

WHY YOUR TIMBER TRUSSES NEED CAMBER

For over thirty years lightweight timber roof trusses have provided the most economical solution for framing large span and complex roofs.

These projects include domestic, commercial and institutional buildings for which prefabricated trusses have significantly influenced the way we build today.

While most projects are completed without a hitch, there have been exceptions which can often be due to the inappropriate selection of camber applied to trusses during manufacture.

Timber trusses, as with solid timber, steel or concrete beams, will deflect on loading. The ability to apply camber during manufacture gives trusses a significant advantage over solid materials and, carefully applied, will result in a more serviceable and aesthetically appealing roof.

The degree to which a timber beam or truss will deflect under load is very much dependant on timber moisture content and time for which the load will be applied.

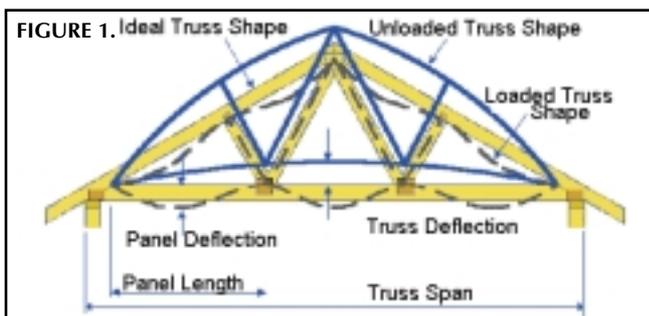


FIGURE 1. Ideal Truss Shape. Exaggerated long term truss deformation under distributed top and bottom chord loads.

This movement of timber with time is called "creep".

Seasoned timber has an average creep factor to two, i.e. if a member deflects 6mm immediately after it is loaded it could be expected that after 12 months it will have deflected a total of 12mm. Any further deflection after one year would be minimal.

Unseasoned timber has an average creep factor of three or more, with much of the creep being due to the drying of the timber under load.

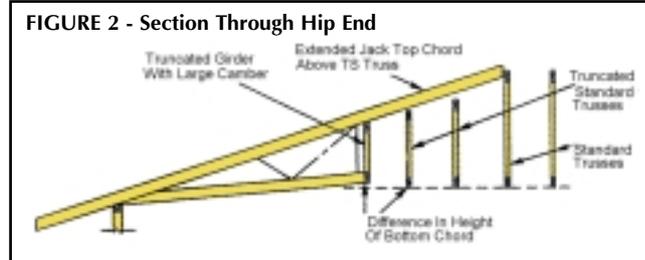
There are two forms of

deflection which occur in a roof truss.

DEFLECTION BETWEEN PANEL POINTS

This is due to bending in the top or bottom chord between panel points and is kept within acceptable limits by increasing member size, or by reducing panel lengths.

A panel deflection check is normally carried out by the truss



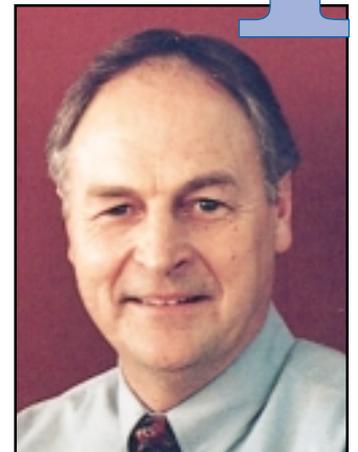
design software and chords with excessive panel deflections increased in size and redesigned.

Limits on panel deflections are similar to those used in the design of rafters and ceiling joists.

require more camber than deep or small span trusses.

Similarly trusses supporting heavy loads or carrying large roof areas such as girder trusses will normally require more camber than trusses at close centers carrying a uniform strip width of roof or ceiling.

The amount of camber applied to a truss is generally at the discretion of the detailer



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roof structure may also create problems for both tilers and plasterers.

For example, where camber in the Truncated Girder of a hip end is significantly larger than camber in an adjacent Truncated Standard, the extension to the Jack truss top chord will be higher than the Truncated Standard truss as shown in Figure 2.

This may tempt the builder to either pack between the extended Jack top chord and Truncated Standard, or birdsmouth the Jack top chord at the Truncated Girder.

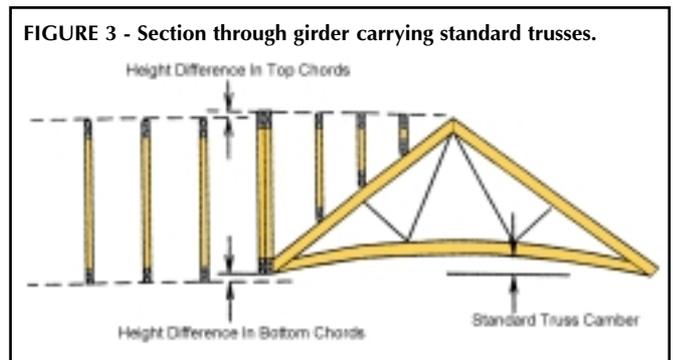
Either option may result in an unsatisfactory roof after loading with tiles or sheet.

In addition the height difference between bottom chords on the Truncated Girder and Truncated Standard may

and, while it is possible to design trusses with very large cambers, this may create problems during manufacture and installation, or for following trades such as tilers and plasterers.

TRUSSES WITH LARGE CAMBERS

Large cambers in standard trusses may result in significant height differences between truss and internal walls creating problems for plasterers when



fixing plasterboard sheets and cornice.

Note that the slotted holes on the Gang-Nail Internal Wall Bracket are 30mm long to allow for up to 25mm movement after installation.

They are not suitable for use on trusses with cambers greater than 25mm.

Large relative cambers between adjacent trusses in a

create difficulties for the plasterer.

Similar problems would be encountered with large camber in a Standard Girder truss relative to the adjacent Standard as shown in Figure 3.

Large cambers in this case would make it difficult for the plasterer to achieve a level ceiling under long term loading.