

MecaWind Std v2.2.7.5 per ASCE 7-10

Developed by MECA Enterprises, Inc. Copyright www.mecaenterprises.com

Date	: 1/6/2018	Project No.	: JobNo
Company Name	: True	Designed By	: Engineer
Address	: Address	Description	: Description
City	: City	Customer Name	: Customer
State	: State	Proj Location	: Location
File Location: C:\Users\William J Collins\AppData\Roaming\MecaWind\Default.wnd			

Directional Procedure Simplified Diaphragm Building (Ch 27 Part 2)

Basic Wind Speed(V)	= 170.00 mph	Exposure Category	= B
Structural Category	= II	Flexible Structure	= No
Natural Frequency	= N/A	Kd Directional Factor	= 0.85
Importance Factor	= 1.00	Zg	= 1200.00 ft
Alpha	= 7.00	Bt	= 0.84
At	= 0.14	Bm	= 0.45
Am	= 0.25	l	= 320.00 ft
Cc	= 0.30	Zmin	= 30.00 ft
Epsilon	= 0.33	Slope of Roof(Theta)	= 26.57 Deg
Pitch of Roof	= 6 : 12	Type of Roof	= GABLED
h: Mean Roof Ht	= 24.75 ft	Eht: Eave Height	= 17.00 ft
RHt: Ridge Ht	= 32.50 ft	Overhead Type	= OH w/ soffit
OH: Roof Overhang at Eave	= 2.00 ft	Bldg Width Across Ridge	= 58.00 ft
Bldg Length Along Ridge	= 84.00 ft		

Gust Factor Calculations

Gust Factor Category I Rigid Structures - Simplified Method
Gust1: For Rigid Structures (Nat. Freq.>1 Hz) use 0.85 = 0.85

Gust Factor Category II Rigid Structures - Complete Analysis
Zm: $0.6 * H_t$ = 30.00 ft
lzm: $C_c * (33 / Z_m)^{0.167}$ = 0.30
Lzm: $1 * (Z_m / 33)^{\text{Epsilon}}$ = 309.99 ft
Q: $(1 / (1 + 0.63 * ((B + H_t) / L_z m)^{0.63}))^{0.5}$ = 0.89
Gust2: $0.925 * ((1 + 1.7 * l_z m * 3.4 * Q) / (1 + 1.7 * 3.4 * l_z m))$ = 0.86

Gust Factor Summary
Not a Flexible Structure use the Lessor of Gust1 or Gust2 = 0.85

