PROJACS ACADEMY
by egis

Preventive Maintenance of Facilities

الصيانة الوقائية للمرافق

13 – 17 November 2023

Dubai / UAE

Introduction

Structures, like people never get younger. Structures, like people can maintain their good health with age, if properly cared for, examined, and treated when needed. One may view this course, in this context, as a structural Physician's reference.

It may be said that a structure that has withstood the combined effects of use, abuse, loads, and environmental conditions over time has, in fact, proven itself. However, buildings and other structures do deteriorate with time because of repeated loadings, exposure to the elements, aging of materials, wear and tear from normal use, abuse, inadequate maintenance, and other factors.

Engineers and managers working in the field of design, construction and maintenance of structures often feel the lack of a comprehensive practical guide on the practice, needs and effective programs of good maintenance. Few practical references are available that bridge the gap between theoretical, technical, practical and managerial matters in this regard.

This course is planned to answer technical questions frequently asked by the experienced engineer and executive. It includes information about the significance of applicable codes and standards, critical characteristics of a given structure, critical loads, types and causes of common deficiencies of structures, workable preventive measures for the decay and deterioration of structures, maintenance work types, root cause analysis, comprehensive check list library and the use of innovative technology and new materials.

Objectives

- To understand the philosophy and significance of codes and standards
- To learn about the uncertainty associated with loads and load effects
- To understand the causes and mechanisms leading to deficient structures
- To workout preventive measures to counteract deterioration of structures
- To plan effective maintenance programs
- To understand the nature of innovative technology and new materials
- To learn about specific needs and requirements for concrete, steel and other structures
- To comprehend the role of the designer, the contractor and the supervision in producing sound structures
- To provide an overview for the role of effective management
- To provide a comprehensive check list library for maintenance jobs
- To learn from past lessons
- To learn from historical structures that stood the test of time

Who Should Attend?

This course is designed to meet the needs primarily of engineers and managers, facing the challenges of maintaining and preserving good, sound structures. It is generally useful for engineers of different disciplines, quality assurance experts, construction and supervision engineers, owners and managers of constructed facilities.

It is expected that a number of the attendees will find the information beneficial and a useful addition to their reference library even though they are not directly practicing in the field.

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

Course Outline

Day One

Road to Good Design, Construction and Maintenance Practices

- Why do we need the codes?
- The multidisciplinary design effort
- Coordination problems
- Design – construction process
- Structural behavior- natural vs. forced
- Design standards and their relationship to structural performance
- List of 100 most frequently cited OSHA construction standards
- Technical specifications, shop drawings, document review
- Design and construction checklists
- Categories of building life
- Degradation factors
- Maintenance levels
- Systematic maintenance programs
- Options other than repair
- The uniform code for building conservation

Day Two

Assessment of Site Conditions

- Construction safety codes
- Inspection of structures
- Human perceptions of durability
- Accepting undesirable existing conditions
- Improvements in durability
- Quality creation
- Data acquisition, condition survey
- Detailed inspections
- Problem conditions requiring special consideration

Maintenance and Repair Strategies

- Anatomy of surface repairs
- Repair concepts
- Repair approaches
- Shoring
- External prestressing
- Supplemental reinforcement
- Stress reduction

- Internal, external grouting
- Epoxy repair
- Span shortening techniques
- Different strategies
- Polymer composites

Day Three

Maintenance – The Science, Art and Philosophy

- Maintenance interdependency
- Maintenance organization
- Maintenance program content
- Maintenance deficiencies
- Responsibilities of maintenance
- Maintenance work types
- Centralization vs. decentralization
- Self-directed work teams
- Breakdown, corrective and preventive maintenance
- The law of intelligent action
- Root cause analysis
- The five whys

Day Four

Preventive and Predictive Maintenance

- Six misconceptions about
- Six patterns of failure
- Hidden failures
- Task list
- Failure history impact on task list
- Short repairs and high productivity
- Three rules for short repairs
- Example of corrective action
- Pencil, panic, planned, productive and percussive maintenance
- Tighten, lubricate, clean
- Save money by rethinking
- Is the organization ready for predictive maintenance
- Questions to ask before you begin
- Is the organization ready for the future?
- Check list library

Day Five

Preventive Maintenance Details for Effectiveness

- Predictive maintenance – state of mind
- Should this be glycol?
- Preventive Maintenance compliance
- Raw Preventive Maintenance measurement
- Preventive Maintenance effectiveness
- Reasons to outsource Preventive Maintenance
- Reasons to stay away from outsourcing
- Personal issues
- Insure the Preventive Maintenances are done as designed
- The future of Predictive and Preventive Maintenance

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 7” Tablet 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:

- 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*

- **3,200 USD**
  **VAT is Excluded If Applicable*