SI International System of Units

An ACI Standard

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

Reported by ACI Committee 562

ACI CODE-562-25

American Concrete Institute
Always advancing

American Concrete Institute
Always advancing

First Printing: July 2025
ISBN: 978-1-64195-324-5

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

This material may not be reproduced or copied, in whole or in part, in any form or by any means, including making copies by any photo process, or by electronic or mechanical device, printed, written, graphic, or oral, or recording for sound or visual reproduction for use in any knowledge or retrieval system or device, without the written consent of ACI. This material may not be used by data mining, robots, screen scraping, or similar data gathering and extraction tools such as artificial intelligence ("AI") for purposes of developing or training a machine learning or AI model, conducting computer analysis or creating derivatives of this material, without the written consent of ACI.

The technical committees responsible for ACI committee reports and standards strive to avoid ambiguities, omissions, and errors in these documents. Despite these efforts, the users of ACI documents occasionally find information or requirements that may be subject to more than one interpretation or may be incomplete or incorrect. Users who have suggestions for the improvement of ACI documents are requested to contact ACI via the errata website at http://concrete.org/Publications/DocumentErrata.aspx. Proper use of this document includes periodically checking for errata for the most up-to-date revisions.

ACI committee documents are intended for the use of individuals who are competent to evaluate the significance and limitations of its content and recommendations and who will accept responsibility for the application of the material it contains. Individuals who use this publication in any way assume all risk and accept total responsibility for the application and use of this information.

All information in this publication is provided "as is" without warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose or non-infringement.

ACI and its members disclaim liability for damages of any kind, including any special, indirect, incidental, or consequential damages, including without limitation, lost revenues or lost profits, which may result from the use of this publication.

It is the responsibility of the user of this document to establish health and safety practices appropriate to the specific circumstances involved with its use. ACI does not make any representations regarding health and safety issues and the use of this document. The user must determine the applicability of all regulatory limitations before applying the document and must comply with all applicable laws and regulations, including but not limited to, United States Occupational Safety and Health Administration (OSHA) health and safety standards.

Participation by governmental representatives in the work of the American Concrete Institute and in the development of Institute standards does not constitute governmental endorsement of ACI or the standards that it develops.

ACI documents are written via a consensus-based process. The characteristics of ACI technical committee operations include:
(a) Open committee membership
(b) Balance/lack of dominance
(c) Coordination and harmonization of information
(d) Transparency of committee activities to public
(e) Consideration of views and objections
(f) Resolution through consensus process

The technical committee documents of the American Concrete Institute represent the consensus of the committee and ACI. Technical committee members are individuals who volunteer their services to ACI and specific technical committees.

American Concrete Institute®, ACI®, and Always Advancing® are registered trademarks of American Concrete Institute.

American Concrete Institute, 3880 Country Club Drive, Farmington Hills, Michigan 48331.
Telephone: +1.248.848.3700. Facsimile: +1.248.848.3701
www.concrete.org

ACI CODE-562-25
(SI Units)

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

An ACI Standard

Reported by ACI Committee 562

F. Michael Bartlett, Chair

Khaled Nahlawi, Secretary (Non-voting)

Voting Members

Tarek Alkhrdaji	Nessa Galati	Ming Liu	Jeffrey S. West
Michael D. Brown	Karim Helmi	John S. Lund	David Whitmore
Nicholas J. Carino	Katelyn Low	John Silva	Mark E. Williams
Matthew D. D'Ambrosia	Keith E. Kesner	Kyle D. Stanish	Paul H. Ziehl
Lisa R. Feldman	Jonah Kurth	J. Gustavo Tumialan	

Subcommittee Members

Ali Abu-Yosef	Jeremiah D. Fasl	Aaron Larosche	George Seegebrecht
Will Beckwith	Kip Gatto	Michael Lee	Stephen Stacey
Sergio F. Brena	Thomas Gernay	Kenton McBride	Gene Stevens
Michael C. Brown	Matthew Graziano	Kevin Moore	Pericles Stivaros
Liam Butler	Pawan R. Gupta	Kevin Mueller	Peter Stynoski
Richard Cantin	Jose Hernandez	Javeed Munshi	Michael Thomas†
Jeffery Carlson	Doug Hooton	Sivakumar Munuswamy	Eric Van Duyne
Kevin Conroy	Barry Jackson	Jose Pacheco	John Vincent
Ziad Elaghoury	Mohammad Jalalpour	Conrad Paulson	Joshua White
Mohamed ElBatanouny	Gaur Johnson	Nicolas Pinoteau	John Wilcher
Chad Enders	Insung Kim	Giovanni Plizzari	John Wilson
Siamak Fakhrayee Nejad	Vincent Lapointe	Diego Romero	

Consulting Members

Paolo Casadei	Kelly Cobeen	Kent Harries	Carl "Chuck" Larosche*

*Special acknowledgement to the previous chair, Carl "Chuck" Larosche, whose vision and initiative were the driving force behind the launch of the ACI 562-25. His foresight and commitment set a clear path forward, inspiring collaboration throughout the process

†Deceased

ACI CODE-562-25, "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 CODE-562-25 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); fire; historical reinforcing bars; interface bond; licensed design professional; maintenance; project record documents; rehabilitation; reliability; repair; strengthening; temporary works; testing agency.