Table 26.11-1 Internal Pressure Coefficients for Buildings, GCpi

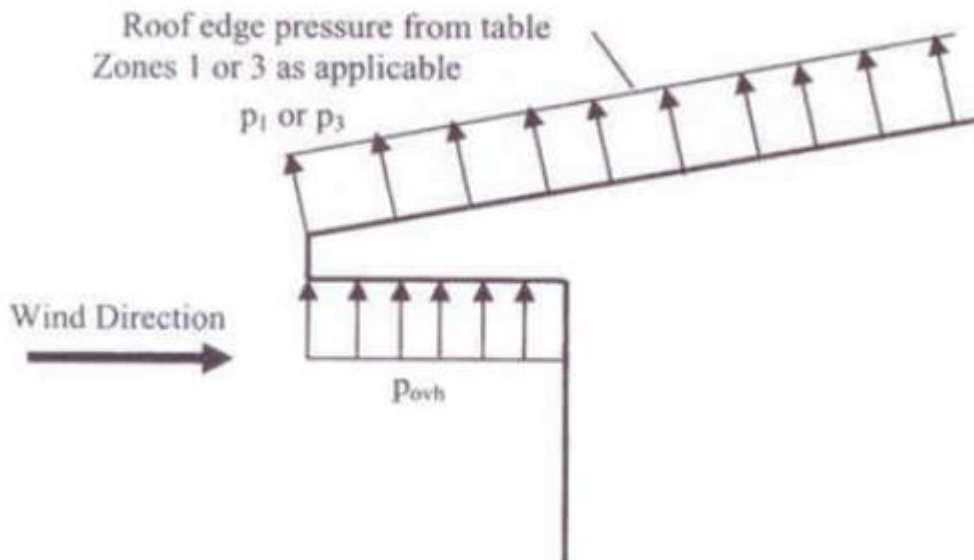
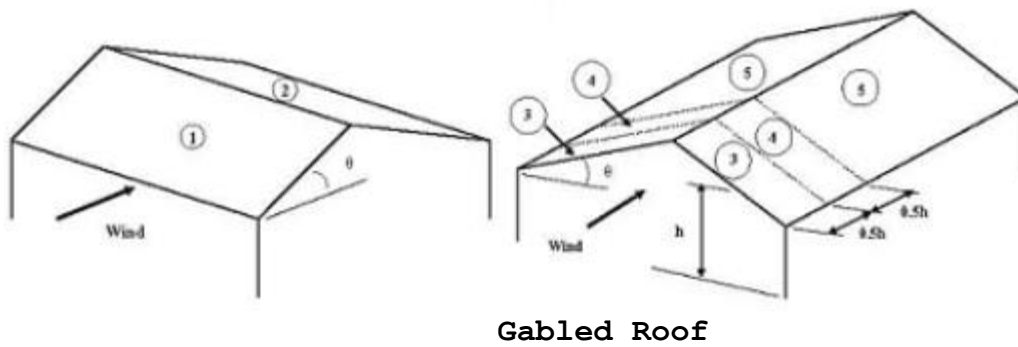
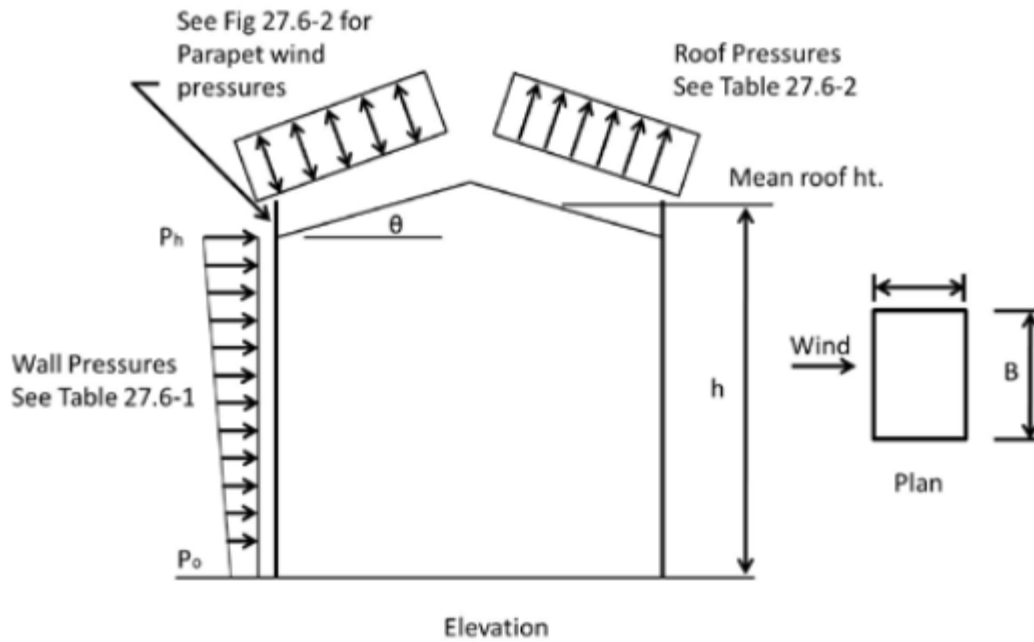
GCpi : Internal Pressure Coefficient = +/-0.18

Topographic Adjustment

$0.33 * z$ = 1.00
Kzt ($0.33 * z$): Topographic factor at elevation $0.33 * z$ = 1.00
Vtopo: Adjust V per Para 27.5.2: $V * [K_z t (0.33 * z)]^{0.5}$ = 170.00 mph

MWFRS Diaphragm Building Wind Pressures per Ch 27 Pt 2

All pressures shown are based upon ASD Design, with a Load Factor of .6



MWFRS Pressures for Wind Normal to 84 ft wall (Normal to Ridge)

WALL PRESSURES PER TABLE 27.6-1

L/B: Bldg Dim in Wind Dir / Bldg Dim Normal to Wind Dir = 0.69
h: Height to top of Windward Wall = 17.00 ft
ph: Net Pressure at top of wall (windward + leeward) = 24.62 psf
p0: Net Pressure at bottom of wall (windward + leeward) = 24.45 psf

ps: Side wall pressure acting away from wall = .54 * ph = -13.29 psf
pl: Leeward wall pressure acting away from wall = .38 * ph = -9.35 psf
pwh: Windward wall press @ top acting toward wall = ph-pl = 15.26 psf
pw0: Windward wall press @ bot acting toward wall = p0-pl = 15.10 psf

ROOF PRESSURES PER TABLE 27.6-2

h: Mean Roof Height = 24.750 ft
Lambda: Exposure Adjustment Factor = 0.702
Slope: Roof Slope = 26.57 Deg

Zone	Load Case1 psf	Load Case2 psf
----	-----	-----
1	-14.42	11.33
2	-18.02	-8.63
3	-27.66	.00
4	-24.65	.00
5	-20.23	.00

Note: A value of '0' indicates that the zone/load case is not applicable.

