



LINCS BUILDING
CONSULTANCY

Guidance Note No. 43

Domestic Trussed Rafter
Roof Construction –
Bracing details between
8 – 12m span

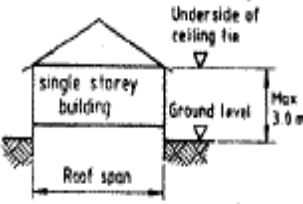
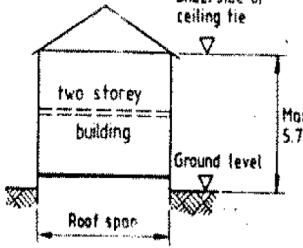
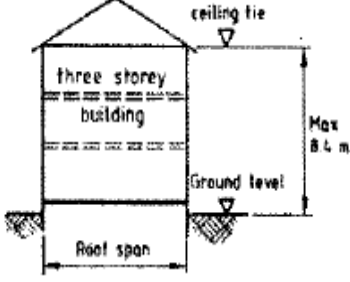
Bracing details – for 'Fink' Trusses of between 8000mm and 12000mm span

All trussed rafted roofs require permanent bracing which can be considered to serve the two separate functions below:-

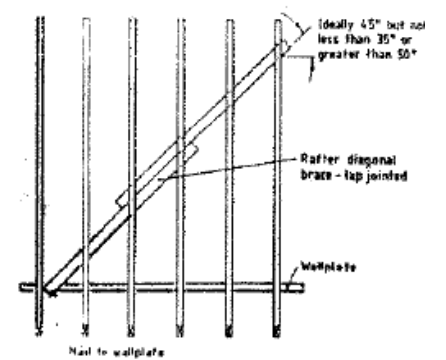
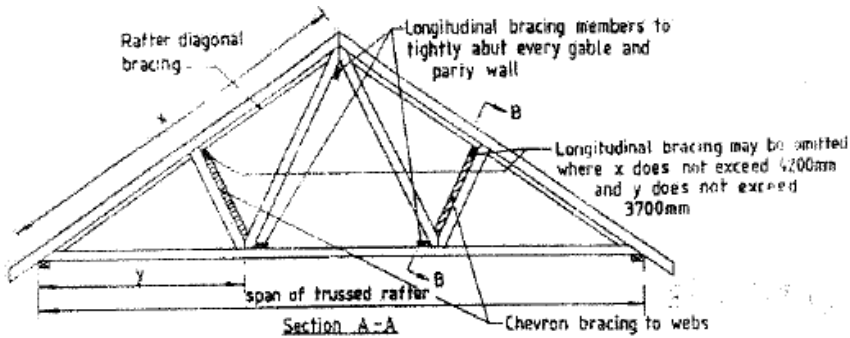
- i) *Stability bracing – this holds the truss rafters vertical, straight and parallel to each other at the correct spacing. It will also provide lateral restraint to members subject to compression.*
- ii) *Wind bracing – Will ensure that the roof acts as a rigid component capable of transmitting horizontal forces to the buttressing elements. This is particularly relevant when the roof is required to provide stability to the gable walls.*

It is the responsibility of the Building designer to detail all bracing and restraint to the roof and to provide accurate details to the Trussed Rafter Designer.

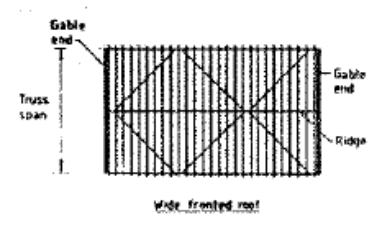
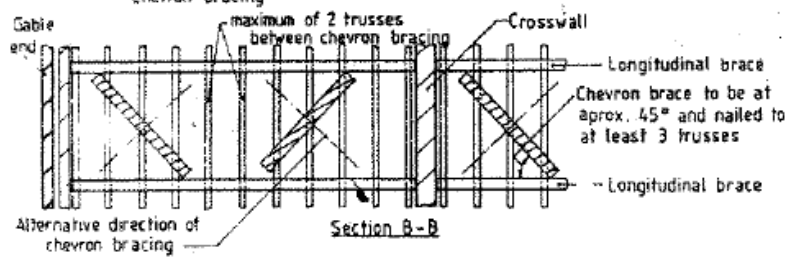
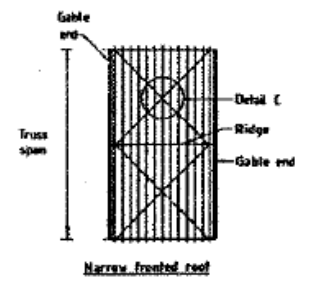
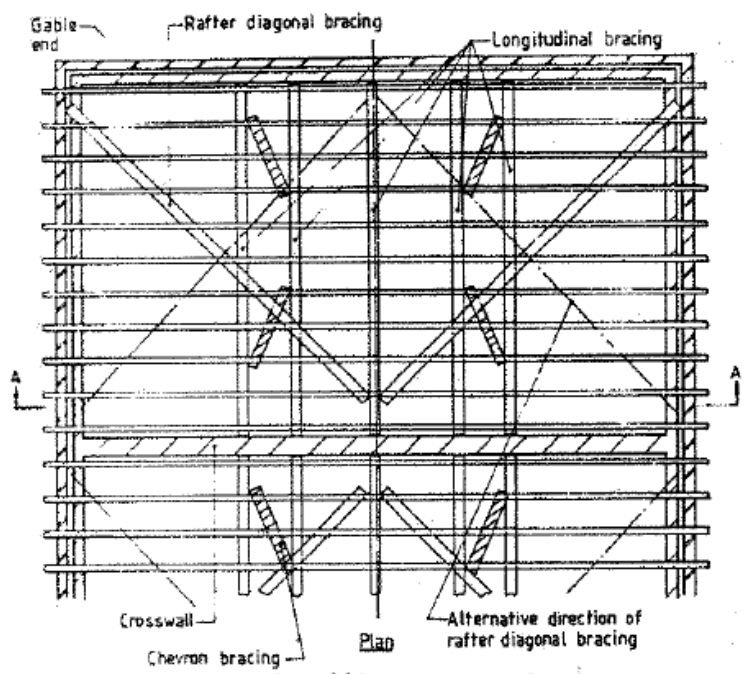
British Standard 5268: Part 3: 1998 details all the requirements for the bracing of most domestic properties by using these specific requirements – as summarised over – there would be no need for further calculations up to the maximum span shown in table 1 below. The standard bracing details do not apply to domestic buildings erected on long fetches of open, level or nearly level country with no shelter such as flat coastal fringes, fens, airfields and grasslands, moorland or farmland without hedges or walls around the fields.

