

Structural Engineering of Concrete Slabs

Purpose and Background

Concrete slabs have been an ordinary part of construction for a very long time. These include slabs-on-grade as well as elevated slabs, subjected to a variety of loads. Numerous engineering textbooks identify means of design, but other publications are also available from engineering agencies, such as the American Concrete Institute, that provide helpful guidance.

This seminar will organize design requirements from code publications and introduce helpful design guidance from other recognizable or reference documents.

Topics will include design and detailing considerations for slabs-on-grade and elevated slabs, consideration of uniformly distributed loads and heavy concentrated forces, horizontal diaphragm design, conventional and post-tension design of one- and two-way elevated slabs.

Numerous practical design examples will be provided, as well as periodic material summary breaks.

Seminar Instructor

DAVE K. ADAMS, P.E., S.E., M.ASCE has been practicing structural engineering since graduation from the University of California, San Diego in 1990. He is currently a Principal Associate with BWE in San Diego, CA, and continues to serve as a subject matter expert for the California engineer's licensing board (BPELSG). He regularly designs and details structures of all materials and collaborates with other engineers and draftspersons. Dave also investigates structural failures or damage for a variety of building types and has written comprehensive reports to summarize findings and retrofit recommendation. Mr. Adams is actively involved in the engineering community through committee membership, paper publication, and student mentoring.

- For group training, contact John Wyrick (JWyrick@asce.org) or Stephanie Tomlinson (STomlinson@asce.org)

Summary Outline

DAY 1

- Navigating code requirements and other publications
- Crash course on concrete design
- Design and detailing of conventionally-reinforced slabs-on-grade
- Design and detailing of conventional and post-tensioned elevated slabs (Part 1)

DAY 2

- Design and detailing of conventional and post-tensioned elevated slabs (Part 2)
- Design and detailing of concrete-filled metal deck slabs
- Serviceability issues
- Quality control and troubleshooting

Seminar Benefits

- Learn how to address heavy concentrated loads in slab design
- Understand how engineering publications and code requirements can be used together
- Design for adequate serviceability
- Coordinate design of slabs for gravity and lateral forces
- Explore reinforcement detailing requirements and options
- Review concrete design principles
- Evaluate tips for selecting an appropriate concrete slab system for a project
- Examine lateral force design principles for slabs

Learning Outcomes

At the end of this course, participants will be able to:

- Determine code-related slab design requirements
- Discover helpful slab design recommendations from other engineering publications
- Calculate the structural suitability of one-way and two-way elevated slabs
- Evaluate the effects of seismic forces on elevated horizontal diaphragms
- Learn effective methods of detailing reinforcement

Assessment of Learning Outcomes

Achievement of the learning outcomes by attendees will be assessed through seminar evaluations, multiple question and answer sessions, personal contact with instructor during breaks, periodic material summaries, end of the seminar review questionnaire.

Who Should Attend?

- Structural engineers
- Civil engineers
- Industrial facility engineers
- Building officials
- Plans examiners
- Architects

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