



## Designing High Performance Concrete Structures Training

### Description

#### Course Description

This course will introduce you to state-of-the-art technologies and methodologies for designing and specifying concrete subjected to extreme conditions.

#### Course Objective

At the end of this seminar you will be able to:

- Understand the basics of quality concrete construction
- Provide design details to minimize concrete deterioration
- Develop project specifications to improve concrete durability
- Fully utilize the latest technology in concrete materials and construction methods
- Reduce potential conflicts in specifications
- Understand quality assurance methods for concrete

#### Course Outline

##### Concrete in Extreme Conditions

- Freeze-Thaw
- Chemical Attack
- Marine Environments
- Abrasion and Erosion
- High Strength Concrete
- Self-Consolidating Concrete
- Mass Concrete
- Roller-compacted Concrete
- Pervious Concrete
- Ultra-thin Whitetopping

## Design Details to Reduce Corrosion

- Crack Control
- Concrete Cover
- Materials and Mix Design

## Characteristics

- Membranes and sealers
- Cathodic Protection

## Fundamentals of Quality Concrete

- Materials
- Batching and Delivery
- Quality Control and Quality Assurance

## Construction Methods

- Handling and Placing Concrete
- Finishing and Curing Concrete
- Hot and Cold Weather Concrete
- Construction Scheduling

## Specifying Concrete for High Performance

- Prescriptive versus

## Performance-based Specifications

- Performance Criteria
- Construction Execution
- Pre-qualification Testing
- Acceptance Testing

## Troubleshooting Concrete Failures

- Plastic Concrete
- Hardened Concrete