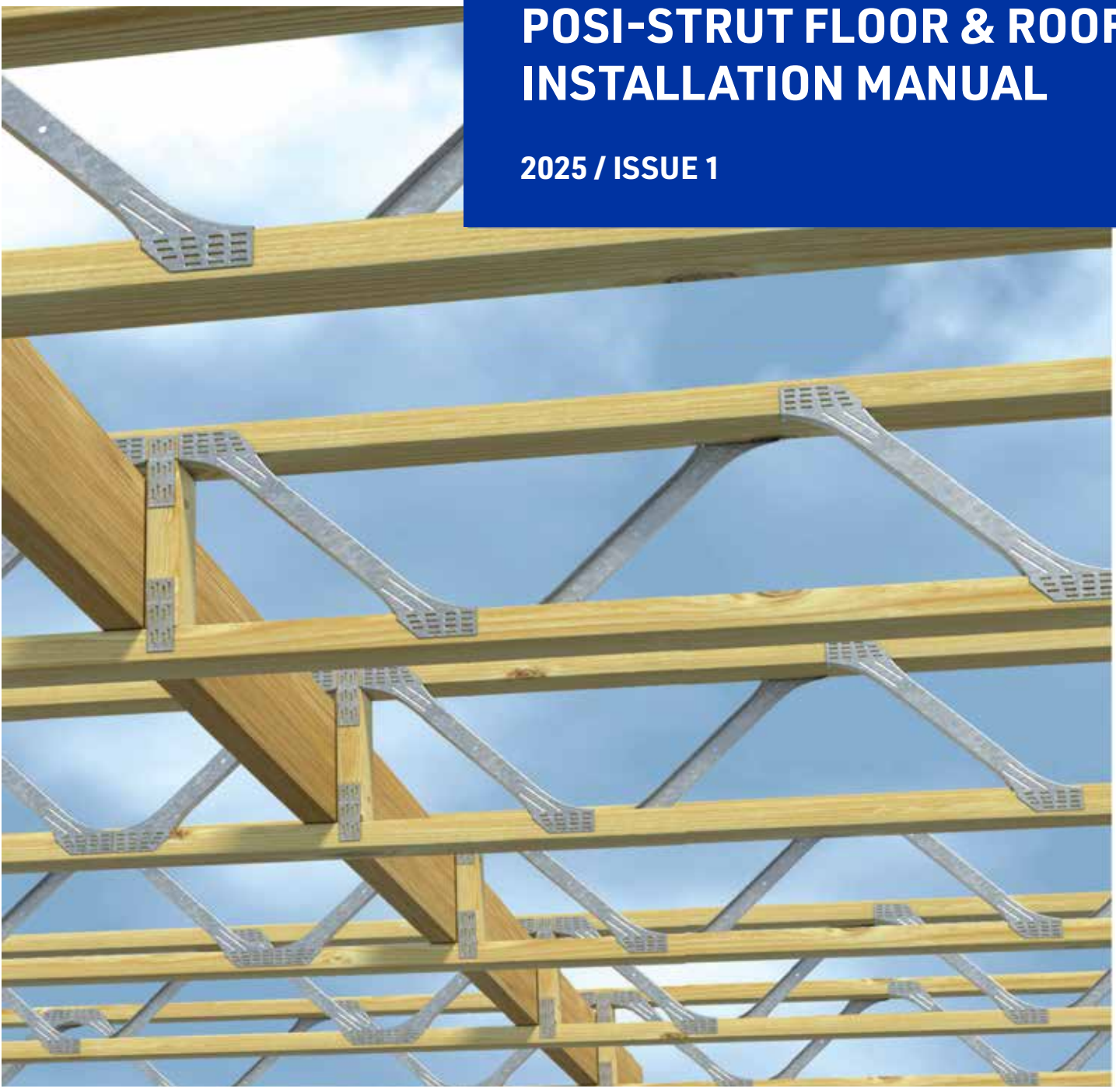
MiTek®

HOMEBUILDING SOLUTIONS

POSI-STRUT FLOOR & ROOF INSTALLATION MANUAL

2025 / ISSUE 1



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ILLUSTRATIONS

All technical illustrations in this Guide have been converted to pdf, AutoCAD 2000 dwg & dxf file formats. They are also compatible for use with MiTek SAPPHIRE™ - making them the ideal, easy reference for installation instructions and data. To access these illustrations, please visit: **mitek.com.au**

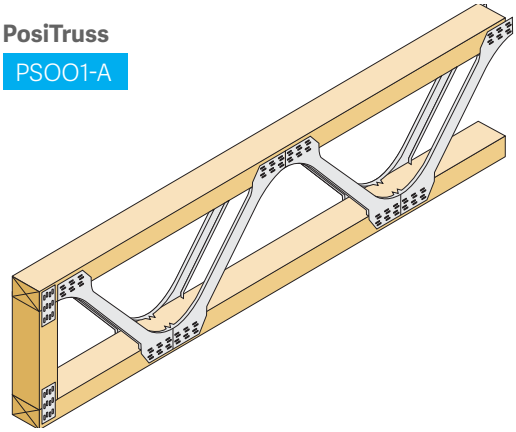
MiTek®

POSI-STRUT® FLOOR SYSTEM

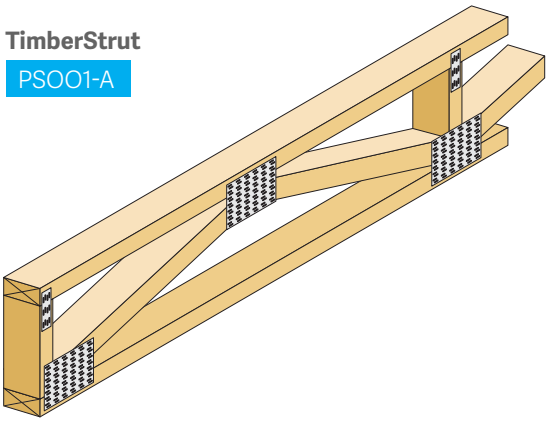
Posi-Strut range of products are parallel chord trusses using timber chords "on flat" and the unique Posi-Strut metal webs.

PosiTruss is a made to order parallel chorded truss commonly used as long span floor joists. They provide an economical and high quality floor structure which is easily assembled and provides excellent access for plumbing, electrical services and air conditioning ducts. PosiTruss may also be used for long span rafters or purlins to carry tile or steel deck roofing.

PosiTruss
PSOO1-A



TimberStrut
PSOO1-A



As PosiTrusses are designed and manufactured to order for specific projects, they can incorporate internal beams and special support conditions.

The Posi-Strut range of products are available in nominal 200, 250, 300, 360 and 400mm depth. Actual overall truss depth depends on timber sizes used for the chords, and is provided in the design tables enclosed. Posi-Struts make more efficient use of timber than conventional joists, as they have timber concentrated at the top and bottom of the truss where it works most efficiently. This concept is similar to that of steel universal beams, where the majority of steel is located in the flanges. The efficient use of timber, combined with the strength of the Posi-Strut webs, make the Posi-Strut range of products very lightweight, yet strong structural members.

Because timber webbed floor trusses (TimberStrut) are similar to the Posi-Struts system, details in this manual also apply where applicable.

ADVANTAGES

Posi-Struts offer the following advantages over solid joists:

- Plumbing, electrical conduit and other services can be run between chords and webs.
- No drilling or notching required to accommodate services.
- Additional width available for fixing flooring.
- Ceiling material can be fixed directly to the truss bottom chords.
- Larger clear spans.
- Internal load bearing walls, piers or stumps and bearers can be reduced or eliminated.
- Shrinkage problems sometimes encountered with unseasoned solid timber are reduced or eliminated.
- Lightweight and easy to handle.
- Load sharing ability.
- Strongback bracing increases floor stiffness and reduces squeaky floors.
- Optional top chord support reduces on-site labour.
- With PosiPurlins, roof and ceiling can be fixed direct.
- Top chord support

DEFINITIONS

Load bearing Partition Walls
Walls which carry roof and/or upper floor loads in addition to their own self weight and wall lining.

Non-Load bearing Partition Walls
Walls which impart self weight only to supporting structure.

Platform Flooring
Flooring fitted continuously from external wall to external wall prior to the installation of internal partition walls.

Fitted Flooring
Flooring fitted for each room after internal walls have been installed.

Strongbacks
Bracing members running at right angles to Posi-Struts which provide load sharing between adjacent members.

FLOOR STIFFNESS

The dynamic response of floor systems to foot traffic and other moving loads is dependant on many factors such as the floor plan of supported walls, applied load, furniture layout, etc. The comfort and expectations of occupants also varies widely and is very personal.

Posi-Struts have been designed so that the maximum span recommended in Tables 1 to 8 conforms to the vibration standard set out in AS 1720.3 Timber structures Part 3: Design Criteria for Timber-Framed Residential buildings.

When selecting a Posi-Strut for your application consideration should be given to the springiness of the floor. Generally the floor stiffness provided by the Tables meets the expectations of most occupants. Where Posi-Struts are near their maximum span for large open areas like rumpus rooms and family rooms, or where additional floor stiffness is required the maximum spans given in Tables 1 to 8 should be reduced by 10%

FLOOR LOADING

Posi-Struts have been designed for the following loads.

Dead Loads
Are due to the mass of the structure and permanent fixtures. An allowance has been made in these designs for the following permanent loads:

Flooring
22mm particle board flooring or equivalent plywood.

Ceiling
13mm plasterboard direct or 10 mm plasterboard on battens.

Floor covering
Normal floor covering loads e.g. carpets or vinyl tiles. If, clay or heavy ceramic tiles are to be used, on large areas (i.e. greater than 3 square metres), further professional advice should be sought before commencing construction.

Live Loads
Are temporary loads due to furniture or people which may vary over time.

Posi-Strut floor systems in this manual have been designed for the following live loads:

Domestic floors = 1.5kPa / 1.8kN
Hospital wards and hotel rooms = 2.0kPa / 1.8kN
Offices for general use = 3.0kPa / 2.7kN
Assembly areas without seating such as concert halls, bars, public lounges = 5.0kPa / 3.6kN

Note
1. The Posi-Strut span chart in the tables, are not designed to support load bearing walls. All roof loads to be supported by external wall only. For Posi-Struts that must support load bearing walls, contact your nearest MiTek office.

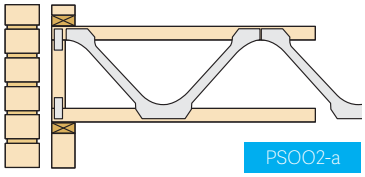
2. The Posi-Strut spans in the tables are indicative and will be specifically verified / designed in MiTek software.

3. Minimum Joint Group JD5.

Earthquake Loads
The Posi-Strut sizes, bracing and connection details are suitable for the design of domestic structures of height less than or equal to 8.5m in accordance with AS 1170.4.

RESIDENTIAL LOADS

SPAN CHARTS FOR BOTTOM CHORD SUPPORT FLOOR TRUSSES



Maximum Spans for 35mm thick timber

Table 1. Maximum Spans for Domestic Floor Loads - Live Load 1.5 kPa													
Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW3520	35 x 70	197	-	3800	4400	3400*	4300	4600	-	3400	4000	3100*	3800	4000
	35 x 90	197	3800	4200	4800	4000	4600	4900	3300	3800	4300	3400	4200	4300
PSW3525	35 x 70	248	-	4600	5200	4100*	5100	5300	-	4200	4800	3400*	4500	4900
	35 x 90	248	4500	5000	5500	4600	5400	5700	3900	4600	5100	4000	4800	5200
PSW3530	35 x 70	302	-	5300	5800	4500*	5700	5900	-	4800	5400	4000*	4900	5500
	35 x 90	302	5000	5600	6200	5200	6100	6300	4400	5200	5800	4500	5600	5900
PSW3536	35 x 70	360	-	5800	6300	4700	6200	6400	-	4900	5000	4400*	5000	5000
	35 x 90	360	5100	6200	6300	5600	6400	6400	3700	4900	5000	5000	5000	5000

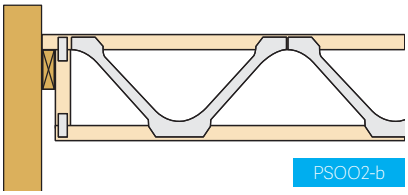
***Important Note:** For spans in the range of 1100 to 2600, top chords should be a minimum grade of F8 or MGP12 to conform to AS 1720.1

Maximum Spans for 45mm thick timber

Table 2. Maximum Spans for Domestic Floor Loads - Live Load 1.5 kPa													
Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW4525	45 x 70	248	4400	4900	5400	4500	5300	5500	3800	4400	5000	3900	4900	5100
	45 x 90	248	4900	5200	5800	5100	5600	5900	4300	4800	5400	4500	5200	5500
PSW4530	45 x 70	302	4900	5500	6100	5100	6000	6200	4300	5100	5700	4500	5500	5800
	45 x 90	302	5500	5800	6500	5800	6300	6600	4800	5400	6000	5000	5900	6100
PSW4536	45 x 70	360	5500	6000	6700	5600	6500	6900	4700	5600	6200	4900	6100	6300
	45 x 90	360	6000	6400	7100	6400	7000	7200	5400	6000	6600	5600	6500	6700
PSW4540	45 x 70	412	5900	6500	7200	6100	7100	7400	5100	6100	6700	5400	6600	6900
	45 x 90	412	6500	6900	7700	6900	7500	7900	5600	6400	7100	6000	7000	7300

SPAN CHARTS FOR TOP CHORD SUPPORT FLOOR TRUSSES

Note: Spans have been produced for 45mm wide top chord bearings.



Maximum Spans for 35mm thick timber

Table 3. Maximum Spans for Domestic Floor Loads - Live Load 1.5 kPa

Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW3520	35 x 70	197	-	3900	4500	-	4100	4500	-	3000#	3900	-	3700	3900
	35 x 90	197	-	4100	4700	4000	4500	4700	-	3700	4000	-	4000	4000
PSW3525	35 x 70	248	-	4100	5100	-	5000	5200	-	3100#	4800	-	4500	4700
	35 x 90	248	-	4900	5500	4600*	5300	5600	-	3900	5000	3900*	4900	5200
PSW3530	35 x 70	302	-	4100	5700	-	5600	5700	-	3100#	5300	-	4900	5300
	35 x 90	302	-	5200	6100	5200*	6000	6200	1100	3900	5700	4100*	5400	5800
PSW3536	35 x 70	360	-	4100	5800	-	5800	5800	-	3100	4600	-	4400	4600
	35 x 90	360	-	5200	5800	4400	5800	5800	-	3900	4600	3400	4600	4600

Maximum Spans for 45mm thick timber

Table 4. Maximum Spans for Domestic Floor Loads - Live Load 1.5 kPa

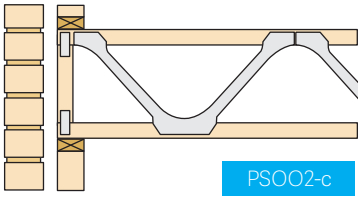
Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW4525	45 x 70	248	4400	4800	5400	4500	5300	5500	3500*	4400	5000	3900	4800	5100
	45 x 90	248	4800	5200	5700	5100	5600	5800	4300	4800	5300	4300	5200	5300
PSW4530	45 x 70	302	4900	5400	6000	5100	5900	6100	4100*	5000	5600	4400	5400	5700
	45 x 90	302	5400	5800	6400	5700	6300	6500	4700	5300	5700	4900	5800	5700
PSW4536	45 x 70	360	2600*	5800	6600	5600	6500	6800	-	5500	6000	4200	5900	6200
	45 x 90	360	5800	6300	7100	6400	6900	7200	4700	5800	6400	5600	6200	6400
PSW4540	45 x 70	412	3400*	6400	7100	6000	6900	7300	-	5800	6600	4700	6400	6700
	45 x 90	412	6200	6800	7600	6900	7400	7700	4700	6300	7000	5800	6800	7000

***Important Note:** For spans in the range of 1100 to 2600, top chords should be a minimum grade of F11 or MGP12 to conform to AS 1720.1

#Important Note: For spans in the range of 1100 to 2600, top chords should be a minimum grade of F8 or MGP12 to conform to AS 1720.1

COMMERCIAL LOADS

SPAN CHART FOR BOTTOM CHORD SUPPORT FLOOR TRUSSES



Maximum Spans for 35mm thick timber

Table 5. Maximum Spans for Commercial Floor Loads - Live Load 2.0 kPa & 1.8 kN

Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW3520	35 x 70	197	-	3800	4300	3100*	3900	4300	-	3300	3500	1100	3300	3500
	35 x 90	197	3300	4100	4300	3400	4300	4500	3000*	3500	3500	3100	3500	3500
PSW3525	35 x 70	248	-	4500	5100	3400*	4500	5100	-	3600	4700	3100*	3700	4800
	35 x 90	248	4000	4800	5500	4100	5100	5700	3300*	4500	4900	3500	4500	5000
PSW3530	35 x 70	302	-	5000	5800	4100*	5100	5100	-	4400	5200	3300*	4500	5200
	35 x 90	302	4500	5600	6200	4500	5800	6200	3700	4900	5200	3400	4800	5200
PSW3536	35 x 70	360	-	5200	5200	4600	5200	5200	-	4200	4200	4000	4200	4200
	35 x 90	360	4700	5200	5200	5200	5300	5300	3900	4200	4100	4200	4200	4200

***Important Note:** For spans in the range of 1200 to 2600, top chords should be a minimum grade of F8 or MGP12 to conform to AS 1720.1

Maximum Spans for 45mm thick timber

Table 6. Maximum Spans for Commercial Floor Loads - Live Load 2.0 kPa & 1.8 kN

Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW4525	45 x 70	248	3800	4700	5400	4000	5000	5500	3300	4300	4800	3400	4400	4800
	45 x 90	248	4400	5100	5800	4500	5600	5900	3800	4700	4800	3900	4700	4800
PSW4530	45 x 70	302	4400	5600	6200	4500	5700	6500	3800	4800	5100	3900	4900	5100
	45 x 90	302	4900	5900	6500	5100	6200	6500	4300	5100	5100	4500	5100	5100
PSW4536	45 x 70	360	4900	6000	6700	5100	6300	6900	4100	5400	5700	4200	5500	5700
	45 x 90	360	5600	6400	7100	5600	7000	7200	4800	5700	5700	4900	5700	5700
PSW4540	45 x 70	412	5300	6600	7400	5500	6800	6800	4200	5600	6000	4700	6000	6200
	45 x 90	412	5700	7100	7800	6100	7400	7900	5200	6000	6000	5400	6200	6200

Table 7. Maximum Spans for Commercial Floor Loads - Live Load 3.0 kPa & 2.7 kN

Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW4525	45 x 70	248	500	4100	4500	3300	4200	4500	500	3400	3500	2900*	3400	3500
	45 x 90	248	3600*	4500	4500	3700	4500	4500	3100*	3500	3500	3300	3500	3500
PSW4530	45 x 70	302	3300*	4600	4800	3800	4600	4800	500	3800	3800	3300*	3800	3800
	45 x 90	302	4100	4800	4800	4300	4800	4800	3400*	3800	3800	3600	3800	3800
PSW4536	45 x 70	360	500	5000	5400	600	5300	5400	500	3800	4300	600	4300	4300
	45 x 90	360	4000*	5400	5400	4700*	5400	5400	600	4300	4300	3900*	4300	4300
PSW4540	45 x 70	412	500	5300	5800	3900*	5600	5800	500	4000	4600	600	4600	4600
	45 x 90	412	3800*	5800	5800	5100*	5800	5800	600	4600	4600	4000*	4600	4600

***Important Note:** For spans in the range of 600 to 2600, top chords should be a minimum grade of F8 or MGP12 to conform to AS 1720.1

Table 8. Maximum Spans for Commercial Floor Loads - Live Load 5.0 kPa & 3.6 kN													
Posi-Strut Size	Timber Size (mm x mm)	Overall Depth (mm)	450mm Posi-Strut Centres						600mm Posi-Strut Centres					
			Timber Grade											
			F5	F8	F17	MGP10	MGP12	MGP15	F5	F8	F17	MGP10	MGP12	MGP15
PSW4525	45 x 70	248	500	3000	3100	500	3100	3100	400	500	2500	500	2100	2500
	45 x 90	248	500	3100	3100	3000*	3100	3100	500	2400	2500	500	2500	2500
PSW4530	45 x 70	302	500	3000	3300	500	3300	3300	400	1800	2600	500	2600	2600
	45 x 90	302	2600*	3200	3300	2900*	3300	3300	500	2600	2600	2600*	2600	2600
PSW4536	45 x 70	360	500	600	3700	500	3300	3700	-	600	3000	500	600	3000
	45 x 90	360	600	3300	3700	600	3700	3700	500	600	3000	600	2700	3000
PSW4540	45 x 70	412	500	600	4000	500	3600	4000	-	500	3200	500	2800	3200
	45 x 90	412	500	3500	4000	600	4000	4000	500	2800	3200	500	3200	3200

***Important Note:** For spans in the range of 600 to 2600, top chords should be a minimum grade of F8 or MGP12 to conform to AS 1720.1

SUPPORTING STRUCTURE

The supporting structure should be checked to ensure that beams, walls and footings are capable of supporting all loads from floors and/or roof. As Posi-Struts allow the use of large open areas with fewer bracing walls, the stability of the structure should be checked in all cases.

