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## BOOMERANG HIP & VALLEY RESTRAINTS

Trusses are slender structures and may at first appear weak and flimsy when they are being lifted. But once they are in place and restrained with battens, their strength and stiffness are unsurpassed.

Roof bracing is one of the most important aspects of truss installation if not THE most important. It is the key ingredient in stabilizing a trussed roof structure for it to achieve its full potential.

There is one area of truss restraint that is not widely understood. And that is the restraint of boomerang girder top chords. (See photo below)

A boomerang girder has a hip side and a valley side.

Although the cut-off trusses on either side of it do provide restraint, their spacing on the top chord is very far apart, often more than 2.5 times the normal truss spacing because of the acute angle they come in at.

The hip side of a boomerang girder is framed just like a normal hip roof with hip battens adjacent and parallel to the top chord on both sides. (Figure 1)

The roof battens butt against the hip battens and the top chord is nicely sandwiched and confined in between.

The valley side however presents a very different picture and is the more susceptible side. It is also the side which carries the heavier load from larger span cut-off trusses. (Figure 2)

The valley boards are located above the top chord and are not usually attached. The valley battens and roof battens are on the far side of the valley boards and are nowhere near close enough to the top chord to provide restraint.

Consequently, the boomerang valley is restrained only by cut-off trusses at very large intervals.

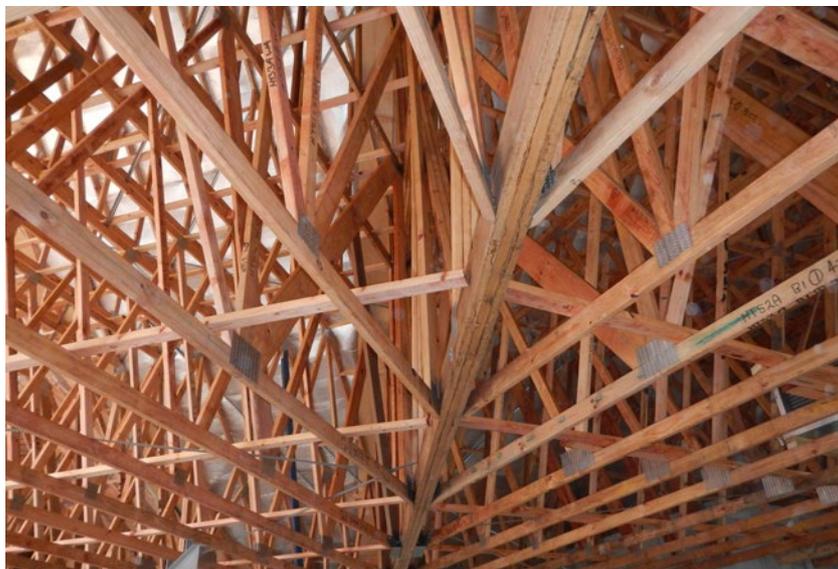
It is therefore necessary to install additional under purlins or solid blocking on both sides of the boomerang girder to restrain the valley top chord against other trusses. (Figures 3a & 3b)

Their spacing must be according to the truss design, usually no further apart than the roof batten or truss spacing.

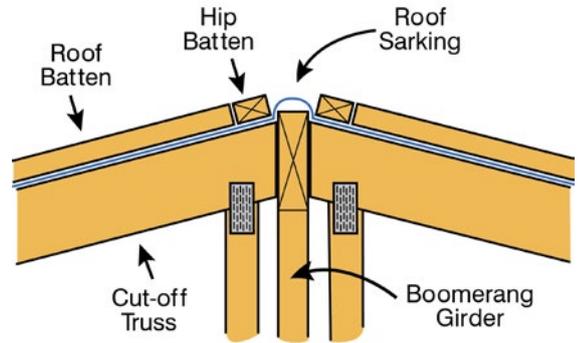
Unfortunately, this detail does not appear in AS 4440:2004 but it is included in recent editions of the Gang-Nail Fixing & Bracing Guidelines.

If you are supplying or installing a boomerang girder, be sure to note these important supplementary instructions.

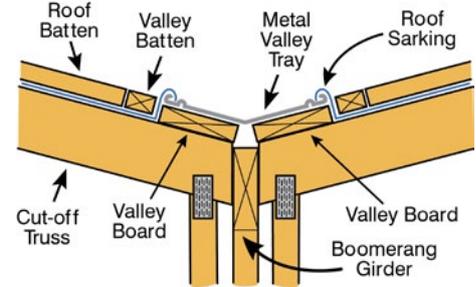
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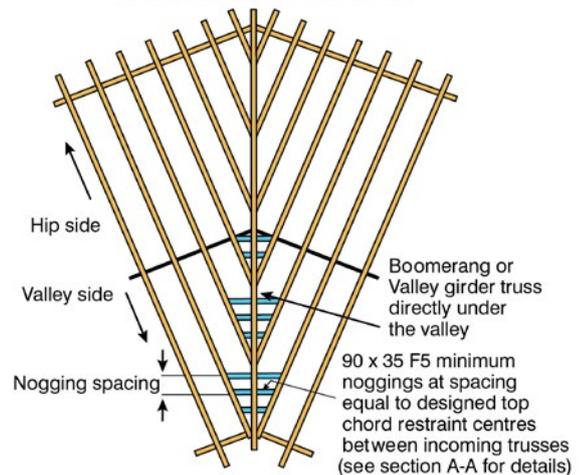
**Fig 1: BOOMERANG HIP FRAMING**



**Fig 2: BOOMERANG VALLEY FRAMING**



**Fig 3: TREATMENT AT BOOMERANG/VALLEY GIRDER**



**SECTION A - A**

