



About the Course

Infrastructure driven economy with Urbanization and vertical expansions, construction of High-rise buildings accompanied by surge in transportation infrastructure development and industry 4.0 demands building of structures with varied functionalities. As the land availability is scarce, the need for these structures to come upon challenging soil conditions has increased, thereby increasing the use of deep foundations. The knowledge on design, equipment and methods to build deep foundations is important for an Engineer to be industry ready in the current world where “Building structures in challenging strata with speed and precision through technology” is the key.

This course has an abridged, systematic, and complete treatment to Design and construction practices of pile foundations, corresponding load testing, quality control, environment, health and safety and challenges in the execution of Pile foundations. The materials, workmanship, and construction procedures for different piles like Cast in-situ piles, Precast piles, Under reamed piles and so on are dealt with and presented by field experts through case studies and Illustrations. It also covers the overview of the advancements in pile foundation such as CFA piles, Spun piles, and Helical piles and overview of analysis software for pile foundations.



Key Topics

- ▶ Construction, design & case studies of bored cast in-situ pile, driven cast in-situ pile, precast driven piles, precast concrete piles in pre-bored holes & under reamed piles
- ▶ Methods of load testing
- ▶ Overview of spun piles, helical piles, micro piles, CFA piles, steel piles
- ▶ Quality Checks for Pile Foundation
- ▶ Software analysis using **PLAXIS 2D**
- ▶ Challenges faced during execution



Course Objectives

The objective of the course is:

- ▶ To introduce the concept of different types of piles and their design requirements
- ▶ To elaborate the construction procedures which are involved in the piling works
- ▶ To explain the different load test which need to be conducted on the pile
- ▶ To understand the Environmental, Health and Safety standards which need to be in place for the handling of the pile works

Learning Outcomes

On successful completion of the course, the learners will be able to:

- ▶ Select appropriate pile foundation based on soil & rock conditions
- ▶ Apply the different construction methodologies and quality control of pile foundations
- ▶ Compute settlement calculations using PLAXIS 2D and carry out design of pile and pile cap including pile groups
- ▶ Carryout Dynamic Vertical load test, Lateral load test and Pullout test on piles
- ▶ Prepare bill of quantities for pile foundations