



Chandrakant Desai Memorial Webinar Series*

Reflections on the Cavity Expansion Problem

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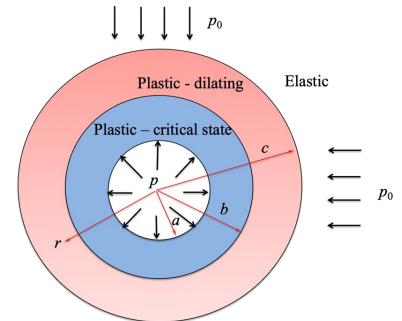
Monday, June 30 | 10:00—11:15 P.M. (U.S. Central Time)

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ABSTRACT

A selective review is provided of the methods and solutions used to predict the response of various geomaterials in cavity expansion problems, both cylindrical and spherical cavities. As many authors have recognized, the solutions to these problems have numerous applications in geotechnics, and the more significant of these have been addressed in this presentation. Some of the more important solutions already available in the literature are described and some novel results presented, illustrating the effects of a number of unique features of soil behaviour, such as softening, rate-dependency, density dependent response and dilation. Some of the solutions are available in closed form, while others have required the use of numerical methods such as the finite element method. It is contended that the relatively simple boundary value problem of cavity expansion, be it either a cylindrical or a spherical cavity, is capable of revealing important aspects of the mechanical behaviour captured in both simplified and complex soil constitutive models.



BIO

John Carter is a civil engineering graduate of the University of Sydney, Australia. He is an Emeritus Professor and former Pro Vice-Chancellor and Dean of Engineering at the University of Newcastle, in New South Wales. He is also a former director of the geotechnical consultancy, Advanced Geomechanics (now Fugro AG), registered in Perth, Western Australia. He is a Fellow of the Australian Academy of Science, the Australian Academy of Technology and Engineering, the Royal Society of NSW, Engineers Australia, and the Australian Institute of Building. In January 2006 he was appointed as a Member of the Order of Australia (AM) for his "contributions to civil engineering through research into soil and rock mechanics and as an adviser to industry". He is currently President of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), succeeding Professor Chandrakan Desai in that role in 2008.



*This webinar series is intended to retain the legacy of Prof. Chandrakant Desai for his original and seminar contributions to Geomechanics.