Wind Load Report

1. Site & Building Data

Roof Type:	Gable
Wind Speed (ult):	120 mph
Exposure Category:	B
Enclosure Class:	Open
Building Width (W):	28 ft.
Building Length (L):	16 ft.
Eave Height (h_e):	9 ft.
Foundation Height (h_f):	0 ft.
Roof Pitch:	4 /12
Eave Overhang (OH_e):	1 ft.
Gable Overhang (OH_g):	1 ft.

2. Parameters & Coefficients

Topographic Factor (K_{zt}):	1.0
Directionality Factor (K_d):	.85
Roof Angle (θ):	18.43 deg.
Mean Roof Height (h):	11.33 ft.
Ridge Height (h_r):	13.67 ft.
Pos. Internal Pressure (+GCpi):	+0.00
Neg. Internal Pressure (-GCpi):	-0.00
Velocity Pressure Exp. Coeff. (K_h):	0.70 @ z=h
Velocity Pressure (q_h):	21.95 psf
End Zone Width (a):	3.00 ft.
Zone 2/2E Dist.:	14.00 ft.

3. Design Assumptions and Notes

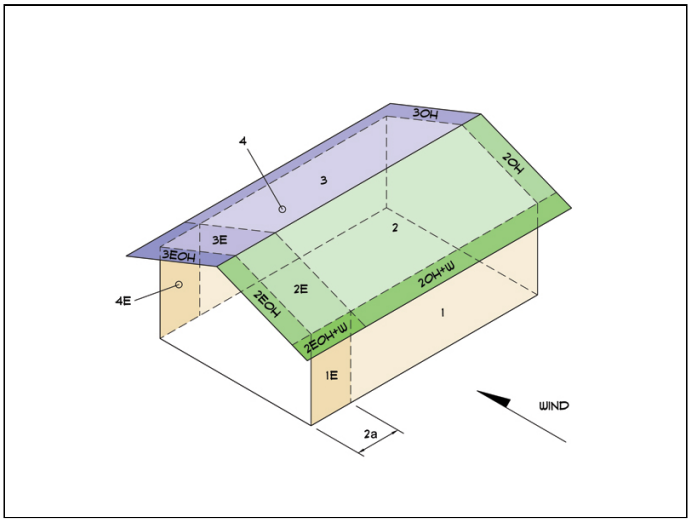
Code Standard:	ASCE 7-10
Geometry:	Regular-Shaped Bldg.
Height Class:	Low-Rise Building
Notes:	

4. Design Loads

Top Chord Dead Load:	7 psf
Bottom Chord Dead Load:	7 psf
Truss/Rafter Spacing:	24 in. o/c

4. Design Wind Pressures: MWFRS Envelope Procedure

Load Case A: Transverse Direction			
Surface	GCpf	Design Pressure (psf)	
		(w/ +GCpi)	(w/ -GCpi)
1	0.52	11.34	
2	-0.69	-15.15	
3	-0.47	-10.29	
4	-0.42	-9.12	
1E	0.78	17.13	
2E	-1.07	-23.49	
3E	-0.67	-14.78	
4E	-0.62	-13.57	
2OH	-0.69	-15.15	
2EOH	-1.07	-23.49	
3OH	-0.47	-10.29	
3EOH	-0.67	-14.78	
2OH+W	-0.69/-0.7	-30.51	
2EOH+W	-1.07/-0.7	-38.86	



a) (+) and (-) signs signify wind pressures acting toward & away from surfaces.
b) External Pressure Coefficients linearly interpolated from Fig. 28.4-1 ASCE 7-10.
c) Design building for all wind directions, 4 load patterns per load case.
d) Total horizontal shear shall not be less than that by neglecting roof wind forces.
e) Min. wind load for enclosed or partially enclosed bldg.: 16 psf wall, 8 psf roof.
f) Design pressures are for strength design, multiply by 0.6 for ASD.

