

Geotechnical Aspects of Planning and Design of Port and Harbor Structures

Dr. Manoj Mukundan

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ABOUT THE TALK :

The geotechnical aspects of planning and designing ports are vital for ensuring the safety and functionality of port infrastructure. Key considerations include comprehensive site investigations to characterize soil conditions, which inform the selection of appropriate foundation types, such as shallow or deep foundations, depending on soil strength and stability. Engineers must assess factors like scour protection, slope stability, and liquefaction potential, especially in seismic zones. Additionally, effective design must address the impacts of dredging and land reclamation, employing ground improvement techniques when necessary to enhance soil properties. By meticulously evaluating these geotechnical factors, engineers can create resilient port structures capable of withstanding environmental challenges and operational demands. The talk will address soil investigation for design of port infrastructure, geotechnical analysis of berthing structures and breakwaters.

ABOUT THE SPEAKER :

Dr. Manoj Mukundan, Ph.D., PE, is a distinguished geotechnical engineer with over two decades of expertise in both offshore and onshore projects. He is currently the Senior Geotechnical Consultant at Somehsa Geosciences Pte Ltd, Singapore. He earned his M.E. and Ph.D. from the prestigious Indian Institute of Science, Bangalore, and has contributed significantly to major infrastructure projects since beginning his career in 1995. Dr. Manoj has worked extensively on offshore and onshore geotechnical engineering projects. Key offshore projects include pile group analysis for a platform foundation at the DAN FG location in the North Sea for Halliburton, Singapore; soil investigations for windfarm foundations in South Korea (Vena Energy) and Japan (RWE) and a “Swiss-Cheese” operation to mitigate jack-up rig punch-through in offshore Malaysia for ExxonMobil. Other notable projects include MODU leg penetration analysis in the Bay of Bengal (Transocean), geotechnical analysis of pipelines in Indonesia (McDermott), and pile driveability studies for platforms in Thailand, Malaysia, Brunei, Indonesia, and the North Sea. He is also a registered patent agent and has published numerous papers in international journals and conferences.