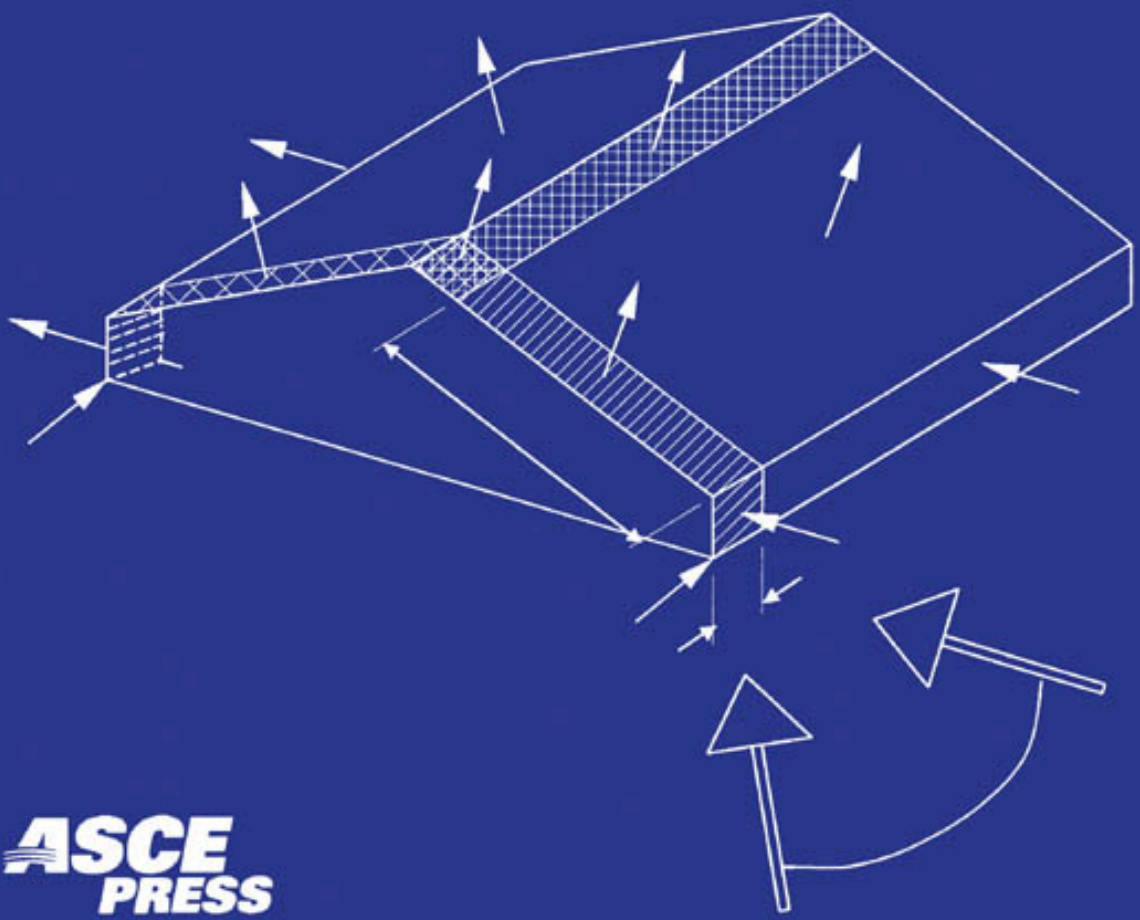
GUIDE TO THE USE OF THE WIND LOAD PROVISIONS OF ASCE 7-98

Kishor C. Mehta and Dale C. Perry



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Abstract: The objective of the *Guide to the Use of Wind Load Provisions of ASCE 7-98* (formerly ASCE 7-88) is to provide guidance in the use of the wind load provisions set forth in ASCE Standard 7-98, *Minimum Design Loads for Buildings and Other Structures*. In order to clearly identify the scope and limitations of this Standard, the *Guide* first provides a brief review of the background material that forms the basis for the Standard's provisions. It then discusses the general format of an analytical procedure used to determine wind loads and the various wind load parameters involved in this determination, such as velocity pressure, gust response factor, and pressure coefficients. This discussion is followed by examples using this analytical procedure to determine wind load. Finally, the *Guide* presents additional background information on the different wind parameters and a discussion on using the wind-tunnel procedure to determine wind load.

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In Memoriam

Guide to the Use of the Wind Load Provisions of ASCE 7-98 was assembled as a combined effort of the two authors. Prior to its final editing, Dale C. Perry passed away in an accident while he was inspecting a damaged building, a task that he loved to do. The completed *Guide* is dedicated to the memory of my colleague and friend of twenty-five years.

Kishor C. Mehta

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Preface

This guide is designed to assist professionals in the use of the wind load provisions of the American Society of Civil Engineers (ASCE) Standard ASCE 7-98. The *Guide* is a revision of *Guide to the Use of Wind Load Provisions of ASCE 7-95* because the wind load provisions underwent significant changes from the previous Standard, ASCE 7-95. The *Guide* contains 10 example problems worked out in detail, which can provide direction to practicing professionals in assessing wind loads on a variety of buildings and other structures. Every effort has been made to make these illustrative example problems correct and accurate. The authors would be pleased to receive comments regarding inaccuracies, errors, or different interpretations. The views expressed and interpretation of the wind load provisions made in the *Guide* are those of the authors and not of the ASCE 7 Standards Committee or the ASCE organization.

Authors' Disclaimer

Although the authors have done their best to ensure that any advice, recommendation, interpretation, or information given herein is accurate, no liability or responsibility of any kind (including liability for negligence) is accepted by the authors.

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In a document of this type, there are individuals in the background who helped in layout, word-processing, and checking calculations. These tasks were handled by the staff of the Wind Science and Engineering Research Center, Texas Tech University. Personnel at Texas A&M University also assisted in formulating the example problems. Contributions by these individuals are acknowledged by the authors.

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About the Authors

Kishor C. Mehta, P.E., Honorary Member of ASCE, Horn Professor of Civil Engineering, is the Director of the Wind Science and Engineering Research Center at Texas Tech University, Lubbock, Texas. He served as Chairman of the ASCE 7 Task Committee on Wind Loads, which produced ASCE 7-88 and ASCE 7-95. He was lead author of the *Guide to the Use of Wind Load Provisions of ASCE 7-95*. Dr. Mehta is past president of the American Association of Wind Engineering and past chairman of the Committee on Natural Disasters, National Research Council. He is project director of the NSF-sponsored Colorado State University/Texas Tech University Cooperative Program in Wind Engineering and program director of the Texas Tech/National Institute of Standards and Technology Cooperative Agreement for Windstorm Damage Mitigation. In April 2000, the National Hurricane Conference honored Dr. Mehta with an award for distinguished service in wind engineering.

Dale C. Perry (1932–2001) was a Dockery Professor in the Department of Architecture at Texas A&M University, College Station, Texas. Dr. Perry worked for the Southern Building Code Congress International (secretary to the Wind Loads Deemed-to-Comply Ad Hoc Committee); served on ASCE/ANSI, SBCCI, and ICBO in developing performance criteria for wind/environmental loads; and was director of Research and Engineering for the Metal Building Manufacturers Association. He was past president of the American Association of Wind Engineering. He served on the ASCE Task Committee to Mitigate Wind Damage and on the ASCE 7 Task Committee on Wind Loads. He also served as a team leader or as a member of a number of post-disaster investigations, including Hurricanes Elena, Andrew, Iniki, Iwa, Gilbert, and Georges. He was the recipient of the engineering award of the National Hurricane Conference in 1993 and again in 1997.