Chapter 7
SNOW LOADS

7.1 SYMBOLS

C_e = exposure factor as determined from Table 7-2
C_s = slope factor as determined from Fig. 7-2
C_t = thermal factor as determined from Table 7-3
h = vertical separation distance in feet (m) between the edge of a higher roof including any parapet and the edge of a lower adjacent roof excluding any parapet
h_b = height of balanced snow load determined by dividing p_s by γ, in ft (m)
h_c = clear height from top of balanced snow load to (1) closest point on adjacent upper roof, (2) top of parapet, or (3) top of a projection on the roof, in ft (m)
h_d = height of snow drift, in ft (m)
h_o = height of obstruction above the surface of the roof, in ft (m)
I_s = importance factor as prescribed in Section 7.3.3
l_u = length of the roof upwind of the drift, in ft (m)
p_d = maximum intensity of drift surcharge load, in lb/ft^2 (kN/m^2)
p_f = snow load on flat roofs ("flat" = roof slope ≤ 5°), in lb/ft^2 (kN/m^2)
p_g = ground snow load as determined from Fig. 7-1 and Table 7-1; or a site-specific analysis, in lb/ft^2 (kN/m^2)
p_m = minimum snow load for low-slope roofs, in lb/ft^2 (kN/m^2)
p_s = sloped roof (balanced) snow load, in lb/ft^2 (kN/m^2)
s = horizontal separation distance in feet (m) between the edges of two adjacent buildings
S = roof slope run for a rise of one
θ = roof slope on the leeward side, in degrees
w = width of snow drift, in ft (m)
W = horizontal distance from eave to ridge, in ft (m)
γ = snow density, in lb/ft^3 (kN/m^3) as determined from Eq. 7.7-1

7.2 GROUND SNOW LOADS, p_g

Ground snow loads, p_g, to be used in the determination of design snow loads for roofs shall be as set forth in Fig. 7-1 for the contiguous United States and Table 7-1 for Alaska. Site-specific case studies shall be made to determine ground snow loads in areas designated CS in Fig. 7-1. Ground snow loads for sites at elevations above the limits indicated in Fig. 7-1 and for all sites within the CS areas shall be approved by the authority having jurisdiction. Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2 percent annual probability of being exceeded (50-year mean recurrence interval).

Snow loads are zero for Hawaii, except in mountainous regions as determined by the authority having jurisdiction.

7.3 FLAT ROOF SNOW LOADS, p_f

The flat roof snow load, p_f, shall be calculated in lb/ft^2 (kN/m^2) using the following formula:

$$p_f = 0.7 C_e C_t I_s p_g \qquad (7.3\text{-}1)$$

7.3.1 Exposure Factor, C_e

The value for C_e shall be determined from Table 7-2.

7.3.2 Thermal Factor, C_t

The value for C_t shall be determined from Table 7-3.

7.3.3 Importance Factor, I_s

The value for I_s shall be determined from Table 1.5-2 based on the Risk Category from Table 1.5-1.

7.3.4 Minimum Snow Load for Low-Slope Roofs, p_m

A minimum roof snow load, p_m, shall only apply to monoslope, hip and gable roofs with slopes less than 15°, and to curved roofs where the vertical angle from the eaves to the crown is less than 10°. The minimum roof snow load for low-slope roofs shall be obtained using the following formula:

Where p_g is 20 lb/ft^2 (0.96 kN/m^2) or less:

$p_m = I_s p_g$ (Importance Factor times p_g)

Where p_g exceeds 20 lb/ft^2 (0.96 kN/m^2):

$p_m = 20\ (I_s)$ (20 lb/ft^2 times Importance Factor)

This minimum roof snow load is a separate uniform load case. It need not be used in determining