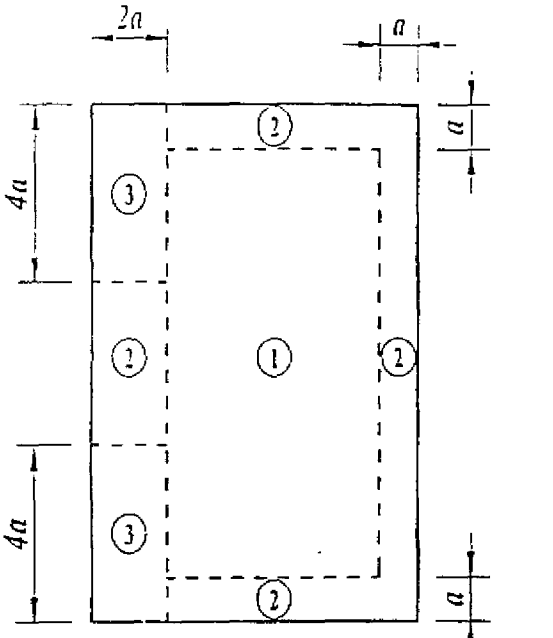
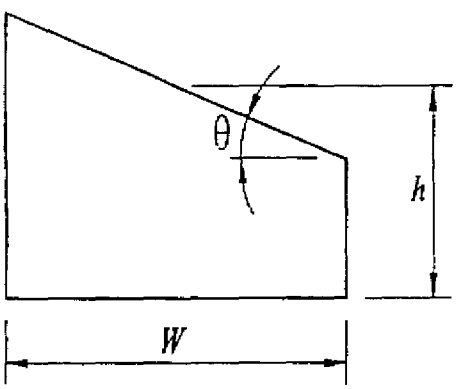
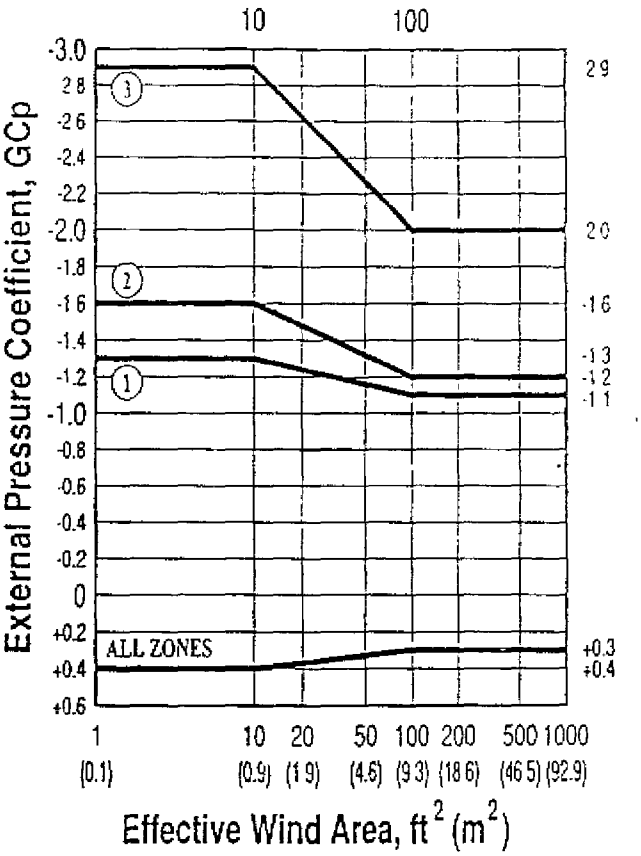
Components and Cladding		h ≤ 60 ft.
Figure 6-7A (con't)	External Pressure Coefficients, GC_p	Monoslope Roofs
Enclosed, Partially Enclosed Buildings		$10° < \theta \leq 30°$



