IN-LB Inch-Pound Units

An ACI Standard

Assessment, Repair, and Rehabilitation of Existing Concrete Structures—Code and Commentary

Reported by ACI Committee 562

ACI CODE-562-21

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Assessment, Repair, and Rehabilitation of Existing Concrete Structures—Code and Commentary

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Reported by ACI Committee 562

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ACI CODE-562-21, "Assessment, Repair and Rehabilitation of Existing Concrete Structures—Code Requirements and Commentary," was developed to provide design professionals a code for the assessment of the damage and deterioration, and the design of appropriate repair and rehabilitation strategies. The Code provides minimum requirements for assessment, repair, and rehabilitation of existing structural concrete buildings, members, systems and, where applicable, nonbuilding structures. ACI 562-19 was specifically developed to work with the International Existing Building Code (IEBC) or to be adopted as a stand-alone code.

Keywords: assessment; bond; corrosion; damage; durability; evaluation; existing structure; fiber-reinforced polymer (FRP); interface bond; licensed design professional; maintenance; rehabilitation; reliability; repair; strengthening.

CONTENTS

ACI 562-21 supersedes ACI 562-19, was adopted November 10, 2021, and was published November 2021.

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PREFACE

This code provides minimum requirements for assessment, repair, and rehabilitation of existing concrete structures, members, and systems. This code was developed by an ANSI-approved consensus process. This code can supplement the International Existing Building Code (IEBC), supplement the code governing existing structures of an authority having jurisdiction, or act as a stand-alone code in a locality that has not adopted an existing building code.

The Code is specifically written for use by a licensed design professional. This code provides minimum requirements for assessment, design and construction, or implementation of repairs and rehabilitation, including quality assurance requirements, for structural concrete in service. This code has no legal status unless it is adopted by the authority having jurisdiction. Where the code has not been adopted, it serves as a standard to provide minimum requirements for assessment, design, and construction for the repair and rehabilitation of existing structural concrete. ACI 318 provides minimum requirements for the materials, design, and detailing of structural concrete buildings and, where applicable, nonbuilding structures, and for new construction within existing structures were noted herein.

Key changes from ACI 562-19 to ACI 562-21 include:

(a) The revised code, 562-21, to be used with any existing structures code (not just IEBC).

(b) Chapters 1 and 4 have been combined. Chapter 4 was reduced to meet the goal in (a).

(c) The content of Appendix A was revised and moved into the body of ACI 562, Chapter 4.

(d) The deletion of Appendix A.

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CODE

CHAPTER 1—GENERAL REQUIREMENTS

1.1—Scope

This Code shall apply to assessment, repair, and rehabilitation of existing concrete structures as:

1. A code supplementing an existing building code, or
2. A stand-alone code for existing concrete structures when an existing building code is not adopted.

1.2—General

1.2.1 ACI 562, "Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures," is hereafter referred to as "this Code."

1.2.2 The *licensed design professional* is responsible for the assessment or repair and rehabilitation design, or both.

1.2.3 The requirements of this Code use strength design provisions for demands and capacities, unless otherwise noted.

1.3—Purpose

1.3.1 The purpose of this Code is to safeguard the public by providing minimum requirements for assessment, repair, and rehabilitation of existing concrete structures.

1.4—Applicability of this Code

1.4.1 This Code provides minimum requirements for assessment, repair, and rehabilitation of structural concrete components in existing structures, including buildings and non-building structures.

COMMENTARY

R1—GENERAL REQUIREMENTS

R1.1 This Code provides assessment, design, construction, and durability requirements for repair and rehabilitation of existing concrete structures. Throughout this Code, the term "structure" means an existing building, non-building structure, member, system, or element, if the construction is concrete or mixed construction with concrete and other materials.

This Code can be used in combination with an existing building code adopted by an authority having jurisdiction. For buildings, this is anticipated to be the state or local adoption of the International Existing Building Code (IEBC) developed by the International Code Council (ICC). Other codes may be applicable to non-building structures, or to structures that are not addressed in the IEBC. The provisions of this Code are intended to be used with the IEBC and similar codes.

If an existing building code is not adopted, Chapter 4 provides requirements for use as a stand-alone code.

R1.2—General

R1.2.3 If the existing building code or this Code permits the original building code to be used and that code uses allowable stress design, the licensed design professional should consider using the strength design provisions of this Code as a check in the evaluation of existing structures originally designed with allowable stress methods. Allowable stress design methods can result in designs that have inconsistent levels of structural reliability compared with modern strength design provisions (MacGregor 1974, Ellingwood et al. 1980).

R1.4—Applicability of this code

R1.4.1 This Code focuses on buildings and non-building structures as addressed by building codes or an authority having jurisdiction.

For buildings or structures similar to buildings, members that are addressed by this Code include but are not limited to foundations, soil-supported slabs, concrete portions of composite members, and precast and prestressed concrete.

In typical U.S. practice, owners are required to maintain existing structures to prevent unsafe conditions from occur-

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