MANDERWOOD
Timber Engineering Limited

7 Roof Design

7.1 Design responsibilities

On every project it is essential that one person Assumes overall responsibility as building designer and is clearly defined as such. The building designer is responsible for providing the information listed in **11.1** to the trussed rafter designer and for ensuring adequate provision is made for the stability of the roof structure as a whole as distinct from and in addition to, the stability of the individual trussed rafters.
The Building designer is responsible for detailing all elements of bracing required in the roof, including that necessary to provide the lateral restraints to truss members required by the trussed rafter designer. The building designer is also responsible for detailing suitable fixings for both the trussed rafters and the wall plates to provide the restraint against uplift required by the trussed rafter designer.

7.2 Overall stability

7.2.1 Bracing functions

The building designer should specify all bracing.

All roof s require permanent bracing. Bracing in roofs can be considered to serve two clear and separate functions as follows.

a) Roof stability. Roof stability bracing is provided to ensure that the roof, as an independent structure, acts in a robust stable manner with adequate overall stiffness when subject to design dean, imposed and wind loadings. It also prevents lateral buckling of compression members and serves to limit and unfavourable consequences arising from poor construction or misuse of the structure.
It is essential that the trussed rafter designer clearly specifies on drawings the location of lateral restraints assumed in the truss design, in order that the building designer may detail a suitable bracing arrangement and support system capable of providing such restraint.
Roof stability bracing to trussed rafter roofs can typically be provided by a combination of the following elements: longitudinal bracing at node points, rafter diagonal bracing, lateral bracing at the mid point of compression members, sarking boards. Particular attention should be given to the need to ensure that principal truss rafters (e.g. girder trusses) are properly braced back to the main roof structure to assist in resisting any torsional tendency induced by out-of-plane eccentric loading.
b) Wall stability. Wall stability bracing may be provided in the roof to assist in bracing the gable and/or supporting walls against wind loads and to ensure that the imposed forces are safely transmitted to other suitably braced parts of the building.
It can typically consist of diagonal bracing at rafter of ceiling levels, or wind girders or diaphragms placed in the plane of the rafters or the ceiling. At gable ends, wall stability bracing in the roof structure is used in conjunction with lateral restraint straps to stabilise the gable walls.

c) See T.R.A. bulletin 03.
Standard bracing conditions attached.