

# WEBINAR ON LOAD TRANSFER MECHANISMS AND CUMULATIVE SETTLEMENTS OF PILE-SUPPORTED EMBANKMENTS UNDER TRAFFIC LOADING

**PROF. ZHENG YEWEI**



**26 FEBRUARY 2025,  
WEDNESDAY**

**4.00 PM - 6.00 PM**



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**Registration Fees**  
**Student Members : Free**  
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## SYNOPSIS

Pile-supported embankments offer advantages, such as rapid construction, easily controlled quality, and effective settlement control. These benefits have led to the widespread application in highway and railway embankments in soft soil areas. However, most existing studies focus on embankments under static loading, and the load transfer mechanisms and cumulative deformation behavior under traffic loading are not well understood. This study systematically investigates the load transfer mechanisms and cumulative settlements of pile-supported embankments using model tests, numerical simulations, and theoretical analysis. A series of model tests were conducted to evaluate the effects of geogrid reinforcement and pile-end conditions on the load transfer mechanisms of pile-supported embankments, and discrete element modeling was performed to investigate the micro-mechanism of load transfer. A 3D finite element model was developed and validated to simulate the cumulative deformation behavior of pile-supported embankments under traffic loading. A new method was proposed to determine the critical height of pile-supported embankments under cyclic traffic loading. A calculation method for cumulative settlements of pile-supported embankments under cyclic traffic loading was also proposed.

## SPEAKER'S PROFILE

Dr. Yewei Zheng is a Professor in the School of Civil Engineering at Wuhan University (WHU) in China. He received his Ph.D. degree in Geotechnical Engineering at the University of California, San Diego in 2017 and was previously a Tenure-track Assistant Professor in the Department of Civil and Environmental Engineering at the Old Dominion University in the United States. His research interests include geosynthetic reinforced soils, geotechnical earthquake engineering, soil dynamics, and unsaturated soils, with the goal of enhancing the resilience and sustainability of transportation and coastal infrastructures under natural hazards and climate changes by advancing geohazard assessment and mitigation. He is the principal investigator of several projects sponsored by the National Key Research and Development Program and the National Natural Science Foundation of China. Professor Zheng received the highly prestigious IGS Award in 2018 from the International Geosynthetic Society (IGS). He is an Associate Editor of Geotextiles and Geomembranes and Editorial Board Member of Geosynthetics International.