

Basic Design of Concrete Foundation & Soil Investigation Training program

Introduction:

Concrete is widely used for making architectural structures, foundations, brick, block walls, pavements, bridges, overpasses, highways, runways, parking structures, dams, pools, reservoirs, pipes, footings for gates, fences and poles and even boats. Concrete is used in large quantities almost everywhere mankind has a need for infrastructure. Foundation is the base of any structure. Without a firm foundation, the structure cannot stand. That is the reason why we have to be very cautious with the design of foundations because our entire structure rests on the foundation. The strength of the foundation determines the life of the structure. The design of foundation depends on the type of soil, type of structure and its load.

Who Should Attend?

Civil and Structural Engineers and Designers, Soils and Foundation Engineers, Public Works Professionals, Project Engineers and Managers, Contractors, Engineers-in-Training, Architectural Engineers and Architects.

Course Objectives:

By the end of this course delegates will be able to:

- Have a working knowledge needed for design of shallow and deep foundation systems, and their interacting soil behaviors
- Know how to estimate and control settlements and handle or modify difficult soil conditions
- Understand basic concepts for planning, design, and construction of a wide range of foundation systems

Course Outline:

- Soil engineering principles for foundation design
- Load and resistance factor design (LRFD) for foundations
- Ground modification (in-place, controlled manufacturing of ground materials to form part of soil system
- Site investigations and specifications for foundations
- Contractual considerations in foundation design and construction

- Settlements of foundations on sands and clays
- Bearing capacity for shallow foundations
- Foundation construction on problem soils (organic soils and peats)
- Rammed aggregate pier systems: design and construction
- Driven pile foundation design and analysis
- Design, construction and testing of micro-piles
- Application of dynamic methods to pile foundation design and construction control
- Drilled shaft and pier foundation design and analysis
- Basic concepts in concrete technology
- Types of cements, aggregates, and admixtures in concrete
- Properties of fresh and hardened concrete
- Concepts of strength and serviceability limit states, load and capacity reduction factors
- Preparation and critical evaluation of concrete specifications
- Drilled shaft and pier foundation design and analysis
- Design and construction: wind turbine foundations
- Design of machine foundations
- Concrete mix design and ability to assess concrete mix proportions for various applications
- Estimation of loads and their representation on structures
- Basic analysis of slabs in the floor system
- Specifications for durability and fire resistance
- Design and detail reinforced concrete beams, slabs and columns for strength and serviceability limit states
- Interpret and use concrete structures and loading codes of practice
- Geotechnical site investigation & laboratory testing