1. Solid Brick Construction

Lateral stability and strength of supporting walls should be checked in accordance with Masonry Code AS 3700.

2. Timber Framed Construction

The strength and bracing of timber framed walls supporting Posi-Struts should be checked using AS 1684 or be designed using AS 1720.1.

3. Elevated Building

For traditional elevated buildings where a central row of piers is to be removed, additional bracing may be required to provide stability to the building. This may be provided by designing ground level shear walls at each end of the building, or by using braced partition walls located centrally. If in doubt, consult MiTek Australia Ltd.

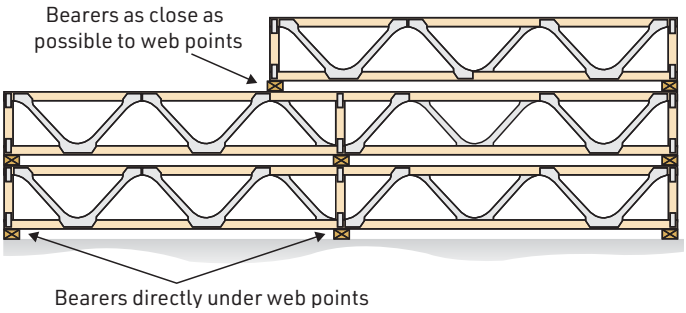
In all of the above cases the stability of the structure relies to some extent on the bracing provided by the panel flooring. For this reason it is important that floor trusses be fixed securely to supporting walls.

All cross walls and end walls should be securely fastened to the outer supporting walls. For timber framed walls use a 50 x 100 mm StrapNail at each intersection. For masonry construction, a continuous timber top plate should be installed and joined to each intersecting top plate at cross walls using 50 x 100 mm StrapNails.

HANDLING AND STORAGE

All Posi-Strut components should be strapped and stacked vertically with the bottom chord clear of the ground, supported on bearers located directly under web points. Posi-Struts may be stacked on top of each other with bearers aligned as closely as possible to web panel points. Posi-Struts should not be left exposed to weather for extended periods of time without adequate protection. If covered, ensure adequate air circulation around the trusses.

PSOO3

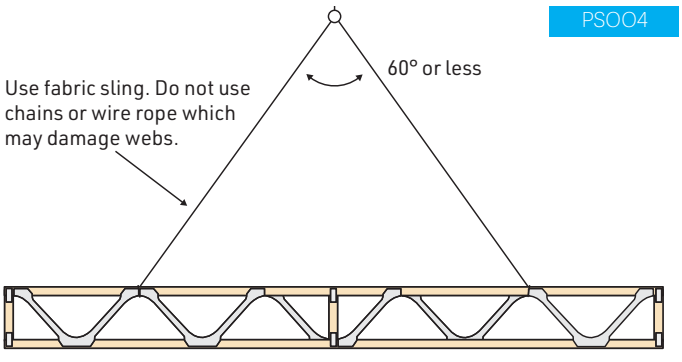


Typical stacking of Posi-Struts

Care should be taken when handling the Posi-Strut to avoid bending, twisting or dropping. Slings should always be attached to the timber chords, and not to the metal webs to avoid buckling.

When lifting Posi-Struts with a crane, slings should be attached at panel points closest to the truss quarter points. See diagram.

PSOO4



The maximum load of sheet materials temporary stored on the Posi-Struts is 175kg/m2 and should not be greater than 200mm deep or 1.5m high stack of prefabricated wall frames. This equates to 10 sheets of 19mm particle board, 9 sheets of 22mm particle board or 15 sheets of 13mm plasterboard. Where the sheets are stacked by hand they should span lengthways across the joists, (Fig. 1). When lifted mechanically they should be seated on 5 bearers the width of which are 600mm longer than the width of the board, (Figs. 2 & 3).

PSOO5-a

Figure 1

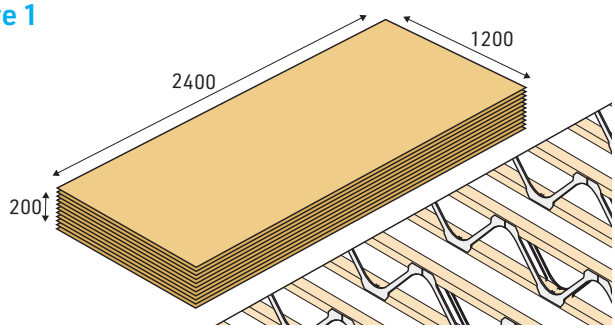
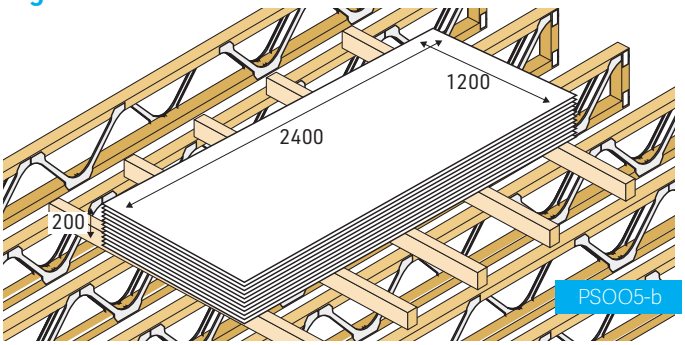
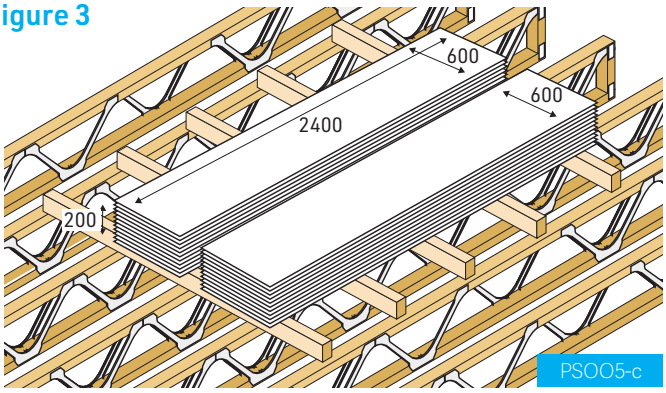


Figure 2



PSOO5-b

Figure 3



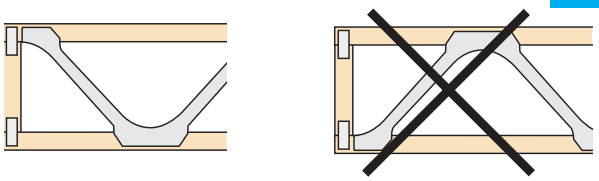
PSOO5-c

SET OUT AND PLACEMENT

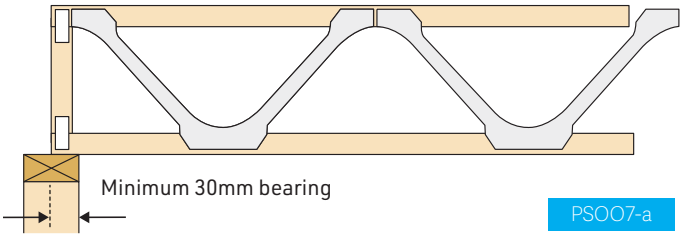
Posi-Struts are generally placed perpendicular to load bearing supporting walls and should be located so that distance between them does not exceed the designed spacing.

Care should be taken to place the Posi-Struts the right way up. Unless marked otherwise PosiStruts® are always manufactured so that Posi-Strut-Web starts at the top chord at each support point. There are occasions where it is necessary to design and manufacture Posi-Struts with the first web starting at bottom chord level. In this case trusses will be marked "THIS WAY UP".

PSOO6

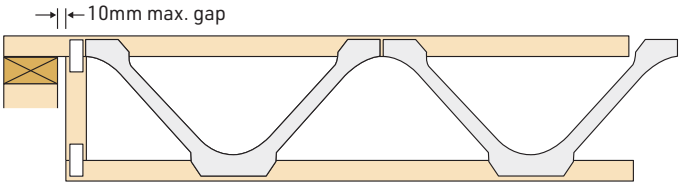


When a truss is not bearing on the full width of the wall, it shall not be shorter than 30mm, whichever is the lesser. The bearing strength should also be checked.



PSOO7-a

Posi-Struts must always be installed plumb and straight. For top chord support, the gap between bearing and timber web must not exceed 10mm.



TRIMMING ON SITE

PosiTrusses are required to be manufactured to the required span for each project. Under no circumstances should PosiTrusses be cut or modified in any way without prior approval from the truss fabricator.

SUPPORTING EXTERNAL WALLS

CASE 1. Upper Storey of 2 Storey

For the upper storey of two storey construction, where the lower stud wall provides continuous support, and where wall plates and lintels have been sized in accordance with AS 1684 lower storey load bearing walls, standard Posi-Struts may be used to support upper walls where the effective length of roof supported does not exceed that given in Table 9.

Table 9. Maximum Effective Length of Roof (EL) Supported by Standard Posi-Strut Trusses		
Posi-Strut	**Sheet Roof (mm)**	**Tile Roof (mm)**
PSW3520	5,050	3,950
PSW3525	5,550	4,350
PSW3530 & PSW3536	6,750	5,300
PSW4525	8,150	6,100
PSW4530	9,000	6,750
PSW4536	7,450	5,600
PSW4540	7,450	5,600

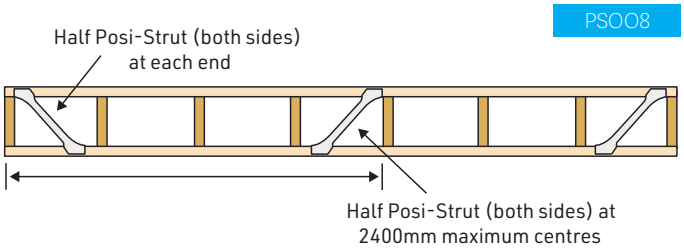
Note:

The above table has been determined for sheet roof at 900mm centres and tiled roof at 600mm centres with maximum 25°roof pitch, floor live load 1.5kPa.

Where effective length of roof supported is greater than those in Table 9, F-Frame as specified below, solid bearer or standard Posi-Strut with timber verticals inserted under studs may be used.

F-Frame manufacturing details

PSO08



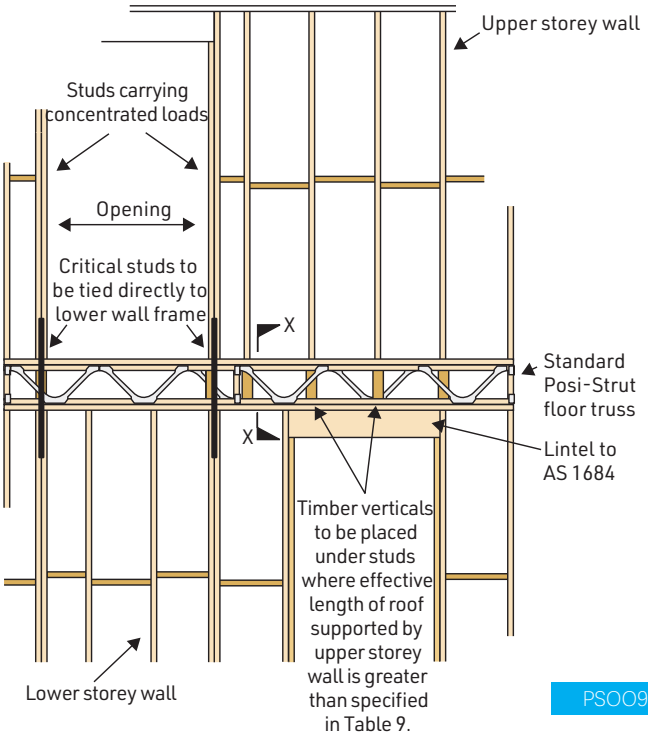
The sizes and grades of top and bottom chord of the F-Frame can be determined as per wall plates from AS 1684 by adopting the vertical strut as stud spacing.

Vertical struts do not necessarily have to line up with common studs if the wall plates have been designed accordingly.

Where there are larger openings in the upper storey wall which cause a concentrated load on the PosiStrut or F-Frame, a suitable timber vertical member should be inserted between the top and bottom chord under the point load to transfer it down to the wall below.

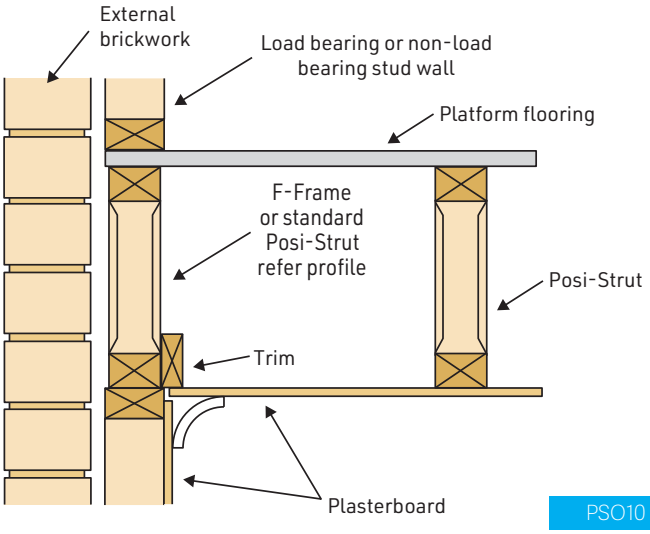
Note:

1. Posi-Strut chords and F-Frame chords may be considered to act in conjunction with wall plates to form a double plate or ribbon plate.
2. Where openings are positioned in end walls, lintels are to be sized in accordance with AS 1684.
3. The fixing of F-Frame to the wall below should be equivalent to the bottom plate fixing of the wall above. Where there are bracing walls, lintel openings or critical studs in the walls above, provide fixing directly to the wall below equivalent to the bottom plate fixing of the wall above.



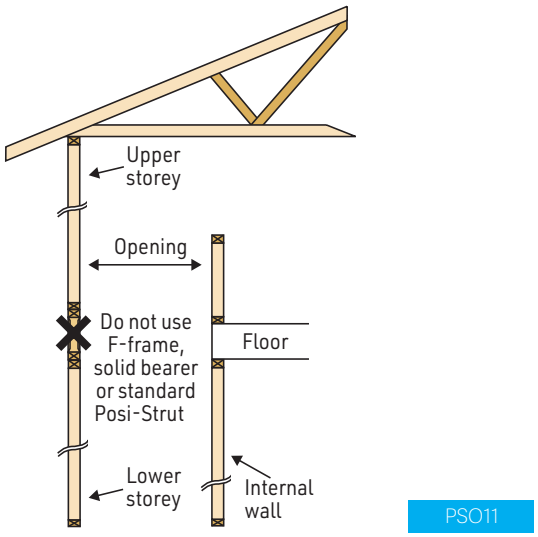
PSO09

SECTION X-X



PSO10

Warning



PSO11

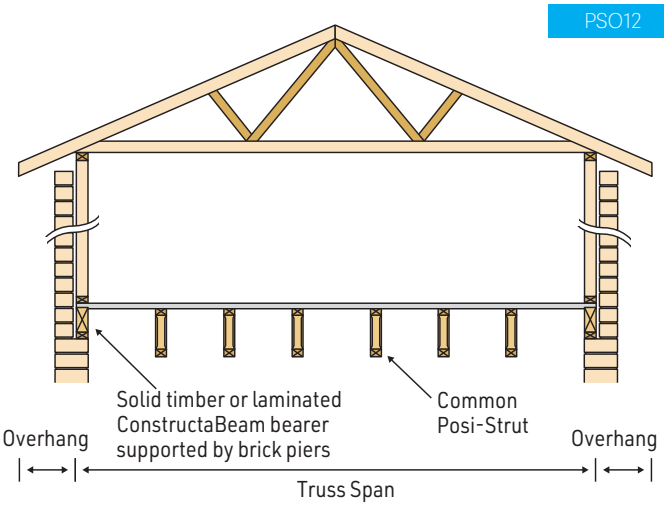
Where stair wells or other voids are located adjacent to external walls, the stability of the external wall should be checked by a structural engineer.