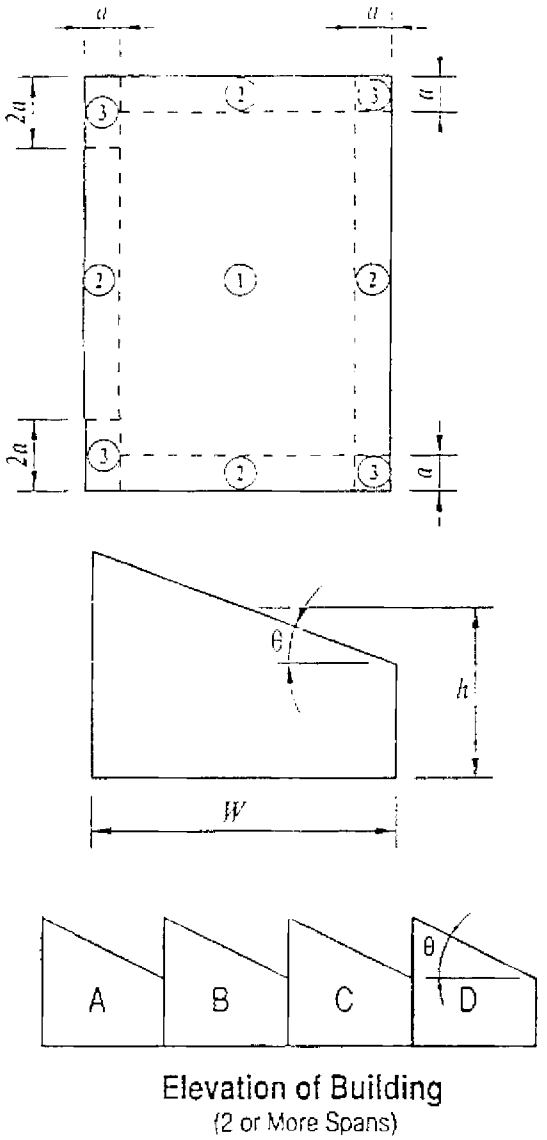




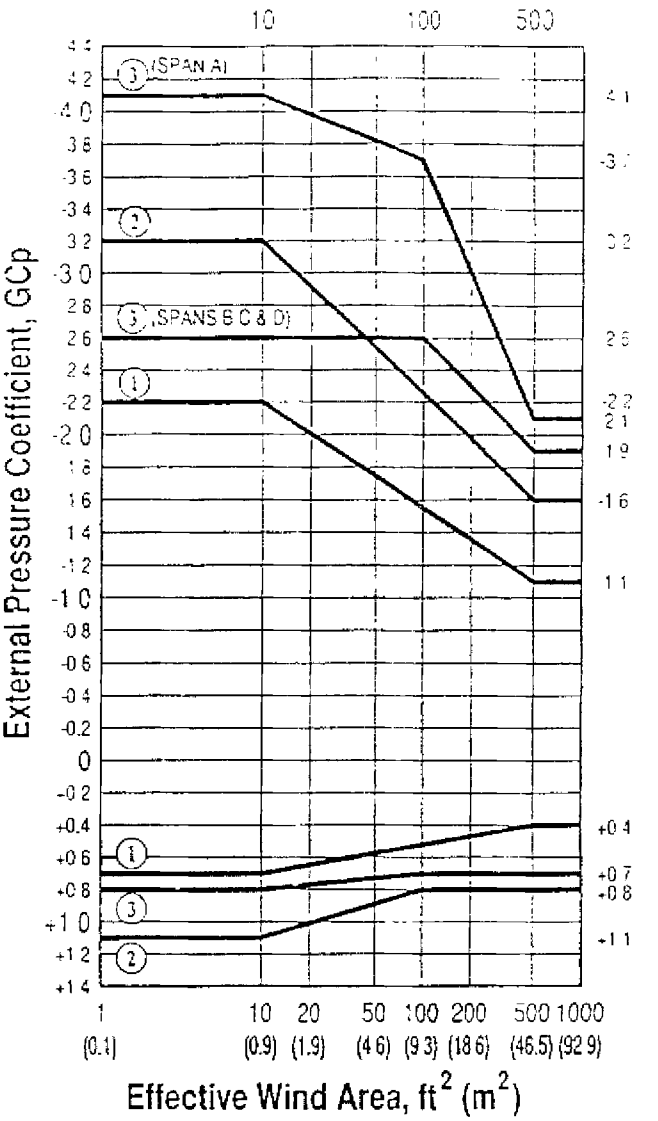
Notes:

1. Vertical scale denotes GC_p to be used with q_h.
2. Horizontal scale denotes effective wind area A, in square feet (square meters).
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively
4. Each component shall be designed for maximum positive and negative pressures.
5. Notation:
   - a: 10 percent of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4 percent of least horizontal dimension or 3 ft (1 m).
   - h: Mean roof height, in feet (meters).
   - W: Building width, in feet (meters).
   - θ: Angle of plane of roof from horizontal, in degrees.