ROOF OVERHANG LOADS (FIGURE 27.6-3):

LOAD CASE 1:

Povh1: Overhang pressure for zone 1 = -10.82 psf
Povh3: Overhang pressure for zone 3 = -20.75 psf

LOAD CASE 2:

Povh1: Overhang pressure for zone 1 = 8.50 psf
Povh3: Overhang pressure for zone 3 = .00 psf

Notes - Normal to Ridge

MWFRS Pressures for Wind Normal to 58 ft wall (Along Ridge)

WALL PRESSURES PER TABLE 27.6-1

L/B: Bldg Dim in Wind Dir / Bldg Dim Normal to Wind Dir = 1.45
h: Height to top of Windward Wall = 32.50 ft
ph: Net Pressure at top of wall (windward + leeward) = 27.73 psf
p0: Net Pressure at bottom of wall (windward + leeward) = 25.03 psf

ps: Side wall pressure acting away from wall = .58 * ph = -16.22 psf
pl: Leeward wall pressure acting away from wall = .33 * ph = -9.17 psf
pwh: Windward wall press @ top acting toward wall = ph-pl = 18.56 psf
pw0: Windward wall press @ bot acting toward wall = p0-pl = 15.86 psf

ROOF PRESSURES PER TABLE 27.6-2

h: Mean Roof Height = 24.750 ft
Lambda: Exposure Adjustment Factor = 0.702
Slope: Roof Slope = 26.57 Deg

Zone	Load Case1 psf	Load Case2 psf
----	-----	-----
1	-14.42	11.33
2	-18.02	-8.63
3	-27.66	.00
4	-24.65	.00
5	-20.23	.00

Note: A value of '0' indicates that the zone/load case is not applicable.

ROOF OVERHANG LOADS (FIGURE 27.6-3):

LOAD CASE 1:

Povh1: Overhang pressure for zone 1 = -10.82 psf
Povh3: Overhang pressure for zone 3 = -20.75 psf

LOAD CASE 2:

Povh1: Overhang pressure for zone 1

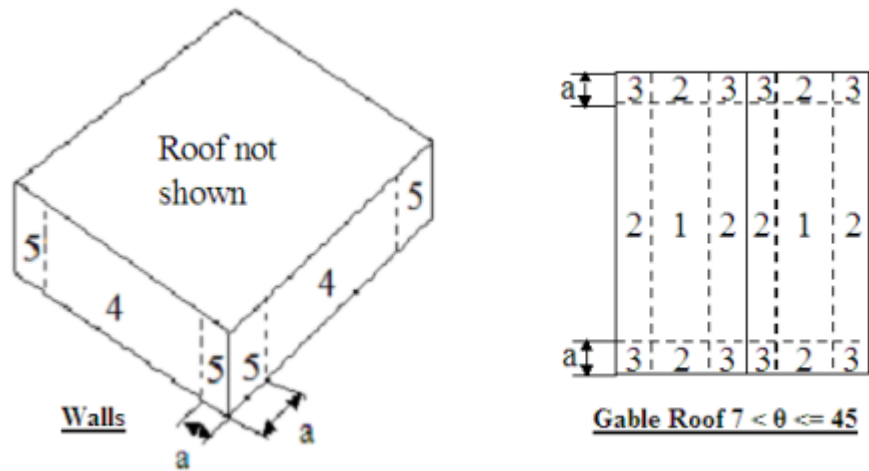
= 8.50 psf

Povh3: Overhang pressure for zone 3

= .00 psf

Notes - Along Ridge

Wind Pressure on Components and Cladding (Ch 30 Part 1)



All pressures shown are based upon ASD Design, with a Load Factor of .6

Width of Pressure Coefficient Zone "a" = 5.80 ft

Description	Width ft	Span ft	Area ft^2	Zone	Max GCp	Min GCp	Max P psf	Min P psf
CENTER WALL	12.00	72.00	1728.0	4	0.70	-0.80	23.26	-25.91
EDGE WALL8	12.00	6.00	72.0	5	0.85	-1.10	27.19	-33.76
CENTER ROOF	72.00	15.00	1080.0	1	0.30	-0.80	12.69	-25.91
ROOF EDGE	6.00	15.00	90.0	2	0.31	-1.22	12.93	-37.08
ROOF CORNER	6.00	6.00	36.0	3	0.39	-2.27	15.03	-64.66

Khcc:Comp. & Clad. Table 6-3 Case 1

= 0.70

Qhcc:.00256*V^2*Khcc*Kht*Kd

= 26.43 psf