Designing Concrete Structures for Industrial Projects

A Realistic Approach to the Design of Reinforced Concrete

Introduction

The knowledge gap in industrial project design, generally, and oil and gas and power generation projects in particular, will be bridged by this Designing Concrete Structures for Industrial Projects training course. In the industrial sector, reinforced concrete structures are commonly used, particularly in the onshore oil and gas sectors. The applications of structural design in industrial projects differ from those in typical dwelling projects taught in engineering and educational institutes.

The training course takes into account the fundamentals of designing concrete structures for strength, serviceability, and robustness. Additionally, the ACI, BS, UBC, and ASCE codes will be discussed so that the attendees can select an appropriate design approach that supports business operability and safety. The main phases in design and review design will be demonstrated, and the likelihood of failure, particularly in ACI and BS, will be covered. Additionally, realistic solutions to field issues and challenges that take into account secondary loads like wind loads and seismic forces will be given careful consideration.

This training session on Course N Carry will emphasize:

- Examining various standards and norms
- The significance of building and upkeep
- The industrial plant's dynamic analysis and concrete design
- Structure design industry practice
- Integration of several design disciplines
- The impact of sustainable design on project investment life cycle optimisation

Objectives

The following are the goals of this training program for the participants:

- An outline of contemporary and efficient methods for designing reinforced concrete structures for the oil and gas sector
- Understanding of how to calculate reinforced concrete components used in the oil and gas sector

- Expand your expertise and help with the use of new tools to help with the design, review, and modification of existing projects or create new ones.
- Expertise in blast design for buildings and foundation design for various kinds of vibrating machinery
- An example of actual design problems that could help the designer provide a concrete construction that is affordable, safe, and able to be constructed
- The general guideline for examining the concrete design along with a corresponding checklist

Training Methodology

A range of tried-and-true adult learning strategies will be employed in this Designing Concrete Structures for Industrial Projects training course to guarantee optimal acquisition, retention, and understanding of the material covered. There will be a lot of interaction and participation in the daily workshops. Images and videos will be utilised to provide examples.

Organizational impacts

The following advantages will be experienced by the organisation as a result of this training program:

- Because staff members may do engineering tasks internally, there will be a reduction in engineering costs.
- Improve the repair process to lower maintenance and repair costs.
- Become knowledgeable about modern design and construction techniques and their technical practices to enhance the performance of your organisation.
- Increase project time and expense by exercising more control over the design phase.
- Enhance the organisation team's capacity to develop various reinforced concrete components.
- Reducing the amount of time and money wasted on maintenance by strengthening the team's capacity to find workable solutions for emerging issues

Personal Imapct

The following will help the participants learn or improve their knowledge and understanding:

- Make the geotechnical background better, especially if the soils are troublesome.
- Become more knowledgeable about the most recent execution phase
- Become more proficient in the maintenance approach
- Develop the ability to improve the standard of each stage of the oil and gas projects.
- Develop the ideas for building the foundations while taking the appropriate foundation type into consideration.

- Emphasise the fundamental design principles that allow for problem solving with workable solutions.

Who should attend?

The American Concrete Institute Standard (ACI) and British Standard (BS) for concrete structure designing are meant to be familiar to professionals and engineers taking this Designing Concrete Structures for Industrial Projects training course.

Junior and senior civil and structural engineers will also find it helpful as they need to have a thorough understanding of structural engineering tasks and how to collaborate during the design stage.

A suitable variety of professionals are enrolled in this Course N Carry training session, and they will greatly benefit from:

- Civil Engineer
- Engineer for Structures
- Engineer for Architecture

Course Outline

Day 1

Overview of Reinforced Concrete

- The Foundations of Technology in Concrete
- ACI and BS Comparison for Concrete Design
- Principal, Concrete Code Limitations for Various Codes (ACI, BS codes, European Code)
- Standards and Codes Theory
- Describe the Various Building Loads
- Earthquake and Effect of Wind Loading
- Describe Static and Dynamic Equipment Loads.
- Describe the Tank Foundation Loads.

Day 2

The Fundamentals of Reinforced Concrete Structures

- The Fundamental Idea of Concrete Design
- The Concrete Design and Precaution Principle
- Various Systems of Structures
- Many types of Slabs

- Slab, Beam, and Column Designs
- Loads in a Horizontal Vessel That Are Applied to Separators
- The Impact of Heater Thermal Loads
- Heater Foundation Design
- Foundation Under Tower Design

Day 3

Geotechnical Issues & Foundation Design

- Soil Examination
- Design Philosophy of Shallow Foundations
- Design Philosophy of Pile Foundation
- Design of Anchor Bolts
- Basis Underneath the Design of Machines
- A Checklist to Examine the Foundation for Rotating Machinery
- Due Diligence on the Design Basis for Vibrating Machines

Day 4

Design of Particular Constructions with Reinforced Concrete

- Create blast-resistant structures, such as control rooms
- Control Room Configuration and Layout
- Configuration of Pipe Racks
- Describe the Loads That Impact Pipe Racks
- Design of Pipe Racks
- Principles and Checks for Designing Retaining Walls
- Load and Compelled in Walls of Retention

Day 5

Design of Particular Structures with Reinforced Concrete II

- Design of Liquid Tanks Made of Reinforced Concrete
- Concrete Tank Structure System
- Rectangular and Circular Tanks
- Design of Ring Beams for the Circular Tank
- Upkeep and Restoration of Concrete Structures
- Principle of Integrity and Maintenance Management System