

MWFRS Wind Load Calculations

ASCE 7-10 Chapter 28

Volunteer Fire Department Building located at E Sixth St, Gramercy, LA 70052, USA

Tbl 28.5-1 Enclosed Simple Diaphragm Low-Rise Buildings

1. Risk Category Tbl 1.5-1 Cat IV Essential Facility
2. Basic Wind Speed, by website at council.org 143mph
3. Wind load parameters:
 - a. Surface Roughness, Sec 26.7.2: Roughness C
 - b. Exposure Cat, Sec 26.7.3: Exposure C
 - c. Topographic Factor, Sec 26.8.2: $K_{zt} = 1$
4. Wind Pressures Fig 28.6-1 Load Case 1 for roof slope $0^\circ - 5^\circ$

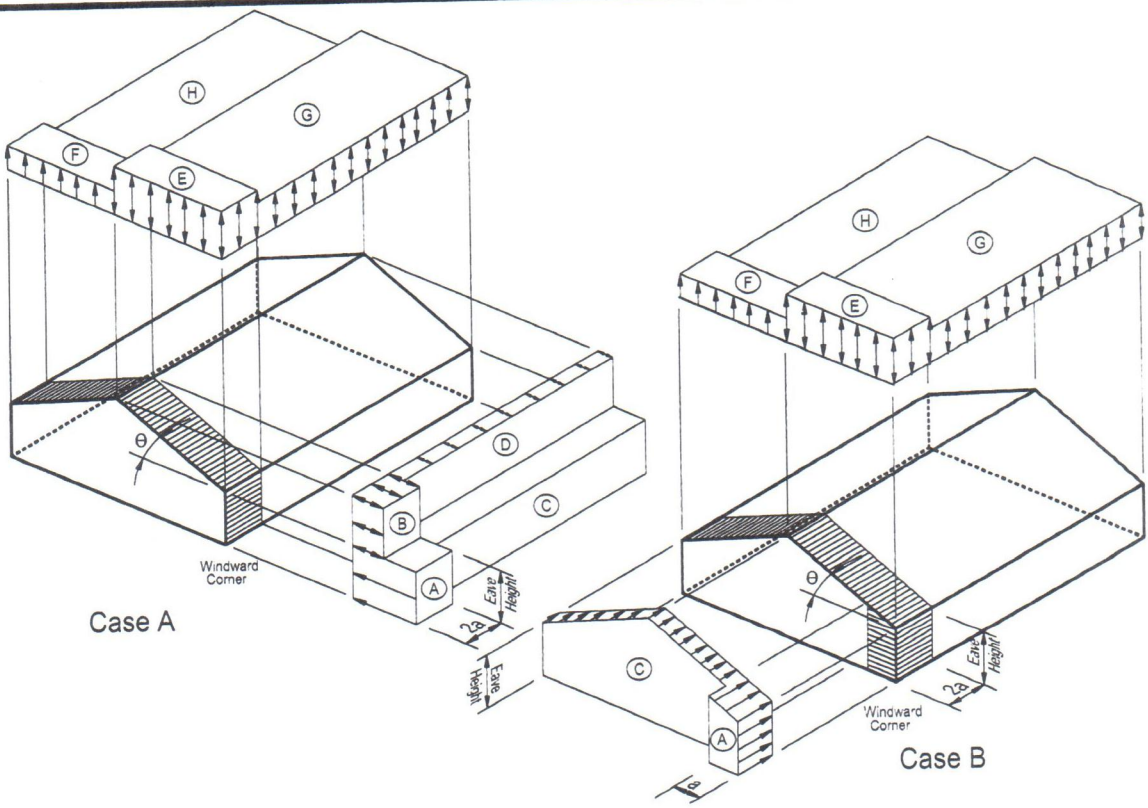
Interpolating Wind Speeds											
Basic Wind Speed	Roof Angle	Horizontal Pressures, P_{s30} (psf)				Vertical Pressures, P_{s30} (psf)				Overhangs	
		A	B	C	D	E	F	G	H	Eoh	Goh
140 mph	5°	31.1	-16.1	20.6	-9.6	-37.3	-21.2	-26.0	-16.4	-52.3	-40.9
150 mph	5°	35.7	-18.5	23.7	-11.0	-42.9	-24.4	-29.8	-18.9	-60.0	-47.0
143 mph	5°	32.5	-16.8	21.5	-10.0	-39.0	-22.2	-27.1	-17.2	-54.6	-42.7

5. Building mean height (h) = 25ft λ for Exposure C – 1.35
6. Adjusted wind pressure P_s Equation 28.6-1 $P_s = \lambda K_{zt} P_{s30}$

Adjusted Wind Pressure P_s											
Basic Wind Speed	Roof Angle	Horizontal Pressures, P_s (psf)				Vertical Pressures, P_s (psf)				Overhangs	
		A	B	C	D	E	F	G	H	Eoh	Goh
143 mph	5°	43.8	-22.7	29.1	-13.5	-52.6	-29.9	-36.6	-23.2	-73.7	-57.7

