



# Geotechnical Testing Laboratory Report

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2012 was a record-breaking year that brought several fundamental changes to the Geotechnical Testing Laboratory (or 'Soils Lab', as we informally refer to it). Before we briefly outline the new Soils Lab organisation, last year's figures may provide perspective on where the lab currently stands. Over 300 undergraduate students, 55 academics and 10 soils lab team members share the soils lab. Our lab has issued 37 industry reports. With over 40 pieces of major equipment, last year's turnover was AU\$3 Million.

As the lab's plans for the future were carefully reassessed in 2012, a consistent effort has been made to assure our quantity levels are matched by the highest level of quality. We are working to operate under a more efficient structure and continuously investing in our most important device: people.

As such, Soils Lab activities have been reorganised into three major groups: education, academic studies and applied industry research. Typical lab workloads have now been streamlined and are being coordinated by specific team members: Nathalie Boukpeti has stepped up as the new acting lab manager responsible for all applied industry research and services. Cristina Vulpe, the latest academic to join the Soils Lab team, has taken over technical report coordination. Senior technician Claire Bearman coordinates all of the educational activities. Our other two senior technicians, Usha Mani and Behnaz Abdollahzadeh, have continued to play a fundamental role in the lab by providing invaluable guidance to fellow team members and lab users. Likewise, Ying Guo and Alex Duff provide critical support to all lab operations. We've felt the absence of Sharmin Farhana and Binaya Bhattarai who are away on maternity and one-year leaves, respectively. We are very fortunate to welcome Satoko Ishigami and Masoomah Lorestani to the team. Both are already contributing to the proper operation, maintenance and calibration of critical lab equipment. Education, training and continuous development of our team members have been made another major lab priority as we attempt to meet our goal of providing unparalleled technical support to all of our lab users and clients.

Substantial progress has also been made to modernise the lab on the equipment front. Our latest additions include a state-of-the-art 10-Hz-Dynamic Triaxial Apparatus with Bender Elements (Figure 5), and an ultramodern Resonant Column Apparatus (Figure 6) with capability to assess stiffness degradation and damping characteristics of geomaterials under confining stresses up to 3 MPa. Major progress has also been made developing 2 new Simple Shear Apparatus (in final stage of completion) as we seek additional lab space to house in the near future

a new Hollow Cylinder Apparatus, Triaxial Apparatus and large-scale Constant Normal Stiffness (CNS) Direct Shear Apparatus.



Figure 5: New 10-Hz Dynamic Triaxial apparatus being operated by Senior Soil Technician Usha Mani

Applied industry research was conducted in 2012 for direct clients: Advanced Geomechanics, ARUP, BP, Coffey, Engineering Geology, Fugro, Knight Piésold, and WorleyParsons, who commissioned work on behalf of ultimate clients: BHP Billiton, Chevron, Extract Resources, Exxon Mobil, Inpex, Shell, Total and Woodside Energy.



Figure 6: Senior Soil Technician Behnaz Abdollahzadeh and CNPq Fellow Marina Bortolotto setting up the new state-of-the-art 3-MPa Resonant Column apparatus at COFS

As we are grateful to all of our academic users and industry clients, we take this opportunity to introduce the new lab slogan: “UWA Soils Lab – Quality Research, Service and Education.” This new motto honours the lab’s rich past and a strong commitment to the future. We will continue to support the most significant engineering projects in Australia and around the world, build on ground-breaking fundamental knowledge in geomaterials science and ensure the rigorous education of a future generation of geotechnical engineers.



Figure 7: Soils lab team

