



American Concrete Institute®  
*Advancing concrete knowledge*



38800 Country Club Drive  
 Farmington Hills, MI 48331  
[www.concreteseminars.com](http://www.concreteseminars.com)

## ACI/PCA Seminar—Reinforced Concrete Design

Earn continuing education credit by attending this seminar!

### Locations & dates ►

Chicago, IL  
 September 29-30, 2009

Philadelphia, PA  
 October 6-7, 2009

Denver, CO  
 October 13-14, 2009

Minneapolis, MN  
 October 20-21, 2009

Atlanta, GA  
 October 27-28, 2009

St. Louis, MO  
 November 3-4, 2009

Los Angeles, CA  
 November 17-18, 2009

Houston, TX  
 December 1-2, 2009

Charlotte, NC  
 December 8-9, 2009

Portland, OR  
 December 15-16, 2009

# Reinforced Concrete Design



American Concrete Institute®  
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### ACI/PCA Two-day Seminar

Attending this seminar will help you fine tune your design skills and build more efficient and safe reinforced concrete structures.



#### Instructors will explain:

- The fundamentals for design of reinforced concrete
- Design aids to increase your design efficiency
- Making profitable design decisions
- Proper application of the ACI 318-08 Building Code provisions
- Avoiding common design errors

**Receive FREE publications valued at \$80.00.**

## seminar topics ▶

Follow along with the instructors' design examples and gain a better understanding of the entire design process.

### DAY ONE

#### ■ Materials Properties

Concrete and reinforcing steel properties relevant to structural concrete design

#### ■ Strength Design Method

Basic principles for strength design

Load factors and load combinations

Strength reduction factors

Analysis and design considerations

Approximate elastic analysis  
Stiffness for lateral load analysis

Redistribution of moments

#### ■ Design of Beams and One-Way Slabs

Flexural design

Tension-controlled and compression-controlled sections

Minimum and maximum flexural reinforcement

Development and splices

Straight bars, standard hooks, and headed bars

Bar cut-offs

Structural integrity reinforcement

Flexural crack control reinforcement

Skin reinforcement

Shear design

Torsion design and detailing

#### ■ Design of Two-Way Slabs

Design by direct design and equivalent frame

Flexural design

Deflection requirements

Two-way shear design

Design of drop panels

Design of headed shear stud reinforcement

Structural integrity reinforcement for slabs

### DAY TWO

#### ■ Columns

Axial load capacity

Combined flexure and axial load interaction

Column slenderness

When are columns non-sway or sway

Column slenderness limits

Moment magnification methods

#### ■ Walls

Axial load and flexure

Design methods

Minimum reinforcement

Shear design

#### ■ Footings

Proportioning footprint

One- and two-way shear strength

Flexural strength

Minimum flexural reinforcement

Distribution of flexural reinforcement

Load transfer at base of column

#### ■ Detailing of Earthquake-Resistant Structures

Intermediate moment frames

Special moment frames

Special structural walls and coupling beams

Structural diaphragms

## faculty ▶

Learn from the experts. Two of the following will be your instructors:

**RICHARD W. FURLONG, PHD, FACI**, Emeritus Professor of Civil Engineering, the University of Texas, Austin, TX. He is a consulting structural engineer and continues to practice, teach, and write.



**JAMES R. HARRIS, PHD, PE, FACI**, is Principal at J. R. Harris & Company, Structural Engineers, Denver, CO.

**MAHMOUD KAMARA, PHD**, Senior Structural Engineer, Portland Cement Association, Skokie, IL.



**DOMINIC J. KELLY, MS, PE, SE**, is a Consulting Structural Engineer for Simpson Gumpertz & Heger Inc., Boston, MA.

**LAWRENCE C. NOVAK, MS, SE, SECB, LEED® AP**, Manager, Building Structures, Portland Cement Association, Skokie, IL.



**BASILE G. RABBAT, PHD, SE, FACI**, is the Manager, Structural Codes at Portland Cement Association, Skokie, IL.

**ANDREW W. TAYLOR, PHD, SE, FACI**, Associate, KPFF Consulting Engineers, Seattle, WA.



For more detailed information on the faculty, go to [www.concreteseminars.com](http://www.concreteseminars.com).

