Editorial

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This special issue includes three papers presenting case histories on three different projects carried out in Turkey.

The paper authored by Salvatore Miranda titled "The Multi-Purpose Bottom Plug for the Galataport Project" presents a detailed account of the design considerations, technologies and performance controls for the realization of the original solution adopted for the construction of a deep excavation at the highly confined and densely populated historical district of Karakoy in Istanbul, presenting almost all conceivable structural and geotechnical challenges. Galataport (the port of Galata) will serve as a passenger terminal for cruise liners with two quays covering 1200 meters of coastline on the west coast of Bosphorus. The original construction, dating back to 1900s, served as the biggest seaport for import cargo until 1986. Since then, the facility became obsolete due to increasing container shipping and was converted into a passenger terminal for cruise liners. The renovation project began in 2014 and has involved the construction of a modern terminal that includes the world's first underground boarding bridge system, a promenade along the coastline and the restoration of the historical buildings located within the construction area. In addition to the variety and complexity of the entailed geotechnical works, the difficult hydraulic and geotechnical conditions and the high seismic hazard susceptibility of the site, the project required the employment of cutting-edge technologies and composite solutions. Among these, this paper focuses on the multi-purpose bottom plug solution that combines seepage control, ground improvement against liquefaction, and load bearing elements to ensure stability against uplift. This application was adopted to allow the deep excavation of a 3-basement building (12.5 m deep and 11.0 m below the sea level). While striving towards the development and construction of the multi-purpose bottom plug, the challenges of execution of the shoring system in the vicinity of the existing quay and historical buildings, the difficulties related to the lateral support of shoring, seepage control, liquefaction risk and uplift possibility were assessed, and possible solutions were evaluated. The multi-purpose bottom plug combines double-fluid overlapping jet grout columns, pseudo-elliptical jet grout columns, and permanent drilled and grouted micropiles to provide support and stability to the future building and to improve stability against uplift, seepage control, and liquefaction resistance. This well-documented case history gives a thorough review of the soil conditions, existing challenges, applied design principles and approaches, accompanied with the calculation and parameter revision processes, applied construction techniques and encountered difficulties, monitoring and performance control operations and their results, together with the applied cutting-edge technologies.

The second paper titled "Performance Monitoring of Rammed Aggregate Piers" presents the detailed account of a ground improvement project designed to reduce settlements and to mitigate liquefaction losses of a wastewater treatment plant, situated on medium stiff and soft soils. The plant is in Yalova region on the coast of Marmara Sea and the paper is authored by E. Kurt Bal, Lale Oner and Kutay Ozaydin. The paper presents the design and application of rammed aggregate piers (RAP) in detail, starting from the very initial stage of soil investigation, assessment of soil parameters, choice of improvement method, up to the end of construction together with performance controls. The preliminary design approaches are given. In this regard, three-dimensional settlement analyses were carried out, both for the unimproved and improved cases and for all layers. Settlement is the primary design criteria due to the high intensity of loads that will be transferred from the main structures that cover large areas to near surface shallow layers. Preliminary pier modulus values were determined and then verified by site-specific modulus tests conducted on the 14-16 meters long RAPs to assess the load bearing capacities and rigidities of the individual piers. Applied liquefaction assessment and modulus determination procedures are also accounted for. After the construction of RAPs, a fully instrumented test embankment is built for monitoring and assessing the efficacy of the RAPs. Moreover, water loading tests were carried out to check the construction performance of the wastewater

Reference: Cinicioglu, F. S. (2021). Editorial. International Journal of Geoengineering Case Histories, https://www.geocasehistoriesjournal.org/, Vol.6, Issue 1, p. i - ii. doi: 10.4417/IJGCH-06-01-00.

treatment facility structures and “water height in the tank versus settlement versus time” relationships were obtained and displayed in the figures provided in the paper.

The third and last paper of this issue was authored by Hakan Kopuklu, Onur Ekli, Onder Akcakal and Turan Durgunoglu. The title of the paper is “A Constructability Problem in a Deep Shoring System”. The location of the project is Dolapdere, downtown Istanbul, which is one of the most congested, highly populated, and expensive commercial districts of Istanbul. High prices of rentable areas in this district fuels the desire to make best use of the available land by providing many basements using deep excavations. It is well known to geotechnical engineers that construction of retaining systems for deep excavations is associated with many challenges especially if the encountered soil and/or rock profile is variable and ground water level is high. In this context, the geological formations encountered within the scope of this project were reviewed in detail in the paper and the overlying layer was defined to be detrital carbonaceous rocks. The case history of the paper deals with the design and construction details of the watertight retaining system for the seven levels of basement, which required an excavation depth up to 30.0 meters. Related site investigation reveals the presence of alluvial soils overlying carboniferous aged Trakya formation rock units. Lugeon tests were performed along with a site investigation program consisting of rotary borings, standard penetration tests, in situ packer permeability tests, collection of soil and rock samples with corresponding laboratory tests. The paper gives a good account of the project and site characteristics, design and construction procedures of the secant pile retaining system together with multilevel anchorages to ensure stability. The construction phases and the encountered problems were outlined together with the applied remedial measures and design modifications. Data from monitoring systems were used to control the safety in relation to the limiting design criteria throughout construction. The results are presented in graphical form in the paper.

