students who were keen to know more about potential future work environments and there was a very positive response from local civil engineering organizations. The scheme was launched in pilot form last year, but its success has provided the motivation for establishing a more comprehensive program in 2004.



2003 1st Pro Committee, L to R: James Moeono, Aine Colson, Megan Fowler, James Ting, Richard Hine,

The industry visits were organized by the 1st Pro Committee, which consisted of nine students and one academic (Dr Mark Davidson, the 1st Pro Coordinator) and was chaired by the 1st Pro student representative. The committee met on a fortnightly basis and dealt with a large variety of issues during the year. One highlight was the social function, that followed on from the annual 1st Pro bridge testing competition.

Tsunami Research Fluid Mechanics Laboratory

An experimental research programme involving Langford Sue, an ME (Civil) student under the supervision of Dr Roger Nokes, and scientists at New Zealand's National Institute of Water and Atmospheric Research (NIWA) is currently underway in the University of Canterbury's Fluid Mechanics Laboratory. It is aimed at looking at the internal mechanisms of tsunamis and improving our understanding of how they are generated. Tsunamis are created when a disturbance displaces a large volume of water from its 'at rest' equilibrium position, such as from earthquakes and earthquake induced landslides. The project hopes to gain insights into these occurrences so that we are able to more accurately predict them, and give communities adequate warning of the hazard.

Being an island nation, New Zealand has a long coastline, and the majority of the country's population lives in close prox-

Environmental Engineering

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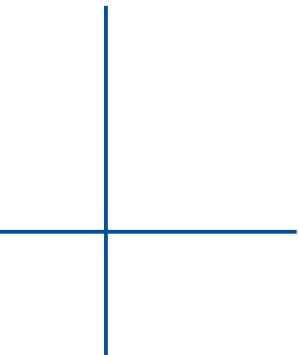
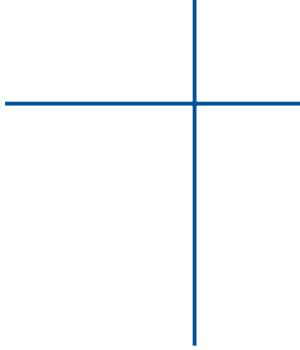
With the NZ waste strategy encouraging the removal of food residuals, and other organic materials, from landfill disposal, implementation of alternative handling and stabilization options for these is becoming on topic of great interest. A paper by Ian Mason and MarMn.43ab ind tpilkos fr, ss(thecurrlogissuestudent, n.” say Ian. He)T Mari.0006 Tworke25 Tpow

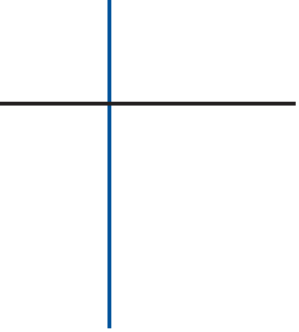
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Led by David Wareham, biological treatment research in the environmental engineering lab has, over the last year, shifted in focus towards investigating processes for the generation of volatile fatty acids (VFAs). German exchange student, Maria Piefel, and Kirsten Norquay, a 3rd Pro student, worked in this area in 2003. The intent is to now extend this research by looking at the use of naturally-produced VFAs in the biodegradation of compounds such as pesticides. The environmental engineering lab was recently successful in obtaining university and departmental funding for a new automated total organic carbon (TOC) machine.

UC Composting is a new web site on composting, with a focus on activities NZ and the South Pacific Islands. It mainly has been created by Ian Mason, Research Fellow in Environmental Engineering, with assistance from Melody Callahan. “Composting is now part of many solid waste management strategies worldwide and the website aims to meet the information and communication needs of compost operators and researchers in our region.” say Ian. He adds “Interestingly enough the boundaries of that region were greatly expanded shortly after the web site was launched, following a contact from a Chilean composting operator, and we now have photos of their site, with a great Andean backdrop, on the operations page”. The







After months of testing with artificial earthquakes on the Department of Civil Engineering's shaking table, the Canterbury University Seismograph Project (CUSP) strong-motion accelerograph located at Ilam recorded its first real earthquake at 6:22 am on Tuesday morning, September 30, 2003 (NZ Standard Time). This event was centered 40 km north-east of Christchurch. With a peak acceleration at Ilam of 1.5 percent of gravity, and an M4.9 rating, this earthquake

was not a world shaking one; but it did provide a good test of the sensitivity of the CUSP instrument and its ability to detect events just above the noise level.

The CUSP accelerograph has been developed by PhD candidate Hamish Avery and Technical Officer Peter Coursey, under the guidance of Dr John Berrill (Civil Engineering) and Mike Dewe (Electrical/IT). The project was motivated by the imminent (in a geological time frame) rupture of the Alpine Fault. The instrument is Internet based to provide easy maintenance and retrieval of data and uses cheap micro-machined accelerometers developed for triggering car airbags.

The Geomechanics Group plans to install a network of about 60 instruments across the central South Island, in collaboration with GeoNet, with three principal arrays, as follows:

- 1) A dense array of about 20 instruments near Cass.