Generally, F-frames may be used to support upper walls of two storey construction at end walls where floor and ceiling acts as a diaphragm to restrain the external wall against lateral loads.

However, F-frames should not be used whenever supporting external walls that have an opening for a void area or staircase as shown. In these cases, the external walls are required to be designed by a structural engineer.

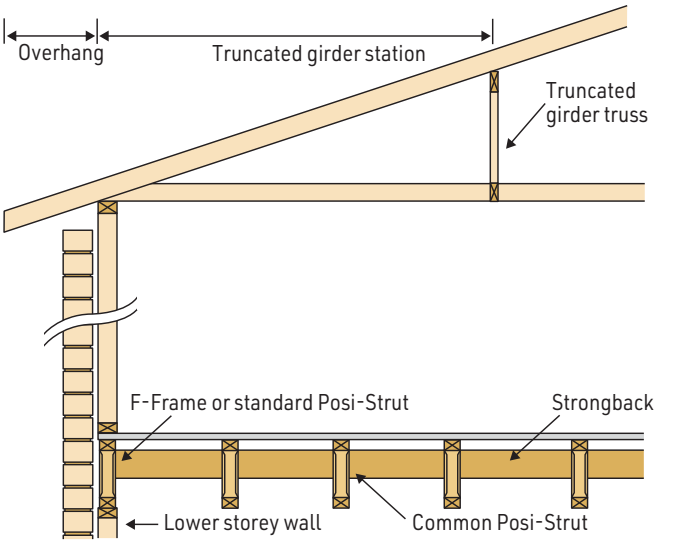
CASE 2. Single Storey - For a single storey construction where continuous support for the end F-Frame is not available, use either solid timber or laminated ConstructaBeams to support end wall and roof loads. Bearer sizes to be taken from AS 1684, relevant State Timber Framing Code or refer MiTek Span Charts for laminated ConstructaBeams or AutoBeam.

PSO12



End wall - Single Storey
EL = 2 x Overhang + Truss Span

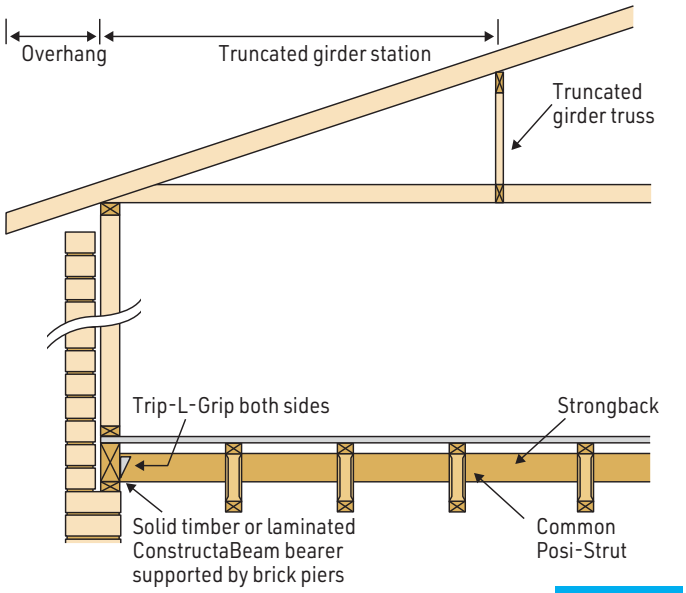
CASE 3. Building with Hip Ends - Both of the above two cases apply, provided the truncated girder truss station does not exceed the effective length of roof supported specified in Table 9.



PSO13-a

End wall - Building with Hip End Upper Storey of 2 Storey
EL = Truncated Girder Truss Station + 2 x Overhang

CASE 4. End Walls for Single Storey Buildings with Hip Roof - As for case 2 except EL = Truncated Girder Station.



PSO13-b

End wall - Building with Hip End Single Storey
EL = Truncated Girder Truss Station + 2 x Overhang

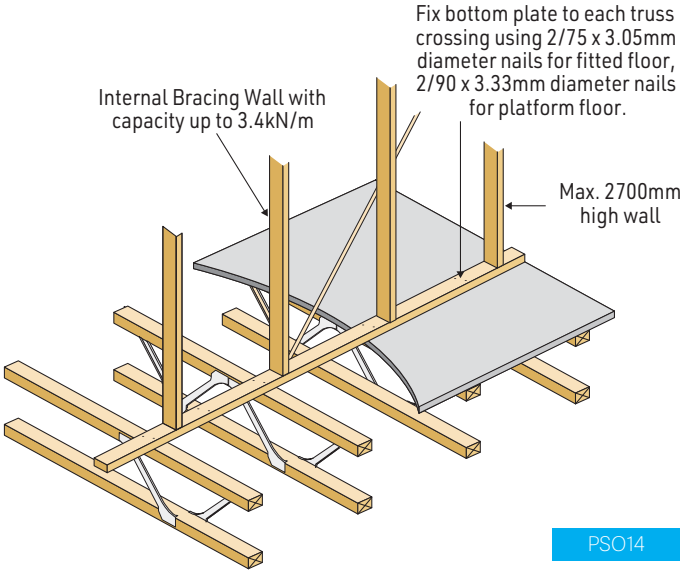
CASE 5. End Walls for Buildings with Gable Roof
Similar to that of building with Hip End, except the effective length of roof supported is as follows:

EL = 2 x Verge Overhang + Truss Spacing

SUPPORTING NON-LOAD BEARING WALLS

Non-load bearing walls require no additional support. However, for braced walls with bracing capacity of up to 3.4 kN/m and 2700mm high, fix the bottom plate of the braced walls to the floor as described below. For braced walls with bracing capacity and height exceeding this limit, specific design is required.

Walls Perpendicular to Posi-Struts

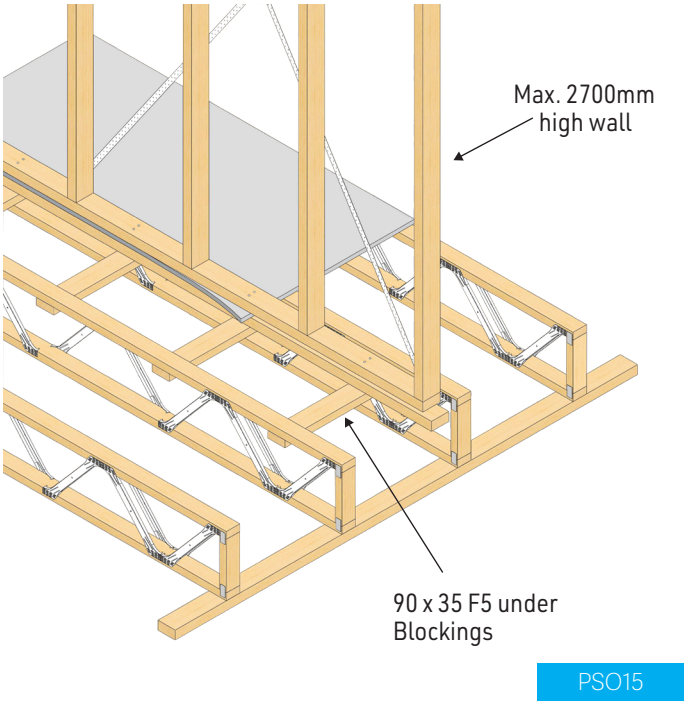


PSO14

Walls Parallel to Posi-Struts

Platform Flooring

a) Bracing wall is positioned between two floor trusses.

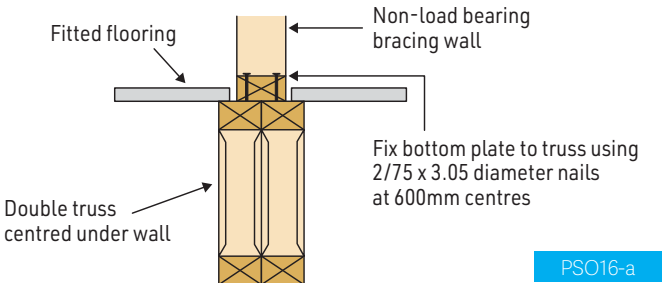


PSO15

b) Bracing wall is positioned directly over floor trusses No nogging is required and fix bottom plate directly to floor truss using 2/90 x 3.33mm diameter nails at 600mm maximum centres.

Fitted Flooring

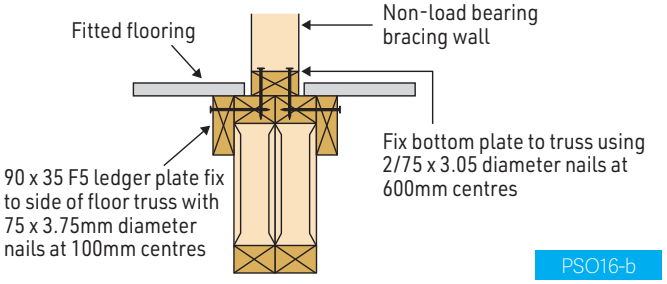
Where flooring is fitted to each room after internal walls have been constructed, locate a double truss directly below the wall to provide support to both the wall and flooring.



PSO16-a

Double trusses used under non-load bearing internal walls should be located such that the partition is bearing equally on both trusses. Flooring and strongbacks should be fixed to both trusses.

Alternatively, a single truss may be used to support the wall and use ledger plates fixed to the side of the floor to provide support to the flooring.

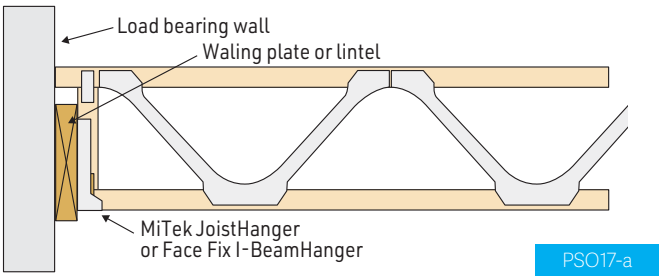


PSO16-b

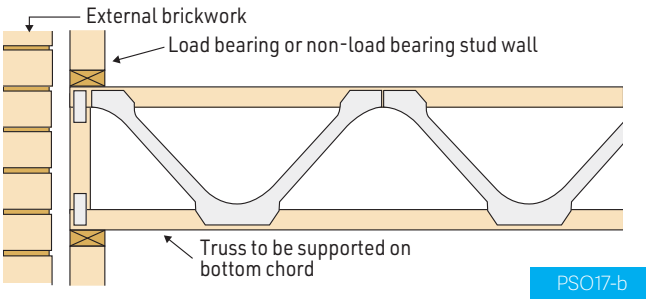
SUPPORT DETAILS

Posi-Strut Bottom Chord Support

Posi-Struts may be supported on their bottom chord as shown.



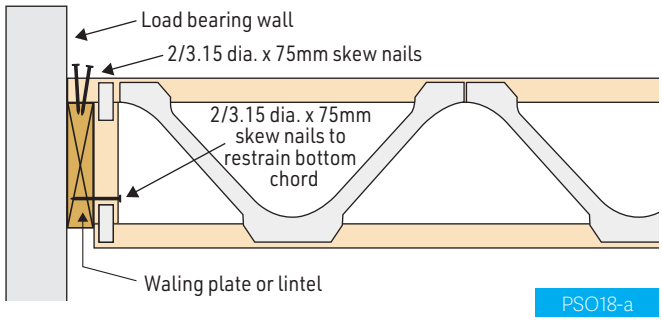
PSO17-a



PSO17-b

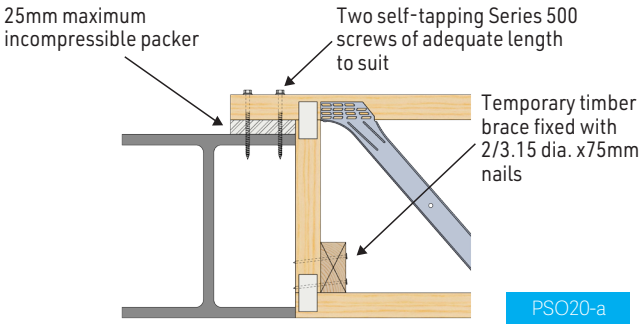
Posi-Strut Top Chord Support

Posi-Struts may be supported on their top chord as shown.

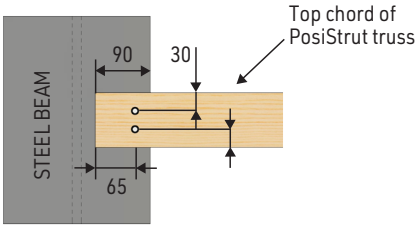


PSO18-a

Posi-Strut Top Chord Support onto Steel Beam



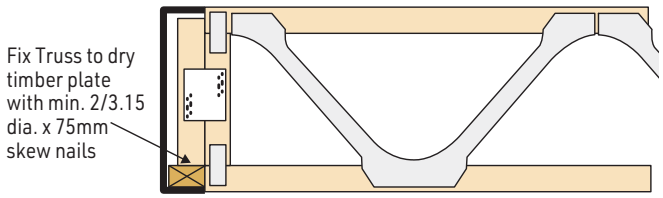
PSO20-a



End and edge distances for fixing screws

PSO20-a2

Posi-Strut End Block Support to Steel Beam



PSO20-b

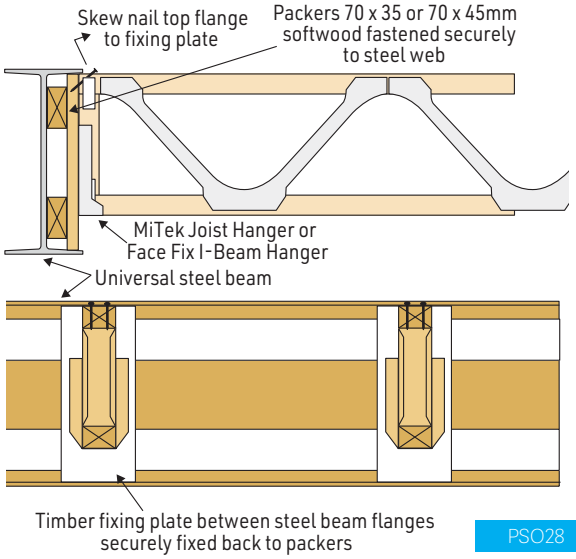
Hangers for Floor Trusses

Floor trusses may be supported by Joist Hangers or I-Beam Hangers in accordance with MiTek 20/20 fixing schedule.

Note:

1. Size of packers and timber fixing plate to suit steel flange width.
2. Timber fixing plate is to be contained within the steel beam flange so as to restrain any vertical load induced by Posi-Strut trusses.

PosiStrut®



PSO28

Supporting Floor Trusses with JoistHanger JH70160 and JH95150

The following details provide recommended fixing details and design capacities for JoistHanger JH70160 and JH95150 fixed with MiTek nails or screws to support PosiStrut or TimberStrut floor trusses. The design capacities are listed in Table 10.

The full product specifications are contained in the MiTek JoistHanger data sheet.

Table 10. Design Capacities of JoistHanger JH70160 and JH95150

Load Cases	Limit State Design Capacity (kN)					
	Fixing with 30 x 2.8 mm dia. Nails			Fixing with MSA1430 Screws		
	Timber Joint Group			Timber Joint Group		
	JD3	JD4	JD5	JD3	JD4	JD5
Dead Load Only	9.7	7.0	5.7	10.2	10.2	7.2
Dead + Floor Live Load	11.8	8.4	6.9	12.3	12.3	8.7

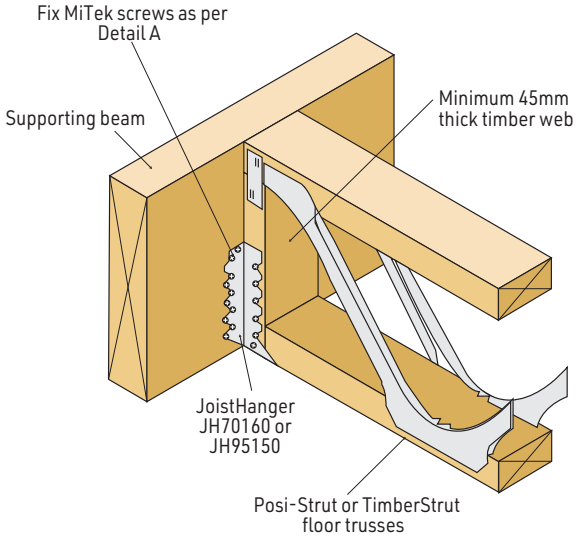
Notes:

1. Use 45mm thick timber for end vertical web when fixing Joist Hangers with screws.
2. The MiTek screws shall be driven into existing nail holes in the bracket, where shown.
3. Use MSA1465 screws in double 35mm ply beams. In double 45mm ply beams and beyond, the layers are also to be laminated together with additional fixings for load sharing.
4. Design capacities have been obtained from laboratory testing and procedures given in AS 1720.1.
5. The vertical web may be set back from the end of the PosiTruss, up to 5mm maximum.

