

Editorial

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Welcome to the August issue of *Geotechnical Engineering*, which forms the second part of the themed issue on construction processes and installation effects. This themed issue has attracted a wide variety of high-quality papers from around the world. It is of particular note that this issue has a very international authorship, reflecting the very wide readership of *Geotechnical Engineering*, with authors from ten countries throughout Europe and Asia.

The journal would not be able to attract such high-quality papers without the sterling work of the editorial panel, and we are currently looking to recruit new members of the *Geotechnical Engineering* editorial panel to replace those reaching the end of their 3-year term. We are looking for high-calibre professionals from both academia and industry, and are particularly interested in attracting applications from geotechnical engineers with consulting or contracting experience based in the UK and mainland Europe. If you, or someone that you know, has the right qualities to become a panel member then please send a short CV of no more than four pages to Josephine Francis at Josephine.francis@icepublishing.com. The deadline for nominations is 30 September 2015.

This issue contains seven papers covering the design and testing of novel anchor systems, stresses induced in the ground during construction and issues related to the construction of tunnels in complex ground conditions. The papers cover a wide range of research approaches, including the use of physical and numerical modelling as well as analysis of case histories.

The first paper in this issue (Mothersille *et al.*, 2015) details the use of SBMA (single bore multiple anchor) technology to support a 25 m deep excavation in Moscow. The paper demonstrates that using multiple anchors within a single borehole allowed the overall anchor to achieve a substantially higher efficiency than a conventional single anchor. Monitoring data of both trial anchors subjected to load testing and of the retaining wall system during construction have demonstrated the excellent performance of this anchor system.

The second paper (Kong *et al.*, 2015) details the stress distributions obtained during the field installation of X-shaped cast-in-place piles in soft ground. These piles are designed to have increased surface area and lateral stiffness compared to an equivalent solid circular pile of the same cross-sectional area. Piles were installed by vibratory driving of a casing, followed by casting in place. Earth pressures, pore pressures and ground displacements were measured during casing installation and were found to be adequately predicted by a novel cavity expansion

method, adapted to take account of the shape of the X-shaped cavity being created.

Similarly, Burali d'Arezzo *et al.* (2015) detail experimental studies of stress measurements around piles during installation, in this case in a centrifuge model. The work described here used novel 'null-gauges', which are actively compensated, to achieve a stress measurement transducer with an infinite stiffness, reducing errors due to soil arching. As with the previous paper, the authors demonstrate that cavity expansion analysis gives an excellent prediction of the stress bulb developed beneath the tip of the pile during pile jacking.

The fourth paper (Engin *et al.*, 2015) describes methods for analysing pile installation effects in finite-element (FE) analysis without explicitly modelling the pile installation process. The effects of installation were obtained from FE models using the press-replace technique and were then validated based on centrifuge model test data. Using this technique, the behaviour of pile foundations can be accurately analysed without the computational complexity of modelling the pile installation.

Rabaiotti *et al.* (2015) also investigate stresses induced in soils due to construction processes, in this case the excessive stressing of retaining walls due to jet grouting at a site in Lucerne, Switzerland. The construction process was modelled in Plaxis using a complex FE model and was then compared to data measured on site. It was determined that the strut forces in the excavation were dominated by the pressure acting on the wall due to jet grouting, being 2.5 times those that would be induced by the earth pressures alone.

The sixth paper (Svoboda and Hilar, 2015) describes a method for understanding the probabilistic variance of soil properties with reference to the stresses acting on the Brusnice tunnel in the Czech Republic. The 'Latin hypercube sampling' (LHS) method is a statistical tool that can be used within an FE framework that is more computationally efficient than the Monte-Carlo method, reducing the number of simulations required to the order of tens or low hundreds.

The final paper (Liao *et al.*, 2015) describes measures taken to remove steel piles from the cutter head of an advancing tunnel-boring machine for the Taipei mass rapid transit system. In order to allow workers safely to remove piles by hand working from the cutter head of an earth pressure balance tunnel-boring machine, soil grouting was used to provide a stable, impermeable soil body within which excavation could be achieved. Following the works described in the paper, steel H-piles were removed at a

depth of 23 m safely and without causing excessive movement of existing tunnel infrastructure.

If any of the papers in this two-part themed issue have been of particular interest or raise issues that you feel strongly about, please consider contributing a discussion to the journal. Guidelines for doing this are given at the end of each paper.

In closing, we would like to thank all the authors, reviewers and panel members who have contributed to the success of this themed issue. We hope that you find the results stimulating and of practical use to you as geotechnical engineers.

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