

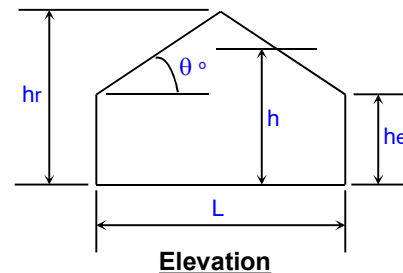
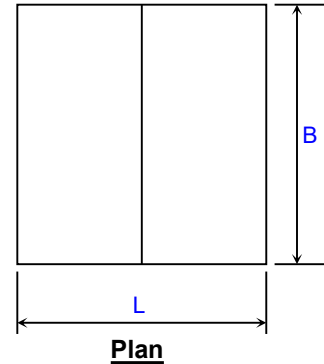
WIND LOADING ANALYSIS - Roof Components and Cladding

Per ASCE 7-05 Code for Bldgs. of Any Height with Gable Roof $\theta \leq 45^\circ$ or Monoslope Roof $\theta \leq 3^\circ$
Using Method 2: Analytical Procedure (Section 6.5)

Job Name:		Subject:	
Job Number:		Originator:	Checker:

Input Data:

Wind Speed, V =	90	mph (Wind Map, Figure 6-1)
Bldg. Classification =	II	(Table 1-1 Occupancy Category)
Exposure Category =	C	(Sect. 6.5.6)
Ridge Height, hr =	53.33	ft. (hr \geq he)
Eave Height, he =	20.00	ft. (he \leq hr)
Building Width =	200.00	ft. (Normal to Building Ridge)
Building Length =	250.00	ft. (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	
Component Name =	Joist	(Purlin, Joist, Decking, or Fastener)
Effective Area, Ae =	208	ft. ² (Area Tributary to C&C)
Overhangs? (Y/N)	N	(if used, overhangs on all sides)



Resulting Parameters and Coefficients:

Roof Angle, θ =	18.43	deg.
Mean Roof Ht., h =	36.67	ft. (h = (hr+he)/2, for roof angle >10 deg.)

Roof External Pressure Coefficients, GCp:

GCp Zone 1-3 Pos. =	0.30	(Fig. 6-11B thru 6-11D)
GCp Zone 1 Neg. =	-0.80	(Fig. 6-11B thru 6-11D)
GCp Zone 2 Neg. =	-1.20	(Fig. 6-11B thru 6-11D)
GCp Zone 3 Neg. =	-2.00	(Fig. 6-11B thru 6-11D)

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

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

If $z \leq 15$ then: $K_z = 2.01 \cdot (15/zg)^{(2/\alpha)}$, If $z > 15$ then: $K_z = 2.01 \cdot (z/zg)^{(2/\alpha)}$ (Table 6-3, Case 1a)

α =	9.50	
zg =	900	(Table 6-2)
Kh =	1.02	(Kh = Kz evaluated at z = h)
I =	1.00	(Table 6-1) (Importance factor)

Velocity Pressure: $q_z = 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I$ (Sect. 6.5.10, Eq. 6-15)

qh =	18.06	psf	qh = $0.00256 \cdot K_h \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I$ (qh evaluated at z = h)
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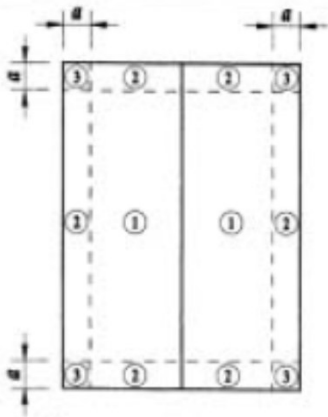
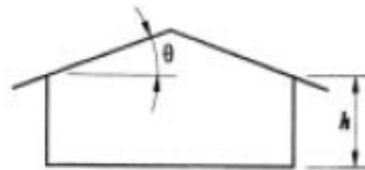
Design Net External Wind Pressures (Sect. 6.5.12.4):

For h \leq 60 ft.: $p = qh \cdot ((GCp) - (+/-GCpi))$ (psf)

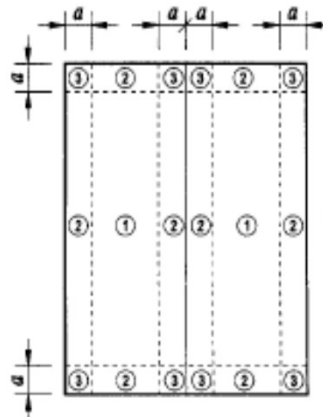
For h $>$ 60 ft.: $p = q \cdot (GCp) - qi \cdot (+/-GCpi)$ (psf)

where: q = qh for roof

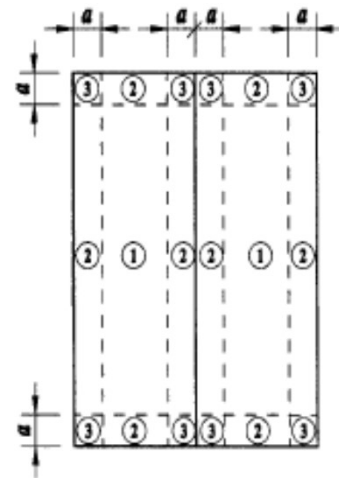
Roof Components and Cladding:



$\theta \leq 7$ deg.



$7 \text{ deg.} < \theta \leq 27$ deg.



$27 \text{ deg.} < \theta \leq 45$ deg.

Roof Zones for Buildings with $h \leq 60$ ft.
(for Gable Roofs $\leq 45^\circ$ and Monoslope Roofs $\leq 3^\circ$)



ROOF PLAN

Roof Zones for Buildings with $h > 60$ ft.
(for Gable Roofs $\leq 10^\circ$ and Monoslope Roofs $\leq 3^\circ$)

Version 1.4

