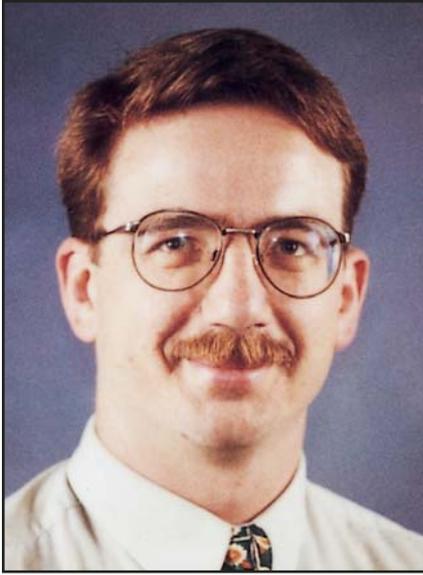


ON-SITE ADJUSTMENTS OF TRUSSES



by **TIM ROSSITER**
Chief Engineer,
MiTek Australia Limited

We all know that sometimes things just don't fit. We also know that – *“Under no circumstances shall a truss be modified by cutting, drilling, or by any other method that may interfere with its structural integrity, without being approved.”*

This is an excerpt from AS4440 – the Australian Standard for the Installation of nailplated timber roof trusses.

The approval must come from a “suitably qualified engineer”, in other words, someone with experience with the design of roof trusses.

All too often site visits are arranged to inspect a problem that has already been fixed because there was no time to wait for the “right” answer. Unfortunately often the fix is worse than the original problem.

A common mistake is to address the symptom rather than the cause.

Recently a girder truss was reported to have ‘come down’ 20mm.

On arrival it was found that when a straight edge was placed across the bottom chord of the standard trusses running parallel to the girder,

that they were in fact an 18 mm higher than the bottom of the girder.

On further investigation it was found though that the girder wasn't down at all, the standard trusses were up, maybe through incorrect camber built into the standard trusses.

The required fix was simple – pack the ceiling down on the standard trusses to line up with the girder.

Unfortunately, the carpenter was impatient and had taken matters into his own hands.

His fix was to jack the girder up, but it only lifted off the wall – then to resolve the problem he cut the top of the bottom chord of the girder and push it up – in the same way you might cripple a stud to get it straight!

Now the rectification of the roof was much more complicated as we had to repair the “fixed” truss, as well as pack down the ceiling.

When trouble starts on site not all is what it seems – there are many optical illusions that can lead you to the wrong conclusion. Make sure when sighting a member that the datum you are using is itself straight.

For example are the two vertical lines shown in Figure 1 parallel or bent? Get out a ruler – you might be surprised!

Imagine now that you are looking at some truss member but have a lot of angled members behind them, a similar optical illusion can occur. The best way to check if a truss is deflecting is to use either a string line or a laser level and use the truss support as the datum.

In the earlier example the mistake was to compare the “bent” truss with ones that were assumed to be straight, but in fact weren't.

This often occurs when trusses are reported as having reduced clearance to an internal wall – the wall and the floor have been assumed to be straight, but may not be (see the article in GN Guidelines 75 and 6).

If you find that the truss is in fact straight then look to its supporting structure for some deviation in level – slabs have been measured up to 50 mm out of level soon after pouring.

There are many other examples of unauthorized changes to trusses by all sorts of following trades – air conditioning installers, plumbers, electricians and DIY “handy” persons.

Altering a truss without approval at the very least will void the warranty on the truss.

In other words, if you “fix” it then you are taking responsibility for its performance, and any other affected trusses too.

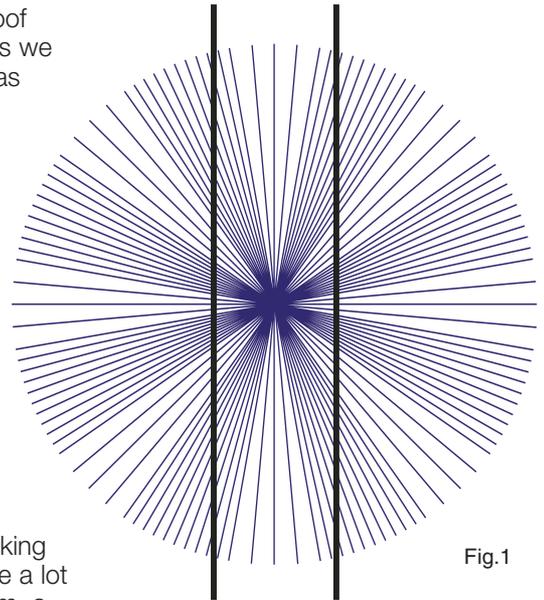


Fig.1

So a small request – lay out the following items in a line across the floor when you have a problem on site and use them in order:

1. A string line, some nails, a hammer and a tape.
2. A mobile phone to call for assistance if you are unable to determine the problem.

The saw, drill and any cutting implement should be placed in a locked cupboard - preferably on another site!