

Editorial

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Welcome to the April 2019 issue of *Geotechnical Engineering*. This issue consists of seven papers and one discussion contribution, with authors from eight countries. The papers cover a wide range of practically relevant geotechnical engineering topics, from innovative laboratory studies to well-documented case histories and field tests. With a diverse group of papers, hopefully there should be something to suit the interests of all readers.

In the first paper, de Koker and Day (2019) analyse a previously suggested modification of design approach 2 according to Eurocode 7. In the proposed modification, actions are combined prior to being factored. In the paper, the main merits of this alternative are considered in the context of spread footings subjected to vertical and horizontal loads. One result is that for high horizontal/vertical ratios, the modified design approach 2 yields significantly lower reliability than the three approaches in Eurocode 7. The analysis also illustrates shortcomings of the modification of design approach 2.

In the second paper, de Sanctis *et al.* (2019) present a case study that deals with the geotechnical aspects of the restoration of the *Insula dei Casti Amanti* in Pompeii, Italy. The work includes the restoration of ruins, stabilisation of slopes and the replacement of the actual roofing system. The analyses performed include seismic site response to predict the seismic behaviour. The results show that, depending on the frequency content of the seismic input, a double-resonance might occur, with potential destructive effects.

In the third paper, Krabbenhoft (2019) describes a systematic approach to the plastic limit state design of embedded retaining walls. The approach is exemplified by the design of singly-propped retaining walls. Three design parameters of wall moment, prop force and embedment depth can be identified in all possible combinations. The performance of the different plastic designs under serviceability conditions was investigated. A general conclusion is that the optimal design is one where the design moment is relatively small, the prop force is relatively large and the embedment depth is moderate.

In the fourth paper, Li *et al.* (2019) propose a new method: vacuum preloading with stepped-voltage electro-osmosis in order to reduce energy consumption. Five laboratory tests were performed on dredged slurry from the Oufei reclamation

project in China. The results show that the method is better than the general method and results in less electrode corrosion. A higher initial voltage did not improve the dredged slurry further and led only to increased energy consumption.

In the fifth paper, Rui and Soga (2019) study the thermo-hydro-mechanical (THM) response of a 23 m long thermal pile at Lambeth College in London, UK. The tested pile has been investigated by conducting a THM finite-element analysis using an advanced thermoelastoplastic constitutive model. The main objective of this study was to quantify the coupled pile–soil–pore fluid behaviour in this particular case. The paper focuses the investigation on the details of the soil deformation and pore water pressure around the pile, which in turn influence the pile behaviour. A parametric study shows that the thermal conductivity of the soil and the reloading/swelling parameter of the model are the two main parameters that influence the matching exercise in this case.

In the sixth paper, Soltani *et al.* (2019) have investigated the consistency limits and compaction characteristics of clay mixed with rubber waste. Cone penetration and standard Proctor tests were carried out on four clays mixed with four different percentages of rubber. The results showed that with increased rubber content, the consistency limits and compaction characteristics exhibited a linearly decreasing trend. The proposed models provide a practical procedure towards predicting the compaction characteristics of ground rubber–clay mixtures. The authors propose that the models can be implemented in practice for preliminary assessments.

In the seventh paper, Xiao and Zhao (2019) present the field instrumentation on the pile foundation of the 492 m high Shanghai World Financial Centre, China, which is supported by steel pipe piles of 700 mm dia. and 60 m long in the deep, soft soil of the Yangtze River delta. What makes this paper particularly interesting is that this is the first that time in situ testing of the pile foundation of a super-tall building embedded in deep, soft soil has been conducted. The results provide a comprehensive insight into the working performance of a pile foundation.

In this issue there is also one discussion contribution. Pender *et al.* (2019) discuss the paper by Pender (2018) on the critical horizontal earthquake acceleration of retaining walls.

The discussers extend the results presented and provide additional comments on the seismic design of such structures.

If any of the papers in this issue are of particular interest or raise issues that you have a strong feeling about, you may wish to contribute to the journal in the form of a discussion piece. Please also remember that the most recent papers are published Ahead of Print on the ICE Virtual Library homepage, if you wish to have quicker access to new content.

We hope you will enjoy this month's issue of *Geotechnical Engineering*.

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