

THE UNIVERSITY



OF HONG KONG

DEPARTMENT OF CIVIL ENGINEERING

SEMINAR

**Progressive Soil Arching Development under
Different Ground Movement and Surface Loading**

by

Professor Jie Han

Glenn L. Parker Professor of Geotechnical Engineering, University of Kansas, USA

Date: September 9, 2019 (Monday)
Time: 4:00 p.m. – 5:30 p.m.
Venue: Room 6-12B, Haking Wong Building, HKU

ABSTRACT

Soil arching is used to describe load transfer due to differential soil movement between two adjacent portions and exists in many geotechnical problems and applications, such as mining, tunneling, pipes and culverts, and pile-supported embankments. Trapdoor tests are often used to simulate soil differential movement in ground to investigate the load transfer mechanism. In most past studies, trapdoors are rigid and move at equal displacement or displacement rate under soil self-weight and/or uniform static surcharge. In reality, ground movement is likely not uniform and depends on soil stress and modulus and existence of geosynthetic. Surface loading may be localized and dynamic, such as traffic loading. This presentation will present a recent study conducted at the University of Kansas to investigate the soil arching behavior under different modes of ground movement and localized surface static/dynamic loading. Test results show that different modes of ground movement result in different load transfer mechanisms and localized surface dynamic loading causes more degradation of soil arching than static loading.

ABOUT THE SPEAKER

Dr. Jie Han is the Glenn L. Parker Professor of Geotechnical Engineering in the Civil, Environmental, and Architectural Engineering Department at the University of Kansas. He received his BS and MS degrees in Geotechnical Engineering from Tongji University in 1986 and 1989, respectively and his Ph.D. degree in Civil Engineering from the Georgia Institute of Technology in 1997. His research has focused on geosynthetics, ground improvement, pile foundations, buried structures, and roadways. Prof. Han is the sole author of the book entitled "Principles and Practice of Ground Improvement" published by Wiley and has published more than 350 peer-reviewed journal and conference papers. Prof. Han is the past president of the International Association of Chinese Infrastructure Professionals, the current chair of the ASCE Geo-Institute Soil Improvement Committee, and the council member of the International Geosynthetics Society. He serves as an associate editor for the ASCE Journal of Geotechnical & Geoenvironmental Engineering and the ASCE Journal of Materials in Civil Engineering and as an editorial board member for ten other international journals. He was the technical co-chair for the ASCE/IFAI GeoFrontiers Conference held in Dallas, Texas in 2011. Dr. Han has been invited to give more than 200 keynote/invited lectures and short courses around the world, including the State of the Practice Lecture at the 21st Annual George F. Sowers Symposium in Atlanta, Georgia in 2018 and the 18th UK IGS Lecture in London in 2018. He has received numerous awards from the profession including but not limited to two US Transportation Research Board Best Paper Awards in 2008 and 2017, the 2011 Shamsher Prakash Prize for Excellence in Practice of Geotechnical Engineering, the 2014 the International Geosynthetics Society Award, the 2014 Associate Editor of the Year Award from the ASCE Journal of Geotechnical & Geoenvironmental Engineering, the 2017 ASCE Martin S. Kapp Foundation Engineering Award, and the 2018 ASCE Kansas City Section Engineer of Year Award. Dr. Han was elected to the ASCE Fellow in 2014.

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