IN-LB Inch-Pound Units

An ACI Standard

Repair of Concrete in Buildings—Specification

Reported by ACI Committee 563

ACI SPEC-563-25

American Concrete Institute
Always advancing

American Concrete Institute
Always advancing

First Printing
March 2025
ISBN: 978-1-64195-305-4

Repair of Concrete in Buildings—Specification

© 2025 American Concrete Institute. All rights reserved.

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 SPEC-563-25

Repair of Concrete in Buildings—Specification

An ACI Standard

Reported by ACI Committee 563

John S. Lund, Chair

Karen Polanco*, Secretary

Jason Coleman
Jorge Costa
Peter Emmons
Paul E. Gaudette
Timothy R. W. Gillespie
Matthew R. Hansen
Susan Isble
Jason S. Johnson
Kevin R. Krawiec
Kenneth M. Lozen
Marjorie M. Lynch
Paul A. Noyce
Jose Pacheco
Clyde Porter Jr.
Brian E. Pulver
James A. Ragland
Michael M. Sprinkel†
Kyle Stanish*
Michael S. Stenko
Gene R. Stevens
David A. VanOcker
David W. Whitmore

Consulting Members

Fred R. Goodwin
Kevin A. Michols
Lawrence F. Kahn
Tracy D. Marcotte
Jay H. Paul

*Editorial committee members.
†Michael Sprinkel was a committee member of ACI 563 from its inception in 2007 and chaired the Overlays subcommittee at the time of his death in December 2022. The committee expresses its deepest appreciation for his friendship and leadership.

This is a Reference Specification that the Architect/Engineer can apply to any construction repair and rehabilitation project involving structural concrete by citing it in the Project Specifications. Mandatory requirements and optional requirements checklists are provided to assist the Architect/Engineer in supplementing the provisions of this Specification, as required or needed, by designating or specifying individual project requirements. The first section covers general construction requirements for repair Work. The second section covers shoring and bracing of the structure or member to be repaired, and addresses sequencing of repair Work as the structure is unloaded and reloaded. The third section covers concrete removal and preparation of the concrete substrate for repair and defines common equipment and methods. The next five sections cover materials and proportioning of concrete; proprietary cementitious and polymer repair materials; reinforcement; production, placing, finishing, and curing of repair materials; formwork performance criteria and construction; treatment of joints; embedded items; repair of surface defects; mockups, and finishing of formed and unformed surfaces. New sections included in this edition of the Specification includes waterproofing cracks by chemical grout injection, architectural concrete repair, structural precast concrete repair, unbonded post-tensioned concrete repair, overlays, protective membranes, and cathodic protection by galvanic anodes. Provisions governing testing, evaluation, and acceptance of repair materials as well as acceptance of the repair Work are included. Sections 16, 17 and 18 incorporate by reference other ACI specifications into this ACI Standard: ACI SPEC-503.7 for crack repair by epoxy injection, ACI SPEC-506.2 for shotcrete, and ACI SPEC-440.12 for wet-layup FRP.

Keywords: bracing; cold weather; compressive strength; consolidation; curing; durability; epoxy injection; finish; formwork; grouting; hot weather; inspection; joints; mockups; placing; precast; rehabilitation; repair; reshoring; shoring; shotcrete; slab; steel reinforcement; surface preparation; testing; tolerance; welded wire.

CONTENTS

ACI SPEC-563-25 supersedes ACI 563-18 and was approved by the ACI Standards Board for publication January 2025, and published March 2025. This Specification was first published in 2018 and revised in 2018.

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.

SECTION 1—GENERAL REQUIREMENTS

1.1—Scope

1.1.1 This Specification covers repair of concrete in existing structures.

1.1.2 This Specification is incorporated by Contract Documents and provides requirements for Contractor.

1.1.3 This Specification governs for construction within its scope, except project-specific Contract Documents govern if there is a conflict.

1.1.4 This Specification governs if there is a conflict with referenced material and testing standards.

1.1.5 Contractor is permitted to submit written alternatives to any provision in this Specification for consideration.

1.1.6 Do not use this Specification in conjunction with ACI SPEC-301, ACI SPEC-350.5, or ACI CODE-530/530.1-13 unless Contract Documents state that this Specification governs for Work covered by 1.1.1.

