

WEBINAR ON EARTH LEVEE SYSTEMS: FROM KATRINA'S FAILURE TO MODERN EVALUATION IN THE CENTRAL VALLEY OF CALIFORNIA



DR. AHMAD (ADAM) MOUSA

PhD, PE, CPM

**25 SEPTEMBER 2024,
WEDNESDAY**



4.00PM - 6.00PM

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Registration Fees

Student Members : Free

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SYNOPSIS

This talk explores the evolution of earth levee assessment from Hurricane Katrina's failures to cutting-edge practices in California's Central Valley. The presentation shares the key lessons from the catastrophic failure of the levee system in New Orleans, including the overlooked problems and the need for accurate subsurface characterization and comprehensive geotechnical analysis. The in-situ investigation program adopted in The Urban Levee Evaluation (ULE) Project, including tools such as LiDAR, HEM surveys, geophysics, and dynamic field-testing techniques, is discussed. These tools provide unprecedented insights into levee integrity to quantify potential failures. California's Central Valley serves as a case study in applying these lessons and technologies. Paired logging and geophysics were extensively employed. The highlights of advanced evaluation methods for levee systems are presented, including slope stability analysis and seepage analysis, using modern software packages. The integration of CPT and SPT-based liquefaction analysis has significantly improved our understanding of seismic risks to levee systems. Lessons learned from California's experience highlight the importance of site-specific investigation and advanced analysis in risk assessment. The combined use of advanced site investigation and analytical techniques has led to more holistic evaluation and cost-effective recommendations for levee revetments. The ULE Project identified levees with deficiencies, which led to a comprehensive approach to reduce flood risk in all urban areas of California's Central Valley. The talk concludes by examining how this integrated approach sets new standards for levee safety.



SPEAKER'S PROFILE

Dr. Mousa is an accomplished academic and practitioner in civil engineering, with a wealth of experience and qualifications. He earned his master's degree in civil engineering and doctorate degrees in geotechnical engineering from USA at Purdue University and the Georgia Institute of Technology, respectively. Dr. Mousa's research expertise encompasses a range of areas, including fundamental geomechanics, geohazard, sustainable building, and forensic engineering.

Dr. Mousa is widely published, with more than 60 refereed journal and conference articles. He is the principal inventor of a patented tool for field classification of soils and also a co-editor of a book on the sustainable use of lightweight concrete and a co-author of the soil improvement manual - the Egyptian Code of Practice. Dr. Mousa supervised several graduate students at Monash University, where he was an active member of the accreditation committee and the industrial officer for civil engineering. With a unique teaching and academic experience that includes exposure to German high-education at the German University in Cairo, and more recently, Australian high-education at Monash University Malaysia, Dr. Mousa brings a diverse and multi-faceted perspective to UNNC. He sits on a number of academic committees and provides a range of administrative services.

Dr. Mousa also possesses significant industry experience in civil and geotechnical engineering, particularly in the area of infrastructures and evaluation of earth dams and levee systems. His work in this field is highly cited. Dr. Mousa's achievements are further enhanced by his engagement in mega infrastructure projects at multinational consulting firms in the United States, including CH2M Hill (Jacobs), URS Corporation (AECOM), and Tetra Tech. As a registered professional engineer in the State of California and a certified project manager (CPM). He is currently providing consulting services as a principal and technologist at Northeast Consulting Group, LLC Jersey City, NJ, USA. Dr. Mousa has demonstrated his commitment to excellence and professionalism in all aspects of his work.

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