ACI is not responsible for statements or opinions expressed by instructors.

## who should attend ▶

- If you want to learn the latest ACI 318 Building Code requirements for structural concrete design.
- If you are designing concrete now, but feel there must be a better way.
- If you need to do some concrete design and your skills are rusty.
- If you did not take reinforced concrete in engineering school but are now faced with designing concrete structures.
- If you are preparing for the professional engineers' or structural engineers' exam.
- If you need Professional Development Hours (PDHs) to maintain your professional engineer status (worth 15 PDHs).

## nonmembers of aci ▶

Pay the standard seminar registration fee (\$879), and you are entitled to a complimentary, one-time, 6-month membership, a \$111 value. Your membership will start following your attendance at the design seminar. Membership includes a monthly issue of *Concrete International*, a bimonthly issue of the *ACI Structural Journal*, discounts on ACI publications, and much more. This offer is available by contacting ACI for details.

## continuing education credit ▶

Attendees receive 1.5 CEUs or 15 LUs, worth 15 PDHs.

Approved course provider for:

- **American Institute of Architects** (G115; RCD)
- **Florida Board of Professional Engineers** (Provider #0003855)
- **Louisiana Professional Engineering and Land Surveying Board**
- **North Carolina Board of Examiners for Engineers and Surveyors**
- **The University of the State of New York, State Board for Engineering**
- **Wisconsin Safety and Building Division** (Course No. 6337)

## seminar times ▶

Registration begins at 7:45 a.m. on the first day. Each day, the seminar will begin at 8:00 a.m. and end at 5:00 p.m. Breakfast breads, lunch, coffee breaks, and free publications are included.

## free publications—an \$80.00 value! ▶

- Seminar Notes and Design Examples
- *Special offer:* Seminar attendees will receive a discount coupon good towards the purchase of the ACI 318-08 Building Code.

## NEW eLearning ▶

- Top-quality training for your ACI Certification, developed by concrete industry experts. Visit [www.acielearning.org](http://www.acielearning.org) for more information.

## refund policy ▶

Substitutions are accepted at any time. If your substitute qualifies at a different registration fee, a credit or surcharge may apply. If you cannot attend the seminar, please notify the ACI Seminar Registrar at 248-848-3815 immediately. If you notify us 7 or more working days before the seminar, we will refund your registration fee. If you notify us that you cannot attend within 3 to 6 working days before the seminar, we will issue you an ACI Credit for the full amount of your registration fee that you may redeem for any future ACI seminar, product, or service. If you notify us that you cannot attend less than 3 working days before the seminar date, we will issue you an ACI Credit minus a \$75 administrative fee. Confirmed participants who do not attend are liable for the entire fee unless we are notified in advance of the seminar date that you cannot attend. If ACI cancels a seminar due to insufficient enrollment, your registration fee will be refunded. ACI is not responsible for any incidental or consequential damages such as nonrefundable airfare.

## request for in-house seminar quote ▶

Let ACI bring the latest concrete technology to your doorstep. An in-house seminar on virtually any concrete-related topic can be brought directly to your office. Pricing is dependent upon the topic and the length of the seminar. ACI publications are available at a substantial discount when an in-house seminar is held. Save time and money by scheduling an in-house seminar today.

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Contact or return the completed form to:

Kelly Dudley

American Concrete Institute

P.O. Box 9094

Farmington Hills, MI 48333-9094

Phone: 248-848-3709; Fax: 248-848-3792;

or e-mail: [Kelly.Dudley@concrete.org](mailto:Kelly.Dudley@concrete.org).

