Editorial

Giovanna Biscontin, *PhD, Former Secretary of ISSMGE Technical Committee 103 Numerical Methods in Geomechanics; email: gb479@cam.ac.uk*
Ryosuke Uzuoka, *PhD, Nominated member of ISSMGE Technical Committee 103 Numerical Methods in Geomechanics; email: uzuoka.ryosuke.6z@kyoto-u.ac.jp*
Akira Murakami, *PhD, Chair of ISSMGE Technical Committee 103 Numerical Methods in Geomechanics; email: murakami.akira.5u@kyoto-u.ac.jp*

TC 103 on Numerical Methods in Geomechanics is pleased to publish the Case Histories on applications of numerical analysis to the design, study, or back analysis of case histories. This special issue presents well documented case histories combining numerical analysis before or during the construction of a project with monitoring and performance data. The presented case studies cover the following topics:

- Comparison of numerical predictions and in situ measurements of carefully monitored case histories
- Successful applications of numerical analysis to reduce costs, solve or prevent design and construction problems
- Numerical analysis of new design or construction technologies applied to recent projects
- Data assimilation or inverse analysis during construction, and applications to hazard prediction or risk management

We have ordered the papers by the type of structures they discuss: slope, embankment, earth dam, and underground structure with excavation. The works use commercial or inhouse software with Finite Difference Models (FDM), Finite Element Models (FEM) and Discrete Element Models (DEM), including conventional or advanced constitutive models. Bekele et al. present a case study fusing field observations and numerical modeling to examine the conditions and triggering mechanisms for a slope in Nebraska that experienced progressive failure. Leelasukseree et al. review a successful case history where applications of numerical predictions for a massive excavation were undertaken to predict the maximum stable undercut width under which the slope would not collapse. Tashiro et al. conduct ex-post evaluations of the countermeasures against residual settlement of ultra-soft peaty ground due to embankment loading based on valuable 6-year monitoring data from the start of expressway operation. Tanenaga et al. demonstrate the procedure for the identification of unknown constitutive parameters needed for an earth dam construction process. Parsa-Pajouh et al. present the methodology adopted to carry out the numerical analysis and predict the behavior of the basement for the Sydney's tallest single mixed-use tower. Creten et al. study the behavior of an underground parking garage in the historical center of the Dutch town of Leiden. Chan et al. present case histories of deep excavations to compare the results from conventional and advanced soil constitutive models.

TC103 aims to provide a forum for all interested members of ISSMGE to explore the use of computational tools and development of advanced numerical methods to solve problems relevant to soil mechanics and geotechnical engineering. In addition, TC103 will facilitate the exchange of ideas and advances in computational geomechanics among academics and practitioners. The presented case histories focus on applications of numerical techniques rather than novelty of the method of analysis. We expect that they can be useful for practitioners from industry and academics as examples of good practices with numerical methods in geomechanics.

We acknowledge the work done by the authors and the reviewers from TC103. We would also like to thank the journal's Editors and staff for their assistance in putting the Special Issue together.

Reference: Biscontin, G., Uzuoka R., and Murakami A. (2021). Editorial. International Journal of Geoengineering Case Histories, https://www.geocasehistoriesjournal.org/, Vol.7, Issue 1, p. i - ii. doi: 10.4417/IJGCH-07-01-00.

Table of Contents

Bekele, B., Song, C. and Lindemann, M. (2021). A Case Study on the Progressive Failure Mechanism of I-180 Slope Using Numerical and Field Observations, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 1-21, doi: 10.4417/IJGCH-07-01-01

Leelasukseree, C., Pipatpongsa, T., Chaiwan, A. and Mungpayabal, N. (2021). Practical Design, Numerical Analysis and Site Monitoring for Huge Arching Effect during Massive Excavation of Undercut Slope in Open-pit Mine, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 22-57, doi: 10.4417/IJGCH-07-01-02

