Roof angle θ degrees	L/B						
	5	3	2	1	1/2	1/3	1/5
10	0.2	0.25	0.3	0.45	0.55	0.7	0.75
15	0.35	0.45	0.5	0.7	0.85	0.9	0.85
20	0.5	0.6	0.75	0.9	1.0	0.95	0.9
25	0.7	0.8	0.95	1.15	1.1	1.05	0.95
30	0.9	1.0	1.2	1.3	1.2	1.1	1.0

Roof angle θ degrees	Center of Pressure X/L		
	L/B		
	2 to 5	1	1/5 to 1/2
10 to 20	0.35	0.3	0.3
25	0.35	0.35	0.4
30	0.35	0.4	0.45

Notes:

1. Wind forces act normal to the surface. Two cases shall be considered: (1) wind forces directed inward, and (2) wind forces directed outward.
2. The roof angle shall be assumed to vary ± 10° from the actual angle and the angle resulting in the greatest force coefficient shall be used
3. Notation:

   B: dimension of roof measured normal to wind direction, in feet (meters);

   L. Dimension of roof measured parallel to wind direction, in feet (meters),

   X: Distance to center of pressure from windward edge of roof, in feet (meters); and

   θ. Angle of plane of roof from horizontal, in degrees.

Cross-Section	Type of Surface	h/D		
		1	7	25
Square (wind normal to face)	All	1.3	1.4	2.0
Square (wind along diagonal)	All	1.0	1.1	1.5
Hexagonal or octagonal	All	1.0	1.2	1.4
Round ($D\sqrt{q_z} > 2.5$) ($D\sqrt{q_z} > 5.3$, D in m, q_z in N/m^2)	Moderately smooth	0.5	0.6	0.7
	Rough (D'/D = 0.02)	0.7	0.8	0.9
	Very rough (D'/D = 0.08)	0.8	1.0	1.2
Round ($D\sqrt{q_z} \le 2.5$) ($D\sqrt{q_z} \le 5.3$, D in m, q_z in N/m^2)	All	0.7	0.8	1.2

Notes:

1. The design wind force shall be calculated based on the area of the structure projected on a plane normal to the wind direction. The force shall be assumed to act parallel to the wind direction
2. Linear interpolation is permitted for h/D values other than shown
3. Notation:

   D: diameter of circular cross-section and least horizontal dimension of square, hexagonal or octagonal cross-sections at elevation under consideration, in feet (meters);

   D': depth of protruding elements such as ribs and spoilers, in feet (meters); and

   h: height of structure, in feet (meters); and

   q_z: velocity pressure evaluated at height z above ground, in pounds per square foot (N/m^2).

At Ground Level		Above Ground Level	
ν	C_f	M/N	C_f
≤3	1.2	≤6	1.2
5	1.3	10	1.3
8	1.4	16	1.4
10	1.5	20	1.5
20	1.75	40	1.75
30	1.85	60	1.85
≥40	2.0	≥80	2.0

Notes:

1. The term "signs" in notes below applies also to "freestanding walls".
2. Signs with openings comprising less than 30% of the gross area shall be considered as solid signs.
3. Signs for which the distance from the ground to the bottom edge is less than 0.25 times the vertical dimension shall be considered to be at ground level.
4. To allow for both normal and oblique wind directions, two cases shall be considered:
   a. resultant force acts normal to the face of the sign on a vertical line passing through the geometric center, and
   b. resultant force acts normal to the face of the sign at a distance from a vertical line passing through the geometric center equal to 0.2 times the average width of the sign.
5. Notation:

   ν: ratio of height to width;

   M: larger dimension of sign, in feet (meters); and

   N: smaller dimension of sign, in feet (meters).

Other Structures		All h
Table 6-12	Force Coefficients, C_f	Open Signs & Lattice Frameworks
Open Structures		

$\in$	Flat-Sided Members	Rounded Members	
		$D\sqrt{q_z} \le 2.5$ ($D\sqrt{q_z} \le 5.3$)	$D\sqrt{q_z} > 2.5$ ($D\sqrt{q_z} > 5.3$)
< 0.1	2.0	1.2	0.8
0.1 to 0.29	1.8	1.3	0.9
0.3 to 0.7	1.6	1.5	1.1

Notes:

1. Signs with openings comprising 30% or more of the gross area are classified as open signs.
2. The calculation of the design wind forces shall be based on the area of all exposed members and elements projected on a plane normal to the wind direction. Forces shall be assumed to act parallel to the wind direction.
3. The area A_f consistent with these force coefficients is the solid area projected normal to the wind direction
4. Notation:

   $\in$: ratio of solid area to gross area;

   D: diameter of a typical round member, in feet (meters),

   q_z: velocity pressure evaluated at height z above ground in pounds per square foot (N/m^2).

Other Structures		All h
Table 6-13	Force Coefficients, C_f	**Trussed Towers**
Open Structures		

Tower Cross Section	C_f
Square	$4.0\,\epsilon^2 - 5.9\,\epsilon + 4.0$
Triangle	$3.4\,\epsilon^2 - 4.7\,\epsilon + 3.4$

Notes:

1. For all wind directions considered, the area A_f consistent with the specified force coefficients shall be the solid area of a tower face projected on the plane of that face for the tower segment under consideration.
2. The specified force coefficients are for towers with structural angles or similar flat-sided members
3. For towers containing rounded members, it is acceptable to multiply the specified force coefficients by the following factor when determining wind forces on such members:

   $0.51\,\epsilon^2 + 0.57$, but not > 1.0
4. Wind forces shall be applied in the directions resulting in maximum member forces and reactions. For towers with square cross-sections, wind forces shall be multiplied by the following factor when the wind is directed along a tower diagonal.

   $1 + 0.75\,\epsilon$, but not > 1.2
5. Wind forces on tower appurtenances such as ladders, conduits, lights, elevators, etc., shall be calculated using appropriate force coefficients for these elements.
6. Loads due to ice accretion as described in Section 11 shall be accounted for.
7. Notation:

   ϵ. ratio of solid area to gross area of one tower face for the segment under consideration.

7. Snow Loads

7.1 Symbols and Notation

- β = gable roof drift parameter as determined from Eq. 7.3
- C_e = exposure factor as determined from Table 7-2
- C_s = slope factor as determined from Fig. 7-2
- C_t = thermal factor as determined from Table 7-3
- h_b = height of balanced snow load determined by dividing p_f or p_s by γ, in feet (meters)
- h_c = clear height from top of balanced snow load to (1) closest point on adjacent upper roof, (2) top of parapet, or (3) top of a projection on the roof, in feet (meters)
- h_d = height of snow drift, in feet (meters)
- h_r = elevation difference between the ridge line and the eaves
- h_o = height of obstruction above the surface of the roof, in feet (meters)
- I = importance factor as determined from Table 7-4
- l_u = length of the roof upwind of the drift, in feet (meters)
- L = roof length parallel to the ridge line, in feet (meters)
- p_d = maximum intensity of drift surcharge load, in pounds per square foot (kilonewton per square meter)
- p_f = snow load on flat roofs ("flat" = roof slope ≤ 5°), in pounds per square foot (kilonewton per square meter)
- p_g = ground snow load as determined from Fig. 7-1 and Table 7-1; or a site-specific analysis, in pounds per square foot (kilonewton per square meter)
- p_s = sloped-roof snow load, in pounds per square foot (kilonewton per square meter)
- s = separation distance between buildings, in feet (meters)
- θ = roof slope on the leeward side, in degrees
- w = width of snow drift, in feet (meters)
- W = horizontal distance from eave to ridge, in feet (meters)
- γ = snow density in pounds per cubic foot (kilonewtons per cubic meter) as determined from equation 7-4

7.2 Ground Snow Loads, p_g. Ground snow loads, p_g, to be used in the determination of design snow loads for roofs shall be as set forth in Fig. 7-1 for the contiguous United States and Table 7-1 for Alaska. Site specific case studies shall be made to determine ground snow loads in areas designated CS in Fig. 7-1. Ground snow loads for sites at elevations above the limits indicated in Fig. 7-1 and for all sites within the CS areas shall be approved by the authority having jurisdiction. Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2% *annual probability of being exceeded* (50-year mean recurrence interval).

