

Martinez Antonio
Address: 2464 Palm RD.,
West Palm Beach, Fl 33406



Wind and Fastener Calculation Report
for property located at

Universal Engineering, Inc
12828 Buckland St., Wellington FL 33414
Tel: 561-204-5000, Fax: 561-204-1050
e-mail: aali@universalengineering.net

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3/30/2011

Project Name:

Martinez Antonio
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Project Description

Building average width: 60 ft.
Building average Length: 58 ft.
Eve Height: 8 ft.
Deck Substrate: Wood
Pitch: Flat

Objective:

Given Polyglass TAMKO Modified Bitumen Roof system over wood deck (check the associated NOA)

- 1) Provide wind calculations for the Field, Perimeter, and Corner areas for the flat roof.
- 2) Provide anchor schedule for the anchor/base sheet in the Field, Perimeter, and corner areas on a wood deck.

Codes:

The design herein is in compliance with Florida Building code with particular emphasis on Chapter 16 and 16-16.1 Building Application Standards o. 117.

Wind Design Criteria:

Basic Wind Speed: 140 mph sustained, 130 mph sustained.
Importance Factor: 1.0
Building Category: Enclosed
Exposure Category: C
Internal Pressure Coefficient = 0.18

Wind Pressures:

The design wind pressure calculations are presented in Exhibit "A" of this report. The results for three wind roof zones are depicted Table 1.

Table 1. Design wind pressure for the three roof zones

Zone	Zone 1, Field	Zone 2, Perimeter	Zone 3, Corner
Wind pressure in psf	-42.7214	-71.685	-107.89

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The exterior zone width (Perimeter and Corner) is 3.2 ft.

Fastener Schedule

The anchor/base sheet fastener calculations were conducted according to Roofing Application Standards 117 and they are presented in Exhibit "B".

All fasteners and their tin caps are according to the product approval

All lap sides are 4 inches.

Fasteners shall be applied to the lap side row and the two center rows. The fastener spacing is according to the following schedule:

Table 2. Fastener spacing in inches schedule for the three zones

Zone	Zone 1, Field	Zone 2, Perimeter	Zone 3, Corner
4" Lap side	9	6	4
center rows	9	6	5

Notes:

1. center rows are staggered.
2. number of center rows in the field is 2 rows.
3. number of center rows in the perimeter and corner is 3 rows.
4. Builder may reduce spacing to 8 inch for construction convenience.

SEAL

Consulting Engineer
AL ALI, PhD, PE
FL PE 53318

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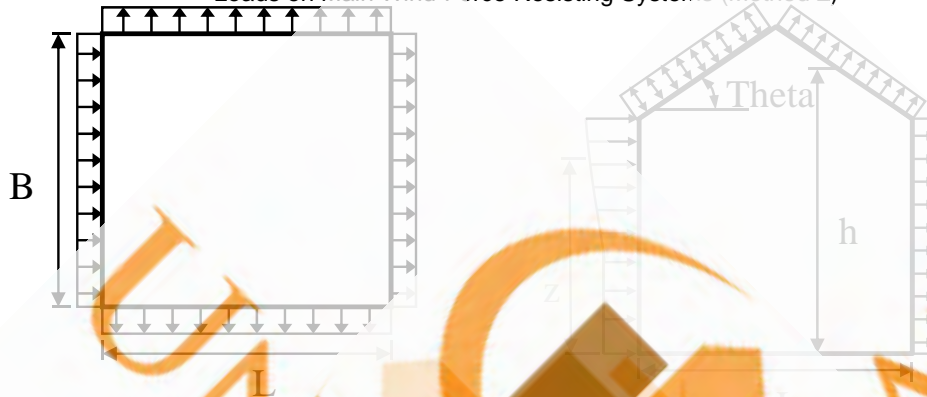
WIND02 v2-03

Detailed Wind Load Design (Method 2) per ASCE 7-05
6.5.12.2.1 Design Wind Pressure - Buildings of All Heights

Elev	Kz	Kzt	qz lb/ft ²	Pressure (lb/ft ²)	
				Windward Wall*	
0				+GCpi	-GCpi
15	0.85	1.00	36.20	18.10	31.14

Figure 6-6 - External Pressure Coefficients, Cp

Loads on Main Wind-Force Resisting Systems (Method 2)



Variable	Formula	Value	Units
Kh	(15/z) ^{2.5}	0.85	
Kzt	0.7 + 0.3(z/z _m) ²	1.00	
Qh	0.6 Kz Kzt V	36.20	psf
Khcc	Clad	0.8	
Qhcc	0.6 Kz Kzt V Khcc	29.36	psf

