Editorial

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On behalf of the Editorial Advisory Board I have the pleasure of introducing you to this May 2020 issue of the *Ground Improvement*, with 5 very interesting papers and a book review.

However, before that, I feel the need to leave here a message about the dark period that we all are experiencing, declared already as a global pandemic because of the worldwide spread of a new disease. Many countries are suffering daily large losses of human lives. I take this opportunity to wish that, when you receive this issue, the worst would be over. We must have hope. Humankind loves to change nature to his advantage. That is in his DNA. Who better than us, the Ground Improvement community, to understand that? We are investigating, analyzing, sharing knowledge, finding solutions to improve, to overcome the geotechnical difficulties that nature is presenting to us. Fortunately, the same happens with the health community that are making huge efforts so that – in a very short period of time and together with society – we quickly overcome these times of extreme difficulty. Meanwhile, I wish you all the best. Be careful, take care of yourself and of your community.

This issue presents five papers covering various aspects of great interest. Three of them experimentally examine the influence of mixing some specific materials (i.e. steel-slag, zeolite and quick-lime) to clayed and sandy soils, while the other two focus on drainage conditions (of a clayed soil and a soil reinforced with stone columns) under cyclic loading by a laboratory program or by a semi-analytical method, respectively. Some of these materials are waste materials, and their use is welcome, with two major advantages (Ahmed *et al.*, 2018) – reduction of waste and saving natural resources.

In Weerakoon *et al.*, (2020), the authors study the potential application of a dredged clay for engineering purposes. These sediments removed from navigation channels and port areas present high water content and too low strength for construction, unless they are pre-treated. For that, authors study the strength mobilisation of the mixture steel slag – clay with curing time. Steel slag presents a high portlandite ($\text{Ca}(\text{OH})_2$) content which provides a hydration capacity when reacting with silica mainly from the clay minerals. The geochemical processes of these mixtures can be found in Toda *et al.*, (2018). The stiffness and strength mobilisation characteristics from early stages of curing were investigated by a laboratory test program on eight combinations of steel slag and dredged clay.

These mechanisms are discussed in the paper in a way to allow understanding of the main influencing factors.

Mola-Abasi *et al.*, (2020) investigate zeolite as an alternative additive to replace cement in order to reduce the pollution and high energy demand associated with cement production. Zeolite is one of the natural pozzolans that is widely used in concrete. It consists of silicon dioxide and aluminium oxide, which react with calcium hydroxide, improving the strength of the mixture. The authors study the effect of zeolite on cemented sands by means of triaxial tests. Mola-Abasi and Shooshpasha (2016) found that the optimum value for zeolite replacement is 30%. Mola-Abasi *et al.*, (2020) found that zeolite is coarser than the cement and concluded that it is responsible for the increase of maximum and residual shear strengths, and changed the brittle behaviour of samples to ductile behaviour among other important conclusions.

Di Sante *et al.*, (2020) built a database with experimental results concerning five soils with different clay fractions and different plasticity characteristics mixed with quicklime in different proportions. Consolidation, triaxial and direct shear tests were carried out at different curing times on mixtures compacted at different water contents. Correlations between shear strength and lime content, plasticity index, clay fraction, water content and curing time were obtained and validated with data from the literature. These correlations allow the optimum lime content to be preliminarily identified, knowing the characteristics of the soil to be treated and the required design shear strength parameters. Long-term changes in the properties of quicklime treated soil was investigated by Takahashi *et al.*, (2018).

Huang *et al.*, (2020), studied the behaviour of an in situ soft clay, partially drained, and subjected to long-term uniform cyclic loading. The authors pointed out that the existing empirical equations are based on test results under undrained conditions, which are appropriately for short-term cyclic loading but not for long-term traffic loading. According to Sun *et al.*, (2015), clayey subsoils under traffic loading could be considered as being in partially drained conditions. Cyclic triaxial tests were performed on a saturated clay (of medium sensitivity and large compressibility) under undrained and partially drained conditions with different cyclic stress ratios. The permanent axial strain, resilient strain and pore pressure were

evaluated and compared under different drainage conditions, and equations were developed.

Wang *et al.*, (2020) reports that although the consolidation behaviour of stone-columns-reinforced soft soils under different loadings has been studied intensively, the solutions concerning the consolidation behaviour of soils reinforced with stone columns considering both smear and well resistance under haversine cyclic loadings are not reported in literature. The purpose of the paper is the development of a semi-analytical method to analyse this consolidation behaviour. The method was developed by using Fourier harmonic analysis and the effects of smear and well resistance on the excess pore pressure, effective stress and average degree of consolidation is considered. The analysis shows that the excess porewater pressure at any depth in the soft-soil foundation changes during the consolidation process causing both positive and negative pressure. The key parameters affecting the excess pore-water pressure and average consolidation degree of the soft soils reinforced with stone columns are presented.

To finish this May issue for 2020, Rujikiatkamjorn (2020) provides a review of Han's book entitled 'Principles and Practice of Ground Improvement'. This book provides a collection of conventional and more recent techniques, some design examples and can be used as a guide for practising engineers as well as a textbook for students.

I hope you find these papers very interesting and useful. I would like to challenge you to send comments and questions to implement some discussion that I believe it would be very beneficial for further research developments. I should call your attention to the fact that the journal publishes its most recent articles Ahead of Print on its Virtual Library homepage (<https://www.icevirtuallibrary.com/toc/jgrim/0/0>). You are welcome to use this quicker access to fresh content for your work.

Finally, I would like to thank all the authors of these papers and the reviewers for their valuable contributions, as well as

the Advisory Board and ICE staff members whose work made this issue possible to come to you.

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