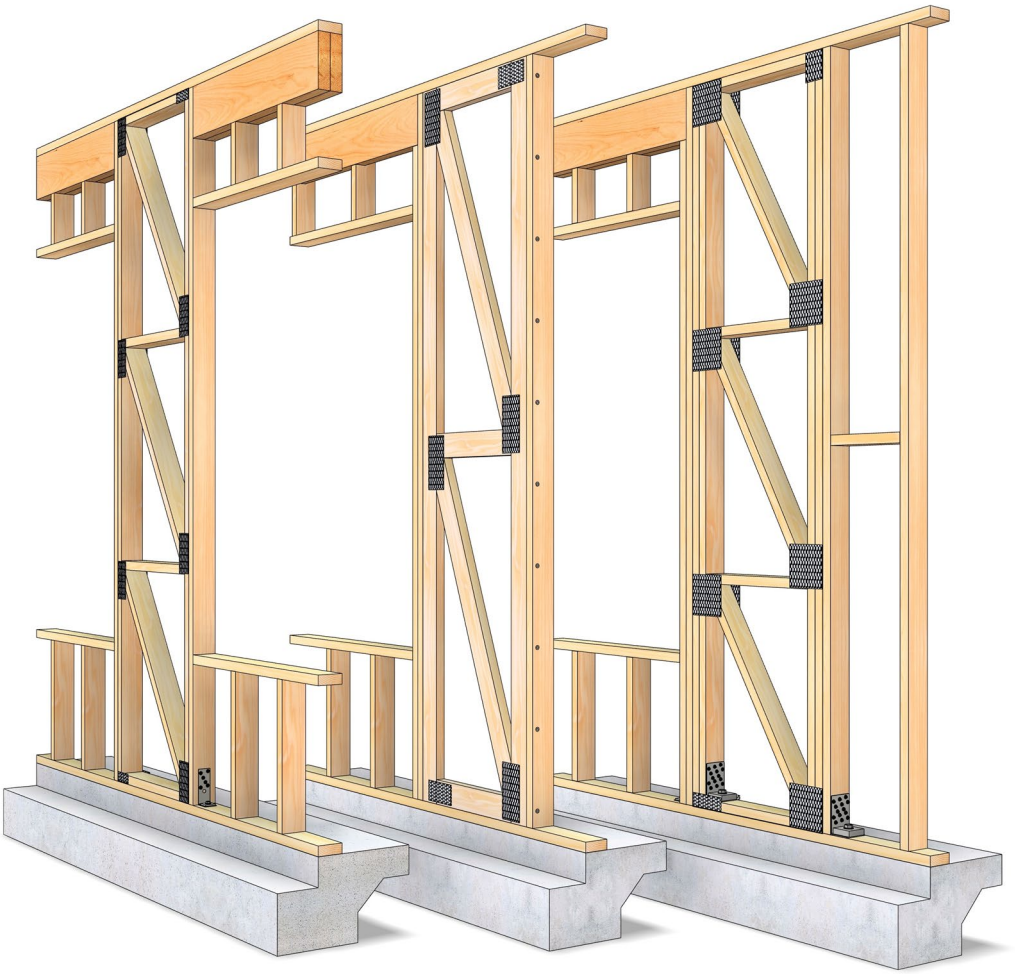
Design Guide

Pryda MuscleBrace™ PMB



Design Guide for Pryda MuscleBrace™ (PMB)

CONTENTS

DESIGN GUIDE FOR PRYDA WALL BRACE

INTRODUCTION

Fewer internal walls and large openings typify domestic housing designs these days. As this trend for open plan housing continues in our market, it is becoming increasingly difficult to achieve bracing adequacy using the traditional units. Short wall lengths are a common place, especially along the front and rear facades of houses.

In the case of two or three storey structures, the ground floor is subjected to the largest racking forces but ironically could have the least number of 'brace-able' walls.

Pryda MuscleBrace™ (PMB) would be advantageous in these scenarios, providing better design values for short wall lengths than most ply or OSB bracing units available in the market.
As an example, for a 600mm bracing wall length, a 3.0 kN/m sheet bracing unit would achieve a capacity of 1.35 kN (in JD5 material with nominal tie-down connections). Note: Plywood bracing units get a significant capacity reduction when their length falls below 900mm.
On the other hand, PMB units suffer no reduction for its length and can achieve capacities of approximately 3 kN (PMB1 or PMB2) for 600mm bracing length and PMB3 can achieve as much as 7.2 kN for the same 600mm bracing length.

Fig 1 - Typical examples of front elevations with short walls where a PMB would be best suited.

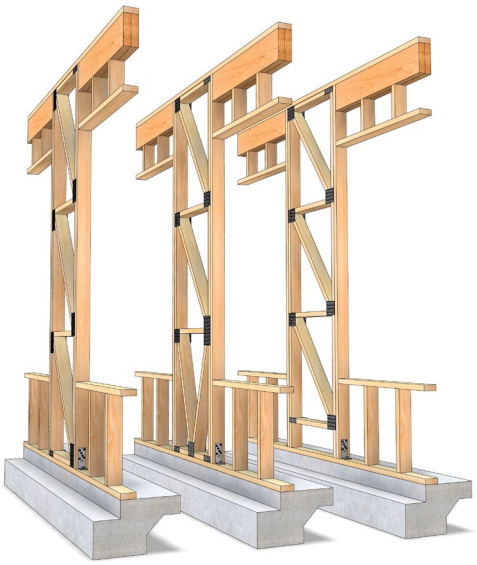
PRODUCTS

Pryda offers three types of short wall truss bracing units. PMB1 and PMB2 which are units with capacities of 5kN/m for walls up to 2700mm and the heavy-duty PMB3 which is rated at 12kN/m (2700mm walls). Above 2700mm height walls the PMB bracing units' capacity will be reduced in accordance with AS1684 height reduction factor (Wall Height / 2700mm).

PMB1

The PMB1 utilises timber chords oriented on flat profile and has a capacity of 5.0 kN/m (on walls up to 2700mm). PMB1 is suitable for 300mm to 1200mm lengths, the PMB1 can be used in multiple applications by selecting different end types.
For wall heights greater than 2700mm, the capacity shall be reduced by a factor equal to 2700/wall height.

Refer to page 8 for installation details.



PMB2

PMB2 uses timber on ‘edge’ profile and also has a capacity of 5.0 kN/m (on walls up to 2700mm).
PMB2 is suitable for 300mm to 1200mm lengths, PMB2 is designed to be fixed between studs located at each end of the bracing unit.
For wall heights greater than 2700mm, the PMB2 capacity shall be reduced by a factor equal to 2700/wall height.
Tie-down fixing options will depend on the wall frame depth.

Refer to page 12 for installation details.

PMB3

This is a heavy-duty bracing unit with capacity of 12.0 kN/m and requires high-capacity tie-down anchors.
The PMB3 is suitable for 300mm -1200mm lengths.
For wall heights greater than 2700mm, the PMB3 capacity shall be reduced by a factor equal to 2700/wall height.
PMB3 can be used in multiple applications by selecting different end types.

Refer to page 16 for installation details.

PMB INSTALLATION GUIDE – END TYPE CONFIGURATION

PMB units may have different end types to enable variable fixing details and to help avoid potential conflicts with openings, etc.

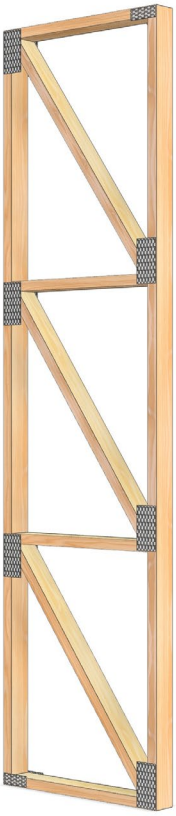
The most common end types are:

- Standard End
- V-Type End profile
- H Type End profile

These flexible end types are available for PMB1, PMB2 and PMB3 and the selected end type variant will be determined by site factors.

H End Profile

V End Profile



Standard End Profile

PMB INSTALLATION GUIDE – TIE-DOWN CONNECTIONS

Tie down connections for PMB units to concrete slabs can be specified from Pryda Build by entering the correct slab details into the software.
It is important to note that tie-down capacities into the slab will be significantly affected by the slab support detail.
This is due to the fact that concrete fixings typically generate their capacity based on pulling out a 'cone' of concrete (Figure 1b). If this concrete cone area is reduced (due to the fixing being close to the edge of concrete) then the cone failure size is reduced along with its capacity.
The most common slab details for residential construction are based on waffle raft/pod specified in AS2870 (Residential Slabs and Footings).
Edge Beam refers to the outside perimeter of the slab which supports external timber framed walls and where the masonry veneer is located. A typical detail for this is similar to Figure 1a.
The edge beam depth and width should be nominated on the structural plans based on the type of construction (Clad frame, Masonry Veneer, etc.) and the soil site conditions.
Edge beam will typically have enough depth to support multiple fixing depth options however it is important to note that fixing anchors to internal slabs can be restrictive as they are often only 85mm thick.
If PMB units are used on internal slabs, it is recommended to consider slab thickening under these walls to enable suitable anchor fixings.

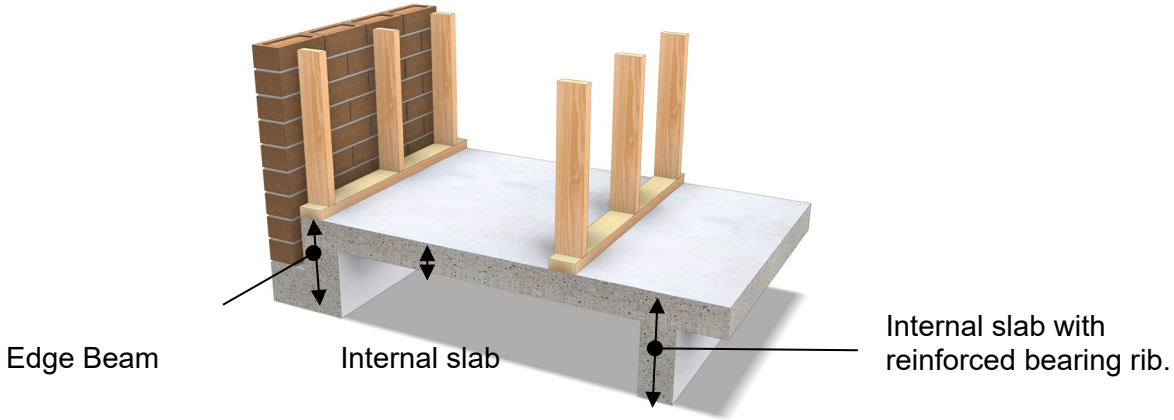


Figure 1a: Typical Edge Beam and internal slab.

