STRUCTURAL CALCULATIONS

FOR

Snow Example 3

ASCE 7-10 Commentary

Code Search

Code: ASCE 7 - 10

Occupancy:

Occupancy Group = B Business

Risk Category & Importance Factors:

Risk 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)	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	100 psf
Partitions	N/A

Company
Address
City, State
Phone

JOB TITLE Snow Example 3

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

Snow Loads - from adjacent building or roof:

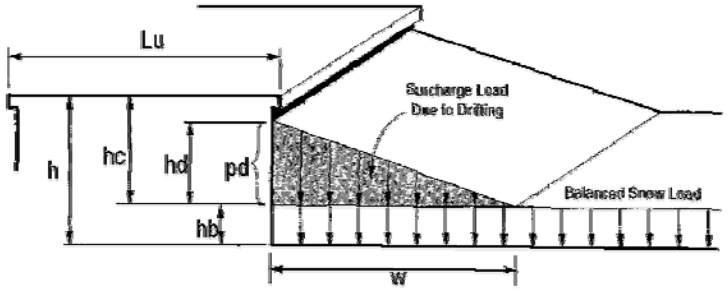
ASCE 7-10 — Nominal Snow Forces

		Higher Roof	Lower Roof
Roof slope	=	0.0 deg	0.25 / 12 = 1.2 deg
Horiz. eave to ridge dist (W)	=	100.0 ft	170.0 ft
Roof length parallel to ridge (L)	=	100.0 ft	100.0 ft
Projection height (roof step) h	=		10.0 ft
Building separation s	=		0.0 ft
Type of Roof		Monoslope	Monoslope
Ground Snow Load	Pg =	40.0 psf	40.0 psf
Risk Category	=	II	I
Importance Factor	I =	1.0	0.8
Thermal Factor	Ct =	1.00	1.20
Exposure Factor	Ce =	0.9	1.0
Pf = 0.7*Ce*Ct*I*Pg	=	25.2 psf	26.9 psf
Unobstructed Slippery Surface		no	no
Sloped-roof Factor	Cs =	1.00	1.00
Balanced Snow Load	**Ps =**	**25.2 psf**	**26.9 psf**
Rain on Snow Surcharge Angle		2.00 deg	3.40 deg
Code Maximum Rain Surcharge		5.0 psf	5.0 psf
Rain on Snow Surcharge	=	0.0 psf	0.0 psf
Ps plus rain surcharge	=	25.2 psf	26.9 psf
Minimum Snow Load	Pm =	20.0 psf	16.0 psf
Uniform Roof Design Snow Load	=	**25.2 psf**	**26.9 psf**
Building Official Minimum	=		

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.

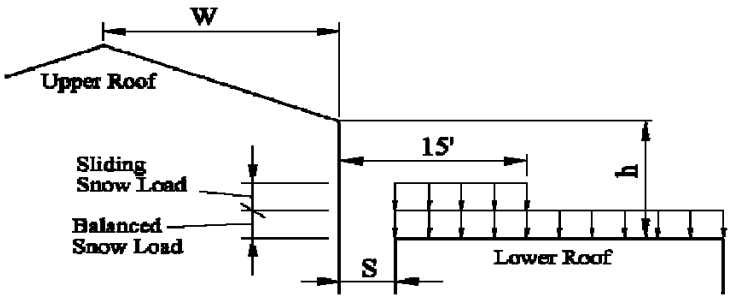
Leeward Snow Drifts - from adjacent higher roof

Upper roof length	lu =	100.0 ft
Snow density	g =	19.2 pcf
Balanced snow height	hb =	1.40 ft
	hc =	8.60 ft
hc/hb >0.2 = 6.1	**Therefore, design for drift**	
Adj structure factor	=	1.00
Drift height (hd)	=	3.81 ft
Drift width	w =	15.23 ft
Surcharge load:	pd = γ*hd =	**73.1 psf**
Balanced Snow load:	=	26.9 psf
		100.0 psf



Windward Snow Drifts - from low roof against high roof

Lower roof length	lu =	170.0 ft
Adj structure factor	=	1.00
Drift height	hd =	3.63 ft
Drift width	w =	14.50 ft
Surcharge load:	pd = γ*hd =	**69.6 psf**
Balanced Snow load:	=	26.9 psf
		96.5 psf



Sliding Snow - onto lower roof

Sliding snow = 0.4 Pf W	=	0.0 plf
Distributed over 15 feet	=	0.0 psf
hd + hb	=	1.40 ft
hd + hb < =h therefore sliding snow	=	**0.0 psf**
Balanced snow load	=	26.9 psf
Uniform snow load within 15' of higher roof	=	26.9 psf

Sliding snow not required since upper roof slope is 1/4 in 12 or less