Environmental Engineering Concrete Structures: Design and Details

ONE DAY, 7.5 HOURS

Based on the 2006 provisions of the ACI 350 Code and ACI 350.3, instructors will familiarize you with the 350 Code requirements for environmental engineering concrete structures, and will present design examples to illustrate practical applications.

Program Content:

- **Durability**
  - General requirements
  - Material requirements
  - Crack control
  - Chemical effects
  - Coating and liners

- **Joints**
  - Types of joints
  - Joint spacing
  - Joint materials
  - Joint design
  - Joint construction considerations

- **Loads**
  - Loads
  - Load combinations and load factors
  - Environmental durability factors (EDF)

- **Serviceability**
  - Cracking
  - Application of restraint factor in design
  - Bar spacing criteria
  - Gergly-Lutz equation

  ACI 318 and ACI 350 equations for bar spacing
  Bar spacing versus bar stress
  Deflection

- **Design of nonprestressed members**
  - Strength requirements
  - Members subjected to flexure, shear, and direct tension
  - Unified design approach
  - Design examples

- **Design of prestressed members**
  - Subgrade preparation
  - Footings
  - Design assumptions/approach
  - Wall types
  - Wall and roof design
  - Prestressed systems
  - Design examples

- **Seismic**
  - Design response spectrum
  - Impulsive and convective seismic forces
  - Seismic load distribution
  - Design for horizontal and vertical acceleration

Who should attend:
Consulting engineers, government agencies including municipalities, material suppliers, testing agencies, academia, and contractors.

Instructors:

Seminar handouts:
Code Requirements for Environmental Engineering Concrete Structures and Commentary (ACI 350-06)
Seismic Design of Liquid-Containing Structures and Commentary (350.3-06)
Special handout with notes and design examples authored by the instructors