



STRUCTURAL ENGINEERING

To:

From: Luis

Subject: OXApp. Wind loads.

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1 Wind loads

The formula in determining the design wind pressure is:

$$p = q \cdot G \cdot C_p - q_i(GC_{pi}) \quad (1)$$

Where:

G : gust effect factor

C_p : external pressure coefficient

(GC_{pi}) : internal pressure coefficient

q : velocity pressure

The velocity pressure q must be take as:

- $q = q_h$ for leeward walls, side walls and roofs (evaluated at rood mean height).
- $q = q_z$ for windward walls, evaluated at height z
- $q = q_h$ for negative internal pressure, $(-GC_{pi})$ evaluation and q_z for positive internal pressure evaluation $(+GC_{pi})$ of partially enclosed buildings but can be taken as q_h for conservative value.

1.1 Gust effect factor: G

The gust effect factor, G , is set to 0.85 as the structure is assumed rigid (Section 26.9.1 of ASCE 7-10).

1.2 Enclosure classification and pressure coefficients

The structure satisfies the definition of partial enclosed building in section 26.2 of ASCE 7-10.

Enclosure Classification	(GC_{pi})
Open Buildings	0.00
Partially Enclosed Buildings	+0.55 -0.55
Enclosed Buildings	+0.18 -0.18

Figure 1: Internal pressure coefficient, (GC_{pi}) , from table 26.11-1 of ASCE 7-10

1.2.1 Internal pressure coefficient

The internal pressure coefficient, (GC_{pi}) , shall be +0.55 and -0.55 based on Table 26.11-1 of ASCE 7-10.

1.2.2 External pressure coefficient

For enclosed and partially enclosed buildings, the external pressure coefficient, C_p , is calculated using the information provided in Figure 27.4-1. For a partially enclosed building with a monoslope roof.

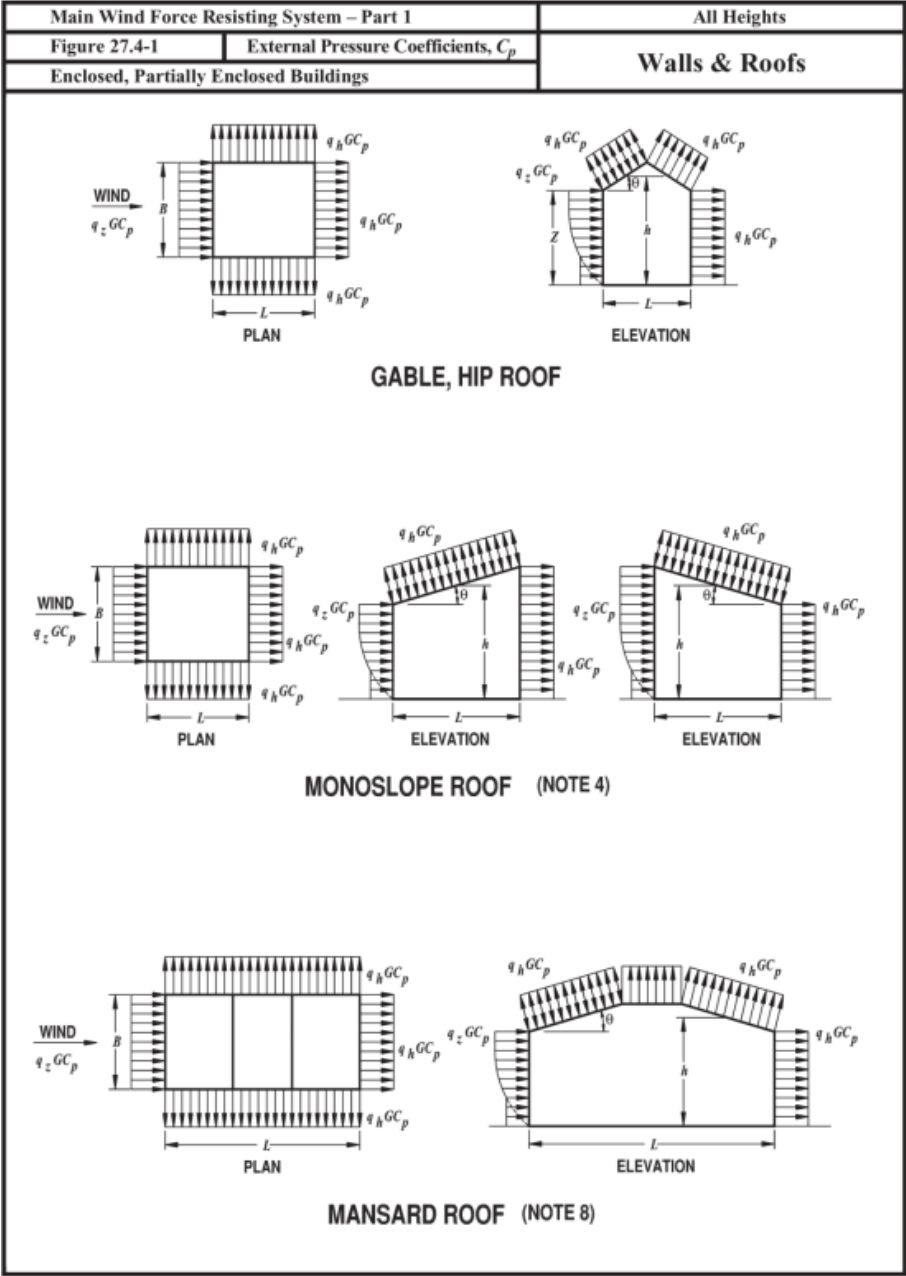


Figure 2: External pressure coefficients, (C_p), from table 27.4-1 of ASCE 7-10