Fixing Details

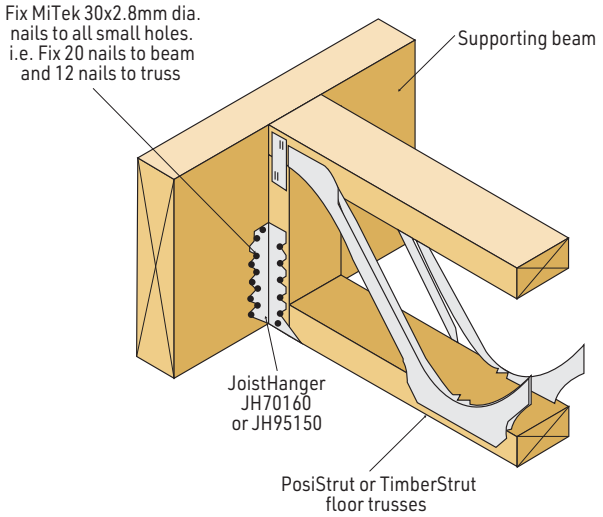
Fixing with Screws

PSO20-c



Fixing with Nails

PSO20-d

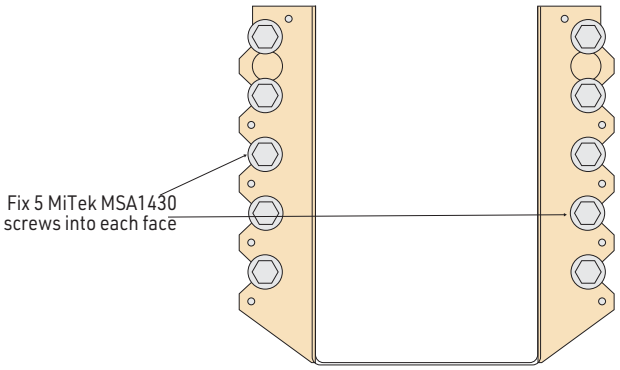


Detail A

a. Screw Fixing Locations to Supporting Beam

Note:

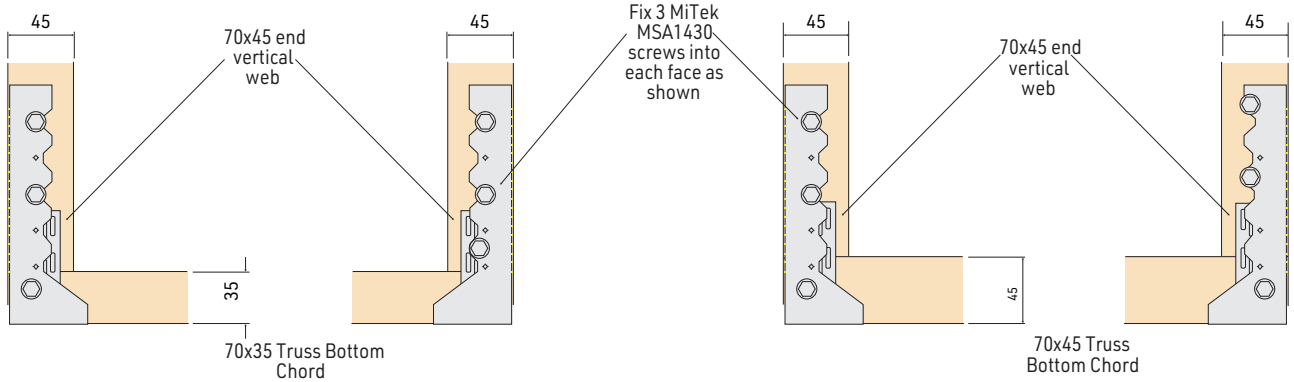
The patented MiTek screws are designed to tap their way through the smaller holes in the steel flanges and nailplates.



PSO20-e

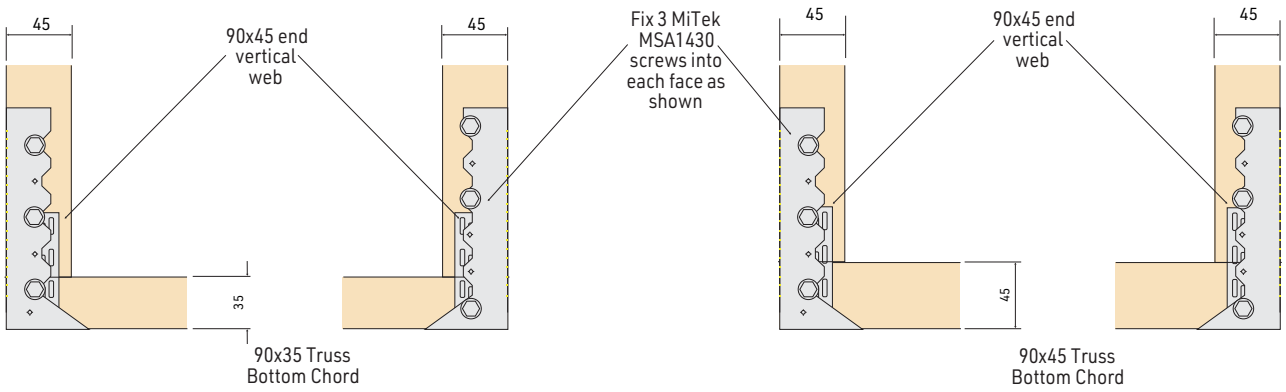
b. Screw Fixing Locations to Floor Trusses

PSO20-f



(i) Fixing Details for Joist Hanger JH70160

PSO20-g



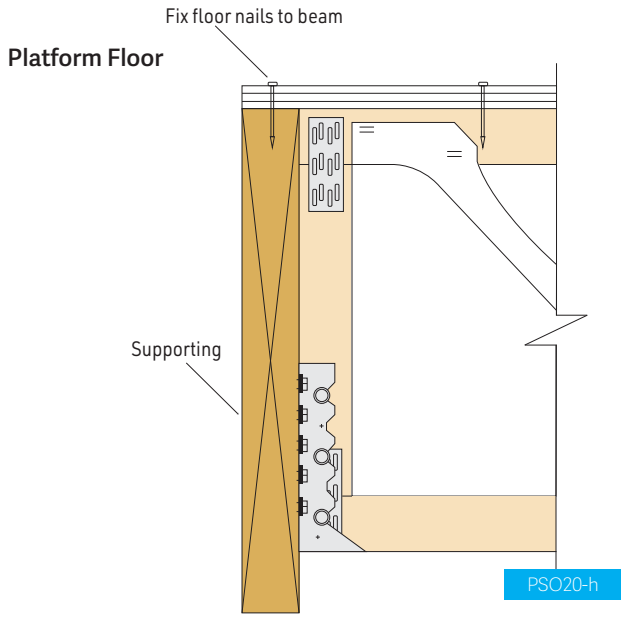
(ii) Fixing Details for Joist Hanger JH95150

Installation Details

Additional lateral restraints are required to prevent rotation of deep floor trusses with depth greater than 250mm. Refer to the following installation details.

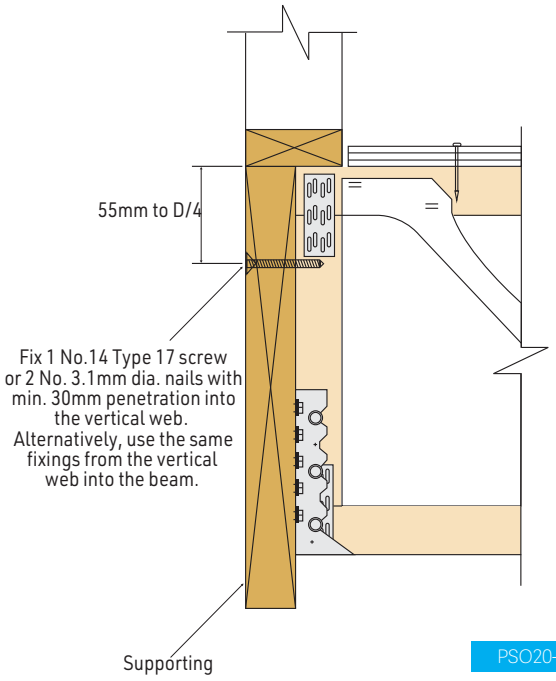
The PosiTruss shall be installed hard against the supporting beam in the JoistHanger shoe.

a. When the beam and floor truss are at the same floor level



PSO20-h

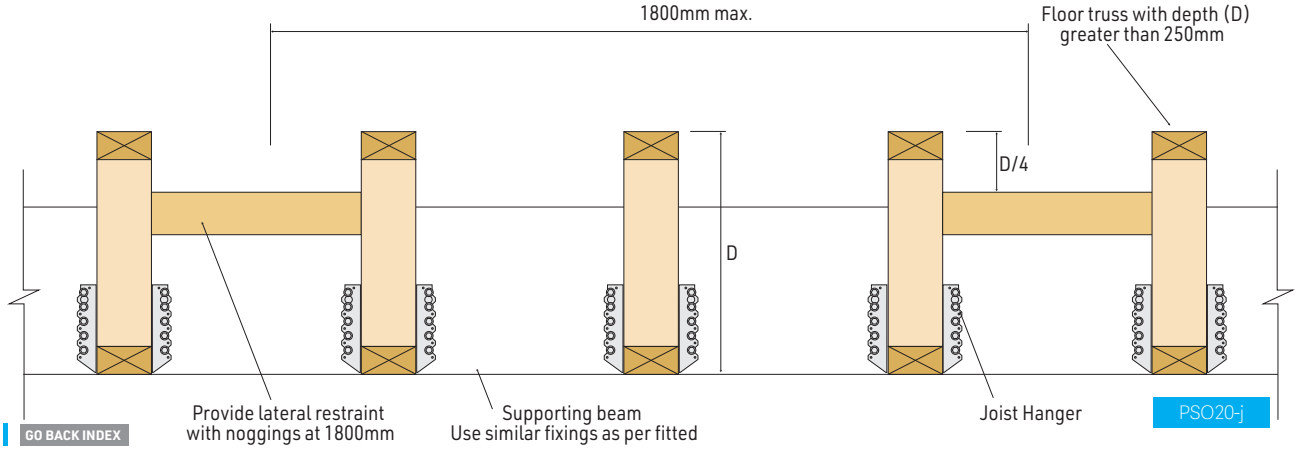
Fitted Floor



PSO20-i

Note:
Refer to MiTek Standard Detail for Floor Truss maximum 35mm Short of Beam (Job No. STDPS Drawing No. M4) when the end of floor truss is offset from the supporting beam.

b. When the beam height is lower than the floor truss



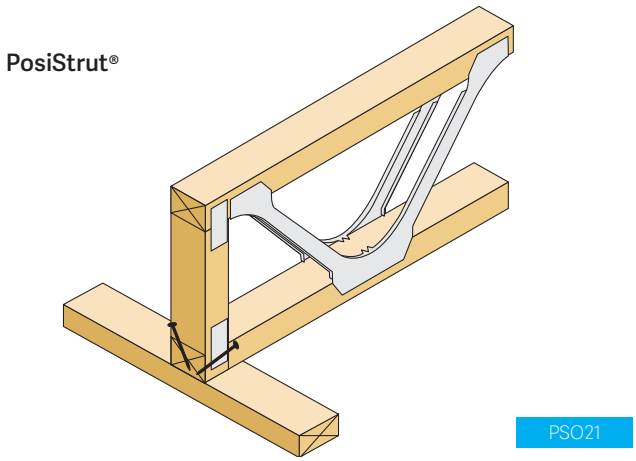
PSO20-j

FIXING AND CONNECTIONS

Fixing to Supports

Each PosiTruss to be fixed onto the supporting structure by a minimum of 2/3.15mm diameter x 75mm long nails.

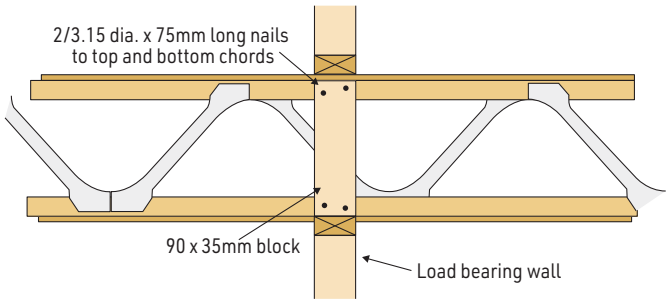
For wind classification areas higher than N2 refer to AS 1684 for details.



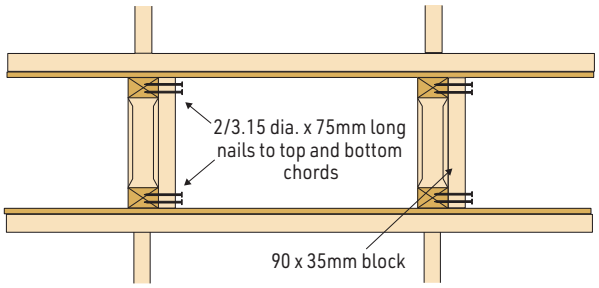
PSO21

Support of Internal Load Bearing Walls

Posi-Struts are generally not designed to support load bearing internal walls, however where there is a supporting wall directly below, PosiJoist and PosiPlus trusses should be strengthened as illustrated below.



PSO22-a



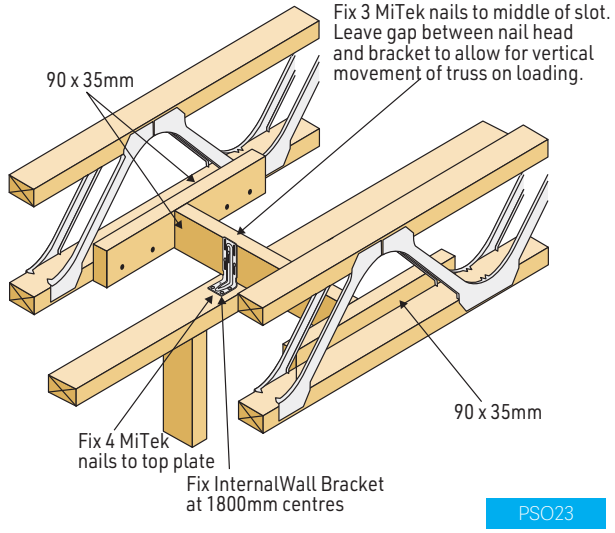
PSO22-b

Fixing to Internal Non Loadbearing Walls

a) Non-bracing wall

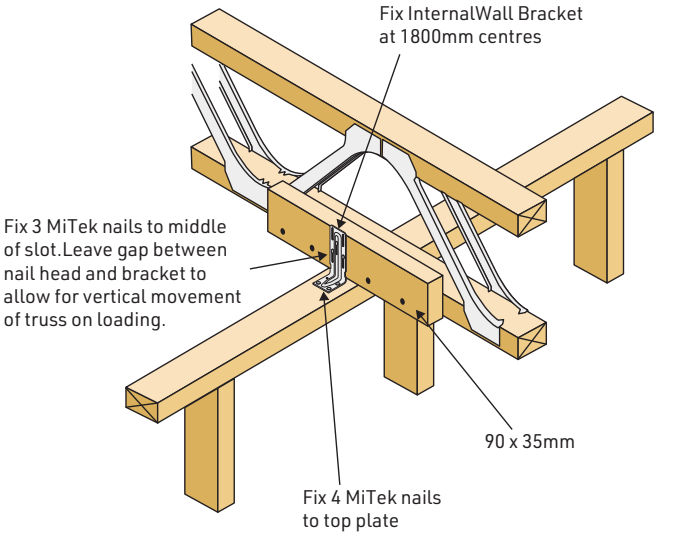
If internal walls are not designed as bracing walls, fix the truss with the InternalWall Bracket with nails in the middle of the slots to allow for truss settlement as it is loaded. Brackets are fixed at 1.8m centres along unsupported sections of the wall. Where trusses are parallel to walls, trim between the bottom chords and fix brackets to the trimmer. Where internal walls are stable in their own right, no InternalWall Brackets are required.

Truss Parallel to Non-Bracing Wall



PSO23

Truss Perpendicular to Non-Bracing Wall

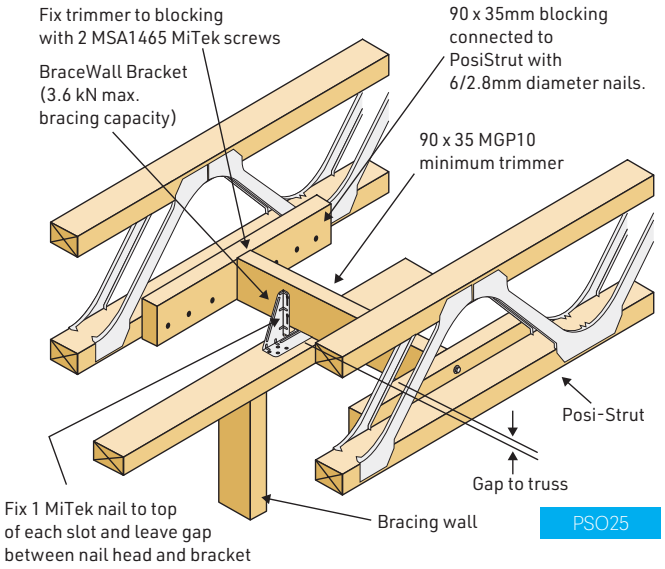


PSO24

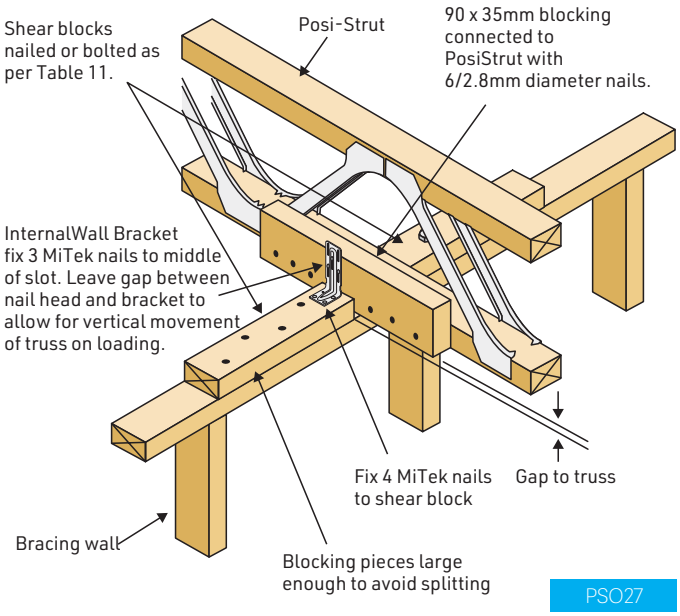
b) Bracing Wall

Where internal walls are designed as bracing walls, trusses should be fixed to the top plate using structural connections of equivalent strength to the bracing strength of that particular bracing wall. The connection should also allow the truss to deflect vertically when it is loaded.

Truss Parallel to Bracing Wall



Truss Perpendicular to Bracing Wall



Modify grade of trimmer to MGP10 minimum.

Table 11. Fixing details for Bracing Walls
Number of Type A or Type B bracing units in braced wall (Refer AS 1684 Part 4)

Type of Connection	Unseasoned Timber						Seasoned Timber					
	J2		J3		J4		JD4		JD5		JD6	
	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B	Type A	Type B
Nails												
4/3.05ø	1.6	N	1.1	N	N	N	1.1	N	N	N	N	N
6/3.05ø	2.1	1.1	1.5	N	1.1	N	1.6	N	1.2	N	1.0	N
4/3.33ø	1.9	N	1.3	N	N	N	1.3	N	1.1	N	N	N
6/3.33ø	2.4	1.2	1.7	N	1.2	N	1.8	N	1.5	N	1.1	N
Bolt Size												
M10	2.5	1.3	2.2	1.1	1.7	N	2.00	1.0	1.6	N	1.3	N
M12	3.3	1.6	2.6	1.3	2.1	1.0	2.4	1.2	1.9	1.0	1.5	N
Screws												
2 No.14 Type 17	3.2	1.6	2.3	1.2	1.6	N	2.3	1.2	1.6	N	1.2	N
3 No.14 Type 17	5	2.5	3.3	1.7	2.5	1.2	3.3	1.7	2.5	1.2	1.8	N

N - Not Suitable

STRONGBACKS

Strongbacks are bracing members running at right angles to Posi-Struts. Strongbacks significantly dampen vibrations and increase the stiffness of the floor system. The performance of the floor depends very much on the proper installation of Strongbacks. They should be placed at 2400mm maximum spacing along span of each truss as close as possible to midspan.