Subject: Wind Loads	Customer:	Location:	Job No.: 2025D106
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Date: 4/26/2025			Page: 1

Load Case B: Longitudinal Direction			
Surface	GCpf	Design Pressure (psf)	
		(w/ +GCpi)	(w/ -GCpi)
1	-0.45	-9.88	
2	-0.69	-15.15	
3	-0.37	-8.12	
4	-0.45	-9.88	
5	0.40	8.78	
6	-0.29	-6.37	
1E	-0.48	-10.54	
2E	-1.07	-23.49	
3E	-0.53	-11.63	
4E	-0.48	-10.54	
5E	0.61	13.39	
6E	-0.43	-9.44	
2OH	-0.69	-15.15	
2EOH	-1.07	-23.49	
3OH	-0.37	-8.12	
3EOH	-0.53	-11.63	
2EOH+W	-1.07/-0.7	-38.86	
3EOH+W	-0.53/-0.7	-27.00	

a) (+) and (-) signs signify wind pressures acting toward & away from surfaces.
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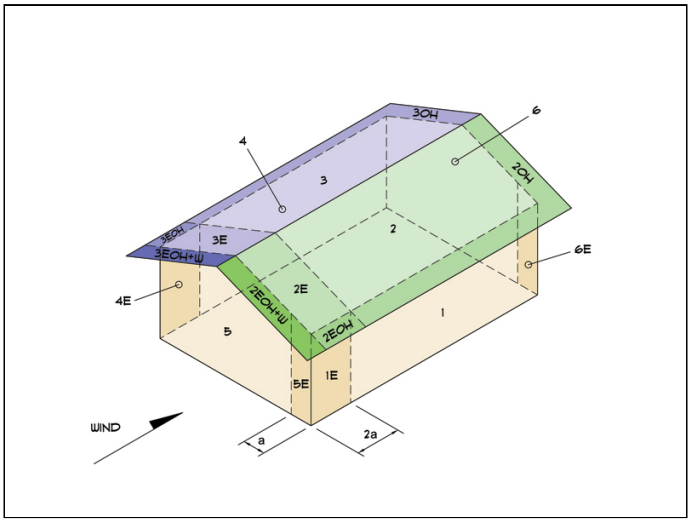
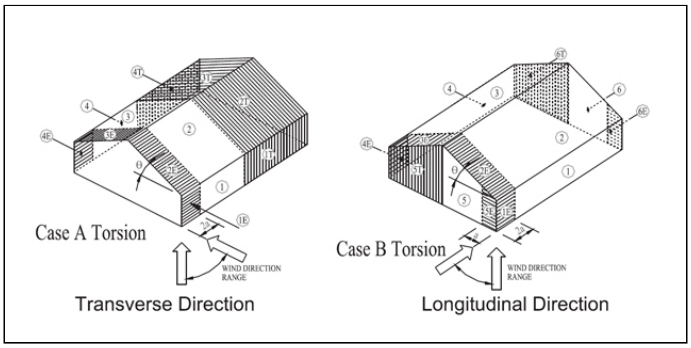


Torsional Load Cases				
Surface	Load Case	GCpf	Design Pressure (psf)	
			(w/ +GCpi)	(w/ -GCpi)
1T	A	-	2.83	
2T	A	-	-3.79	
3T	A	-	-2.57	
4T	A	-	-2.28	
5T	B	-	2.20	
6T	B	-	-1.59	

a) (+) and (-) signs signify wind pressures acting toward & away from surfaces.
b) Pressures designated with a "T" are 25% of full design wind pressures.
c) Torsional loading shall apply to all 8 load patterns using the figures shown.
d) Design pressures are for strength design, multiply by 0.6 for ASD.
e) Torsional Design Exceptions: One story bldg. with h ≤ 30 ft,
Two stories or less framed with light frame construction,
Two stories or less with flexible diaphragms.



