

TECHNICAL ADVICE

Steel & Timber Roof Battens

This is an alert to builders, contractors, designers, and building owners alike.

It has come to light that there may be an issue with the use of steel tile battens in roof trusses, including timber roof trusses.

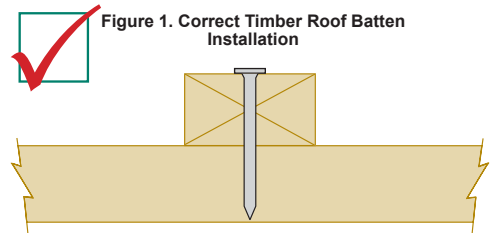
Under gravity loads, the top chords of roof trusses rely on roof battens to restrain them from buckling. This is due to the fact that compression loads will attempt to bend the top chord sideways.

Roof battens stop the top chords from buckling, depending on the spacing of the restraints and the amount of restraint provided. This lateral restraint therefore is one of the most vital design features of all truss designs. This is emphasised by this extract from AS3623: Domestic Metal Framing Clause A2.4.1; which states, "Roof battens are also expected to act as lateral restraints for the top chord of the roof truss. They are also used to transmit the horizontal loads to the bracing system."

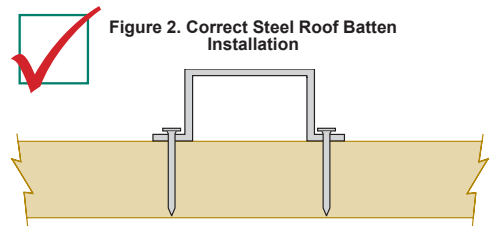
It is important to note that if the roof batten, or the fixing method is inadequate, then the effectiveness of the restraint is affected and so to the effectiveness of the trusses. Under these reduced restraint conditions trusses may buckle sideways under load and, if this is not attended to, it will cause damage to the building and possibly complete failure of the roofing structure.

To pre-empt and prevent problems, installing roof battens correctly is of paramount importance.

When using timber roof battens, a minimum single fixing (nail or screw) must be embedded through the timber roof batten, whereby the batten transfers lateral load in direct shear. By embedding a single fixing per batten per truss, the most effective connection method, yielding the highest strength, is achieved (Refer Figure 1).

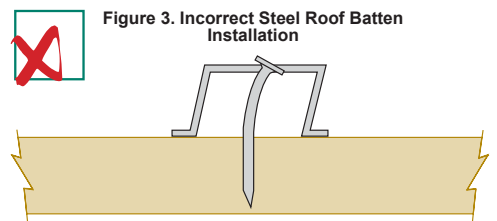


When using steel roof battens, fixings (nails/screws) are embedded on the sides of the steel flange (Refer Figure 2).



It is important not to fix steel roof battens through the middle as the fixing will not be in direct shear with the roof truss. Because of the 'gap' between steel batten and timber, the nail is susceptible to bending, dramatically reducing the load capacity of the nail (Refer Figure 3).

Alternatively, if using a single fixing to secure a steel roof batten to a truss, it is recommended that the type and grade of the connector be increased so that the capacity is equivalent to the timber roof batten. Refer to manufacturers specifications.



Where steel roof battens are used, their capacity and fixing to the truss must be equivalent to the timber roof batten that they are replacing and should also conform to the requirements of AS3623: Domestic Metal Framing.

It is further recommended that builders, contractors, designers, and building owners discuss this issue with the suppliers of the steel roof battens and obtain certification confirming that the strength of the product being provided, and the recommended fixing to the roof trusses, conforms to these requirements.