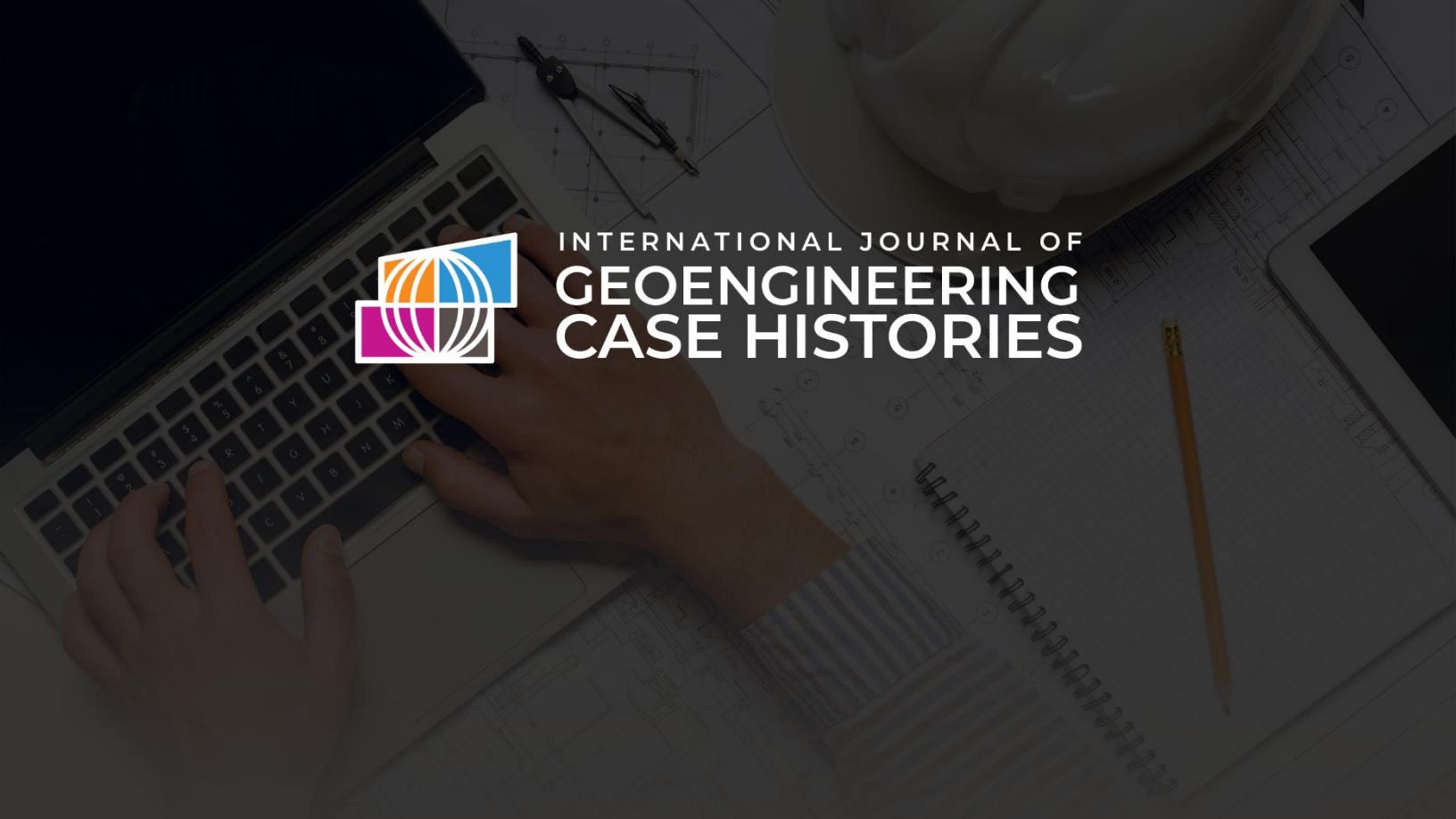
Tashiro, M., Kawaida, M., Inagaki, M., Yamada, S. and Noda. T. (2021). Ex-Post Evaluation of Countermeasures Against Residual Settlement of an Ultra-Soft Peaty Ground Due to Test Embankment Loading: A Case Study in Maizuru-Wakasa Expressway in Japan, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 58-75, doi: 10.4417/IJGCH-07-01-03

Tanenaga, E., Fujisawa, K. and Murakami, A. (2021). Identification of Material Parameters by Particle Filter Using Observation Data Obtained during Construction of Rock-fill Dam, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 76-94, doi: 10.4417/IJGCH-07-01-04

Parsa-Pajouh, A., Azari, B., Mirlatifi, S., Buys, H. and Cullen, I. (2021). Numerical Analysis of a Top-Down Constructed Deep Basement with Diaphragm Walls in Sydney Barangaroo - A Case Study, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 95-112, doi: 10.4417/IJGCH-07-01-05

Creten, S., Verbraken, H., François, S. and Bauduin, C. (2021). Design, Construction, and Back-analysis of a Deep Underground Parking Garage in an Urban Environment, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 113-136, doi: 10.4417/IJGCH-07-01-06

Chan, C.L.C., Chiu, S.M.D., Lo, L.C.F., Kwan, S.H.J., Lee, S.W. and Leung, C.O.A. (2021). Back Analyses of Two Deep Excavations in Hong Kong using Mohr-Coulomb Model with Linear Elasticity and the Hardening Soil Model, International Journal of Geoengineering Case Histories, Volume 7, Issue 1, pp. 137-163, doi: 10.4417/IJGCH-07-01-07



INTERNATIONAL JOURNAL OF
GEOENGINEERING
CASE HISTORIES

The Journal's Open Access Mission is generously supported by the following Organizations:

dar
a Sidara company

Geosyntec consultants
engineers | scientists | innovators

CONETEC
MUD BAY DRILLING
LANKELMA
Geotech DRILLING

ENGEO
Expect Excellence

Access the content of the ĪSSMGE Īnternational Journal of Geoengineering Case Histories at:
www.geocasehistoriesjournal.org

Downloaded: Wednesday, November 11 2026, 13:53:19 UTC