

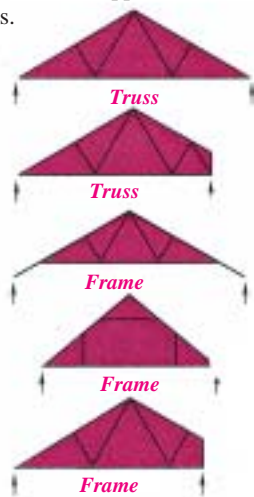
Problems to be aware of

Some of the more common problems which may occur when designing roofs containing trussed rafters are listed below.

1. Trussed rafter or frame?

Trussed rafters are fully triangulated frameworks and there is often confusion when raised tie or Attic frames are required. Such frames are not fully triangulated trusses rafters, although they are of similar appearance, and their design calls for a completely different approach than that for true trussed rafters.

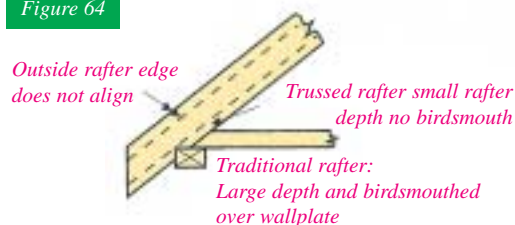
Figure 63



2. Trusses to match existing construction

Where trusses are required to align with existing roof constructions, great care must be taken to obtain the critical dimensions to which the new trusses should be made. The most common problems in this area are the misalignment of the outside rafter line and the mis-match of overall roof height.

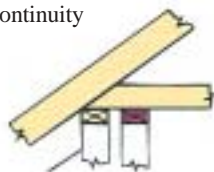
Figure 64



3. Changes in wall thickness

Trussed rafters are commonly supported on the inner leaf of a cavity wall construction. Where both inner and outer leaves of the masonry are required to support trusses (common when a garage abuts directly onto a bungalow for example), great care should be taken to ensure continuity of the outside rafter line.

Figure 65

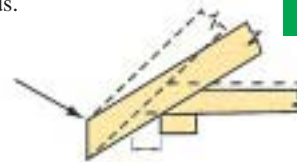


If trusses are supported on outer leaf (or single skin wall) some trusses may require short cantilever details

4. Changes in adjoining roof pitch

If two adjoining areas of roof are required to be at different pitches, care should be taken to ensure that the outside top edges of the rafter overhangs are of common height to provide continuity of fixing for fascia boards.

Figure 66



Cantilever produced by change of pitch

5. Variations in support conditions

It is increasingly common for the support conditions for trusses to be varied from the standard type of heel support, to create cantilevered and bobtailed (stub) trusses, where the cantilever or bobtail distance is short (in the order of 100 to 400mm). Such support conditions must be specially designed for. (See section 2.8).

6. Depth limits for trussed rafters

The general limit for the manufacture of roof trusses is in the order of 600mm overall depth minimum. Further, it is recommended that the span-to-depth ratio (span of truss divided by its overall depth) is not greater than 10. (See section 1.4).

7. Check that everything fits

Ensure that all water tanks, air-handling plant, services etc will fit within the outside profile and will clear the internal webs. A further point here, is to check that any deep hangers used to carry special loads will fit within the depth available to them, as such items tend to be relatively deep.

Figure 67

Tank does not fit



8. Fixings to support trusses

Timber to timber connections are best made at 90 degrees wherever possible, as angled connections increase costs. (See section 2.9).

9. Fixing of hangers

Where hangers are used on the bottom chords of girder trusses to support trusses and/or infill members, it is often more practical to provide a deeper bottom chord, usually 125mm or greater, in the girder truss to avoid the need for blocking-out on site.

Where hangers are used in masonry walls to carry trusses, a sufficient depth of masonry above the hanger should be provided to ensure a secure fixing. (See section 3.9).

10. Alignment of webs

In some cases, it is important to align webs on adjacent trusses within the roof to enable bracing members to continue in a straight line or for connections to be made from purlins. (See section 2.7).