PROJACS ACADEMY
by egis

Maintenance and Repair of Structural, Architectural & Electro-Mechanical Facility Work Items

المتطلبات الفنية لصيانة وإصلاح الأعمال الإنشائية والمعمارية والكهروميكانيكية للمرافق

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Istanbul / Turkey

Introduction

Structures (including structural elements, architectural works, and electro-mechanical facilities) like people never get younger. Structures, like people can maintain their good health with age, if properly cared for, examined, maintained, and repaired when needed.

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.

Objectives

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, 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.

Who Should Attend?

This course is designed to meet the needs primarily of engineers and managers, working in the area of construction engineering, and facing the challenges of maintaining and preserving good, sound buildings. It is specifically useful for structural engineers, Architectural engineers Electro-mechanical engineers, quality assurance experts, construction and supervision engineers, owners and managers of constructed facilities.

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 One

- Introduction to maintenance and repair works
  - Meaning of maintenance and repair.
  - When we Need for maintenance or repair?
  - Target of maintenance organization.
  - Objects and maintenance works.
- The structural organization of maintenance management.
- Establishing of maintenance objectives
- Factors to be included in maintenance objectives.
- Maintenance Strategy
  - The Factors Determining Maintenance Strategy.
  - Total Productive Maintenance (TPM)
  - Top-Down-Bottom-Up Approach (TDBU)
  - Reliability Centered Maintenance (RCM)
- Maintenance Types

Day Two

- Maintenance and repair of structural works
  - Safety of Structures
  - Serviceability of structures
  - Establishing the capacity of the structure
- Assessment of Site Conditions
  - Construction safety codes
  - Inspection of structures
  - Accepting undesirable existing conditions
  - Improvements in durability
  - Detailed inspections
  - Problem conditions requiring special consideration
- Engineering Analysis of Structural Defects
  - Types and causes of nonperformance and failures
  - Causes of deterioration of concrete
  - Exposure to aggressive chemicals
  - Carbonation
  - Freeze and thaw disintegration
  - Erosion
  - Alkali-silica reactivity
  - Thermal volume change
  - Fire damage
  - Non-structural elements

Day Three

- 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
- Repair works
  - Reasons and causes of deterioration of structural elements.
  - Shape of distress for structural elements.(slabs-beams- columns-walls-foundation)
  - Repair of different structural elements.
    - Shoring
    - Preparing
    - Constructing of repair works.
    - Protecting the repair works.

Day Four

- Maintenance and repair of architectural works
  - Types of architectural elements.
    - roofing
    - paints
    - Wooden works
    - Walls
    - Stairs
    - Fences
    - Cladding
  - Life time of architectural elements
  - Inspection period of architectural elements.
  - Causes of deterioration of architectural elements.
  - Maintenance of architectural works.
  - Repair and replacement of architectural works.

Day Five

- Maintenance and repair of Electro-mechanical systems
  - Types of Electro-mechanical systems.
    - Water supply system
    - Sanitary system.
    - A/C system
    - Electric system.
    - Heating and ventilating system
  - Life time of Electro-mechanical systems
  - Inspection period of Electro-mechanical systems.
  - Causes of deterioration of Electro-mechanical systems.
  - Maintenance of Electro-mechanical systems.
  - Replacement of Electro-mechanical systems

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*

المقدمة

إن الهياكل (بما في ذلك العناصر الهيكلية، والأعمال المعمارية، والمرافق الكهربائية والميكانيكية) مثل البشر فهي لا تفضل على حالها. ولكن الهياكل، مثل البشر يمكن الحفاظ على صحتهم الجيدة مع التقدم في السن، إذا كان يهتم بها بشكل صحيح، تفحص وتصان، وتُصَلَّح عند الحاجة.

ويمكن القول إن البنية التي صمدت بين الآثار المترتبة على الاستخدام، والإساءة، والأحمال، والظروف البيئية مع مرور الوقت، أثبتت في الواقع نفسها. ومع ذلك، فإن المباني والهياكل الأخرى تتدهور مع مرور الوقت بسبب التحميل المتكرر، والتعرض للعناصر، وقدم المواد، والبلى من الاستخدام العادي، والإساءة، وعدم كفاية الصيانة، وعوامل أخرى.

المهندسين والمديرين العاملين في مجال تصميم وبناء وصيانة الهياكل غالبا ما يشعرون بعدم وجود دليل عملي شامل على الممارسة والاحتياجات والبرامج الفعالة للصيانة الجيدة. وهناك عدد قليل من المراجع العملية المتاحة التي تسد الفجوة بين المسائل النظرية والتقنية والعملية والإدارية في هذا الصدد.

الأهداف

من المقرر ان هذه الدورة ستجيب على الأسئلة التقنية التي كثيرا ما يطلبها مهندس من ذوي الخبرة والتنفيذية. وهو يتضمن معلومات عن أهمية القوانين والمعايير المطبقة، والخصائص الحرجة لهيكل معين، وأسباب أوجه القصور المشتركة في الهياكل، والتدابير الوقائية القابلة للتطبيق من أجل الاضمحلال وتدهور الهياكل، وأنواع أعمال الصيانة، وتحليل الأسباب الجذرية، واستخدام التكنولوجيا المبتكرة والمواد الجديدة.

الحضور

تم تصميم هذه الدورة لتلبية احتياجات المهندسين والمديرين في المقام الأول، والعمل في مجال هندسة البناء، ومواجهة تحديات صيانة والحفاظ على المباني الجيدة والسليمة. إنه مفيد بشكل خاص للمهندسين الإنشائيين والمهندسين المعماريين والمهندسين الكهروميكانيكيين وخبراء ضمان الجودة ومهندسي البناء والإشراف ومالكي ومديري المرافق المشيدة.

سيجد المهندسون المشاركون في التصميم، أو الإشراف أو البناء أو التخطيط العديد من الروابط المباشرة مع ممارساتهم ومتطلباتهم ويمكنهم استخدام المعلومات المقدمة على الفور.