PART 1: LOW-RISE BUILDINGS

The component and cladding tables in Fig. 30.5-1 are a tabulation of the pressures on an enclosed, regular, 30-ft-high building with a roof as described. The pressures can be modified to a different exposure and height with the same adjustment factors as the MWFRS pressures. For the designer to use this method for the design of the components and cladding, the building must conform to all five requirements in Section 30.6; otherwise one of the other procedures specified in Section 30.1.1 must be used.

PART 3: BUILDINGS WITH h > 60 ft (18.3 m)

In Eq. 30.6-1 a velocity pressure term, q_i, appears that is defined as the "velocity pressure for internal pressure determination." The positive internal pressure is dictated by the positive exterior pressure on the windward face at the point where there is an opening. The positive exterior pressure at the opening is governed by the value of q at the level of the opening, not q_h. For positive internal pressure evaluation, q_i may conservatively be evaluated at height h ($q_i = q_h$). For low buildings this does not make much difference, but for the example of a 300-ft-tall building in Exposure B with the highest opening at 60 ft, the difference between q_{300} and q_{60} represents a 59 percent increase in internal pressure. This is unrealistic and represents an unnecessary degree of conservatism. Accordingly, $q_i = q_z$ for positive internal pressure evaluation in partially enclosed buildings where height z is defined as the level of the highest opening in the building that could affect the positive internal pressure. For buildings sited in wind-borne debris regions, glazing that is not impact resistant or protected with an impact protective system, q_i should be treated as an opening.

PART 4: BUILDINGS WITH $h \leq 160$ ft (SIMPLIFIED)

This section has been added to ASCE 7-10 to cover the common practical case of enclosed buildings up to height h = 160 ft. Table 30.7-2 includes wall and roof pressures for flat roofs ($\theta < 10°$), gable roofs, hip roofs, monoslope roofs, and mansard roofs. Pressures are derived from Fig.30.6-1 (flat roofs), Fig. 30.4-2A, B, and C (gable and hip roofs), and Fig. 30.4-5A and B (monoslope roofs) of Part 3. Pressures were selected for each zone that encompasses the largest pressure coefficients for the comparable zones from the different roof shapes. Thus, for some cases, the pressures tabulated are conservative in order to maintain simplicity. The (GC_p) values from these figures were combined with an internal pressure coefficient (+ or – 0.18) to obtain a net coefficient from which pressures were calculated. The tabulated pressures are applicable to the entire zone shown in the various figures.

Pressures are shown for an effective wind area of 10 ft^2. A reduction factor is also shown to obtain pressures for larger effective wind areas. The reduction factors are based on the graph of external pressure coefficients shown in the figures in Part 3 and are based on the most conservative reduction for each zone from the various figures.

C30.7.1.2 Parapets

Parapet component and cladding wind pressures can be obtained from the tables as shown in the parapet figures from the table. The pressures obtained are slightly conservative based on the net pressure coefficients for parapets compared to roof zones from Part 3. Two load cases must be considered based on pressures applied to both windward and leeward parapet surfaces as shown in Fig. 30.7-1.

C30.7.1.3 Roof Overhangs

Component and cladding pressures for roof overhangs can be obtained from the tables as shown in Fig. 30.7-2. These pressures are slightly conservative and are based on the external pressure coefficients contained in Fig. 30.4-2A to 30.4-2C from Part 3.

PART 5: OPEN BUILDINGS

In determining loads on component and cladding elements for open building roofs using Figs. 30.8-1, 30.8-2 and 30.8-3, it is important for the designer to note that the net pressure coefficient C_N is based on contributions from the top and bottom surfaces of the roof. This implies that the element receives load from both surfaces. Such would not be the case if the surface below the roof were separated structurally from the top roof surface. In this case, the pressure coefficient should be separated for the effect of top and bottom pressures, or conservatively, each surface could be designed using the C_N value from Figs. 30.8-1, 30.8-2 and 30.8-3.