

STEEL STRUCTURE: DESIGN, CONSTRUCTION AND MAINTENANCE

INTRODUCTION

Steel is the most used construction material in the USA for high-rise towers, industrial buildings, bridges and other structures. It competes with reinforced concrete in the US and rest of the world because of its many favorable characteristics including high strength, high stiffness, ductility and toughness, speed of erection, competitive cost, etc. Its use in the Middle East region has been mostly confined to industrial plants and warehouses. The rise in labor cost and the need for higher buildings will inevitably improve the competitive edge of steel in many instances in the near future.

Design of steel structures has widely been based on the Allowable Stress Design based on the AISC.

This design philosophy has been changed since twenty. Many designers and fabricators still use the old allowable stress techniques. The more recent LRFD code of the AISC offer more rational and economical procedures for the design of steel structures.

This course shall make reference to various codes old and new but is primarily based on the AISC-LRFD procedures, which are the recognized state of the art in design.

Maintenance is the most important item in steel construction, so the maintenance plan will be presented.

Who Should Attend?

Civil Engineers who are interesting in learning about steel design may attend the course. Design structural engineers, Supervision engineer, Planners, Steel fabricator and Construction engineers.

PRESENTER

Dr. Mohamed A. El-Reedy

Dr. El-Reedy has a background in structural engineering. His main area of researches is reliability of steel and concrete structure. He is consultant for different oil and gas industries in Egypt with an international companies as leoc and Bp. Moreover, he provides different steel structure design package for warehouses and telecommunication towers. Reliability, Inspection and maintenance strategy for offshore steel structure platforms is performed for many platforms in Gulf of Suez.

Dr. El-Reedy has many publications and presenting papers in an local and international conferences which are sponsor by ASME, ACI, ASTM and API and international technical journals more over he is an author for three books related to total quality management , quality management and quality assurance.

PROGRAM

DAY ONE

- Introduction
- The case for steel use in construction.
- Structure system
- The comparison between different structure system
- Define the appraise, select and define step in steel structure projects
- Available steel grades and sections.
- Codes of practice for design, evolution from allowable stress to LRFD and limit state design.
- Preparing SOR and BOD
- Codes and standards Phylosophy

DAY TWO

- Selection of structural systems for one story and multistory buildings.
- Rigidly connected frames
- Plane trusses
- Space trusses
- Bracing strategies and design
- Analysis of steel structures using computer packages
- Design of steel structures using computer packages

DAY THREE

- Design of tension members
- Design of compression members.
- Design of Beams
- Design of Beam-Columns

DAY FOUR

- Different types of connections
- Bolted connections design
- Welded connections design
- Earthquake resistant design.
- New connection type.
- Fabrication and erection of steel instructor
- New methods for connecting steel to Concrete.
- Using CRFP in Steel structure
- Fabrication and erection of CFRP

DAY FIVE

- Maintenance procedure.
- Reliability based inspection
- Maintenance plan.Design of composite slabs
- Case study