Snow loads are zero for Hawaii, except in mountainous regions as determined by the authority having jurisdiction.

7.3 Flat-Roof Snow Loads p_f. The snow load, p_f, on a roof with a slope equal to or less than 5 degrees (1 in./ft = 4.76°) shall be calculated in pounds per square foot (kilonewton per square meter) using the following formula

$$p_f = 0.7\, C_e C_t I p_g \qquad \text{(Eq. 7-1)}$$

but not less than the following minimum values for low slope roofs as defined in Section 7.3.4

where p_g is 20 lb/ft² (0.96 kN/m²) or less,
$p_f = (I)\, p_g$ *(Importance factor times p_g)*

where p_g exceeds 20 lb/ft² (0.96 kN/m²),
$p_f = 20\, (I)$ *(Importance factor times 20 lb/ft²)*

7.3.1 Exposure Factor, C_e. The value for C_e shall be determined from Table 7-2

7.3.2 Thermal Factor, C_t. The value for C_t shall be determined from Table 7-3

7.3.3 Importance Factor, I. The value for I shall be determined from Table 7-4

7.3.4 Minimum Values of p_f for Low-Slope Roofs. Minimum values of p_f shall apply to monoslope roofs with slopes less than 15 degrees, hip and gable roofs with slopes less than or equal to (70/W) + 0.5, and curved roofs where the vertical angle from the eaves to the crown is less than 10 degrees.

7.4 Sloped-Roof Snow Loads, p_s. Snow loads acting on a sloping surface shall be assumed to act on the horizontal projection of that surface. The sloped-roof snow load, p_s, shall be obtained by multiplying the flat-roof snow load, p_f, by the roof slope factor, C_s.

$$p_s = C_s\, p_f \qquad \text{(Eq. 7-2)}$$

Values of C_s for warm roofs, cold roofs, curved roofs, and multiple roofs are determined from 7.4.1-7.4.4. The thermal factor, C_t, from Table 7-3 determines if a roof is "cold" or "warm." "Slippery surface" values shall be used only where the roof's surface is unobstructed and sufficient space is available below the eaves to accept all the sliding snow. A roof shall be considered unobstructed if no objects exist on it which prevent snow on it from sliding. Slippery surfaces shall include metal, slate, glass, and bituminous, rubber and plastic membranes with a smooth surface Membranes with an imbedded aggregate or mineral granule surface shall not be considered smooth Asphalt shingles. wood shingles and shakes shall not be considered slippery

7.4.1 Warm-Roof Slope Factor, C_s. For warm roofs (C_t = 1.0 as determined from Table 7-3) with an unobstructed slippery surface that will allow snow to slide off the eaves. the roof slope factor C_s shall be determined using the dashed line in Fig 7-2a, provided that for non-ventilated roofs. their thermal resistance (R-value) equals or exceeds 30 ft²·hr·°F/Btu (5.3 K·m²/W) and for ventilated roofs, their R-value equals or exceeds 20 ft²·hr·°F/Btu (3.5 K·m²/W) Exterior air shall be able to circulate freely under a ventilated roof from its eaves to its ridge For warm roofs that do not meet the aforementioned conditions, the solid line in Fig 7-2a shall be used to determine the roof slope factor C_s

7.4.2 Cold Roof Slope Factor, C_s. Cold roofs are those with a C_t > 1.0 as determined from Table 7-3 For cold roofs with C_t = 1.2 and an unobstructed slippery surface that will allow snow to slide off the eaves, the roof slope factor C_s shall be determined using the dashed line in Fig 7-2b For all other cold roofs with C_t = 1.2, the solid line in Fig. 7-2b shall be used to determine the roof slope factor C_s For cold roofs with C_t = 1.1, C_s shall be determined by taking the average of values obtained from the appropriate $C_t \leq 1.0$ curve in Fig 7-2a and the appropriate C_t = 1.2 curve in Fig 7-2b

7.4.3 Roof Slope Factor for Curved Roofs. Portions of curved roofs having a slope exceeding 70 degrees shall be considered free of snow load, (i.e., C_s = 0). Balanced loads shall be determined from the balanced load diagrams in Fig 7-3 with C_s determined from the appropriate curve in Fig 7-2.

7.4.4 Roof Slope Factor for Multiple Folded Plate, Sawtooth, and Barrel Vault Roofs. Multiple folded plate, sawtooth, or barrel vault roofs shall have a C_s=1.0, with no reduction in snow load because of slope (i.e., $p_s = p_f$).

7.4.5 Ice Dams and Icicles Along Eaves. Two types of warm roofs that drain water over their eaves shall be capable of sustaining a uniformly distributed load of 2 p_f on all overhanging portions there: those that are unventilated and have an R-value less than 30 ft²·hr·°F/Btu (5.3 k•m²/W) and those that are ventilated and have an R-value less than 20 ft²·hr·°F/Btu (3.5 k•m²/W). No other loads except dead loads shall be present on the roof when this uniformly distributed load is applied.

7.5 Partial Loading. The effect of having selected spans loaded with the balanced snow load and remaining spans loaded with half the balanced snow load shall be investigated as follows:

7.5.1 Continuous Beam Systems. Continuous beam systems shall be investigated for the effects of the three loadings shown in Figure 7-4

Case 1 Full balanced snow load on either exterior span and half the balanced snow load on all other spans
Case 2 Half the balanced snow load on either exterior span and full balanced snow load on all other spans

Case 3 All possible combinations of full balanced snow load on any two adjacent spans and half the balanced snow load on all other spans For this case there will be (n-1) possible combinations where n equals the number of spans in the continuous beam system

If a cantilever is present in any of the above cases, it shall be considered to be a span.

Partial load provisions need not be applied to structural members which span perpendicular to the ridgeline in gable roofs with slopes greater than 70/W + 0.5

7.5.2 Other Structural Systems. Areas sustaining only half the balanced snow load shall be chosen so as to produce the greatest effects on members being analyzed

7.6 Unbalanced Roof Snow Loads. Balanced and unbalanced loads shall be analyzed separately Winds from all directions shall be accounted for when establishing unbalanced loads.

