

MWFRS Wind Load Calculations  
 ASCE 7-10 Chapter 30 Wind Loads on Components & Cladding - PART  
 1 - MWFRS

Project: Garage Pre-Engineered Building

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|--|--|-------|---------|
| <p>1. Risk Category Table 1.5-1</p> <p>2. Basic Wind Speed, by website at council.org</p> <p>3. Wind load parameters</p> <p style="margin-left: 20px;">a. Wind Directionality factor <math>K_d</math>, Sec 26.6:</p> <p style="margin-left: 20px;">a. Surface Roughness, Section 26.7.2:</p> <p style="margin-left: 20px;">b. Exposure Category, Section 26.7.3:</p> <p style="margin-left: 20px;">c. Topographic Factor, Section 26.8.2:</p> <p style="margin-left: 20px;">d. Enclosure classification, Sec 26.10</p> <p style="margin-left: 20px;">e. Internal Press Coefficient, Sec 29.4.2 or Tbl 26.11-1</p> <p>4. Velocity pressure exposure coefficient <math>K_z</math> or <math>K_h</math>, Tbl 30.3-1</p> <p>5. Velocity Pressure <math>q_h</math>, Eq. 30.3-1</p> <p>6. Determine External Pressure Coefficient, (<math>GC_p</math>)</p> <p style="margin-left: 20px;">a. Walls, Fig. 30.4-1</p> <p style="margin-left: 20px;">b. Flat Roofs, Gable Roofs, Hip roofs, Fig. 30.4-2</p> <p style="margin-left: 20px;">c. Stepped roofs, Fig. 30.4-3</p> <p style="margin-left: 20px;">d. Multispan Gable Roofs, Fig. 30.4-4</p> <p style="margin-left: 20px;">e. Monoslope Roofs, Fig. 30.4-5</p> <p style="margin-left: 20px;">f. Sawtooth Roofs, Fig. 30.4-6</p> <p style="margin-left: 20px;">g. Domed Roofs, Fig. 30.4-7</p> <p style="margin-left: 20px;">h. Arched Roofs, Fig 27.4-3 footnote 4</p> <p>7. Calculate Wind Pressure, <math>p</math>, Eq. 30.4-1</p> | <table border="1" style="margin-bottom: 10px; border-collapse: collapse; width: 100%;"> <tr><td style="text-align: center;">Cat I</td></tr> <tr><td style="text-align: center;">131 mph</td></tr> </table> <p><math>K_d = 0.85</math></p> <p>Roughness B</p> <p>Exposure B</p> <p><math>K_{zt} = 1</math></p> <p>Enclosed</p> <p><math>GC_{pi} = 0.18</math> &amp; <math>-0.18</math></p> <p><math>K_z = 0.70</math> <math>K_h = 0.70</math></p> <p><math>q_h = 0.00256 K_z K_{zt} K_d V^2</math> (<math>lb/ft^2</math>)</p> <p><math>q_h = 26.14</math></p> <p><math>GC_p(+)= 0.8</math>      <math>GC_p(-)= 0.95</math></p> <p><math>p = q_h[(GC_p) - (GC_{pi})]^{#}/ft^2</math></p> <p><math>p(+)= 16.21</math>      <math>p(-)= 29.54</math></p> | Cat I | 131 mph |
| Cat I  |  |       |         |
| 131 mph  |  |       |         |

Calculated Value  
 Input Value

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 Date: 10/3/2016