Strongbacks are to be supported off end walls, beams and preferably at any internal walls or props at 6m spacing where Posi-Struts span are large and building length is very long to increase floor stiffness. They should be strutted off walls with short jack stud or prop skew nailed into place. When propping is not practical at the recommended spacing, the design of stiffer Posi-Struts to reduce deflections should be considered and/or contact MiTek Engineering office for assistance.

Strongbacks must be fixed to central vertical webs on each Posi-Strut with 3/3.15mm diameter nails and spliced in accordance with details following.

Note:

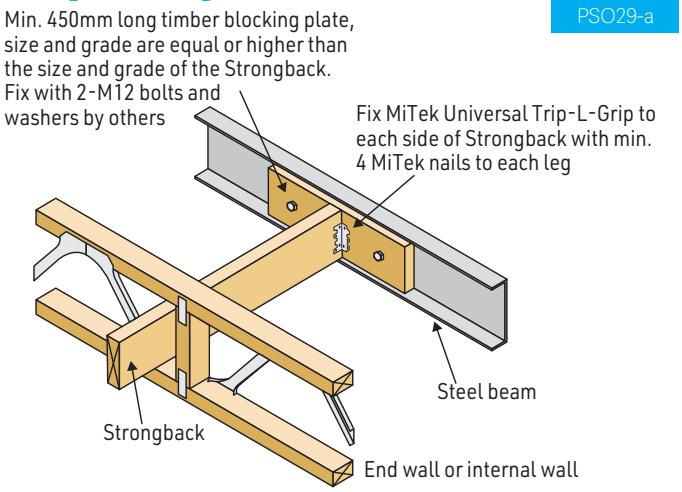
1. Unless specified otherwise in the fabricator drawings, the recommended strongback sizes are shown in Table 12.
2. The recommended timber grade for strongbacks in Table 11 is equal to or higher than the grade in the Posi-Strut chords.
3. For optimal performance, the strongback should preferably be located hard against the underside of the top chord before fixing to timber web or block.

Table 12. Recommended Strongback Sizes

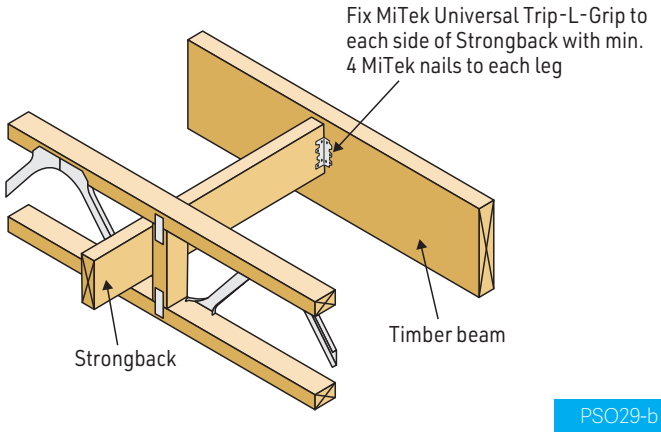
Posi-Strut Depth	200	250	300	360	400
Strongback Size	90 x 35	120x35	140x35	170x35	190x35

Strongback fixing to Steel Beam

PSO29-a

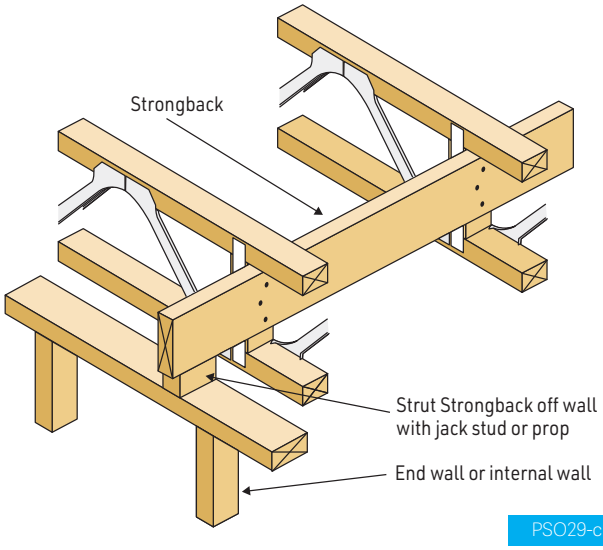


Strongback fixing to Timber Beam



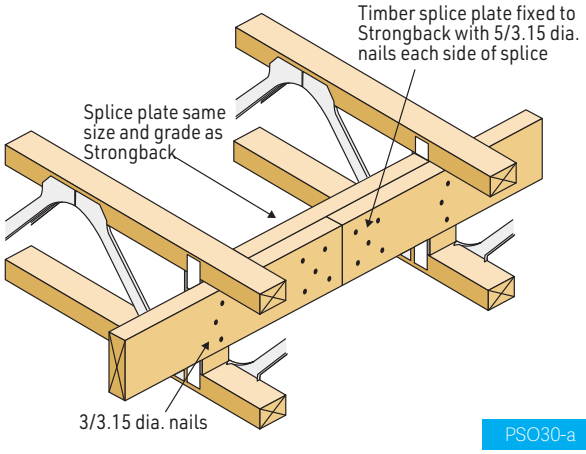
PSO29-b

Strongback supported off wall

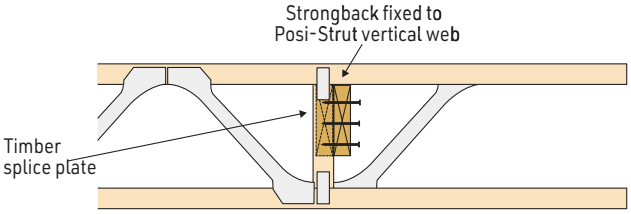


PSO29-c

Strongback fixing and splice

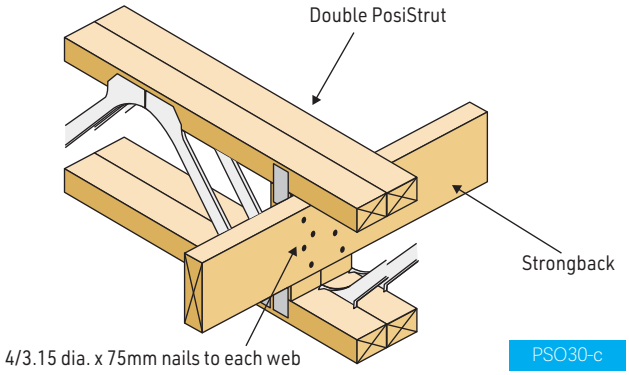


PSO30-a



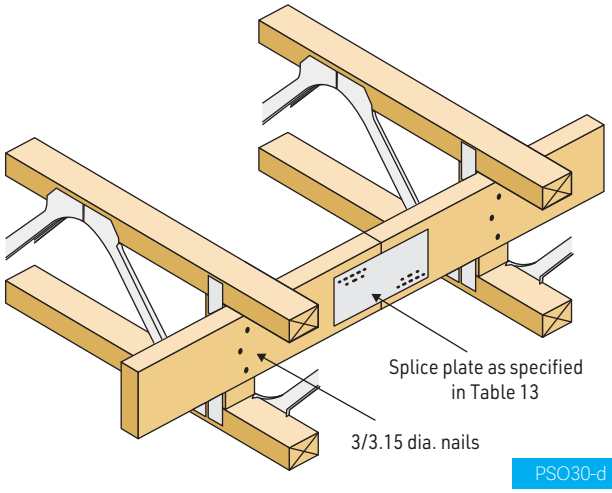
PSO30-b

Strongback to double truss connection



PSO30-c

Alternative Strongback splice



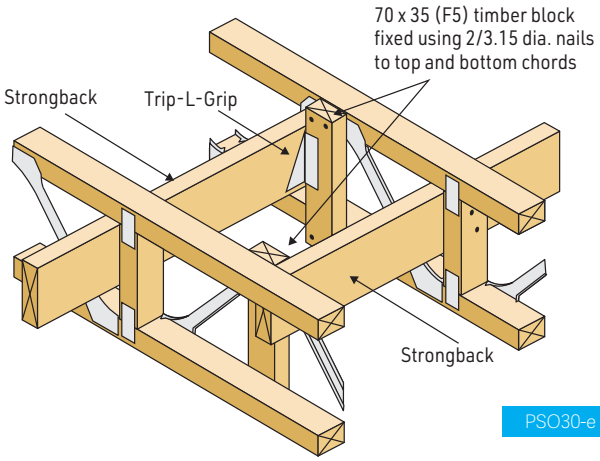
PSO30-d

Table 13. Splice Plate Sizes

Strongback Size	Joint Type	GN Plate Type & Size	Tylok Plate Type & Size
90 x 35	Single	GE85175	TL6T10
120 x 35	Single	GE85175	TL6T10
140 x 35	Double	GQ50150	TL6T5
170 x 35	Double	GQ63150	TL6T7
190 x 35	Double	GQ63150	TL6T7

When Strongback location changes, the Strongback must run through to the next Posi-Strut and be connected to the side as per detail following.

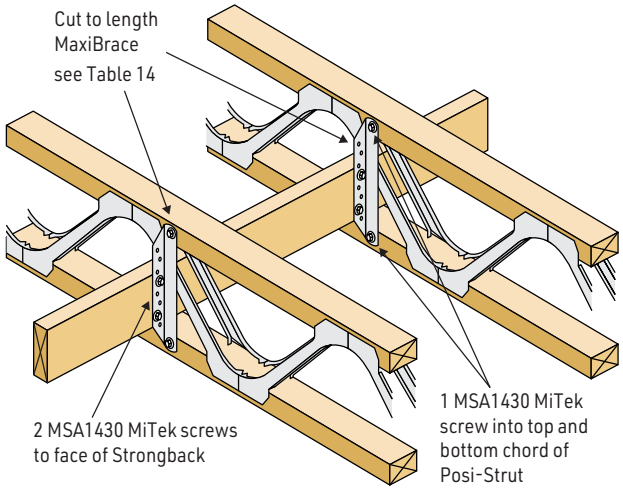
Connection of Strongback to Posi-Strut at change of span



PSO30-e

Strongback fixing with MaxiBrace

When a Strongback is located at a position where there is no timber vertical web to fix to, a short length of MiTek MaxiBrace may be used for this purpose. This allows for a continuous Strongback line even where are variations in joist span. The ideal cut length of MaxiBrace to suit different Posi-Strut sizes is given in Table 14.



PSO30-f

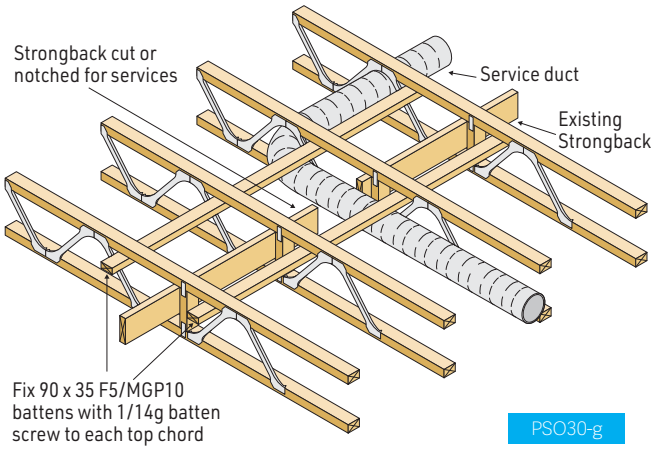
Table 14. Cut to Length MaxiBrace

PosiStrut Depth	200	250	300	360	400
MaxiBrace Length (mm)	190	240	290	350	400

Strongback Modification for Services

Where a strongback has to be cut (or notched) to run a service duct through it, a compensating pair of 90x35 F5/MGP10 battens may be fixed to the underside of the top chord, on each side of the strongback, see figure 4. The battens should extend across 3 Posi-Strut spacings. Multiple cuts in a strongback should not be less than 3 PosiStrut spacings apart, or additional measures will be required.

Figure 4

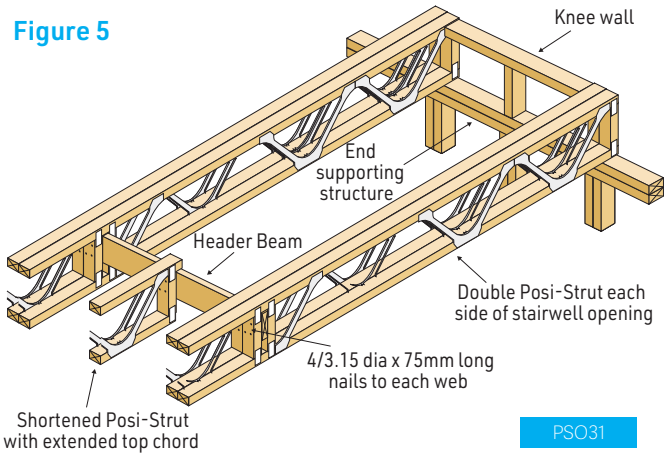


PSO30-g

STAIR OPENING

Where openings are required on the upper floor for stairwells, one or more shorter Posi-Struts may be used and supported on headers fixed to adjacent Posi-Struts.
The header beam maybe supported on double Posi-Strut, see figure 5. For header beam sizes refer Table 15. The connection of the header to the double Posi-Strut is as shown on page 20.
Note that header beams have been designed to carry Posi-Strut floor loads only

Figure 5



PSO31

Table 15. Header Beam Sizes to Support Posi-Strut Only - 1.5kPa Floor Live Load

Shortened Truss Span	Header Beam Span (mm)						
	900	1200	1500	1800	2100	2400	2700
2000	90 x 45 MGP10	90 x 45 MGP10	90 x 45 F17	120 x 45 MGP12	140 x 45 MGP12	190 x 35 MGP12	190 x 35 MGP12
3000	90 x 45 MGP10	90 x 45 MGP12	120 x 35 MGP12	140 x 35 F17	140 x 45 F17	190 x 45 MGP12	190 x 35 F17
4000	90 x 45 MGP12	90 x 45 F17	120 x 45 MGP12	140 x 45 F17	190 x 45 F17	190 x 45 F17	190 x 45 F17
5000	90 x 45 MGP12	90 x 45 F17	120 x 45 F17	140 x 45 F17	190 x 45 F17	190 x 45 F17	240 x 35 F17
6000	120 x 45 MGP12	120 x 35 F17	120 x 45 F17	190 x 35 F17	190 x 45 F17	240 x 45 F17	240 x 45 F17

Illustrated below are some common types of stairwells (refer to Figures 6 to 8). For each diagram there are certain conditions that need to be observed. For other types of stairwells, and for dimensions greater than those shown in Figures 6 to 8, contact your Posi-Strut supplier.

Case 1

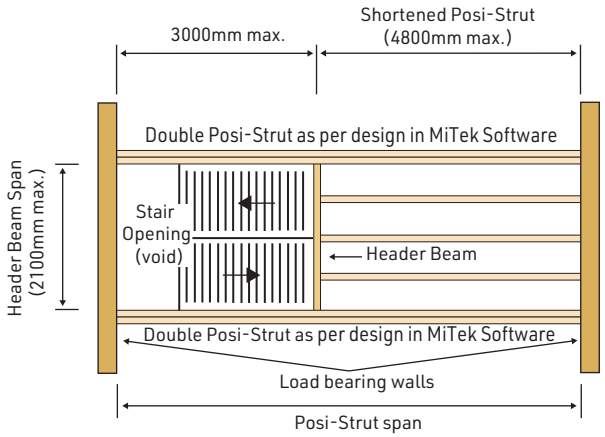


Figure 6 PSO32-a

Case 2

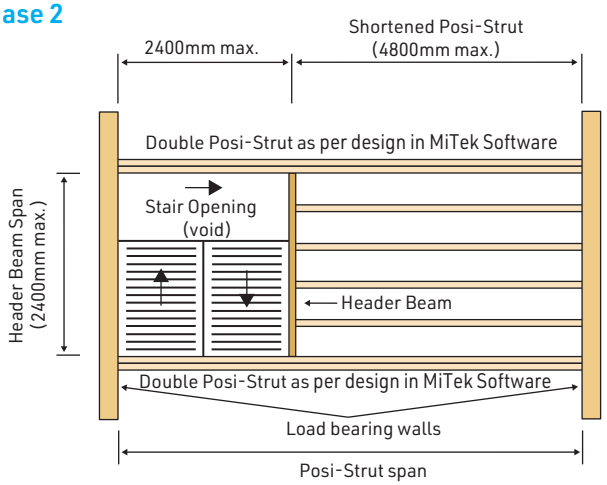


Figure 7 PSO32-b

Case 3

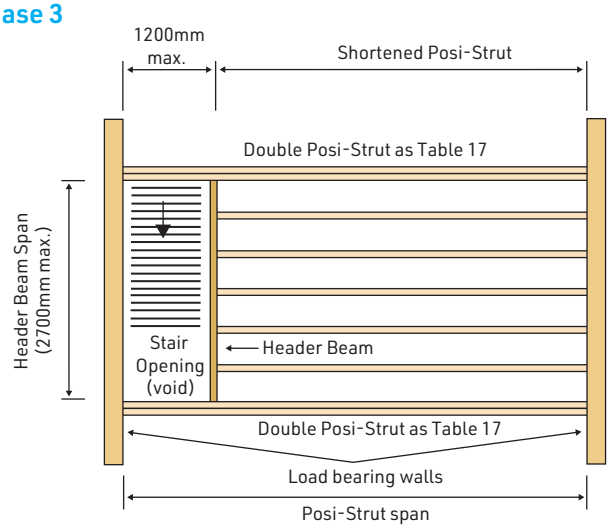


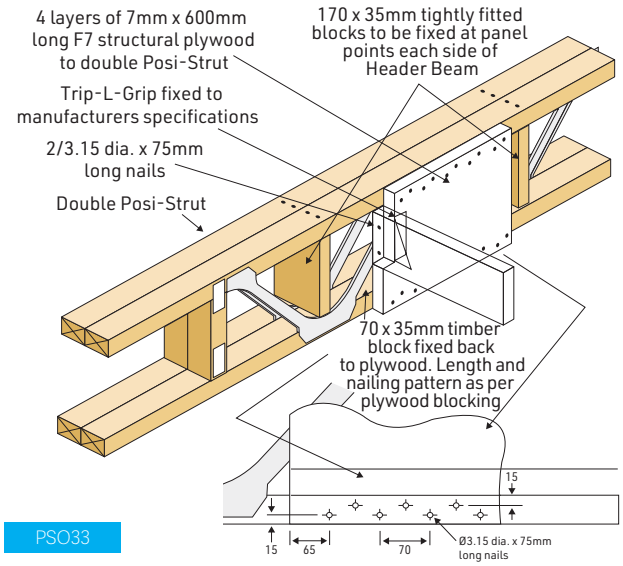
Figure 8 PSO32-c

Note:

1. These double Posi-Struts have been designed to carry header beams which support shorter Posi-Struts only. They will not carry the stairwell itself.
2. Double Posi-Struts have also been designed for 600mm maximum truss centres. Therefore, web layouts of 600mm truss centres should be used.

