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## PARAPET CONSTRUCTION

**P**refabricated timber roof trusses have been used extensively in residential and light commercial construction since the 1960s when the “Gang-Nail” nail plate was first introduced into Australia.

During that time, there have been many construction trends that have come and gone.

One of the popular trends currently is for shallow roofs with box gutters and parapets.

Parapet construction can be approached in a number of ways but two of the more common approaches are either for the builder to frame it on site or to have the truss fabricator deal with the issue and build them into the truss.

As parapets are outside the scope of the Residential Timber-Framed Construction standards, the build-on-site option may create some issues for the builder.

### PREFABRICATION

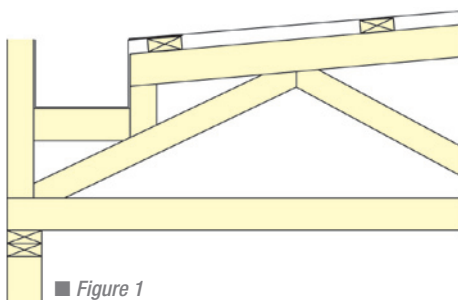
**For small parapets it may be possible to use a cantilever member (Figure 1).**

However, care needs to be taken during design to ensure the member is correctly loaded with lateral loads, e.g. wind loads.

And if the parapet is intended as a barrier for Workplace Health and Safety reasons, additional barrier loads would also need to be allowed for.

Extra care also needs to be taken during manufacture to ensure the cantilever member is aligned correctly so that the end result is a nice straight and even parapet.

There is also the issue of ensuring that the cantilever member is not damaged during transport and handling.



■ Figure 1



■ A kneebrace to a parapet.

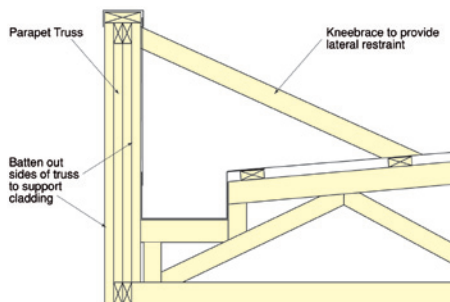
I have often seen jobs that have specified parapet girder trusses to support the other trusses.

This introduces a few more concerns that could easily be overlooked. The first is to do with lateral restraint.

There have been several previous articles discussing the requirements of lateral restraint and in a typical roof truss this is usually provided by the roof battens or by other incoming trusses at right angles to the truss chord.

In the case of a parapet girder truss top chord there is no member(s) at right angles and often will require t-stiffeners and kneebraces to transfer the loads back to the main structure (Figure 2).

The use of kneebraces can then create some interesting connection details and can add further issues to waterproofing the roof.



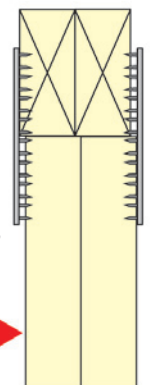
■ Figure 2

**Another issue often overlooked is that roof trusses are very effective at transferring loads that are applied in the same plane as the truss.**

For example, a typical roof truss will have roof and ceiling loads applied through the roof battens and the plasterboard ceiling which then get distributed through the truss and find their way to the supporting structure. However parapet girder trusses will also be subject to lateral loads from wind.

If this cladding material was fixed directly to the girder truss the webs could be pushed through the truss and the nail plates could eventually dislodge (Figure 3).

Therefore adequately sized battens would be required so that the lateral wind loads can be distributed to the top and bottom chords and then transfer back into the main roof structure.



■ Figure 3

**Lateral Loads** →

So next time you receive a project with parapets, remember that extra care needs to be taken to ensure that the trusses are designed and manufactured correctly.

The engineering department of your nail-plate supplier will be able to assist you with these designs.