These papers were selected as engaging examples of geotechnical construction activities in Turkey and considered to be of interest to the readers of the International Journal of Geoengineering Case Histories and have gone through a thorough review process. They are also useful for educational purposes as they outline all the stages of the design and construction procedures, together with performance evaluations.

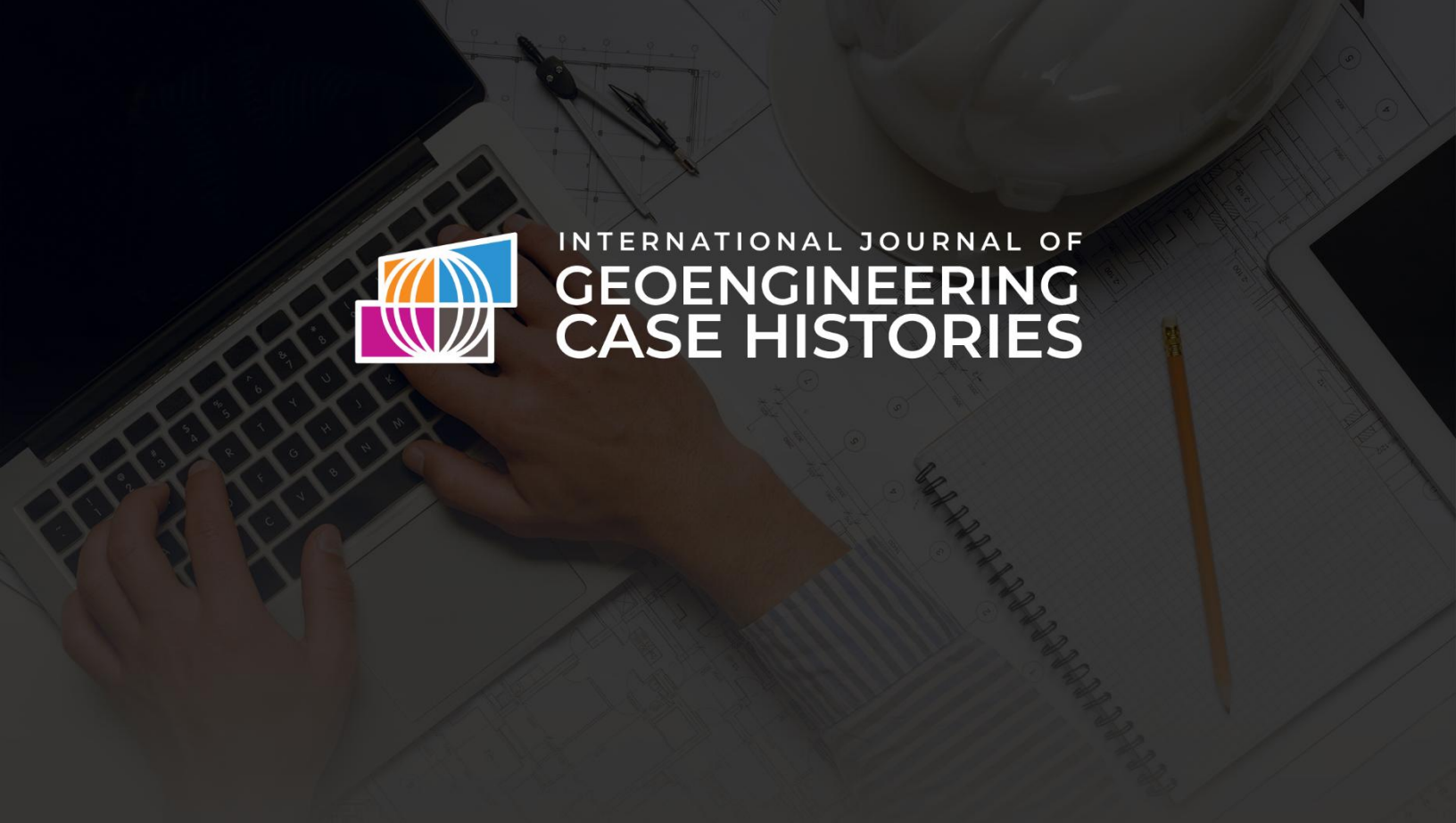
I am thankful to the authors of the papers and the reviewers for their efforts and I also would like to extend my special thanks to the editors and the manager of the Journal for giving this opportunity and their guidance throughout the review process.

Table of Contents

Miranda S. (2021). The Multi-Purpose Bottom Plug for the Galataport Project. International Journal of Geoengineering Case Histories, Volume 6, Issue 1, pp. 1-36, doi: 10.4417/IJGCH-06-01-01

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GEOENGINEERING
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