



# Snow Load Report

## 1. Roof and Building Data

Ground Snow Load (Pg): 97.0 psf  
Roof Pitch: 12 /12  
Risk Category: II  
Eave-to-Ridge (W): 13 ft.  
Terrain Category: B  
Exposure: Sheltered  
Thermal Factor (Ct): 1.00  
Roof Surface: Asphalt Shingles  
Roof System: Rafter  
Spacing: 16 in. o/c  
Overhang: 24 in.

## 2. Design Loads

Top Chord Dead Load: 9 psf  
Bottom Chord Dead Load: 0 psf  
SF (Slope Factor) =  $1/\text{Cosine}(\Phi) = 1.41$  (Dead loads specified on a projected horizontal basis take into account the effect of the pitch via a slope factor.)  
Adj. TCDL (TCDL x SF): 12.7 psf

## 3. Design Assumptions

Code Standard: ASCE 7-10  
Number of Plies: 1 PLY  
Bottom Chord Pitch: 0 /12

## 4. Snow Load Calculations

Calculate flat roof snow load pf using the following equation:

$$p_f = 0.7 C_e C_t I_s p_g$$

where:

$p_f$  = Flat Roof Snow Load in psf  
 $C_e = 1.20$  = Exposure Factor, as determined by ASCE 7-10 Table 7-2 (Terrain Cat. B, Exp. Sheltered)  
 $C_t = 1.00$  = Thermal Factor, as determined by ASCE 7-10 Table 7-3  
 $I_s = 1.00$  = Importance Factor, as determined by ASCE 7-10 Table 1.5-2 (Risk Cat. II)  
 $p_g = 97.0$  psf = Ground Snow Load in psf

$$p_f = 0.7 C_e C_t I_s p_g = 0.7(1.20)(1.00)(1.00)(97.0) = 81.5 \text{ psf}$$

Subject Snow Loads	Customer Dominic Fontana	Location 164 Kiwassa Rd	Job No. Kemp
Engr. Engineer	Company Name 123 Street City, State 12345 ph. (888) 777-5555 www.website.com		Rev. -
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A minimum roof snow load,  $p_m$  shall apply to monoslope, hip and gable roofs with slopes less than 15 degrees using the following equations:

Where  $p_g$  is 20 psf or less:  $p_m = I_s p_g$

Where  $p_g$  exceeds 20 psf:  $p_m = I_s (20)$

Roof slope is greater than 15 degrees, the minimum roof snow load,  $p_m$ , does not apply.

For locations where  $p_g$  is 20 psf or less, but not zero, all roofs with slopes (in degrees) less than  $W/50$  with  $W$  in feet shall included a 5 psf rain-on-snow surcharge load. This additional load applies only to the sloped roof (balanced) load case and need not be used in combination with drift, sliding, unbalanced, minimum, or partial loads.

Roof slope in degrees ( $45.00^\circ$ ) is greater than  $W/50 = 0.3$ , the 5.0 psf rain-on-snow surcharge load does not apply.

Calculate sloped roof snow load  $p_s$  using the following equation:

$$p_s = C_s p_f$$

where:

$p_s$  = Sloped Roof Snow Load in psf

$C_s = 1 - [(45.00 - 30)/40] = 0.63$  = Roof Slope Factor, as determined by ASCE 7-10 Sec. 7.4.1-7.4.4 and Figure 7-2

$p_f$  = Flat Roof Snow Load in psf

Roof surface (Asphalt Shingles) is considered a "non-slippery" roof. For a  $C_t = 1.00$  the roof slope factor  $C_s$  is given by the solid line of ASCE 7-10 Figure 7-2a.

$$p_s = C_s p_f = (0.63)(81.5) = 50.9 \text{ psf}$$

Calculate unbalanced snow load for hip and gable roofs as shown in ASCE 7-10 Figure 7-5.

Unbalanced snow loads are required for roof pitches between 1/2 on 12 to 7 on 12.

