Building Preventive Maintenance

Introduction:

This training course presents the methods of inspection and evaluation of buildings and diagnosis and reason of concrete deterioration or the corrosion of the steel bars to develop preventive maintenance program. The causes of structure deterioration will be discussed and topics will concentrate on the reasons of corrosion and new protection methods to the steel bars.

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

This BTS course will also introduce the ways of repair for different concrete structure elements and presents the precaution, materials and other resources needed for each type of repair. The design of CFRP for strengthening will be presented and the way of using steel sections in repair. The rehabilitation and maintenance strategies will be discussed in scope of recent technique of risk based inspection and structure reliability.

This training course will feature:

- 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

Who Should Attend?

This BTS course is suitable to a wide range of professionals:

- Architects
- Engineers
- Practicing Building Construction Inspectors
- Project Engineers
- Technicians and Technologists involved with building maintenance

This training course will also benefit owners, contractors and building owners, who wish to become more effective by better understanding the requirements for assessment, inspections and repair for concrete structure.

Course Objectives:

By the end of this training course, participants will be familiar with:

- Testing and inspection techniques of engineering materials
- Workmanship in building construction
- NDE for the steel and welding
- The capability to inspect the finishing work activity
- Testing and inspection for road construction
- The ways and skills for the inspector

Course Outline:

Day One: 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 techniques
- Using ultrasonic and infrared for inspection.
- Evaluate the building risk
- Diagnoses the reason of deterioration
- Workshop: Define the cracks types
- Workshop: cracks in administration building

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 methods
- From inspection and analysis predict the structure life time

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 Repair - 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
- CFRP applications

Day Five: Maintenance Strategy

- 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