Editorial

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It is my absolute pleasure to be able to write an editorial for this first 2015 issue of *Ground Improvement*. This issue includes six high-quality papers addressing some of the key practical issues in relation to an array of ground improvement schemes for infrastructure development. From more conventional practice of geosynthetics in the established field of transportation geotechnics to lesser known aspects of salt grain addition for affecting organic soil consolidation, this issue certainly offers the readership one of the most timely and interesting issues of *Ground Improvement*.

In the first paper, Arulrajah *et al.* (2015) describe a case study of high-speed rail track recently completed in Malaysia. Different types of geosynthetics, such as high-strength biaxial geogrids, non-woven geotextiles and woven geotextiles, were used for separation, filtration and reinforcement purposes. A detailed insight into the design and implementation of ground improvement is provided with emphasis on the geogrid reinforcement design of piled embankments. The geosynthetics were used to provide a safe and cost-effective solution to the various geotechnical engineering challenges encountered.

Peat has always been considered a problematic geomaterial due to its inherent qualities such as high water content, high compressibility and low shear strength. Zhang and O'Kelly (2015) present results of preliminary laboratory tests performed using the hydraulic consolidation (Rowe) cell apparatus. A novel method is investigated that can accelerate the primary consolidation and can reduce the creep rate by adding salt grains to fibrous peat. Salt-treated specimens were found to show reduced creep rates and smaller magnitudes of creep settlements in one-dimensional loading compared with untreated samples when tested in similar loading conditions.

Details of the failure of a cantilever retaining wall built for a road embankment and its rehabilitation aspects using soil nails are presented by Sivakumar Babu and Jaladurgam (2015). Clear signs of distresses in the retaining walls were observed in the field. Rehabilitation measures adopting grouted nails were proposed and analysed using both conventional and finite element analysis. Two systems of individual soil nailing for each wall and soil nailing connecting both cantilever walls were considered appropriate. Finite element analysis demonstrates that the second method yields lesser deformations and a higher factor of safety compared with the individual soil nailing system.

Use of prefabricated vertical drains has been a very popular method to improve thick soft clay layers. Use of biodegradable

natural prefabricated vertical drains (NPVD) constructed out of jute and coir ropes offers an environmentally friendly alternative to the plastic drains (PPVD). In this paper by Asha and Mandal (2015), the effect of discharge capacity on the consolidation is investigated using experimental results and numerical analysis using four types of NPVD and one PPVD. Laboratory results indicate that discharge capacities of NPVDs is less than that of PPVD for the hydraulic gradients considered. Large-scale consolidated tests yield the same rate of consolidation for all types of drains. These tests are in agreement with the numerical simulation results.

The use of a topographic survey as a tool to assess dynamic compaction in uncontrolled fill sites is presented by Moyle and Airey (2015). This topographic survey was used to monitor the change in the ground level after each pass during the dynamic compaction process and the data were used to develop spatial plots of the print-to-heave volume ratio. This could be useful to identify areas of different compaction levels in uncontrolled fills, and where a tertiary pass is required. In this paper, the authors demonstrate topographic survey as a suitable tool in quality-control processes.

Chiaro *et al.* (2015) investigated the possible use of a blend of coal wash (CW) and basic organic steel slag fins (BOS) in large-scale reclamation projects. For the selection of granular fill as a suitable structural fill material, four levels of acceptance criteria are proposed in this study. Using these criteria, a CW-BOS blend with a BOS content of between 30 and 45% is found to be suitable for harbour reclamation given the typical expected live loads. This mix meets most geotechnical specifications, such as high shear strength and bearing capacity, low swelling, reduced particle breakage, and adequate permeability required for a suitable structural fill.

This issue of *Ground Improvement* covers an array of diverse topics with obvious implications for infrastructure development. It promises to be most beneficial to the readership, and I strongly encourage as much discussion in clarifying salient aspects with the authors or suggest insightful comments with respect to practical applications on the basis of the papers published in this issue.

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