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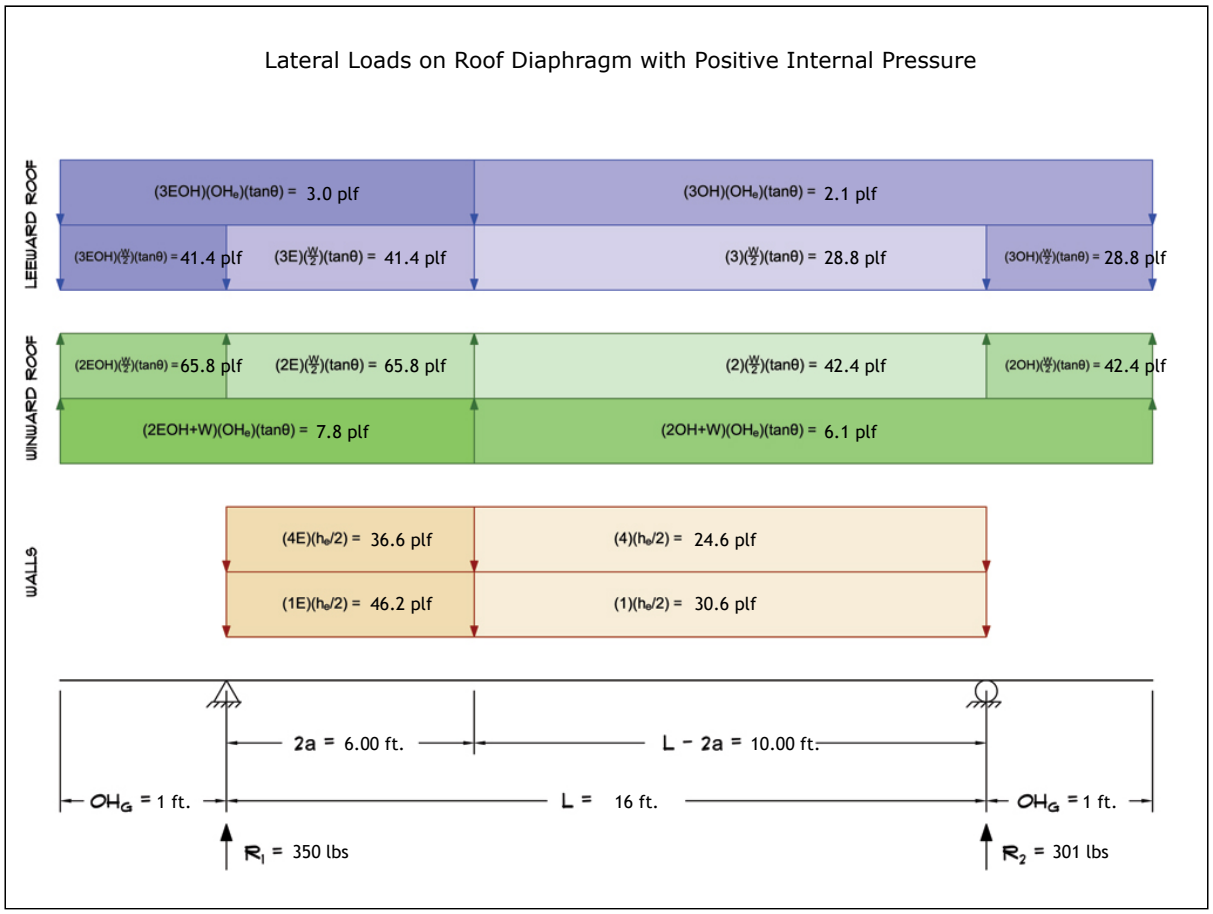
Wind Loads			2025D106
Engr.	ENGINEERING COMPANY INC.		Rev.
Engineer Name	Street Address City, CA 99999		-
Date	ph. (800) 000-0000 www.website.com		Page
4/26/2025			2

5. Wind Load Calculations

1.) Lateral Loads - Transverse Direction:

