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Editorial

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It is with great honour that I have been asked to write this Editorial and introduce to you seven interesting papers in this June issue of *Geotechnical Engineering*. I am writing this Editorial in April, after we have had the postponement of the Rankine Lecture until October 2020 and the British Geotechnical Association Annual Conference, rescheduled to a date which has not yet been confirmed. Of course, our thanks should be extended from our usual recognition of the efforts of all our authors, reviewers, assessors and staff whose hard work behind the scenes allow these papers to come to fruition, to those in the National Health Service (NHS) dealing directly or indirectly with Covid-19 and all those in minimum-wage positions who continue to work: caring, cleaning, stacking shelves and delivering goods to allow our daily lives to continue. This is not to forget the hard work of construction workers and supervisors who also do not have the luxury of necessarily being able to work remotely that many of us do, nor ignore the importance of the civil infrastructure works to the improvement of the health and running of our society.

I am not sure that anyone reads these Editorials (past the lovely and dedicated Editorial Panel of course!), but if you are reading this, Hello! And welcome! We have seven lovely papers for you, which I have perused on your behalf and organised into an order I hope you will enjoy.

There are a great number of large scale civil engineering projects being undertaken in China, which, being such a vast country, also covers a wide range of geotechnical challenges. This issue alone covers Karstic structures (Jiang *et al*., 2020) to cemented loess (Hu *et al*., 2020; Ma *et al*., 2020) and also indicates that as China develops, the luxury of choosing prime locations to construct diminishes pushing engineers to explore more and more difficult materials (Wang *et al*., 2020; Yu and Liu, 2020) with all the challenges that that brings.

We start off with Jiang *et al*. (2020) looking at bearing capacity of large step-tapered piles in Karst ground conditions. The authors discuss the use of the novel large (an impressive 15 m and 14 m in diameter!) step-tapered hollow pile to support the piers of a concrete deck Ji'an Shenzhen bridge to span underlying Karst structures. This novel foundation was analysed using FLAC3D to assess bearing capacity and determine the most appropriate taper angle with new pile sections suggested to widen the application of step-tapered hollow piles in the future.

This is followed by my personal favourite speciality topic of two laboratory testing-based papers, the first of which is by Hu *et al*. (2020) examining the anisotropy of dynamic properties of loess through cyclic triaxial tests on intact loess samples, using samples cut vertically and at 30° above the horizontal. They examine the effects of anisotropy on the dynamic behaviour of the cemented silt in terms of shear stiffness degradation and damping ratio.

Staying on the topic of loess and cyclic triaxial testing, Ma *et al*. (2020) examine cement- and lime-improved loess materials for high-speed railway subgrades. The authors used the cyclic shear-strain threshold to assess the stability of the stabilised loess samples in the laboratory. Lower percentages of cement admixtures were able to achieve suitable dynamic stability compared to lime admixtures.

This leads us nicely on to a couple of ground improvement-related papers, starting with Massarsch *et al*. (2020), who examine the effect of deep vibration compaction on the horizontal stresses within the ground, using both a cone penetration test and flat dilatometer test to measure the effects of deep vibratory compaction in five case histories. This is followed by Wang *et al*. (2020), who look at the effectiveness of vacuum preloading of dredged slurries and comparing traditional prefabricated vertical drain (PVD) hoses – where a membrane is placed over the soil and the PVDs are connected to a perforated hose to distribute the suction and allow drainage of the pore water being removed – to a method with a membrane-free mother, where the PVDs are instead connected to a sealed suction system. Wang *et al*. (2020) used scaled model tests to compare the efficiencies of the different setups using indicators such as settlement, moisture content and shear strength. This neatly leads us to Yu and Liu (2020), who used triaxial tests to examine artificially cemented gravel–silty clay mixed soils as an analogy for thick, naturally structured deposits of alluvium that are difficult to sample. The chosen soil mixes were cemented with calcium oxide in 100 mm diameter moulds. The authors examine both cemented and remoulded soil mixes for four levels of fines content and tested under four stress levels. Their results indicate that the fines content influences the effectiveness of the cementation and the shearing behaviour of the mix.

Just in case you are fond of a little bit of numerical modelling and were missing some equations in your life, the final paper is

more theoretical. Oreste *et al*. (2020) perform a parametric study using numerical modelling to look at creep behaviour of a sprayed-concrete tunnel linings. The authors use the hyperstatic reaction method and the convergence–confinement method to calculate the stresses and deformations in a number of theoretical sprayed concrete lined tunnels.

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