6.4 METHOD 1—SIMPLIFIED PROCEDURE

6.4.1 Scope. A building whose design wind loads are determined in accordance with this section shall meet all the conditions of 6.4.1.1 or 6.4.1.2. If a building qualifies only under 6.4.1.2 for design of its components and cladding, then its MWFRS shall be designed by Method 2 or Method 3.

6.4.1.1 Main Wind-Force Resisting Systems. For the design of MWFRSs the building must meet all of the following conditions:

1. The building is a simple diaphragm building as defined in Section 6.2.
2. The building is a low-rise building as defined in Section 6.2.
3. The building is enclosed as defined in Section 6.2 and conforms to the wind-borne debris provisions of Section 6.5.9.3.
4. The building is a regular-shaped building or structure as defined in Section 6.2.
5. The building is not classified as a flexible building as defined in Section 6.2.
6. The building does not have response characteristics making it subject to across wind loading, vortex shedding, instability due to galloping or flutter; and does not have a site location for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.
7. The building has an approximately symmetrical cross-section in each direction with either a flat roof or a gable or hip roof with $\theta \leq 45°$.
8. The building is exempted from torsional load cases as indicated in Note 5 of Fig. 6-10, or the torsional load cases defined in Note 5 do not control the design of any of the MWFRSs of the building.

6.4.1.2 Components and Cladding. For the design of components and cladding the building must meet all the following conditions:

1. The mean roof height *h* must be less than or equal to 60 ft *(h* <. 60 ft).
2. The building is enclosed as defined in Section 6.2 and conforms to the wind-borne debris provisions of Section 6.5.9.3.
3. The building is a regular-shaped building or structure as defined in Section 6.2.
4. The building does not have response characteristics making it subject to across wind loading, vortex shedding, instability due to galloping or flutter; and does not have a site location for which channeling effects or buffeting in the wake of upwind obstructions warrant special consideration.
5. The building has either a flat roof, a gable roof with $\theta \leq 45°$, or a hip roof with $\theta \leq 27°$.

6.4.2 Design Procedure.

1. The *basic wind speed V* shall be determined in accordance with Section 6.5.4. The wind shall be assumed to come from any horizontal direction.
2. An *importance factor I* shall be determined in accordance with Section 6.5.5.
3. An *exposure category* shall be determined in accordance with Section 6.5.6.
4. A height and exposure adjustment coefficient, λ, shall be determined from Fig. 6-2.

6.4.2.1 Main Wind-Force Resisting System. Simplified design wind pressures, P_s, for the MWFRSs of low-rise simple diaphragm buildings represent the net pressures (sum of internal and external) to be applied to the horizontal and vertical projections of building surfaces as shown in Fig. 6-2. For the horizontal pressures (zones A, B, C, D), P_s is the combination of the windward and leeward net pressures, P_s shall be determined by the following equation:

$$P_s = \lambda K_{ZT} I P_{S30} \quad (6\text{-}1)$$

where

λ = adjustment factor for building height and exposure from Fig. 6-2

K_{ZT} = topographic factor as defined in Section 6.5.7 evaluated at mean roof height, h

I = importance factor as defined in Section 6.2

P_{S30}= simplified design wind pressure for Exposure B, at h = 30 ft, and for I = 1.0, from Fig. 6-2

6.4.2.1.1 Minimum Pressures. The load effects of the design wind pressures from Section 6.4.2.1 shall not be less than the minimum load case from Section 6.1.4.1 assuming the pressures, P_S, for zones A, B, C, and D all equal to +10 psf, while assuming zones E, F, G, and H all equal to 0 psf.

6.4.2.2 Components and Cladding. Net design wind pressures, P_{net}, for the components and cladding of buildings designed using Method 1 represent the net pressures (sum of internal and external) to be applied normal to each building surface as shown in Fig. 6-3. P_{net} shall be determined by the following equation:

$$P_{net} = \lambda K_{ZT} I P_{S30} \quad (6\text{-}2)$$

where

λ = adjustment factor for building height and exposure from Fig. 6-3

K_{ZT} = topographic factor as defined in Section 6.5.7 evaluated at mean roof height, h

I = importance factor as defined in Section 6.2

P_{net30} = net design wind pressure for exposure B, at h = 30 ft, and for I = 1.0, from Fig. 6-3

6.4.2.2.1 Minimum Pressures. The positive design wind pressures, P_{net} , from Section 6.4.2.2 shall not be less than +10 psf, and the negative design wind pressures, P_{net} , from Section 6.4.2.2 shall not be less than -10 psf.

6.4.3 Air Permeable Cladding. Design wind loads determined from Fig. 6.3 shall be used for all air permeable cladding unless approved test data or the recognized literature demonstrate lower loads for the type of air permeable cladding being considered.