



Vila Structural Consulting Engineers, Inc.

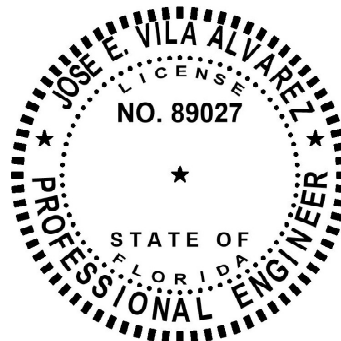
Structural Wind Calculations for

Mark Bachman

***571 SW Worry Free LGN
Fort White, FL 32038***

*Pages
1 to 5*

Project Number: 25CB020



***Jose E. Vila Alvarez
FL PE# 89027
September 26, 2025***



***This item has been electronically signed and sealed by Jose E. Vila Alvarez, PE,
on 09/26/2025 using a SHA authentication code.***

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Structure Description

The structure is a patio cover constructed of sawn lumber with overall dimensions of approximately 48 ft long, 20 ft wide, and 9 ft tall, measured from the top of grade. The layout consists of 4 bays in the long direction and 2 bays in the short direction. The structure is open and partially roofed by the installation of solar panels. The frames in the short direction each contain three columns, while the long direction contains five columns. All columns are braced with diagonal elements, either extending across the full frame or located near the top, to provide lateral stability.

The foundation consists of round embedded concrete-filled piers, 4 ft deep and 12 in in diameter, with an additional 6 in extending above grade to prevent wood-to-soil contact. The columns are sawn lumber, nominal 4x4s, sistered together to create composite 4x8 members. Edge beams are 2x10s, the ridge beam consists of 2x12s, and the infill beams are 2x8s.

Wind load calculations were performed for the specific site location and structure. Maximum service-level wind pressures were determined to be +26 psf (positive) and -26 psf (negative). According to the manufacturer's data, the solar panels meet or exceed these load requirements.

ASCE Hazards Report

Address:

571 SW Worry Free Gln
Fort White, Florida
32038

Standard:

ASCE/SEI 7-22

Risk Category: I

Soil Class:

Default

Latitude:

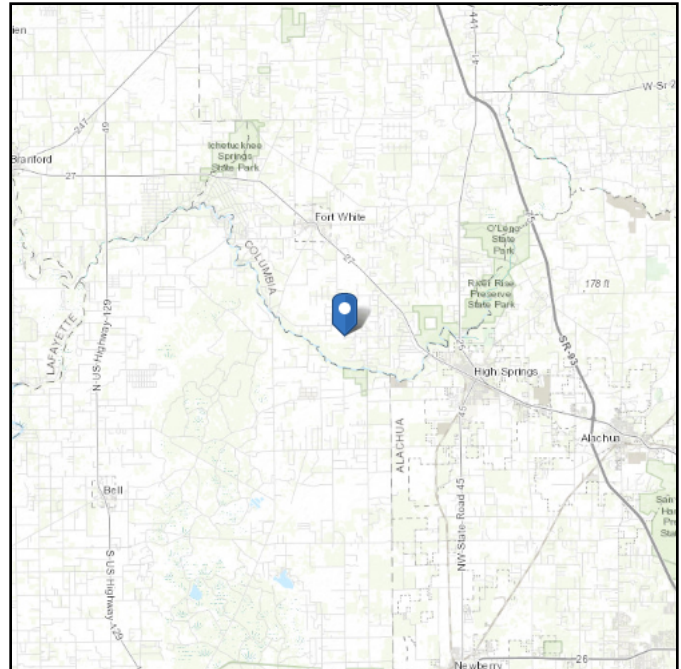
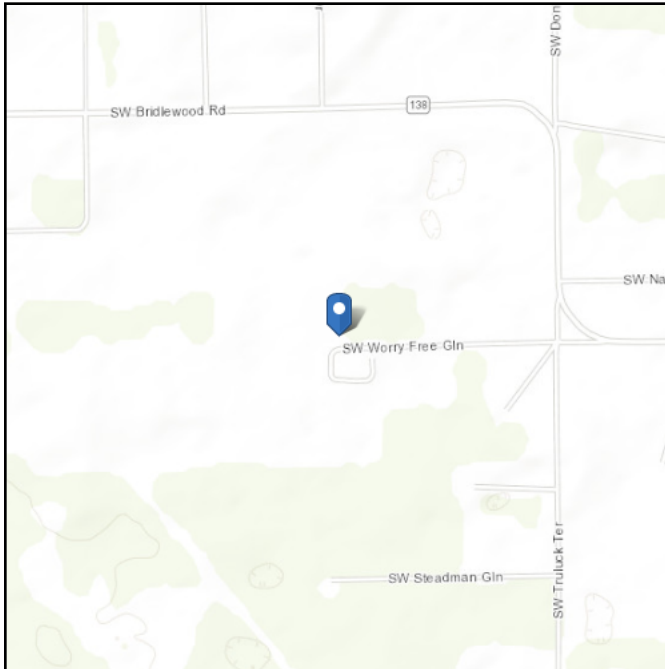
29.853163