**For available topics, go to [www.concreteseminars.com](http://www.concreteseminars.com)**

## Earn CEUs Online ▶

Experience the convenience and value of our online CEU program. This new service is **FREE to ACI members** and available to nonmembers for a nominal fee. Online courses, delivered via ACI's Web site, will help you fulfill your continuing education requirements. For a complete list of topics, go to [http://www.concrete.org/education/edu\\_online\\_CEU.htm](http://www.concrete.org/education/edu_online_CEU.htm).

Download and read the concrete-related document of your choice and take a short quiz. Upon successful completion of the quiz, you will receive a certificate of completion indicating the number of CEUs earned. A maximum of .8 CEUs (equivalent to 8 PDHs) can be earned for free each year by ACI members. More CEUs can be earned for an additional fee. ACI educational opportunities. It's not just about seminars anymore!

## seminar registration ► Please check seminar location and date.

### RCD9

ILF  **CHICAGO, IL—September 29-30, 2009**

Instructors: Kamara and Novak  
Illinois Chapter ACI

PAF  **PHILADELPHIA, PA—October 6-7, 2009**

Instructors: Rabbat and Taylor  
E. Pennsylvania and Delaware Chapter ACI

COF  **DENVER, CO—October 13-14, 2009**

Instructors: Harris and Kamara  
Rocky Mountain Chapter ACI

MNF  **MINNEAPOLIS, MN—October 20-21, 2009**

Instructors: Novak and Taylor  
Minnesota Chapter ACI

GAF  **ATLANTA, GA—October 27-28, 2009**

Instructors: Harris and Rabbat  
Georgia Chapter ACI

MOF  **ST. LOUIS, MO—November 3-4, 2009**

Instructors: Furlong and Kamara  
Missouri Chapter ACI

CAF  **LOS ANGELES, CA—November 17-18, 2009**

Instructors: Kelly and Rabbat  
S. California Chapter ACI

TXF  **HOUSTON, TX—December 1-2, 2009**

Instructors: Kamara and Taylor  
Houston Chapter ACI

NCF  **CHARLOTTE, NC—December 8-9, 2009**

Instructors: Novak and Rabbat  
Carolinas Chapter ACI

ORF  **PORTLAND, OR—December 15-16, 2009**

Instructors: Novak and Taylor  
Oregon Chapter ACI

If you have a disability or special dietary needs that require special accommodations, please check here and submit a statement regarding your needs.

You will be sent confirmation of your registration with the address of the seminar. See [www.concreteseminars.com](http://www.concreteseminars.com) for additional co-sponsors. If it's necessary to substitute an instructor, an individual with similar qualifications will be used.

## fees and sign-up ►

**\$879 Registration Fee**

**\$729 ACI National Members Registration Fee**

**\$225 Full-Time Students**

**Registrations from nonmembers (except government agencies within the U.S.) must be accompanied by full payment or charged to VISA or MasterCard.**

**Two- or three-character promotional code listed above your name on the mailing label: \_\_\_\_\_**

To qualify for the discounted ACI National Members Seminar Fee, please provide your ACI Member number next to your name.

Discounted student seminar fee is only for full-time students. Include current proof of enrollment with your registration.

NAME		ACI MEMBER NO.:	
TITLE		Registration Fee: \$	
COMPANY		ADDRESS 1	
ADDRESS 2		CITY, STATE, ZIP	
PHONE	FAX	E-MAIL	

## payment ►

**I am paying by check** (payable to ACI)

**Please charge to:** (circle one) VISA MasterCard

Account Number: \_\_\_\_\_

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**Please charge to my ACI member account**

Current ACI national members only. Registration from all others must be accompanied by full payment, charged to a credit card, or reserved by government or company purchase order (ACI federal ID# is 38-0296490). All payments must be in U.S. funds and issued from a U.S. bank.

## register today ►

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Farmington Hills, MI 48333-9094

**fax:** 248-848-3801 (24 hours a day)

**phone:** Member Services  
248-848-3815  
8 a.m.-5 p.m. ET