Header Beam Connection

Where double Posi-Struts are supporting header beams, Strongbacks are to be fixed to each truss using 4/3.15mm diameter x 75mm long nails.



PSO33

CANTILEVERS

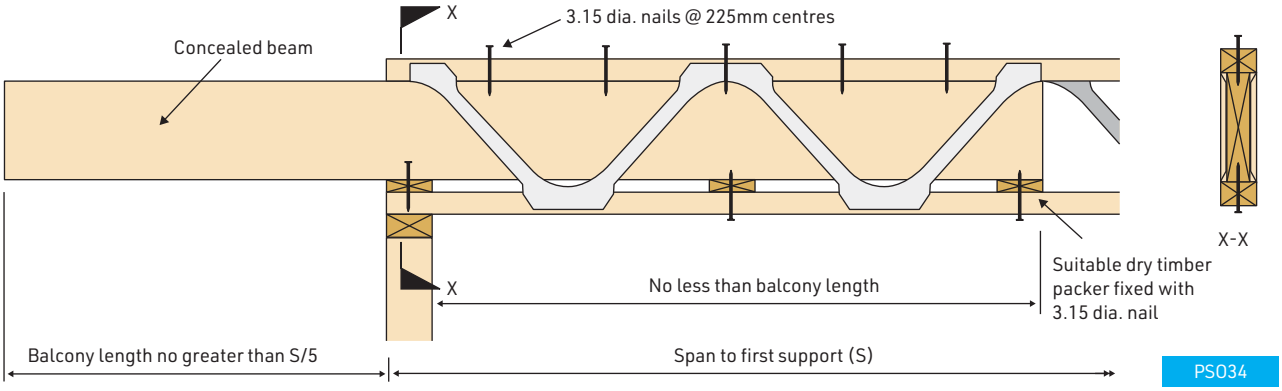
Non Load Bearing Wall

Cantilevered balconies can be formed using solid timber either fitted into trusses between chords or off to the side of the truss as shown below. The cantilever beam can be sized from timber span charts and should extend back into the building to a distance greater than the balcony length. Balcony cantilevers should be no greater than one fifth of the floor truss span.

For cantilever beams built into Posi-Strut trusses ensure full bearing along top and bottom chord using Non Load Bearing Wall suitable dry timber packers fixed to both truss and beam with 3.15mm dia. nails at 225mm centres.

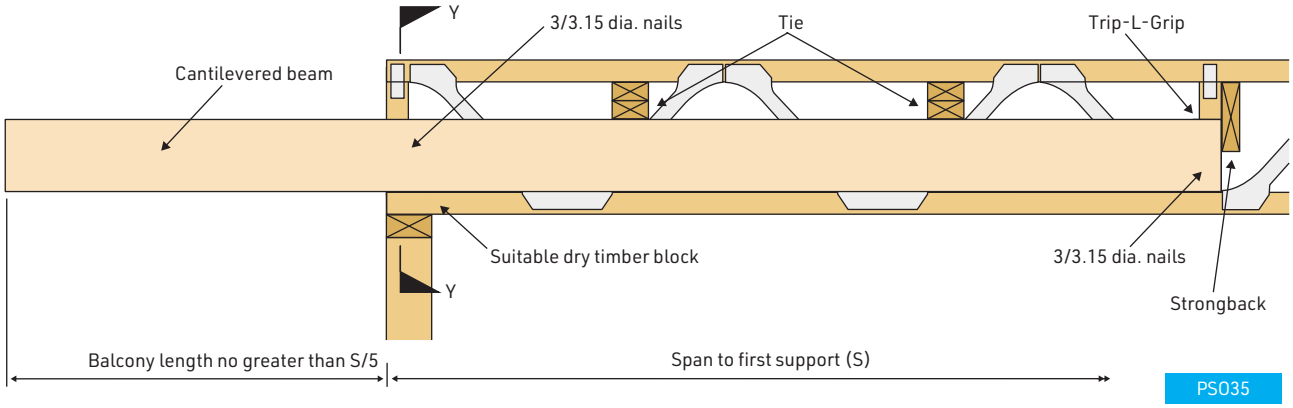
For beams supplied separate to trusses, fix to vertical webs with a minimum of 3/3.15mm dia. nails and to the first Strongback with 1 Trip-L-Grip. Provide lateral ties to top edge of beam at 600mm centres fixed to beam with 1/3.15mm dia. nail.

Built in cantilever beam.



PS034

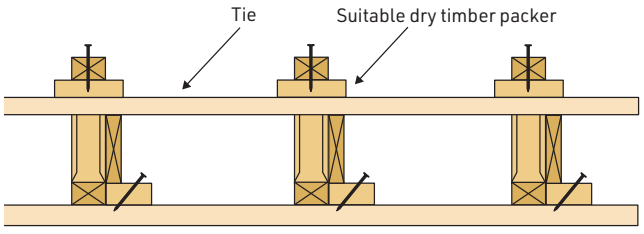
Lapped and nailed cantilever beam.



PS035

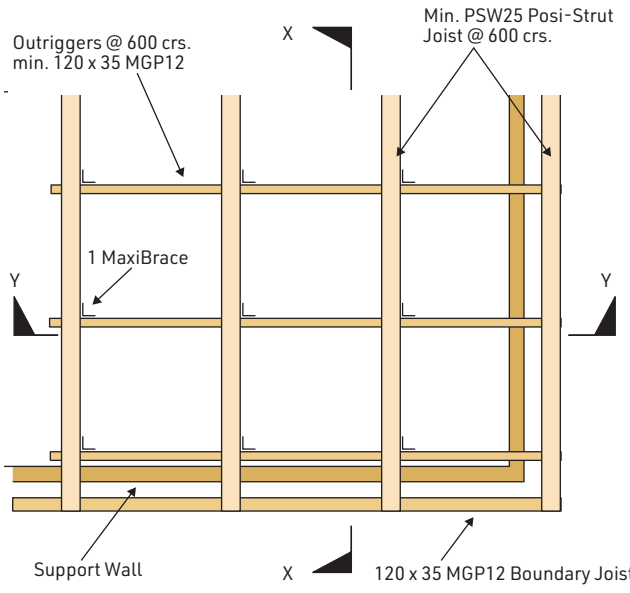
Note:

1. Cantilever beam has been designed to carry balcony load only. Size and grade can be obtained from AS 1684.
2. If cantilever is exposed to weather, place damp proof course between joist and PosiTruss.



PS036

Load Bearing Wall



PS037

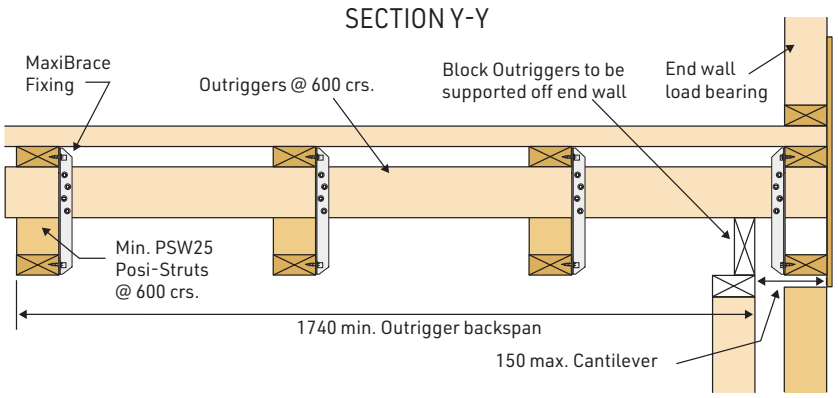
PosiTruss

Posi-Strut standard outrigger system is recommended for PosiTruss with small cantilevers with the following limitations.

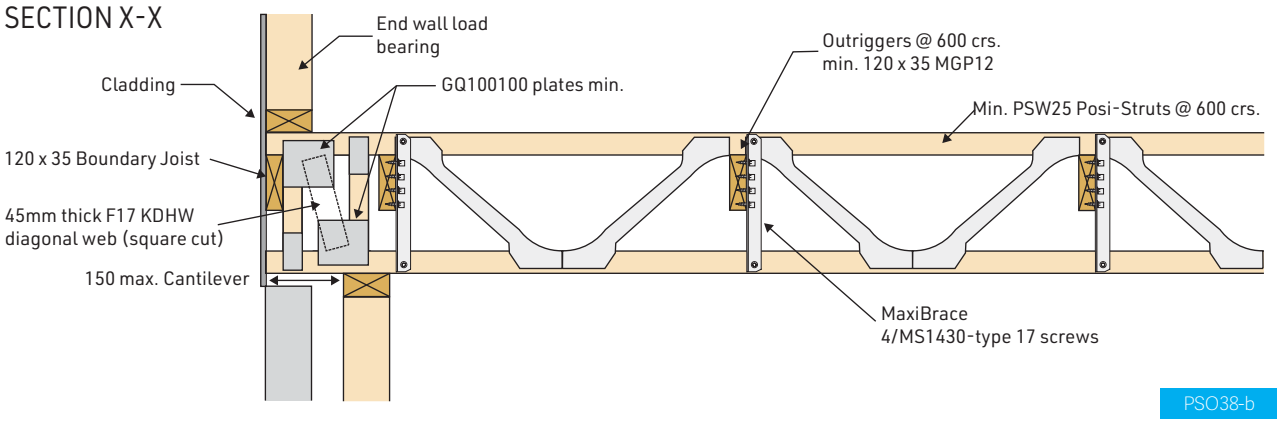
Endwall supporting max 9m span trusses for:

- Tiled roof @ 600 crs.
- Sheet roof @ 900 crs.
- Not for girder loads
- Max. wall height of 2400mm

For girder loads contact MiTek state engineering office.



PSO38-a



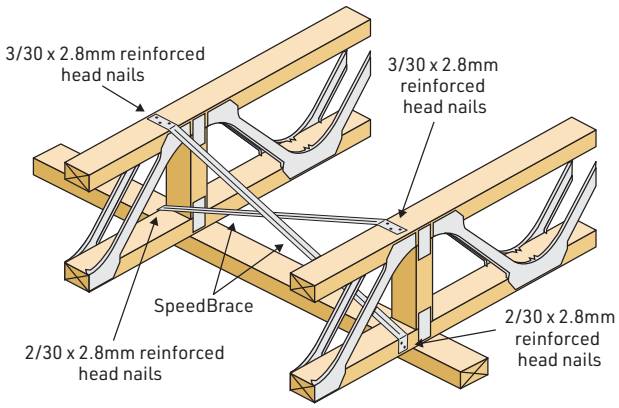
PSO38-b

BRACING

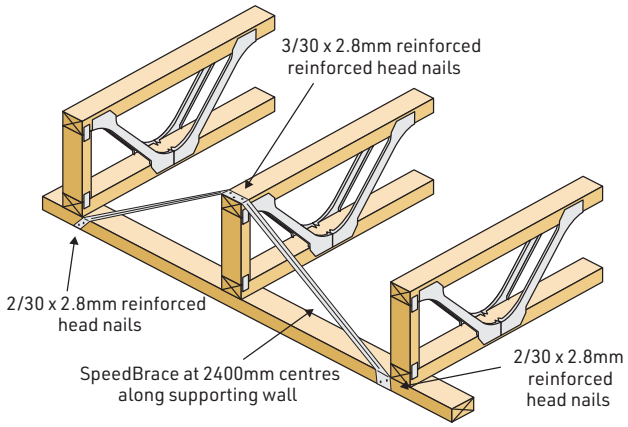
The bracing of the upper storey wall should be continued through the floor trusses to the lower storey wall and the requirements should be specified in the design documentation. The following are the typical minimum end and internal support bracings. Where there are bracing walls above the floor trusses, provide fixing directly to the wall below equivalent to the bottom plate fixing of the wall above.

End and Internal Support Bracing

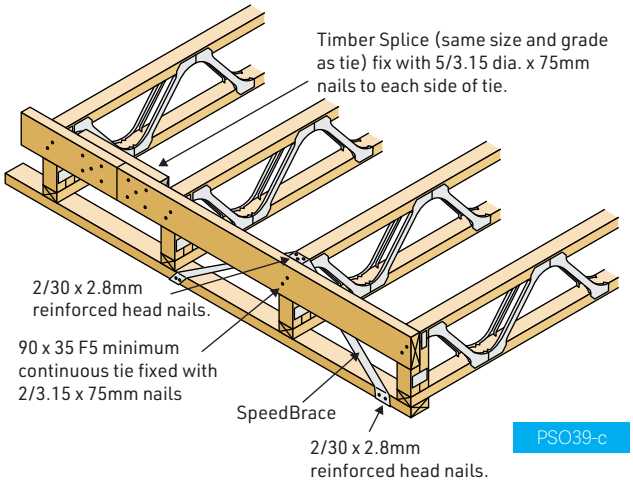
SpeedBrace bracing at 2400mm maximum centres along supporting walls.



PSO39-b



PSO39-a

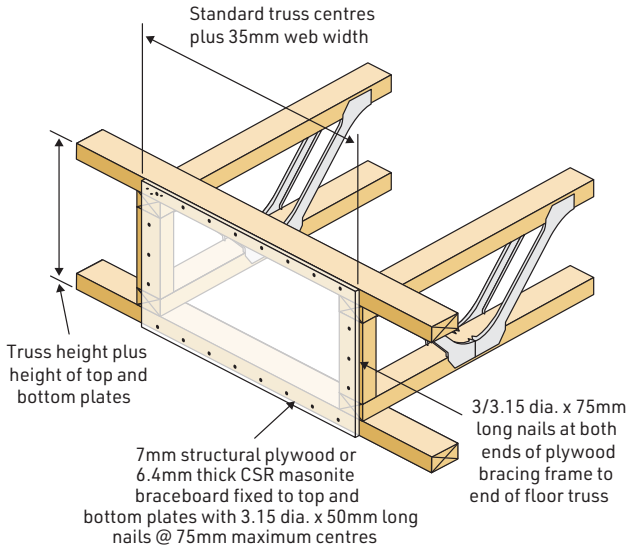


PSO39-c

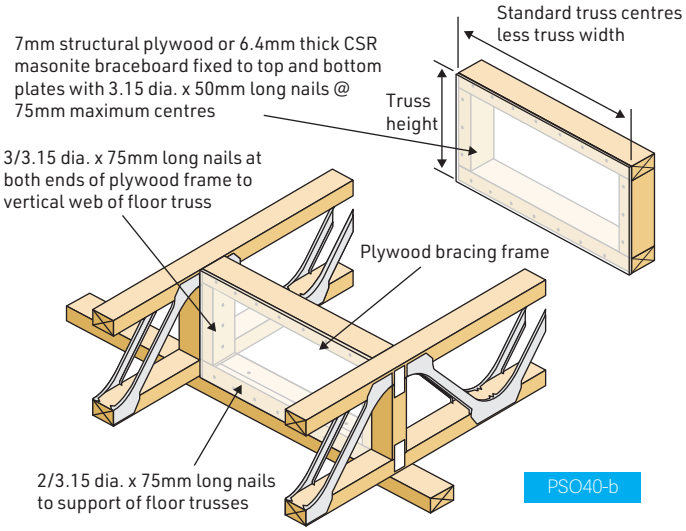
Note:
The 90x35 F5 ribbon plate is capable of continuously supporting bottom plates of walls supporting standard trusses. Blocks are required under jamb studs, girder trusses and other critical studs.

Alternative End and Internal Support Bracing

Plywood Bracing Frame at 2400mm maximum centres.

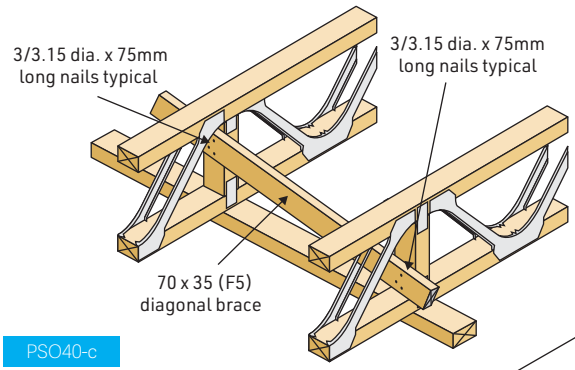


PSO40-a

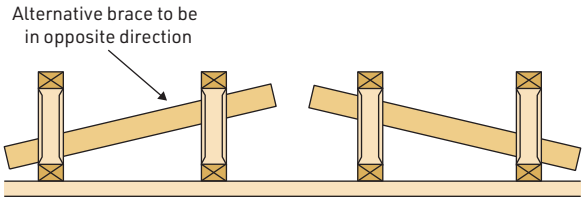


PSO40-b

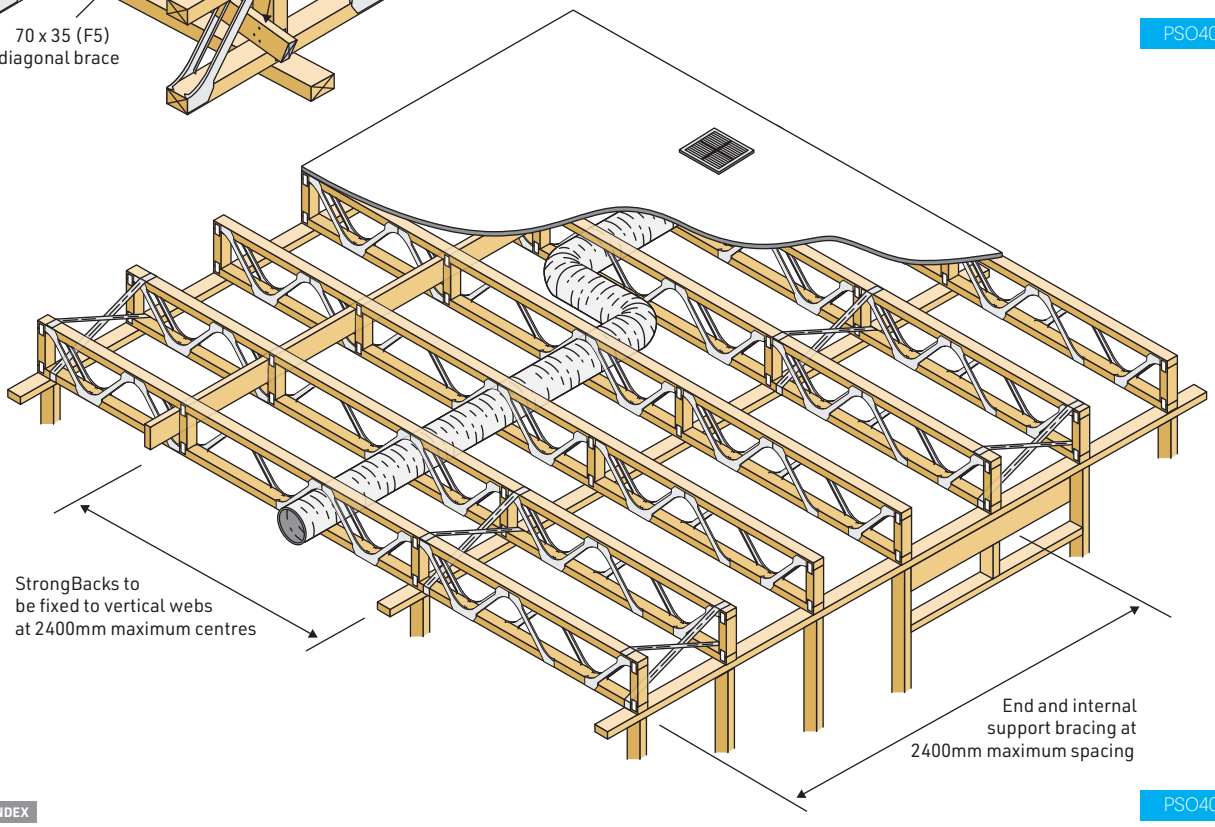
Timber Diagonal Bracing at 1800 mm maximum centres.