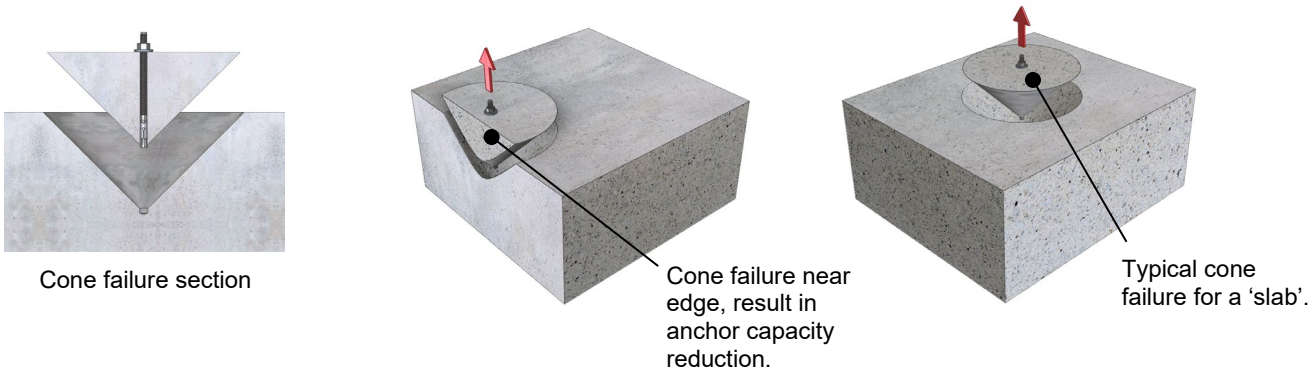


Figure 1b: Cone failure.

When attempting to fix to edge beams it is also critical that the anchor fixing is not installed any closer than 40mm to the edge of the concrete (edge distance).

Embedment depth is the net depth that the anchor is required to be fixed into the concrete.

This can be impacted by the bottom plate thickness, the connector thickness used to fix the legs of the PMB unit and the washer thickness.

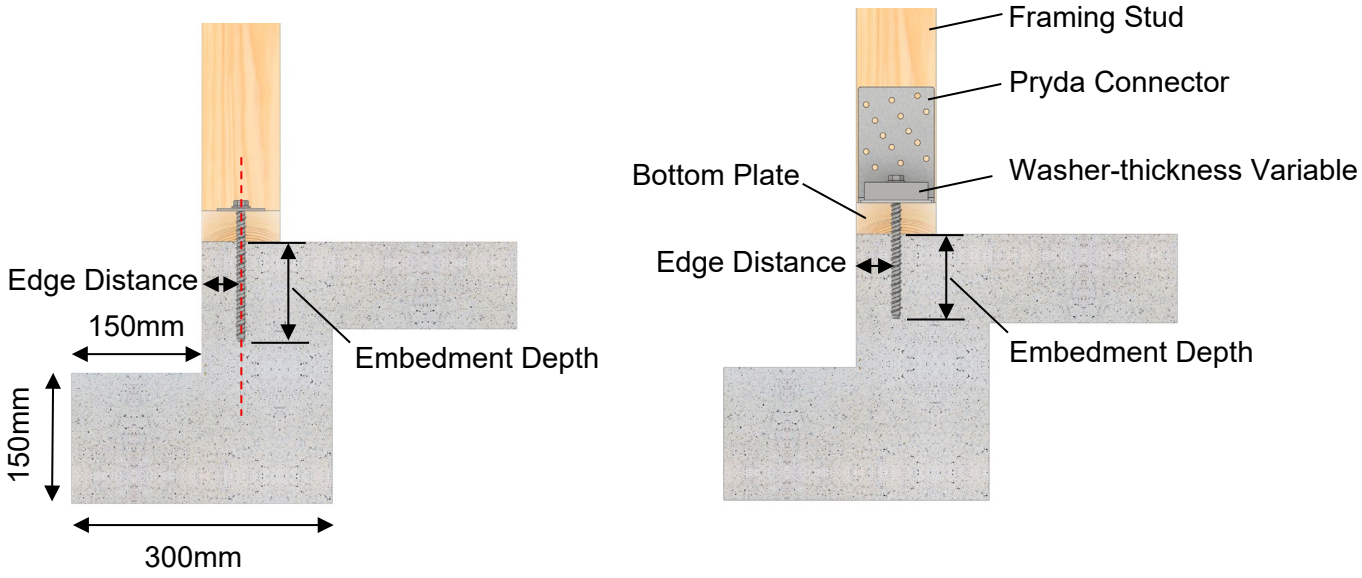


Figure 2: Anchor edge distance and embedment depth.

Tie-down fixing will depend on the PMB end type configuration, the slab support type and the tie-down force required for the PMB unit selected.

The Pryda connector may be fixed either directly to the legs of the unit or to the stud on either side (if available).

Pryda tie-down connectors MPCPAH and CPB can be used in conjunction with specified washers and either RAMSET WERCS™ Ankascrew™ or 12mm/16mm rods and RAMSET ChemSet™ Reo 502™ XTREM.

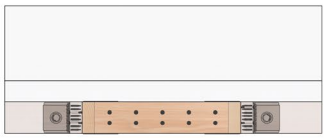
It is critical that if the connectors are fixed to the stud on each side that the stud and the connector are designed to take the additional force from the PMB unit in addition to the studs own expected support loads (face wind loads + roof or floor trusses applied loads, etc.). This will require Engineering guidance to ensure all the relevant additional loads are catered for in the stud and tie-down design.
In addition, the studs should be laminated to the PMB chord with sufficient screws so the uplift force can be transferred from the PMB unit to the stud.

PMB1 INSTALLATION GUIDE – TIE-DOWN CONNECTIONS

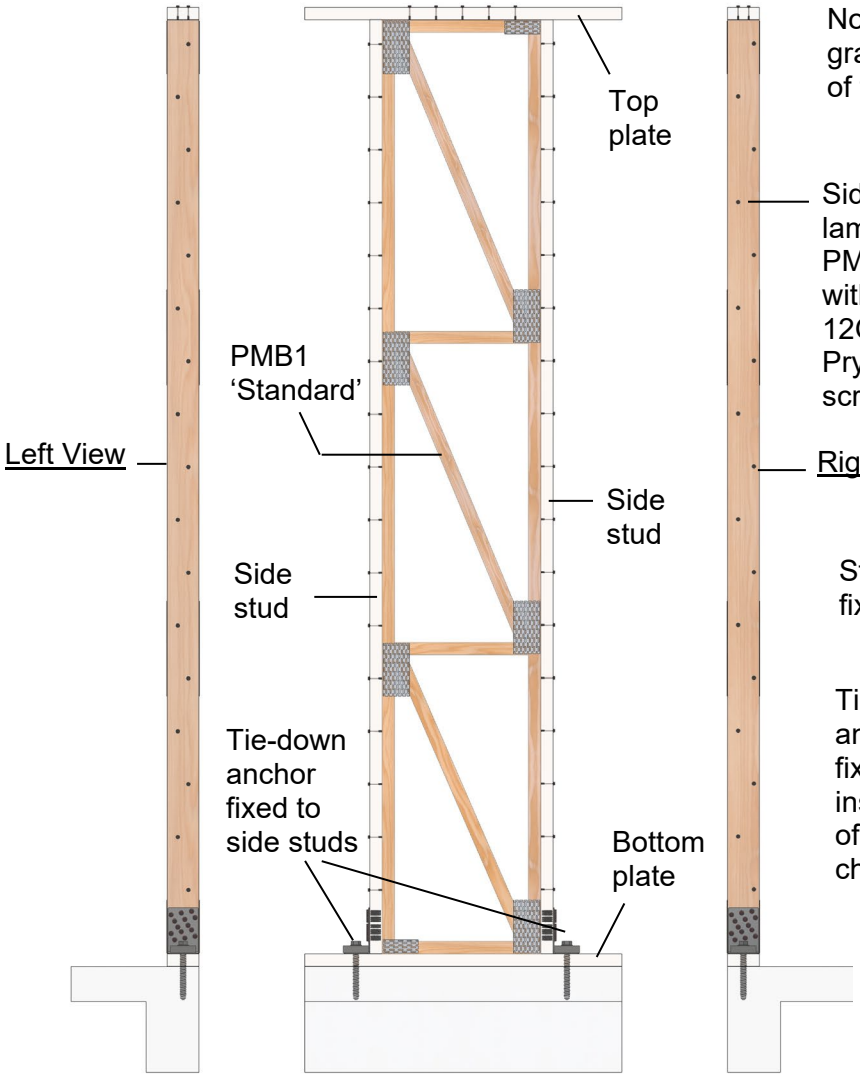
PMB1 – 'Standard' End Type (tie-down connector fixing to studs)

Top View

Screw fixes top plate to PMB1 end web.

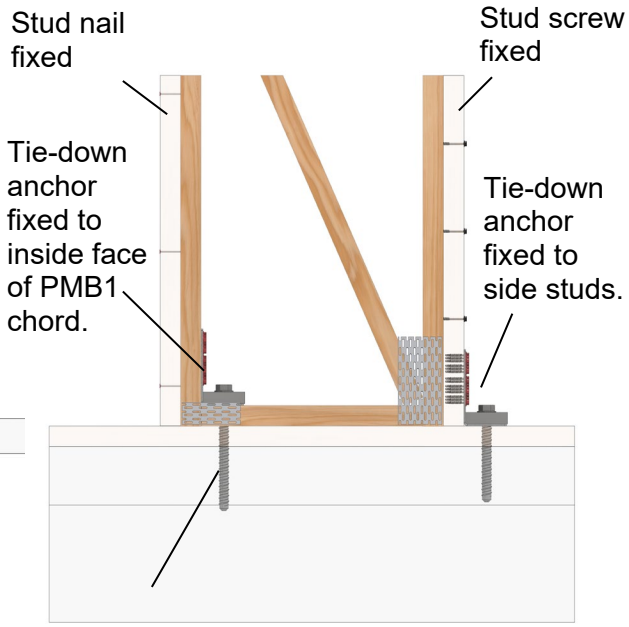


If studs are present each side of unit and the tie-down is connected directly to the stud instead of the PMB1 chord, then the stud is required to be laminated with sufficient screws to transfer the uplift force from the PMB1 to the stud.
Note: The stud should be equivalent size and grade to the chord of the PMB1 on each side of the unit.



Front View

IMPORTANT: PMB panel profile shown is only indicative.



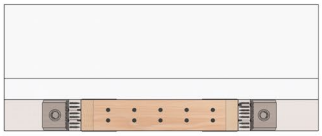
Longer anchor bolt required for net embedment depth

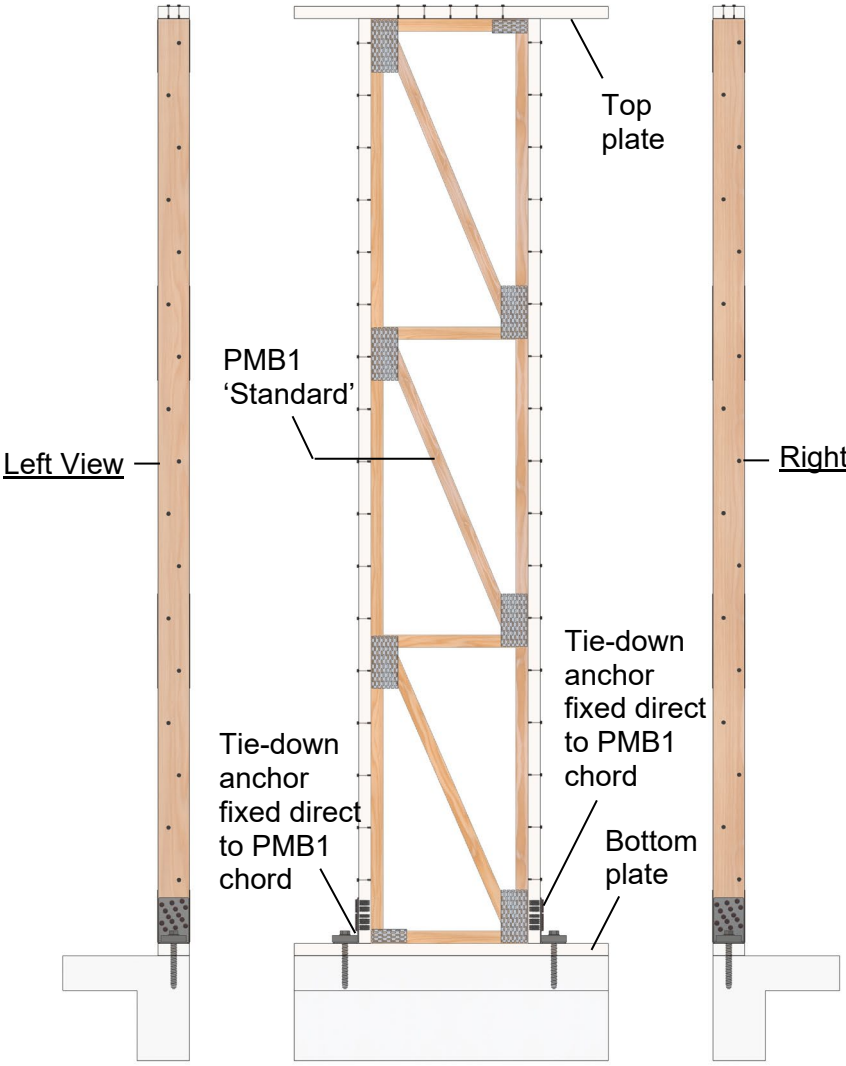
If studs are present but the connector is fixed directly to the PMB chord then the stud can be nail laminated with 65x2.8 or equivalent nails @ 250mm centres.

