Calculation of Snow Loads for Sloped Roof as per ASCE/SEI 7-10 Chapter 7

Parameters of Snow Load

Ground Snow Loads (According to Table 7-1 of ASCE/SEI 7), p_g=   40.00 pf

Density of Snow (According to Eq. 7.7-1 of ASCE/SEI 7),

γ=   MIN(0.13 * p_g + 14; 30)   = 19.20 lb/ft^3

Terrain Category (According to Table 7-2 of ASCE/SEI 7),

TER_CAT=   SEL("ASCE/Ter_Cat"; ID;)   =   B

Exposure of Roof (According to Table 7-2 of ASCE/SEI 7),

EX_RF=   SEL("ASCE/EX_RF"; ID;)   = Fully Exposed

Exposure Factor (According to Table 7-2 of ASCE/SEI 7),

C_e=   0.70

Thermal Factor (According to Table 7-3 of ASCE/SEI 7),

C_t=   SEL("ASCE/Ct"; ID;)   = 1.10

Risk Category (According to Table 1.5-1 of ASCE/SEI 7),

RI_CAT=   SEL("ASCE/Risk_Cat"; ID;)   =   II

Importance Factor (According to Table 1.5-2 of ASCE/SEI 7),

I_s=   TAB("ASCE/Is"; Is; RI_CAT=RI_CAT;)   = 1.00

Snow Load for Flat Roof

Min Snow Load (According to Cl. 7.3.4 of ASCE/SEI 7),

p_m=   IF(p_g>20; 20*I_s; p_g*I_s)   = 20.00 psf

Flat Roof Snow Load (According to Cl. 7.3 of ASCE/SEI 7),

p_f=   0.7 * C_e * C_t *I_s * p_g = 21.56 psf

Snow Load for Sloped Roof

α=   20.0 ^{0}

Thermal Resistance Value R=   30.0 ^{0} Fh ft^2/Btu

Roof Slope Factor (According to Fig. (7-2b) of ASCE/SEL, 7,

C_s=   1.00

Sloped Roof Snow Load (According to Cl.7.4 of ASCE/SEL 7),

p_s= p_f *C_s = 21.56 in

Calculation Summary

Min Snow Load, p_m= p_m = 20.00 psf

Flat Roof Snow Load, p_f= p_f = 21.56 psf

Sloped Roof Snow Load, p_s= p_s = 21.56 in