

Designing Concrete Structures Reinforced with GFRP Bars Using the New ACI CODE 440.11-22

In-House Seminar

ONE DAY, 7.5 HOURS (7.5 PDHs/0.75 CEUs)

Who should attend: This is a great opportunity for engineers, owners, contractors, consultants, students, and manufacturers to get familiar with the technical and engineering aspects of the ACI 440.11 code and learn more about designing and detailing with GFRP reinforcement.

Program Content:

The primary purpose of this seminar is to educate attendees on ACI CODE 440.11-22 and the application of GFRP reinforced concrete in the construction industry. ACI 440.11-22 “Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars” is a newly developed design code for new concrete structures reinforced with GFRP bars. It is based on ACI 318 code requirements for steel-reinforced concrete but modifies ACI 318 code requirements for the specific use of GFRP reinforcing bars as an alternative to steel reinforcing bars. It addresses construction and material requirements, structural systems, members, and strength and serviceability requirements. Among the subjects covered are design and construction for strength, serviceability, and durability; load combinations, load factors, and strength reduction factors; structural analysis methods; deflection limits; development and splicing of reinforcement; construction document information; and field inspection and testing.

This seminar will provide a basic overview of FRP reinforcing bar properties, where they are commonly used, and how other specifications and standards from ACI and ASTM provide the basic foundation on which the new code has been developed. A discussion on where the code puts limits on the types of structures that can be reinforced with GFRP and where the code does and does not apply will be presented. The seminar will then provide detailed discussion on the engineering of GFRP reinforced concrete for various member types (including beams, columns, slabs, walls, and connections); determining flexural, shear, torsional, and axial strength of members reinforced with GFRP; and detailing GFRP bars for serviceability and durability. In all discussions, specific differences in designing with GFRP reinforcement versus steel reinforcement will be highlighted.

Learning Objectives:

- Identify the basic material performance properties of GFRP reinforcing bars and how they compare to traditional steel reinforcement.
- Learn where the new ACI code for GFRP reinforced concrete applies, what the limitations are for using this code are, and how it relates to other standards from ACI and ASTM.
- Understand the basic mechanics of GFRP reinforced concrete in flexure, shear, axial compression, and torsion; how it compares to steel reinforced concrete; and the associated code requirements.
- Be able to use the basic principles presented to design concrete beams, slabs (one-way and two-way), columns, walls, and connections reinforced with GFRP bars per the code requirements.

Related Documents:

To expand attendees knowledge, ACI In-House Seminar customers may purchase multiple copies of related documents at 50% off the regular price.

- ACI CODE-440.11-22: Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars—Code and Commentary
- MNL-7(23) GFRP-Reinforced Concrete Design Handbook

Instructors:

Two industry experts will present this seminar.

Up to 40 copies of the presentation slides included. Additional copies can be purchased.

ACI is an approved education provider for AIA and ICC.



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