Surface	Cp
Windward Wall (See Figure 6-6 for wind direction)	0.8

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

Calculations for Wind Normal to 60 ft face <i>Additional Runs may be required for other wind directions</i>	Cp	Pressure (psf)	
		+GCpi	-GCpi
Leeward Walls (Wind Dir Normal to 60 ft wall)	-0.50	-21.90	-8.87
Leeward Walls (Wind Dir Normal to 58 ft wall)	-0.49	-21.69	-8.66
Side Walls	-0.70	-28.06	-15.02
Overhang Bottom (Applicable on Windward only)	0.80	24.62	24.62
Roof - Wind Normal to Ridge (Theta<10) - for Wind Normal to 60 ft face			
Dist from Windward Edge: 0 ft to 16 ft - Max Cp	-0.18	-12.06	0.98
Dist from Windward Edge: 0 ft to 4 ft - Min Cp	-0.90	-34.21	-21.18
Dist from Windward Edge: 4 ft to 8 ft - Min Cp	-0.90	-34.21	-21.18
Dist from Windward Edge: 8 ft to 16 ft - Min Cp	-0.50	-21.90	-8.87
Roof - Wind Parallel to Ridge (All Theta) - for Wind Normal to 58 ft face			
Dist from Windward Edge: 0 ft to 16 ft - Max Cp	-0.18	-12.06	0.98
Dist from Windward Edge: 0 ft to 4 ft - Min Cp	-0.90	-34.21	-21.18

WIND02 v2-03

Detailed Wind Load Design (Method 2) per ASCE 7-05

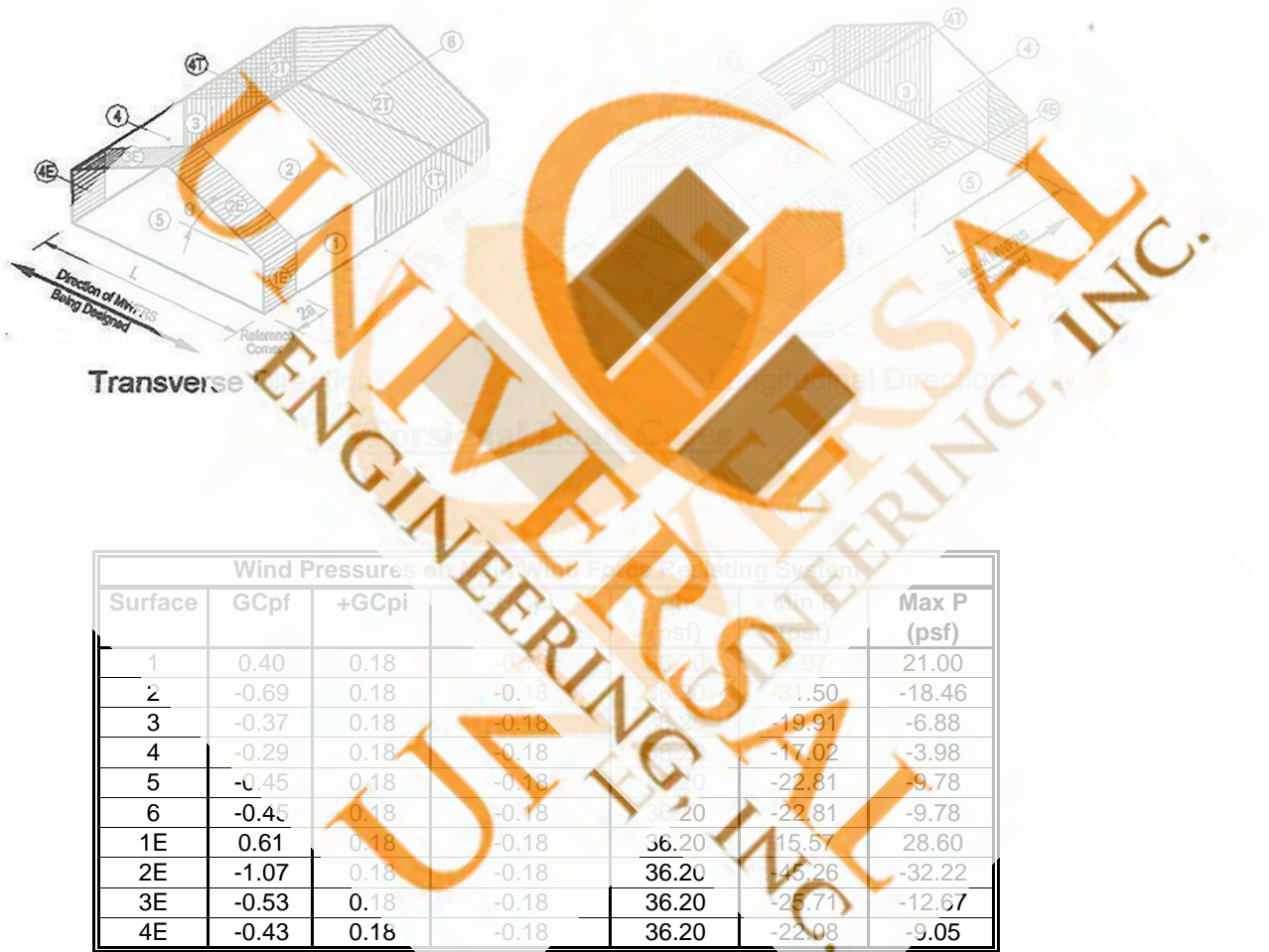
Dist from Windward Edge: 4 ft to 8 ft - Min Cp	-0.90	-34.21	-21.18
Dist from Windward Edge: 8 ft to 16 ft - Min Cp	-0.50	-21.90	-8.87
Dist from Windward Edge: > 16 ft	-0.30	-15.75	-2.72