Components and Cladding		h ≤ 60 ft
Figure 6-7B	External Pressure Coefficients, GC_p	Sawtooth Roofs
Enclosed, Partially Enclosed Buildings		



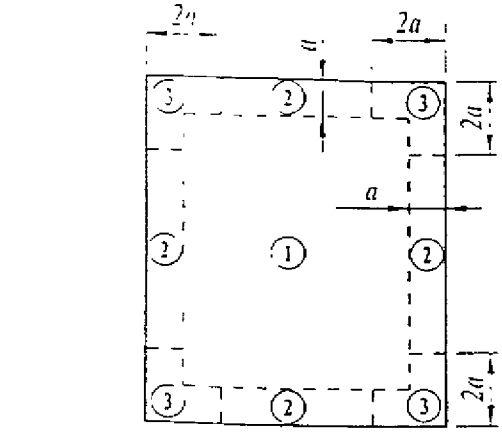
Elevation of Building
(2 or More Spans)

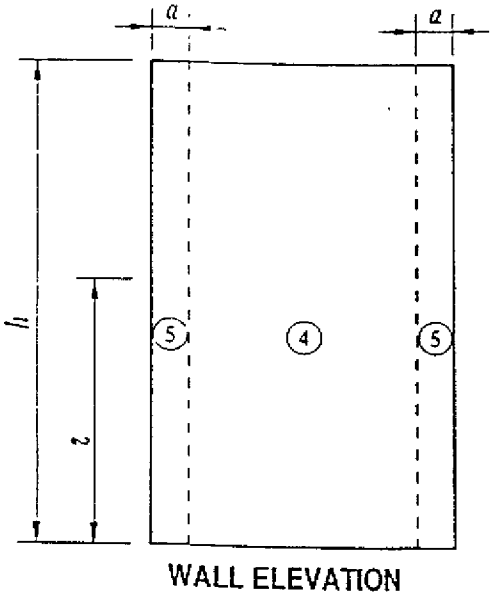


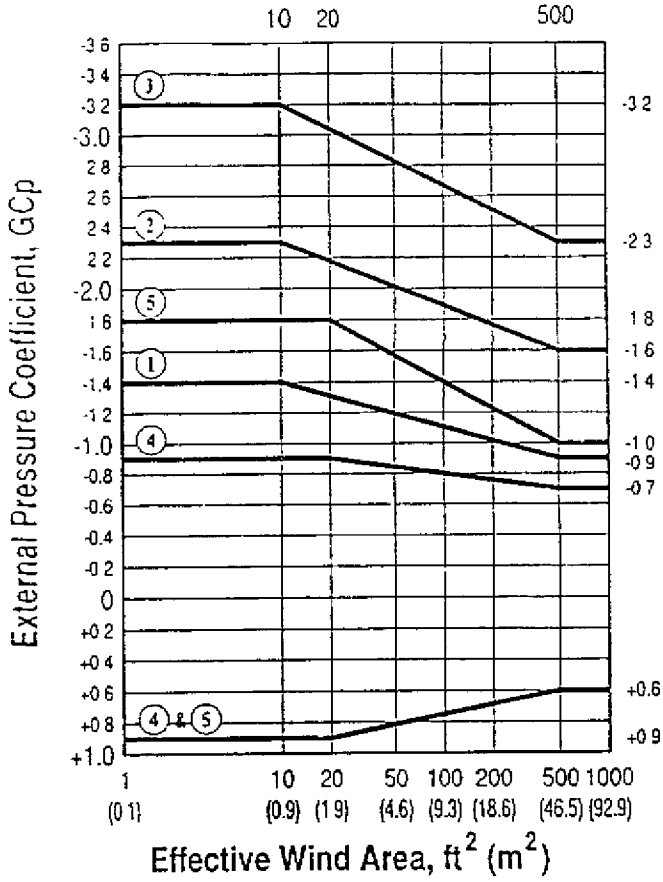
Notes:

1. Vertical scale denotes GC_p to be used with q_h.
2. Horizontal scale denotes effective wind area A, in square feet (square meters).
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively
4. Each component shall be designed for maximum positive and negative pressures.
5. For $\theta \leq 10°$, values of GC_p from Fig. 6-5B shall be used.
6. Notation:
   - a: 10 percent of least horizontal dimension or $0.4h$, whichever is smaller, but not less than either 4 percent of least horizontal dimension or 3 ft (1 m).
   - h: Mean roof height, in feet (meters).
   - W: Building width, in feet (meters).
   - θ: Angle of plane of roof from horizontal, in degrees.

