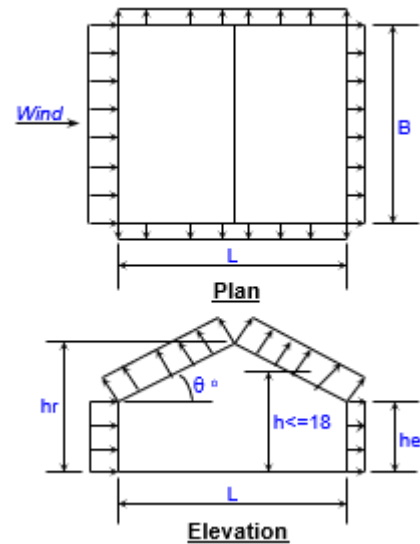


WIND LOAD ASCE 7-10

Input Data:

Wind Speed, V =	54	m/s
Bldg. Classification =	I	(Table 1-1 Occupancy Cat.)
Exposure Category =	C	(Sect. 6.5.6)
Ridge Height, hr =	15.30	m (hr >= he)
Eave Height, he =	9.00	m (he <= hr)
Building Width =	85.60	m (Normal to Building Ridge)
Building Length =	98.60	m (Parallel to Building Ridge)
Roof Type =	Gable	(Gable or Monoslope)
Topo. Factor, Kzt =	1.00	(Sect. 6.5.7 & Figure 6-4)
Direct. Factor, Kd =	0.85	(Table 6-4)
Enclosed? (Y/N)	Y	(Sect. 6.2 & Figure 6-5)
Hurricane Region?	N	



Resulting Parameters and Coefficients:

Roof Angle, q =	8.37	deg.
Mean Roof Ht., h =	9.00	m (h = he, for angle <= 10 deg.)

Check Criteria for a Low-Rise Building:

- Is h <= 18 ? **Yes, O.K.**
- Is h <= Lesser of L or B ? **Yes, O.K.**

External Pressure Coeffs., GCpf (Fig. 6-10):

(For values, see following wind load tabulations.)

Positive & Negative Internal Pressure Coefficients, GCpi (Figure 6-5):

+GCpi Coef. =	0.18	(positive internal pressure)
-GCpi Coef. =	-0.18	(negative internal pressure)

If h < 4.6 then: Kh = 2.01*(15/zg)^(2/a) (Table 6-3, Case 1b)

If h >= 4.6 then: Kh = 2.01*(z/zg)^(2/a) (Table 6-3, Case 1b)

a =	9.50	(Table 6-2)
zg =	274.34	(Table 6-2)
Kh =	0.98	(Kh = Kz evaluated at z = h)
I =	0.87	(Table 6-1) (Importance factor)

Velocity Pressure: qz = 0.613*Kz*Kzt*Kd*V^2*I (Sect. 6.5.10, Eq. 6-15)

$$q_h = 1.29 \text{ KN/m}^2 \quad q_h = 0.00256*Kh*Kzt*Kd*V^2*I \quad (q_z \text{ evaluated at } z = h)$$

Design Net External Wind Pressures (Sect. 6.5.12.2.2):

$$p = q_h * [(GCpf) - (+/-GCpi)] \quad (\text{psf, Eq. 6-18})$$

Wall and Roof End Zone Widths 'a' and '2*a' (Fig. 6-10):

a =	3.60	m
2*a =	7.20	m

MWFRS Wind Load for Transverse Direction				MWFRS Wind Load for Longitudinal Direction			
Surface	GCpf	= Net Pressures (KN/m ²)		Surface	*GCpf	p = Net Pressures (KN/m ²)	
		(w/ +GCpi)	(w/ -GCpi)			(w/ +GCpi)	(w/ -GCpi)
Zone 1	0.43	0.32	0.79	Zone 1	0.40	0.28	0.75
Zone 2	-0.69	-1.13	-0.66	Zone 2	-0.69	-1.13	-0.66
Zone 3	-0.39	-0.74	-0.28	Zone 3	-0.37	-0.71	-0.25
Zone 4	-0.32	-0.65	-0.18	Zone 4	-0.29	-0.61	-0.14
Zone 5	-0.45	-0.82	-0.35	Zone 5	-0.45	-0.82	-0.35
Zone 6	-0.45	-0.82	-0.35	Zone 6	-0.45	-0.82	-0.35
Zone 1E	0.65	0.61	1.08	Zone 1E	0.61	0.56	1.02
Zone 2E	-1.07	-1.62	-1.15	Zone 2E	-1.07	-1.62	-1.15
Zone 3E	-0.57	-0.97	-0.50	Zone 3E	-0.53	-0.92	-0.45
Zone 4E	-0.48	-0.85	-0.38	Zone 4E	-0.43	-0.79	-0.32

