EROL GULER

Bogazici University - Turkey

Title of the Theme Lecture
Performance of Ordinary and Geosynthetic Encased Stone Columns in Soft Clayey Soils under Seismic Loads

Abstract
The Geotextile Encased Columns (GEC) foundation system for embankments on soft or problematic soils was introduced in 1994. The GECs consist of compacted granular fill similar to common stone columns with one decisive difference: they are confined in a high strength woven geotextile “cylinder” (encasement). Consequently, they work properly even in extremely soft soils since the GEC’s help to prevent the bulging failure. The risk of bulging is even higher for earthquake loading conditions. Vast amount of numerical, analytical and experimental research has been done to study different aspects of the GEC’s behavior. Despite these available literatures from several researchers, there is very little study, numerically or experimentally, about the seismic behavior of GECs.

To analyze the effect of earthquake on stone columns and to determine how the presence of GEC improves the soil behavior, Shaking Table tests have been conducted. With the help of these tests, it was shown that geosynthetic encasement of stone columns improves the system in several aspects under earthquake loading conditions.

Bio
Dr. Guler is a Full Professor of Geotechnical Engineering at Bogazici University since 1989. He is also an Adjunct Professor at the George Mason University. Dr. Güler has more than 35 years of experience in the field of geotechnical engineering. He has combined his academic experience to perform research and conduct multi-faceted geotechnical designs. His areas of expertise include foundation design with emphasis on pile foundations, slope stabilization, soil improvement, reinforced soil structures, soil stabilization and soil dynamics. He has performed also a large number of geotechnical investigations in various parts of Turkey for governmental agencies as well as private contractors. Dr. Güler is a leading geotechnical engineer in Turkey with respect to his academic background, work experience and innovative practice in the field of geosynthetics. He has successfully implemented his research studies to practical problems in Turkey; he is particularly well known for his geosynthetic applications within the geotechnical engineering community. Professor Guler is very active in the Geosynthetics area and is an Elected Council Member of IGS (International Geosynthetic Society). He is also the Founding President of Turkish Chapter of IGS. He is also on the Editorial Board of the Journal “Geosynthetics International”. Professor Guler acts as the Convener of WG2 of ISO (International Standards Organization) Technical committee 221 on Geosynthetics and as Convener of WG2 of CEN (European Standards Organization) Technical committee 189 on Geosynthetics. He is an international Member of USA TRB AFS70 Geosynthetics Committee. Professor Guler is also active in ISSMGE and is Member of Board of the National Committee of Soil Mechanics and Foundation Engineering (ISSMGE) and Member of Soil Mechanics and Foundation Engineering (ISSMGE) Technical Committee on Reinforced soil Structures TC 218. At Bogazici University he served as the Chairman of Civil Engineering Department (2004 – 2010), Director of Environmental Sciences Institute (1996-1999), Senator (1996-1999). Professor Guler has more than 140 scientific publications, has supervised more than 20 Ph.D. and 60 M.Sc. thesis.