1.1.7 Ignore provisions of this specification that are not applicable to Work.

1.1.8 Values in this Specification are stated in inch-pound units. A companion specification in SI units is available.

1.1.9 The Notes to Specifier are not part of this Specification.

1.2—Interpretation

1.2.1 Unless otherwise explicitly stated, this Specification shall be interpreted using the following principles:

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

1.2.1.1 Interpret this Specification consistent with the plain meaning of the words and terms used.

1.2.1.2 Definitions provided in this Specification govern over the definitions of the same or similar words or terms found elsewhere.

1.2.1.3 Whenever possible, interpret this Specification so that its provisions are in harmony and do not conflict.

1.2.1.4 Headings are part of this Specification and are intended to identify the scope of the provisions or sections that follow. If there is a difference in meaning or implication between the text of a provision and a heading, the meaning of the text governs.

1.2.1.5 Footnotes are part of this Specification. The meaning of the provision text governs in the event of a difference in meaning or implication between the provision text and a footnote to that provision.

1.2.1.6 Where a provision of this Specification involves two or more items, conditions, requirements, or events connected by the conjunctions "and" or "or," interpret the conjunction as follows:

"and" indicate that all the connected items, conditions, requirements, or events apply

"or" indicates that the connected items, conditions, requirements, or events apply singularly

1.2.1.7 The use of the verbs "may" or "will" indicates that the Specification provision is for information to the Contractor.

1.2.1.8 The phrase "as indicated in Contract Documents" means the specifier included the provision requirements in Contract Documents.

1.2.1.9 The phrase "unless otherwise specified" means the specifier may have included an alternative to the default requirement in Contract Documents.

1.2.1.10 The phrase "if specified" means the specifier may have included a requirement in Contract Documents for which there is no default requirement in this Specification.

1.3—Definitions

acceptable or **accepted—**determined by Architect/Engineer to be in compliance with Contract Documents.

acceptance—acknowledgment by Architect/Engineer that submittal or completed Work is acceptable.

Architect/Engineer—the architect, engineer, architectural firm, designing, or engineering firm developing Contract Documents, or administering the Work under Contract Documents, or both.

architectural concrete—concrete that is typically exposed to view, or is indicated as architectural concrete in Contract Documents, and therefore requires special care in selection of the concrete materials, forming, placing, and finishing to obtain the desired architectural appearance.

bracing—temporary supplemental members used to avoid local or global instability during construction, assessment, or repair or rehabilitation that are intended to be removed after completion of construction.

bruised surface—a surface layer weakened by interconnected microcracks in concrete substrates caused by use of high-impact, mechanical methods for concrete removal and surface preparation; fracture layer typically extends to a depth of 1/8 to 3/8 in. and, if not removed, frequently results in lower bond strengths compared to surfaces prepared with non-impact methods.

cast-in-place concrete—concrete that is deposited and allowed to harden in the place where it is required to be in the completed structure, as opposed to precast concrete.

construction joint (repair material)—the interface where two successive placements of repair material meet.

Contract Documents—set of documents that form the basis of a contractual relationship between and Owner and Contractor or design-builder. These documents are defined by the contractual agreement, and can contain contract forms, contract conditions, specifications, drawings, addenda, and contract changes.

Contractor—the person, firm, or entity under contract for construction of the Work.

delamination—a planar separation in a material that is roughly parallel to the surface of the material.

drawings—graphic presentations that detail requirements for Work and may include written notes.

formwork, engineer-designed—formwork that is required by the Contract Documents to be designed by a specialty engineer.

formwork, non-engineer-designed—formwork that is not required by the Contract Documents to be designed by a specialty engineer.

hydraulic ram—a mechanical device used to apply force to a monostand tendon that includes a pressure gauge and hydraulic pump.

hydrodemolition—a method for concrete removal and surface preparation using high-pressure or ultra-high-pressure water; this method is capable of removing sound and deteriorated concrete and provides a sound concrete substrate; the process will also clean existing steel reinforcement for reuse.

install—operations at the project site, including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

intermediate stressing splice—a device that is used to connect and stress two separate lengths of prestressing steel along the same line. The connector consists of two opposing end openings where one end of the device provides a fixed end anchorage for one of the lengths of prestressing steel and the other end provides a stressing end anchor for the other length of prestressing steel.

liftoff—a field procedure where one end of the tendon is tensioned with a calibrated jacking assembly to slightly displace or lift the anchoring device off the concrete surface to determine the actual force in a tendon at the point where the procedure is executed.

lightweight concrete—structural concrete containing lightweight aggregate conforming to ASTM C330/C330M and having an equilibrium density, as determined by ASTM C567/C567M, between 90 and 115 lb/ft^3.

microcrack—crack too small to be seen by the unaided eye.

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