A Guide to Basics of Concrete

Training program

Introduction:

Concrete is widely used in domestic, commercial, recreational, rural and educational construction. Communities around the world rely on concrete as a safe, strong and simple building material. It is used in all types of construction; from domestic work to multi-storey office blocks and shopping complexes. Despite the common usage of concrete, few people are aware of the considerations involved in designing strong, durable, high quality concrete. This course aims to provide a clear, concise explanation of all aspects of making quality concrete; from the Materials and Properties involved through Planning, Preparation, Finishing and Curing.

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

This course addresses the needs of unskilled and semi-skilled persons undertaking general concreting projects including home and handyman projects. Concrete Basics also assists owner builders in the supervision of construction. It aims to develop an understanding of highly technical terms through clear definition accompanied by simple illustrations. A general understanding of these terms will help to facilitate communication within the building industry. It will help to generate a higher standard of workmanship on-site and facilitate better communication among construction workers, builders, engineers, building surveyors, architects and anyone interested in understanding the processes involved in making quality concrete.

Course Objectives:

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

- Have an overview of the history and importance of the concrete industry
- Have a general knowledge of the key events in the development of the concrete industry and the products that it makes
- Have an understanding of the terminology used in the concrete industry
- Understand of the types of materials used to manufacture concrete and their significance

- Know the properties of concrete
- Learn about the key steps in concrete production and supply including ordering, mixing, delivery and testing
- Identify the key onsite activities including finishing, placing and curing and the effects on concrete quality
- Have a general knowledge of the key safety and environmental requirements for the concrete industry

Course Outline:

Fundamental Concrete Concepts

- Understanding the concrete needs for your project
- Matching materials to project requirements
- Moving from materials to completed project

Selection and Use of Materials

- Cementitious materials
- Aggregates
- Chemical admixtures
- Water
- Fibers

Codes and Specifications

- What' s a Code and what' s a Specification?
- Requirements of ACI 318
- Requirements of ACI 301

Concrete Production

- Ordering and basis of sale
- Production facility
- Delivery issues
- Resolving disputes
- Inspection and certification

Sampling and Control Tests for Concrete

- Why do we test concrete?
- When do we test concrete?
- How do we test concrete?

Evaluation of Test Results

- General review of a test report
- Evaluating cylinder data
- Identifying trends in the test data

In-Place Evaluation of Strength

- Evaluation process
- Testing methods

Concrete Materials

Concrete Properties

Concrete Testing

Ordering Concrete

Proportioning and Mixing Concrete

Planning and Site Preparation

Transporting and Placing Concrete

Compacting Concrete

Finishing Concrete

Curing Concrete

Joints in Concrete

Hot and Cold Weather Concreting

Surface Finishes on Concrete

Defects in Concrete

Removing Stains from Concrete

Cracking in Concrete

Reinforced Concrete

Formwork