

## TECHNICAL DOCUMENTS

### ACI 216.1M-14: Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies (Metric)

This standard contains design and analytical procedures for determining the fire resistance of concrete and masonry members and building assemblies.

### ACI 301S-16: Specifications for Structural Concrete—Spanish Language

This is a Reference Specification that the Architect/Engineer can apply to any construction project involving structural concrete by citing it in the Project Specifications.

### ACI 315R-18: Guide to Presenting Reinforcing Steel Design Details

This document guides designers of concrete structures how to determine information and design details that are required to prepare reinforcing steel fabrication details and placing drawings.

### ACI 369.1M-17: Standard Requirements for Seismic Evaluation and Retrofit of Existing Concrete Buildings (369.1) and Commentary (Metric)

This standard provides retrofit and rehabilitation criteria for reinforced concrete buildings based on results from the most recent research on the seismic performance of existing concrete buildings.

## ACI UNIVERSITY ONLINE COURSES

### On-Demand Course: Sulfate Attack on Concrete

#### Learning Objectives

1. Identify laboratory tests—concrete specimen or mortar bar tests—that measure volume expansion in specimens in sulfate environments over different time periods—short-term and long-term tests.
2. Describe mechanisms that initiate internal and external sulfate attack that cause deterioration or expansion in concrete.
3. Explain the characteristics of different sulfate attacks—ettringite sulfate attack, physical sulfate attack, and thaumasite sulfate attack.
4. Describe effects of tested blended cement mortar bars and cements with supplementary cementitious materials including fly ash, silica fume, metakaolin, and cement slag, with regards to sulfate attack deterioration over long-term testing.

**Continuing Education Credit: 0.1 CEU (1 PDH)**

### On-Demand Course: ACI 364 TechNotes on Repair and Rehabilitation (Part 1)

#### Learning Objectives

1. Identify reasons for cracks in concrete repair overlays and patches used to repair deteriorated concrete slabs-on-ground and pavements.
2. Describe characteristics of properties of durable concrete patch repair material with respect to properties of repaired concrete substrates, including modulus of elasticity.
3. Explain methods to demolish and remove partial-depth damaged concrete from substrate while minimizing bruising or microfractures in otherwise sound substrate.
4. Describe environmental conditions that promote corrosion process of reinforcing steel and describe steps that engineers need to perform to restore corrosion damaged concrete to serviceability.

**Continuing Education Credit: 0.1 CEU (1 PDH)**

### On-Demand Course: ACI 364 TechNotes on Repair and Rehabilitation (Part 2)

#### Learning Objectives

1. Identify types of chemical grouts and methods of applying grouts to repair concrete liquid containment cracks.
2. Describe method to test actual pH levels of floor slabs and how high pH levels on slab surfaces affect adhesives placed under floor coverings.
3. Explain the chemical process that could cause more corrosion on reinforcing bars near chloride-free patches that are used to fill and rehabilitate partial depth deteriorated concrete members
4. Explain and summarize different shear strengthening methods on concrete members to improve existing shear capacities.

**Continuing Education Credit: 0.1 CEU (1 PDH)**

### On-Demand Course: Concrete with Recycled Materials Using Recycled Concrete Aggregates (Part 2)

#### Learning Objectives

1. Demonstrate how to evaluate concrete mixtures with various waste by-product and recycled materials.
2. Identify the properties of concrete that are affected by using RCAs.
3. Identify examples of successful projects where concrete made with recycled materials performed adequately.
4. Describe emerging technologies in concrete produced with recycled materials and its application in civil infrastructures.

**Continuing Education Credit: 0.1 CEU (1 PDH)**