Cite this article

Ong DEL and Rahman MM (2020)
Editorial.
Geotechnical Research 7(3): 132–133,
<https://doi.org/10.1680/jgere.2020.7.3.132>

Editorial

ICE Publishing: All rights reserved

Geotechnical Research

ice Publishing

Editorial

1 Dominic E. L. Ong

Senior Lecturer, School of Engineering and Built Environment,
Griffith University, Brisbane, Australia

2 Md Mizanur Rahman

Associate Professor in Geotechnical Engineering, School of Natural
and Built Environments, University of South Australia, Adelaide,
Australia

On behalf of the Editorial Board of *Geotechnical Research* (GeoRes), we welcome our readers to the third issue of volume 7 (2020). This issue includes one briefing and four papers. GeoRes strives to provide readers with quality publications to enhance knowledge in geotechnical engineering practice. Being a Gold Open Access (OA) journal, readers are more than welcome to download, distribute and share copies with their like-minded colleagues. It is really pleasing to see the increased contributions from our readers, authors, reviewers and panel members, making GeoRes a truly international and interactive journal. Lately, we have seen a steady increase in manuscripts coming from the fast-growing regions of Asia Pacific, propping up the strong contributions from Europe and North America. We would also like to thank our readers for their loyal readership and recommendations to peers.

In this issue, papers related to the studies of soil–structure interaction – for example, deep excavations and pile foundations – are presented. Understanding of ground deformations induced by adjacent excavation and pile installation works remains an important area of study in geotechnical engineering, so as to protect adjacent properties from potential damages. This issue also includes ground improvement research, typically on the improved properties of cement-treated soils.

The briefing in this issue presents an indirect approach to predict the specific gravity of solids (G_s) for peaty soils from their ignition loss (N) values. Li *et al.* (2020) used a total of 102 data sets collected to establish the G_s – N correlation for peaty soils. The authors recommended that an oven temperature of 105°C to be used consistently for drying peaty soil specimens so that the discrepancies in experimental results due to procedural differences between relevant codes and previous experimental studies can be overcome.

Zhang (2020) conducted a deformation analysis of a deep foundation pit located in Anyang, China using the effect of time and space. The excavation of a foundation pit created a difference in soil pressure between the inner and outer soils of the foundation pit which eventually resulted in soil displacements. An open excavation with bottom-up technique was adopted for the 11.3 m deep foundation pit. Inclinometers were used to monitor horizontal displacements of the enclosed structure, while ground

markers were used to monitor the settlements of the surrounding buildings and pipelines. The case study reported an increase in horizontal displacement of the enclosure structure when the project advanced. Larger horizontal displacements were observed at the midpoint of the enclosure structure as opposed to the corners due to ‘corner effect’. Consistently, an increase in ground settlement was noted, but with smaller magnitudes nearer to the corners of the foundation pit. This case study provides reliable data for subsequent back-analyses.

Ge *et al.* (2020) studied the characteristics of a pile–net composite foundation during soil filling and consolidation stages for a 500 kV substation in China. The site was in a backwater area with a shallow soil layer consisting mainly of sludge and clayey silts. During soil filling and consolidation stages, the pile–soil stress ratio, geogrid tension and pile axial forces were monitored. This was achieved by placing settlement plates, earth pressure sensors and flexible inclinometers at strategic locations of the pile–net composite foundation. Results showed a gradual increase in earth pressures at the top of the pile which then stabilised during the filling and consolidation stages. A rapid increase in pile–soil stress ratio was recorded during soil filling, but subsequently stabilised at a ratio of 5.0. Geogrid tension was found to be increasing with the filling height. Lastly, the pile axial force behaved dynamically with time: increasing initially and then decreasing along with the depth, due to soil–structure interaction with dissipating excess pore water pressure.

The mechanical behaviour of lightly cement-treated sand (CTS) when exposed to repetitive cycles of air-drying and water submergence was studied by Ahsan *et al.* (2020), using salinity concentrations of 0.1 M and 1.0 M. Local sand with a fineness modulus of 0.78 and ordinary Portland cement were used for this study. Optimum moisture content was used to ensure consistency in specimen preparation. For each cycle, unconfined compressive strength (UCS) tests were conducted and the results were compared against unweathered samples. After a period of drying–wetting cycles of about 3 months, it was found that higher salt concentration would reduce the unconfined compressive strength and vice versa. A saline environment will have a negative implication on the

modulus of elasticity (E_{50}) and with long exposure will decrease the stiffness of the cement-treated sandy soil.

A new prefabricated recyclable retaining system that can be used to stabilise foundation pit excavation was introduced by Guo *et al.* (2020). A three-dimensional finite-element model was developed to study the stresses and deformations of the retaining system consisting of H-piles and steel panels. Ground settlements at various excavation stages were also studied. The model was validated using a pipe-jacking project in Northern China. The working shaft was excavated in silts where the new prefabricated retaining system was used. It was found from the study that stabilisation of large deep foundation pits can be potentially achieved with the new retaining system, which also facilitates safety, fast construction and recyclable utilisation at relatively low costs.

REFERENCES

- Ahsan MK, Barman DC, Shaikh M and Maqsood Z (2020) Influence of salinity exposure on the mechanical properties of cement-treated sand. *Geotechnical Research* 7(3): 161–172, <https://doi.org/10.1680/jgere.20.00013>.
- Ge J, Tan Y, Zhou Z *et al.* (2020) Study on characteristics of pile–net composite foundation at 500 kV substation in China. *Geotechnical Research* 7(3): 153–160, <https://doi.org/10.1680/jgere.20.00012>.
- Guo C, Wang R, Lin P and Wang F (2020) Numerical analyses of a prefabricated retaining system for foundation pits in silt soils. *Geotechnical Research* 7(3): 173–190, <https://doi.org/10.1680/jgere.20.00015>.
- Li W, O’Kelly BC, Yang M *et al.* (2020) Briefing: Specific gravity of solids relationship with ignition loss for peaty soils. *Geotechnical Research* 7(3): 134–145, <https://doi.org/10.1680/jgere.20.00019>.
- Zhang Q (2020) Deformation analysis of deep foundation pit excavation in China under time–space effect. *Geotechnical Research* 7(3): 146–152, <https://doi.org/10.1680/jgere.20.00009>.