

MecaWind v2344

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Calculations Prepared by:

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File Location : M:\Website\Website Content\C&C Calculation\Example_CandC_Ch30Pt4.wnd

Basic Wind Parameters

Wind Load Standard = ASCE 7-16 Exposure Category = C
 Wind Design Speed = 150.0 mph Risk Category = III
 Structure Type = Building Building Type = Enclosed

General Wind Settings

Incl_LF = Include ASD Load Factor of 0.6 in Pressures = False
 DynType = Dynamic Type of Structure = Rigid
 NF = Natural Frequency of Structure (Mode 1) = 1.000 Hz
 Zg = Altitude (Ground Elevation) above Sea Level = 0.000 ft
 Bdist = Base Elevation of Structure = 0.000 ft
 SDB = Simple Diaphragm Building = False
 Reacs = Show the Base Reactions in the output = False
 MWFRSType = MWFRS Method Selected = No Analysis

Topographic Factor per Fig 26.8-1

Topo = Topographic Feature = None
 Kzt = Topographic Factor = 1.000

Building Inputs

Roof : Building Roof Type = MonoSlope W : Width Perp to Ridge = 100.000 ft
 L : Length Along Ridge = 200.000 ft EHT : Eave Height = 40.000 ft
 RE : Roof Entry Method = Slope Slope: Slope of Roof = 1.0 :12
 Theta: Roof Slope = 4.76 Deg Par : Is there a Parapet = False

Exposure Constants per Table 26.11-1:

Alpha: Const from Table 26.11-1= 9.500 Zg: Const from Table 26.11-1= 900.000 ft
 At: Const from Table 26.11-1= 0.105 Bt: Const from Table 26.11-1= 1.000
 Am: Const from Table 26.11-1= 0.154 Bm: Const from Table 26.11-1= 0.650
 C: Const from Table 26.11-1= 0.200 Eps: Const from Table 26.11-1= 0.200

Overhang Inputs:

Std = Overhangs on all sides are the same = True
 OHType = Type of Roof Wall Intersections = None

Components and Cladding (C&C) Calculations per Ch 30 Part 4:

h = Mean Roof Height = 40.000 ft
 LF = Load Factor based upon STRENGTH Design = 1.00
 Kzt = Topographic Factor is 1 since no Topographic feature specified = 1.000
 EAF = Exposure Adjustment Factor per Table 30.7-2 = 1.000
 LHD = Least Horizontal Dimension: Min(B, L) = 100.000 ft
 a1 = Min(0.1 * LHD, 0.4 * h) = 10.000 ft
 a = Max(a1, 0.04 * LHD, 3 ft [0.9 m]) = 10.000 ft
 2a = Parameter used to define zone width: 2*a = 20.000 ft
 Lamba = Adjustment factor per Table 30.6-2 to Fig 30.4-1 pressures = 1.490

Wind Pressures for Components and Cladding per Fig 30.4-1 All wind pressures include a load factor of 1.0

Description	Zone	Width	Span	Area	1/3 Rule	Ptable		p	
						Pos	Neg	Pos	Neg
ft		ft	ft	ft		psf	psf	psf	psf
Zone 1	1	1.000	1.000	1.000	No	16.50	-64.50	24.59	-96.11
Zone 1'	1'	1.000	1.000	1.000	No	16.50	-37.00	24.59	-55.13
Zone 2	2	1.000	1.000	1.000	No	16.50	-85.10	24.59	-126.80
Zone 3	3	1.000	1.000	1.000	No	16.50	-115.90	24.59	-172.69
Zone 4	4	1.000	1.000	1.000	No	40.50	-43.90	60.35	-65.41
Zone 5	5	1.000	1.000	1.000	No	40.50	-54.20	60.35	-80.76

Ptable = Pressure taken from Fig 30.4-1
 p = Wind Pressure: Ptable * Lamba * Kzt * LF [Eqn 30.7-1 & Table 30.6-2 Note 5]
 * Per Para 30.2.2 the Minimum Pressure for C&C is 16.00 psf [0.766 kPa] {Includes LF}
 Pressures on overhangs include Pressure from the top and bottom surface of overhang

Components and Cladding (C&C) Zone Summary per Ch 30 Pt 4:

h = Mean Roof Height = 40.000 ft
 LF = Load Factor based upon STRENGTH Design = 1.00
 Kzt = Topographic Factor is 1 since no Topographic feature specified = 1.000
 EAF = Exposure Adjustment Factor per Table 30.7-2 = 1.000
 LHD = Least Horizontal Dimension: Min(B, L) = 100.000 ft
 a1 = Min(0.1 * LHD, 0.4 * h) = 10.000 ft
 a = Max(a1, 0.04 * LHD, 3 ft [0.9 m]) = 10.000 ft
 2a = Parameter used to define zone width: 2*a = 20.000 ft
 Lamba = Adjustment factor per Table 30.6-2 to Fig 30.4-1 pressures = 1.490

Wind Pressure Summary for C&C Zones based Upon Areas Ch 30 Pt 4 All wind pressures include a load factor of 1.0

Zone	Figure	A <=	A =	A =	A >
		10.00 sq ft	20.00 sq ft	50.00 sq ft	100.00 sq ft
		psf	psf	psf	psf

1	30.4-1	24.59	-96.11	22.95	-89.70	21.01	-81.35	21.01	-81.35
1'	30.4-1	24.59	-55.13	22.95	-55.13	21.01	-55.13	21.01	-55.13
2	30.4-1	24.59	-126.80	22.95	-118.60	21.01	-107.88	21.01	-107.88
3	30.4-1	24.59	-172.69	22.95	-156.45	21.01	-134.85	21.01	-134.85
4	30.4-1	60.35	-65.41	57.66	-62.73	53.94	-59.15	53.94	-59.15
5	30.4-1	60.35	-80.76	57.66	-75.25	53.94	-68.09	53.94	-68.09

- * A is effective wind area for C&C: Span Length * Effective Width
- * Effective width need not be less than 1/3 of the span length
- * Maximum and minimum values of pressure shown.
- * + Pressures acting toward surface, - Pressures acting away from surface
- * Per Para 30.2.2 the Minimum Pressure for C&C is 16.00 psf [0.766 kPa] {Includes LF}
- * Interpolation can be used for values of A that are between those values shown.