



Advanced Technique for Design, Construction and Repair

5-day Training program

WORKSHOP OBJECTIVES

There are many development and researches every days and ongoing to enhance the concrete production and properties. so in this course will present up to date techniques in concrete industry from design stage, construction and repair stage.

In order to improve the properties of concrete, recent advances in material science introduce new materials or admixtures to be added to or replace conventional concrete materials. Such materials could be used in new concrete construction and/or in repairing new or existing structures. Moreover, there are many researches in using different types of structure system to carry all types of loads in normal and high-rise buildings. Therefore, this course will illustrated all the structures system up to date, advantages, and disadvantages for every system.

Moreover, the trend on the international codes as ACI and BS will be presented to increase the engineering sense about design feeling by comparing between the different codes and standard. The new pushover structure analysis will be illustrated to evaluate the structure optimizing the design of high-rise building. There are also parallel advanced techniques in construction to produce high quality concrete on site will be presented.

This five-day course will introduce newly developed concrete materials as well as the repair materials utilized in most repair works in concrete structures either for those needed during construction or for rehabilitation of existing structures. The course will also cover test methods and technical specifications for such materials as well as troubleshooting for their most common problems. At the end of this course, participants will know the necessary information about the different advanced concrete materials.

So, this course presents for all people who are working on the area of the repair and maintenance of the reinforced concrete structure the recent technology and the golden rules using in the repair work and preparing the maintenance strategy.

The course introduces the ways of repair for different concrete structure elements and presents the precaution and the materials and other resources needed for each type of repair.



WHO SHOULD ATTEND

This seminar is designed for people in construction, industry and government who are involved in building construction and maintenance and repair programs. This also design for who are involved in preparing maintenance document package and diagnosis the reasons of failure and also the engineers who define and choose the methods of repair.

PROGRAM

Day One

- Different structure system
- Different slab types
- Composite section
- Structure system for high rise building
- Loads effect on the building in different codes (ACI, BS)
- Ballast load material precaution
- New trend in international codes
- Pushover analysis
- Standard Test Methods for Non-Conventional Concretes and Reinforcement

Day Two

- High Strength Concrete: General
- High Performance Concrete and Ultra HPC
- Self-compacted concrete (SCC) design mix
- Special Constituent materials and Admixtures
- Construction Practices for Concrete in the Gulf area
- Construction practices for high rise building
- Quality control on site
- Specifics of Gulf Environment
- Precautions for different concreting operations in the hot weather of Gulf region
- Slag (GGBS), Fly Ash, and Silica fume
- High Strength Concrete: Production
- Pump concrete mix design

Day Three

- Standard test methods for fresh and Hardened Special concretes
- Standard specifications for epoxy coated bars
- Standard test methods for properties of FRP rods
- Technical Specifications for Concrete and Reinforcement
- Sample concrete and reinforcement specifications
- Protecting steel reinforcement from corrosion by advanced materials
- Non-Traditional Types of Reinforcement Used in Concrete Structures
- Galvanized and epoxy coated bars
- (FRP) reinforcement for concrete
- Anodic inhibitor
- Cathodic protection system

Day Three

- Evaluating the existing structure
- Define repair procedure
- Convention repair methods to slab and beam
- Foundation repair by new materials
- Using steel section to repair Latex Modified Concrete:
- Standard Specifications and Guides
- Latex Modified Concrete: Production
- Mix Proportioning and placing
- Finishing and Curing
- Latex Modified Concrete: Properties and Applications

Day Five

- Strengthen by steel sections
- Repair technique by using CFRP
- Design of the CFRP philosophy
- Selecting the reasonable materials.
- Execution of the CFRP
- Advanced programs for inspection and repair