PMB1 – 'Standard' End Type

Top View

Screw fixes top plate to PMB1 end web.

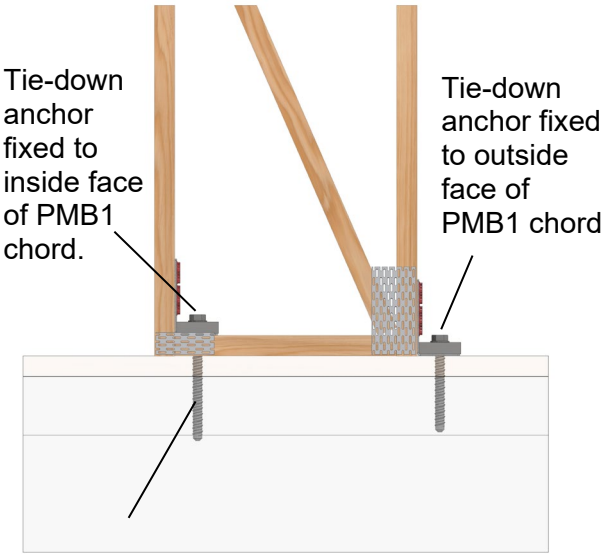




Front View

Tie-down fixed direct to PMB chords.

IMPORTANT: PMB panel profile shown is only indicative.



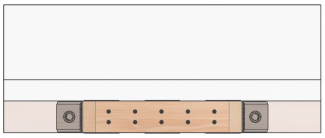
Longer anchor bolt required for net embedment depth

Note: Tie-down can also be fixed direct to inside face of chords if there is no web conflict.

PMB1 – 'V' End Type

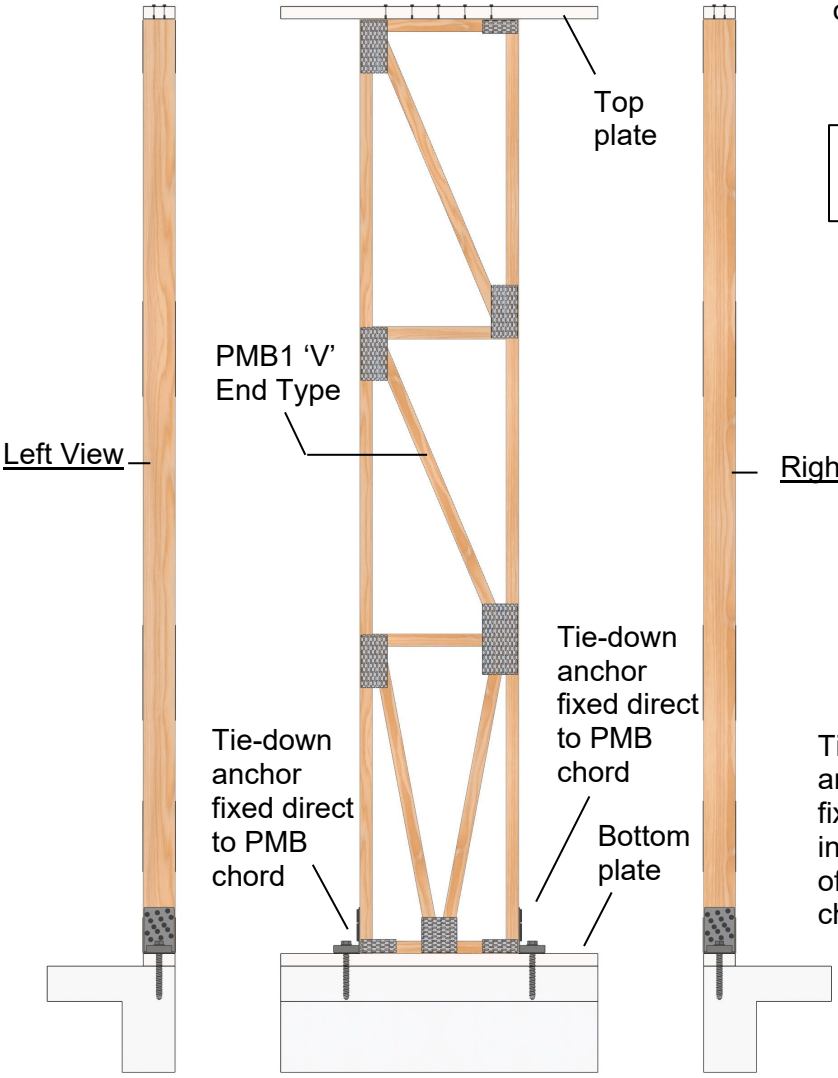
Top View

Screw fixes top plate to PMB1 end web.



V end types are used when there is external conflict on **BOTH** sides of the PMB1 unit (e.g. an opening or slab edge). The PMB1 unit should be made with enough clearance height to enable the Pryda connector (CPB or MPCPAH) to be installed against the chord upright on the inside face.

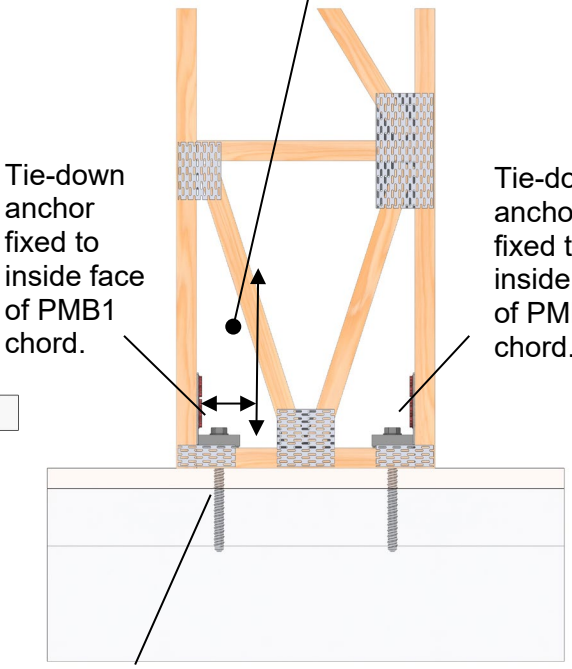
IMPORTANT: PMB panel profile shown is only indicative.



Front View

Tie-down for V end types can be fixed directly to the outside of the chords (shown above) as well, however its primary purpose is to resolve tie-down conflicts that occur outside of the chords.

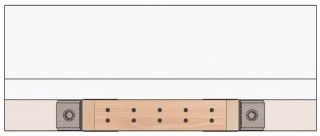
Fixing inside the chord will only be suitable when sufficient clearance between webs is made available to fully install Pryda connectors



PMB1 – 'H' End Type

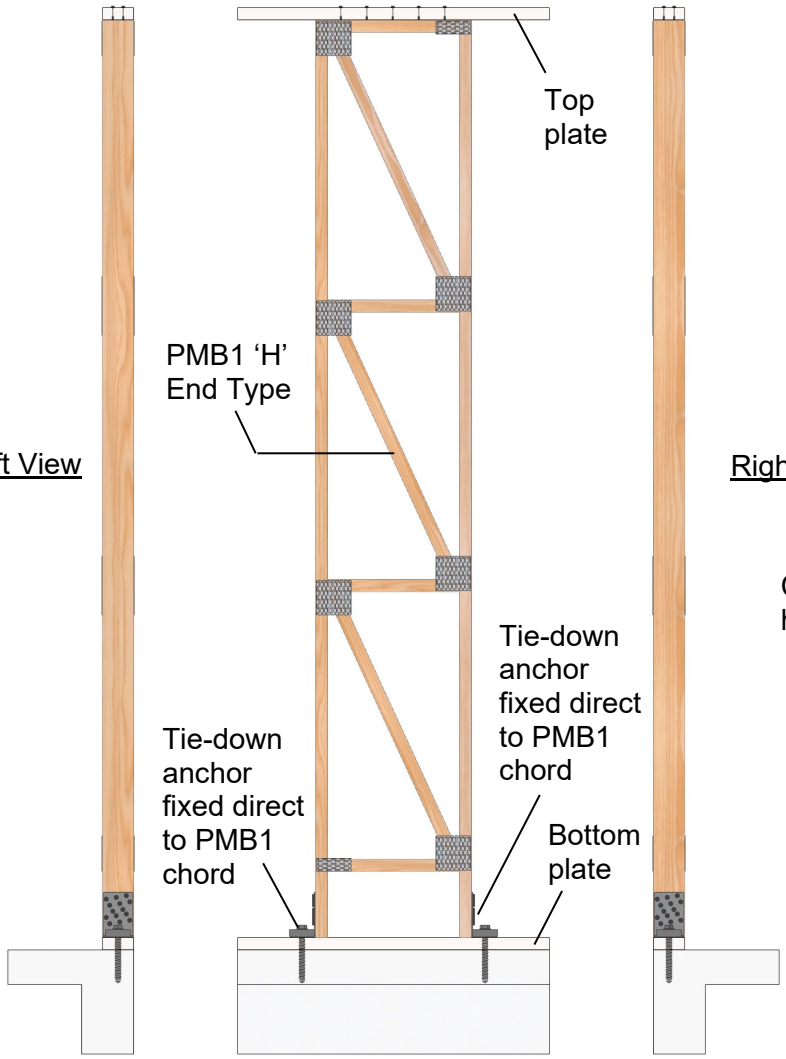
Top View

Screw fixes top plate to PMB1 end web.



