

WIND (MWFRS - Open Building)

Wind Analysis Method	Analytic Directional Procedure	ASCE 7-10 Fig. 27.4-5, 27.4-7
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
Gust Effect Factor	G = 0.85	ASCE 7-10 Sec. 26.9.1

Roof Pitch	4.00 :12	18.43 DEG
Roof Eave Height	8.000 FT	
Peak Roof Height	11.500 FT	α = 9.5
Mean Roof Height	9.750 FT	z _g = 900
Terrain Exp. Category	C	

Velocity Pressures

Height (ft)	K _z	q _h	$q_z = .00256 K_z K_{zt} K_d V^2$
h = 9.75 FT	0.849	44.38 psf	L = Span of Pitched Roof B = Length of Building
L = 24	L/B = 0.60		
B = 40	h/L = 0.41		

Design Pressures

$p = q_h GC_N$

Transverse Direction:

Note: Pressures are limit state design pressures for strength design. Multiple by 0.6 for ASD.
(Wind direction perpendicular to ridge.)

	h (ft)	q _h (psf)	Design Pressure (psf)			
			C _{NW}	C _{NL}	q _h GC _{NW}	q _h GC _{NL}
Load Case A: Clear Wind Flow	9.75	44.38	1.100	-0.171	41.49	-6.45
Load Case B: Clear Wind Flow	9.75	44.38	0.008	-0.963	0.32	-36.31
Load Case A: Obstructed Wind Flow	9.75	44.38	-1.200	-1.092	-45.27	-41.18
Load Case B: Obstructed Wind Flow	9.75	44.38	-0.692	-1.646	-26.09	-62.08

Longitudinal Direction:

Note: Pressures are limit state design pressures for strength design. Multiple by 0.6 for ASD.
(Wind direction parallel to ridge.)

	Distance (ft)	q _h (psf)	Design Pressure (psf)	
			C _N	q _h GC _N
Load Case A: Clear Wind Flow	(0 to h/2)	44.38	-0.80	-30.18
	(h to 2h)	44.38	-0.60	-22.63
	(>2h)	44.38	-0.30	-11.32
Load Case B: Clear Wind Flow	(0 to h/2)	44.38	0.80	30.18
	(h to 2h)	44.38	0.50	18.86
	(>2h)	44.38	0.30	11.32
Load Case A: Obstructed Wind Flow	(0 to h/2)	44.38	-1.20	-45.27
	(h to 2h)	44.38	-0.90	-33.95
	(>2h)	44.38	-0.60	-22.63
Load Case B: Obstructed Wind Flow	(0 to h/2)	44.38	0.50	18.86
	(h to 2h)	44.38	0.50	18.86
	(>2h)	44.38	0.30	11.32