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Editorial

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Welcome to this August issue of *Ground Improvement,* which comprises a briefing note, six papers and a discussion note. The quality of the contributions is high; I hope that you will enjoy reading them. You are encouraged to submit items for discussion. Apart from the interesting technical content, it is encouraging to note the wide geographic spread of the contributing authors – UK, Iran, Iraq, India, USA, Canada, Ireland and Tunisia. Our geotechnical community is truly international and knows no boundaries. The results of laboratory and field tests are described with the ground stabilised with stone and tyre chip columns, grouting, geocell-reinforced beds and microbial-induced carbonate precipitation (MICP).

In the briefing note, Serridge (2015) provides a useful good practice guide to dry bottom-feed soft stone column construction in fine-grained soils in order to minimise disturbance effects and optimise performance. The author draws on field research observations undertaken in the last 10–15 years in soft sensitive clay soils. It is advocated that the vibroflot should not remain in the ground for longer than is necessary. Also that during stone column construction the vibroflot should only be permitted to penetrate the previously introduced charge of stone aggregate between one and two times. Serridge concludes by stressing the importance of proper supervision of construction of the columns and the experience of the rig operator complemented by in cab monitoring.

In the first full paper, (Esmaeili *et al.*, 2015) the applicability of grouting in loose alluvium formations found in Tehran, Iran, is considered through a series of laboratory tests on cylindrical specimens of different compactions. Parameters such as grouting pressure, and water cement ratio were considered and the compressive strengths of the specimens established. The authors consider that the results of the series of tests could be used to predict in situ grouting performance.

The second paper (Al Saoudi *et al.*, 2015) is from Iraq and outlines the problems of constructing new railway lines or upgrading existing ones situated on the country's soft saturated sedimentary deposits and considers improving the bearing capacity and stiffness of the soils with ballast and stone columns. A useful summary is given of previous research work around the world on ground improved by stone columns. The authors describe a series of laboratory tests that they performed on soil placed in steel containers. They conclude that bearing and settlement characteristics from the model tests are 'in harmony with several analytical approaches present in the literature'.

The disposal of used tyres is an international challenge. The third paper (Ayothiraman and Soumya, 2015) considers the replacement of aggregate in stone columns with tyre chips, resulting in a potentially environmentally sustainable foundation improvement technique. Laboratory tests were conducted in cylindrical tanks of kaolinite clay stiffened with a column of stone aggregate and mixture of tyre chips and stone aggregate. The conclusion was made that up to around 60% replacement of the aggregate with tyre chips would have the same load carrying capacity as 100% aggregate. The authors caution, however, that full-scale site tests should be conducted and long-term durability investigated.

The fourth paper (Aboobacker *et al.*, 2015) considers the effect of geocell-reinforced beds as a means of improving the performance of foundations. The response of beams on a geogrid-reinforced earth bed on soft soil under moving loads was analysed by modelling the reinforced granular bed as a rough membrane embedded in a 'Pasternak' (Pasternak, 1954) shear layer. The deflection profile of the shear layer was analysed to obtain load-settlement profiles. The researchers found a good match from published laboratory experiments and their numerical study.

Field-scale bio-cementation tests (MICP) to improve sands are presented in paper five (Gomez *et al.*, 2015). The object was to improve the erosion resistance of loose sand deposits and provide surface stabilisation for dust control and revegetation. The tests showed an increase in stiffness and shear strength.

The fifth paper (Shahrokhi-Shahraki *et al.*, 2015) is a further consideration of MICP, in particular the protocol for injecting reagents of bacteria, urea and calcium to treat quartz sands using different injection strategies in a series of laboratory tests on cylindrical specimens. Strength, stiffness and permeabilities were measured and compared.

The final presentation is a discussion of a paper on the prediction of stone column ultimate capacity (Frikha *et al.*, 2015), which seeks clarification and opinion, and comments on the authors' cavity expansion model.

On behalf of the editorial panel we look forward to meeting some of you at the XVI European Conference on Soil Mechanics and Geotechnical Engineering in Edinburgh, UK, in September, and to continuing in person the discussion and debate on ground improvement.

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