7.6.1 Unbalanced Snow Loads for Hip and Gable Roofs For hip and gable roofs with a slope exceeding 70° or with a slope less than 70/W + 0.5 , unbalanced snow loads are not required to be applied For roofs with an eave to ridge distance. W. of 20 ft. or less, the structure shall be designed to resist an unbalanced uniform snow load on the leeward side equal to $1.5p_f / C_e$ for roof slopes of 5° or less, and $1.5p_s / C_e$ for roof slopes exceeding 5° For roofs with W > 20 ft and with slopes (in degrees) greater than $275\, \beta p_f / \gamma W$, the structure shall be designed to resist an unbalanced uniform snow load on the leeward side equal to $1.2(1 + \beta/2)p_s/C_e$ with β given by equation 7-3

$$\beta = \begin{cases} 0.5 & L/W \leq 1 \\ 0.33 + 0.167\, L/W & 1 < L/W \leq 4 \\ 1.0 & L/W > 4 \end{cases} \qquad \text{Eq 7-3}$$

Where L is the roof length parallel to the ridgeline and W is the horizontal eave to ridge distance. For roofs with W > 20 ft. and slopes (in degrees) equal to or less than $275\, \beta p_f / \gamma W$ the structure shall be designed to resist a linearly varying snow load on the leeward side. This linearly varying load is $1.2\, p_f / C_e$ at the ridge and $1.2\,(1 + \beta)\, p_f / C_e$ at the eave. However the intensity of the surcharge at the eave, $1.2\beta\, p_f / C_e$, need not be taken as larger than the product of the snow density, γ, and the elevation difference between the ridgeline and the eaves, h_r.

For the unbalanced situation with W > 20 ft., the windward side shall have a uniform load equal to $0.3p_s$ when the angle in question is greater than $275\ \beta p_f / \gamma W$ and $0.3\ p_f$ when the roof slope is equal to or less than $275\ \beta p_f / \gamma W$. Balanced and unbalanced loading diagrams are presented in Fig. 7-5.

7.6.2 Unbalanced Snow Loads for Curved Roofs. Portions of curved roofs having a slope exceeding 70 degrees shall be considered free of snow load. If the slope of a straight line from the eaves (or the 70 degree point, if present) to the crown is less than 10 degrees or greater than 60 degrees, unbalanced snow loads shall not be taken into account.

Unbalanced loads shall be determined according to the loading diagrams in Fig. 7-3. In all cases the windward side shall be considered free of snow. If the ground or another roof abuts a Case II or Case III (see Fig. 7-3) curved roof at or within 3 feet (0.91 m) of its eaves, the snow load shall not be decreased between the 30-degree point and the eaves but shall remain constant at the 30 degree point value. This distribution is shown as a dashed line in Fig. 7-3.

7.6.3 Unbalanced Snow Loads for Multiple Folded Plate, Sawtooth, and Barrel Vault Roofs. Unbalanced loads shall be applied to folded plate, sawtooth, and barrel vaulted multiple roofs with a slope exceeding 3/8 in/ft (1.79 degrees). According to 7.4.4, $C_s = 1.0$ for such roofs, and the balanced snow load equals p_f. The unbalanced snow load shall increase from one-half the balanced load at the ridge or crown (i.e., $0.5\ p_f$) to two times the balanced load given in 7.4.4 divided by C_e at the valley (i.e., $2\ p_f/C_e$). Balanced and unbalanced loading diagrams for a sawtooth roof are presented in Fig. 7-6. However, the snow surface above the valley shall not be at an elevation higher than the snow above the ridge. Snow depths shall be determined by dividing the snow load by the density of that snow from Eq. 7-3 which is in 7.7.2.

7.6.4 Unbalanced Snow Loads for Dome Roofs. Unbalanced snow loads shall be applied to domes and similar rounded structures. Snow loads, determined in the same manner as for curved roofs in 7.6.2, shall be applied to the downwind 90 degree sector in plan view. At both edges of this sector, the load shall decrease linearly to zero over sectors of 22.5 degrees each. There shall be no snow load on the remaining 225 degree upwind sector.

7.7 Drifts on Lower Roofs (Aerodynamic Shade). Roofs shall be designed to sustain localized loads from snow drifts that form in the wind shadow of (1) higher portions of the same structure and (2) adjacent structures and terrain features.

7.7.1 Lower Roof of a Structure. Snow that forms drifts comes from a higher roof or, with the wind from the opposite direction, from the roof on which the drift is located. These two kinds of drifts ("leeward" and "windward" respectively) are shown in Figure 7-7. The geometry of the surcharge load due to snow drifting shall be approximated by a triangle as shown in Fig. 7-8. Drift loads shall be superimposed on the balanced snow load. If h_c/h_b is less than 0.2, drift loads are not required to be applied.

For leeward drifts the drift height h_d shall be determined directly from Fig. 7-9 using the length of the upper roof. For windward drifts the drift height shall be determined by substituting the length of the lower roof for l_u in Figure 7-9 and using three-quarters of h_d as determined from Figure 7-9 as the drift height. The larger of these two heights shall be used in design. If this height is equal to or less than h_c, the drift width, w, shall equal $4\ h_d$ and the drift height shall equal h_d. If this height exceeds h_c, the drift width, w, shall equal $4\ h_d^2/h_c$ and the drift height shall equal h_c. However, the drift width w shall not be greater than $8\ h_c$. If the drift width, w, exceeds the width of the lower roof, the drift shall be truncated at the far edge of the roof, not reduced to zero there. The maximum intensity of the drift surcharge load, p_d, equals $h_d\gamma$ where snow density, γ, is defined in Eq. 7-4:

$\gamma = 0.13\ p_g + 14$ but not more than 30 pcf Eq. 7-4
(in SI: $\gamma = 0.426p_g + 2.2$ but not more than 4.7 kN/m^3)

This density shall also be used to determine h_b by dividing p_f (or p_s) by γ. (in SI: also multiply by 102 to get the depth in meters)

7.7.2 Adjacent Structures and Terrain Features. The requirements in 7.7.1 shall also be used to determine drift loads caused by a higher structure or terrain feature within 20 feet (6.1 m) of a roof. The separation distance, s, between the roof and adjacent structure or terrain feature shall reduce applied drift loads on the lower roof by the factor (20 - s)/20 where s is in feet ((6.1-s)/6.1 where s is in meters).

7.8 Roof Projections. The method in 7.7.1 shall be used to calculate drift loads on all sides of roof projections and at parapet walls. The height of such drifts shall be taken as three-quarters the drift height from Fig. 7-9 (i.e., $0.75\ h_d$) with l_u equal to the length of the roof upwind of the projection or parapet wall. If the side of a roof projection is less than 15 ft (4.6 m) long, a drift load is not required to be applied to that side.

7.9 Sliding Snow. The extra load caused by snow sliding off a sloped roof onto a lower roof shall be determined assuming that all the snow that accumulates on the upper roof under the balanced loading condition slides onto the lower roof. The solid lines in Fig. 7-2 shall be used to determine the total extra load available from the upper roof, regardless of the surface of the upper roof.

The sliding snow load shall not be reduced unless a portion of the snow on the upper roof is blocked from sliding onto the lower roof by snow already on the lower roof or is expected to slide clear of the lower roof.

Sliding loads shall be superimposed on the balanced snow load.