Longitude:

-82.691092

Elevation:

55.9062737870322 ft (NAVD
88)



Wind

Results:

Wind Speed	112 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	99 Vmph
300-year MRI	112 Vmph
700-year MRI	122 Vmph
1,700-year MRI	132 Vmph
3,000-year MRI	138 Vmph
10,000-year MRI	147 Vmph
100,000-year MRI	155 Vmph
1,000,000-year MRI	168 Vmph

Data Source:

ASCE/SEI 7-22, Fig. 26.5-1A and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed:

Fri Sep 26 2025



Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-22 Standard. Wind speeds correspond to approximately a 15% probability of exceedance in 50 years (annual exceedance probability = 0.00333, MRI = 300 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

Site is in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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STRUCTURAL CONSULTING ENGINEERING

Project Name: 571 SW Worry Free GLN

Date: 9/25/2025

Project No. 25CB020

Engineer: J. Vila

ASCE 7-22 Chapter 30 Part 5 Open Bldg. Monoslope Free Roof

Risk Category I
 Wind Speed 122 mph
 $K_d = 0.85$
 Exposure C
 $K_{zt} = 1.00$
 Enclosure Classification Open
 $GC_{pi} = 0$
 $K_z = 0.85$
 $K_e = 1.00$
 $q_z = 16.50$ psf

$z = 9$ ft
 Length = 48 ft
 Width = 20 ft
 Height = 9 ft
 $h/B = 0.45$
 $a = 3$ ft
 Pitch = 0.25 in 12"
 $\theta = 1.19$

