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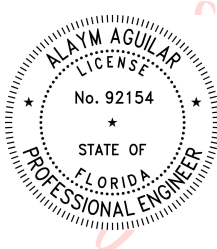
Laboratory Certification No. 22-0120.06

Contractor: Father & Son Roofing Contractors INC

Address: 10840 SW 67th Ave Miami, FL 33156

Permit:

Wind Load Calculations



Digitally signed

by Alaym

Aguilar

Date:

2026.08.18

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Alaym Aguilar

P.E Lic.92154

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ASD Design, with a Load Factor of 0.6*W

ASCE 7-22 ASD DESIGN=0.6*W

Wind Loads on Buildings (Directional Procedure) per ASCE 7-22

Description: Analysis by: A.A		
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User Input Data		
Structure Type	Building	
Basic Wind Speed (V)	175	mph
Struc Category (I, II, III, or IV)	II	
Exposure (B, C, or D)	C	
Struc Nat Frequency (n1)	1	Hz
Slope of Roof	0.3	:12
Slope of Roof (Theta)	1.2	Deg
Type of Roof	Monoslope	
Kd (Directonality Factor)	0.85	
Eave Height (Eht)	17.00	ft
Ridge Height (RHt)	17.00	ft
Mean Roof Height (Ht)	17.00	ft
Width Perp. To Wind Dir (B)	33.00	ft
Width Paral. To Wind Dir (L)	117.00	ft

Calculated Parameters	
Type of Structure	
Height/Least Horizontal Dim	0.52
Flexible Structure	No

Calculated Parameters		
<i>Hurricane Prone Region (V>100 mph)</i>		
Table 6-2 Values		
Alpha =	9.500	
zg =	900.000	
At =	0.105	
Bt =	1.000	
Bm =	0.650	
Cc =	0.200	
I =	500.00	ft
Epsilon =	0.200	
Zmin =	15.00	ft

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	Zmin	15.00	ft
Izm	$Cc * (33/z)^{0.167}$	0.2281	
Lzm	$I*(zm/33)^{Epsilon}$	427.06	ft
Q	$(1/(1+0.63*((Min(B,L)+Ht)/Lzm)^{0.63}))^{0.5}$	0.9272	
Gust2	$0.925*((1+1.7*Izm*3.4*Q)/(1+1.7*3.4*Izm))$	0.8867	
Gust Factor Summary			
G	Since this is not a flexible structure the lessor of Gust1 or Gust2 are used	0.85	

Fig 26.11-1 Internal Pressure Coefficients for Buildings, Gcpi

Condition	Gcpi	
	Max +	Max -
Open Buildings	0.00	0.00
Partially Enclosed Buildings	0.55	-0.55
Enclosed Buildings	0.18	-0.18
Enclosed Buildings	0.18	-0.18

ASD Design, with a Load Factor of 0.6*W

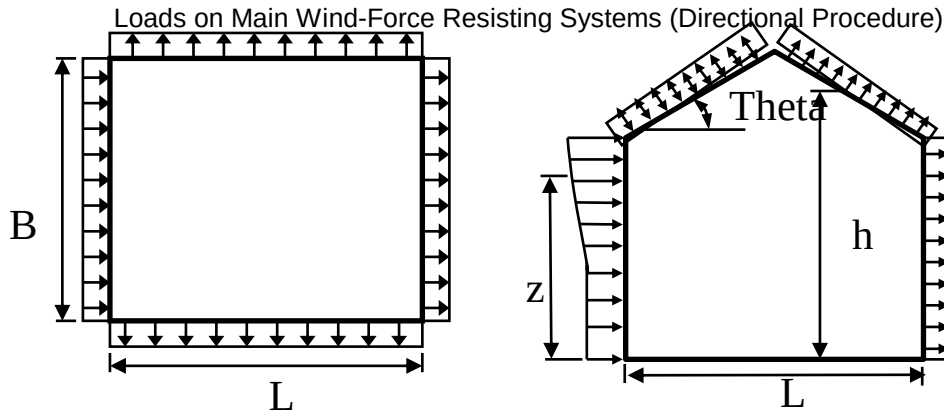
ASCE 7-22 ASD DESIGN=0.6*W

Wind Loads on Buildings (Directional Procedure) per ASCE 7-22

6.5.12.2.1 Design Wind Pressure - Buildings of All Heights

Elev	Kz	Kzt	qz	Pressure (lb/ft ²)	
				Windward Wall*	
0			lb/ft ²	+GCpi	-GCpi
17	0.87	1.00	58.08	17.42	29.97
15	0.85	1.00	56.57	16.81	29.35

