STRUCTURAL CALCULATIONS

FOR

Snow Example 3

ASCE 7-05 Commentary

Code Search

Code: ASCE 7 - 05

Occupancy:

Occupancy Group = B Business

Occupancy Category & Importance Factors:

Occupancy Category =	I
Wind factor =	0.87
Snow factor =	0.80
Seismic factor =	1.00

Type of Construction:

Fire Rating:

Roof =	1.0 hr
Floor =	2.0 hr

Building Geometry:

Roof angle (θ)	0.00 / 12	0.0 deg
Building length (L)	100.0 ft	
Least width (B)	100.0 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: 20 psf
200 to 600 sf: 24 - 0.02Area, but not less than 12 psf
over 600 sf: 12 psf

Floor

Typical Floor	50 psf
Lobbies & first floor corridors	100 psf
Corridors above first floor	80 psf
Mechanical	100 psf
Stairs & Exitways	100 psf
Balcony / Deck	50 psf
Partitions	15 psf

Company
Address
City, State
Phone
other

JOB TITLE Snow Example 3

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

Snow Loads :

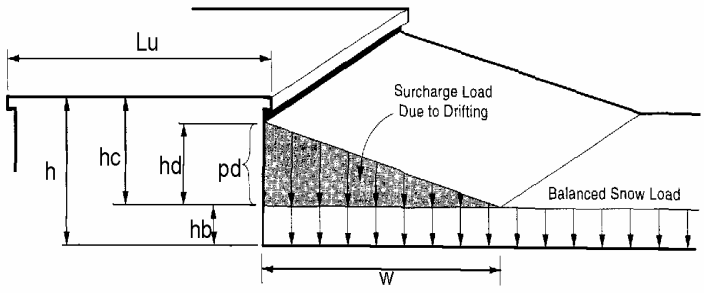
Roof slope		=	0.0 deg
Horiz. eave to ridge dist (W)		=	100.0 ft
Roof length parallel to ridge (L)		=	100.0 ft
Type of Roof			Monoslope
Ground Snow Load	Pg	=	40.0 psf
Importance Category		=	I
Importance Factor	I	=	0.8
Thermal Factor	Ct	=	1.20
Exposure Factor	Ce	=	1.0
Pf = 0.7*Ce*Ct*I*Pg		=	26.9 psf
Pf min		=	16.0 psf
Flat Roof Snow Load	Pf	=	26.9 psf
Rain on Snow Surcharge Angle		=	2.00 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	=	1.00
Design Roof Snow Load (Ps)		=	**26.9 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.

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	γ	=	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	γ	=	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**