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GN GUIDELINES No. 183

ANOTHER MITEK ADVANTAGE – SEPTEMBER 2012

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WATCH OUT FOR "ANTI-SPLIT" PLATES!

Engineers are often accused (rightly sometimes) of using confusing jargon that the rest of the population can't understand.

However, this is not one of those cases.

Amazingly "Anti-Split plates" are actually intend to - you guessed it - prevent splitting!

Occasionally we see jobs on site where a split has occurred in a girder truss bottom chord, e.g. Fig 1 and 2, and these splits are being unfairly blamed on timber quality.

However, often it is the incorrect application of Anti-Split plates that is the cause of these types of problems – in Fig 1 they are missing and in Fig 2 incorrect location (in the depth on the bottom chord).

In fact the incorrect positioning of the anti-split plate has probably contributed to the instigation of the split – the top of the anti-split lined up with the underside of the web joint plate.

It's interesting to note that the situation in Fig 1 occurred quite soon after the job was loaded, but Fig 2 occurred some years after the trusses were installed.

The requirement for Anti-Split plates is sometimes misunderstood, despite clear nomination by nailplate suppliers' design software.

The need can be seen in Fig 3, where the load in the bracket pulls the lower part of the bottom chord down, while the webs resist, or "pull up".

The structure of timber can be likened to a pack of drinking straws stuck together – pull along the straws (ie with the grain) and the straws resist, but pull the straws away from each other (ie across or "perpendicular to" the grain) and it's the "glue" between the fibres that does the work.

Nailplates that bridge this split zone reinforce the "glue" and provide sufficient strength to prevent the timber from splitting.

Different timbers and EWP's have varying capacities in this "perp grain tension" property.

Hence, it is vital that you have your design software checking the exact material that you are going to be making the trusses from (Ref GN Guideline 131).

Most commonly, the Anti-Split plates are required either side of the web joints as there are relatively fewer of those than the girder brackets, thus concentrating the force.

However, your bracket supplier may in fact require anti-split plates either side of their brackets to ensure full capacity is achieved – be sure to check their literature and/or follow the instructions given in their software output.

Sometimes a piece of timber will be overloaded for a number of years and then an extra ordinary event, a storm perhaps, is enough to tip the balance – that was the case of the truss in Fig 2.

Please pay careful attention to this oft overlooked requirement of your truss manufacturing operation.

Not only should the anti-split plates be included when required, but they must be located as specified to be effective.

If you suspect that they may have been missed on a job you have already supplied, then contact your nailplate suppliers engineering support asap for remedial work - it will be much cheaper and simpler to fix before a split occurs than after the next big storm! TTN

Fig 1

Fig 2

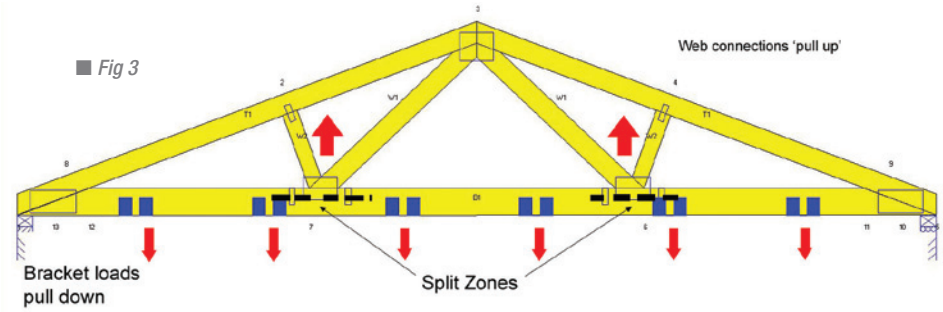

Fig 3