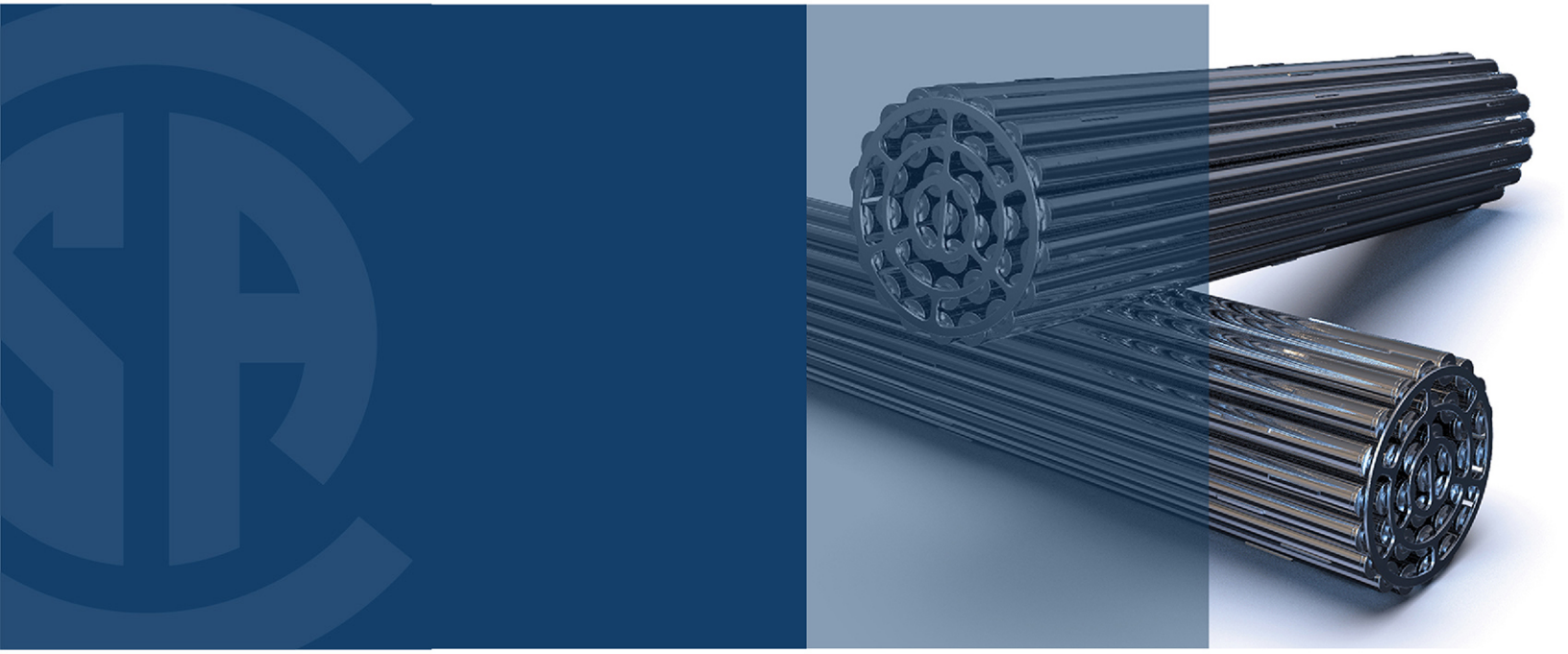
CSA N291:19

(reaffirmed 2024)

Requirements for nuclear safety-related structures



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CSA N291:19
March 2019

Title: *Requirements for nuclear safety-related structures*

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CSA N291:19
Requirements for nuclear safety-related structures

Published in March 2019 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

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ISBN 978-1-4883-1689-0

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Preface

This is the third edition of CSA N291, *Requirements for nuclear safety-related structures.* It supersedes the previous edition published in 2015 under the title, *Requirements for safety-related structures for nuclear power plants* and 2008 under the title, *Requirements for safety-related structures for CANDU® nuclear power plants*. The title has been changed to reflect more accurately the scope.

Note: *CANDU® (CANada Deuterium Uranium) is a registered trademark of Atomic Energy of Canada Limited (AECL).*

There have been many changes throughout this edition; the most significant changes are as follows:

- clarification of the scope, specifically for storage of radioactive waste material;
- addition of new clauses on testing of welding materials and rebar splice materials;
- addition of new clauses on beyond design basis and design extension conditions;
- addition of new clauses on personnel qualifications for: visual inspection, non-destructive examination, welding, concrete construction inspection, and non-metallic liner and coatings inspection.
- modification and addition of new clauses to clarify the requirements for a formal, detailed construction inspection and testing program;
- addition of new clauses on aging management; and
- updates to tests and test frequencies tables for concrete materials, concrete, and grout.

This Standard specifies requirements for the material, analysis and design, construction, fabrication, inspection, examination, and aging management of safety-related structures constructed of structural steel, reinforced concrete, and reinforced masonry. The minimum design requirements specified in this Standard follow the requirements of CSA A23.3, CSA S16, CSA S304.1, and the *National Building Code of Canada*. Additional requirements reference the CSA N287 series and the CSA N289 series of Standards.

This Standard provides a general definition of safety-related structures rather than a comprehensive listing of all safety-related structures. The analysis and design of structures cover static and dynamic loads, and the loads, load factors, load combinations, and safety criteria cover service loads and abnormal/environmental loads. This Standard also covers the design and analysis of irradiated fuels and radioactive waste storage structures.

The CSA N-Series of Standards provides an interlinked set of requirements for the management of nuclear facilities and activities. CSA N286 provides overall direction to management to develop and implement sound management practices and controls, while the other CSA Group nuclear Standards provide technical requirements and guidance that support the management system. This Standard works in harmony with CSA N286 and does not duplicate the generic requirements of CSA N286; however, it may provide more specific direction for those requirements.

The users of this Standard are reminded that an authority having jurisdiction (AHJ) such as the Canadian Nuclear Safety Commission might impose additional requirements to those specified in this Standard.

This Standard was prepared by the Subcommittee on Requirements for Nuclear Safety-Related Structures, under the jurisdiction of the Technical Committee on Concrete Containment and Safety-Related Structures for Nuclear Power Plants and the Strategic Steering Committee on Nuclear Standards, and has been formally approved by the Technical Committee.

