

RESEARCH DIRECTIONS

On a Sound Footing

Associate Professor Chin Jian Leo and Dr Jia Zou from the Civionics Research Centre in collaboration with Prof. Buddhima Indraratna from the University of Wollongong, Dr Henry Wong from Ecole Nationale des Travaux Publics de l'Etat and Prof. Dennes Bergado from the Asian Institute of Technology, in partnership with Mr Robert Golaszewski of Penrith Lakes Development and Mr Tristan McWilliam of Coffey Geotechnics are investigating a new method for assessing the quality of compacted soil fills. This research is funded by Penrith Lakes Development Corporation, Coffey Geotechnics and the Australian Research Council through its Linkage Project grants scheme.

'The viability of a civil engineering project can be seriously affected by the quality and moisture content of the underlying soil and the type of infrastructure it will support', explains Associate Professor Leo. 'If soil quality is poor, ground improvement works are commonly required to overcome poor underlying soils before building and construction can take place. Currently, moisture content and soil compaction measurements are costly and time consuming. This project aims to explore a new technique for soil quality measurement that will rely on how sound travels through different soils. This is expected to introduce a more cost-effective, fast and minimally destructive way to test soils before construction.'

The research team will study two compacted-fill construction sites with different ground conditions in the Penrith Lakes area to develop and test the new ambient noise technique. Results from the tests will be compared to those obtained using existing testing techniques. This will allow the team to determine the reliability and accuracy of the ambient noise technique. The research will also train two



postgraduate students as a contribution to maintaining Australia in the forefront of this new technology.

The results of this study will lower costs and improve risk assessment when investigating the soil quality of large industrial sites, leading to economic benefits for the Australian construction and mining industry and safer urban infrastructure for the Australian public.

Project Title: Geotechnical characterisation of compacted ground based on passive ambient noise techniques

Funding has been set at: \$156,840 over 3 years

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