Figure 27.4-1 - External Pressure Coefficients, Cp

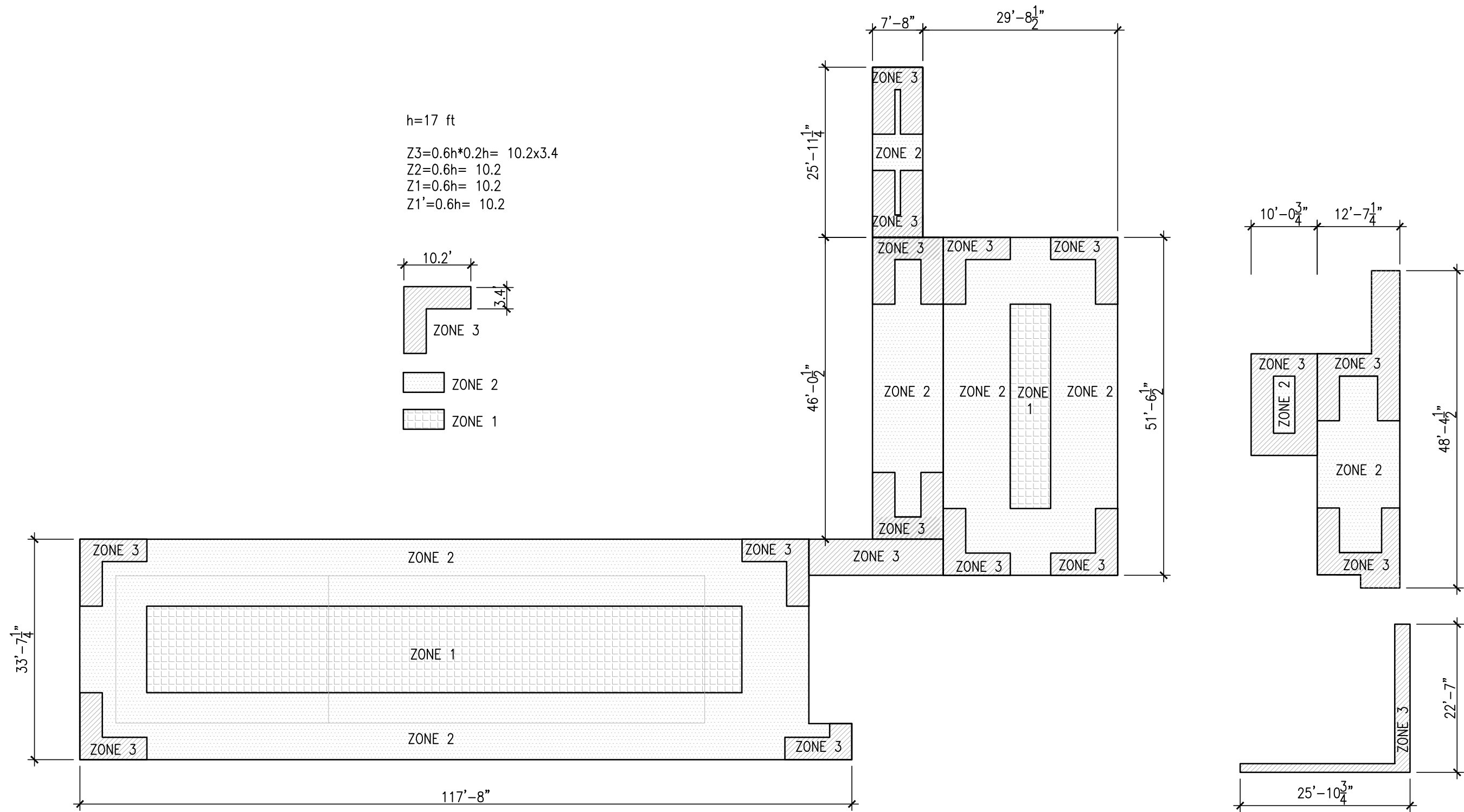


Variable	Formula	Value	Units
Kh	$2.01 \cdot (Ht/zg)^{2/\alpha}$	0.87	
Kht	Topographic factor (Fig 6-4)	1.00	
Qh	$.00256 \cdot (V)^2 \cdot Kh \cdot Kht \cdot Kd$	58.08	psf
Khcc	Comp & Clad: Table 6-3 Case 1	0.87	
Qhcc	$.00256 \cdot V^2 \cdot Khcc \cdot Kht \cdot Kd$	58.08	psf

Wall Pressure Coefficients, Cp	
Surface	Cp
Windward Wall (See Figure 27.4-1)	0.8

Roof Pressure Coefficients, Cp	
Roof Area (sq. ft.)	-
Reduction Factor	1.00

Calculations for Wind Normal to 33 ft Face	Cp	Pressure (psf)	
<i>Additional Runs may be req'd for other wind directions</i>		+GCpi	-GCpi
Leeward Walls (Wind Dir Normal to 33 ft wall)	-0.22	-12.87	-0.32
Leeward Walls (Wind Dir Normal to 117 ft wall)	-0.50	-21.08	-8.54
Side Walls	-0.70	-27.01	-14.46
Overhang Bottom (Applicable on Windward only)	0.80	23.70	23.70
Roof - Wind Normal to Ridge (Theta<10) - for Wind Normal to 33 ft face			
Dist from Windward Edge: 0 ft to 34 ft - Max Cp	-0.18	-11.60	0.94
Dist from Windward Edge: 0 ft to 8.5 ft - Min Cp	-0.90	-32.93	-20.39
Dist from Windward Edge: 8.5 ft to 17 ft - Min Cp	-0.90	-32.93	-20.39
Dist from Windward Edge: 17 ft to 33 ft - Min Cp	-0.50	-35.14	-14.23



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Wind Loads on Buildings (Directional Procedure) per ASCE 7-22

Description: Analysis by: A.A		