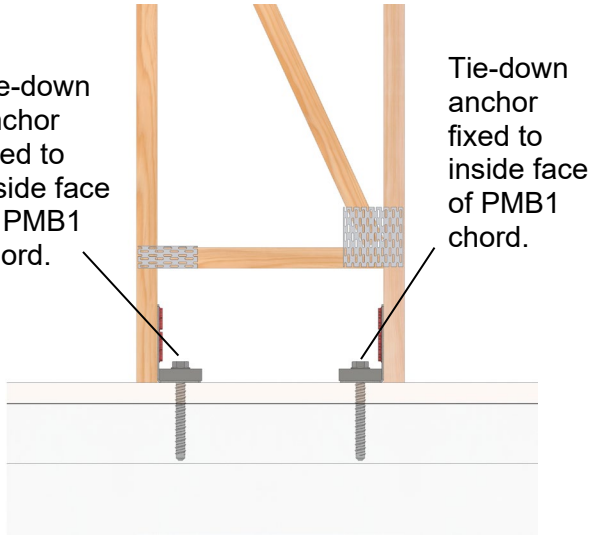
H end types can be used when there is a void required between the chords.
For PMB1 there will be a limit to how high this clearance can be set as there will be additional deflection of the unit and the chords are slender so will have difficulty designing if the clearance height is extensive.
Fixing of tie-down connectors can be direct to chords on the outside or inside face.

IMPORTANT: PMB panel profile shown is only indicative.



Front View

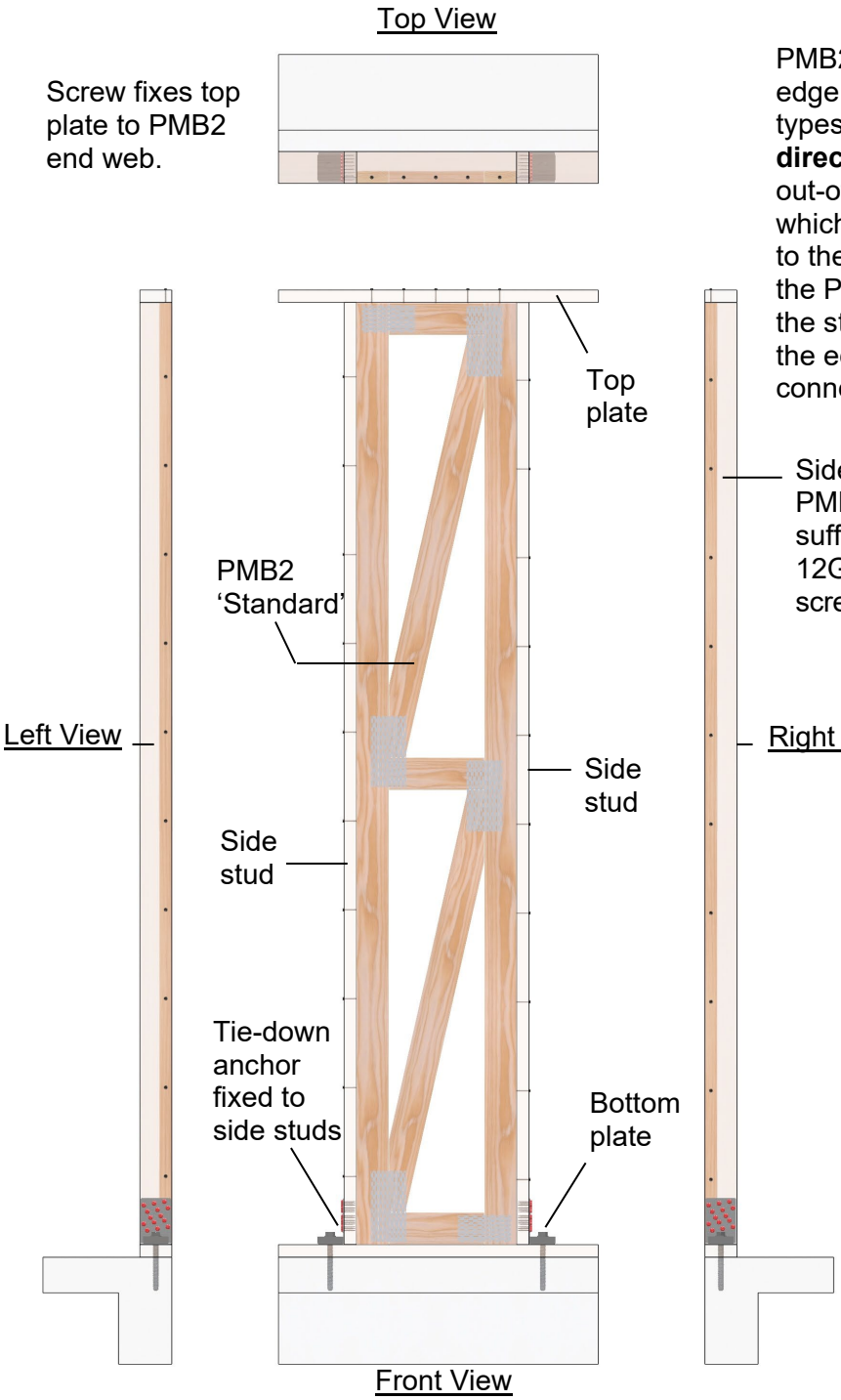
Clearance height



Fixing inside the chord will only be suitable when sufficient clearance between webs is made available to fully install Pryda connectors to internal face of PMB1.

PMB2 INSTALLATION GUIDE – TIE-DOWN CONNECTIONS

PMB2 – 'Standard' End Type (tie-down connector fixing to studs)



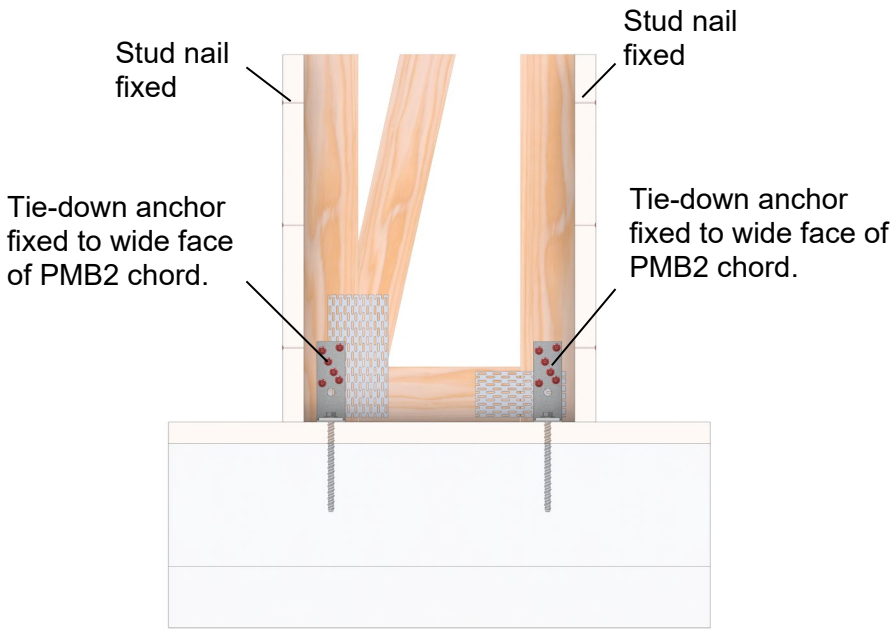
PMB2 units are made with the chords oriented on edge similar to a roof truss. When using these types of units, it is critical that there is a stud fixed **directly** to the PMB2 chords. This is due to the low out-of-plane buckling resistance in this specific unit which require the studs to function as 'T-stiffeners' to the PMB vertical chords. Due to this requirement the PMB tie-down connector must be either fixed to the stud or directly to the wide face of the chords as the edge of the chords are too narrow for tie-down connection.

IMPORTANT: PMB panel profile shown is only indicative.

For PMB2, if the tie-down connector is fixed to the studs, then:

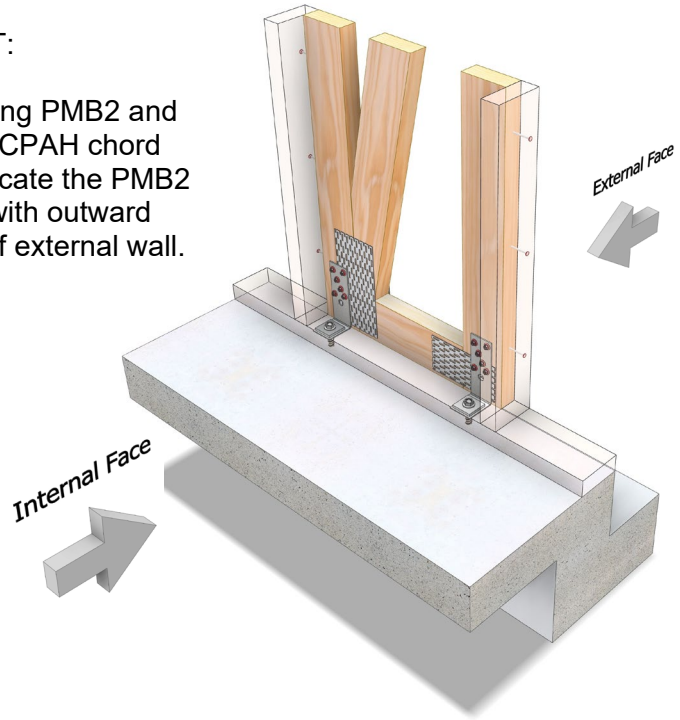
1. The stud size and grade is required to be, as a minimum, the same size and grade as the PMB2 chords.
2. If the studs fixed to the PMB2 are carrying additional roof/wall or floor loads they may require specific Engineering design.
3. The stud is **required** to be laminated with sufficient screws to transfer the uplift force from the PMB2 to the stud.

PMB2 fixing to the chord face may be possible if the frame depth allows the connector geometry to be used while keeping the required edge distance on the slab.
If this connection is possible then studs can be nail fixed to the PMB2 chord with 65 x 2.8mm or better nails @ 250mm centres.



IMPORTANT:

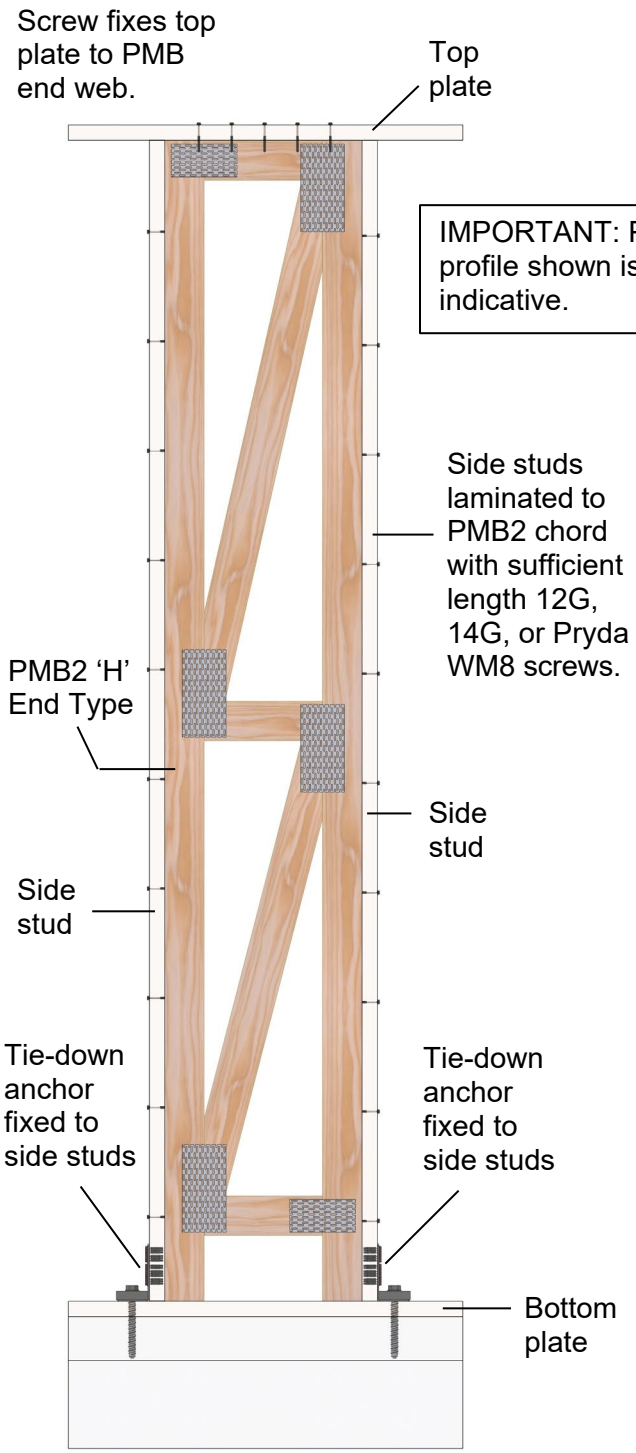
When installing PMB2 and adopting MPCPAH chord tie-downs, locate the PMB2 frame flush with outward facing side of external wall.



