Chapter 28
WIND LOADS ON BUILDINGS—MWFRS (ENVELOPE PROCEDURE)

28.1 SCOPE

28.1.1 Building Types

This chapter applies to the determination of MWFRS wind loads on low-rise buildings using the Envelope Procedure.

1) Part 1 applies to all low-rise buildings where it is necessary to separate applied wind loads onto the windward, leeward, and side walls of the building to properly assess the internal forces in the MWFRS members.
2) Part 2 applies to a special class of low-rise buildings designated as enclosed simple diaphragm buildings as defined in Section 26.2.

28.1.2 Conditions

A building whose design wind loads are determined in accordance with this section shall comply with all of the following conditions:

1. The building is a regular-shaped building or structure as defined in Section 26.2.
2. The building does not have response characteristics making it subject to across wind loading, vortex shedding, instability due to galloping or flutter, or it does not have a site location for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.

28.1.3 Limitations

The provisions of this chapter take into consideration the load magnification effect caused by gusts in resonance with along-wind vibrations of flexible buildings. Buildings not meeting the requirements of Section 28.1.2, or having unusual shapes or response characteristics shall be designed using recognized literature documenting such wind load effects or shall use the wind tunnel procedure specified in Chapter 31.

28.1.4 Shielding

There shall be no reductions in velocity pressure due to apparent shielding afforded by buildings and other structures or terrain features.

PART 1: ENCLOSED AND PARTIALLY ENCLOSED LOW-RISE BUILDINGS

28.2 GENERAL REQUIREMENTS

The steps required for the determination of MWFRS wind loads on low-rise buildings are shown in Table 28.2-1.

User Note: Use Part 1 of Chapter 28 to determine the wind pressure on the MWFRS of enclosed, partially enclosed or open *low-rise buildings* having a flat, gable or hip roof. These provisions utilize the Envelope Procedure by calculating wind pressures from the *specific equation* applicable to each building surface. For building shapes and heights for which these provisions are applicable this method generally yields the lowest wind pressure of all of the analytical methods specified in this standard.

28.2.1 Wind Load Parameters Specified in Chapter 26

The following wind load parameters shall be determined in accordance with Chapter 26:

– Basic Wind Speed V (Section 26.5)
– Wind directionality Factor K_d (Section 26.6)
– Exposure category (Section 26.7)
– Topographic factor K_{zt} (Section 26.8)
– Enclosure classification (Section 26.10)
– Internal pressure coefficient (GC_{pi}) (Section 26.11).

28.3 VELOCITY PRESSURE

28.3.1 Velocity Pressure Exposure Coefficient

Based on the Exposure Category determined in Section 26.7.3, a velocity pressure exposure coefficient K_z or K_h, as applicable, shall be determined from Table 28.3-1.

For a site located in a transition zone between exposure categories that is near to a change in ground surface roughness, intermediate values of K_z or K_h, between those shown in Table 28.3-1, are permitted, provided that they are determined by a