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User Input Data		
Structure Type	Building	
Basic Wind Speed (V)	175	mph
Struc Category (I, II, III, or IV)	II	
Exposure (B, C, or D)	C	
Struc Nat Frequency (n1)	1	Hz
Slope of Roof	0.3	:12
Slope of Roof (Theta)	1.2	Deg
Type of Roof	Monoslope	
Kd (Directonality Factor)	0.85	
Eave Height (Eht)	27.00	ft
Ridge Height (RHt)	27.00	ft
Mean Roof Height (Ht)	27.00	ft
Width Perp. To Wind Dir (B)	22.00	ft
Width Paral. To Wind Dir (L)	41.00	ft

Calculated Parameters	
Type of Structure	
Height/Least Horizontal Dim	1.23
Flexible Structure	No

Calculated Parameters		
<i>Hurricane Prone Region (V>100 mph)</i>		
Table 6-2 Values		
Alpha =	9.500	
zg =	900.000	
At =	0.105	
Bt =	1.000	
Bm =	0.650	
Cc =	0.200	
I =	500.00	ft
Epsilon =	0.200	
Zmin =	15.00	ft

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 * Ht	16.20 ft
Izm	$Cc * (33/z)^{0.167}$	0.2252
Lzm	$I*(zm/33)^{Epsilon}$	433.68 ft
Q	$(1/(1+0.63*((Min(B,L)+Ht)/Lzm)^{0.63}))^{0.5}$	0.9287
Gust2	$0.925*((1+1.7*Izm*3.4*Q)/(1+1.7*3.4*Izm))$	0.8877

Gust Factor Summary		
G	Since this is not a flexible structure the lessor of Gust1 or Gust2 are used	0.85

Fig 26.11-1 Internal Pressure Coefficients for Buildings, Gcpi

Condition	Gcpi	
	Max +	Max -
Open Buildings	0.00	0.00
Partially Enclosed Buildings	0.55	-0.55
Enclosed Buildings	0.18	-0.18
Enclosed Buildings	0.18	-0.18

