

# Internal pressure in buildings

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Cyclone Testing Station



# Objective

- Net pressures on building envelope caused by BOTH external and internal pressures
- Possible openings in a building have the potential to influence net pressures
- Combinations of openings shall be assumed to give internal pressures, which together with external pressures give the most adverse wind actions (AS/NZS 1170.2:2002)

# Opening

- Potential for air inside the building to equilibrate with air outside the building.
- Left open
  - Windows
- Blown open
  - Doors
  - Garage doors
- Blown in
  - Cladding
- Damaged by debris
  - Accessories (e.g. Air conditioners)

# Non-cyclonic



# Roller doors



# Automatic glass doors



## Other doors

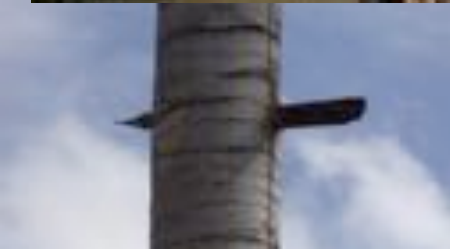


# Ventilators





# Debris



# Robustness

- Structures shall be detailed such that all parts of the structure shall be tied together both in the horizontal and the vertical planes so that the structure can withstand an event without being damaged to an extent disproportionate to that event.
- If a window breaks – expect to replace a window – not the building



**INTERNAL PRESSURE COEFFICIENTS ( $C_{p,i}$ ) FOR BUILDINGS  
WITH OPENINGS GREATER THAN 0.5% OF THE AREA  
OF THE CORRESPONDING WALL OR ROOF**

Ratio of area of openings on one surface to the sum of the total open area (including permeability) of other wall and roof surfaces	Largest opening on windward wall	Largest opening on leeward wall	Largest opening on side wall	Largest opening on roof
0.5 or less	-0.3, 0.0	-0.3, 0.0	-0.3, 0.0	-0.3, 0.0
1	-0.1, 0.2	-0.3, 0.0	-0.3, 0.0	-0.3, 0.0
2	$0.7C_{p,e}$	$C_{p,e}$	$C_{p,e}$	$C_{p,e}$
3	$0.85C_{p,e}$	$C_{p,e}$	$C_{p,e}$	$C_{p,e}$
6 or more	$C_{p,e}$	$C_{p,e}$	$C_{p,e}$	$C_{p,e}$



# TC Yasi – Category 5?

