Chapter C26
WIND LOADS—GENERAL REQUIREMENTS

General. The format and layout of the wind load provisions in this standard have been significantly revised from previous editions. The goal was to improve the organization, clarity, and use of the wind load provisions by creating individual chapters organized according to the applicable major subject areas. The wind load provisions are now presented in Chapters 26 through 31 as opposed to prior editions, where the provisions were contained in a single chapter. The multiple-chapter approach greatly reduced the depth of the paragraph numbering, which subsequently significantly improves the clarity of the provisions. The reorganization is presented in a logical sequence geared toward the structural design community. To assist users in locating provisions between ASCE 7-05 and ASCE 7-10, a cross-reference of the applicable sections is provided in Table C26.1-1.

Chapter 26 provides the basic wind design parameters that are applicable to the various wind load determination methodologies outlined in Chapters 27 through 31. Items covered in Chapter 26 include definitions, basic wind speed, exposure categories, internal pressures, enclosure classification, gust-effects, and topographic factors, among others. A general description of each chapter is provided below:

Chapter 27—Directional Procedure for Enclosed, Partially Enclosed, and Open Buildings of All Heights: The procedure is the former "buildings of all heights method" in ASCE 7-05, Method 2. A simplified procedure, based on the Directional Procedure, is provided for buildings up to 160 ft in height.

Chapter 28—Envelope Procedure for Enclosed and Partially Enclosed Low-Rise Buildings: This procedure is the former "low-rise buildings method" in ASCE 7-05 Method 2. This chapter also incorporates ASCE 7-05 Method 1 for MWFRS applicable to the MWFRS of enclosed simple diaphragm buildings less than 60 ft in height.

Chapter 29—Other Structures and Building Appurtenances: A single chapter is dedicated to determining wind loads on nonbuilding structures such as signs, rooftop structures, and towers.

Chapter 30—Components and Cladding: This standard addresses the determination of component and cladding loads in a single chapter. Analytical and simplified methods are provided based on the building height. Provisions for open buildings and building appurtenances are also addressed.

Chapter 31—Wind Tunnel Procedure.

C26.1.1 Scope

The procedures specified in this standard provide wind pressures and forces for the design of MWFRS and for the design of components and cladding (C&C) of buildings and other structures. The procedures involve the determination of wind directionality and velocity pressure, the selection or determination of an appropriate gust effect factor, and the selection of appropriate pressure or force coefficients. The procedure allows for the level of structural reliability required, the effects of differing wind exposures, the speed-up effects of certain topographic features such as hills and escarpments, and the size and geometry of the building or other structure under consideration. The procedure differentiates between rigid and flexible buildings and other structures, and the results generally envelop the most critical load conditions for the design of MWFRS as well as components and cladding.

The pressure and force coefficients provided in Chapters 27, 28, 29, and 30 have been assembled from the latest boundary-layer wind-tunnel and full-scale tests and from previously available literature. Because the boundary-layer wind-tunnel results were obtained for specific types of building, such as low- or high-rise buildings and buildings having specific types of structural framing systems, the designer is cautioned against indiscriminate interchange of values among the figures and tables.

C26.1.2 General

The ASCE 7-10 version of the wind load standard provides several procedures (as illustrated in Table 26.1-1) from which the designer can choose.

For MWFRS:

1. Directional Procedure for buildings of all heights [Chapter 27]
2. Envelope Procedure for low-rise buildings [Chapter 28]
3. Directional Procedure for Building Appurtenances [Chapter 29]
4. Wind Tunnel Procedure for all buildings and other structures [Chapter 31]