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بروجاكس للتدريب والتطوير
Projacs Training and Development

Advanced Materials in Repair and Restoration of Buildings – Design and Implementation

المواد المتقدمة لإصلاح وترميم المباني – التصميم والتنفيذ

08 – 12 August 2021

Dubai / UAE



ProjacsAcademy.com



Introduction

In the past, outmoded and functionally obsolete buildings were routinely demolished; today they are often maintained, repaired, remodelled and restored. The concept of recycling, once applicable to collecting glass bottles, metal cans and newspapers, now has engineering significance. Recycling buildings can be viewed as a way to conserve resources and reduce landfill demand.

The most astounding challenge facing engineers and scientists to-date has been in the development of new, advanced construction and repair materials. The new technology of polymer composites, initially used by the aircraft industry, has now found its way to the construction industry and is bound to have a huge impact on the way structures are built and repaired.

Advanced materials with superior qualities require the collective efforts of engineers, chemists, physicists together with economists and aestheticians. If this can be done in a really imaginative way, then the future opportunities are enormous. The concept of recycled buildings is already attracting attention and the idea is probably not mere fiction.

Objectives

By the end of this course practitioners shall learn to:

- Characterization of defects in buildings in general.
- Causes of defects in concrete buildings.
- Different construction systems for buildings.
- Ways to repair structural defects.
- Characterization of materials developed and methods of use.
- Modern construction systems.

Who Should Attend?

This course is designed to meet the needs primarily of structural engineers, material specialists, quality control and quality assurance experts, construction and supervision engineers, and contractors.

Because it avoids impenetrable technical terminology, the course content should be easily followed by architects who are seeking to broaden their knowledge of repair methods and materials.

Engineers involved in design, supervision, construction or planning will find many direct links with their practice and requirements and can put the information provided to use immediately.

Course Outline

DAY 1:

Concrete as an old and new material

- Concrete as an old material
- Properties of concrete
- The development of reinforced concrete structure
- Concrete with admixture
- Concrete with polymers

DAY 2:

Engineering Analysis of Structural Defects and Failures

- Causes of deterioration of structures
- Shape of distress
- Analysis of the cracks and defects
- Solved examples of defects

DAY 3:

Repair of structural element

- Testing of the deteriorate structure
- Propping of the defected elements
- Repair of columns
- Repair of beams
- Repair of slabs
- Repair of cracks

DAY 4:

New materials for construction

- Fibre reinforced polymers
- Using FRP as a reinforcement
- Using FRP as a repair material
 - Advantages
 - Disadvantages
 - Method of application for various type of structural elements
- Grancrete as a replacement of cement
 - Grancrete properties
 - Advantages and disadvantages

- Applications
- Self-compact concrete
- High strength concrete

DAY 5:

New systems for construction

- Sandwich panel structures
- Coffour system
- M2 system
- Composite construction
- How to make a structural report for structural safety problems?

Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation
- slides and handouts
- Post-assessment

Program Support

This program is supported by interactive discussions, role-play, case studies and highlight the techniques available to the participants.

Schedule

The course agenda will be as follows:

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|---------------------|------------------|
| • Technical Session | 08.30-10.00 am |
| • Coffee Break | 10.00-10.15 am |
| • Technical Session | 10.15-12.15 noon |
| • Coffee Break | 12.15-12.45 pm |
| • Technical Session | 12.45-02.30 pm |
| • Course Ends | 02.30 pm |

Course Fees*

- **2,950USD**
**VAT is Excluded If Applicable*