ASD Design, with a Load Factor of 0.6*W

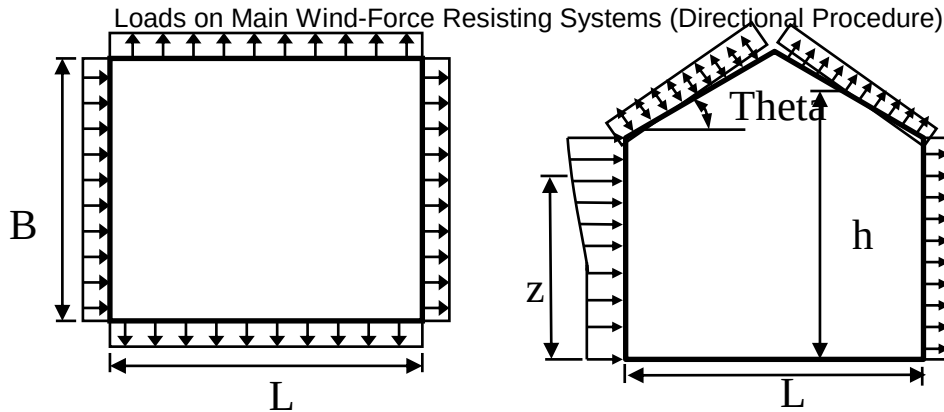
ASCE 7-22 ASD DESIGN=0.6*W

Wind Loads on Buildings (Directional Procedure) per ASCE 7-22

6.5.12.2.1 Design Wind Pressure - Buildings of All Heights

Elev	Kz	Kzt	qz	Pressure (lb/ft ²)	
				Windward Wall*	
0			lb/ft ²	+GCpi	-GCpi
27	1.14	1.00	76.04	22.81	39.24
20	1.08	1.00	72.18	21.24	37.66
15	1.03	1.00	68.65	19.80	36.22

Figure 27.4-1 - External Pressure Coefficients, Cp



Variable	Formula	Value	Units
Kh	$2.01 \cdot (Ht/zg)^{(2/\alpha)}$	1.14	
Kht	Topographic factor (Fig 6-4)	1.00	
Qh	$.00256 \cdot (V)^2 \cdot Kh \cdot Kht \cdot Kd$	76.04	psf
Khcc	Comp & Clad: Table 6-3 Case 1	1.14	
Qhcc	$.00256 \cdot V^2 \cdot Khcc \cdot Kht \cdot Kd$	76.04	psf

Wall Pressure Coefficients, Cp	
Surface	Cp
Windward Wall (See Figure 27.4-1)	0.8

Roof Pressure Coefficients, Cp	
Roof Area (sq. ft.)	-
Reduction Factor	1.00

Calculations for Wind Normal to 22 ft Face	Cp	Pressure (psf)	
<i>Additional Runs may be req'd for other wind directions</i>		+GCpi	-GCpi
Leeward Walls (Wind Dir Normal to 22 ft wall)	-0.33	-20.91	-4.48
Leeward Walls (Wind Dir Normal to 41 ft wall)	-0.50	-27.60	-11.18
Side Walls	-0.70	-35.36	-18.93
Overhang Bottom (Applicable on Windward only)	0.80	31.03	31.03
Roof - Wind Normal to Ridge (Theta<10) - for Wind Normal to 22 ft face			
Dist from Windward Edge: 0 ft to 54 ft - Max Cp	-0.18	-15.19	1.23
Dist from Windward Edge: 0 ft to 13.5 ft - Min Cp	-1.03	-48.04	-31.61
Dist from Windward Edge: 13.5 ft to 22 ft - Min Cp	-0.84	-40.66	-24.23

