Editorial

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Ground Improvement was first published in 1997 as the journal of Technical Committee 17 (Ground Improvement) of the International Society for Soil Mechanics and Geotechnical Engineering. In 2008 the journal began to be published as part of the *Proceedings of the Institution of Civil Engineers* and at that time I was delighted to be invited to become chairman of the editorial advisory board and honorary editor. After 4 years in this post I am now standing down and am very pleased that the current deputy chairman of the editorial advisory board, Professor Anand Puppala, will be replacing me as chairman. My delight at being appointed chairman was not misplaced because I have enjoyed the role very much! This is not least because of my interactions with members of both the editorial board and staff at ICE Publishing, particularly Mrs Margaret Tomlinson who, as journals editorial co-ordinator for *Ground Improvement*, does much to ensure the success of this journal.

The role of honorary editor has been enjoyable also because I have had the opportunity to take a part in helping to establish the journal as an internationally recognised venue for publishing papers that have an appeal and relevance to a readership of not only geotechnical engineering academics and consultants but also ground improvement practitioners. This is because the journal seeks to publish papers that describe, across the broad range of ground improvement technologies, case studies and the latest developments in construction techniques as well as fundamental studies of processes and developments in analysis. In addition, although *Ground Improvement* is published as part of the *Proceedings of the Institution of Civil Engineers* – a UK-based organisation – each issue contains papers that are exceptionally international, both in their authorship and in the location of projects described, which together add great value for readers of the journal.

A theme that runs through much of this issue is numerical methods; with the studies in four of the five papers making use of such techniques to a lesser or greater extent. The key to successful numerical modelling is an appropriate constitutive relationship and in their paper Hosseininia and Farzaneh (2011) describe the development of a non-linear, multi-phase constitutive model to simulate the stress–strain behaviour of reinforced soil. Using an homogenisation approach the authors have developed a model that represents soil and strips of horizontal reinforcement as a single two-phase medium. By conducting analytical parametric studies, in which axisymmetric samples of reinforced soil with different soil stiffness and reinforcement characteristics are

subjected to a series of loading paths, the features of the proposed constitutive model are demonstrated.

In their paper, which reports on a case study of a bridge approach embankment constructed on a soft soil reinforced by stone columns, Mohamedzein and Al-Shibani (2011) use a finite-element analysis to predict settlements and assess the effectiveness of the improvement technique. The predicted results compare very well with those measured in the field. Numerical analyses are used also to assess the effectiveness of stone columns in deep deposits of compressible soil that are not end bearing on a less compressible underlying stratum.

This issue of *Ground Improvement* contains two papers related to the technique of soil nailing. In the first of these Sengupta and Giri (2011) present analytical methods for conducting stability analyses of soil-nailed slopes subject to seismic loading. The proposed techniques – which use a method of slices – are adapted from the kinematic limit approach of Juran *et al.* (1990) and are validated successfully using numerical analysis. The second paper related to soil nailing, Sivakumar Babu *et al.* (2011) considers the use of the technique for the rehabilitation of two ‘distressed’ reinforced earth retaining walls. The paper first describes the case study of the forensic investigation into why the walls suffered distress. This includes a description of the results of laboratory testing together with a back analysis of the causes of failure using both conventional and numerical analyses. The results of the numerical analyses are then extended to investigate the use of soil nails to rehabilitate the wall. The results of this analysis indicate that this technique would result in improvement.

The final paper in this issue also considers failures of improved ground. In this case Paige-Green (2011) discusses the durability of chemically stabilised pavements. Based on laboratory and field investigations conducted over a period of a quarter of a century, the author concludes that many failures of stabilised material are the result of a lack of understanding of fundamental processes related to material and stabilisation. However, problems with durability may be ameliorated through improved understanding and implementation of existing knowledge.

With papers reporting developments in fundamental understanding, analytical techniques and construction methodologies, I believe this issue of *Ground Improvement* reflects the qualities of the journal described at the beginning of this editorial. Also

included in this issue are case histories. Some of these consider failures in ground improvement techniques – as a result of insufficient information included in design or a lack of understanding of the processes involved in an improvement technique. Indeed, it is through being aware of problems as well as successes in ground improvement technologies that advances in understanding can be made most effectively. Providing a means for international dissemination of these advances in understanding, together with the latest relevant research findings, is the purpose of *Ground Improvement* and I look forward to the continued success of the journal in fulfilling this role in the future.

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