

**AUSTRALIAN  
GEOMECHANICS  
SOCIETY**  
South Australian Chapter



***November Meeting***

**50<sup>th</sup> Rankine Lecture**

**Stiffness at Small Strain – Research and Practice**

**PROFESSOR CHRIS CLAYTON**

**SYNOPSIS**

The rapid development of computing power and of numerical modeling software over the past forty years has made sophisticated analysis of geotechnical problems accessible to most practicing engineers. Typically computer packages now offer a wide range of constitutive models, which the design engineer needs to choose between, and then obtain parameters for. For those structures designed to be far from failure, for example supporting urban excavations, strains in the ground are small. A sound knowledge of stiffness parameters at small strain is essential if realistic predictions of the ground movements that may affect adjacent buildings or underlying infrastructure are to be made.

This lecture reviews what is now known about the complex stiffness behaviour of soil and weak rocks in the context of elasticity, arguably the simplest of constitutive behaviour. Drawing on experience gained through field observation and numerical modeling, the case is made for the routine use of non-linear anisotropic stiffness. The determination of the parameters required is then explored, and the usefulness of advanced triaxial testing, and dynamic laboratory and field testing examined.

**ABOUT THE SPEAKER**

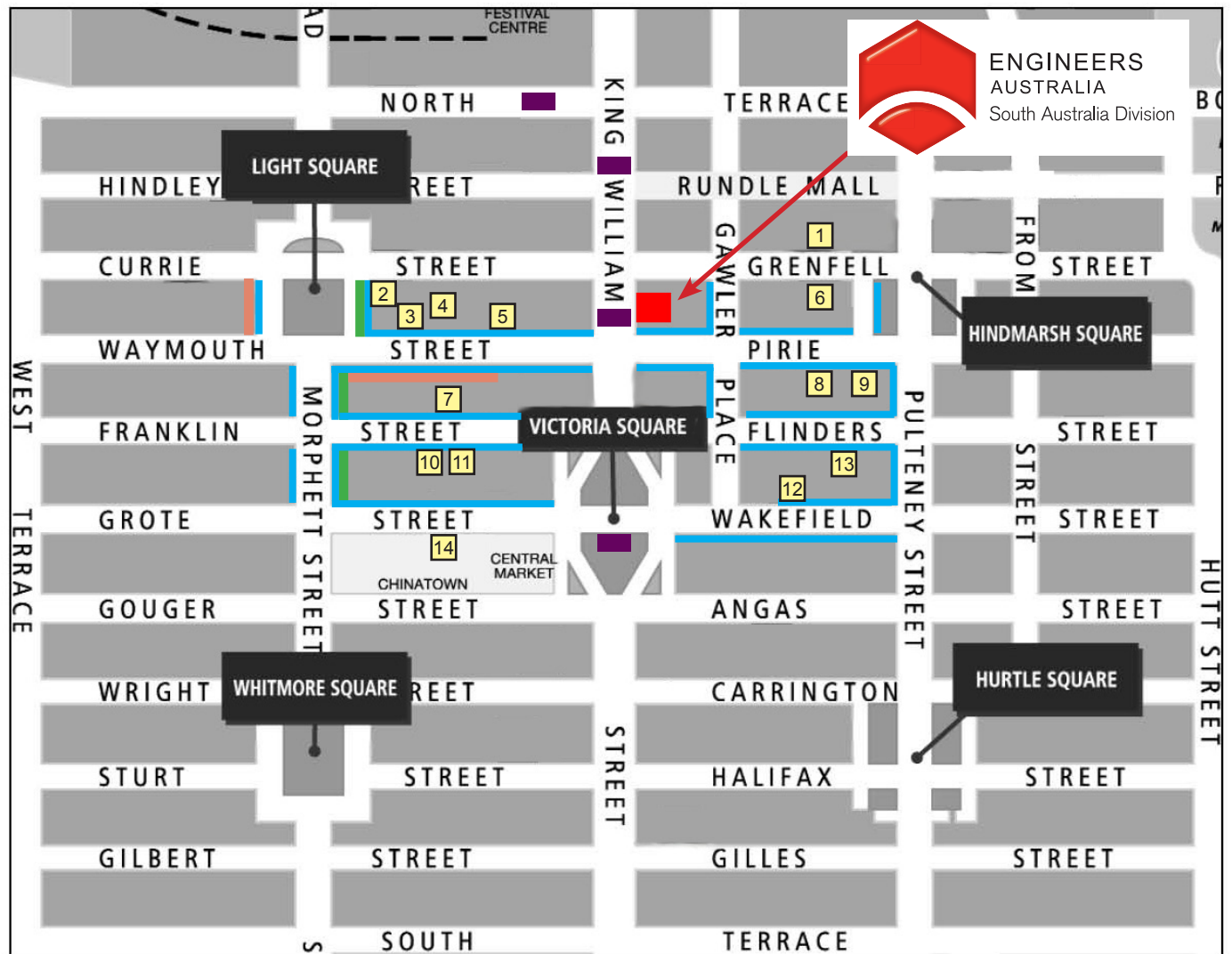
Chris Clayton is Professor of Infrastructure Engineering and Head of the School of Civil Engineering and the Environment at the University of Southampton. He is currently the Editor of *Géotechnique*, was the founding Editor of *Geotechnical Engineering*, part of the Proceedings of the Institution of Civil Engineers, and has been the Scientific Editor of the Quarterly Journal of Engineering Geology and Hydrogeology. He served as the Chairman of the British Geotechnical Society (now the BGA) between 1990 and 1993. He is the author of about 200 papers and books, including textbooks on “Site Investigation” and on “Earth pressures and earth-retaining structures”, and has contributed to five CIRIA reports, on the procurement of ground investigations, the Standard Penetration Test, the Chalk, and CFA Piling in Chalk.

**DATE: Thursday 4 November 2010**

**TIME: 6:00 pm to 7:30 pm (light refreshments from 5:30 pm)**

**VENUE: Engineers Australia SA Division, Level 11, 108 King William Street, Adelaide. SA. 5000 (see map attached)**

Please check the AGS web site at <http://www.australiangeomechanics.org/sa> prior to attending for any late changes, or contact AGS Chairman Dr Matthew Duthy on 08 8237 9777



**ENGINEERS AUSTRALIA**  
South Australia Division

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| <b>1. U-Park</b> ..... 08 8203 7203<br>- 90-100 Grenfell Street  | <b>10. Care Parks</b> ..... 08 8231 5994<br>- Franklin Street Car Park<br>81 Franklin Street      |
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| <b>9. EZIPARK PTY LTD</b> ..... 08 8223 4188<br>- Flinders Street Car Park<br>80 Flinders Street             |   |

### KEY

- ..... Engineers Australia South Australia Division Office
- ..... Car Parking Structure
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- ..... Ticket 2 Hour 8.00am-6.00pm Street Parking
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