SI International System of Units

Design of Nuclear Safety-Related Structures for Impactive and Impulsive Loads using ACI CODE-349 and ASME Section III, Division 2 Provisions—Guide

Reported by ACI Committees 349 and 359

ACI PRC-(349-359)-24

American Concrete Institute
Always advancing

First Printing
June 2025
ISBN: 978-1-64195-320-7

Design of Nuclear Safety-Related Structures for Impactive and Impulsive Loads using ACI CODE-349 and ASME Section III, Division 2 Provisions—Guide

© 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 PRC-(349-359)-24

(SI Units)

Design of Nuclear Safety-Related Structures for Impactive and Impulsive Loads using ACI CODE-349 and ASME Section III, Division 2 Provisions—Guide

Reported by ACI Committees 349 and 359

ACI Committee 349

Adeola K. Adediran, Chair
Branko Galunic, Vice Chair
Partha S. Ghosal, Vice Chair
John F. Silva, Vice Chair
Lisa M. Anderson, Secretary

Omesh B. Abhat
Monzer M. Allam
Taha D. Al-Shawaf
Sungjin Bae
Carlos Cantarero-Leal
Mi-Guem Chorzepa
Rolf Eligehausen
Farhad Farzam
Werner A. F. Fuchs
Stewart C. Gallocher
Herman L. Graves
James A. Hammell
Charles J. Hookham
Thomas T. C. Hsu
Ronald J. Janowiak
Scott A. Jensen
Christopher A. Jones
Ola Jovall
Carl J. Larosche
Nam-Ho Lee
W. Calvin McCall
Javeed Munshi
Nebojsa Orbovic*
Jaspal Saini
David B. Scott
Matthew R. Sherman
Madhumita Sircar
Bozidar Stojadinovic
Amit H. Varma
Shen Wang
Andrew S. Whittaker
Charles A. Zalesiak

Consulting Members

Hansraj G. Ashar*
Peter J. Carrato
Ronald A. Cook
Mukti L. Das
Orhan Gurbuz*
Dan J. Naus
Barendra K. Talukdar
Albert Y. C. Wong

ACI Committee 359

John McLean, Chair
Nebojsa Orbovic,* Vice Chair
Justin Cassamassino, Secretary

Chang Joon Bang
Louis J Colarusso
Arthur C. Eberhardt
Partha S. Ghosal
Bill D. Hovis
Todd C. Inman
Christopher A. Jones
Ola Jovall
Thomas Kang
Nam-Ho Lee
Javeed Munshi
Toyohiko Muraki
James Franklin Strunk
George Thomas
Shen Wang

Consulting Members

Adeola K. Adediran
Sungjin Bae
Jean Baptiste Domage
Ata Istar
Barry B. Scott
Matthew R. Senecal
Ziduan Joshua Shang
Madhumita Sircar
Clayton T. Smith

Special acknowledgment is given to Adeola K. Adediran, Ola Jovall, and Nebojsa Orbovic for their contributions to this guide.

*Deceased.

ACI Committee Reports and Guides are intended for guidance in planning, designing, executing, and inspecting construction. This document is 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 information it contains. ACI disclaims any and all responsibility for the stated principles. The Institute shall not be liable for any loss or damage arising therefrom. Reference to this document shall not be made in contract documents. If items found in this document are desired by the Architect/Engineer to be a part of the contract documents, they shall be restated in mandatory language for incorporation by the Architect/Engineer.

ACI PRC-(349-359)-24 was adopted and published in December 2024. The SI unit version was published in June 2025.

Copyright © 2024, American Concrete Institute.

All rights reserved including rights of reproduction and use in any form or by any means, including the making of copies by any photo process, or by electronic or mechanical device, printed, written, or oral, or recording for sound or visual reproduction or for use in any knowledge or retrieval system or device, unless permission in writing is obtained from the copyright proprietors.