Components and Cladding	h >60 ft.
Figure 6-8 External Pressure Coefficients, GC_p	Walls & Roofs
Enclosed, Partially Enclosed Buildings	



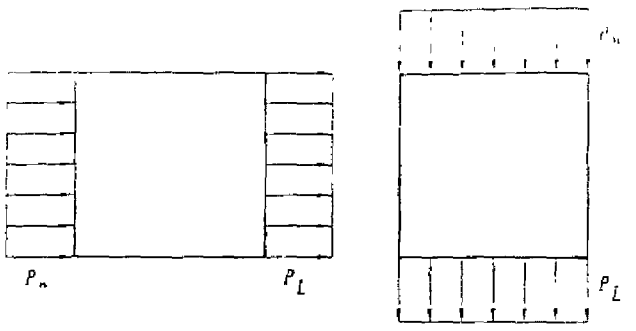




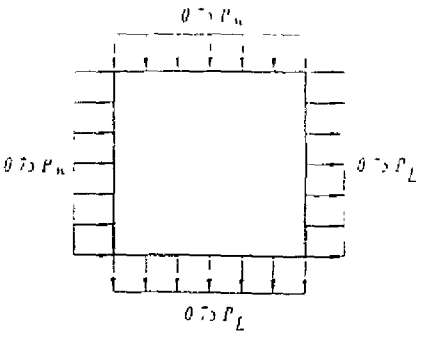
Notes:

1. Vertical scale denotes GC_p to be used with appropriate q_z or q_h.
2. Horizontal scale denotes effective wind area A, in square feet (square meters).
3. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively
4. Use q_z with positive values of GC_p and q_h with negative values of GC_p.
5. Each component shall be designed for maximum positive and negative pressures.
6. Coefficients are for roofs with angle $\theta \leq 10°$. For other roof angles and geometry, use GC_p values from Fig. 6-5B and attendant q, based on exposure defined in 6.5.6.
7. If a parapet equal to or higher than 3 ft (1m) is provided around the perimeter of the roof with $\theta \leq 10°$, Zone 3 shall be treated as Zone 2.
8. Notation:
   - a: 10 percent of least horizontal dimension, but not less than 3 ft (1 m).
   - h: Mean roof height, in feet (meters), except that eave height shall be used for $\theta \leq 10°$.
   - z: height above ground, in feet (meters).
   - θ: Angle of plane of roof from horizontal, in degrees.

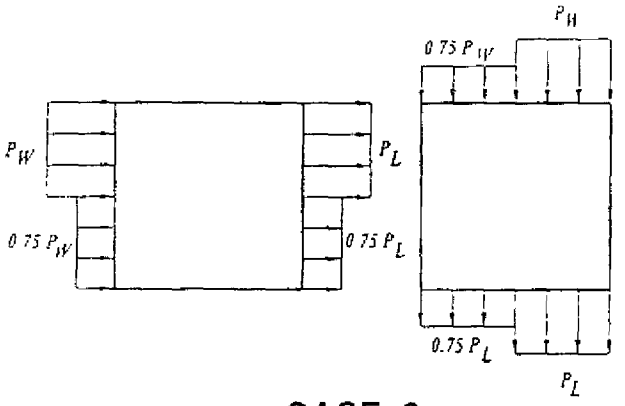
Main Wind Force Resisting System		h >60 ft
Figure 6-9	Full & Partial Loadings	



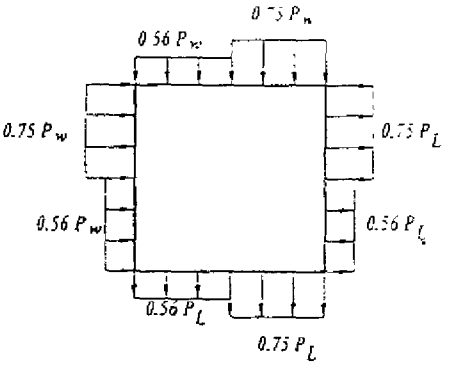
CASE 1



CASE 3



CASE 2



CASE 4

Case 1. Full design wind pressures acting on the projected area perpendicular to each principal axis of the structure considered separately

Case 2 Wind pressure as defined in Case 1, but with a 25% reduction in pressure acting on 50% of the projected area bounded by the extreme projected edge of the building

Case 3. Wind pressure as defined in Case 1, but considered to act simultaneously at 75% of the specified value.

