

WIND (C&C)

Wind Analysis Method

Part 1: Low Rise Buildings

Basic Wind Speed (ultimate)

155.00 MPH

Topography Factor

K_{zt} = 1.00 ASCE 7-10 Fig. 26.8-1

Directionality Factor

K_d = 0.85 ASCE 7-10 Fig. 26.6-1

Internal Pressure Coefficients

(GC_{pi}) = 0.18 -0.18 ASCE 7-10 Table 26.11-1

Roof Pitch

5.00 :12 22.62 DEG

Roof Eave Height

10.500 FT

Peak Roof Height

20.500 FT

α = 9.5

Mean Roof Height

15.500 FT

z_g = 900

Terrain Exp. Category

C

Velocity Pressure

$$q_z = 0.00256 K_z K_{zt} K_d V^2$$

Height (ft)

K_z

q_z

h = 15.50 FT

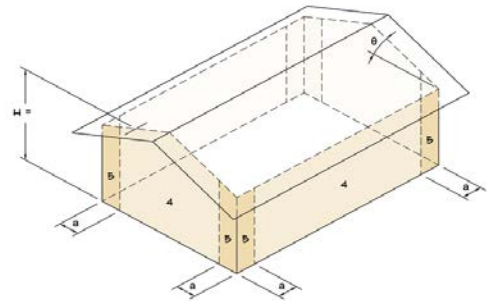
0.855

44.69

Wall Components

$$p = q h (GC_p - GC_{pi})$$

Component	Span Length (ft.)	Width (ft.)	Trib. Area	Eff. Area
Stud	16	1.33	21.33	85.33
A ≤ 10 ft ²	-	-	-	10.00
A = 20 ft ²	-	-	-	20.00
A = 50 ft ²	-	-	-	50.00
A = 100 ft ²	-	-	-	100.00
A = 200 ft ²	-	-	-	200.00
A ≥ 500 ft ²	-	-	-	500.00



Wall Coefficients taken from ASCE 7-10 Fig. 30.4-1

Wall Coefficients

Component	Eff. Area	Zone 4 Pos	Zone 4 Neg	Zone 5 Pos	Zone 5 Neg
Stud	85.33	0.84	-0.94	0.84	-1.07
A ≤ 10 ft ²	10.00	1.00	-1.10	1.00	-1.40
A = 20 ft ²	20.00	0.95	-1.05	0.95	-1.29
A = 50 ft ²	50.00	0.88	-0.98	0.88	-1.15
A = 100 ft ²	100.00	0.82	-0.92	0.82	-1.05
A = 200 ft ²	200.00	0.77	-0.87	0.77	-0.94
A ≥ 500 ft ²	500.00	0.70	-0.80	0.70	-0.80

Wall Design Pressures

(psf)

Component	Eff. Area	Zone 4 Pos	Zone 4 Neg	Zone 5 Pos	Zone 5 Neg
Stud	85.33	45.38	-49.85	45.38	-55.91
A ≤ 10 ft ²	10.00	52.73	-57.20	52.73	-70.60
A = 20 ft ²	20.00	50.35	-54.82	50.35	-65.85
A = 50 ft ²	50.00	47.21	-51.68	47.21	-59.57
A = 100 ft ²	100.00	44.84	-49.31	44.84	-54.82
A = 200 ft ²	200.00	42.46	-46.93	42.46	-50.07
A ≥ 500 ft ²	500.00	39.32	-43.79	39.32	-43.79

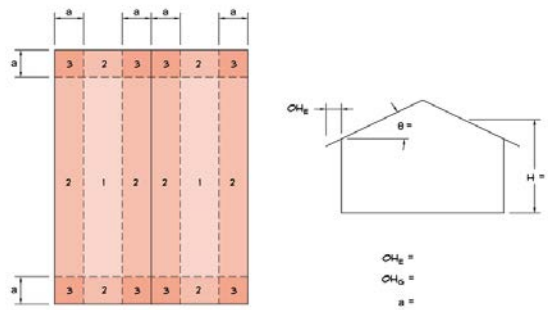
Note: Pressures are limit state design pressures for strength design. Multiple by 0.6 for ASD.

