What's New from aci

TECHNICAL DOCUMENTS

222R-19: Guide to Protection of Metals in Concrete Against Corrosion

This guide reviews the most recent developments of metal corrosion, specifically reinforcing steel, in concrete. *(Free access for ACI Members)*

364.1R-19: Guide for Assessment of Concrete Structures Before Rehabilitation

This guide presents general procedures for assessment of concrete structures before rehabilitation**.** *(Free access for ACI Members)*

437R-19: Strength Evaluation of Existing Concrete Buildings

The strength of existing concrete buildings and structures can be evaluated analytically and supplemented where necessary with load testing. *(Free access for ACI Members)*

ACI UNIVERSITY ONLINE COURSES

On-Demand: Seismic Design of Precast Concrete Diaphragms

Learning Objectives:

1. Identify the new alternative diaphragm seismic design force level of ASCE 7-16.
2. Explain why the alternative force level was found necessary.
3. Describe how to use the newly introduced diaphragm design force reduction factor.
4. Summarize the new precast concrete diaphragm design provisions of ASCE 7-16.

Continuing Education Credit: 0.1 CEU (1.0 PDH)

On-Demand Course: Fiber-Reinforced Concrete: Design & Practice

Learning Objectives:

1. Recognize various fibers types and their effects on FRC performance.
2. Explain how FRC design (flexure, shear, hybrid) is based on the performance of the composite material and not individual fibers.
3. Identify structural and non-structural FRC applications.
4. Summarize strategies for specifying and practicing FRC.

Continuing Education Credit: 0.1 CEU (1.0 PDH)

On-Demand Course: Performance-Based Specifications for Concrete

Learning Objectives:

1. Relate the requirements in your specifications to industry standards.
2. Understand the benefits of performance-based specifications that support improved fresh and hardened concrete performance.
3. Evolve design office specifications to reduced prescription with alternative performance-based requirements.
4. Recognize the synergy between performance-based specifications and quality, sustainability, and cost.

Continuing Education Credit: 0.1 CEU (1.0 PDH)

On-Demand Course: ACI 201.2R-16: Updated Guidance on Concrete Durability (Part 1)

Learning Objectives:

1. Describe the fundamental concepts underlying mass transport in concrete movement of liquids, gasses, and chemical ions in solution through concrete pore structure; and discuss how mass transport initiates damage in concrete.
2. Explain types of damage from freezing and thawing cycles and measures to design concrete mixture properties to improve resistance to deterioration, such as surface scaling, surface disintegration, and D-cracking, of concrete exposed to freezing and thawing environments.
3. Explain alkali-aggregate reaction types and mechanisms of alkali-aggregate reactivity (AAR), alkali carbonate reactivity (ACR), and alkali sulfate reactivity (ASR) and how these reactions negatively affect durability of concrete.
4. Describe measures to mitigate ACR and ASR with use of supplementary cementitious materials, admixtures, low-alkali cement, nonreactive aggregates, and other measures that are designed into concrete mixtures for concrete exposed to AAR.

Continuing Education Credit: 0.1 CEU (1.0 PDH)

On-Demand Course: ACI 201.2R-16: Updated Guidance on Concrete Durability (Part 2)

Learning Objectives:

1. Describe types and mechanisms of external and internal sulfate attack and describe measures in concrete mixture designs to resist sulfate damage.
2. Identify differences in now Chapter 7, Chemical Attack, of the new document in comparison to the older version (ACI 201.2R-8) of the document including occurrences of chemical attack, such as acids, and physical salt attack, such as deicing salts.
3. Explain the mechanisms of physical salt attack such as sodium sulfates, sodium carbonate, and sodium chloride; and salts in soil such as calcium sulfate, magnesium sulfate, and calcium carbonate; and describe how concrete can be made to be more resistant to various physical salt attack.
4. Describe the process of reinforcing steel corrosion from

mass transport of chloride ions or carbon dioxide molecules and methods to increase the time of steel corrosion to extend reinforced concrete service life.

Continuing Education Credit: 0.1 CEU (1.0 PDH)

On-Demand Course: Ward R. Malisch Concrete Construction Symposium (Part 1)

Learning Objectives:

1. Describe the Menzel/NRMCA nomograph method to estimate evaporation rate of fresh concrete, knowing concrete temperature, air temperature, relative humidity, and wind speed at time of concrete delivery and placement.
2. Explain the pros and cons of the 90-minute concrete delivery time provision in ACI 301 and describe permitted procedures to accept late delivery while maintaining specified adequate slump, air entrainment, concrete temperature, and strength.
3. Describe the effects on durability of concrete slabs-on-ground when curing water is applied at temperatures 20°F degree or colder than newly placed cast-in-place concrete temperature.
4. Describe the proper placement of vapor retarders or barriers to better resist ground penetrating moisture through slabs with moisture sensitive coverings.

Continuing Education Credit: 0.15 CEU (1.5 PDH)

On-Demand Course: Ward R. Malisch Concrete Construction Symposium (Part 2)

Learning Objectives:

1. Describe the construction issues contractors address to measure and achieve floor flatness and floor levelness of supported concrete floor slabs, composite concrete on metal deck floor slabs, and cambered support beams.
2. Explain methods that contractors employ to achieve floor flatness and levelness requirements for elevated concrete floor slabs on metal deck supported by steel beams, girders, and columns.
3. Explain risks of construction tolerances associated with as-built cast-in-place concrete construction conditions with respect to structural building safety and to engineer design building capacity knowing as-built tolerances exist.
4. Explain some problems of concrete specifications that place unnecessary restrictions on concrete mixtures that can adversely affect expectations of durability, constructability and structural performance of concrete slabs-on-ground and other members.
5. Recall strategies for improving specifications writing and describe some examples cited in ACI 301-16 that were improved through Ward Malisch's efforts.

Continuing Education Credit: 0.15 CEU (1.5 PDH)