Case 4. Wind pressure as defined in Case 3, but with a 25% reduction of these pressures acting on 50% of the projected area bounded by the extreme projected edge of the building

Notes:

1. Design wind pressures for windward and leeward faces obtained in accordance with the provisions of 6.5.12 for main wind-force resisting systems for buildings with mean roof height h greater than 60 ft (18 m).
2. Diagrams show plan view of building
3. Notation:
   P_W: Windward face design pressure.
   P_L: Leeward face design pressure.

Importance Factor, I (Wind Loads)

Table 6-1

Category	Non-Hurricane Prone Regions and Hurricane Prone Regions with V = 85-100 mph and Alaska	Hurricane Prone Regions with V > 100 mph
I	0 87	0 77
II	1.00	1.00
III	1.15	1.15
IV	1.15	1.15

Note:

1. The building and structure classification categories are listed in Table 1-1.

Main Wind Force Resisting System		h ≤ 30 ft
Table 6-2	Design Wind Pressure	Simplified Procedure Walls & Roofs
Enclosed, Partially Enclosed Buildings		

DESIGN WIND PRESSURE (PSF)										
Location	Building Classification	Basic Wind Speed V (MPH)								
		85	90	100	110	120	130	140	150	160	170
Roof	Enclosed	-14	-16	-20	-24	-29	-33	-39	-45	-51	-57
	Partially Enclosed	-19	-21	-26	-31	-37	-44	-51	-58	-66	-74
Wall	Enclosed or Partially Enclosed	12	14	17	20	24	29	33	38	43	49

Notes:

1 Design wind pressures above represent the following:
Roof – Net pressure (sum of external and internal pressures) applied normal to all roof surfaces
Wall – Combined net pressure (sum of windward and leeward, external and internal pressures) applied normal to all windward wall surfaces.

2 Values shown are for exposure B For other exposures, multiply values shown by the factor below

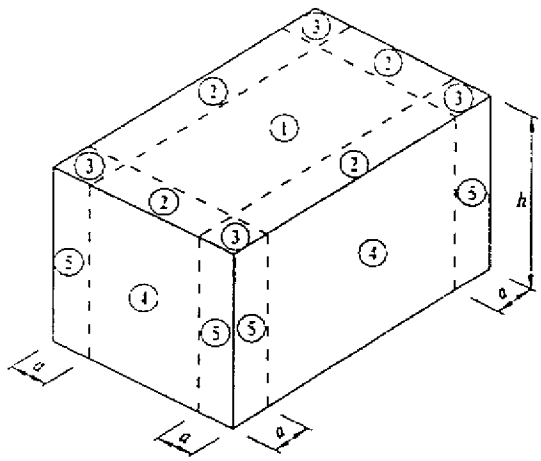
Exposure	Factor
C	1.40
D	1.66

3 Values shown for roof are based on a tributary area less than or equal to 100 sf. For larger tributary areas, multiply values shown by reduction factor below:

Area (SF)	Reduction Factor (Linear Interpolation Permitted)
≤ 100	1.0
250	0.9
≥ 1000	0.8

4. Values shown are for importance factor I = 1.0 For other values of I, multiply values shown by I.
5. Plus and minus signs indicate pressures acting toward and away from exterior surface, respectively.

Components and Cladding		h ≤ 30 ft.
Table 6-3A	Design Wind Pressures	Simplified Procedure
Enclosed Buildings		Walls & Roofs



