

# MITIGATING MOISTURE-RELATED ROAD PROBLEMS WITH WICKING GEOTEXTILE

## Speaker

## Professor Jie HAN

Roy A. Roberts University Distinguished Professor, the University of Kansas, USA



### Abstract

It is well recognized that moisture has detrimental effects on road performance due to the increase of soil weight, expansion-shrinkage, freeze-thaw potential, the reduction of soil strength and modulus, the soil erosion, and the asphalt stripping. Reduction of moisture can improve the road performance, often through drainage and dewatering in the current practice, which require a high degree of saturation and hydraulic gradient. Even though subgrade soil and base course in the road system above a groundwater table are under an unsaturated condition after drainage and dewatering, they may still have too high moisture contents that are still problematic to road performance. A wicking geotextile has been introduced and used in recent years to mitigate moisture-related soil problems by further removing moisture from the road system through wicking action, lateral drainage, and evaporation. This presentation will explain the functions of the wicking geotextile and present laboratory and field studies conducted to demonstrate the benefits of using the wicking geotextile to mitigate moisture-related road problems as compared with non-wicking geotextiles.

### Biography

Dr. Jie Han is a Roy A. Roberts University Distinguished Professor 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" and has published more than 450 peer-reviewed journal and conference papers. Prof. Han is the President of the ASCE Geo-Institute, the treasurer of the International Geosynthetics Society, the past president of the International Association of Chinese Infrastructure Professionals, the current chair of the US Transportation Research Board (TRB) Transportation Earthworks Committee, and the past chair of the ASCE Geo-Institute Soil Improvement Committee. He serves as the chief editor of the Geotechnical Engineering Section of the Frontiers in Built Environment journal. Dr. Han has been invited to give nearly 300 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, the 18th UK IGS Lecture in London in 2018, the 2021-2023 GMA Robert M Koerner Award Lecture in 2022-2023, and the Sun Jun Lecture in 2024. He has received numerous awards from the profession including but not limited to the 2011 Shamsher Prakash Prize for Excellence in Practice of Geotechnical Engineering, the 2014 the International Geosynthetics Society Award, the 2017 ASCE Martin S. Kapp Foundation Engineering Award, the 2018 ASCE Kansas City Section Engineer of Year Award, and the 2024 Irvin E. Youngberg Award from the Kansas State Higher Education system. Dr. Han was elected to the ASCE Fellow in 2014.



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Civil Engineering  
Conference Room  
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