

€ TRAINING

Concrete Structural Design for Industrial
Sector





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Introduction:

This training program offers specialized instruction tailored for professionals involved in designing concrete structures for industrial applications. It will allow engineers to be familiar with using American Concrete Institute Standard ACI and British standard BS.

Program Objectives:

At the end of this program, participants will be able to:

- Explore the modern and effective procedures for the design of reinforced concrete structures in the Oil & Gas industry.
- Gain knowledge on calculation for reinforced concrete elements used in the Oil & Gas industry.
- Increase the knowledge and assist in using new tools for designing and reviewing the design for a new project or modify the existing one.
- Gain knowledge on the design of foundation under all types of vibrating equipment, and the blast design of buildings.
- Illustrate the real design issues that may assist the designer in providing the concrete structure that is safe, economical, and constructible.
- Understand the rule of thumb to check the concrete design with an associated checklist.

Targeted Audience:

- Civil Engineer.
- Structural Engineer.
- Architectural Engineer.

Program Outlines:

Unit 1:

Introduction to Reinforced Concrete:

- The Fundamentals of Concrete Technology.
- Comparison between ACI and BS for Concrete Design.

- Principal, Limitations for Different Codes in Concrete ACI, BS codes, European Code.
- Codes and Standards Philosophy.
- Define the Different Loads on the Building.
- Earthquake and Wind Load Effect.
- Define Loads of Static and Dynamic Equipment, Define the Loads on the Foundation of Tanks.

Unit 2:

First Principles of Structural Reinforced Concrete:

- The Basic Concept of Concrete Design.
- The Principal of Concrete Design and Precaution.
- Different Structure Systems, Different Slab Types.
- Design of Slab, Beam, and Columns.
- Loads Applied in a Horizontal Vessel Separators.
- The Effect of Thermal Loads on Heaters.
- Design of Heater Foundations, Design of Foundation Under Tower.

Unit 3:

Geotechnical Problems & Design of Foundations:

- Soil Investigation.
- Shallow Foundation Design Philosophy.
- Pile Foundation Design Philosophy.
- Anchor Bolt Design.
- Foundation under Machines Design.
- Checklist to Review Foundation under Rotating Equipment.
- Precaution in Design Foundation under Vibrating Machines.

Unit 4:

Design of Special Reinforced Concrete Constructions I:

- Design Blast Resistance Building such as Control Room.
- Control Room Layout and Configuration.
- Pipe Rack Configuration.
- Define Loads which Affect Pipe Rack.
- Pipe Rack Design.
- Retaining Walls Design Principals and Checks.
- Load and Forced in Retaining Walls.

Unit 5:

Design of Special Reinforced Concrete Constructions II:

- Design for Reinforced Concrete Liquid Tanks.
- Structure System for Concrete Tanks.
- Circular and Rectangular Tank.
- Ring Beam Design for the Circular Tank.
- Maintenance and Repair in Concrete Structure.
- Integrity and Maintenance Management System Principal.