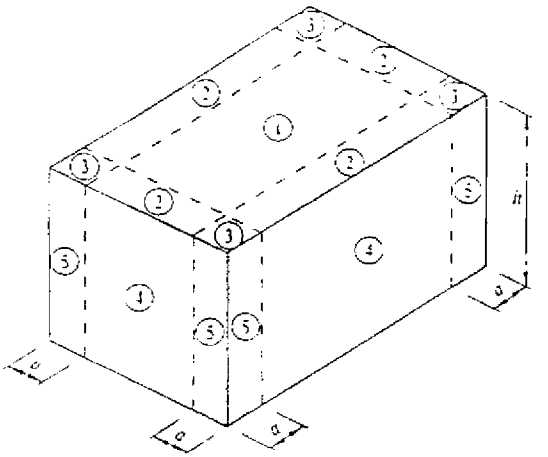
Location	Zone	Effective Wind Area (SF)	DESIGN WIND PRESSURE (PSF) Basic Wind Speed V (MPH)									
			85	90	100	110	120	130	140	150	160	170
Roof	1	10	+10 -13	+10 -15	+10 -18	+10 -22	+11 -26	+12 -30	+14 -35	+16 -40	+19 -46	+21 -52
		20	+10 -13	+10 -14	+10 -18	+10 -21	+10 -25	+12 -30	+13 -34	+15 -39	+18 -45	+20 -51
		100	+10 -12	+10 -13	+10 -16	+10 -20	+10 -24	+10 -28	+11 -32	+13 -37	+15 -42	+17 -48
	2	10	+10 -22	+10 -24	+10 -30	+10 -36	+11 -43	+12 -51	+14 -59	+16 -68	+19 -77	+21 -87
		20	+10 -19	+10 -22	+10 -27	+10 -33	+10 -39	+12 -46	+13 -53	+15 -61	+18 -69	+20 -78
		100	+10 -14	+10 -16	+10 -19	+10 -24	+10 -28	+10 -33	+11 -38	+13 -44	+15 -50	+17 -56
	3	10	+10 -33	+10 -37	+10 -45	+10 -55	+11 -65	+12 -77	+14 -89	+16 -102	+19 -116	+21 -131
		20	+10 -27	+10 -30	+10 -37	+10 -45	+10 -54	+12 -63	+13 -73	+15 -84	+18 -96	+20 -108
		100	+10 -14	+10 -16	+10 -19	+10 -24	+10 -28	+10 -33	+11 -38	+13 -44	+15 -50	+17 -56
Walls	4	10	+13 -14	+15 -16	+18 -19	+22 -24	+26 -28	+30 -33	+35 -38	+40 -44	+46 -50	+52 -56
		50	+12 -13	+13 -14	+16 -18	+19 -22	+23 -26	+27 -30	+31 -35	+36 -40	+41 -46	+46 -51
		500	+10 -11	+11 -12	+13 -15	+16 -18	+19 -21	+23 -25	+26 -29	+30 -34	+34 -38	+39 -43
	5	10	+13 -17	+15 -19	+18 -24	+22 -29	+26 -35	+30 -41	+35 -47	+40 -54	+46 -62	+52 -70
		50	+12 -15	+13 -16	+16 -20	+19 -25	+23 -29	+27 -34	+31 -40	+36 -46	+41 -52	+46 -59
		500	+10 -11	+11 -12	+13 -15	+16 -18	+19 -21	+23 -25	+26 -29	+30 -34	+34 -38	+39 -43

Metric Conversion: 1 PSF = 47.9 pascals 1 SF = 0.0929 SM 1 MPH = 0.447 M/S

Notes:

1. Design wind pressures above represent the net pressure (sum of external and internal pressures) applied normal to all surfaces.
2. Values shown are for exposure B. For other exposures, multiply values shown by the following factor: exposure C: 1.40 and exposure D: 1.66.
3. Linear interpolation between values of tributary area is permissible.
4. Values shown are for an importance factor I = 1.0. For other values of I, multiply values shown by I.
5. Plus and minus signs signify pressure acting toward and away from the exterior surface, respectively.
6. All component and cladding elements shall be designed for both positive and negative pressures shown in the table.
7. Notation:
   a: 10 percent of least horizontal dimension or 0.4 *h*, whichever is smaller, but not less than 4% of least horizontal dimension or 3 ft.
   h: Mean roof height in feet (meters).

Components and Cladding		h ≤ 30 ft.
Table 6-3B	Net Pressure Coefficients	Simplified Procedure
Partially Enclosed Buildings		Walls & Roofs