PSO40-c



PSO40-d



PSO40-e

MECHANICAL SERVICES

Posi-Strut trusses allow mechanical service ducts and plumbing to be easily accommodated. Maximum clearance available for the different Posi-Strut depths is given in Table 18.

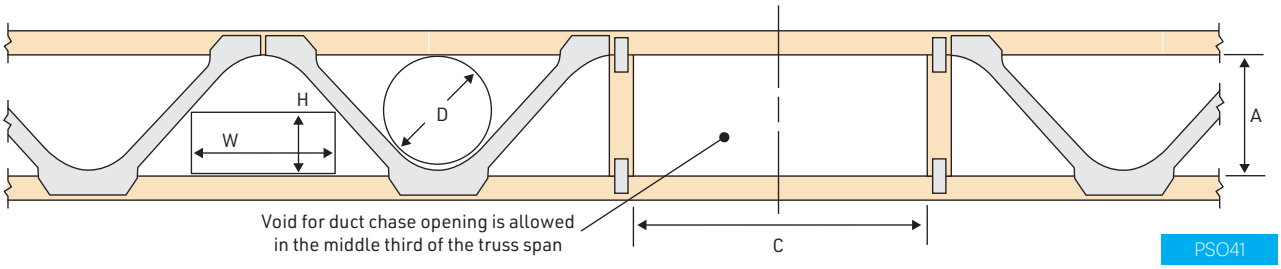


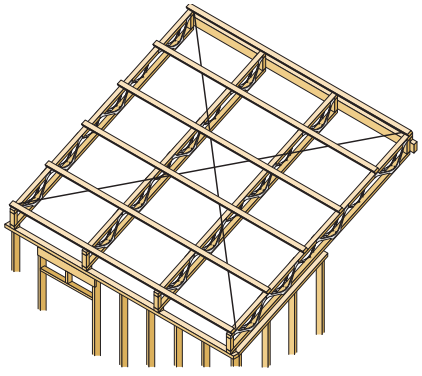
Table 18. Maximum Mechanical Service Clearances

Posi-Strut Size	Dimension A	Dimension C	Dimension D	Dimension H						
				50	75	100	125	150	175	200
				Dimension W						
PSW3520	127	500	120	280	200	120	-	-	-	-
PSW3525	178	500	170	320	280	230	180	140	-	-
PSW3530	232	500	220	350	310	280	240	210	170	130
PSW3536	290	500	245	360	330	300	270	240	210	180
PSW4525	158	500	150	310	260	200	150	60	-	-
PSW4530	212	500	200	340	300	260	210	170	130	70
PSW4536	270	500	245	480	440	390	350	300	250	200
PSW4540	322	500	280	490	460	410	370	330	300	250

POSI-STRUT ROOF RAFTER & PURLIN SYSTEM

INTRODUCTION

Posi-Strut rafter and purlin details contained in this manual are only suitable for domestic construction Although Posi-Strut rafters and purlins provide an economical solution for many commercial and light industrial buildings they need to be specifically designed for each building. For structures other than domestic buildings, consult MiTek Australia Ltd. or a licensed MiTek fabricator. Because timber webbed roof trusses are similar to the Posi-Struts system, details in this manual also apply where applicable.



PSO42

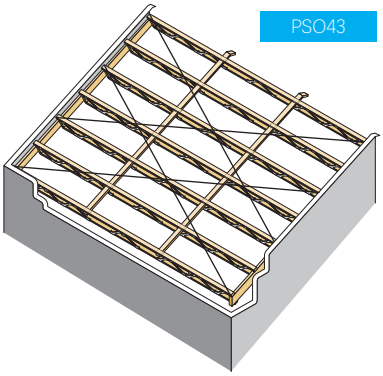
DEFINITION

Posi-Strut rafters are trusses placed parallel to roof pitch.

Posi-Strut purlins are trusses placed perpendicular to roof pitch.

Note:
Maximum roof pitch is 45°

PSO43



ROOF LOADING

Posi-Strut rafters and purlins have been designed to allow for the following loads.

Dead Loads
Dead loads are due to the weight of the roof structure and permanent fixtures. An allowance has been made for the following permanent loads.

1. Roof and ceiling material
➔Steel decking and 13mm plaster battened, maximum load 40kg/m2

2. Self weight of Posi-Strut rafters and purlins
Provision for hot water units and air conditioning units have not been considered, Should there be the need for such services then contact MiTek Australia Ltd. engineers for advice.

Live Loads
Live loads are temporary loads due to maintenance of the roof structure. These loads are in accordance with AS/NZS 1170.1

Earthquake Loads
The Posi-Strut sizes, bracing and connection details are suitable for the design of domestic structures of height less than or equal to 8.5m in accordance with AS 1170.4.

Snow Loads
Snow loads of up to 0.2 kPa have been assumed in design for member sizes, bracing and connection.

Wind Loads
The Posi-Strut rafters and purlins have been designed according to AS/NZS 1170.2 Wind Actions, AS 4055 Wind Loads for Housing for the maximum design gust wind speed in Table 19.

Table 19. Maximum Design Gust Wind Speed

Wind Classification	Design Gust Wind Speed (m/s)	Pressure coefficient	
	Ultimate Limit State (V_u)	External (C_{pe})	Internal (C_{pi})
N3	50	-0.9	0.2
N4	61	-0.9	0.2
C1	50	-0.9	0.7

CAMBER

Camber of span/300 or 20mm maximum should be set into each truss.

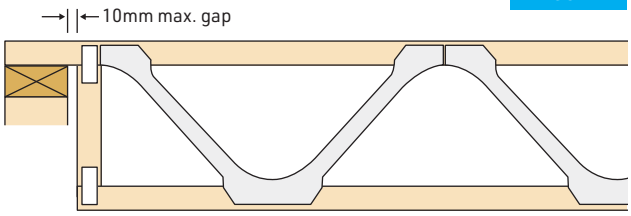
SET OUT AND PLACEMENT

Posi-Strut rafters and purlins have been designed for 600, 900, 1200, 1500 and 1800mm centres and in no case should the design maximum truss centres be exceeded.

Posi-Struts must be installed plumb and straight. Support location tolerance is 50mm with no reduced bearing. Check bearing strength where bearing area is reduced.

For top chord support, the gap between bearing and timber web must not exceed 10mm.

PSO44



Sizes for battens or purlins used in conjunction with Posi-Strut rafters to be in accordance with AS 1684 'Residential Timber-Framed Construction'. Posi-Strut rafters and purlins used in open carports and garages may have higher criteria. In these situations consult MiTek Australia Ltd. engineers for further advice.

SIZES

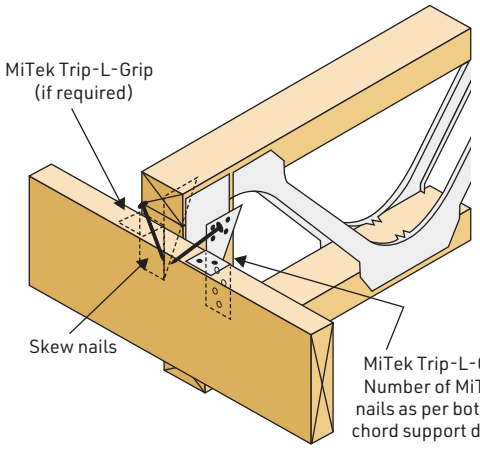
The Posi-Strut rafters and purlins are available in four nominal sizes 200, 250, 300, 360 and 400mm depths. As all Posi-Strut rafters and purlins are made to order, they are produced in the exact length required for the job.

HOLD DOWN DETAILS

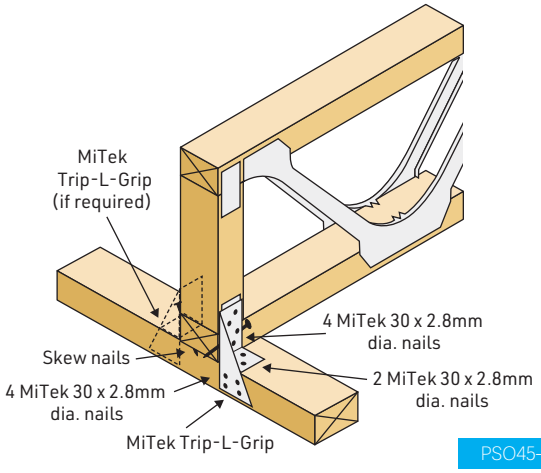
Fixing types for various spans, spacing and roof covering are given in Table 20.

For more accurate assessment of hold down requirements on specific projects, refer to MiTek Australia Ltd. engineers.

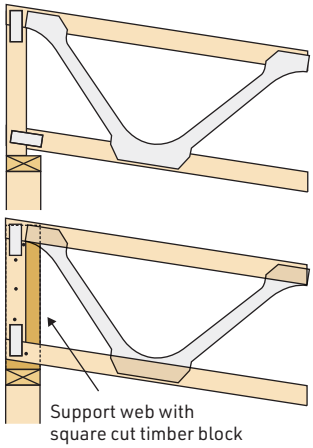
Details for fixing wall plates to foundations to be by others. The supporting structure must also be designed by others to resist all vertical and horizontal loadings.



PSO45-a



PSO45-b



PSO45-c

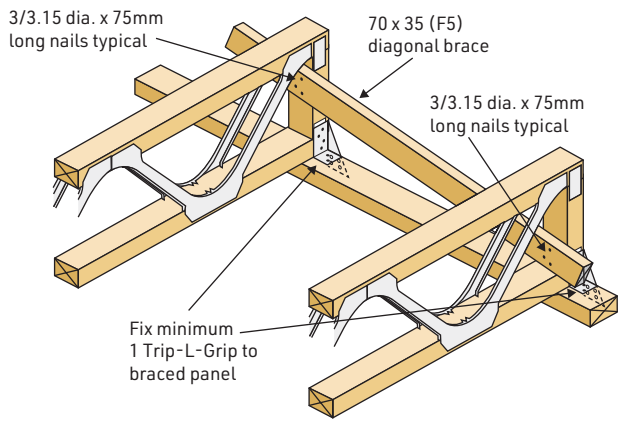
Table 20. Maximum Raked Span (mm)

Fixing type	Spacing (mm)									
	600		900		1200		1500		1800	
	Joint Group									
	JD4	JD3	JD4	JD3	JD4	JD3	JD4	JD3	JD4	JD3
Sheet roof with ceiling - Wind Classification N3										
1 Trip-L-Grip	9000	12200	6000	8100	4500	6100	3600	4900	3000	4000
2 Trip-L-Grips	18000	20000	12000	16300	9000	12200	7200	9800	6000	8100
Sheet roof with ceiling - Wind Classification N4										
1 Trip-L-Grip	5600	7600	3700	5000	2800	3800	2200	3000	1800	2500
2 Trip-L-Grips	11200	15200	7400	10100	5600	7600	4500	6100	3700	5000
Sheet roof with ceiling - Wind Classification N3										
1 Trip-L-Grip	5700	7800	3800	5200	2800	3900	2300	3100	1900	2600
2 Trip-L-Grips	11500	15600	7600	10400	5700	7800	4600	6200	3800	5200

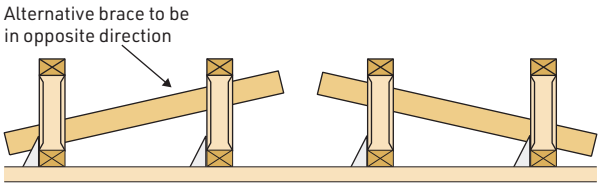
END AND INTERNAL SUPPORT BRACING

At external and internal supports, Posi-Strut rafters and purlins should be braced back to the top plate with the following:

1. Timber Diagonal Bracing (TDB) at 1200mm centres recommended for 300, 360 and 400mm Posi-Strut Rafters and Purlins

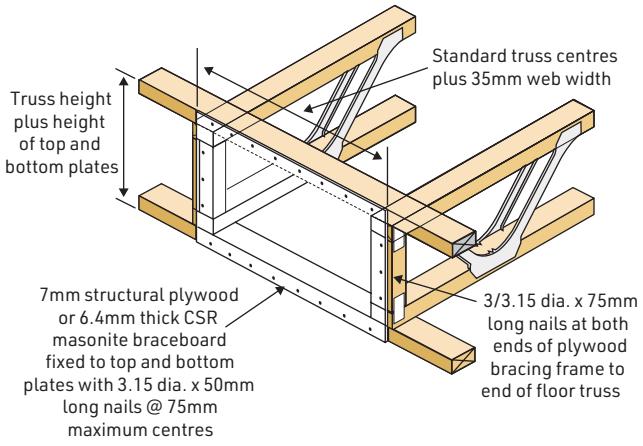


PSO46-a



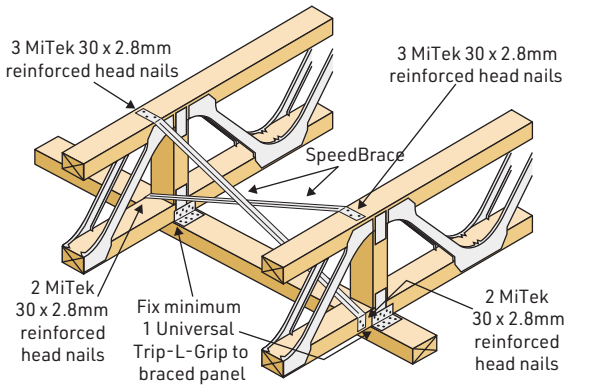
PSO46-b

2. Plywood Bracing Frame (PBF) at 2400mm centres



PSO46-c

3. SpeedBrace (SB) at 2400mm centres



PSO46-d

Note:
For top chord supported Posi-Strut trusses end panel bracing may be omitted if end web is fastened to end wall at bottom chord level.

PERMANENT BRACING

These recommendations assume the following:
a. Wind Classification areas N4 and C1.
b. Walls being stable in their own right.
c. Roof spans as per Tables 21 to 22.
d. Maximum truss centres - 1800mm.

LATERAL RESTRAINT

Top Chord

For roofing battens or roofing purlins use sizes as required by AS 1684 Residential Timber-Framed Construction, at 900mm maximum centres.

Bottom Chord

For ceiling battens or ceiling joists use sizes as required by AS 1684 Residential Timber-Framed Construction at 600mm maximum centres.

For suspended ceilings or where ceiling battens do not provide restraint to bottom chords, eg. metal furring channels clipped to trusses, bottom chord ties may be required. Use 50 x 25 (F5) ties for trusses up to and including 900mm centres, and 70 x 35 (F5) ties for trusses at up to 1800mm centres. Fix ties to each truss with one 3.75mm diameter nail. Splice by lapping over adjacent trusses.

MAXIMUM SPAN CHARTS

Note:
1. All charts designed using LSD design method.
2. Minimum Joint Group JD5.