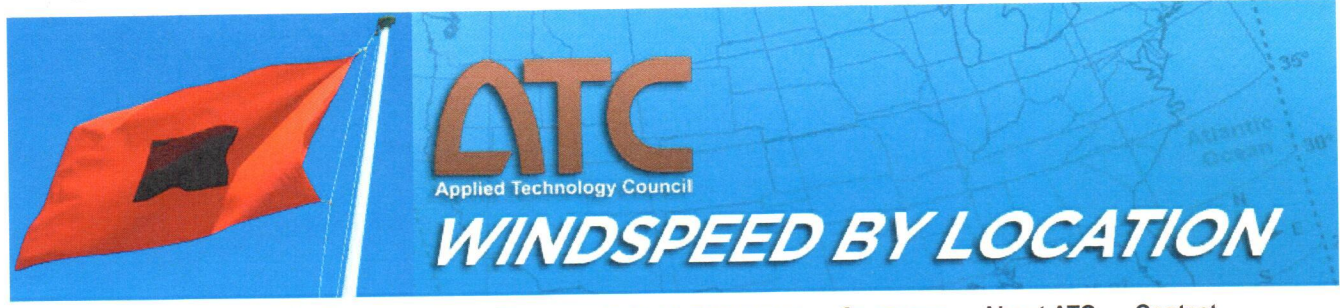
7. D1.1 One and Two Story Building with $h \leq 30$ ft are exempt from torsional load cases.

Main Wind Force Resisting System – Method 2		$h \leq 60$ ft.
Figure 28.6-1	Design Wind Pressures	Walls & Roofs
Enclosed Buildings		



Notes:

- Pressures shown are applied to the horizontal and vertical projections, for exposure B, at $h=30$ ft (9.1m). Adjust to other exposures and heights with adjustment factor λ .
- The load patterns shown shall be applied to each corner of the building in turn as the reference corner. (See Figure 28.4-1)
- For Case B use $\theta = 0^\circ$.
- Load cases 1 and 2 must be checked for $25^\circ < \theta \leq 45^\circ$. Load case 2 at 25° is provided only for interpolation between 25° and 30° .
- Plus and minus signs signify pressures acting toward and away from the projected surfaces, respectively.
- For roof slopes other than those shown, linear interpolation is permitted.
- The total horizontal load shall not be less than that determined by assuming $p_s = 0$ in zones B & D.
- Where zone E or G falls on a roof overhang on the windward side of the building, use E_{OH} and G_{OH} for the pressure on the horizontal projection of the overhang. Overhangs on the leeward and side edges shall have the basic zone pressure applied.
- Notation:
 - a: 10 percent of least horizontal dimension or 0.4h, whichever is smaller, but not less than either 4% of least horizontal dimension or 3 ft (0.9 m).
 - h: Mean roof height, in feet (meters), except that eave height shall be used for roof angles $< 10^\circ$.
 - θ : Angle of plane of roof from horizontal, in degrees.



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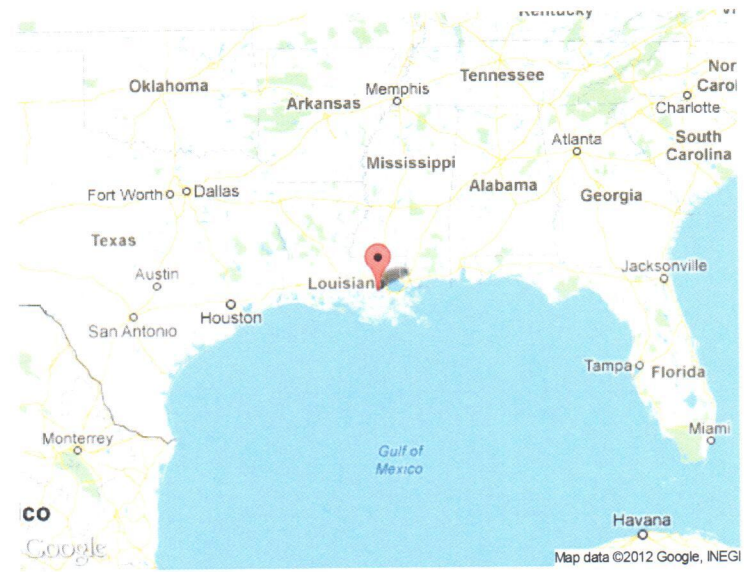
Search Results

Latitude: 30.0615
Longitude: -90.6967

**ASCE 7-10 Wind Speeds
(3-sec peak gust MPH*):**

Risk Category I: 125
Risk Category II: 135
Risk Category III-IV: 143
MRI** 10 Year: 77
MRI** 25 Year: 93
MRI** 50 Year: 103
MRI** 100 Year: 113


ASCE 7-05: 115
ASCE 7-93: 98



*MPH(Miles per hour)
**MRI Mean Recurrence Interval (years)

Users should consult with local building officials to determine if there are community-specific wind speed requirements that govern.

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