ASD Design, with a Load Factor of 0.6*W

ASCE 7-22 ASD DESIGN=0.6*W

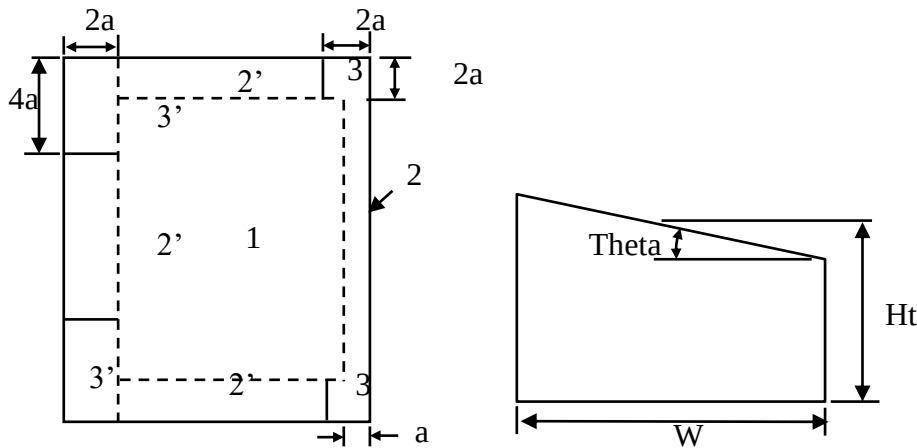
Wind Loads on Buildings (Directional Procedure) per ASCE 7-22

Roof - Wind Parallel to Ridge (All Theta) - for Wind Normal to 41 ft face			
Dist from Windward Edge: 0 ft to 54 ft - Max Cp	-0.18	-15.19	1.23
Dist from Windward Edge: 0 ft to 13.5 ft - Min Cp	-1.30	-58.63	-42.20
Dist from Windward Edge: 13.5 ft to 27 ft - Min Cp	-0.70	-35.36	-18.93
Dist from Windward Edge: 27 ft to 22 ft - Min Cp	-0.70	-35.36	-18.93