PMB2 – 'V' and 'H' End Type

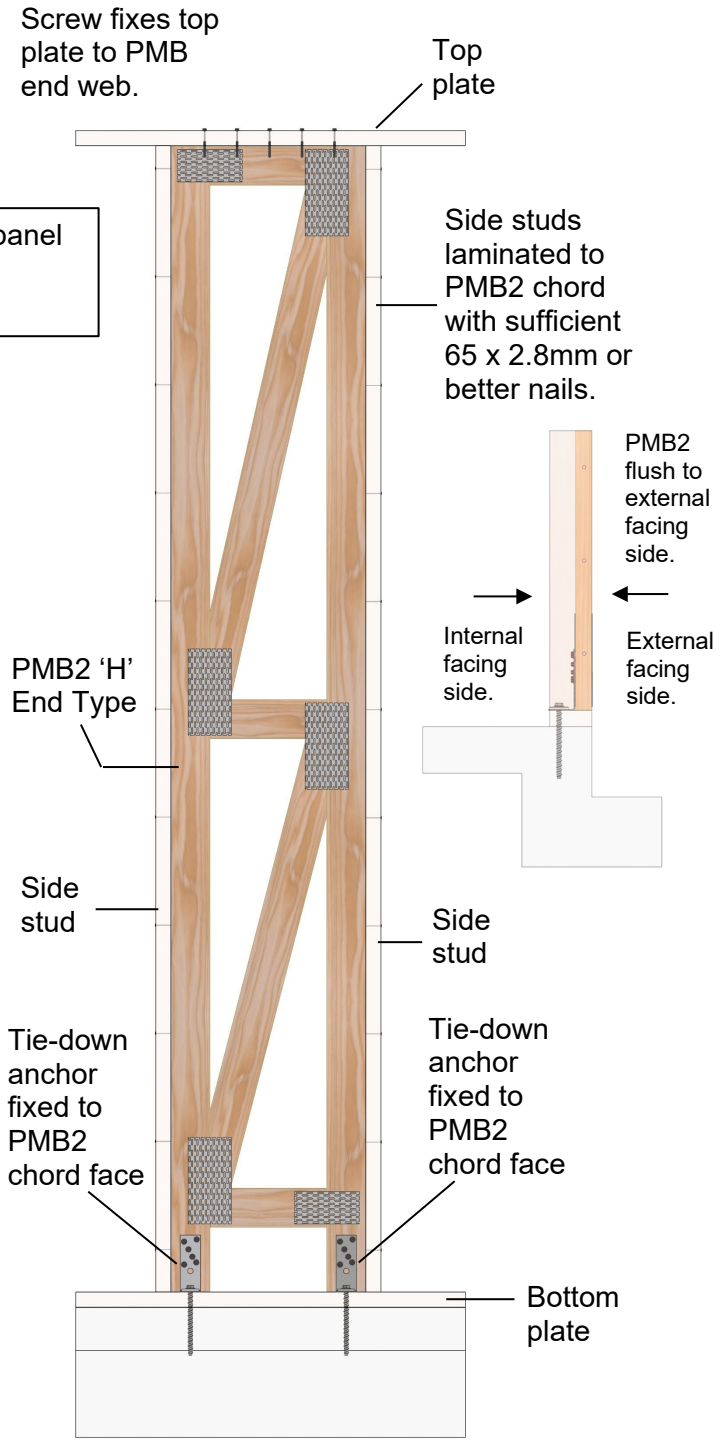
V and H end types are treated in a comparable way to the standard end type with both fixing to stud and direct fixing to face options.

Similar lamination and stud size and grade details apply.



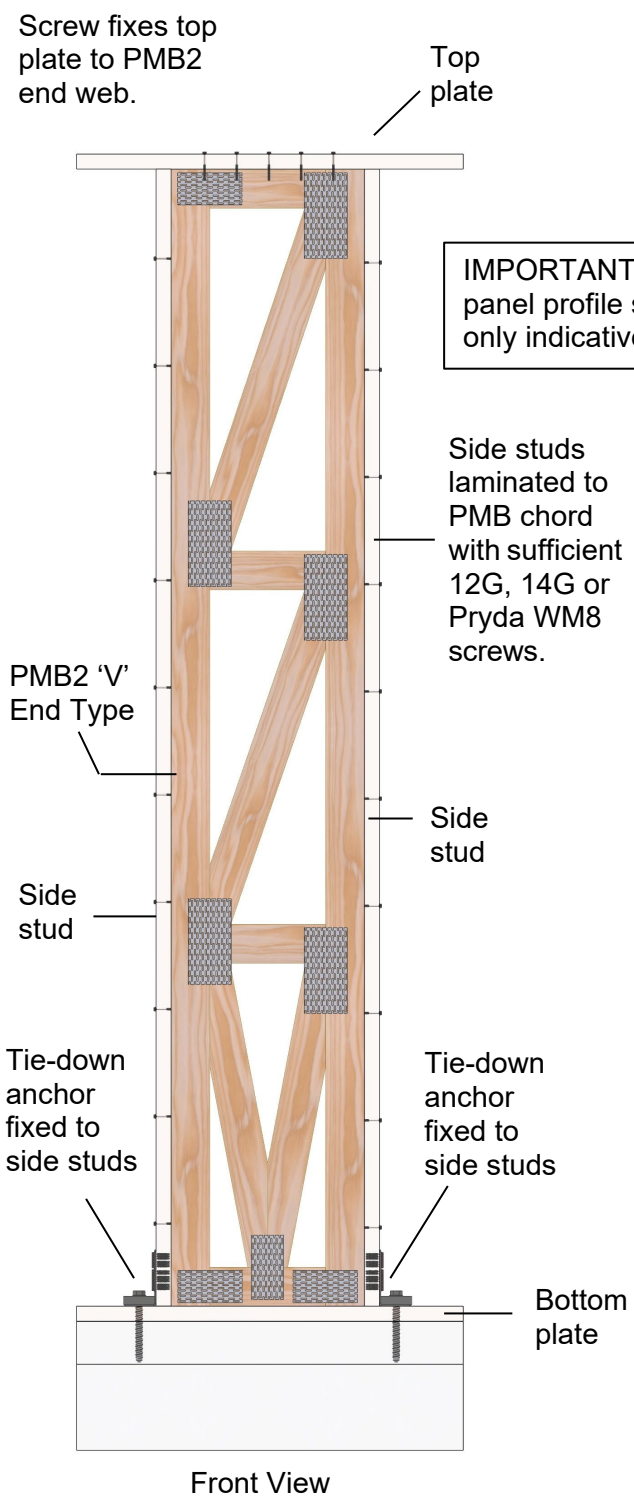
Front View

H End Type with tie-down fixed to stud.



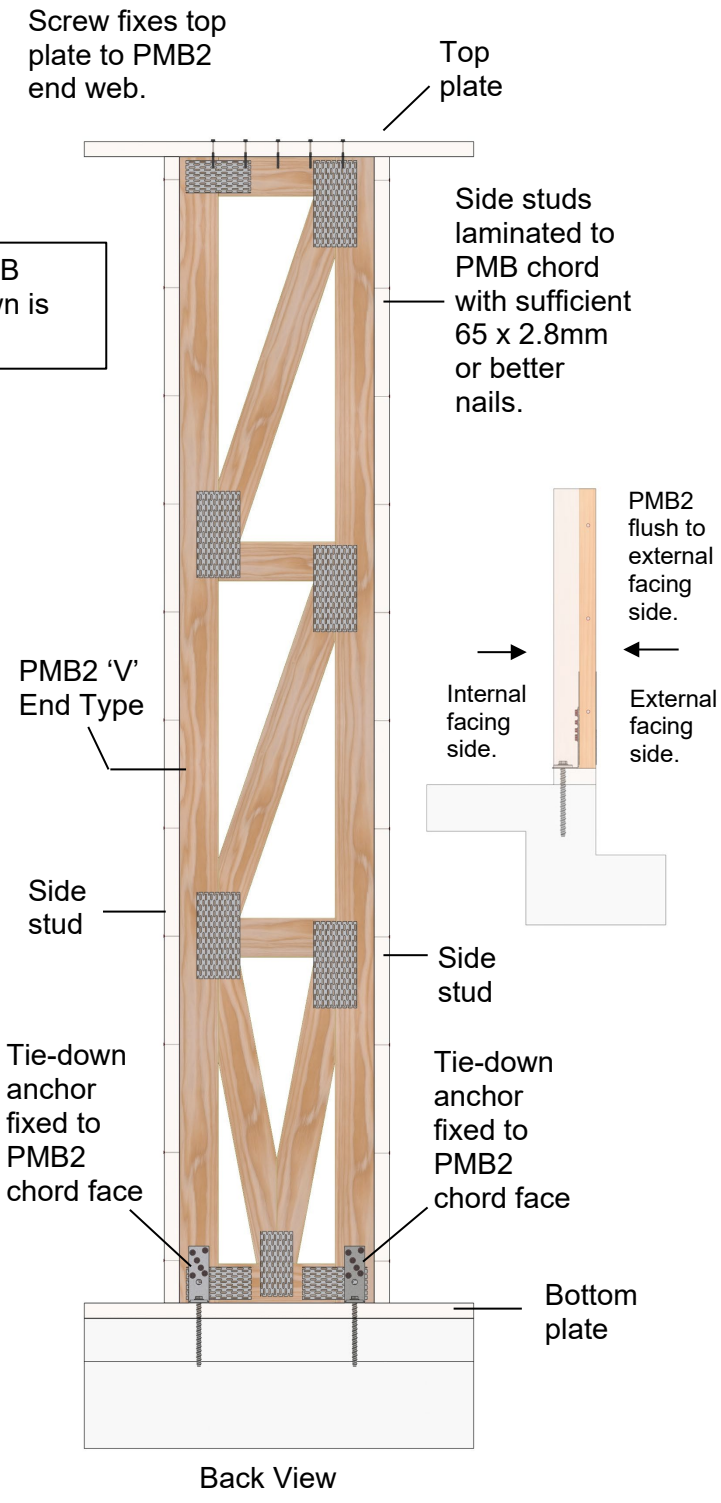
Front View

H End Type with tie-down fixed to PMB2 chord face.



Front View

V End type with tie-down fixed to stud.

