

## Locations and Accommodations:

\*rate subject to cut-off dates and apply only the day before and the days of the seminar, with check-out on the last day of the seminar.

**JULY 20-21, 2006  
PORTLAND, OR**  
The Heathman Hotel  
1001 SW Broadway  
Portland, OR 97205  
503-241-4100  
ASCE Hotel Rate: \$149 Single/Double\*

**SEPTEMBER 21-22, 2006  
DENVER, CO**  
Doubletree Hotel Denver  
3203 Quebec Street  
Denver, CO 80207  
303-321-3333  
ASCE Hotel Rate: \$109 Single/Double\*

**SAVE 10%** Send three or more from the same organization and save 10% on each enrollment



ASCE offers more than 500 online courses on a wide variety of technical, management, and regulatory topics. These courses are available through ASCE's distance learning partnerships. For a complete listing of these courses or to register, please go to:

[www.asce.org/conted/distancelearning/](http://www.asce.org/conted/distancelearning/)

ASCE members receive discounts of 15% or more on most online courses.

## REGISTRATION INFORMATION:

**ENROLLMENT:** Registration fee must be paid in advance. To register on the web go to: <http://www.asce.org/conted/seminars/> and click on technical division and then click on seminar title. Credit card, check, and purchase orders payments can now be accepted using this link. You can also mail, fax or phone in your registration. Make check payable to "ASCE Continuing Education." See registration form for additional information

**ON-SITE ENROLLMENT:** If your schedule does not permit you to register in advance, you may register on-site. Although this does not guarantee that you will receive all course materials that day, they will be mailed to you 2-3 weeks after the seminar. PLEASE be sure to contact ASCE at 1-800-548-2723 no later than the day before the seminar to confirm that the seminar is going forward as planned.

**CONFIRMATION LETTER:** Registrations received at least two weeks prior to the seminar will be confirmed in writing. You should receive confirmation within 10 business days of your registration; if not confirmed, please call.

**TIME: 8:30am - 4:30pm. Registration begins at 8:00am.**

**CERTIFICATES:** Earn 1.4 Continuing Education Units (CEUs). (.1 Continuing Education Units = 1 Professional Development Hour)

**TEAM DISCOUNTS:** Three or more people from the same company attending the same seminar location and date receive a 10% discount off each enrollment fee when registering at the same time. Larger discounts will be negotiated for larger groups.

**RENTAL CARS:** ASCE has negotiated special rates with Enterprise. Go to [www.enterprise.com](http://www.enterprise.com) or call 1-800-736-8222 to make reservation. A brochure with instructions will be enclosed with confirmation letter.

**INSTRUCTOR SUBSTITUTION:** ASCE reserves the right to substitute an equally qualified instructor should unforeseen circumstances require.

**CANCELLATIONS/REFUND POLICY:** If you need to cancel your registration, please contact us as early as possible. Cancellations must be made in writing on your company letterhead with attendee's name, and the name and date of the seminar and faxed to 703-295-6144. There will be a charge of \$95 for cancellations within 10 business days of the seminar and no refunds for cancellations within 5 business days of the seminar. You can transfer the registration to another date or seminar, but this must be done before the 5-day deadline in order to receive full credit for monies paid. No transfers or refunds will be issued within 5 business days of the seminar. There will be no credits issued after the seminar has begun. Your registration may be transferred to another individual anytime, up to the first day of the seminar. If a non-member is replacing a member's registration, the non-member is responsible for the price difference. ASCE is not responsible for non-refundable expenses such as airfare, hotels, cancellation /transfer fees or any other expenses except for seminar registration fees. If ASCE cancels a seminar due to insufficient enrollment, your registration fee will be refunded.

**HOTEL ACCOMMODATIONS:** Please make your reservations early. ASCE negotiates discounted rates that are subject to cut off dates. Accommodations are not included in your registration fee.

**DISCOUNTED AIRFARES:** Use United Airlines or American Airlines and save money on airfares when traveling to ASCE Seminars. Call United Airlines Meeting Reservations Center at 1-800-521-4041, 7 Days a week from 7:00 am to 12:00 midnight eastern time and refer to ID #557AG. Call American Airlines at 1-800-433-1790 and refer to ID# 18413. If you wish to use a travel agency, you must tell your agent to book your reservation under the above ID #s to receive your discount.

**DRESS:** Casual business attire is appropriate.

**MEMBERSHIP:** Go to [www.asce.org](http://www.asce.org) to join ASCE and save on future continuing education opportunities. Enter 06CEUCAT in the promotion code section of the membership application.