DESIGN WIND PRESSURE (PSF)											
Location	Zone	Effective Wind Area (SF)	Basic Wind Speed V (MPH)									
			85	90	100	110	120	130	140	150	160	170
Roof	1	10	+10 -17	+10 -19	+13 -24	+16 -29	+19 -34	+22 -40	+25 -46	+29 -53	+33 -60	+37 -68
		20	+10 -17	+10 -19	+12 -23	+15 -28	+18 -33	+21 -39	+24 -45	+28 -52	+32 -59	+36 -67
		100	+10 -16	+9 -18	+11 -22	+14 -27	+16 -32	+19 -37	+22 -43	+26 -50	+29 -57	+33 -64
	2	10	+10 -26	+10 -29	+13 -36	+16 -43	+19 -52	+22 -60	+25 -70	+29 -81	+33 -92	+37 -103
		20	+10 -24	+10 -26	+12 -33	+15 -39	+18 -47	+21 -55	+24 -64	+28 -73	+32 -83	+36 -94
		100	+10 -18	+10 -20	+11 -25	+14 -30	+16 -36	+19 -42	+22 -49	+26 -57	+29 -64	+33 -73
	3	10	+10 -37	+10 -41	+13 -51	+16 -62	+19 -73	+22 -86	+25 -100	+29 -115	+33 -131	+37 -147
		20	+10 -31	+10 -35	+12 -43	+15 -52	+18 -62	+21 -73	+24 -84	+28 -97	+32 -110	+36 -125
		100	+10 -18	+10 -20	+11 -25	+14 -30	+16 -36	+19 -42	+22 -49	+26 -57	+29 -64	+33 -73
Walls	4	10	+17 -18	+19 -20	+24 -25	+29 -30	+34 -36	+40 -42	+46 -49	+53 -57	+60 -64	+68 -73
		50	+16 -17	+18 -19	+22 -23	+26 -28	+31 -34	+37 -40	+42 -46	+49 -53	+55 -60	+63 -68
		500	+14 -15	+15 -17	+19 -21	+23 -25	+27 -30	+32 -35	+37 -40	+43 -46	+49 -53	+55 -59
	5	10	+17 -21	+19 -24	+24 -30	+29 -36	+34 -43	+40 -50	+46 -58	+53 -67	+60 -76	+68 -86
		50	+16 -19	+18 -21	+22 -26	+26 -31	+31 -37	+37 -44	+42 -51	+49 -58	+55 -66	+63 -75
		500	+14 -15	+15 -17	+19 -21	+23 -25	+27 -30	+32 -35	+37 -40	+43 -46	+49 -53	+55 -59

Metric Conversion: 1 PSF = 47.9 pascals 1 SF = 0.0929 SM 1 MPH = 0.447 M/S

Notes:

1. Design wind pressures above represent the net pressure (sum of external and internal pressures) applied normal to all surfaces.
2. Values shown are for exposure B. For other exposures, multiply values shown by the following factor: exposure C: 1.40 and exposure D: 1.66.
3. Linear interpolation between values of tributary area is permissible.
4. Values shown are for an importance factor I = 1.0. For other values of I, multiply values shown by I.
5. Plus and minus signs signify pressure acting toward and away from the exterior surface, respectively.
6. All component and cladding elements shall be designed for both positive and negative pressures shown in the table.
7. Notation:
   - *a*: 10 percent of least horizontal dimension or 0.4 *h*, whichever is smaller, but not less than 4% of least horizontal dimension or 3 ft.
   - *h*: Mean roof height in feet (meters).

Terrain Exposure Constants

Table 6-4

Exposure	α	z_g (ft)	$\hat{a}$	$\hat{b}$	$\bar{\alpha}$	$\bar{b}$	c	ℓ (ft)	$\bar{\in}$	z_{min} (ft)*
A	5.0	1500	1/5	0.64	1/3.0	0.30	0.45	180	1/2.0	60
B	7.0	1200	1/7	0 84	1/4.0	0 45	0.30	320	1/3.0	30
C	9.5	900	1/9.5	1.00	1/6.5	0.65	0.20	500	1/5.0	15
D	11.5	700	1/11.5	1.07	1/9.0	0.80	0.15	650	1/8.0	7

*z_{min} = minimum height used to ensure that the equivalent height $\bar{z}$ is greater of $0.6h$ or z_{min}. For buildings with $h \leq z_{min}$, $\bar{z}$ shall be taken as z_{min}.

Velocity Pressure Exposure Coefficients, K_h and K_z

Table 6-5

Height above ground level, z		Exposure (Note 1)					
		A		B		C	D
ft	(m)	Case 1	Case 2	Case 1	Case 2	Cases 1 & 2	Cases 1 & 2
0-15	(0-4.6)	0.68	0.32	0.70	0.57	0.85	1.03
20	(6.1)	0.68	0.36	0.70	0.62	0.90	1.08
25	(7.6)	0.68	0.39	0.70	0.66	0.94	1.12
30	(9.1)	0.68	0.42	0.70	0.70	0.98	1.16
40	(12.2)	0.68	0.47	0.76	0.76	1.04	1.22
50	(15.2)	0.68	0.52	0.81	0.81	1.09	1.27
60	(18)	0.68	0.55	0.85	0.85	1.13	1.31
70	(21.3)	0.68	0.59	0.89	0.89	1.17	1.34
80	(24.4)	0.68	0.62	0.93	0.93	1.21	1.38
90	(27.4)	0.68	0.65	0.96	0.96	1.24	1.40
100	(30.5)	0.68	0.68	0.99	0.99	1.26	1.43
120	(36.6)	0.73	0.73	1.04	1.04	1.31	1.48
140	(42.7)	0.78	0.78	1.09	1.09	1.36	1.52
160	(48.8)	0.82	0.82	1.13	1.13	1.39	1.55
180	(54.9)	0.86	0.86	1.17	1.17	1.43	1.58
200	(61.0)	0.90	0.90	1.20	1.20	1.46	1.61
250	(76.2)	0.98	0.98	1.28	1.28	1.53	1.68
300	(91.4)	1.05	1.05	1.35	1.35	1.59	1.73
350	(106.7)	1.12	1.12	1.41	1.41	1.64	1.78
400	(121.9)	1.18	1.18	1.47	1.47	1.69	1.82
450	(137.2)	1.24	1.24	1.52	1.52	1.73	1.86
500	(152.4)	1.29	1.29	1.56	1.56	1.77	1.89

