

Damage Assessment and Rehabilitation Of Concrete Structures Training

Description

Course Description

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Over the past 60 years, it is remarkable how much has been learned, and how much knowledge has been applied-about the physical properties of concrete, and the impact of the environment, fire, wind, earthquake, etc. Nevertheless, many patterns continue to be repeated. Structures still fall prey to natural and man-made disasters. Partly this is due to unforeseen problems that have arisen as we have stretched our technology to higher levels, built on marginal sites, or attempted to cut cost by cutting corners

Structural dysfunction (even failure) is not just an accident. It is the result of human error originating from oversight, carelessness, ignorance or plain lack of knowledge. Early savings in design and construction costs often boomerang as later and larger costs of repair and litigation.

In short, structural malfunction may be characterized as the unacceptable difference between intended and actual structural performance. We must conclude that in the field of structures, as in any other field of human endeavour, only better knowledge and a deeper consciousness of our professional, human and social responsibilities can lead to the construction of safer and better performance buildings.

Sound knowledge can also help us with the proper means to maintain and rehabilitate deficient structures when the need arises, eventually extending the lifespan of structure and leading to better performance under service conditions

Course Objective

- To understand the critical characteristics of a given structure
- To understand the types and causes of common deficiencies (even failures) of structures
- To explain methods of observation, instrumentation and testing
- To workout preventive measures to counteract deterioration of structures
- To comprehend workable temporary and permanent repairs for any particular structure
- To provide a comprehensive practical guide on the practice and business of assessment of site conditions and evaluation and repair strategies and techniques of concrete structures, or others

structures
- To understand the nature of innovative technology
- To provide an overview for the role of effective management
- To comprehend the role of the designer, the contractor and the supervision in producing sound structures

Course Outline

Upon the successful completion of this seminar, participants will be able to:

- Understand the various types of damage that can affect concrete and reinforced concrete structures and be familiar with their effects in the assessment and rehabilitation of the structures
- List down the codes and standards used in the assessment and rehabilitation of concrete structures and identify the design precautions for carbonation and chloride ingress
- Know the method of damage assessment including the identification of service and exposure conditions of concrete structures
- Learn how to conduct visual and exploratory investigation of damaged concrete structures and determine ways on how to locate and monitor delaminated concrete, voids, cracks, honeycombs, etc
- Explain the principles of rehabilitation including methods to prevent defects in concrete, rehabilitation methods against corrosion damage and determine the required properties of repair materials and systems in concrete structure
- Explain the surface repair of concrete structures, list material requirements, reinforcing steel cleaning, repair & protection and be familiar with the placement methods that are applied to the concrete structures
- Employ the proper procedure for strengthening and stabilization of concrete structures including the techniques/design considerations, shear transfer strengthening between members, stress reduction techniques and crack stabilization
- Identify and apply the strategies and methods of protection of concrete structures
- Be familiar with risk-based maintenance strategy as well as the required repair time, required time to start of corrosion, time required to start of deterioration and cost analysis for different protection methods

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