Rain Loads

Guide to the Rain Load Provisions of ASCE 7-16

Michael O'Rourke, Ph.D., P.E.
Aaron Lewis, P.E.

ASCE PRESS

Rain Loads

Other Titles of Interest

ASCE 7 Hazard Tool
Delivers a quick, efficient way to look up key design parameters specified by the standards ASCE/SEI 7-10 and 7-16 through a web-based application that retrieves load data for each of seven hazards, visualizes them on a map, and generates a unified report of results. (ASCE 2016) (http://ascetools.online)

Minimum Design Loads and Associated Criteria for Buildings and Other Structures, ASCE/SEI 7-16
Provides requirements for general structural design and includes means for determining dead, live, soil, flood, wind, snow, rain, atmospheric ice, and earthquake loads and their combinations that are suitable for inclusion in building codes and other documents. A detailed commentary of explanatory and supplementary information is included. (ASCE 2016) (ISBN 978-0-7844-1424-8)

Significant Changes to the Minimum Design Load Provisions of ASCE 7-16
BY GARY CHOCK, P.E., D.CE., S. K. GHOSH, PH.D., MICHAEL O'ROURKE, PH.D., P.E., AND T. ERIC STAFFORD, P.E.
Describes the revisions to the minimum design load requirements set forth in the standard ASCE/SEI 7-16. (ASCE Press 2018) (ISBN 978-0-7844-1457-6)

Wind Loads: Guide to the Wind Load Provisions of ASCE 7-16
BY WILLIAM L. COULBOURNE, P.E., AND T. ERIC STAFFORD, P.E.
Sets forth a detailed and authoritative interpretation of the wind load provisions of the standard ASCE/SEI 7-16, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*. (ASCE Press 2020) (ISBN 978-0-7844-1526-9)

Snow Loads: Guide to the Snow Load Provisions of ASCE 7-16
BY MICHAEL O'ROURKE, PH.D., P.E.
Supplies a detailed, authoritative explanation of the snow load provisions contained in the standard *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, ASCE/SEI 7-16. (ASCE Press 2017) (ISBN 978-0-7844-1456-9)

Seismic Loads: Guide to the Seismic Load Provisions of ASCE 7-16
BY FINLEY A. CHARNEY, PH.D., P.E., THOMAS F. HEAUSLER, P.E., S.E., AND JUSTIN D. MARSHALL, PH.D., P.E.
Provides clear, authoritative explanations of the seismic design provisions contained in the standard *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, ASCE/SEI 7-16. (ASCE Press 2020) (ISBN 978-0-7844-1550-4)

Rain Loads

Guide to the Rain Load Provisions of ASCE 7-16

Michael O'Rourke, Ph.D., P.E.
Aaron R. Lewis, P.E.

ASCE PRESS

LCCN 2019055358

Published by American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, Virginia 20191-4382
www.asce.org/bookstore | ascelibrary.org

Errata: **Errata, if any, can be found at https://doi.org/10.1061/978078441553.**

ISBN 978-0-7844-4155-3 (print)
ISBN 978-0-7844-8276-6 (PDF)
ISBN 978-0-7844-8277-3 (ePub)
Manufactured in the United States of America.

26 25 24 23 22 21 20 1 2 3 4 5

Contents

This page intentionally left blank

Preface

This guide provides practicing structural engineers with a detailed description of the rain load provisions of Standard ASCE/SEI 7-16, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, published by ASCE. The intent of this guide is to describe the key parameters that underpin the provision and to illustrate the application of the provisions through numerous examples. Readers and users of this guide will know how to use the provisions as well as the concepts behind them. In this fashion, users may be able to address nonroutine rain loading issues that are not explicitly covered in ASCE 7-16.

Every effort has been made to make the illustrative example problems in this guide correct and accurate. The authors welcome comments regarding inaccuracies, errors, or different interpretations. The views expressed and the interpretation of the rain load provisions made in this guide are those of the authors and not of the ASCE Standards Committee or the ASCE organization.

Acknowledgments

The authors would like to acknowledge the past and present members of the Snow and Rain Loads Subcommittee of ASCE 7. Without their comments, questions, and discussions, the development of Chapter 8 in ASCE 7-16, and subsequently this guide, would not have been possible.

As with any document of this type, many individuals have contributed their hard work and effort. The authors acknowledge the work and effort extended by the administrative staff of the Department of Civil and Environmental Engineering at Rensselaer Polytechnic Institute, who assisted in the word processing and preparation of this narrative. The authors would also like to acknowledge the review work of Sean Homem of SGH. Finally, the authors would like to acknowledge Anthony Longabard and Jen-uwe Thalheim of FM Global for providing detailed information on rain load losses.