7.10 Rain-on-Snow Surcharge Load. For locations where p_g is 20 psf (0.96 kN/m^2) or less but not zero, all roofs with a slope less than 1/2 in./ft (2.38°), shall have a 5 psf (0.24 kN/m^2) rain-on-snow surcharge load applied to establish the design snow loads. Where the minimum flat roof design snow load from 7.3.4 exceeds p_f as determined by Eq. 7-1, the rain-on-snow surcharge load shall be reduced by the difference between these two values, with a maximum reduction of 5 psf (0.24 kN/m^2).

7.11 Ponding Instability. Roofs shall be designed to preclude ponding instability. For roofs with a slope less than 1/4 in./ft (1.19°), roof deflections caused by full snow loads shall be investigated when determining the likelihood of ponding instability from rain-on-snow or from snow meltwater (see 8.4).

7.12 Existing Roofs. Existing roofs shall be evaluated for increased snow loads caused by additions or alterations. Owners or agents for owners of an existing lower roof shall be advised of the potential for increased snow loads where a higher roof is constructed within 20 feet (6.1 m). See footnote to Table 7-2 and Section 7.7.2.

Table 7-1 Ground Snow Loads, p_g, for Alaskan locations.

Location	p_g lb/ft²	p_g (kN/m²)	Location	p_g lb/ft²	p_g (kN/m²)	Location	p_g lb/ft²	p_g (kN/m²)
Adak	30	(1.4)	Galena	60	(2.9)	Petersburg	150	(7.2)
Anchorage	50	(2.4)	Gulkana	70	(3.4)	St Paul Islands	40	(1.9)
Angoon	70	(3.4)	Homer	40	(1.9)	Seward	50	(2.4)
Barrow	25	(1.2)	Juneau	60	(2.9)	Shemya	25	(1.2)
Barter Island	35	(1.7)	Kenai	70	(3.4)	Sitka	50	(2.4)
Bethel	40	(1.9)	Kodiak	30	(1.4)	Talkeetna	120	(5.8)
Big Delta	50	(2.4)	Kotzebue	60	(2.9)	Unalakleet	50	(2.4)
Cold Bay	25	(1.2)	McGrath	70	(3.4)	Valdez	160	(7.7)
Cordova	100	(4.8)	Nenana	80	(3.8)	Whittier	300	(14.4)
Fairbanks	60	(2.9)	Nome	70	(3.4)	Wrangell	60	(2.9)
Fort Yukon	60	(2.9)	Palmer	50	(2.4)	Yakutat	150	(7.2)

Table 7-2 Exposure Factor, C_e

Terrain Category	Fully Exposed	Exposure of roof* Partially Exposed	Sheltered
A (see Section 6.5.3)	N/A	1.1	1.3
B (see Section 6.5.3)	0.9	1.0	1.2
C (see Section 6.5.3)	0.9	1.0	1.1
D (see Section 6.5.3)	0.8	0.9	1.0
Above the treeline in windswept mountainous areas	0.7	0.8	N/A
In Alaska, in areas where trees do not exist within a 2-mile (3 km) radius of the site	0.7	0.8	N/A

The terrain category and roof exposure condition chosen shall be representative of the anticipated conditions during the life of the structure. An exposure factor shall be determined for each roof of a structure.

* Definitions
Partially Exposed: All roofs except as indicated below
Fully Exposed: Roofs exposed on all sides with no shelter** afforded by terrain, higher structures or trees Roofs that contain several large pieces of mechanical equipment, parapets which extend above the height of the balanced snow load (h_b), or other obstructions are not in this category.
Sheltered: Roofs located tight in among conifers that qualify as obstructions.

** Obstructions within a distance of 10 h_o provide "shelter," where h_o is the height of the obstruction above the roof level. If the only obstructions are a few deciduous trees which are leafless in winter, the "fully exposed" category shall be used except for terrain category "A." Note that these are heights above the roof. Heights used to establish the Terrain Category in Section 6.5.3 are heights above the ground.

Table 7-3 Thermal Factor, C_t

Thermal Condition*	C_t
All structures except as indicated below	1 0
Structures kept just above freezing and others with cold, ventilated roofs in which the thermal resistance (R-value) between the ventilated space and the heated space exceeds 25 F°·hr sq ft/Btu (4 4 K m²/W)	1 1
Unheated structures and structures intentionally kept below freezing	1 2
Continuously heated greenhouses ** with a roof having a thermal resistance (R-value) less than 2.0 F°·hr·sq ft/Btu (0 4 K·m²/W)	0 85

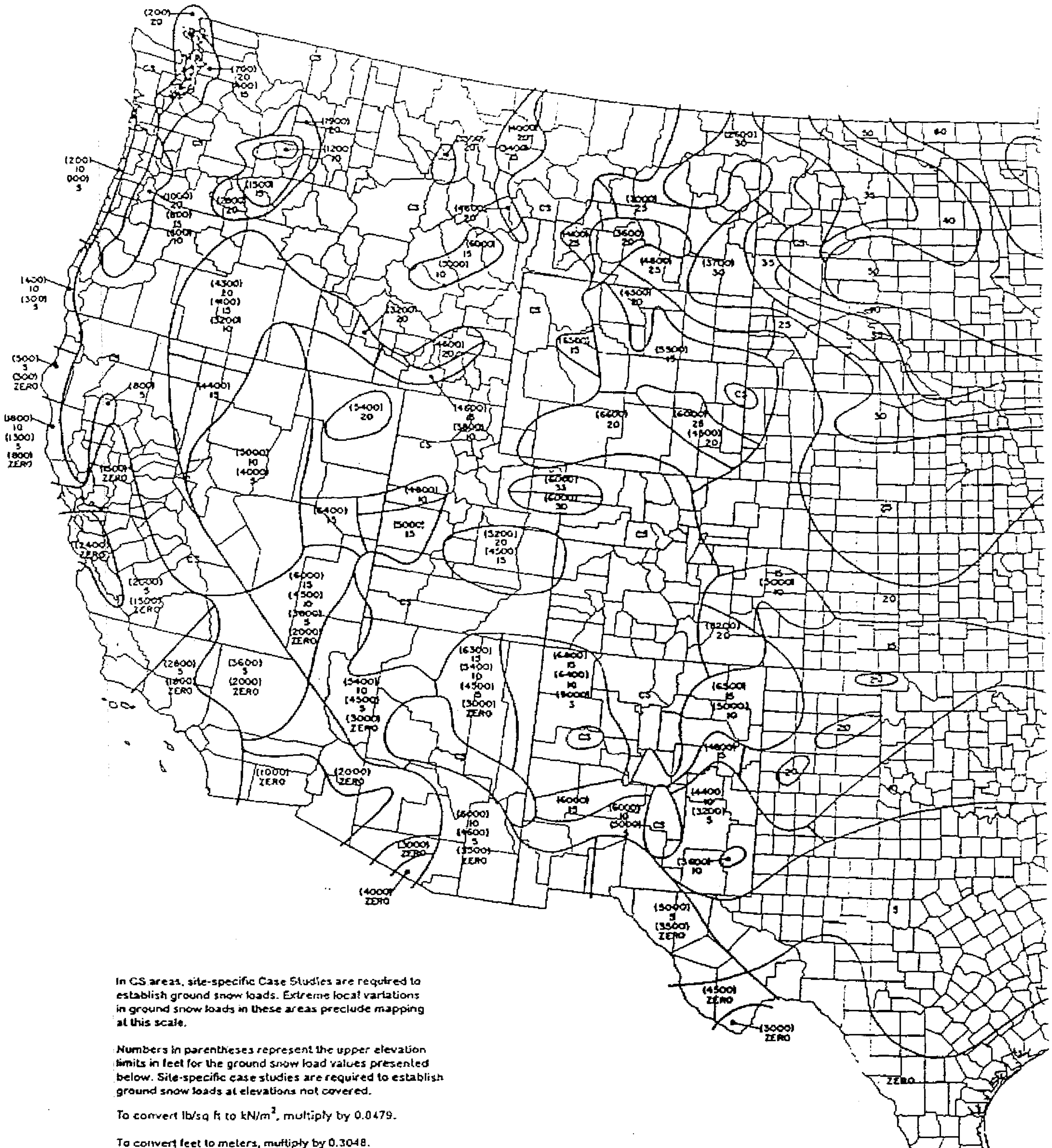
* These conditions shall be representative of the anticipated conditions during winters for the life of the structure.

