

HOW TO USE THE MASONS BARRICADE DEFENSE BRACING CALCULATOR



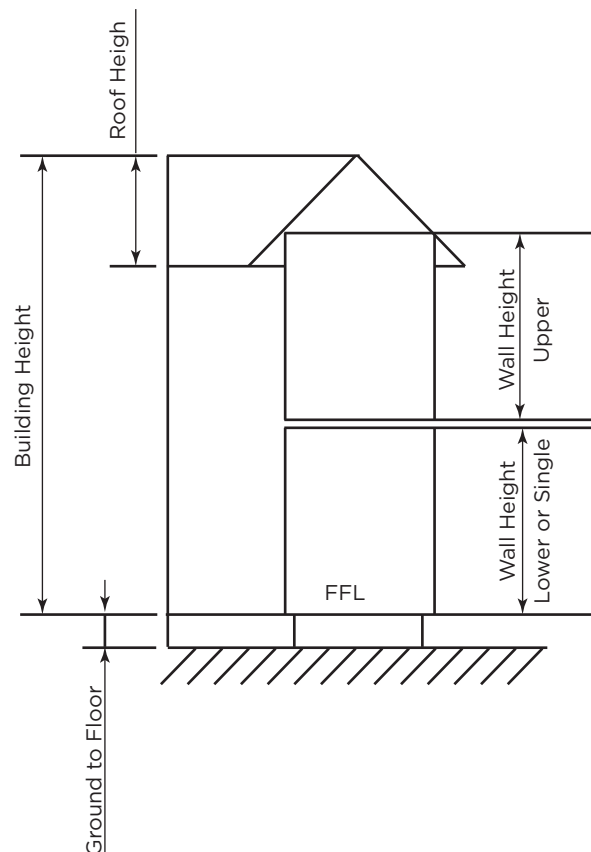
MASONS
Designed Smart, Built Tough.

V1.0 February 2023

STEP 1: ENTER BUILDING PARAMETERS

Building and roof heights:

Enter the building height and roof height - refer to the diagram below:



Roof Weight:

- **Light** - Metal or timber roof or other material with a mass less than 20 kg/m².
- **Heavy** - Concrete tiles or slate roof or other material with a mass more than 20 kg/m² but less than 60 kg/m².

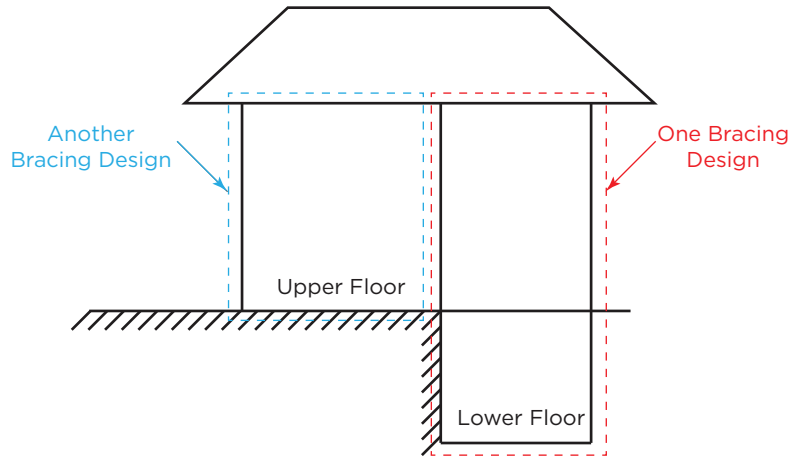
Cladding Weight:

- **Light** - Weatherboard or timber cladding or other material with a mass less than 30 kg/m².
- **Medium** - Stucco cladding or other material with a mass more than 20 kg/m² but less than 80 kg/m².
- **Heavy** - Concrete masonry veneers or other material with a mass more than 80 kg/m² but less than 220 kg/m².



Notes:

Split into two bracing designs when gross area of lower floor is less than upper floor as below:



STEP 2: DETERMINE WIND AND EARTHQUAKE ZONE

Wind Zone:

Determine the wind zone as per procedure from table 5.1 (NZS 3604;2011) or as specified by consultant.

Earthquake Zone:

- Determine the earthquake zone as figure 5.4 (NZS 3604;2011).
- Refer to geotechnical report for subsoil classification and Annual Probability of Exceedance.

STEP 3: CALCULATE BRACING DEMAND

Wind and Earthquake Bracing demands for both directions (across and along) will be calculated automatically after step 1 and step 2 are completed.

Check the building height and roof height as per Tables 5.5-5.7 from NZS 3604:2011, if any errors appear.

Note:

Height definition from NZS 3604:2011	In this bracing calculator
Average ground to apex	Building Height (FFL to Apex) + Ground to Lower of Single Floor
Single or upper floor level to apex	Single storey: Building Height (FFL to Apex) Double Storey: Building Height (FFL to Apex) - Wall Height Lower or Single Storey.
Lower floor level to apex	Building Height (FFL to Apex)



STEP 4: SELECT BRACING DESIGN SHEET FOR EACH FLOOR

1. Each direction (along or across) up to 10 bracing lines.
2. Each bracing line has minimum bracing demand:
 - **Internal wall lines:** 100 BU's or 100 bracing units or 50 % of the total bracing demand divided by the number of bracing lines, whichever is greater.
 - **External wall lines:** same demand as Internal wall lines or 15 times the wall length in metres, whichever is greater.

STEP 5: ADD ADDITIONAL BRACING ELEMENTS

1. Masons Barricade Weather Defense System has been preselected in the 'Product Spec' of the calculator.
2. Add additional bracing elements including portal frames to 'Product Spec' as required.

STEP 6: SELECT BRACING ELEMENTS

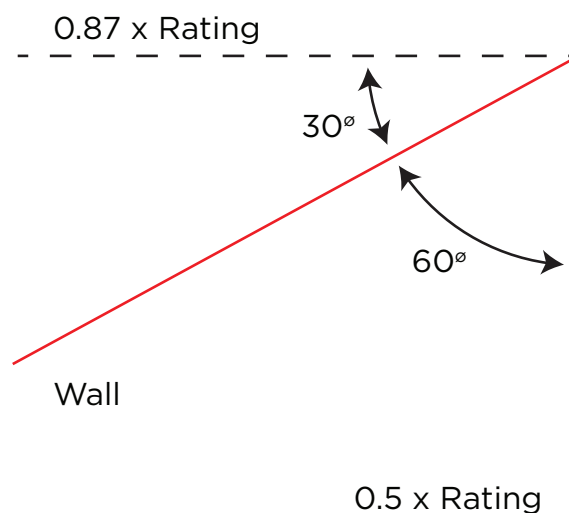
1. Select type of bracing element from manufacturer's literature for each bracing line.
2. Enter the length and height of wall elements or number of bracing elements for subfloor.
3. Factor for wall with angle:

30° - 0.87

45° - 0.7

60° - 0.5

other angles - $\text{COS}(\theta)$



4. Add more bracing lines or change product type with a greater BU/m or extend the length of bracing elements until meet the minimum bracing demand for each line and total bracing achieved is equal to, or exceeding total bracing demand.