ACI CODE-562-25 was approved by the ACI Standards Board for publication January 2025, and published January 2025. This Code was first published in 2013 and revised in 2016, 2019, and 2021. The SI unit version was published in July 2025.

Copyright © 2025, American Concrete Institute.

This material may not be reproduced or copied, in whole or in part, in any form or by any means, including making copies by any photo process, or by electronic or mechanical device, printed, written, graphic, or oral, or recording for sound or visual reproduction for use in any knowledge or retrieval system or device, without the written consent of ACI. This material may not be used by data mining, robots, screen scraping, or similar data gathering and extraction tools such as artificial intelligence ("AI") for purposes of developing or training a machine learning or AI model, conducting computer analysis or creating derivatives of this material, without the written consent of ACI.

American Concrete Institute – Copyrighted © Material – www.concrete.org

CONTENTS

PREFACE, P. 4

CHAPTER 1—GENERAL REQUIREMENTS, P. 5
1.1—Scope, p. 5
1.2—General, p. 5
1.3—Purpose, p. 5
1.4—Applicability of this Code, p. 5
1.5—Administration, p. 6
1.6—Design and construction documents, p. 7
1.7—Assessment, design, and construction requirements if used with an existing building code, p. 8
1.8—Assessment, design, and construction requirements if used as a stand-alone code, p. 10

CHAPTER 2—NOTATION AND DEFINITIONS, P. 12
2.1—Notations, p. 12
2.2—Definitions, p. 14

CHAPTER 3—REFERENCED STANDARDS, P. 23

CHAPTER 4—CRITERIA AS A STAND-ALONE CODE FOR ASSESSMENT, REPAIR, AND REHABILITATION OF EXISTING STRUCTURES, P. 26
4.1—General, p. 26
4.2—Criteria for the assessment, repair design, and rehabilitation design of existing concrete structures, p. 26
4.3—Severe strength deficiencies and dangerous conditions, p. 28
4.4—Substantial structural damage, p. 30
4.5—Less than substantial structural damage with strengthening, p. 31
4.6—Less than substantial structural damage without strengthening, p. 33
4.7—Additions, p. 33
4.8—Alterations, p. 34
4.9—Change of occupancy or use, p. 35

CHAPTER 5—LOADS, FACTORED LOAD COMBINATIONS, AND STRENGTH REDUCTION FACTORS, P. 37
5.1—General, p. 37
5.2—Loads and factored load combinations for repair or rehabilitation design, p. 37
5.3—Strength reduction factors for repair or rehabilitation design, p. 38
5.4—Strength reduction factors for detailed assessment, p. 39
5.5—Additional load combinations for structures repaired with external reinforcing system, p. 39
5.6—Additional load combinations for structures subjected to fire, p. 40

CHAPTER 6—ASSESSMENT, EVALUATION, AND ANALYSIS, P. 42
6.1—Assessment, p. 42
6.2—Preliminary assessment, p. 42
6.3—Detailed assessment, p. 44
6.4—Reliability-based assessment, p. 46
6.5—Field investigation, p. 47
6.6—Material properties, p. 48
6.7—Test methods to quantify material properties, p. 52
6.8—Evaluation requirements for systems, members, and elements, p. 58
6.9—Serviceability evaluation, p. 63
6.10—Durability evaluation, p. 65
6.11—Structural analysis of existing structures, p. 66
6.12—Structural analysis for repair or rehabilitation design, p. 68
6.13—Strength evaluation by load testing, p. 69
6.14—Strength evaluation by model analysis and testing, p. 69

CHAPTER 7—FIRE RESISTANCE, ASSESSMENT, AND DAMAGE REPAIR, P. 70
7.1—General, p. 70
7.2—Fire resistance of existing concrete members, p. 71
7.3—Fire resistance with external reinforcement, p. 72
7.4—Assessment and repair of fire-damaged structures, p. 73

CHAPTER 8—REINFORCEMENT DETAILS AND CONDITION FOR STRUCTURAL EVALUATION AND REPAIR DESIGN, P. 76
8.1—General, p. 76
8.2—Types of historical reinforcing bars, p. 76
8.3—Development length of historical steel reinforcing bars, p. 76
8.4—Corroded reinforcement, p. 79
8.5—Corroded prestressed reinforcement, p. 81
8.6—Tendon splicing, p. 82
8.7—Tendon anchorage zones, p. 82

CHAPTER 9—DESIGN OF REPAIRS, P. 84
9.1—General, p. 84
9.2—Strength and serviceability, p. 84
9.3—Behavior and detailing of repaired systems, p. 84
9.4—Interface bond of cementitious materials for repair, p. 85
9.5—Materials, p. 90
9.6—Section enlargement repair, p. 92
9.7—Prestressed concrete repair, p. 92
9.8—Repairs using supplemental reinforcement, p. 93

American Concrete Institute – Copyrighted © Material – www.concrete.org