** Green houses with a constantly maintained interior temperature of 50 degrees F (10 degrees C) or more at any point 3 feet above the floor level during winters and having either a maintenance attendant on duty at all times or a temperature alarm system to provide warning in the event of a heating failure

Table 7-4 Importance Factor, I, (Snow Loads)

Category*	I
I	0 8
II	1 0
III	1 1
IV	1.2

* See Section 1 5 and Table 1-1



In CS areas, site-specific Case Studies are required to establish ground snow loads. Extreme local variations in ground snow loads in these areas preclude mapping at this scale.

Numbers in parentheses represent the upper elevation limits in feet for the ground snow load values presented below. Site-specific case studies are required to establish ground snow loads at elevations not covered.

To convert lb/sq ft to kN/m^2, multiply by 0.0479.

To convert feet to meters, multiply by 0.3048.

0 100 200 300 miles

FIG. 7-1. Ground Snow Loads, p_g for the United States (lb/sq ft)

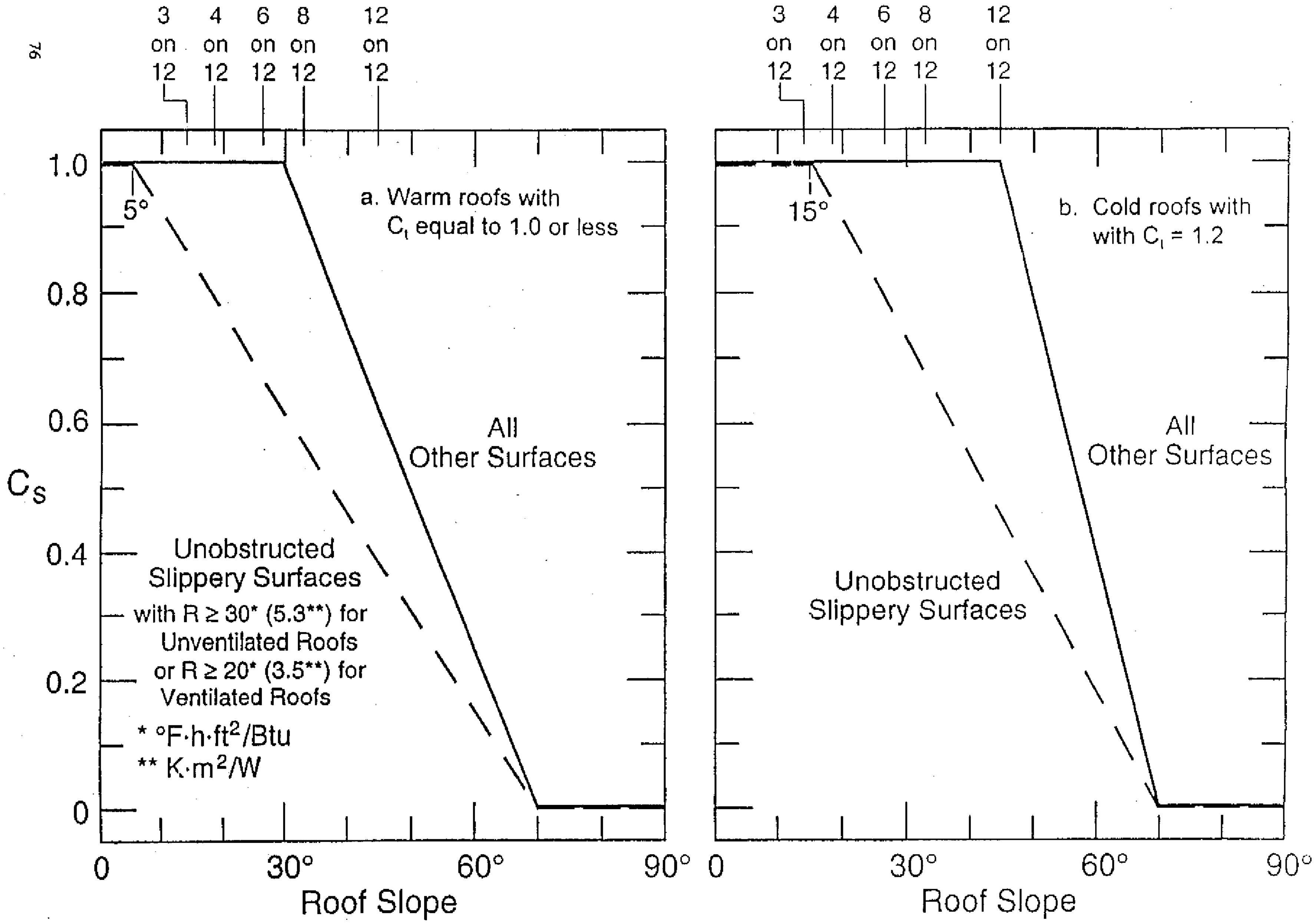


Fig. 7-2: Graphs for Determining Roof Slope Factor, C_s, for Warm and Cold Roofs.

