

pressure. The magnitude of internal pressures depends on whether the building is enclosed, partially enclosed, or open, as defined in ASCE 7-10. Figure 8-17 shows the effect of wind on an enclosed and partially enclosed building.

In wind-borne debris regions (as defined in ASCE 7-10), in order for a building to be considered enclosed for design purposes, glazing must either be impact-resistant or protected with shutters or other devices that are impact-resistant. This requirement also applies to glazing in doors.

Methods of protecting glazed openings are described in ASCE 7-10 and in Chapter 11 of this Manual.



TERMINOLOGY: HURRICANE-PRONE REGIONS

In the United States and its territories, hurricane-prone areas are defined by ASCE 7-10 as (1) the U.S. Atlantic Ocean and Gulf of Mexico Coasts where the basic wind speed for Risk Category II buildings is greater than 115 mph and (2) Hawaii, Puerto Rico, Guam, the Virgin Islands, and American Samoa.

8.7.1 Determining Wind Loads

In this Manual, design wind pressures for MWFRS are based on the results of the envelope procedure for low-rise buildings. A low-rise building is defined in ASCE 7-10. The envelope procedure in ASCE 7-10 is only one of several for determining MWFRS pressures in ASCE 7-10, but it is the procedure most commonly used for designing low-rise residential buildings. The envelope procedure for low-rise buildings is applicable for enclosed and partially enclosed buildings with a mean roof height (h) of less than or equal to 60 feet and where mean roof height (h) does not exceed the smallest horizontal building dimension.

Figure 8-18 depicts the distribution of external wall and roof pressures and internal pressures from wind. The figure also shows the mean roof height, which is defined in ASCE 7-10



FORMULA

The following formula converts ASCE 7-05 wind speeds to ASCE 7-10 Risk Category II wind speeds.

$$\text{ASCE 7-10} = (\text{ASCE 7-05}) \left(\sqrt{1.6} \right)$$

For conversion from ASCE 7-10 to ASCE 7-05, use:

$$\text{ASCE 7-05} = \frac{\text{ASCE 7-10}}{\sqrt{1.6}}$$

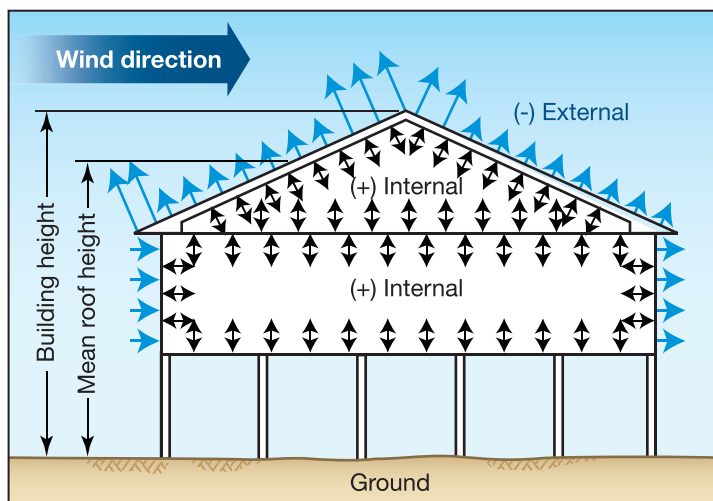


Figure 8-18.
Distribution of roof, wall,
and internal pressures on
one-story, pile-supported
building