SC016:
Assessment, Evaluation and Repair of Reinforced Concrete Structure
Training Description:

This intensive training course will present the methods of inspection and evaluation of buildings and will diagnose the reason of concrete deterioration or the corrosion of the steel bars to develop preventive maintenance program. The causes of structure deterioration will be discussed in deeply and concentrate on the reason of corrosion and new protection methods to the steel bars. The repair of the reinforced concrete structures recently developed by using new materials will be discussed theoretically and practically, its advantages and disadvantages and how to use the suitable method.

The assessment of the reinforced concrete structure is now a main challenge to the civil engineer. The repair of the reinforced concrete structures has developed in the recent years due to the new technology of the materials and the techniques of maintenance and repair.

The preventive maintenance strategy with its target and plan in scope of economic point of view will be illustrated in this course, as well as the background of the new software used in the area maintenance management system. Risk based inspection technique will be presented in scope of likelihood of building failure, consequences of failure and the building risk matrix.

The course will highpoint:

➢ Assessment and evaluation technique for concrete and steel structures
➢ The importance of inspection and testing activity
➢ Applying the inspection and testing in many construction areas
➢ Focusing on practical and theoretical ways of inspection
➢ How to integrate new inspection technique into the work domain

Training Objectives:

By the end of the training, participants will be able to:

✓ Familiarise testing and inspection techniques of engineering materials
✓ Understand workmanship in building construction
✓ Understand NDE for the steel and welding
✓ Acquire the capability to inspect the finishing work activity
✓ Perform testing and inspection for road construction
✓ Apply the ways and skills for the inspector

Personal Impact:

✓ Enhance the skills of inspection of the trainee
✓ Increase knowledge of up to date of execution phase
✓ Increase the skill for maintenance approach
✓ Increase the skill to design CFRP

Organisational Impact:

✓ Improve the maintenance cost by enhancing the engineering review process
✓ Improve the maintenance cost by enhancing the construction and materials selection process
✓ Reduce the maintenance cost by using new approach for structure assessment
✓ Increase the structure capital investment by increasing its life time
✓ Improve the organization investment by providing a durable structure by better design, construction or maintenance
Training Designed for:

This course is intended for those Professionals including Architects, Engineers, Practicing Building Construction Inspectors, Project Engineers, Technicians and Technologists involved with building maintenance, and Contractors and Building Owners.

Training Program:

**DAY ONE:**
- **PRE-TEST**
- **Building Assessment**
  - Introduction to mature structure
  - Codes and standard deficiency
  - Inspection and evaluate the buildings
  - Methods of Inspection
  - Visual inspection criteria
  - Inspect the building using a new technique
  - Using ultrasonic and infrared for inspection
  - Evaluate the building risk
  - Diagnoses the reason of deterioration
  - Practical exercise: Define the cracks types
  - Practical exercise: Cracks in miscellaneous foundations

**DAY TWO:**
- **Problems in Design, Materials and Construction**
  - Concrete materials problems
  - Construction ways affect concrete durability
  - Design error affect structure integrity
  - Corrosion and protection of steel structure in concrete
  - Protection of reinforcing bars
  - Define the method of repair
  - Videos presenting a repair method
  - From inspection and analysis predict the structure lifetime

**DAY THREE:**
- **Properties of Protective Coating**
  - Precaution during repair
  - Selecting the materials repair
  - Step by step repair procedure
  - Methods of protection
  - Cathodic protection
  - Comparison between different type of protection
    - Evaluate the current protective coating
    - Types of protective coating
    - Properties of each type
    - Precautions in using the coating
DAY FOUR:
❖ Methods of Repairing the Cracked Structure Corrosion
   • Types of cracks in R. C. structures
   • Comparison between different cracks
   • Reasons for each type
   • Methods of repair and prevent for each type.
   • Materials using to repair corroded structure
   • Methods of repair
   • Using polymer bonding materials
   • Types of polymer
   • Properties of these materials
   • Ways of using steel sections in repair

DAY FIVE:
❖ Maintenance Strategy
   • CFRP design
   • CFRP applications
   • Likelihood of building failure
   • Define consequences of failure
   • Provide risk matrix
   • Risk based inspection (RBI)
   • Maintenance plan and strategy
   • Maintenance plan based economic cost
   • Preparing priority lists
   • Software for maintenance strategy
   • Case study

❖ Course Conclusion
❖ POST-TEST and EVALUATION

Training Requirements:

“Hands-on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Please note that the above topics can be amended as per client’s learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:
• 30% Lectures, Concepts, Role Play
• 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
• Pre and Post Test
Training Certificate(s):
Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:
As per the course location - This rate includes participant’s manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:
07:45 - 08:00  Morning Coffee / Tea
08:00 - 10:00  First Session
10:00 - 10:20  Recess (Coffee/Tea/ Snacks)
10:20 - 12:20  Second Session
12:20 - 13:30  Recess (Prayer Break & Lunch)
13:30 - 15:00  Last Session

For training registrations or in-house enquiries, please contact:
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Training & Career Development Department