

# BRACE YOURSELF ?!

**In a previous article I mentioned a 'conversation' that a builder may have with his truss supplier when he is 'concerned' about the truss performance.**

A similar discussion takes place between a builder and his frame supplier just after the builder has been informed that Council has knocked back his frame as being 'inadequately braced'.

The frame quickly becomes 'your frame' and the problem has to be fixed immediately because the plasterer is standing on site with trowel in hand and every second is costing money.

The issue is usually one wall of the house, often the front wall with the Entry and Master Bedroom, that simply has no wall space left to put effective frame bracing into.

This problem is much more prevalent in NSW than in any other state. The situation in Queensland is that the building is designed with the wall bracing in mind and has all the bracing set out when the job goes out for quoting.

The other advantage that Queensland has is that the development of wall bracing has a much longer history so that everyone is well educated about it from the house designer to the frame manufacturer to the builder.

They have come up with a system of 'rating' each bracing system in terms of kN/m; in other words you multiply the length of the unit by its rating and come up with its capacity in kN.

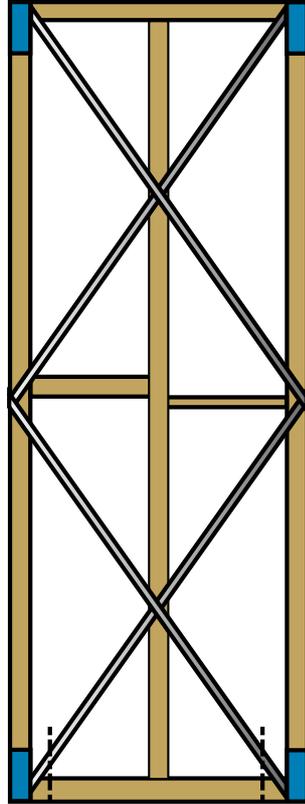
The calculation for required bracing capacity for the house in each major axis is very similar to that used in AS 1684 except that in the end you finish up with a required number of kN instead of a required number of Type A or Type B units.

In other states, either the buildings are more conservative in their window space requirements or the inspectors have not yet picked up on the requirements released in the 1992 version of AS 1684.

There is an ongoing education program for inspectors that covers AS 1684 requirements and it is easy to see where the training has been recently done as the queries come through.

I apologise to those readers in Queensland this month, but you may be interested to know what you have avoided.

Anyway back to the problem -



**Figure 1**

how do we brace this wall and get the inspector to pass the frame?

This is not the right time to ask this question, but we will come back to it. The right time to ask this question is when the house is simply lines on paper, or on screen for the CAD designer.

Have we supplied enough uninterrupted wall in each of the major axes to allow this house to be braced? This is even more critical for the lower storey of a two-storey house as the area to restrain in so much larger.

Sometimes the solution on paper is as simple as narrowing a window by 100 mm to give 600 mm of wall either side - enough for 2/3 of an A type brace. Sometimes it may require a major redesign of the wall layout. Either way a plan is easier to fix than a half-built house.

So how do we fix the problem? There are a number of solutions and none of them are elegant. What we are required to provide (in accordance with

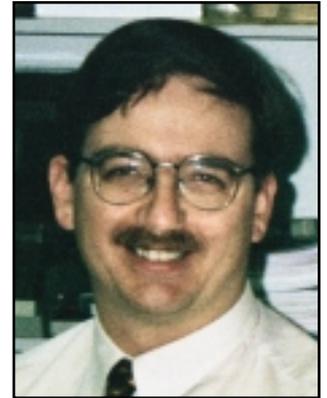
AS 1684 and the Framing Manuals of most states) is a number of A type or B type brace units.

To set the record straight two A type units is equivalent to one B type unit - an A type unit resists 2 kN of force, while a B type unit has to resist 4 kN.

This resistance is not checked in terms of strength but in terms of deflection - the top of a brace unit must not move more than 8 mm when the required load is applied.

The solutions developed to satisfy the requirements of an A type unit and the narrow walls range from a double crossed unit (Fig 1) to a steel column (Fig 2) to transferring the force from one 'unbraceable' wall to a braceable one by strengthening the ceiling plane with metal bracing.

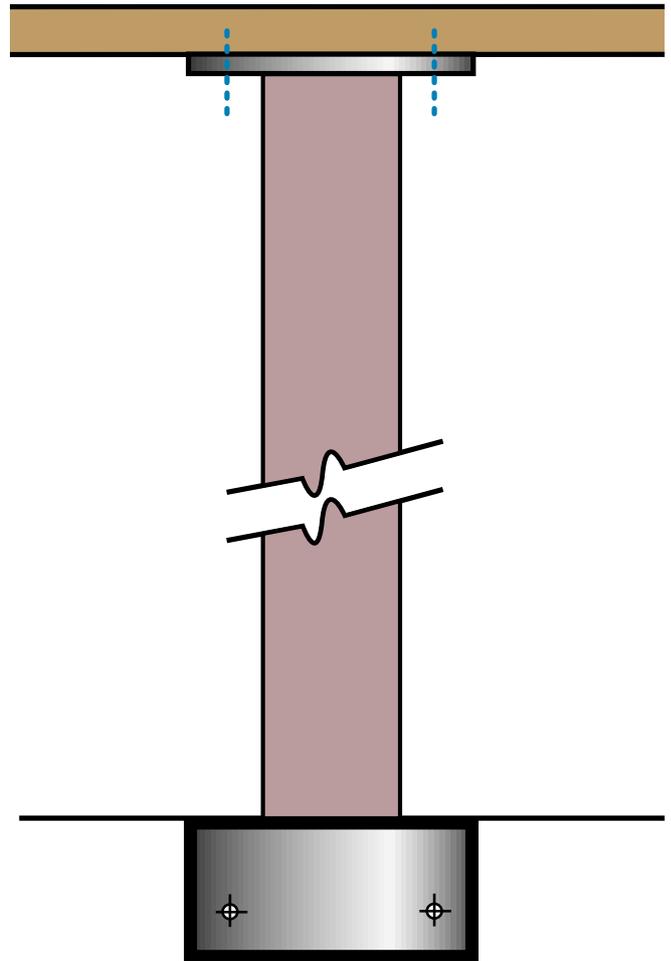
Hopefully some of these will be taken on by the Framing



**by Tim Rossetor  
Chief Engineer  
Gang-Nail Australia Limited**

Manuals as 'deemed to comply' solutions. In the meantime you will have to ask an engineer for assistance.

By far the best solution is for the building designer to become educated on the requirements and design window openings vs 'blank' wall space accordingly.



**Figure 2**