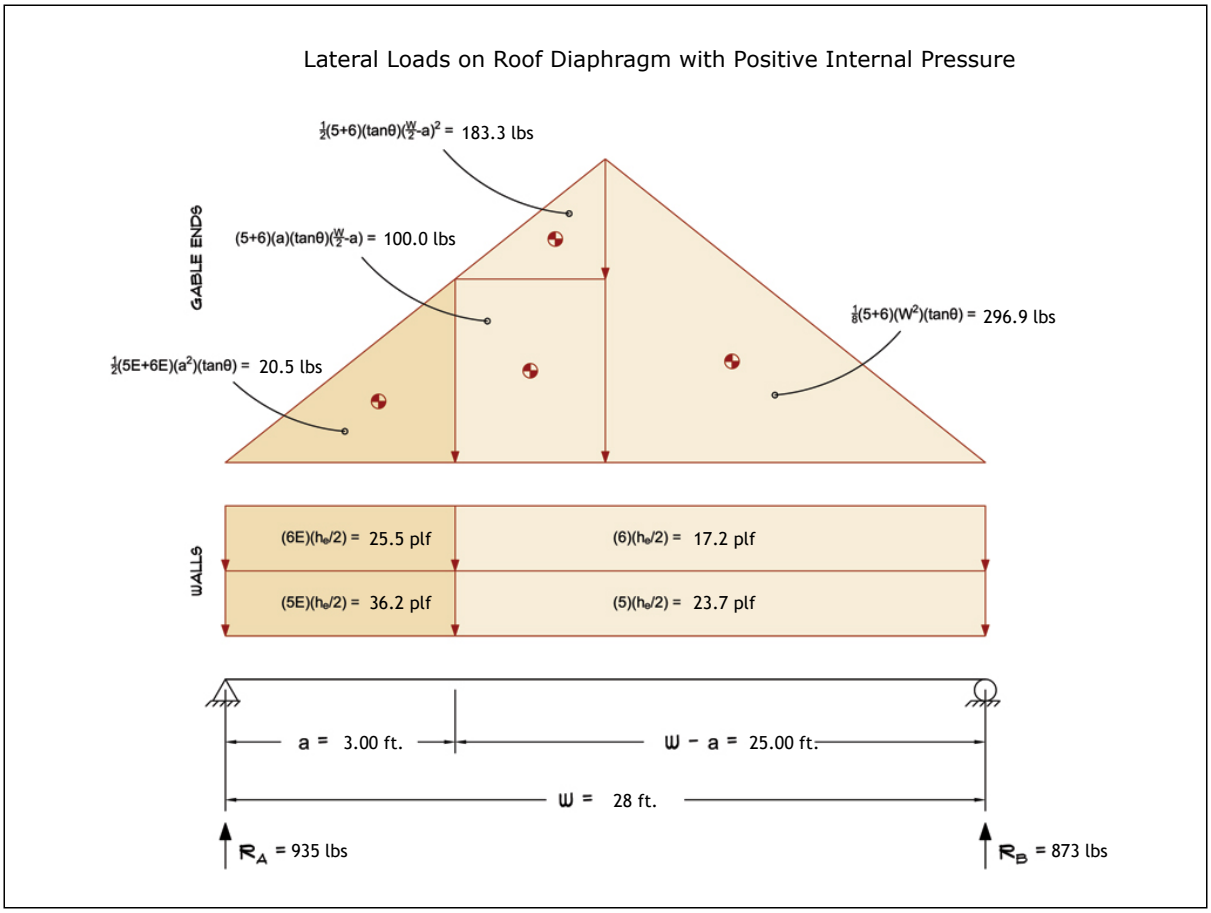


a) (-) signs signify wind lateral forces acting opposite to the direction of the arrows shown.
b) Strength design values multiplied by 0.6 to obtain ASD values.

Wind Base Shear (ASD)						
Load Case A: Transverse Direction						
Load Case	Walls (lbs)	Roof (lbs)	Roof Overhangs (lbs)	Total Lateral Load (lbs)	R_1 (lbs)	R_2 (lbs)
Positive Internal Pressure	1050	-282	-116	651	350	301
Negative Internal Pressure	1050	-282	-116	651	350	301
Roof Pressure = 0	1050	0	0	1050	577	473
Min. Pressures (8 psf, 16 psf)	691	358	74	1123	562	562

a) Bottom half of wall neglected in tributary area calculations.
b) Strength design values multiplied by 0.6 to obtain ASD values.

