STRUCTURAL CALCULATIONS

FOR

Snow Example 1

ASCE 7-05 Commentary

Code Search

Code: ASCE 7 - 05

Occupancy:

Occupancy Group = R Residential

Occupancy Category & Importance Factors:

Occupancy Category =	II
Wind factor =	1.00
Snow factor =	1.00
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	0.0 hr
Floor =	0.0 hr

Building Geometry:

Roof angle (θ)	8.00 / 12	33.7 deg
Building length (L)	100.0 ft	
Least width (B)	60.0 ft	
Mean Roof Ht (h)	30.0 ft	
Parapet ht above grd	0.0 ft	
Minimum parapet ht	0.0 ft	

Live Loads:

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

Typical Floor	40 psf
Habital attics & sleeping areas	30 psf
Attics without storage	10 psf
Mechanical	
Stairs & Exitways	100 psf
Balcony / Deck	40 psf
Partitions	N/A

Company
Address
City, State
Phone
other

JOB TITLE Snow Example 1

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

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 and gable w/ trussed systems
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 Angle		=	0.60 deg
Code Maximum Rain Surcharge			5.0 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		=	

Exposure Factor, Ce			
	Exposure of roof		
Terrain	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

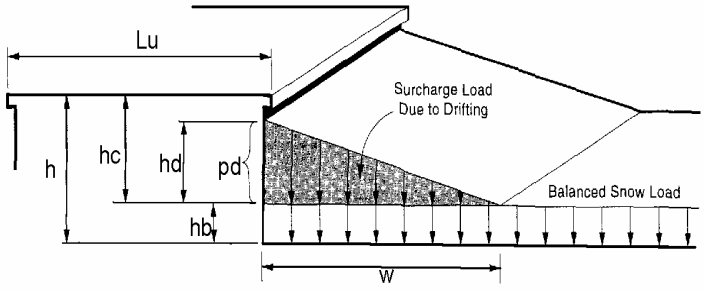
NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

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 = hdγ / √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**