Using the following equations:

$$\gamma = 0.13 p_g + 14 \text{ (snow density)}$$

$$h_d = .43 \sqrt[4]{l_u} \sqrt{p_g} + 10 - 1.5 \text{ (drift height) [if } l_u < 20 \text{ ft., use } l_u = 20 \text{ ft.]}$$

$$l_d = \frac{8}{3} h_d \sqrt{S} \text{ (width of drift surcharge)}$$

$$p_d = h_d \gamma / \sqrt{S} \text{ (drift surcharge snow load)}$$

where:

$\gamma$  = Snow density in pcf, not to exceed 30 pcf.

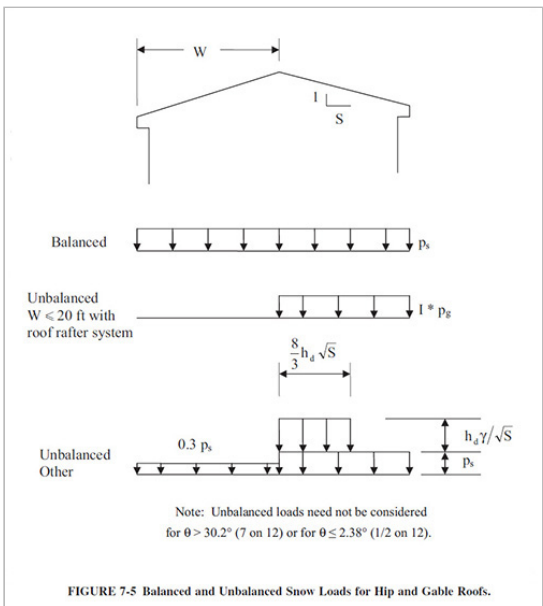
$h_d$  = Drift height in feet, as determined by eqn. or ASCE 7-10 Fig. 7-9.

$l_u$  =  $W$  = Ridge to eave distance in feet, windward side of roof.

$S$  = 12/Roof Pitch

$l_d$  = Width of drift surcharge in feet.