* Horizontal distance from windward edge

Figure 6-10 - External Pressure Coefficients, GCpf

Loads on Main Wind-Force Resisting Systems w/ Ht <= 60 ft

$K_h = 2.01 * (15/z_g)^{2/\alpha} = 0.85$
 $K_{ht} = \text{Topographic factor (Fig 6-2)} = 1.00$
 $Q_h = 0.00256 * (V)^2 * \text{ImpFac} * K_h * K_{ht} * K_d = 36.20$
 $\text{Theta} = \text{Angle of Roof} = 1.2 \text{ Deg}$



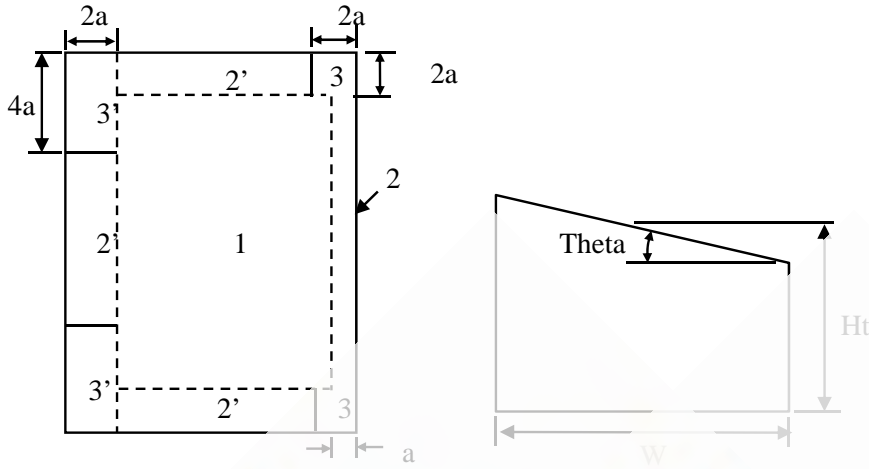
* p = qh * (GCpf - GCpi)

Figure 6-11 - External Pressure Coefficients, GCp

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

WIND02 v2-03

Detailed Wind Load Design (Method 2) per ASCE 7-05



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

a = 3.2 ==> 3.20

Double Click on any data cell to receive Help Screen

Component	Width (ft)	Span (ft)	Area (ft ²)	Zone	GCp		Wind Press (lb/ft ²)	
					Max	Min	Max	Min
0 -> 5			3.20	1	0.30	-1.00	17.38	-42.72
5 -> 10			3.20	1	0.30	-1.80	17.38	-74.69
10 -> 15			3.20	1	0.30	-2.80	17.38	-107.69
15 -> 20			3.20	1	0.90	-0.99	39.10	-42.36
20 -> 25			3.20	1	0.90	-1.26	39.10	-52.13
25 -> 35			3.20	1	0.90	-1.70	10.36	-61.55
35 -> 50			3.20	1	0.90	-1.70	10.36	-61.55
50 -> 70			3.20	1	0.80	-2.80	10.86	-101.37

Note: * Enter Zone 1 through 5, or 1 through 3 for windward walls



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ANCIENT BUSH SHEET FASTENER

ANCHOR/BASE SHEET FASTENER SCHEDULE CALCULATION

Sheathing transverse support spacing	4	
Truss rafter spacing	2	
effective area	maximum(4*4/3, 4*2)	
effective area	8 ft^2	
Zone 1, Field	-42.72	-42.72
Zone 2, Perimeter	-71.69	-71.69
Zone 3, Corner	-107.89	-107.89
total square	100 ft^2	
Nail spacing of Side Lap	8 inch	
Nail spacing of center rows	8 inches	
Base sheet width	39.37 inches	
lap width	4	
number of center rows in the field (given by NOA)	2	
Number of center rows in the perimeter, adjusted	3	
Number of center rows in the corner, adjusted	3	
net width	35.2" from each side	
spacing between rows	12 inch	
Net length for 100 ft^2	33.9 ft	
Side lap	31 fasteners	
total fasteners of Center rows in the field	62 fasteners	
total	93 fasteners	
area/fastener	1.06 ft^2	
Maximum design pressure	94 psf	
Fy, Fastener value =Maximum design		
pressure*served area	88 lb	
Anchor/Base sheet fastener spacing = Served area	1.14	
the design pressures in the elevated pressure zones	1.2	
of the roof		
Exterior Zone width =	3.20 feet	
Perimeter, P	71.69 psf	
RS, row spacing	9 inch	
FS	8 inch	
Corner, P	107.89 psf	
RS, row spacing	9 inch	
FS	5 inch	

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