## Post Tensioning Construction and Design

1801 Alexander Bell Drive  
Reston, Virginia, 20191-4400



For fast and immediate registration register online! Go to: [www.asce.org/conted/seminars](http://www.asce.org/conted/seminars)

ASCE Individual Member # \_\_\_\_\_  
[ASCE membership numbers are NOT TRANSFERABLE within any given company] PE:  Yes  No PhD:  Yes  No

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### Payment Information: Must be complete before processing can occur

- A check for \$ \_\_\_\_\_ is enclosed.
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### Locations: Please check one

- July 20-21, 2006 / Portland, OR  
 September 21-22, 2006 / Denver, CO

### Fees: Please check one

A copy of your check or PO is required when faxing your registration

- \$995 Members  
 \$1,195 Non-Members

### ASCE Distance Learning:

#### Reinforced Concrete Design - Part I: Flexural Members (V01)

- \$288 Ind

#### Reinforced Concrete Design - Part II: Columns (code: P21)

- \$144 Ind

(add \$7.50 for shipping first item, \$2.00 each additional item)\*

\*additional cost outside the USA and for overnight delivery.

#### Wind Loads Online Course (V02)

- \$144 Ind

### How to reach us:

**Mail:** ASCE Continuing Education  
P.O. Box 79536, Baltimore,  
Maryland 21279-0536

**Phone:** 1-800-548-2723  
703-295-6300 (international)

**Fax:** 703-295-6144

**Email:** [conted@asce.org](mailto:conted@asce.org)

Please route to a colleague who will benefit by attending.

Please do not remove mailing/label/  
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Continuing Education  
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# Post Tensioning Construction and Design

July 20-21, 2006 / Portland, OR

September 21-22, 2006 / Denver, CO

"The vast international experience of the instructor in post tensioning technology development & practice was passed on in the intense two-day session."

-Bill Ramratttan, Managing Director, Central Project Management Limited, Couva, Trinidad & Tobago

"Best seminar I have attended in the last 10 years."

-Bora Erbilin, Associate, Burton Braswell Middle Brooks, Longwood, FL

"The seminar clarified every concern that I had about any aspects of post tensioning design."

-Mark François, Director, BBFL Consultant Ltd., Port of Spain, Trinidad and Tobago

"Excellent seminar for updating your knowledge in the field of post tensioning design and construction. It covered design as well as practical construction aspects."

-Yogesh Sharma, Concept Engineering Inc., Houston, TX

"The instructor explained in detail the state of design of post tensioned concrete. Anyone involved in this industry should take this course."

-Thomas Adams, P.E., Construction Engineering Group, Melbourne, FL

This is an ASCE Continuing Education Course, NOT JUNK MAIL. If you don't need CEU's pass this on to someone who does.



1.4  
CEUs

# Post Tensioning Construction and Design

## Purpose and Background

Presenting the latest developments in construction, design technology, and software tools, this seminar provides you with the know-how and means for efficient, economical and expeditious designs for your post-tensioned buildings and parking structures for gravity, earthquake/wind loading. The seminar starts with the introduction of current post-tensioning systems, hardware, and construction practice. Next it covers the modern design concepts, and explains in detail the design procedures, supplanted with well documented long-hand numerical examples, along with computer application for beams, one-way and column-supported flat slab floor systems. This leads to the concepts and design procedure for earthquake prone regions, wind loading and catastrophic loads, such as blasts. Next comes the Component Technology, the state-of-the-art method for creating structural models for analysis and design of floor systems. Using Component Technology and software application, the seminar highlights the savings in design time and reduction in potential errors by integrating the design process from the architectural drawings all the way to the structural documents.

## Learning Objectives

### You will learn about:

- Current post-tensioning systems and construction practice in building and parking structures
- Concepts and procedures of post-tensioning design, including design for earthquake and wind
- Benefits and details of post-tensioning design for earthquake prone regions
- Latest design code provisions for post-tensioned structures
- Long-hand calculation for design and design verification
- Industry standard software application to design
- Finite element application to design of post-tensioned buildings
- Structural modeling of post-tensioned buildings and design, using Component Technology – project samples
- Tendon layout and detailing for construction

## Seminar Benefits

Seminar attendees receive comprehensive course notes and reference material including detailed design examples.