$p_d$  = Drift Surcharge Snow Load in psf

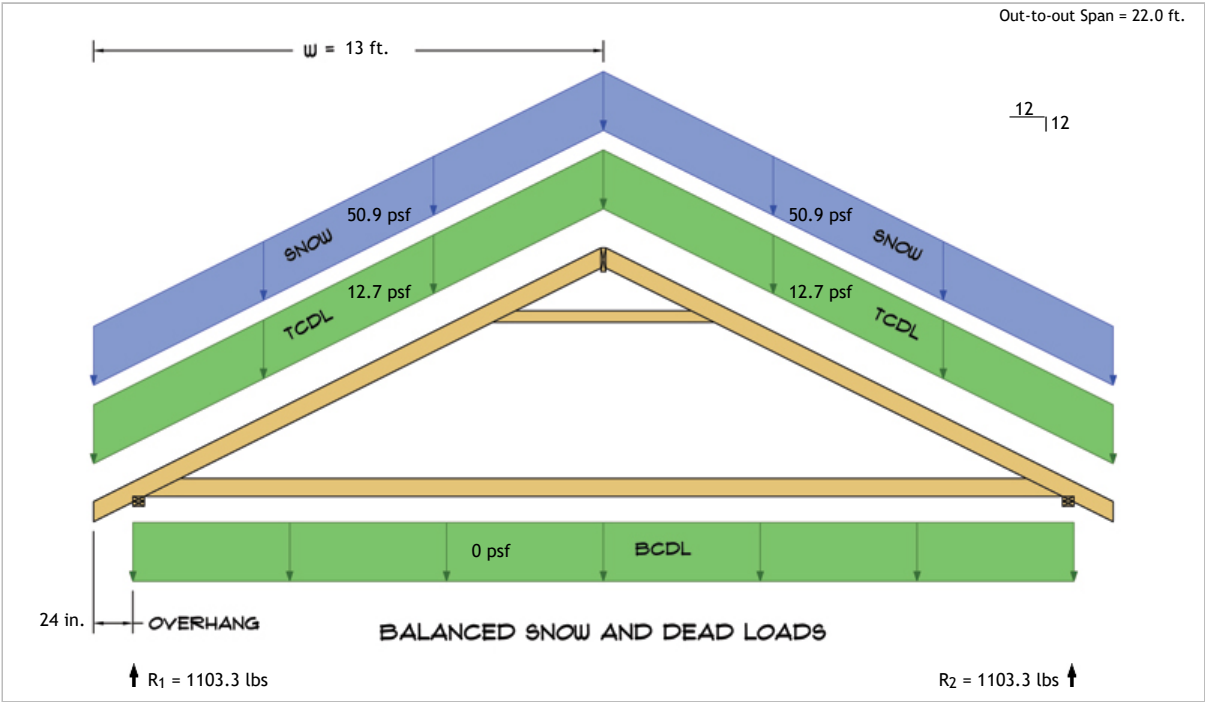


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Roof slope is greater than 7 on 12 or less than 1/2 on 12, unbalanced snow loads are not required to be applied.

On warm roofs apply a distributed 2p<sub>f</sub> snow load on all overhanging portions as per ASCE 7-10 section 7.4.5. No other loads except dead loads shall be present on the roof when this uniformly distributed load is applied.

2p<sub>f</sub> = (2)(81.5) = 163.0 psf

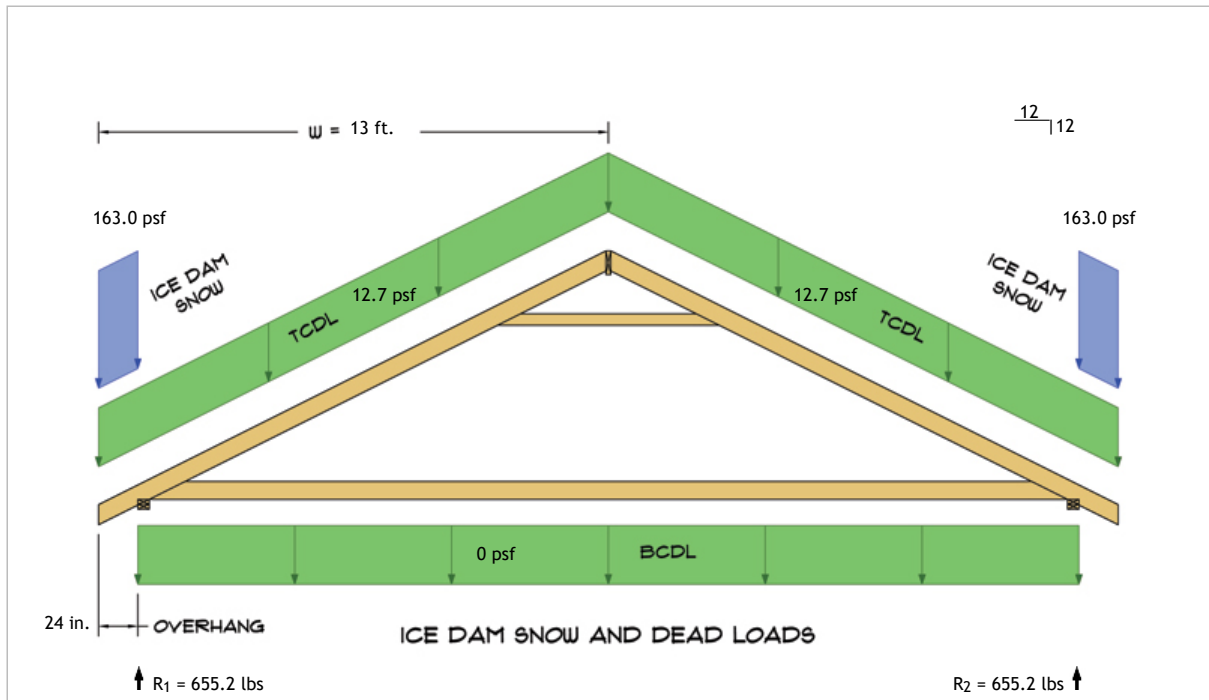


R<sub>1</sub> = D + S = 220.6 lbs + 882.7 lbs  
R<sub>2</sub> = D + S = 220.6 lbs + 882.7 lbs

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$$R_1 = D + S = 220.6 \text{ lbs} + 434.6 \text{ lbs}$$

$$R_2 = D + S = 220.6 \text{ lbs} + 434.6 \text{ lbs}$$

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