Design wind load for Interior frame - Transverse Direction (KN/m)						Interior frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	2.26	-7.88	-5.21	-4.54	7.00	
W(-)	5.52	-4.62	-1.95	-1.28		
Design wind load for Interior frame - Transverse Direction (KN/m)						End wall frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	1.16	-4.05	-2.68	-2.34	3.60	
W(-)	2.84	-2.38	-1.00	-0.66		
Design wind load for End wall frame - Transverse Direction (KN/m)						End wall frame
Load case	Zone 1E	Zone 2E	Zone 3E	Zone 4E	Pressure zone width (m)	
W(+)	2.23	-5.90	-3.52	-3.10	3.65	
W(-)	3.93	-4.20	-1.82	-1.40		
Design wind load for End wall frame - Transverse Direction (KN/m)						First Interior frame
Load case	Zone 1E	Zone 2E	Zone 3E	Zone 4E	Pressure zone width (m)	
W(+)	2.17	-5.74	-3.43	-3.02	3.55	
W(-)	3.83	-4.09	-1.77	-1.37		
Design wind load for the first interior frame - Transverse Direction (KN/m)						First Interior frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	3.33	-9.80	-6.10	-5.36	7.15	
W(-)	6.66	-6.46	-2.77	-2.02		
Design wind load for End wall frame - Transverse Direction (KN/m ²)						End wall frame
Load case	Zone 5	Zone 6			Pressure zone width (m)	
W(+)	-6.93	-6.93			8.500	
W(-)	-2.97	-2.97				
Design wind load for Interior frame - Longitudinal Direction (KN/m)						Interior frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	2.42	-9.57	-6.05	-5.17	8.500	
W(-)	6.38	-5.61	-2.09	-1.21		
Design wind load for Interior frame - Longitudinal Direction (KN/m)						End wall frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	1.67	-6.59	-4.16	-3.56	5.85	
W(-)	4.39	-3.86	-1.44	-0.83		
Design wind load for End wall frame - Longitudinal Direction (KN/m)						End wall frame
Load case	Zone 1E	Zone 2E	Zone 3E	Zone 4E	Pressure zone width (m)	
W(+)	2.45	-7.12	-4.04	-3.47	4.400	
W(-)	4.50	-5.07	-1.99	-1.42		
Design wind load for End wall frame - Longitudinal Direction (KN/m)						First Interior frame
Load case	Zone 1E	Zone 2E	Zone 3E	Zone 4E	Pressure zone width (m)	
W(+)	1.56	-4.53	-2.57	-2.21	2.80	
W(-)	2.86	-3.22	-1.27	-0.91		
Design wind load for the first interior frame - Transverse Direction (KN/m)						First Interior frame
Load case	Zone 1	Zone 2	Zone 3	Zone 4	Pressure zone width (m)	
W(+)	3.22	-11.12	-6.74	-5.77	8.650	
W(-)	7.25	-7.09	-2.71	-1.74		
Design wind load for End wall frame - Longitudinal Direction (KN/m)						End wall frame
Load case	Zone 5	Zone 6			Pressure zone width (m)	
W(+)	-5.71	-5.71			7.00	
W(-)	-2.45	-2.45				

*Note: Use roof angle $q = 0$ degrees for Longitudinal Direction.

For Trans. when GCpf is neg. in Zones 2/2E:

Zones 2/2E dist. = 22.50 m

For Long. when GCpf is neg. in Zones 2/2E:

Zones 2/2E dist. = 22.50 m

Remainder of roof Zones 2/2E extending to ridge line shall use roof Zones 3/3E pressure coefficients.