- Find out about the latest developments in post-tensioning systems and construction practice, including measures for durability and low maintenance
- Learn about the benefits and design procedures for post-tensioning in earthquake regions, and post-tensioning design for catastrophic loads
- Know the changes in ACI and IBC building codes and their impacts on your design
- Learn how you can avoid costly errors by using an integrated approach in your design from architectural drawings to structural documents
- Become skilled in tendon layout and detailing for good construction practice

- Examine the possibilities of increasing the productivity of your designs using Component Technology for seamless flow of the design process from the architectural drawings to construction documents
- Learn how to increase the reliability and economy of your designs

## Who Should Attend

- Structural engineers engaged in concrete and/or post-tensioning design
- Building officials and city plan checkers
- Engineers responsible for review or investigation of post-tensioned structures, engineers dealing with design in high seismic regions
- Engineers charged with retrofit of post-tensioned buildings
- Forensic engineers who deal with post-tensioned structures
- Academics and students with interest and background in concrete design

## Seminar Instructor

**BIJAN O. AALAMI, PH.D., M. ASCE**, is Professor Emeritus of San Francisco State University, Life Member of the Post-Tensioning Institute, Chartered Engineer, and a Principal of ADAPT Corporation – a structural engineering firm in California specializing in design of concrete structures. He has been actively engaged in the design and construction of numerous notable post-tensioned buildings, bridges and special structures. A renowned world leader and teacher in the design of concrete buildings, bridges, special structures and post-tensioning, through his worldwide educational seminars, Dr. Aalami has enriched the practice of many engineers in North and Latin America, Far East, Europe and the Middle East. His extensive publications on concrete design, in particular post-tensioning, are the principal resource for practical design of post-tensioned buildings and bridges. For the last twenty years Dr. Aalami has been the project leader of the software suite ADAPT that is serving concrete design engineers in over 70 countries worldwide.



### Reinforced Concrete Design - Part I: Flexural Members

Fundamentals of design of reinforced concrete flexural members are covered. Focus is on design by the American Concrete Institute's Building Code Requirements for Structural Concrete 18-0 (ACI 18-0). Fundamental behavior of flexural members and the necessary design checks are presented. Examples of analysis and design of beams, one-way slabs, and retaining walls are used to illustrate the concepts. A fundamental background in structural analysis and design is assumed. 0.6 CEUs

### Reinforced Concrete Design - Part II: Columns

Focus is on design of reinforced concrete columns using the American Concrete Institute's Building Code Requirements for Structural Concrete 18-05 (ACI 18-05). Fundamentals necessary for understanding and verifying the output of typical design software and design aids are emphasized. Topics include: an introduction to strength design, behavior of tied and spirally reinforced columns, construction of axial load and moment interaction diagrams, strength reduction factors, use of interaction diagrams in design, shear resistance, biaxial bending, and an introduction to slenderness effects. 3-hours. 0.3 CEUs

### Wind Loads Online Course – Newly Updated!

This course is an online version of the popular ASCE workshop. Topics include wind effects (e.g., Bernoulli's equation, patterns over buildings, and effects of roof geometry), basic design wind speed, design wind loads, how to use the ASCE-7 standard (plus three worked solutions), frequently asked questions, other codes, and where to get further information. 0.8 PDH

# SUMMARY OUTLINE

TIME: 8:30am – 4:30pm

## DAY ONE

- Introduction to post-tensioning; post-tensioning systems; post-tensioning hardware
- Construction technology of post-tensioned structures; preferred construction practice
- Review of design concepts of concrete floors with specific reference to post-tensioning
- Detailed design procedure of post-tensioned floors and frames
- Long-hand design example of a post-tensioned column supported flat slab
- Long-hand design example of a post-tensioned parking structure beam and slab
- Industry standard computer applications for design of flat slabs, beams and frames; Equivalent Frame Method and beam frames (using ADAPT-PT)
- Design of post-tensioned sections using ACI-318
- Layout of post-tensioning tendons; detailing for tendons and rebar
- Structural Modeling of post-tensioned members for analysis and design; procedures for both building and bridge designs

## DAY TWO

- IBC, ACI and other code provisions for design of post-tensioned members for gravity, wind and earthquake
- Stress losses and elongations in post-tensioned tendons
- Design and detailing of post-tensioned structures for earthquake
- Response and design of post-tensioned floor systems to catastrophic loads
- One-way and punching shear design and reinforcement options for flat beams and slabs
- Key concepts and benefits in Component Technology for structural modeling and application of finite elements to design of post-tensioned floor systems
- Finite element analysis and design case study of flat slab floor systems using ADAPT-FLOOR-Pro
- Hyperstatic (secondary) actions in post-tensioned members, their significance and determination
- Questions and discussion



## In-House Presentations

### Let us come to you.

This seminar can be:

- Presented at your organization
- Scheduled at your convenience
- Tailored to the needs of your staff

An on-site program can reduce the per person cost by more than 25% and your total training cost by 50%.

Call ASCE Continuing Education at: **1-800-548-2723**