

**Residential Code Requirements
for Structural Concrete (ACI 332-10)
and Commentary**

An ACI Standard

Reported by ACI Committee 332



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Residential Code Requirements for Structural Concrete and Commentary

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An ACI Standard

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The “Residential Code Requirements for Structural Concrete” cover the design and construction of cast-in-place concrete for one- and two-family dwellings and multiple single-family dwellings (townhouses), and their accessory structures.

Among the subjects covered are the design and construction requirements for plain and reinforced concrete footings, foundation walls, and slabs-on-ground, and requirements for concrete, reinforcement, forms, and other related materials.

The quality and testing of materials discussed in this document are covered by reference to the appropriate ASTM standards.

The Code is written to allow for reference by adoption in a general building code without changing its language. Background details or suggestions for carrying out the requirements or intent of the Code are provided in the commentary. The commentary discusses some of the considerations of the committee in developing the Code with emphasis given to the explanation of provisions that may be unfamiliar to code users or where significant departure exists from other concrete codes. Commentary provisions begin with an “R,” such as “R.1.1.1,” and commentary text is shown in italics.

Relevant resource documents are cited for the user desiring more detailed study of individual issues.

Keywords: admixtures; aggregates; air entrainment; anchorage (structural); backfill; building codes; calcium chloride; cements; cold weather construction; compressive strength; concrete construction; concrete construction joints; concretes; contraction joints; cover; curing; flexural strength; floors; footings; formwork (construction); foundation walls; foundations; hot weather construction; inspection; loads (forces); materials; mixing; mixture proportioning; placing; plain concrete; reinforced concrete; reinforcing steels; residential; serviceability; specifications; slab-on-ground; slabs; sulfates exposure; strength; structural analysis; structural concrete; structural design; walls; water; welded wire reinforcement.

CONTENTS

Introduction, p. 2

Chapter 1—General, p. 3

- 1.1—Scope
- 1.2—Alternative systems
- 1.3—Footings and foundation walls
- 1.4—Drawings and specifications
- 1.5—Inspection

Chapter 2—Notation and definitions, p. 4

- 2.1—Notation
- 2.2—Definitions

Chapter 3—Referenced standards, p. 5

Chapter 4—Materials, p. 6

- 4.1—Concrete
- 4.2—Reinforcement
- 4.3—Formwork

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Chapter 5—Concrete requirements, p. 7

- 5.1—General requirements
- 5.2—Concrete properties
- 5.3—Concrete cover
- 5.4—Calcium chloride

Chapter 6—Concrete production and placement, p. 9

- 6.1—Concrete
- 6.2—Placement
- 6.3—Form removal
- 6.4—Finishing
- 6.5—Curing
- 6.6—Cold weather
- 6.7—Hot weather

Chapter 7—Footings, p. 10

- 7.1—General
- 7.2—Design
- 7.3—Construction

Chapter 8—Foundation walls, p. 13

- 8.1—General
- 8.2—Design
- 8.3—Construction

Chapter 9—Design for expansive soils, p. 16

- 9.1—General
- 9.2—Expansive soil classification
- 9.3—Design

Chapter 10—Slabs-on-ground, p. 17

- 10.1—Design
- 10.2—Support
- 10.3—Forms
- 10.4—Thickness
- 10.5—Joints
- 10.6—Reinforcement

Appendix A—Prescriptive tables for foundation walls, p. 18**Commentary references, p. 29****INTRODUCTION**

The commentary of ACI 332-10 discusses some of the considerations of Committee 332 in developing the provisions contained in “Residential Code Requirements for Structural Concrete (ACI 332-10),” hereinafter called the “Code.” Explanation of the departure of this Code from ACI 318 is emphasized. Comments on specific provisions are made under the corresponding chapter and section numbers of the Code.

The commentary is not intended to provide a complete historical background concerning the development of the Code, nor is it intended to provide a detailed résumé of the studies and research data reviewed by the committee in formulating the Code.

However, references to some research data are provided for those who wish to study the background material in

depth. The Code is meant to be used as part of a legally adopted building code and, as such, must differ in form and substance from documents that provide detailed specifications, recommended practice, or complete design procedures.

The Code is intended to cover all residential structures that fall within the scope of the International Residential Code (IRC). Requirements more stringent than the Code provisions may be desirable for large, complex or irregular structures, high-hazard areas, and other unusual construction. The Code and commentary cannot replace sound engineering knowledge, experience, and judgment.

A building code states only the minimum requirements necessary to provide for public health and safety. The Code is based on this principle. For any structure, the owner or the designer may require the quality of materials and construction to be higher than the minimum requirements necessary to protect the public as stated in the Code. However, lower standards are not permitted. The commentary directs attention to other documents that provide suggestions for carrying out the requirements and intent of the Code. However, those documents and the commentary are not a part of the Code.

The Code has no legal status unless adopted by government bodies having authority to regulate building design and construction. Where the Code has not been adopted, it may serve as a reference to good practice even though it has no legal status.

The Code provides a means of establishing minimum standards for acceptance of designs and construction by legally appointed building officials or their designated representatives. The Code and commentary are not intended for use in settling disputes between the owner, engineer, architect, contractor, or their agents, subcontractors, material suppliers, or testing agencies. Therefore, the Code cannot define the contract responsibility of each of the parties in construction. General references requiring compliance with the Code in the project specifications should be avoided because the contractor is rarely in a position to accept responsibility for design details or construction requirements that depend on detailed knowledge of the design. Design-build construction contractors; however, typically combine the design and construction responsibility. Generally, the drawings, specifications, and contract documents should contain all the necessary requirements to ensure compliance with the Code. In part, this can be accomplished by reference to specific Code sections in the project specifications. Other ACI publications, such as ACI 301, are written specifically for use as contract documents for construction. Testing and certification programs should be provided for the individual parties involved with the execution of work performed in accordance with this Code.

ACI 332.1R is a companion document to the Code that provides practical information about the quality construction of residential concrete elements conforming to this Code. ACI 332.1R provides detailed information on systems for production, placement, finishing, and testing residential concrete along with considerations for such issues as insulation, hot and cold weather precautions, curing, and forming. ACI 332.1R does not provide any further mandatory requirements