2.) Lateral Loads - Longitudinal Direction:

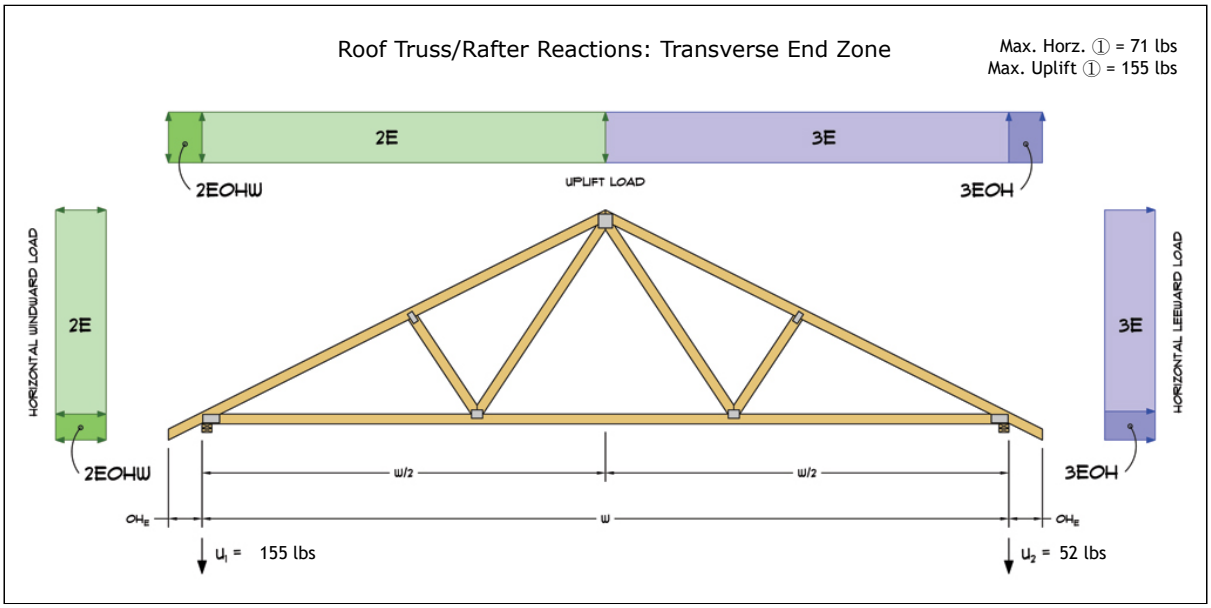


a) (-) signs signify wind lateral forces acting opposite to the direction of the arrows shown.
b) Strength design values multiplied by 0.6 to obtain ASD values.
c) Where the length of building (L) exceeds 4X the mean roof height (h), wind drag forces should additionally be considered.

Wind Base Shear (ASD)						
Load Case B: Longitudinal Direction						
Load Case	Walls (lbs)	Gable Ends (lbs)	Roof (lbs)	Total Lateral Load (lbs)	R_A (lbs)	R_B (lbs)
Positive Internal Pressure	1207	601	0	1808	935	873
Negative Internal Pressure	1207	601	0	1808	935	873
Roof Pressure = 0	1207	601	0	1808	935	873
Min. Pressures (8 psf, 16 psf)	1210	627	0	1837	918	918

a) Bottom half of wall neglected in tributary area calculations.
b) Strength design values multiplied by 0.6 to obtain ASD values.

3.) Roof Truss Reactions:



a) Strength design values multiplied by 0.6 to obtain ASD values.
b) Windward loads may be positive or negative depending on pitch of roof.

Roof Truss/Rafter Reactions (ASD)					
w/ Positive Internal Pressure					
Load Case	Horizontal Load (lbs)	Gross Uplift (lbs)	Net Uplift (lbs)	U_1 (lbs)	U_2 (lbs)
Transverse Int. Zone	35	476	-25	21	-45
Transverse End Zone	58	707	206	155	52
Longitudinal Int. Zone	42	419	-82	-7	-75
Longitudinal End Zone	71	632	131	123	9

a) Gross Uplift calculations do not include any counteracting roof dead loads.
b) Net Uplift calculations include counteracting roof dead loads multiplied by 0.6 per load case (7) ASCE 7-10.
c) Strength design values multiplied by 0.6 to obtain ASD values for wind loads.
d) Loads based on truss spacing calculated at 24" o/c.
e) Negative values for horizontal load indicate load acting in windward direction (tranverse load cases).
f) Negative values for uplift indicate net downward force (zero uplift).