Table 21. Posi-Strut Rafter & Purlin Maximum Spans
Maximum Raked Span for Domestic Roof Loading
- Steel Deck Roofing with Ceiling - 40kg/m2
- Wind Classification Area N3
- Bottom Chord Supported

Raked Span = Horizontal Span / Cos Ø Where, Ø = Roof Pitch

Posi-Strut Size	Timber Size (mm x mm)	Posi-Strut Centres (mm)														
		600			900			1200			1500			1800		
		Timber Stress Grade														
		F5	F8	F17	F5	F8	F17	F5	F8	F17	F5	F8	F17	F5	F8	F17
PSW3520	35x70	-	4800	5500	-	4100	4800	-	3600	4300	-	3300	3600	-	2500	3100
	35x90	2600	5200	6000	2600	4500	5200	2500	4100	4400	2400	3600	3600	2400	3100	3100
PSW3525	35x70	-	5500	6600	-	4900	5700	-	4500	5200	-	4000	4800	-	2900	4000
	35x90	4100	6200	7200	4100	5400	6200	3600	4900	5600	3100	4500	5300	2500	4200	4600
PSW3530	45x70	-	6600	7700	-	5700	6600	-	5200	6000	-	4600	5700	-	3300	4500
	35x90	4900	7200	7700	4800	6300	7200	4200	5700	6700	3700	5200	5700	3200	4800	4800
PSW3536	35x70	-	7500	8600	-	6000	6000	-	4600	4600	-	3800	3800	-	3200	3300
	35x90	7200	7700	4800	6300	7200	4200	5700	6700	3700	5200	5700	3200	4800	4800	3300
PSW4525	45x70	4800	6000	7000	3700	5300	6100	3700	4800	5500	3600	4400	4900	2700	3300	4200
	45x90	6000	6600	7600	4900	5700	6600	4700	5200	5900	4400	4800	5000	3900	4200	4200
PSW4530	45x70	5100	7100	8100	4900	6200	7100	4300	5600	6400	4100	5200	5300	3100	3900	4500
	45x90	6800	7700	8800	6100	6700	7700	5600	6100	6500	5100	5300	5300	4500	4500	4500
PSW4536	45x70	5400	9100	10500	4600	8200	9300	3900	7200	8300	3900	6200	6500	3800	5500	5700
	45x90	7500	10000	11300	6700	8900	10000	6000	8100	8400	5400	6300	6500	4800	5700	5800
PSW4540	45x70	6100	10000	12500	5400	9000	10800	4600	7500	8200	2900	6600	6600	2800	5600	5600
	45x90	8300	11100	12500	7000	9800	10800	6500	8200	8200	5800	6600	6600	4600	5600	5600
Posi-Strut Size	Timber Size (mm x mm)	Timber Stress Grade														
		MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15
PSW3520	35x70	2900	5300	6500	1300	4300	5800	1300	4100	4500	1200	3500	3700	1100	3100	3100
	35x90	4100	6500	7000	3500	5400	5900	3100	4500	4500	3000	3700	3700	2500	3100	3100
PSW3525	35x70	3600	6000	7700	3100	5400	6900	1300	4700	6300	1300	4500	5300	1100	4000	4400
	35x90	4800	6800	8400	4300	6400	7400	3600	5900	6600	3600	5300	5400	3300	4600	4600
PSW3530	35x70	3700	6800	9100	3600	6100	7300	2400	5500	6900	1300	4900	5600	1300	4600	4700
	35x90	5600	8500	9800	5300	7600	8700	4300	6500	7000	4000	5600	5700	3500	4700	4700
PSW3536	35x70	4800	7900	8700	4300	6000	6000	3300	4600	4600	1300	3800	3800	1100	3300	3300
	35x90	6100	8600	8600	5700	6000	6000	4500	4600	4600	3800	3800	3800	3200	3300	3300
PSW4525	45x70	4800	7300	8200	4300	6600	7200	3700	5700	6200	3600	5100	5100	3600	4300	4300
	45x90	6100	8300	8800	5500	7400	7800	4900	6200	6300	4600	5100	5100	4100	4300	4300
PSW4530	45x70	5900	8600	9600	5400	7500	8500	4800	6500	6700	4400	5400	5400	3700	4600	4600
	45x90	7000	9800	10200	6600	8700	8900	5800	6700	6700	5200	5500	5500	4600	4600	4600
PSW4536	45x70	6700	9900	10900	5400	8400	9600	5300	7100	8300	4600	6400	6700	3900	5600	5700
	45x90	7700	11200	11700	7000	9600	10400	6600	8200	8300	5600	6700	6800	5100	5700	5700
PSW4540	45x70	6900	10800	12100	6100	9000	10700	5600	7600	8100	5000	6600	6600	4600	5600	5600
	45x90	8600	12300	12900	8000	10300	10800	7100	8100	8200	6000	6600	6600	5600	5600	5600

Table 22. Posi-Strut Rafter & Purlin Maximum Spans
Maximum Raked Span for Domestic Roof Loading
- Steel Deck Roofing with Ceiling - 40kg/m2
- Wind Classification Area N4/C1
- Bottom Chord Supported

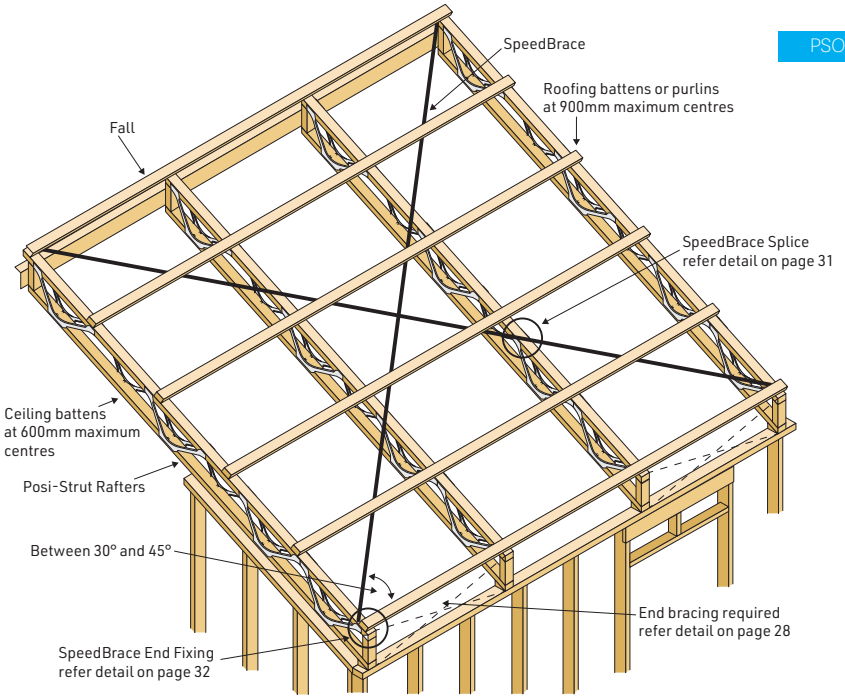
Raked Span = Horizontal Span / Cos Ø Where, Ø = Roof Pitch

Posi-Strut Size	Timber Size (mm x mm)	Posi-Strut Centres (mm)														
		600			900			1200			1500			1800		
		Timber Stress Grade														
		F5	F8	F17	F5	F8	F17	F5	F8	F17	F5	F8	F17	F5	F8	F17
PSW3520	35x70	-	4200	4800	-	3600	3700	-	2900	2900	-	2400	2400	-	2100	2100
	35x90	3000	4500	5200	3000	3700	3700	2500	2900	2900	2400	2400	2400	2100	2100	2100
PSW3525	35x70	-	5000	5700	-	4300	4500	-	3900	4300	-	3300	3500	-	2700	3000
	35x90	3900	5400	6200	3900	4700	4900	3400	4200	4300	2600	3500	3500	2200	3000	3000
PSW3530	45x70	-	5800	6600	-	5000	5300	-	4500	4500	-	3700	3700	-	2900	3200
	35x90	4900	6300	6600	4600	5400	5800	4000	4500	4500	2900	3700	3700	2400	3200	3200
PSW3536	35x70	-	6100	6100	-	4500	4500	-	3500	3500	-	2800	2900	-	2100	2500
	35x90	5400	6100	6100	1900	4500	4500	1300	3500	3500	1300	2900	2900	1300	2500	2500
PSW4525	45x70	4800	5300	6100	3700	4600	4800	3500	3900	3900	3100	3300	3300	2600	2800	2800
	45x90	5200	5700	6600	4600	5000	5100	3900	3900	4000	3300	3300	3300	2800	2800	2800
PSW4530	45x70	5100	6200	7100	4700	5400	5400	4100	4200	4200	3300	3500	3500	2800	3000	3000
	45x90	6100	6700	7800	5300	5500	5500	4200	4200	4300	3500	3500	3500	3000	3000	3000
PSW4536	45x70	5400	7900	9900	4600	6400	6900	3100	5300	5300	1500	4400	4400	1500	3400	3700
	45x90	7000	9000	10000	5500	6900	6900	4600	5300	5300	3500	4400	4400	3000	3700	3700
PSW4540	45x70	6100	8600	9900	4500	6700	6700	3500	5200	5200	2400	4300	4300	1700	3600	3700
	45x90	7400	9900	9900	6100	6700	6700	4900	5200	5200	3900	4300	4300	3500	3700	3700
Posi-Strut Size	Timber Size (mm x mm)	Timber Stress Grade														
		MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15	MGP10	MGP12	MGP15
PSW3520	35x70	2900	4500	5400	1300	3700	3700	1300	2900	2900	1200	2500	2500	1100	2100	2100
	35x90	4100	5400	5400	3600	3700	3700	2900	2900	2900	2400	2500	2500	2000	2200	2200
PSW3525	35x70	3600	5700	7300	3100	4700	5500	1300	4000	4300	1300	3200	3500	1100	2700	3000
	35x90	4800	6600	7300	4000	5400	5600	3400	4300	4300	2600	3500	3500	2100	3000	3000
PSW3530	35x70	3700	6500	8200	3200	5300	5900	2400	4400	4500	1300	3700	3700	1300	2900	3200
	35x90	5600	7600	8600	4700	5900	5900	3800	4500	4500	2800	3700	3700	2500	3200	3200
PSW3536	35x70	4400	6100	6100	3300	4500	4500	2500	3500	3500	1300	2900	2900	1100	2500	2500
	35x90	6100	6100	6100	4500	4500	4500	3500	3500	3500	2900	2900	2900	2500	2500	2500
PSW4525	45x70	4800	6500	7600	4200	5200	5200	3400	4000	4000	3000	3400	3400	2500	2900	2900
	45x90	5900	7400	7600	4600	5200	5200	4000	4000	4000	3400	3400	3400	2900	2900	2900
PSW4530	45x70	5900	7300	8200	4500	5500	5500	4000	4300	4300	3300	3500	3500	2800	3000	3000
	45x90	6600	8200	8200	5300	5500	5500	4300	4300	4300	3500	3500	3500	3000	3000	3000
PSW4536	45x70	6100	8100	9900	5200	6500	6900	4300	5300	5300	3300	4400	4400	2800	3800	3800
	45x90	7200	9100	9900	5700	6900	6900	5000	5300	5300	3900	4400	4400	3300	2800	3800
PSW4540	45x70	6900	8600	9900	5400	6700	6700	4400	5200	5200	3300	4300	4300	2600	3700	3700
	45x90	7900	9900	9900	6300	6700	6700	5200	5200	5200	4100	4300	4300	3500	3700	3700

SPEEDBRACE FIXING

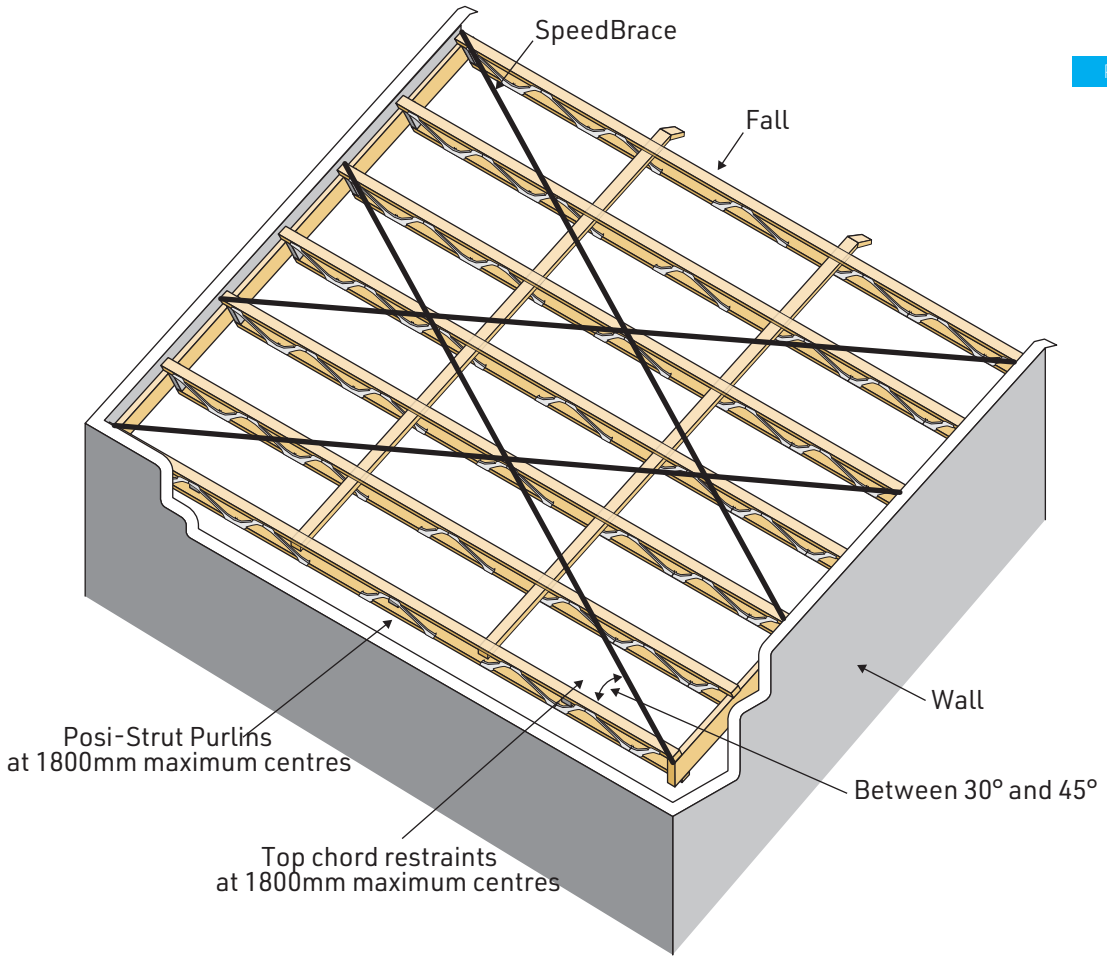
Roof Bracing - Posi-Strut Rafters Trusses are placed parallel to roof pitch

PSO47



Roof Bracing - Posi-Strut Rafters Trusses are placed parallel to roof pitch

PSO48



TOP CHORD BRACING

The top chord bracing shall be arranged according to the following roof lengths using single SpeedBrace.

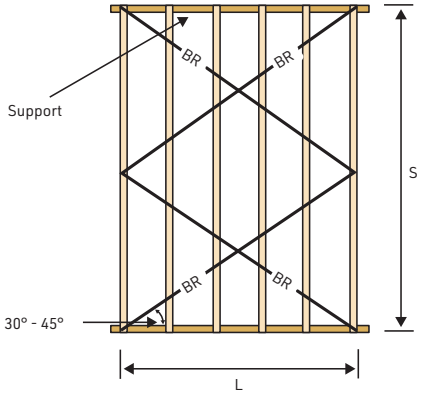
BOTTOM CHORD BRACING

Adopt similar batten and bracing arrangement as the top chord for trusses with suspended ceiling or exposed bottom chords.

Note:
The following bracing details are designed for the stability of Posi-Strut truss only. The stability of supporting and end walls should be checked by others.

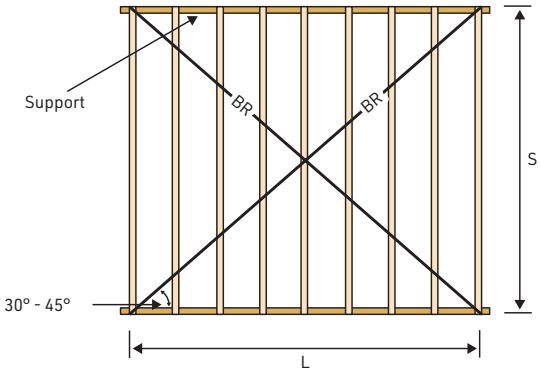
a. Roof length 'L' is less than truss span 'S'

Where the roof length 'L' is very short compared to the span 'S' such that it would result in a brace angle greater than 45°, a diagonal bracing arrangement is required as given below. Bracing bays should be spaced across the roof such that the angle is always between 30°and 45°.



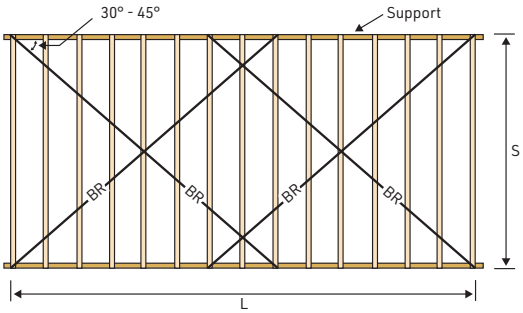
PSO49-a

b. Roof length 'L' is 1 to 1.5 times the truss span 'S'



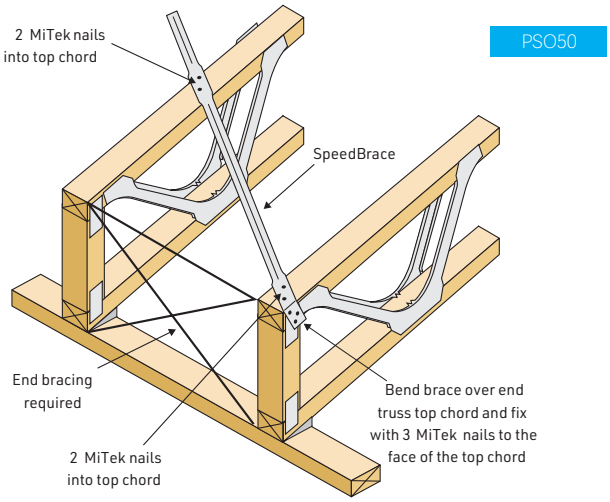
PSO49-b

c. Roof length 'L' is long compared to the truss span 'S'

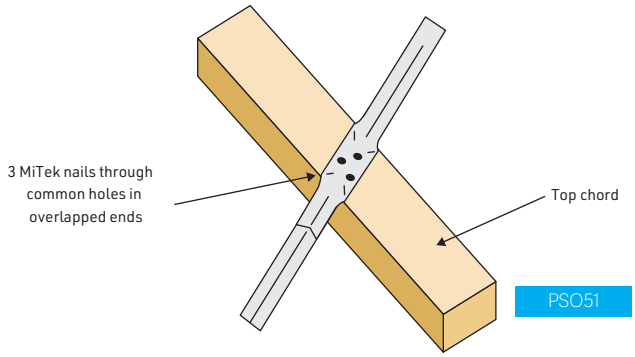


PSO49-c

TYPICAL END FIXING DETAIL



PSO50



PSO51

MiTek® | Better Building Through Off-site Technology

Why MiTek Posi-Struts are right for your next build.

Faster Installation

MiTek's engineered design and **Posi-Strut** No Floor Hanger system streamline installation, reducing construction time by over 30%* compared to I-Joists.

Reduced Waste & Energy Efficient

Prefabricated components, combined with machine precision lead to minimal material waste and optimised energy consumption during installation.

Easy Access to Services

Posi-Strut webs provide easy access for service installation and maintenance in the floor zone. Energy code compliance makes **Posi-Strut** ideal, potentially reducing the need for soffits and increasing room heights.

Versatility & Customisation

Posi-Struts offer longer spans for diverse applications, enabling customisation to fit specific project requirements.

Light-weight Construction

Posi-Struts combine the lightness of timber with the strength of steel so they are easy to handle which contributes to overall efficiency on-site.

Attract Trades to Your Job

Posi-Struts streamline structural floor installation, reducing time and minimising height-related risks for trades. Its user-friendly design makes it appealing for builders seeking efficiency and safety in their projects.

If you are interested in using Posi-Strut in your next build, visit our website **www.mitek.com.au** to learn more or to locate a MiTek enabled Fabricator.

* Results are based on actual comparative build utilising Posi-Strut No Floor Hanger system.

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