

MWFRS Wind Load Calculations
ASCE 7-10 Chapter 28 Wind Loads on Buildings; Envelope Procedure
Simple Diaphragm

Project: Textron Stone Road Addition

Table 28.5-1 Enclosed Simple Diaphragm Low-Rise Buildings

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Risk Category Table 1.5-1 2. Basic Wind Speed, by website at council.org 3. Wind load parameters <ol style="list-style-type: none"> a. Surface Roughness, Section 26.7.2: b. Exposure Category, Section 26.7.3: c. Topographic Factor, Section 26.8.2: 4. Wind Pressures Fig 28.6-1 | <p>Cat II
141 mph</p> <p>Roughness B
Exposure B
$K_{zt} = 1$
Load Case 1 for roof slope 30°</p> |
|---|--|

Interpolating Wind Speeds												
Basic Wind Speed	Roof Angle	Load Case	Horizontal Pressures, P_{s30} (psf)				Vertical Pressures, P_{s30} (psf)				Overhangs	
			A	B	C	D	E	F	G	H	Eoh	Goh
140 mph	10°	1	35.1	-14.5	23.3	-8.5	-37.3	-22.8	-26.0	-17.5	-52.3	-40.9
150 mph	10°	1	40.2	-16.7	26.8	-9.7	-42.9	-26.2	-29.8	-20.1	-60.0	-47.0
141 mph	10°	1	35.6	-14.7	23.7	-8.6	-37.9	-23.1	-26.4	-17.8	-53.1	-41.5

- | | |
|---|--|
| 5. Building mean height (h) = <15 ft | λ for Exposure B = 1.0 |
| 6. Adjusted wind pressure P_s = Equation 28.6-1 | $P_s = \lambda K_{zt} P_{s30} = 1.0 * 1 * P_{s30}$ |

Adjusted Wind Pressure P_s												
Basic Wind Speed	Roof Angle	Load Case	Horizontal Pressures, P_s (psf)				Vertical Pressures, P_s (psf)				Overhangs	
			A	B	C	D	E	F	G	H	Eoh	Goh
141 mph	10°	1	35.6	-14.7	23.7	-8.6	-37.9	-23.1	-26.4	-17.8	-53.1	-41.5

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