

**Company**

Address  
City, State  
Phone  
other

JOB TITLE Snow Example 3 - ASCE7-05

JOB NO. \_\_\_\_\_ SHEET NO. \_\_\_\_\_  
CALCULATED BY \_\_\_\_\_ DATE \_\_\_\_\_  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

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**STRUCTURAL CALCULATIONS**

FOR

**Snow Example 3**

ASCE7-05 Commentary

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**Code Search**

**I. Code:** ASCE 7 - 05

**II. Occupancy:**

Occupancy Group = B Business

**III. Type of Construction:**

Fire Rating:  
Roof = 1.0 hr  
Floor = 2.0 hr

**IV. Live Loads:**

Roof angle ( $\theta$ ) 0.00 / 12 0.0 deg  
**Roof** 0 to 200 sf: 20 psf  
200 to 600 sf: 24 - 0.02Area, but not less than 12 psf  
over 600 sf: 12 psf

**Roofs used for roof gardens** 100 psf

**Floor** 50 psf  
**Stairs & Exitways** 100 psf  
**Balcony** 100 psf  
**Mechanical** N/A  
**Partitions** 15 psf

**V. Wind Loads : ASCE 7 - 05**

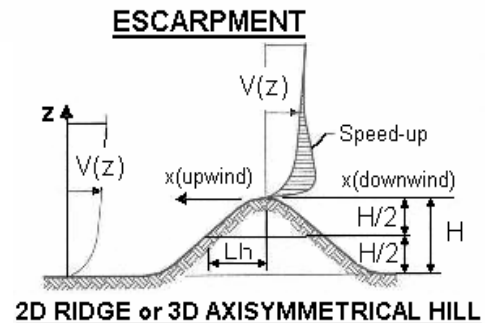
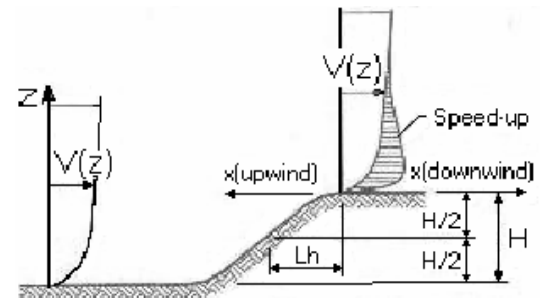
Importance Factor 1.00  
Basic Wind speed 110 mph  
Directionality (Kd) 0.85  
Mean Roof Ht (h) 30.0 ft  
Parapet ht above grd 0.0 ft  
Exposure Category B  
Enclosure Classif. Enclosed Building  
Internal pressure +/-0.18  
Building length (L) 100.0 ft  
Least width (B) 100.0 ft  
Kh case 1 0.701  
Kh case 2 0.701

**Topographic Factor (Kzt)**

Topography Flat  
Hill Height (H) 80.0 ft  
Half Hill Length (Lh) 100.0 ft  
Actual H/Lh = 0.80  
Use H/Lh = 0.50  
Modified Lh = 160.0 ft  
From top of crest: x= 50.0 ft  
Bldg up/down wind? downwind

H/Lh= 0.50  $K_1 = 0.000$   
x/Lh = 0.31  $K_2 = 0.792$   
z/Lh = 0.19  $K_3 = 1.000$

At Mean Roof Ht:  
 $K_{zt} = (1+K_1K_2K_3)^2 = 1.000$



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**VII. Snow Loads :**

Roof slope = 0.0 deg  
 Horiz. eave to ridge dist (W) = 50.0 ft  
 Roof length parallel to ridge (L) = 100.0 ft

Type of Roof = Monoslope  
 Ground Snow Load Pg = 40.0 psf  
 Importance Category = I  
 Importance Factor I = 0.8  
 Thermal Factor Ct = 1.20  
 Exposure Factor Ce = 1.0

Pf = 0.7\*Ce\*Ct\*I\*Pg = 26.9 psf  
 Pf min = 16.0 psf

Flat Roof Snow Load Pf = 26.9 psf  
 Rain on Snow Surcharge = 0.0 psf  
 Unobstructed Slippery Surface (per Section 7.4) = no  
 Sloped-roof Factor Cs = 1.00

Exposure Factor, Ce			
Terrain	Exposure of roof		
	Fully	Partially	Sheltered
A	n/a	1.1	1.3
B	0.9	1.0	1.2
C	0.9	1.0	1.1
D	0.8	0.9	1.0
Above treeline	0.7	0.8	n/a
Alaska-no trees	0.7	0.8	n/a

Design Roof Snow Load (Ps) = **26.9 psf** ("balanced" snow load)  
 Building Official Minimum = 26.9 psf

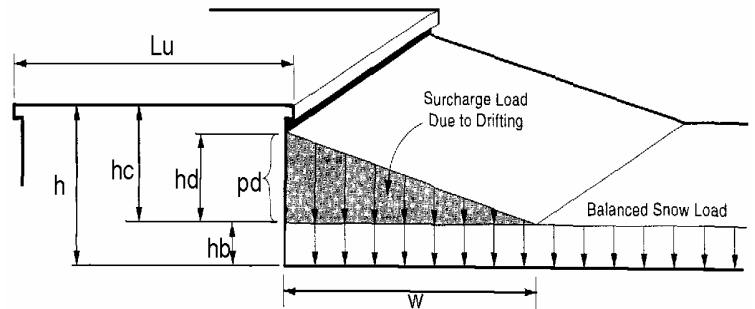
NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

**Leeward Snow Drifts - from adjacent higher roof**

Upper roof length lu = 100.0 ft  
 Projection height h = 10.0 ft  
 Building separation s = 0.0 ft  
 Adjacent structure factor = 1.00  
 Snow density  $\gamma$  = 19.2 pcf  
 Balanced snow height hb = 1.40 ft  
 hc = 8.60 ft

hc/hb > 0.2 = 6.1 **Therefore, design for drift**

Drift height hd = 3.81 ft  
 Drift width w = 15.23 ft  
 Surcharge load: pd = g\*hd = **73.1 psf**



**Windward Snow Drifts - Against walls, parapets, etc more than 15' long**

Building roof length lu = 170.0 ft  
 Projection height h = 10.0 ft  
 Snow density  $\gamma$  = 19.2 pcf  
 Balanced snow height hb = 1.40 ft  
 hc = 8.60 ft

hc/hb > 0.2 = 6.1 **Therefore, design for drift**

Drift height hd = 3.63 ft  
 Drift width w = 14.50 ft  
 Surcharge load: pd = g\*hd = **69.6 psf**