Min. Pressure: The design wind pressure for C&C shall not be less than 16 psf acting in either direction normal to the surface.

$$p = qh(GC_p - GC_{pi})$$

Roof Components

Component	Span Length (ft.)	Width (ft.)	Trib. Area	Eff. Area
Truss/Rafter	30	2	60.00	300.00
Panel	8	4	32.00	32.00
A ≤ 10 ft ²	-	-	-	10.00
A = 20 ft ²	-	-	-	20.00
A = 50 ft ²	-	-	-	50.00
A ≥ 100 ft ²	-	-	-	100.00



Roof Coefficients taken from ASCE 7-10 Fig. 30.4-2B

Roof Coefficients

Component	Eff. Area	Zone 1 Pos	Zone1 Neg	Zone 2 Pos	Zone 2 Neg	Zone 3 Pos	Zone 3 Neg
Truss/Rafter	300.00	0.30	-0.80	0.30	-1.20	0.30	-2.00
Panel	32.00	0.40	-0.85	0.40	-1.45	0.40	-2.30
A ≤ 10 ft ²	10.00	0.50	-0.90	0.50	-1.70	0.50	-2.60
A = 20 ft ²	20.00	0.44	-0.87	0.44	-1.55	0.44	-2.42
A = 50 ft ²	50.00	0.36	-0.83	0.36	-1.35	0.36	-2.18
A ≥ 100 ft ²	100.00	0.30	-0.80	0.30	-1.20	0.30	-2.00

Roof Design Pressures

(psf)

Component	Eff. Area	Zone 1 Pos	Zone1 Neg	Zone 2 Pos	Zone 2 Neg	Zone 3 Pos	Zone 3 Neg
Truss/Rafter	300.00	21.45	-43.79	21.45	-61.67	21.45	-97.41
Panel	32.00	25.87	-46.00	25.87	-72.72	25.87	-110.68
A ≤ 10 ft ²	10.00	30.39	-48.26	30.39	-84.01	30.39	-124.23
A = 20 ft ²	20.00	27.70	-46.92	27.70	-77.28	27.70	-116.16
A = 50 ft ²	50.00	24.14	-45.14	24.14	-68.39	24.14	-105.49
A = 100 ft ²	100.00	21.45	-43.79	21.45	-61.67	21.45	-97.41

Roof Coefficients

(Overhang)

Component	Eff. Area	Zone 1 Pos	Zone1 Neg	Zone 2 Pos	Zone 2 Neg	Zone 3 Pos	Zone 3 Neg
Truss/Rafter	300.00	0.3	-0.80	0.30	-2.20	0.30	-2.50
Panel	32.00	0.40	-0.85	0.40	-2.20	0.40	-3.09
A ≤ 10 ft ²	10.00	0.50	-0.90	0.50	-2.20	0.50	-3.70
A = 20 ft ²	20.00	0.44	-0.87	0.44	-2.20	0.44	-3.34
A = 50 ft ²	50.00	0.36	-0.83	0.36	-2.20	0.36	-2.86
A ≥ 100 ft ²	100.00	0.3	-0.80	0.30	-2.20	0.30	-2.50

Roof Design Pressures

(Overhang)

(psf)

Component	Eff. Area	Zone 1 Pos	Zone1 Neg	Zone 2 Pos	Zone 2 Neg	Zone 3 Pos	Zone 3 Neg
Truss/Rafter	300.00	21.45	-43.79	21.45	-106.35	21.45	-119.76
Panel	32.00	25.87	-46.00	25.87	-106.35	25.87	-146.29
A ≤ 10 ft ²	10.00	30.39	-48.26	30.39	-106.35	30.39	-173.38
A = 20 ft ²	20.00	27.70	-46.92	27.70	-106.35	27.70	-157.24
A = 50 ft ²	50.00	24.14	-45.14	24.14	-106.35	24.14	-135.90
A = 100 ft ²	100.00	21.45	-43.79	21.45	-106.35	21.45	-119.76

Width of Zones 2,3 and 5

smaller of:	0.1 x	45.00 =	4.50 ft	(controls)
	0.4 x	15.50 =	6.20 ft	
not less than:	0.04 x	45.00 =	1.80 ft	
		or	3 ft	

Note: Pressures are limit state design pressures for strength design. Multiple by 0.6 for ASD.

Min. Pressure: The design wind pressure for C&C shall not be less than 16 psf acting in either direction normal to the surface.