

213 BONANZA GLENN  
LAKE CITY, FL  
WIND LOAD CALCULATION  
May 13, 2026

## **DOOR WIND LOAD CALCULATIONS**

This structure has been designed in accordance with the requirements of the American Society of Civil Engineers MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES ASCE 7-22. The following wind load requirements from the FLORIDA BUILDING CODE 8<sup>TH</sup> EDITION were employed in the design of the structure.

- Wind Load Requirements employed in the Design of the Structure
  - Ultimate Wind Speed:  $V_{ULT} = 120$  MPH
  - Wind Bourne Debris: NO
  - Basic Wind Speed:  $V_{ASD} = 93$  MPH
  - Building Category II, Enclosed
  - Wind Exposure C

Door wind load calculations based on individual structural panels secured at top and bottom with rollers and pins with the door in the closed position whenever high winds are expected. Door wind load calculations meet ASCE 7-22 “Minimum Design Loads for Buildings and Other Structures” for building mean roof height under 30 ft.

Calculations are limited to FOLDTITE SYSTEMS, INC., FOLD-TITE System Door Series CSA-2.5 XL 12 PANEL 4 GIRT designed for:

213 BONANZA GLENN  
LAKE CITY, FL  
42 ft. X 12 ft,  
FOLDTITE SYSTEMS

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## **WIND LOAD PRESSURE**

Ultimate Wind Speed  $V_{ULT} = 120$  MPH

Velocity pressure exposure coefficient exposure C (ASCE 7 Table 6-5)

$$K_Z = 0.85$$

Topographic factor (ASCE 7 Eq. 6-1, Figure 6-2, no hill or escarpment)

$$K_{ZT} = 1.0$$

Directionality (ASCE 7 Eq. 6-1, Table 6.6)

$$K_D = 0.85$$

Importance Factor

$$I = 1.00$$

Velocity pressure (ASCE 7 Eq. 6-13)

$$Q_Z = 0.00256 \cdot K_Z \cdot K_{ZT} \cdot K_D \cdot V^2 \cdot I$$

$$Q_Z = 26.63 \text{ lb} \cdot \text{ft}/\text{ft}^2$$

External pressure coefficient (ASCE 7 Figure 6-5A)

$$\text{Positive: } 0.7, \text{ Negative: } -0.8 \quad G_{CP} = -0.8$$

Internal pressure coefficient enclosed (ASCE 7 Table 6-7)

$$\text{Positive: } 0.18, \text{ Negative: } -0.18 \quad G_{CPI} = 0.18$$

## **DESIGN WIND PRESSURE (MAX.)**

Components and cladding, mean building height under 60 ft

$$P = -Q_Z \cdot (G_{CP} - G_{CPI})$$

$$P = 26.10 \text{ lb} \cdot \text{ft}/\text{ft}^2$$

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### **ASD WIND LOAD FACTOR**

$$P_{ASD} = 0.6 \cdot P$$

$$P_{ASD} = 15.66 \text{ lb} \cdot \text{ft}/\text{ft}^2$$

### **CRITICAL STRUCTURAL CONDITION**

The critical structural condition for the door is the bending of the vertical members on the sides of the individual door panels. The critical panels are the center panels.

Panel Clear Span Height

$$H = 12 \text{ ft.}$$

$$H = 144 \text{ in}$$

Panel Width

$$W = 3 \text{ ft } 5.75 \text{ in}$$

$$W = 41.75 \text{ in}$$

Load on Vertical Edge Members at Joint with Adjacent Panels

$$L = P_{ASD} \cdot W/2$$

$$L = 27.24 \text{ lb} \cdot \text{ft}/\text{ft}$$

$$L = 2.27 \text{ lb} \cdot \text{ft}/\text{in}$$

Moment on Vertical Edge Member

$$M_{MAX} = L \cdot H \cdot H/8$$

$$M_{MAX} = 5,883 \text{ lb} \cdot \text{in}$$

Edge Member Properties

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The edge member is an aluminum extrusions from KEYMARK CORPORATION, die number S64856, Aluminum Alloy 6063 T-5 for FOLDTITE SYSTEMS #CSA-2.5XL. The extrusion member has the following properties according to the KEYMARK CORPORATION.

$$I_x = 0.668 \text{ in}^4$$

$$I_y = 0.249 \text{ in}^4$$

$$S_x = 0.501 \text{ in}^3$$

$$S_y = 0.184 \text{ in}^3$$

Aluminum Properties Alloy 6063 T-5

$$F_{YALLOWABLE} = 20.600 \text{ lb / in}^2$$

Moment Allowable

$$M_{ALLOWABLE} = S_x \cdot F_y$$

$$M_{ALLOWABLE} = 10,321 \text{ lb} \cdot \text{in}$$

**THEREFORE, THE MEMBER IS ADEQUATE**

**THEREFORE, THE DOOR DESIGN IS ADEQUATE**