Area (A) Limits
 $a^2 = 9$ ft²
 $4.0xa^2 = 36$ ft²

Service		Clear Wind Flow											
		Zone 3				Zone 2				Zone 1			
Roof Angle	Wind Area (ft ²)	+ Factor	PSF	- Factor	PSF	+ Factor	PSF	- Factor	PSF	+ Factor	PSF	- Factor	PSF
0	a^2	2.4	33.65	-3.3	-46.27	1.8	25.24	-1.7	-23.84	1.2	16.83	-1.1	-15.42
0	$a^2 < A < 4.0xa^2$	1.8	25.24	-1.7	-23.84	1.8	25.24	-1.7	-23.84	1.2	16.83	-1.1	-15.42
0	$A > 4.0xa^2$	1.2	16.83	-1.1	-15.42	1.2	16.83	-1.1	-15.42	1.2	16.83	-1.1	-15.42
7.5	a^2	3.2	44.87	-4.2	-58.89	2.4	33.65	-2.1	-29.45	1.6	22.43	-1.4	-19.63
7.5	$a^2 < A < 4.0xa^2$	2.4	33.65	-2.1	-29.45	2.4	33.65	-2.1	-29.45	1.6	22.43	-1.4	-19.63
7.5	$A > 4.0xa^2$	1.6	22.43	-1.4	-19.63	1.6	22.43	-1.4	-19.63	1.6	22.43	-1.4	-19.63
15	a^2	3.6	50.48	-3.8	-53.28	2.7	37.86	-2.9	-40.66	1.8	25.24	-1.9	-26.64
15	$a^2 < A < 4.0xa^2$	2.7	37.86	-2.9	-40.66	2.7	37.86	-2.9	-40.66	1.8	25.24	-1.9	-26.64
15	$A > 4.0xa^2$	1.8	25.24	-1.9	-26.64	1.8	25.24	-1.9	-26.64	1.8	25.24	-1.9	-26.64
30	a^2	5.2	72.91	-5	-70.11	3.9	54.68	-3.8	-53.28	2.6	36.46	-2.5	-35.05
30	$a^2 < A < 4.0xa^2$	3.9	54.68	-3.8	-53.28	3.9	54.68	-3.8	-53.28	2.6	36.46	-2.5	-35.05
30	$A > 4.0xa^2$	2.6	36.46	-2.5	-35.05	2.6	36.46	-2.5	-35.05	2.6	36.46	-2.5	-35.05
45	a^2	5.2	72.91	-4.6	-64.50	3.9	54.68	-3.5	-49.08	2.6	36.46	-2.3	-32.25
45	$a^2 < A < 4.0xa^2$	3.9	54.68	-3.5	-49.08	3.9	54.68	-3.5	-49.08	2.6	36.46	-2.3	-32.25
45	$A > 4.0xa^2$	2.6	36.46	-2.3	-32.25	2.6	36.46	-2.3	-32.25	2.6	36.46	-2.3	-32.25

Service		Obstructed Wind Flow											
		Zone 3				Zone 2				Zone 1			
Roof Angle	Wind Area (ft ²)	+ Factor	PSF	- Factor	PSF	+ Factor	PSF	- Factor	PSF	+ Factor	PSF	- Factor	PSF
0	a^2	1	14.02	-3.6	-50.48	0.8	11.22	-1.8	-25.24	0.5	7.01	-1.2	-16.83
0	$a^2 < A < 4.0xa^2$	0.8	11.22	-1.8	-25.24	0.8	11.22	-1.8	-25.24	0.5	7.01	-1.2	-16.83
0	$A > 4.0xa^2$	0.5	7.01	-1.2	-16.83	0.5	7.01	-1.2	-16.83	0.5	7.01	-1.2	-16.83
7.5	a^2	1.6	22.43	-5.1	-71.51	1.2	16.83	-2.6	-36.46	0.8	11.22	-1.7	-23.84
7.5	$a^2 < A < 4.0xa^2$	1.2	16.83	-2.6	-36.46	1.2	16.83	-2.6	-36.46	0.8	11.22	-1.7	-23.84
7.5	$A > 4.0xa^2$	0.8	11.22	-1.7	-23.84	0.8	11.22	-1.7	-23.84	0.8	11.22	-1.7	-23.84
15	a^2	2.4	33.65	-4.2	-58.89	1.8	25.24	-3.2	-44.87	1.2	16.83	-2.1	-29.45
15	$a^2 < A < 4.0xa^2$	1.8	25.24	-3.2	-44.87	1.8	25.24	-3.2	-44.87	1.2	16.83	-2.1	-29.45
15	$A > 4.0xa^2$	1.2	16.83	-2.1	-29.45	1.2	16.83	-2.1	-29.45	1.2	16.83	-2.1	-29.45
30	a^2	3.2	44.87	-4.6	-64.50	2.4	33.65	-3.5	-49.08	1.6	22.43	-2.3	-32.25
30	$a^2 < A < 4.0xa^2$	2.4	33.65	-3.5	-49.08	2.4	33.65	-3.5	-49.08	1.6	22.43	-2.3	-32.25
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45	$a^2 < A < 4.0xa^2$	3.2	44.87	-2.9	-40.66	3.2	44.87	-2.9	-40.66	2.1	29.45	-1.9	-26.64
45	$A > 4.0xa^2$	2.1	29.45	-1.9	-26.64	2.1	29.45	-1.9	-26.64	2.1	29.45	-1.9	-26.64