* Horizontal distance from windward edge

Figure 6.30-2 - External Pressure Coefficients, GCp

Loads on Components and Cladding for Buildings w/ Ht ≤ 60 ft

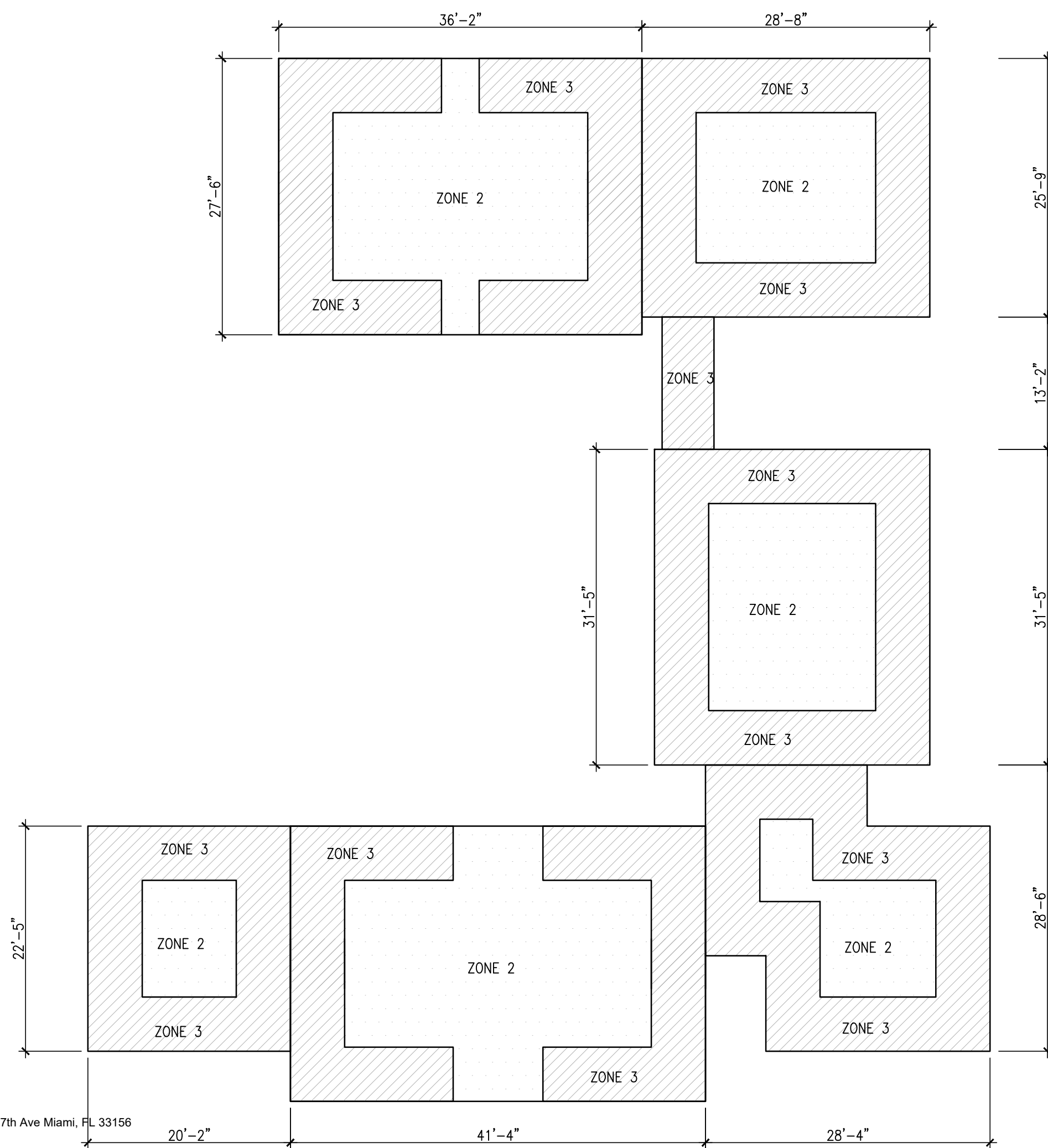


Note: The image shows a Gabled roof, but Fig 6-11 also applies to some monoslope cases

a = 2.2 ==> 3.00 ft

Double Click on any data entry line to receive a help Screen

Component	Width (ft)	Span (ft)	Area (ft^2)	Zone	GCp		Wind Press (lb/ft^2)	
					Max	Min	Max	Min
10			10.00	4	0.90	-0.99	49.28	-53.38
10			10.00	5	0.90	-1.26	49.28	-65.70
20			20.00	4	0.85	-0.94	47.09	-51.20
20			20.00	5	0.85	-1.16	47.09	-61.34
50			50.00	4	0.79	-0.88	44.21	-48.31
50			50.00	5	0.79	-1.04	44.21	-55.56
100			100.00	4	0.74	-0.83	42.02	-46.13
100			100.00	5	0.74	-0.94	42.02	-51.20
200			200.00	4	0.69	-0.78	39.84	-43.95
200			200.00	5	0.69	-0.85	39.84	-46.83
10			10.00	1	0.30	-1.00	21.90	-53.84
10			10.00	2	0.30	-1.80	21.90	-90.34
10			10.00	3	0.30	-2.80	21.90	-135.97
20			20.00	1	0.27	-0.97	20.53	-52.47
20			20.00	2	0.27	-1.59	20.53	-80.73
20			20.00	3	0.27	-2.29	20.53	-112.62
50			50.00	1	0.23	-0.93	18.71	-50.65
50			50.00	2	0.23	-1.31	18.71	-68.02
50			50.00	3	0.23	-1.61	18.71	-81.75
100			100.00	1	0.20	-0.90	17.34	-49.28



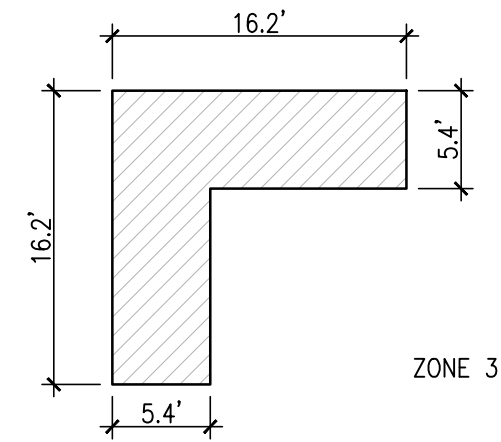
$h=27$ ft

$Z3=0.6h*0.2h= 16.2x5.4$

$Z2=0.6h= 5.4$

$Z1=0.6h= 5.4$

$Z1'=0.6h= 5.4$



ZONE 3



ZONE 2