

Company

Address
City, State
Phone
other

JOB TITLE Snow Example 1 - ASCE7-05

JOB NO. _____ SHEET NO. _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____

www.struware.com

STRUCTURAL CALCULATIONS

FOR

Snow Example 1

ASCE7-05 Commentary

Company

Address
 City, State
 Phone
 other

JOB TITLE Snow Example 1 - ASCE7-05

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

www.struware.com

Code Search
I. Code: ASCE 7 - 05
II. Occupancy:

Occupancy Group = R Residential

III. Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	1.0 hr

IV. Live Loads:
 Roof angle (θ) 8.00 / 12 33.7 deg

Roof	0 to 200 sf: 16 psf
	200 to 600 sf: 19.2 - 0.016Area, but not less than 12 psf
	over 600 sf: 12 psf

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

V. Wind Loads : ASCE 7 - 05

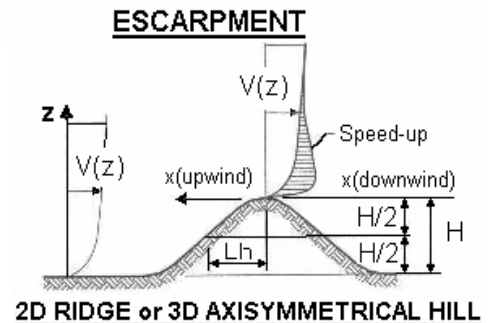
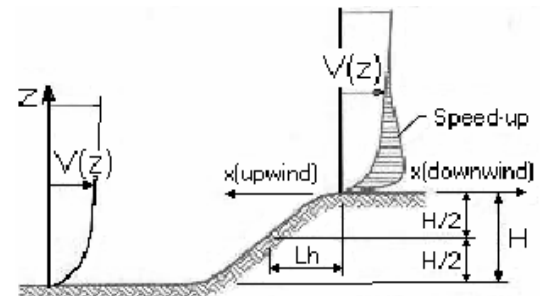
Importance Factor	1.00
Basic Wind speed	110 mph
Directionality (Kd)	0.85
Mean Roof Ht (h)	30.0 ft
Parapet ht above grd	0.0 ft
Exposure Category	B
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Building length (L)	100.0 ft
Least width (B)	60.0 ft
Kh case 1	0.701
Kh case 2	0.701

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:

$$K_{zt} = (1 + K_1 K_2 K_3)^2 = 1.000$$


Company

Address
City, State
Phone
other

JOB TITLE Snow Example 1 - ASCE7-05

JOB NO. _____ **SHEET NO.** _____
CALCULATED BY _____ **DATE** _____
CHECKED BY _____ **DATE** _____

VII. Snow Loads :

Roof slope = 33.7 deg
Horiz. eave to ridge dist (W) = 30.0 ft
Roof length parallel to ridge (L) = 100.0 ft

Type of Roof Hip or gable
Ground Snow Load Pg = 30.0 psf
Importance Category = II
Importance Factor I = 1.0
Thermal Factor Ct = 1.00
Exposure Factor Ce = 1.0

Pf = 0.7*Ce*Ct*I*Pg = 21.0 psf
Pf min = 0.0 psf

Flat Roof Snow Load Pf = 21.0 psf
Rain on Snow Surcharge = 0.0 psf
Unobstructed Slippery
Surface (per Section 7.4) = no
Sloped-roof Factor Cs = 0.91

Design Roof Snow Load (Ps) = **19.1 psf** ("balanced" snow load)
Building Official Minimum = 19.1 psf

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

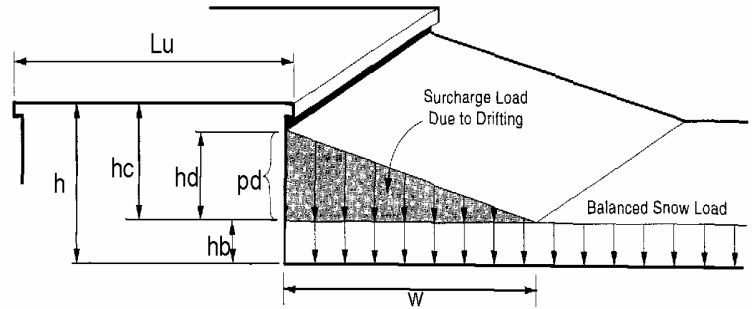
NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

Unbalanced Snow Loads - for Hip & Gable roofs only

Larger of 2.38 degrees or 70/W + 0.5 = 2.8 deg **Unbalanced snow loads must be applied**
Windward snow load = 5.7 psf = 0.3Ps
Leeward snow load from ridge to 6.08' = 46.2 psf = hdy / √S + Ps
Leeward snow load from 6.08' to the eave = 19.1 psf = Ps

Leeward Snow Drifts - from adjacent higher roof

Upper roof length lu = 0.0 ft
Projection height h = 0.0 ft
Building separation s = 0.0 ft
Adjacent structure factor = 1.00
Snow density γ = 17.9 pcf
Balanced snow height hb = 1.06 ft
hc = -1.06 ft
hc/hb < 0.2 = -1.0 **Therefore, no drift**
Drift height hd = 0.00 ft
Drift width w = -10.37 ft
Surcharge load: pd = g*hd = **0.0 psf**



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

Building roof length lu = 0.0 ft
Projection height h = 0.0 ft
Snow density γ = 17.9 pcf
Balanced snow height hb = 1.06 ft
hc = -1.06 ft
hc/hb < 0.2 = -1.0 **Therefore, no drift**
Drift height hd = 0.00 ft
Drift width w = -8.52 ft
Surcharge load: pd = g*hd = **0.0 psf**