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CSA A23.3:19
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Design of concrete structures

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Preface

This is the seventh edition of CSA A23.3, *Design of concrete structures.* It supersedes the previous editions published in 2014, 2004, 1994, 1984, 1977 (metric), and 1973 (imperial), and 1959.

This Standard is intended for use in the design of concrete structures for buildings in conjunction with CSA A23.1/A23.2, *Concrete materials and methods of concrete construction/Methods of test and standard practices for concrete,* and CSA A23.4, *Precast concrete — Materials and construction*.

Changes in this edition include the following:

- Some definitions have been updated.
- Additional information on cover for fire resistance has been provided in Clauses 7 and 8.
- Clause 10 on flexural ductility and slenderness effects has been updated.
- Clause 11 on the Simplified and General method for shear design has been updated.
- A new clause has been added to address punching shear around circular supports or reaction area.
- Clause 14 on walls has been updated.
- A new Clause 19 on structural diaphragms has been added. The previous Clause 19 on shells and folded plates has been moved to mandatory Annex E.
- Numerous updates have been added to Clause 21.
- Annex D is now a mandatory part of the Standard.

This Standard was prepared by the Technical Committee on Reinforced Concrete Design, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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 Standard 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 Standard.*
4) *To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include "Request for interpretation" in the subject line:*
   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) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

   Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at standardsactivities.csa.ca.*
5) *This Standard is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include "Proposal for change" in the subject line:*
   a) *Standard designation (number);*
   b) *relevant clause, table, and/or figure number;*
   c) *wording of the proposed change; and*
   d) *rationale for the change.*

CSA A23.3:19
Design of concrete structures

1 Scope

1.1 General

This Standard specifies requirements, in accordance with the *National Building Code of Canada,* for the design and strength evaluation of

a) structures of reinforced and prestressed concrete; and
b) plain concrete elements.

Notes:

1) *For structures such as blast-resistant structures, tanks, reservoirs, swimming pools, bins, silos, towers, and chimneys, users of this Standard should also refer to applicable codes, standards, or guidelines for additional requirements*
2) *Special requirements for parking structures are specified in CSA S413.*

1.2 Fire resistance

This Standard requires designs to be carried out in accordance with the fire resistance requirements of the applicable building code (see Clause 8.1.2).

Note: *Information on the fire resistance of concrete elements can be found in Appendix D of the* National Building Code of Canada*.*

1.3 Alternative design procedures

Designs that use procedures that are not covered by this Standard but are carried out by a person qualified in the methods applied and provide a level of safety and performance equivalent to designs complying with this Standard are acceptable if carried out by one of the following methods:

a) analysis based on generally established theory;
b) evaluation of a full-scale structure or a prototype by a loading test; or
c) studies of model analogues.

1.4 Shells and folded plates

Design requirements for shells and folded plates can be found in Annex E.

1.5 Terminology

In this Standard, “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.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