Building Profile	Roof Pitch	Maximum roof pitch. Zone 's' (max. wind speed 48m/s)
	M	M
	15.0	12.0
	17.5	12.0
	20.0	12.0
	22.5	12.0
	25.0	12.0
	27.5	12.0
	30.0	12.0
	32.5	11.8
	35.0	10.6
	37.5	10.0
	40.0	8.9
42.5	8.5	
45.0	7.4	
	15.0	12.0
	17.5	12.0
	20.0	12.0
	22.5	12.0
	25.0	12.0
	27.5	12.0
	30.0	11.5
	32.5	10.7
	35.0	9.1
	37.5	8.6
	40.0	7.5
	42.5	7.2
45.0	6.7	
	15.0	12.0
	17.5	12.0
	20.0	12.0
	22.5	12.0
	25.0	12.0
	27.5	11.5
	30.0	10.2
	32.5	9.0
	35.0	8.6
	37.5	7.5
	40.0	7.1
	42.5	6.1
45.0	5.8	

NOTE: When wind speeds are basic wind speeds in metres per second

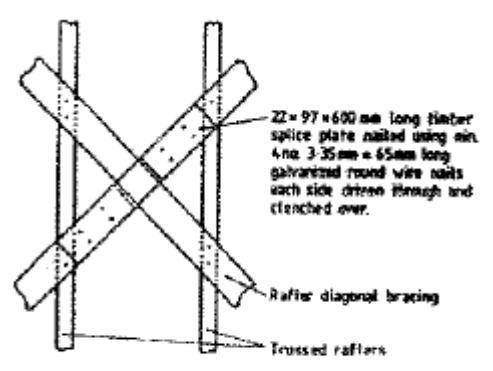


Detail A - Lap joint



Detail B - Rafter bracing layout

Standard bracing for trussed rafters between 8000 and 12000mm span



Detail C - Bracing splice plate

Notes: -

The following criteria must be observed.

- a) The maximum length of unsupported external masonry wall should not exceed 9000mm between buttressing walls, piers or chimneys and the minimum thickness of the unsupported cavity wall is 190mm.
- b) The maximum trussed rafter spacing is 600mm.
- c) The maximum clear floor to ceiling height is 2600mm.
- d) Horizontal lateral restraint should be provided in accordance with Approved Document A, Building Regulations 2000 (as amended) and fixed at both rafter and ceiling level.
- e) A plasterboard ceiling should be provided throughout, fixed to the bottom chord of the truss. The plasterboard should be a minimum thickness of 9.5mm for up to 450mm truss centres or 12.5mm for up to 600mm truss centres. Where a ceiling is less rigid than plasterboard or omitted completely extra bracing may be required at ceiling level.
- f) All bracing members should be a minimum size of 22mm by 97mm and free from major strength reducing defects.
- g) All bracing members should be nailed to every trussed rafter they cross with two 3.35mm diameter by 65mm long galvanised round wire nails.
- h) Where bracing members are provided in two pieces, they should be lap jointed by at least two trussed rafters and nailed as (g) above.
- i) At least four rafter diagonal braces are fixed to the underside of the rafter members at approximately 45 degrees to the rafter. Where the bracing crosses, as in the narrow fronted roof, a splice plate should be used.
- j) Longitudinal bracing members should extend over the whole length of the roof and tightly abut the face of the gable and party walls.
- k) Hipped ends on a trussed rafter roof will provide a satisfactory alternative to the bracing shown. If the length of the roof between the hipped ends exceeds 1800mm, this section should be braced as above.
- l) Tiling battens should be fixed to every rafter member they cross. They should be at least 1200mm long and butt joints arranged so that no more than one in four is jointed on any rafter member.

Sources of information:-
BS 5268: Part 3: 1998



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Please note that these guidance notes are for advice only and may not cover all situations. It is your responsibility to ensure that they are appropriate for use in your particular circumstances.