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WEBINAR

on

Optimisation of Deep Vibratory Compaction as Liquefaction Mitigation Measure

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Speaker

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Optimisation of Deep Vibratory Compaction as Liquefaction Mitigation Measure

Abstract

The current world population ranges around 7 billion and is ever increasing; the rising population has created huge demand of land for various infrastructure facilities. This has pushed the engineering community to use land which previously in history was considered unsuitable for any construction. Soil liquefaction caused by earthquake loading is a major threat to infrastructure. Loose saturated sands when subjected to seismic loading develop high excess pore water pressures and shear strains that may lead to soil liquefaction. Deep vibratory compaction method is an established ground improvement technique for granular soils. This technique is used to improve the properties of loose to medium dense granular soils by compacting deep layers of the soil and therefore reducing settlements, increasing the vertical bearing capacity, and aiding in liquefaction mitigation. The lack of analytical design methodology and dependence on field experience of past projects to ascertain liquefaction mitigation potential inhibits the efficient use of deep vibratory compaction. This talk would highlight insights from a combination of physical modelling, field measurements and numerical simulations that were carried out to analyse deep vibratory compaction. Followed by seismic numerical simulations of saturated sand, compacted by deep vibratory compaction to analyse the feasibility and effectiveness of this method for mitigating the liquefaction hazard and its consequences.

Biography

It was in high school when, Dr. -Ing. Sparsha Nagula developed keen interest in Earth sciences and the most probable reason, having a Geologist father. She graduated with a degree in Civil engineering from Visvesvaraya National Institute of Technology, Nagpur India in 2012. Following that she completed her masters in Geotechnical engineering from IIT, Madras, India and then moved to Hamburg Germany to pursue her PhD from TUHH under the prestigious DAAD doctoral scholarship. She defended her PhD with Magna Cum Laude in 2021. She now works as a post-doctoral researcher at Norwegian Geotechnical Institute (NGI), Oslo, Norway. Her current tenure in the Natural Hazards division at the NGI gives her the opportunity to work extensively with modelling of tailings dam breaches and quick clay and subaqueous landslides. She has been a silver and gold medallist in her under-graduation and post-graduation respectively. She has worked in the field of numerical geotechnics involving large scale deformations, seismic geotechnics, granular material characterization, 1g physical modelling, development of coupled hydro-mechanical models, advanced pavement design with plastic deformations and usability of remote sensing and GIS in the field of geotechnics. She has already co-authored 8 journal publications in renowned journals like Geotechnique, Computer and Geotechnics, ASCE Journal of Geomechanics and 11 peer reviewed international proceedings.

Prof. Dasaka S Murty
(Chairman, IGS Mumbai Chapter)

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