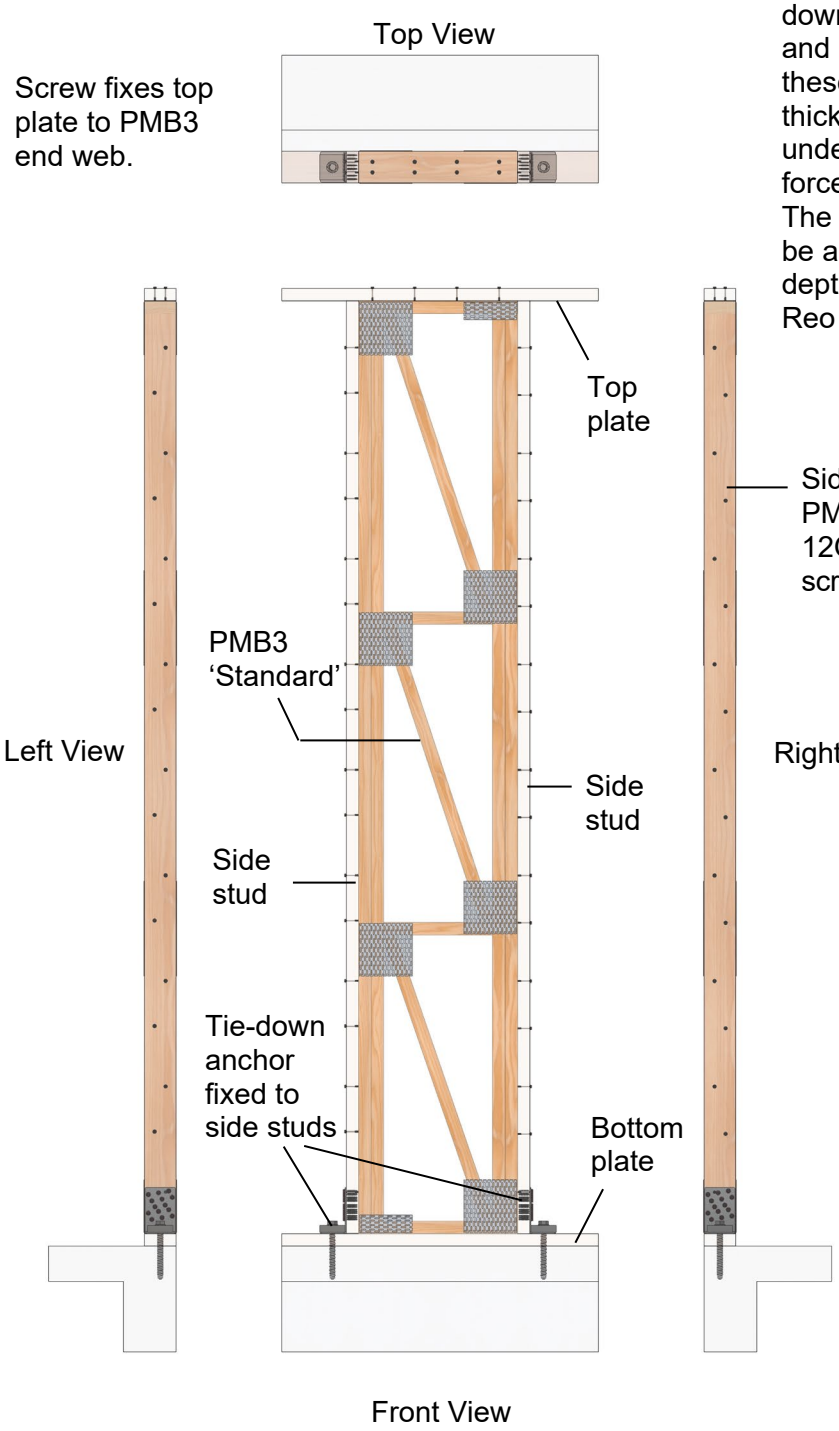


Back View

V End type with tie-down fixed to PMB2 chord face.

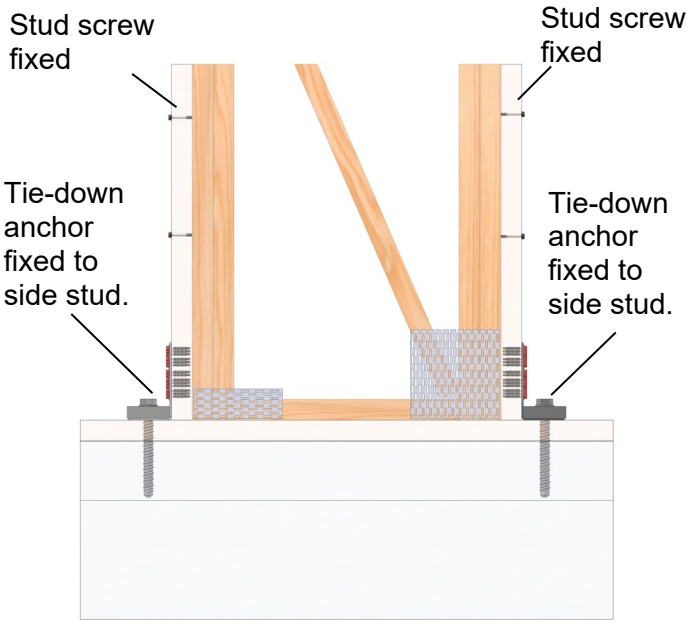
PMB3 INSTALLATION GUIDE – TIE-DOWN CONNECTIONS

PMB3 – 'Standard' End Type

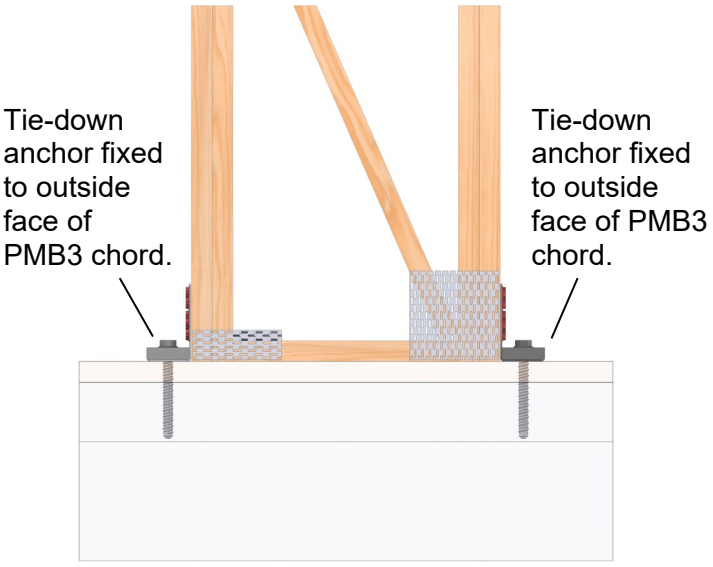


PMB3 units are higher capacity bracing units and as such will have higher tie-down capacity requirements than PMB1 and PMB2. It is not recommended to use these units on internal slabs without thickening the slab appropriately directly under the unit to take the necessary uplift force (generally approx. 35kN).
The slab will also need sufficient depth to be able to accommodate the embedment depth required for fixing with Chemset™ Reo 502™ XTREM and anchor rods.

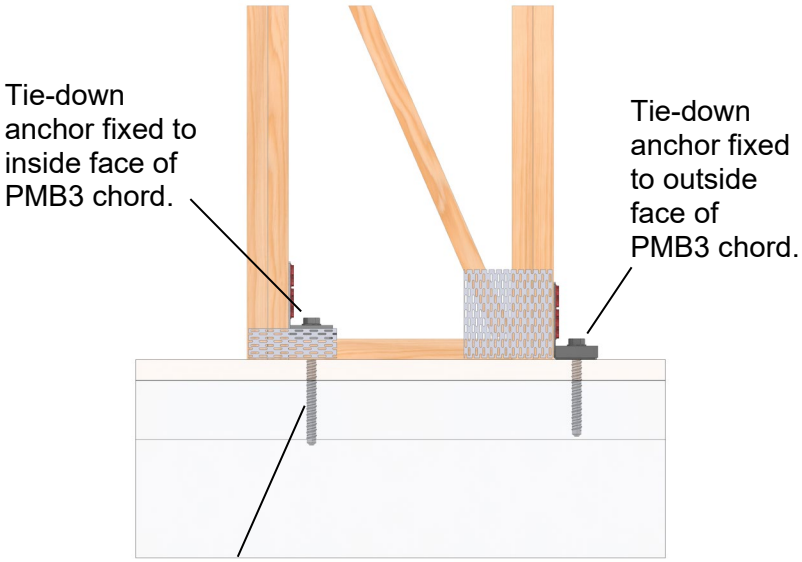
IMPORTANT: PMB panel profile shown is only indicative and may vary to final design.



Standard End type with tie-down fixed to stud.
Note: Specific Engineering design of stud (and stud lamination detail) is required due to high uplift forces.



Tie-down can also be fixed direct to outside of chord face.

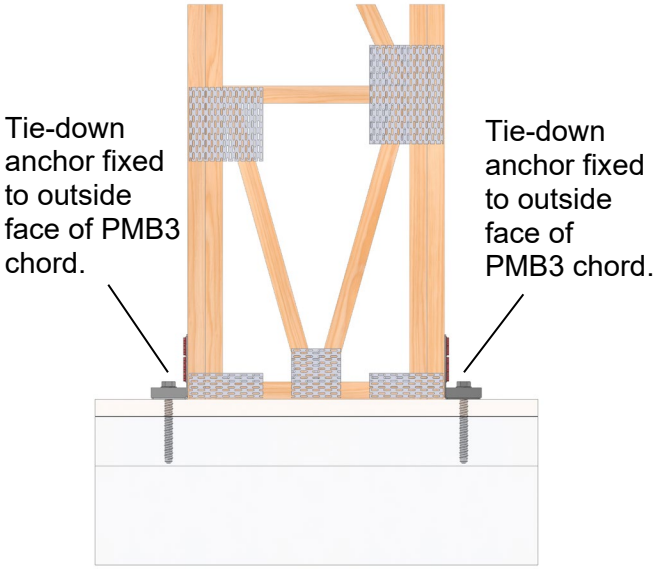


Longer anchor bolt required for net embedment depth

Tie-down connector can also be fixed direct to inside of PMB3 chord face if there are no web conflicts.

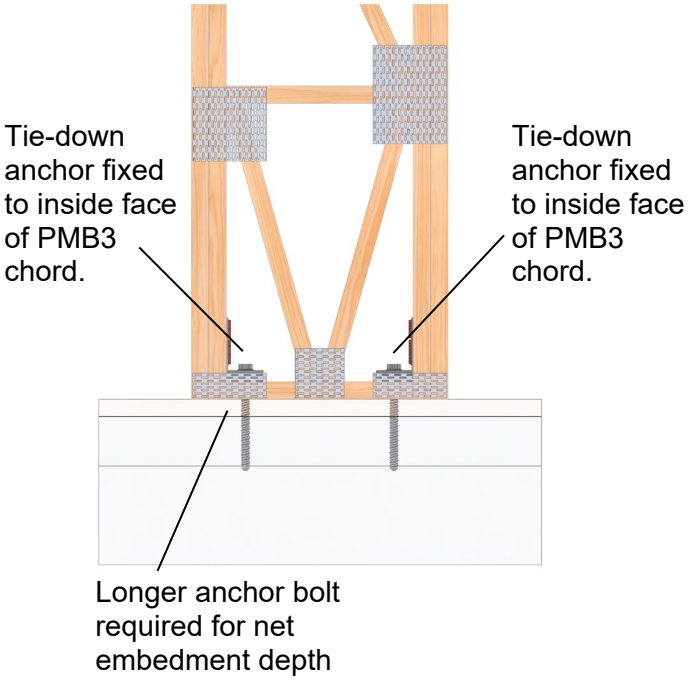
PMB3 – 'H' AND 'V' End Type

PMB3 units can use both H and V end types provided suitable designs can be generated from Pryda Build'. Similar in principle to PMB1, clearance heights can be set to install connectors to the inside leg of the PMB3 unit.



