

## INSTALLATION OF NAIL PLATED TIMBER TRUSSES - CODE REQUIREMENTS

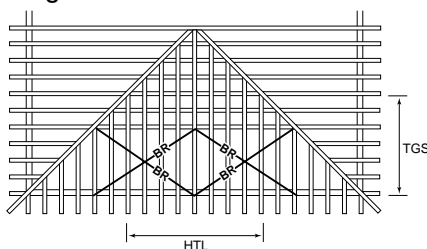


by **ADAM DENNAOUI**  
State Engineer,  
MiTek Victoria

**W**hy is it that when such a lot of effort, time and money is invested into the design and manufacture of timber roof trusses, builders - on occasions - choose to ignore guidelines set down for their installation.

So what goes wrong? Up until recently it has been up to the builder or contractor to follow one of a number of Truss Installation Guides produced by the nail plate manufacturers.

**Diagram A**



**Top chord bracing required to jack trusses where T.G. span is greater than 13000mm**

Now - Australian Standard - AS 4440 1997 Installation of Nail Plated Timber Trusses - fulfills that requirement, replacing a number of similar, but sometimes conflicting documents providing installation information to the builder.

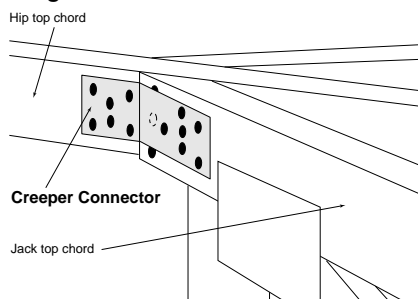
Unfortunately, although trusses may be

designed and manufactured correctly, they may still misbehave in-situ if not handled and installed correctly. At best incorrect installation will simply overstress the timbers. At "worst", incorrect installation will cause perfectly good trusses to collapse.

A report in the United States found that incorrect temporary bracing caused over 60 per cent of truss roof collapses. Experience by local engineers here in Australia who are required to inspect "problem roof trusses" also find a very large proportion of the problems are related to poorly erected, braced, or connected trusses.

Unfortunately, trusses usually present problems after they have been loaded for a long period of time - most often after the ceiling is installed. This makes for costly and difficult repair.

**Diagram B**



AS 4440 is the result of three years of unprecedented co-operation between engineering staff from each of the nail plate manufacturers, Building Inspectors and Timber Industry, all of whom participated in the composition and editing of the Standard.

They used existing installation guides as the basis for their investigation and evolved them into a national document, which now gives uniform guidelines on the correct installation of roof trusses.

Although AS 4440 used existing recommendations as a basis, there are some differences that should be noted.

For example:

### 1. Truncated Girder Truss

The fixing of Jack Trusses to Truncated

Girder Trusses now need Triple-Grips where the Truncated Girder is greater than 8000mm span.

### 2. Hip Trusses

The fixing of jacks to hip trusses in some instances require special brackets.

(See diagram B)

### 3. Hip End Bracing

AS 4440 requires the top chords of jack trusses to be braced where TG trusses exceed 13000mm span.

(See diagram A)

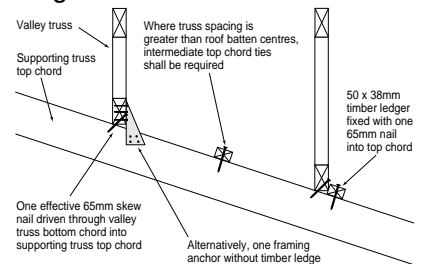
### 4. Saddle Trusses

Saddle trusses are required to be fixed to standard trusses with Triple Grips or timber ledger for pitches greater than 15 degrees.

(See diagram C)

The above are just a few examples where AS 4440 varies from common practice. With the pending acceptance of this code into the BCA it is important for all truss manufacturers and truss installers to become familiar with its requirements.

**Diagram C**



Timber trusses are an engineered component of a structure, and as such require adherence to specification for design handling and bracing.

Correctly installed timber trusses will perform to their full capacity, giving a safe and enduring service. Competent application of the details of AS 4440 - 1997 will go a long way towards ensuring that the truss installer does get it right first time - so the best choice is - don't ignore guidelines set down for the installation of nailplated timber trusses and read up on AS 4440!