# WIND LOADS FOR HOUSING

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Many of you would have heard about a new set of revised loading codes just released by Standards Australia. The extent of their effect on trusses is still being evaluated and will be announced as they are known.

Although Part 2 of AS1170 "Wind Actions" has changed, the simplified version AS4055-1992 "Wind Loads for Housing" remains unaltered and is still approved by the Australian Building Code.

This Standard is applicable to buildings up to 16m span, 6m eaves height, 8.5m ridge height and with roof pitch not greater than 35 degrees.

As many house designers prefer to use AS4055 in lieu of AS1170.2 when specifying Design Wind Speed in their drawings, it is important know how to determine the appropriate Wind Classification based on the specified factors.

The Wind Classification System is governed by four main factors as shown in the following table. They are Wind Region, Terrain Category, Shielding Classification and Topographic Classification.

## WIND REGION

The Wind Region refers to the geographic location of the building site in Australia. A boundary map in AS4055 divides the country into four wind regions labelled A to D.

Crudely, Region A applies to all inland Australia over 100km from the coastline and any coastal areas below latitude 30 degrees. Region B covers non-cyclonic areas along the coastline between latitudes 25 degrees – 30 degrees.

In cyclonic areas above latitude 25 degrees, Region C generally applies to a 50km strip along the coastline, and Region B between 50km and 100km from the coastline.

Northwest Australian coastal regions, including Region D, are subjected to severe cyclones and should be specifically determined from the Code.

## TERRAIN CATEGORY

An assessment of the Terrain Category should be made based on the likely development of the neighbourhood in a five-year time frame.

TC1 is totally unobstructed flat plains. TC2 comprises open areas with lightly scattered obstructions such airfields and coastal areas. TC2.5 has moderately scattered obstructions such as agricultural land and cane fields. TC3 applies to typical residential estates and urban areas.

## SHIELDING CLASSIFICATION

Shielding Classification takes into account local obstructions immediately around the building site. Full shielding (FS) applies when there are other houses or wooded trees all close by.

Partial shielding (PS) is typical of acreage housing where there are ample trees surrounding the house but the neighbours are further away. No shielding (NS) applies to building sites abutting open parklands, lakes or airfields.

## TOPOGRAPHIC CLASSIFICATION

This is based on the contour of the land on which the building site is located. A house that is situated near the top of a steep hill or escarpment would naturally be subjected to greater wind gusts than one at the bottom of gently undulating land.

The determination of topographic classification is naturally complicated and requires several diagrams and tables in the code to explain, well beyond the space available here.

The descriptions I have given above are all fairly brief and reference should be made to the entire Standard for complete information.

In practice, the fabricator is not expected to make any determination of the factors governing Wind Classification. They are the responsibility of the designer.

However, should the plans not clearly state the Wind Classification but only provide the various governing factors according to this Standard, the reader is then able to determine that from the above table.

Further assistance and guidance is available from the engineers of your connector plate supplier.

**WIND CLASSIFICATION SYSTEM**

| Region | Terrain Catergory | TOPOGRAPHIC CLASSIFICATION | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | T1 | | | T2 | | | T3 | | | T4 | | | T5 | | |
| | | FS | PS | NS | FS | PS | NS | FS | PS | NS | FS | PS | NS | FS | PS | NS |
| A | TC 3 | N1 | N1 | N2 | N1 | N2 | N2 | N2 | N3 | N3 | N3 | N3 | N3 | N3 | N4 | N4 |
| | TC 2·5 | N1 | N2 | N2 | N2 | N3 | N3 | N2 | N3 | N3 | N3 | N4 | N4 | N3 | N4 | N4 |
| | TC 2 | N2 | N2 | N3 | N3 | N3 | N3 | N3 | N3 | N4 | N3 | N4 | N4 | N4 | N5 | N5 |
| | TC 1 | N3 | N3 | N3 | N3 | N4 | N4 | N4 | N4 | N4 | N4 | N5 | N5 | N5 | N5 | N6 |
| B | TC 3 | N2 | N2 | N3 | N2 | N3 | N3 | N3 | N3 | N4 | N3 | N4 | N4 | N4 | N4 | N5 |
| | TC 2·5 | N2 | N3 | N3 | N3 | N3 | N4 | N3 | N4 | N4 | N4 | N4 | N5 | N4 | N5 | N5 |
| | TC 2 | N3 | N3 | N3 | N3 | N4 | N4 | N4 | N4 | N5 | N4 | N5 | N5 | N5 | N5 | N6 |
| | TC 1 | N3 | N4 | N4 | N4 | N5 | N5 | N4 | N5 | N5 | N5 | N6 | N6 | N6 | N6 | N/A |
| C | TC 3 | C1 | C1 | C2 | C2 | C2 | C2 | C2 | C2 | C3 | C3 | C3 | C3 | C3 | C4 | C4 |
| | TC 2·5 | C1 | C2 | C2 | C2 | C2 | C3 | C2 | C3 | C3 | C3 | C4 | C4 | C3 | C4 | C4 |
| | TC 1, CT2 | C2 | C2 | C2 | C2 | C3 | C3 | C3 | C3 | C4 | C3 | C4 | C4 | C4 | N/A | N/A |
| D | TC 3 | C2 | C2 | C3 | C2 | C3 | C3 | C3 | C4 | C4 | C4 | C4 | N/A | C4 | N/A | N/A |
| | TC 2·5 | C2 | C3 | C3 | C3 | C3 | C4 | C3 | C4 | C4 | C4 | N/A | N/A | N/A | N/A | N/A |
| | TC 1, TC 2 | C3 | C3 | C3 | C3 | C4 | C4 | C4 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

**LEGEND:**

C = cyclonic N = non-cyclonic NS = no shielding PS = partial shielding FS = full shielding N/A = not applicable