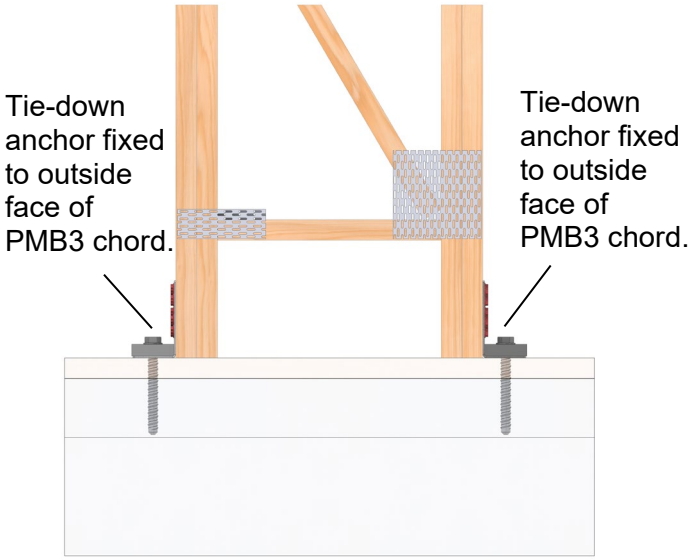
V End type – fixing direct to outside of chords.

IMPORTANT: PMB panel profile shown is only indicative and may vary to final design.

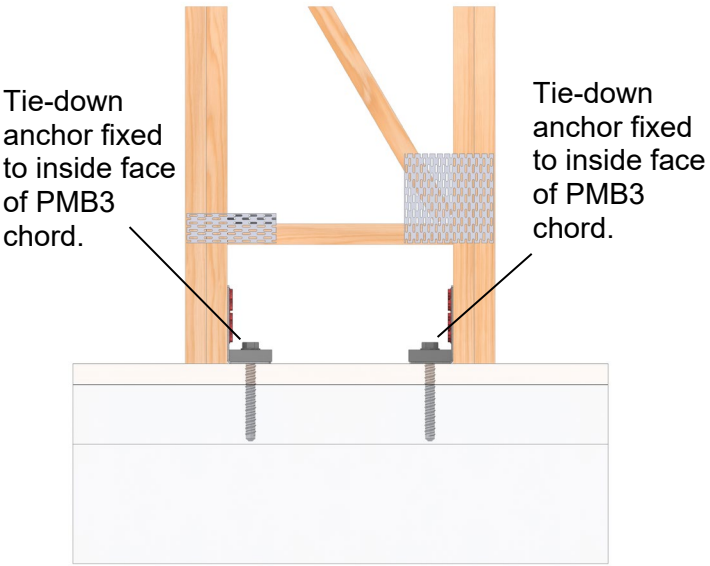


V End type – fixing direct to inside of chords.

Ensure sufficient clearance between webs to successfully install Pryda anchor.



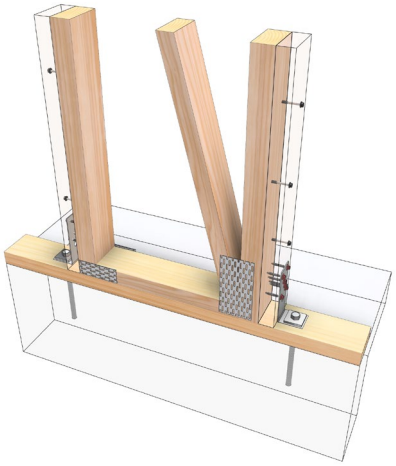
H End type – fixing direct to outside of chords.

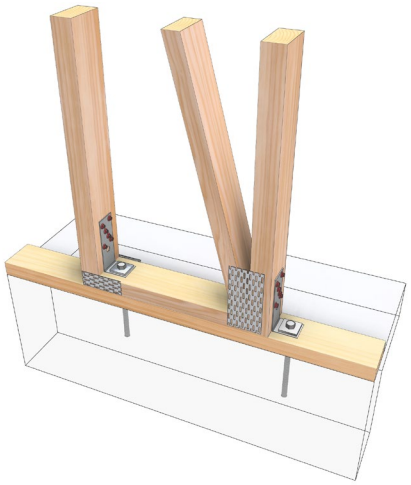


H End type – fixing direct to inside of chords.

PMB – PRYDA CONNECTOR SELECTION - MPCPAH

Pryda connectors should be used to connect to the chords of the PMB unit to ensure stability.
Pryda connectors can also be fixed to studs provided the studs are directly fixed to the PMB unit chords.
When the tie-down connectors are fixed to the studs, the studs must be of equivalent or higher grade than the PMB unit chords and the stud will require specific lamination fixing to the PMB chord.
Currently 2 Pryda connectors are available for use on PMB units – MPCPAH and CPB.
MPCPAH are primarily for lower capacity PMB1 and PMB2 while CPB is more suited to PMB3.
Below are design capacities for MPCPAH brackets:





Specific Stud Lamination Detail MPCPAH:

If a MPCPAH Pryda connector is used to fix to the studs, then a minimum 14 x 12- or 14-Gauge screws are required to laminate the stud to the PMB1/PMB2 chords.
The screws should be of sufficient length to cover the combined lamination thickness of the stud and the PMB chords.
To join multiple laminate studs and PMB chords, Pryda WM8135 or WM8175 can be used.
Nail lamination can also be used, however a minimum 30 x 75 x 3.06mm nails are required for 2 x 35mm members.
The screws/nails should be staggered and equally spaced along the stud/chord length.
Note: If combined member (stud + PMB chord) thickness is > 70mm then the screw/nail length must be of sufficient length to adequately laminate the members together.
A rule of thumb is to add the combined stud / PMB chord thickness and subtract 10mm to get the minimum length of screw required.

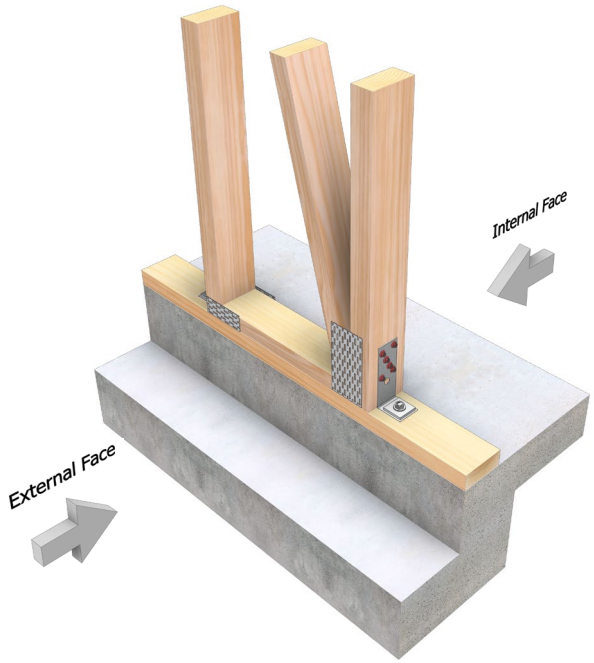
FIXING METHOD	MINIMUM STUD/CHORD FIXING WIDTH	FIXING WITH 6 x TCS12-35 SCREWS		
		CHORD /STUD GRADE		
		JD5	JD5	JD3
		DESIGN CAPACITY kN		
FIXED DIRECT TO STUD	70	10.53	14.89	20
FIXED DIRECT TO PMB1 CHORD				
FIXED DIRECT TO PMB2 CHORD				
FIXED DIRECT TO PMB3 CHORD		NS	NS	NS

		FIXING WITH 6 x TCS12-65 SCREWS		
1 X STUD + PMB 1 CHORD	70	12.49	17.65	20

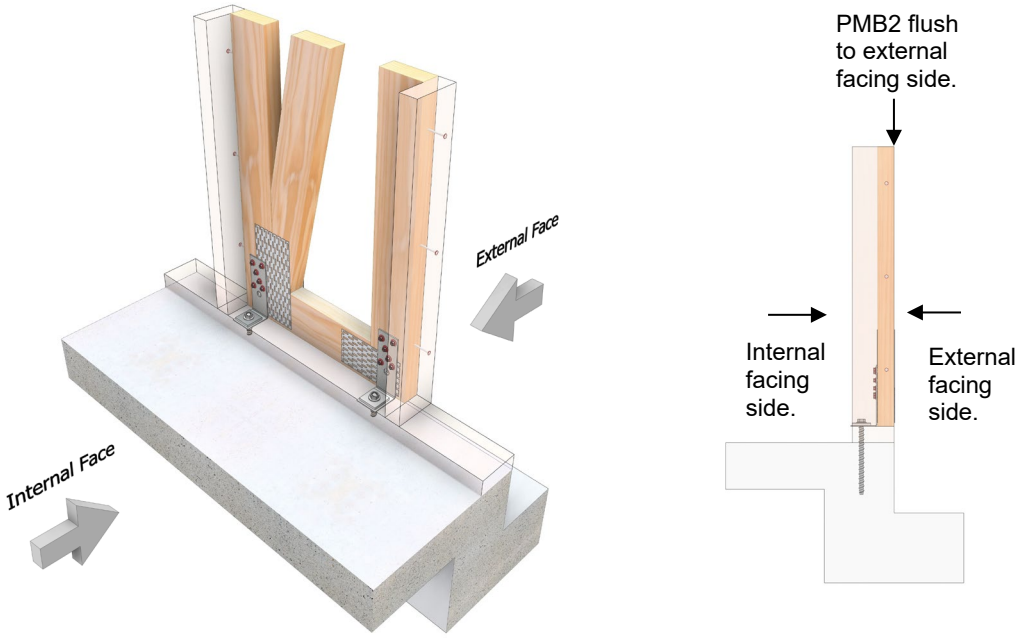
TABLE 1: MPCPAH fixing method and tie-down capacity.

MPCPAH AnkaScrew™ bolt indicative for display purpose only.

The MPCPAH may also be fixed directly to the PMB1 or PMB2 chords as shown below:
If the tie-down connector is fixed directly to the chords in this way, then the studs on each side can be nail laminated centres with 75 x 3.06mm nails.
Tie-down capacities for MPCPAH from Table 1 will apply.



MPCPAH fixed direct to PMB1 chord.



