

**Sign Calculator: Lateral Loads**

Wind Analysis Method	Design Wind Loads - Solid Freestanding Signs	ASCE 7-10 Sec. 29.4
Basic Wind Speed (ultimate)	155.00 MPH	
Topography Factor	Kzt = 1.00	ASCE 7-10 Fig. 26.8-1
Directionality Factor	Kd = 0.85	ASCE 7-10 Fig. 26.6-1
Gust Effect Factor	G = 0.85	ASCE 7-10 Sec. 26.9.1
Sign Height	h = 20.00 ft	
Terrain Exp. Category	D	$\alpha = 11.5$
Velocity Pressure Exp. Coefficient	Kz = 1.083	$z_g = 700$
<b>Velocity Pressure</b>	<b>qz = 56.62 psf</b>	$q_z = .00256K_zK_{zt}K_dV^2$
Sign Gross Area (normal to wind)	As = 7.48 ft <sup>2</sup>	
Vertical Dimension of Sign	s = 3.00 ft	
Horizontal Dimension of Sign	B = 3.00 ft	.2B = 0.60 ft
Clearance Ratio of Sign	s/h = 0.15	
Aspect Ratio of Sign	B/s = 1.00	
Force Coefficient for Sign	Cf,sign = 1.80	ASCE 7-10 Fig. 29.4-1
Wind Load on Sign (Strength Level)	Fsign = 648 lbs	$F = q_zGC_fA_s$
ASD Wind Load on Sign	FASD,sign = 389 lbs	(Case A & Case B)

- Case A: Resultant force acts normal to the face of the sign through the geometric center.
- Case B: Resultant force acts normal to the face of the sign at a distance from the geometric center toward the windward edge equal to 0.2 times the average width of the sign.
- Case C: Resultant forces act normal to the face of the sign through the geometric center of each region. See Figure 29.4-1 for details.

Cases C Requirement: **Case C not required since B/h < 2**

Notes:

1. For s/h = 1 the vertical location of the resultant force(s) occur at a distance above the geometric center equal to 0.05 times the average height of the sign. For s/h < 1 the vertical location of the resultant force(s) occur at the geometric center of the sign.