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CSA S448.1:10
(reaffirmed 2020)

Repair of reinforced concrete in buildings and parking structures

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Preface

This is the second edition of CSA S448.1, *Repair of reinforced concrete in buildings and parking structures.* It replaces the previous edition, published in 1993.

This Standard specifies minimum requirements for the investigation, design, and execution of repair work needed to restore reinforced concrete structural components of buildings to a safe and serviceable state. It provides a framework for the design of repair projects and covers repair techniques and materials in a general way; engineers are responsible for selecting appropriate procedures and materials to obtain the desired performance.

This Standard covers the repair of regular (i.e., not pre-stressed or post-tensioned) reinforced concrete structural elements in buildings and parking structures. This Standard addresses the need to ensure the structural integrity and safety of a building during the repair period and the need for the engineer to establish follow-up maintenance and monitoring programs for implementation by the building owner.

This Standard reflects the current state of knowledge regarding concrete repair technology. It recognizes that, in the design of a repair project, the engineer works closely with the owner to determine the owner's requirements for service life following repair and his or her commitment to regular maintenance of the structure.

This Standard was prepared by the Technical Committee on Repair of Reinforced Concrete in Buildings, under the jurisdiction of the Strategic Steering Committee on Structures (Design), and has been formally approved by the Technical Committee.

July 2010

Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This publication was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*

(4) *CSA Standards are subject to periodic review, and suggestions for their improvement will be referred to the appropriate committee.*

(5) *All enquiries regarding this Standard, including requests for interpretation, should be addressed to Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.*

Requests for interpretation should

(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;

(b) provide an explanation of circumstances surrounding the actual field condition; and

(c) be phrased where possible to permit a specific "yes" or "no" answer.

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are published in CSA's periodical* Info Update*, which is available on the CSA Web site at www.csa.ca.*

S448.1-10
Repair of reinforced concrete in buildings and parking structures

1 Scope

1.1
This Standard specifies requirements for the repair of reinforced structural concrete components of buildings and parking structures.

1.2
This Standard does not cover repairs to
(a) pre-stressed, including post-tensioned, components and structures; or
(b) non-structural slabs-on-grade.

1.3
This Standard does not cover repairs to
(a) docks and wharves;
(b) highway bridges;
(c) bins, tanks, and silos; or
(d) treatment plants.

1.4
This Standard is generally limited to materials and procedures pertaining to repairs that are accepted as industry standard and based on sound engineering practice. This Standard does not prohibit the use of innovative procedures and materials provided that
(a) such procedures are carried out by persons qualified in the specific methods applied;
(b) an acceptable level of safety and performance is provided when one of the following methods is used:
    (i) analysis based on generally established theory;
    (ii) evaluation of a full-scale structure or a prototype; or
    (iii) studies of model analogues; and
(c) such methods are acceptable to the owner.

1.5
This Standard specifies requirements for the preparation of recommendations for installation of appropriate protection materials or systems and for post-repair maintenance schedules in order to provide protection to repaired structures and components.

1.6
In CSA standards, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.