GANG-NAIL GUIDELINES No.128

ANOTHER MITEK ADVANTAGE

SADDLE TRUSSES ARE BETTER THAN FRAMING

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It is fair to say that over time, roof shapes have become more complex. Fortunately, advances in truss design software now allow difficult jobs to be readily done where they were once relegated to the 'too hard basket'.

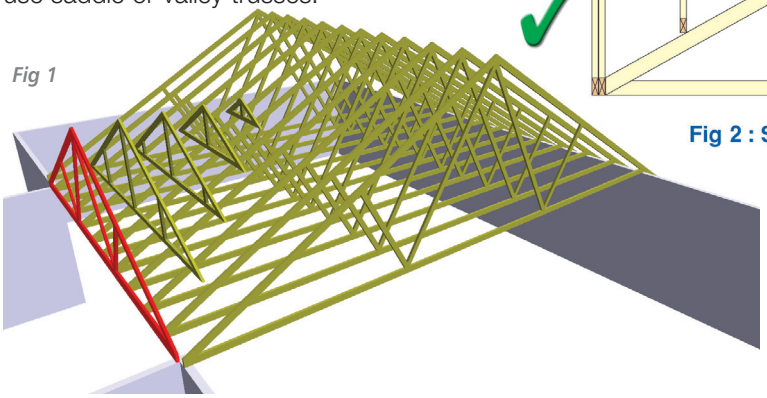
These advances in design software have given the designer a lot more power at his finger tips to truss complicated roofs with relative ease.

Take valley roofs for example. In past years, there might have been a tendency for a few truss fabricators to ask for complicated valleys to be 'Framed By Others' and to let the builder worry about this on site.

But how this is completed on site, and what consequences it has for the trusses below have been largely ignored, often to the detriment of the job.

A much simpler, more economical and better performing method is to use saddle or valley trusses.

Fig 1



This allows roof loads to be properly and uniformly transferred onto the roof structure underneath as well as securing all the trusses together.

So what is a saddle truss? In engineering terms, saddles are actually frames and not trusses because the web layout is not fully triangulated.

However, as saddles can easily be manufactured with the same equipment used in truss fabrication, they are often referred to as trusses.

The benefits of saddle trusses are that they spread and transfer the roof loads from the roof battens to the supporting trusses below at close regular intervals and therefore do not apply any concentrated point loads onto the standard trusses.

The bottom chords of the saddle trusses are connected to the top chords of the trusses below, thereby providing the necessary lateral restraint required by design.

Provided that the saddle truss spacing is less than the lateral restraint centres specified in the truss design, no additional lateral restraint needs to be installed (See Figure 1).

Connection details for saddle trusses to the trusses in Figure 2 can be found in "AS4440-2004 'Installation of nailplated timber roof trusses'.

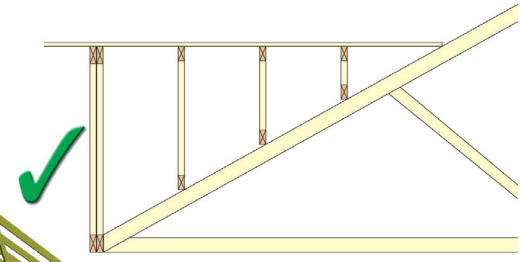


Fig 2 : Saddle Trusses

These connection details are required not only to ensure that the saddle trusses are adequately anchored under wind uplift but that the trusses below are also adequately restrained from buckling under gravity load.

For roof pitches above 15 degrees, Trip-L-Grips or timber blocks are required to prevent the saddle trusses from sliding down the roof.

A conventional valley that is 'Framed by Others' with loose rafters and ridge boards (Figure 3) will apply concentrated point loads from the ridge board and rafters to the trusses below and will require special design and loading cases to be considered for each individual truss.

This is not done because of its impracticality and is therefore not a recommended practice. Furthermore, intermediate ties would be required to the trusses below to ensure the lateral restraint spacing specified in the truss design is not exceeded.

In summary, saddle trusses must be supplied with all trussed jobs where required, and framing valleys on site should be avoided.

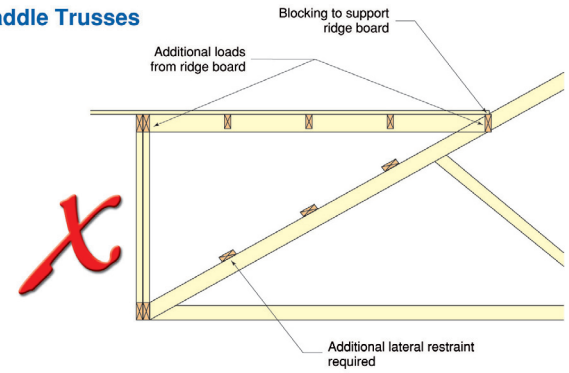


Fig 3 : Conventional Valley

With the power of modern truss design software, even the most complicated saddle truss series can be created and designed with relative ease.

And the smart link in the software between the truss layout and the truss generation and engineering design gives total confidence that the truss system produced will fit and perform to the best industry standard.

For further information, contact your nailplate supplier. TTN