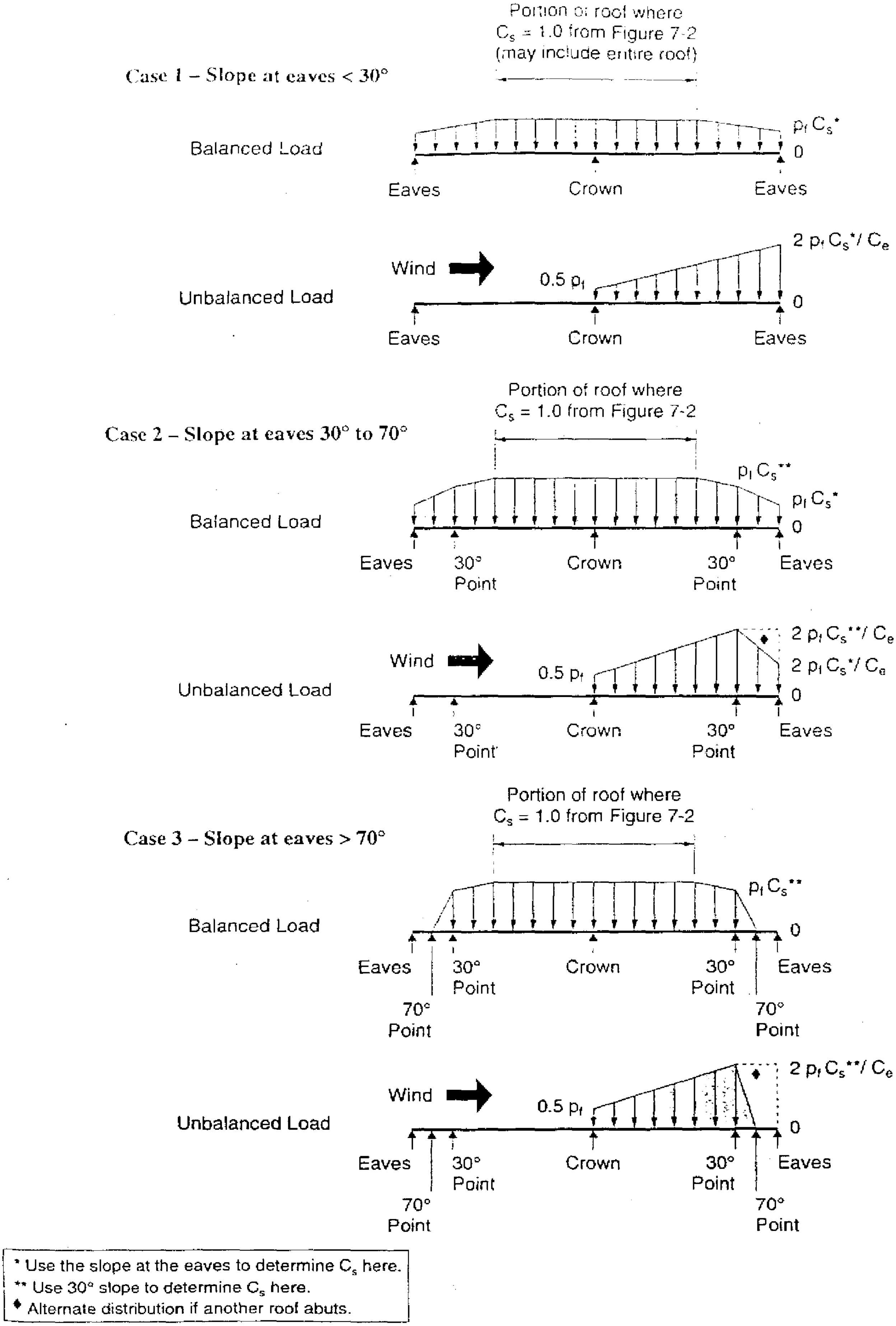
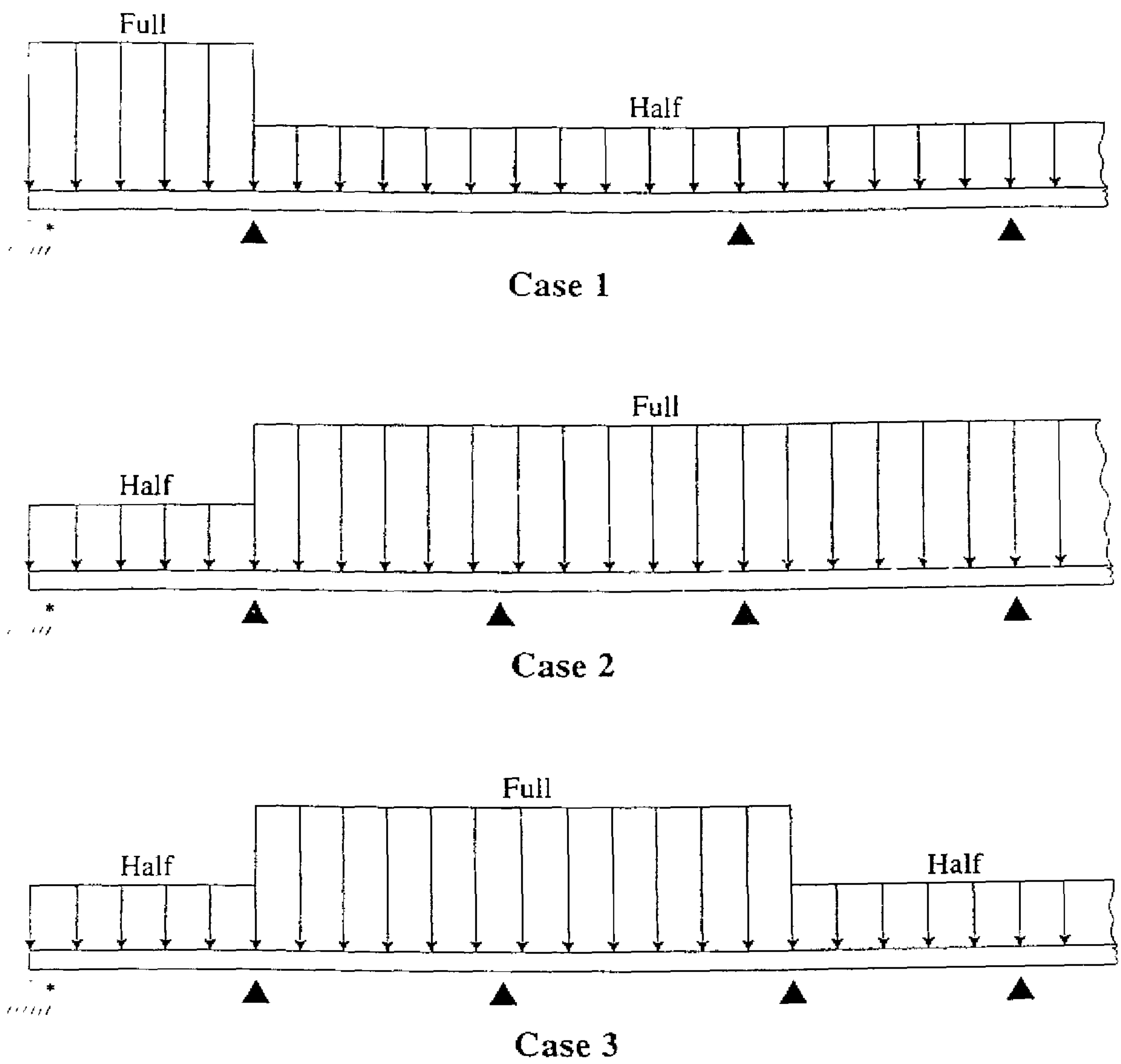


Figure 7-3. Balanced and Unbalanced Loads for Curved Roads



* The left supports are dashed since they would not exist when a cantilever is present