Civil Engineers show soccer skills

During the university 2002/2003 summer soccer championship played on the Ilam fields, the Department of Civil Engineering team once again demonstrated its well-known abilities. The team, which comprised two academic staff and nine postgraduate students, achieved 3rd place in the one-day social soccer competition, which involved all the departments of the university.

‘The team played with outstanding determination all the matches, in the face of very strong opposition’, says Andre Dantas. He adds that they gradually established their playing system (all-at-the-same-time-together style), over the course of the competition, thereby managing to overcome the intense heat, a lack of fitness and minimal initial soccer skills! Andre especially acknowledges the decisive contribution of the women in the team.

2003 Civil Engineering soccer team. (L to R) Rear: Maria Piefel, Caroline Francois, Andre Dantas, Dean Saunders, Victor Wong, Eric Liew; Front: Heidi Lee, Iwan Sudarno, Dave Arnold, Stefano Pampanin, Ee Yii, Vincent Wong Reclining: Glenn Koorey

At the end of the competition, the team celebrated their achievement, capping the many joyful moments experienced together. ‘Next year, we expect a stronger team, which will continue to consolidate the emerging tradition that the Department’s students and academics definitely know how to play soccer’ says Andre.

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This year 90 students on the 2nd Professional Civil Engineering Management course had the opportunity to put their management skills into action. Dr Jason Le Masurier organised a 3-day camp at YMCA Wainui on Banks Peninsula, generously sponsored by Fulton Hogan, a major employer of our graduates. At the camp the 11 teams were presented with the challenge of designing and constructing rafts to transport sand within Akaroa harbour. The exercise incorporated many aspects of the syllabus, with teams required to submit for assessment a programme, cost estimate, risk assessment and raft design. Each team effectively operated as a design and

Industry Advisory Board

The Department is fortunate

Bente Clausen says thanks for seven years

After ten years in New Zealand and seven years as a hydrology lecturer in the Department, I have decided it is time to return to Denmark to share some time with my family and especially my parents, while I still have the chance. I am very grateful to the University of Canterbury and especially the Department of Civil Engineering for my time here. It has been an invaluable experience to be part of the New Zealand engineering and academic community and in particular the Hydrological Society, which is very strong compared to many other countries. I feel privileged to have been part of it - New Zealand is a great place to study hydrology.

When I think of my time in the Department, some memories stand out. From the 'old' days (in the last century) when David Wilkinson and Bob Spigel were around and I was 'new', I remember the challenge of teaching in a (for me) new style and culture. One day Bob Spigel was going to try out one of my ideas in an Engineering Mechanics lecture, to get students to the board to work through small examples. I sat in the lecture, and soon after the start the young lad next to me was half asleep, while others were chatting. After half an hour, Bob had a problem outlined and asked for a volunteer to draw the forces on the board, shaking a little brown bag from a comic shop very temptingly. The room fell very silent. The guy next to me looked up, confused, and asked his friend what was happening. After a long pause, a brave student from the back came down, very timidly, and drew the forces correctly. Out of the bag came a set of chattering teeth, and the theatre broke into laughter. Bob

drew another diagram, and this time another student appeared immediately at the front. The guy next to me was now wide awake, concentrating very hard. 'I think I could almost do it', he muttered. 'If only I had been listening', he mumbled wistfully. When we left, the theatre was humming and there were probably ten people trying to draw forces on the board – what a great lecture!

In the new century I settled more in my position and started to enjoy the student feedback. I particularly relished the fork and the horns that were drawn on my picture on one teaching survey after a concentrated effort on getting students to turn up on time.

From a contact I made in Nepal in 1999, and with the Dean's support, a new tradition came to life – two New Zealand

Transportation Engineering

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“The Transportation Engineering programme, which commenced in February 2002 with financial assistance from Transfund NZ, the Land Transport Safety Authority and Road Safety Trust, is proving very successful” says Associate Professor Alan Nicholson, who leads the programme. There has been substantial growth in the number of enrolments over the last year, with 44 enrolled as of October 2003. The table below gives details of the qualifications being sought, and the number of full-time (FT) and part-time (PT) students, with the numbers for 2002 shown in parentheses.

| <u>Degree</u> | <u>Total</u> | <u>FT</u> | <u>PT</u> |
|---------------|--------------|-----------|-----------|
| PhD | 4(4) | 3(4) | 1(0) |
| ME | 20(8) | 10(2) | 10(6) |
| PGDipl. | 14(5) | 5(1) | 9(4) |
| COP | 6(1) | 0 | 6(1) |
| Total | 44(18) | 18(7) | 26(11) |

In 2003, Dr Andre Dantas, originally appointed to the Transfund NZ Fellowship for five years, was appointed to a continuing position by the University. The Department expects to appoint a replacement Transfund NZ Fellow for a four-year term, from the start of the 2004 teaching year. This brings the number of committed Transportation Engineering staff to four.

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- Traffic Management
- Accident Reduction & Prevention
- Advanced Pavement Design
- Pavement Management Systems
- Transport Planning & Modelling
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