Advanced Civil Concrete Technology Training program

Introduction:

Concrete technology refers to the process of using concrete in various structures. It can also be defined as the widespread use of concrete globally. The durability and versatility of the concrete material is one of the major reasons why people decide to use it in buildings, homes and any other structures in the field of construction. It is now widely used in creating architectural structures, block or brick wall, foundations, motorways or roads, dams, reservoirs or pools, parking structures, runways, footings designed for gates, poles, fences, pipes, overpasses or bridges and pavements. When planning to use concrete technology to build structures, you should remember that concrete is a combination of 2 major components namely the paste and the aggregates. The paste is mainly composed of water and cement and works by binding the aggregates that usually come in the form of crushed stone and sand and gravel into a mass which looks like rock. The chemical reaction between water and cement works in hardening the paste. It should be noted that you can also add other chemical admixtures and supplementary materials into the paste to make it even more useful. The aim of the course is to provide a teaching and learning experience for the candidates such that they obtain an in-depth knowledge at an advanced level of a wide variety of topics within the field of concrete technology.

Who Should Attend?

Construction Engineers, Senior Construction Engineers, Construction Supervisors, Construction General Supervisors, Construction Project Managers, Engineering Technologists, Supervision Engineer, Inspection Engineers, Civil Inspectors, Foremen, Design Structural Engineers, Planners, Structural Engineers, Material Specialists, Quality Control and Quality Assurance Experts, Architects, Supervision Engineers, Team Leaders, Site Officers and Managers, Mechanical Engineers, Technical Professionals, Field Production Supervisor, Operation Engineers, Clients Representatives

Course Objectives:

By the end of this course delegates will be familiar with:

- Introduction to concrete technology
- Performing tests to determine the contents of cement
- Taking advantage of test and calibration samples
- Different test methods that you can use including the pressure filter method, constant volume method and the buoyancy method
- Basics of particle density determination
- Basics of testing water content using a variety of methods including the oven-drying method, microwave oven method and the high-temperature method
- Different strength-testing machines that you can use for concrete structures
- Compression testing machines specifications
- Basics of force calibration and force transfer
- A more comprehensive overview about flexural and tensile strength testing
- Major objectives of early-age and accelerated testing
- Effectively analyzing hardened concrete and mortar
- Analyzing mortar as a means of determining proportions
- Basics of determining chloride content, sulphate content, alkalis content and cement or original water ratio
- Determining the accuracy and precision of the identified concrete content and mortar mix proportions
- Major reasons why you need to take and test cores
- Required size, location, number of cores and drilling procedures
- Diagnosing, inspecting, testing and repairing reinforced concrete structures
- Effectively recognizing defects in concrete
- Identifying poor quality construction and preventing it

Course Outline:

- Cements
- Additions to Concrete
- Admixtures
- Aggregates
- Fresh Concrete
- Setting and Hardening Concrete
- Properties of Hardened Concrete
- Durability of Concrete and Concrete Construction
- Mix Design
- Special Concretes
- Special Processes and Technology for Particular Types of Structure
- Ready-Mixed Concrete
- Exposed Concrete Finishes
- Repairing Concrete
- Formwork

- Concrete Plant
- Precast Concrete
- Concrete Roads
- Industrial Floors
- Principles of Reinforced and Pre-Stressed Concrete
- Test Methods and Equipment
- Quality Concepts
- Quality Control
- Statistics
- Standards
- Specifications and Codes of Practice
- Assessment of Concrete Construction