

# ALL THE SMALL THINGS



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“I need to you to inspect a roof as soon as possible; the roof-line is all over the place”. Another one of those calls!

The cause of poor roof-lines are many, and need not have anything to do with the underlying trusses misbehaving.

It is worth mentioning at the outset that an “unsatisfactory” roof-line, to use an unemotional term (as opposed to the more commonly used “bloody terrible”, “shocking”, or “totally unacceptable”) is a very subjective thing.

One man’s ripple is another man’s tidal wave. It is also worth noting that viewing a plane surface at an acute angle will exaggerate any deviations, which may exist. (This is why many builders use down-lights).

It also follows that it is not necessarily a good idea to design a roof so that it is



Photo 1

possible to look along the line of a roof at eye level, particularly if the tiles are the very flat style.

Measure those bumps and dips with a string line, or a level, do not rely on your eye, before calling for help.

In this article I would like to discuss the part the humble tile batten plays in the performance of the roof.

Apart from very important role of supporting the tiles between trusses and stopping the tiles from sliding down the roof, they are crucial to the structural integrity of the roof trusses.

They are also very important in achieving a straight roof-line. The straightness of the rows of tiles on the roof relies on the battens being straight and level.

Photo 1 shows a wavy roof-line, unacceptable by most standards. The cause for this was in fact that the tiles battens were badly warped and were not able to transfer the shape of the underlying trusses.

This can be seen from Photo 2. A straight roof-line requires straight battens – either straighten them as they are positioned or reject excessively warped ones.

The structural integrity of roof trusses relies on them being erected straight and plumb, and being held in that position during service.

Guidelines No. 29 - “Keep ‘em Straight Keeps ‘em Strong” dealt with this subject.

I have been involved in a number of cases where insufficient connection of battens to trusses, particularly girder trusses, has resulted in a truss exhibiting excessive deflection of the roof and ceiling line.

In one instance there was a run of standard trusses and a girder truss, on the other side of the girder truss the valley series continued up the supported trusses.

It so happened that the length of run of the standard trusses meant that the last truss spacing next to the girder was approx 200 mm.

The tile batten had been nailed to the standard truss and then to the valley truss top chord, which was around 600



Photo 2

mm away, but not to the girder truss top chord in between.

When loaded this allowed the girder truss top chord bow some 150 mm out of plane towards the standard truss and the result was the ceiling dipping some 20 mm. Roof battens must be nailed to every truss or rafter that they cross.

Continuing the same theme – battens can only provide effective lateral restraint to the top chords if they are effectively connected.

An effective nail must be at least 20 mm from the end of a piece of timber, so where a batten is butt spliced at a top chord there is no way that either nail can be effective.

AS4440 states that only one in three consecutive battens may be spliced on the same truss.

The battens in the roof shown in Photo 3 have been installed incorrectly – they are continually spliced on one truss. AS 4440 also states that battens may not be spliced at all on a truss top chord in



Photo 3

the last bracing zone on a gable roof See Fig 4.1, AS 4440-1997.

The last problem I would like to mention is that battens are sometimes installed without the aid of a string-line.

There have been inspections done on roofs that have obvious waves in the roof line, that have turned out to be nothing more sinister than a wavy tile line created by poor batten installation.

Use a string-line and get the battens straight and the tiles will follow.