Figure 7-4. Partial Loading Diagrams for Continuous Beams

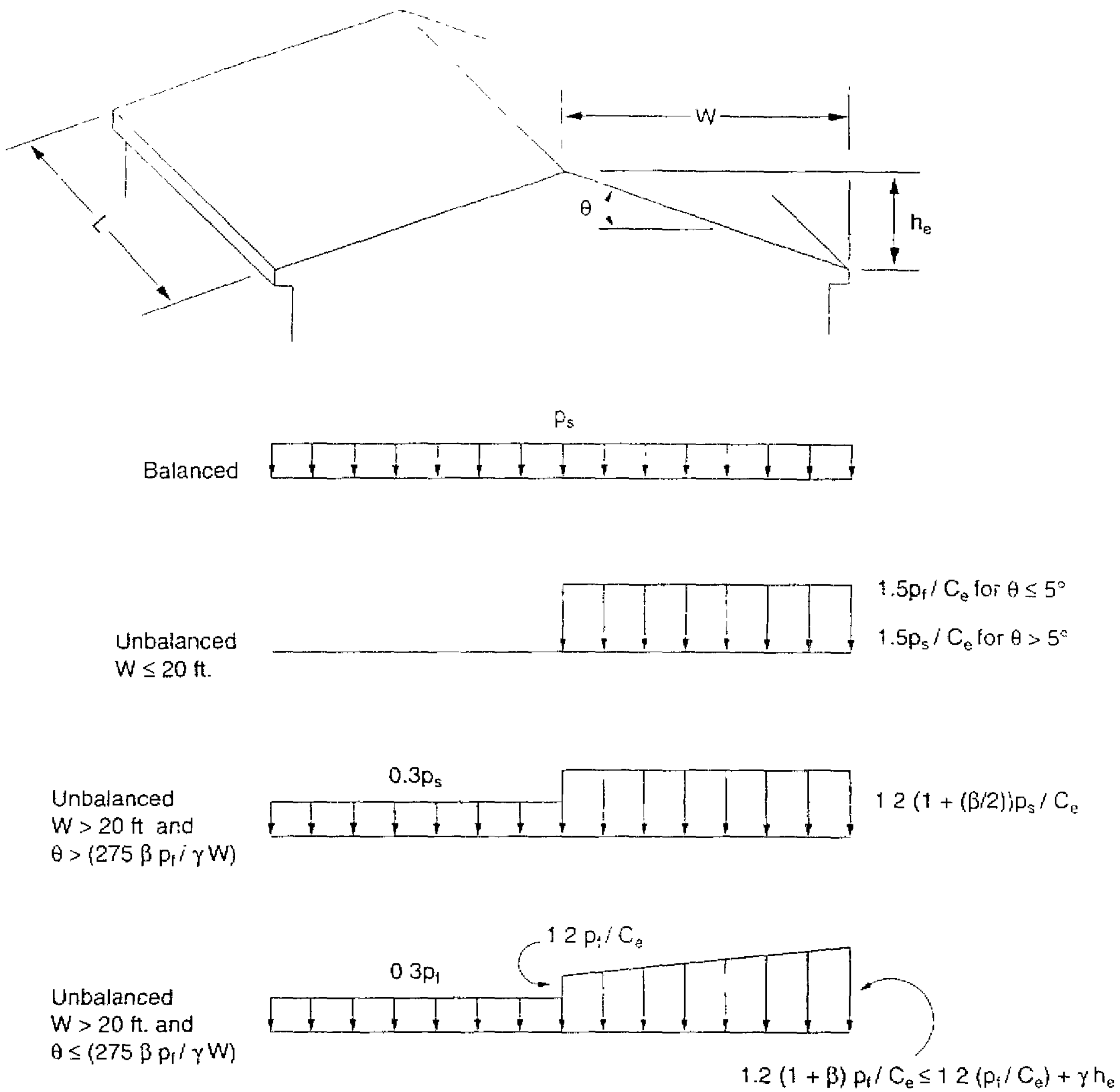
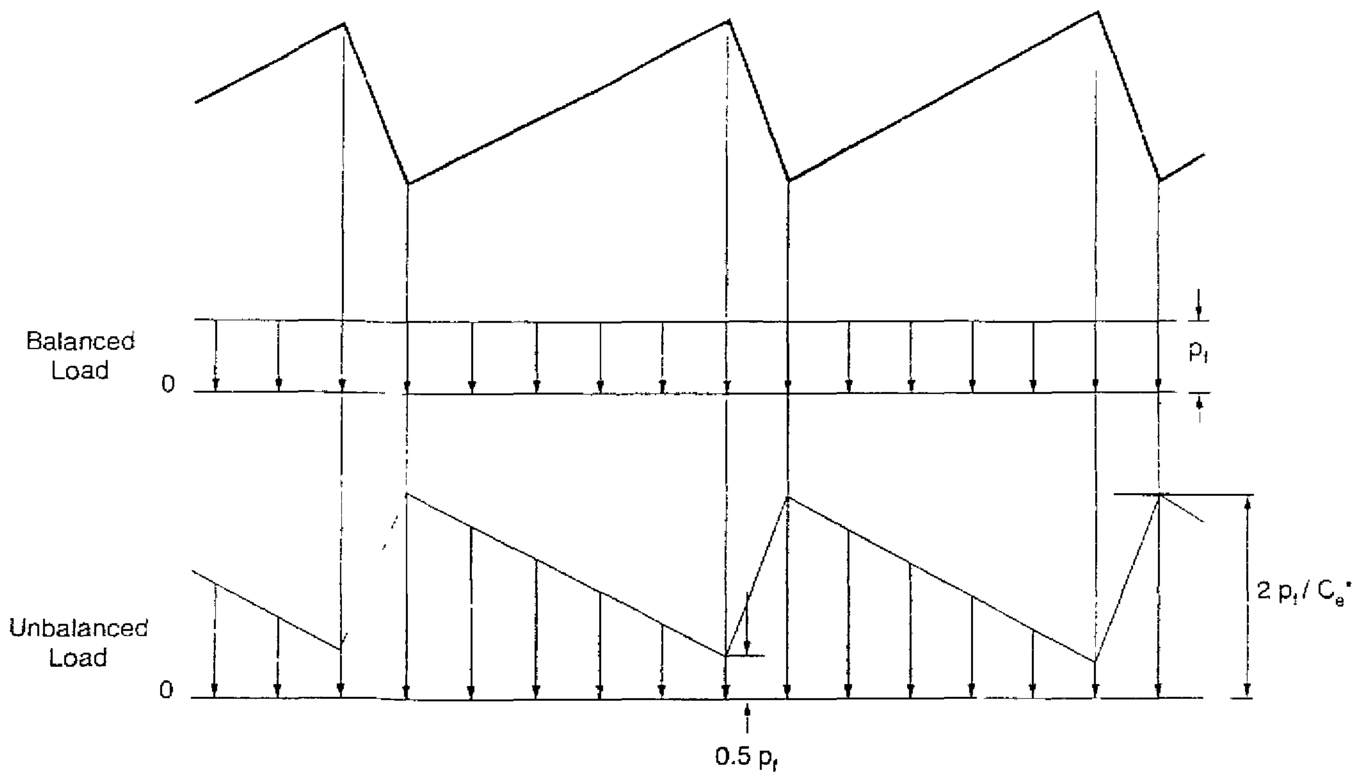


Figure 7-5. Balanced and Unbalanced Snow Loads for Hip and Gable Roofs

Note: Unbalanced loads need not be considered for $\theta \geq 70°$ or for $\theta < 70/W + 0.5$



* May be somewhat less; see Section 7.6.3.