Notes:

1. Case 1: a. All components and cladding.
   b. Main wind force resisting system in low-rise buildings designed using Figure 6-4.

   Case 2: a. All main wind force resisting systems in buildings except those in low-rise buildings designed using Figure 6-4.
   b. All main wind force resisting systems in other structures.
2. The velocity pressure exposure coefficient K_z may be determined from the following formula:

   For $15 \text{ ft.} \le z \le z_g$ $\quad K_z = 2.01\,(z/z_g)^{2/\alpha}$

   For $z < 15$ ft $\quad K_z = 2.01\,(15/z_g)^{2/\alpha}$

   Note: z shall not be taken less than 100 feet for Case 1 in exposure A or less than 30 feet for Case 1 in exposure B.
3. α and z_g are tabulated in Table 6-4.
4. Linear interpolation for intermediate values of height z is acceptable.
5. Exposure categories are defined in 6.5.6.

Wind Directionality Factor, K_d

Table 6-6

Structure Type	Directionality Factor K_d*
Buildings Main Wind Force Resisting System Components and Cladding	 0 85 0.85
Arched Roofs	0.85
Chimneys, Tanks, and Similar Structures Square Hexagonal Round	 0.90 0.95 0.95
Solid Signs	0.85
Open Signs and Lattice Framework	0.85
Trussed Towers Triangular, square, rectangular All other cross sections	 0.85 0.95

*Directionality Factor K_d has been calibrated with combinations of loads specified in Section 2. This factor shall only be applied when used in conjunction with load combinations specified in 2.3 and 2.4.

Internal Pressure Coefficients for Buildings, GC_{pi}

Table 6-7

Enclosure Classification	GC_{pi}
Open Buildings	0.00
Partially Enclosed Buildings	+0.55 -0.55
Enclosed Buildings	+0.18 -0.18

Notes:

1. Plus and minus signs signify pressures acting toward and away from the internal surfaces
2. Values of GC_{pi} shall be used with q_z or q_h as specified in 6.5.12.
3. Two cases shall be considered to determine the critical load requirements for the appropriate condition:

   (i) a positive value of GC_{pi} applied to all internal surfaces
   (ii) a negative value of GC_{pi} applied to all internal surfaces

Main Wind Force Resist. Sys. / Components & Cladding		All It
Table 6-8	External Pressure Coefficients, C_p	Arched Roofs
Enclosed, Partially Enclosed Buildings		

Conditions	Rise-to-span ratio, r	C_p		
		Windward quarter	Center half	Leeward quarter
Roof on elevated structure	$0 < r < 0.2$	-0.9	-0.7 - r	-0.5
	$0.2 \leq r < 0.3$*	$1.5r$ - 0.3	-0.7 - r	-0.5
	$0.3 \leq r \leq 0.6$	$2.75r$ - 0.7	-0.7 - r	-0.5
Roof springing from ground level	$0 < r \leq 0.6$	$1.4r$	-0.7 - r	-0.5

*When the rise-to-span ratio is $0.2 \leq r \leq 0.3$, alternate coefficients given by 6r - 2.1 shall also be used for the windward quarter.

Notes:

1. Values listed are for the determination of average loads on main windforce resisting systems.
2. Plus and minus signs signify pressures acting toward and away from the surfaces, respectively.
3. For wind directed parallel to the axis of the arch, use pressure coefficients from Fig. 6-3 with wind directed parallel to ridge.
4. For components and cladding: (1) At roof perimeter, use the external pressure coefficients in Fig. 6-5B with θ based on spring-line slope and (2) for remaining roof areas, use external pressure coefficients of this table multiplied by 0.87.