Figure 7-6. Balanced and Unbalanced Snow Loads for a Sawtooth Roof

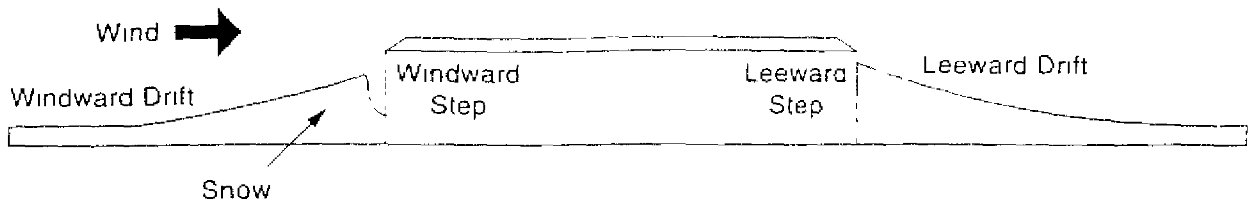


Figure 7-7. Drifts Formed at Windward and Leeward Steps

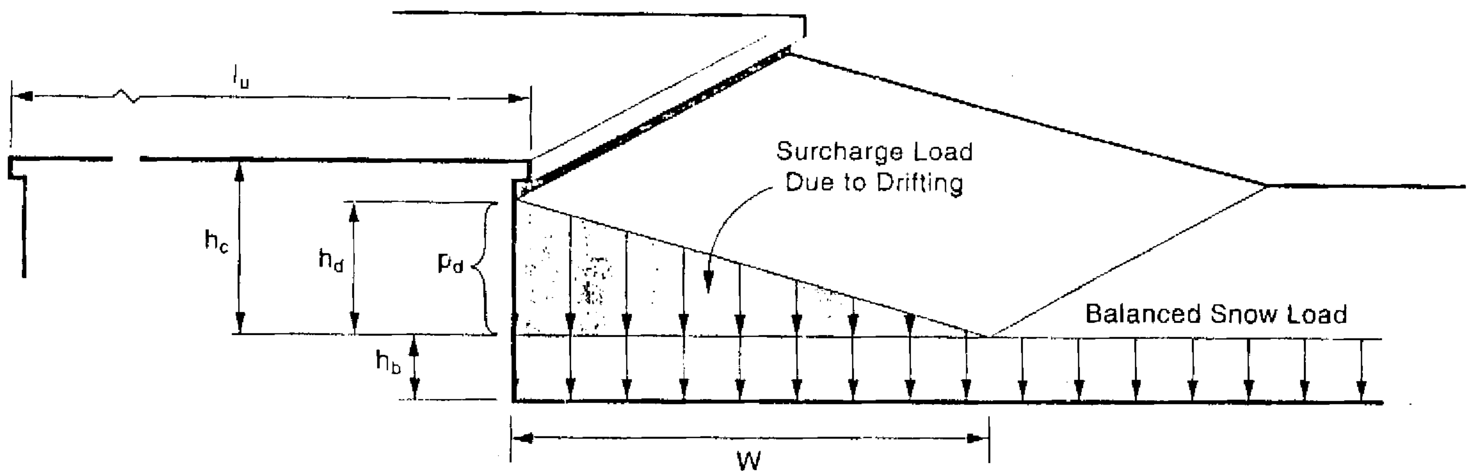


Figure 7-8. Configuration of Snow Drifts on Lower Roofs

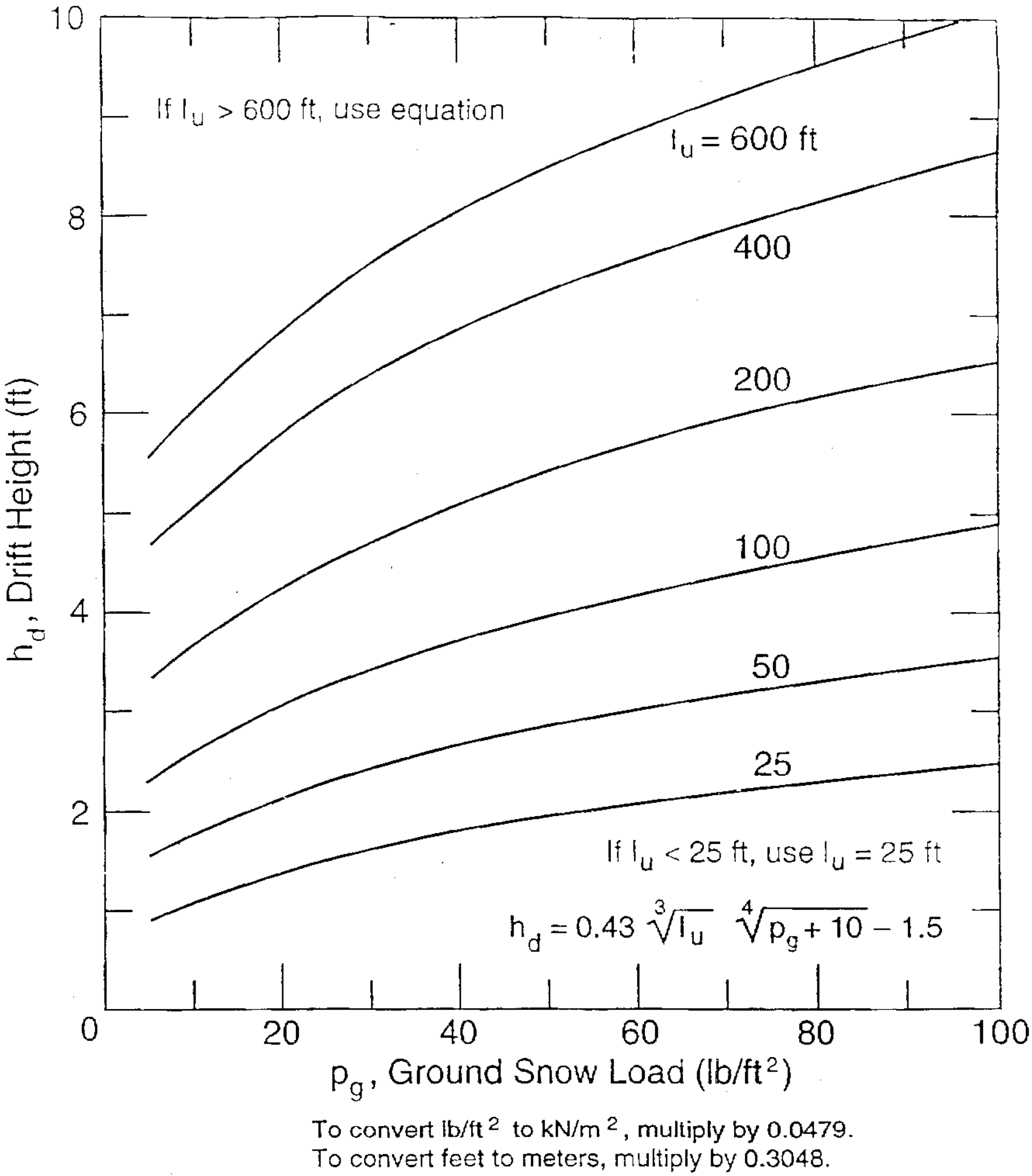


Fig. 7-9. Graph and Equation for Determining Drift Height, h_d.