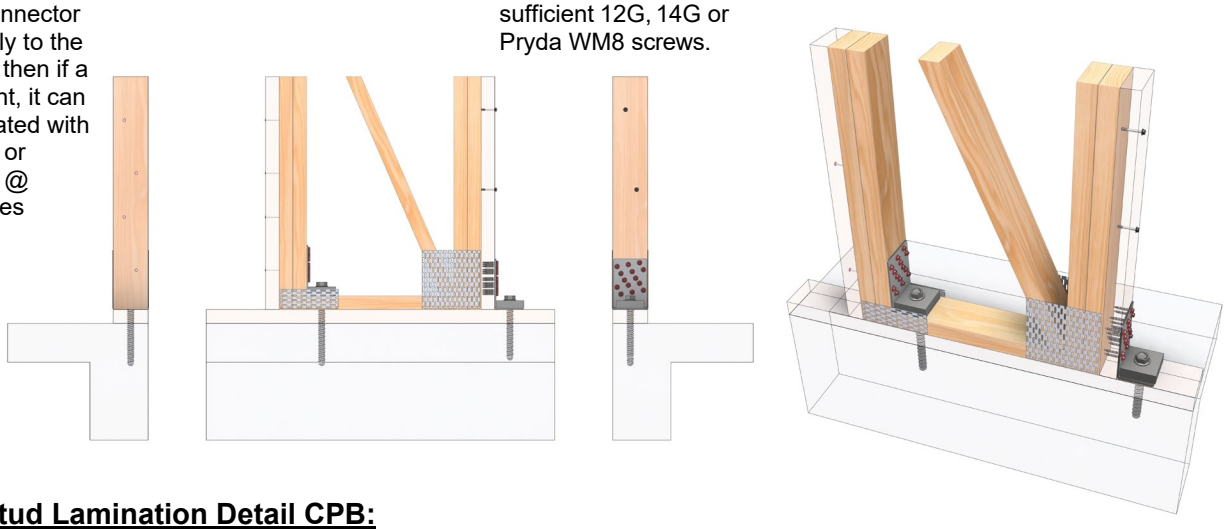
MPCPAH fixed direct to PMB2 chord.

PMB – PRYDA CONNECTOR SELECTION - CPB

Pryda CPB connectors can be used with PMB1 and PMB2 units as long as the chords/stud are ≥ 90mm wide. Primarily CPB connectors are used for PMB3 units due to their high capacity.
The CPB can be fixed directly to the chord or to the stud. Fixing to the stud for PMB3 requires careful design consideration of the stud, as the uplift forces can be approx. 35 kN. The connecting stud needs to be designed to withstand this PMB3 uplift force, as well as the loads applied to the stud from roof/floor support and the face wind loads that may apply. This typically requires Engineering design.
If this stud design can be achieved, then the stud will also require specific lamination fixing to the PMB3 chord.

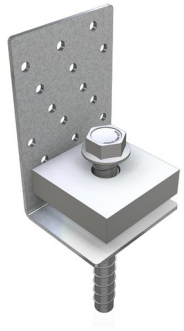
If the CPB connector is fixed directly to the PMB chords, then if a stud is present, it can be nail laminated with 75 x 3.06mm or 90 x 3.15mm @ 250mm centres

Side studs laminated to PMB chord with sufficient 12G, 14G or Pryda WM8 screws.



Specific Stud Lamination Detail CPB:
If a CPB Pryda connector is used to fix to the stud, then a minimum 32 x 12- or 14-Gauge screws are required to laminate the stud(s) to the PMB3 chords.
The screws should be of sufficient length to cover the combined lamination thickness of the stud and the PMB chords.
To join multiple laminate studs and PMB3 chords, Pryda WM8135 or WM8175 may be required.
Nail lamination is not practical for PMB3 fixing due to the combined laminate thickness.
The screws should be fixed in 2 columns equally spaced along the stud/chord length.
Note: The selected screw must be of sufficient length to adequately laminate the combined members together.
A rule of thumb is to add the combined stud/PMB chord thickness and subtract 10mm to get the minimum length of screw required.

FIXING METHOD	MINIMUM STUD/CHORD FIXING WIDTH	FIXING WITH 14 x TCS12-35 SCREWS		
		CHORD /STUD GRADE		
		JD5	JD4	JD3
		DESIGN CAPACITY kN		
FIXED DIRECT TO STUD	90	23.83	33.68	45
FIXED DIRECT TO PMB1 CHORD				
FIXED DIRECT TO PMB2 CHORD		NS	NS	NS
		FIXING WITH 14 x TCS12-65 SCREWS		
FIXED DIRECT TO PMB3 CHORD (2 LAMINATES)	90	29.14	41.19	45



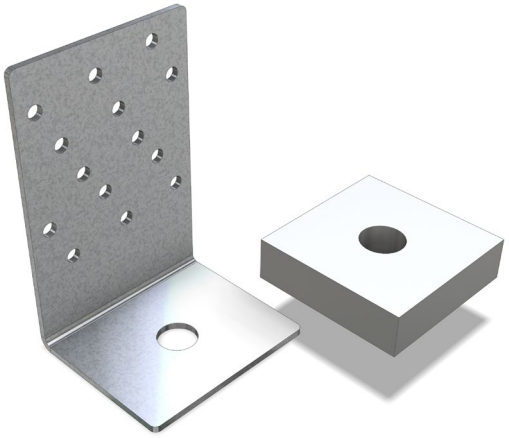
CPB AnkaScrew™ bolt indicative for display purpose only.

TABLE 2: CPB fixing method and tie-down capacity.

PMB – WASHER SELECTION

A critical part of tie-down for PMB units is the washer selection.
Proprietary washers supplied by Pryda must be used as they have been specifically designed and shaped to the baseplate of the MPCPAH and CPB units.
For MPCPAH connectors the 5mm thick washer (Product code: ANC5050) should be used for loads up to an including 15 kN.
For MPCPAH above 15 kN, 2 x 5 mm washer should be used
For CPB connectors the 1 x 5mm thick washers (Product code: (OW16/63S) should be used for loads up to an including 15 kN (PMB1 and PMB2 only). 2 x 5mm washers should be used for loads up to an including 25 kN.
For PMB3 units a 20mm thick washer (Product code: (OW16/72S) should be used.

MPCPAH and washer



CPB and Washer

PMB – SLAB FIXING

Each PMB unit will generate an uplift force at each end of the unit. To adequately support the PMB unit it must be fixed with a suitably designed Pryda connector, a proprietary washer (based on the type of Pryda connector and the tie-down force) and a slab fixing connector – which may either be a RAMSET M12 x 150 WERCS™ AnkaScrew™ or 12/16mm rods epoxied into the slab with Chemset™ Reo 502™ XTREM. The concrete anchor required will depend on tie-down capacity required and whether the PMB is supported on an edge beam or on a slab.
The slab fixing connector must meet or exceed the uplift generated at each end of the PMB unit.
Typical slab connection design values are shown in Table 3:

Note: the design load allowance for AnkaScrew™ allows for an embedment reduction of the combined thickness of a 35mm bottom plate, a Pryda connector thickness of 3mm and a washer thickness of 5mm. If site conditions vary from this, connectors should be re-designed with Engineering support.

	EDGE BEAM FIXING				SLAB FIXING		
	EMBEDMENT DEPTH (mm)	EDGE DISTANCE		MINIMUM EDGE BEAM DEPTH (mm)	EMBEDMENT DEPTH (mm)	EDGE DISTANCE GREATER THAN 120mm	MINIMUM SLAB DEPTH (mm)
		70mm FRAME	90mm FRAME				
		40	45				
		DESIGN CAPACITY (kN)				DESIGN CAPACITY (kN)	
M12 x 150 RAMSET WERCS AnkaScrew™	107	12.71	13.43	260	107	23.98	143
M12 ROD GRADE 5.8 + Chemset™ Reo 502™ XTREM	100	16.2	16.84	260	100	23.06	130
	140	24.48	25.2		140	31.23	170
	180	30.21	31.4		180	33.6	210
	220	32.9	33.39		220		250
	240	33.6	33.6	310	240		270
M12 ROD GRADE 8.8 + Chemset™ Reo 502™ XTREM	100	16.2	16.84	260	100	23.06	130
	140	24.48	25.2		140	31.23	170
	180	30.21	31.4		180	36.19	210
	220	32.9	33.39		220	41.26	250
	240	33.75	34.22	310	240	43.82	270
M16 ROD GRADE 5.8 + Chemset™ Reo 502™ XTREM	100	16.2	16.84	260	100	23.08	136
	140	24.48	25.2		140	32.15	176
	180	31.63	32.87		180	38.6	216
	220	35.45	35.99		220	44.01	256
	240	40.06	41.3	310	240	46.74	276

TABLE 3: Edge beam and slab fixing. Refer to Figure 2 for edge distance and embedment depth.

PMB – HOW TO DEAL WITH DIFFERENT WALL TYPES

All the information presented so far in this data sheet is specific to PMB fixing and tie-down ONLY. There may be situations when PMB units are used at the sides of opening and as part of jamb and prop stud combinations which require special attention. As a general rule, the tie-downs specified in this guide. DO NOT include any allowance for any additional loads applied to the studs.

Let us look at some examples

PMB in Internal Non-load bearing walls (INLB):

This is typically the easiest condition to resolve.
If the tie-down connector is fixed directly to the PMB unit then the stud can be designed as 'normal' in accordance with AS1684 based on the spacing required to fit the PMB unit.
If the stud spacing is > 600mm then the studs on each side of the unit should be designed for the extended spacing and consideration should be given to provide a horizontal trimmer to fix plasterboard in accordance with plasterboard manufacturers specification.
If the PMB tie-down connectors are fixed to the stud, then the stud should be designed for the opening width of the unit and the additional uplift force from the PMB unit.
Typically for INLB walls, 90 x 35 MGP10 studs will design sufficiently up to 1200mm opening in max N3 wind zones for max. 3600mm wall heights for PMB1 and PMB2 units.
PMB3 units fixed to studs would require specific stud Engineering design.
Note: An important consideration is to ensure is there is sufficient slab depth under the bracing wall to enable correct tie-down embedment depth.

INLB = Internal Non-Load Bearing wall

PMB IN EXTERNAL LOAD BEARING WALL

When PMB units are used in external walls several important design considerations need to be made.

Top Plate Design:

In general, if the PMB is narrower than the common stud spacing then provided the top plate is designed adequately there is no need to reinforce the PMB top chord.
If the PMB unit is wider than the common stud spacing, then the top plate design should be checked and verified to ensure it has the capacity to extend the additional distance.
If not, then the top chord of the PMB unit may need to be reinforced to carry the additional load.

Stud Design:

The studs on each side of the unit should be designed in accordance with the provisions set out below.

Tie-down and Fixing to PMB unit:

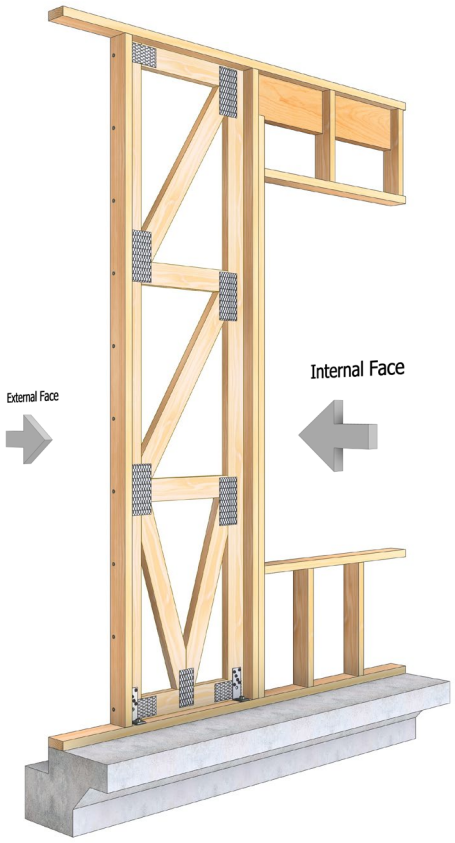
If the PMB tie-down is fixed directly to the chords of the unit then the adjacent stud can simply be designed as a common stud on an external wall as per AS1684 and nail laminated to the chord of the PMB unit.

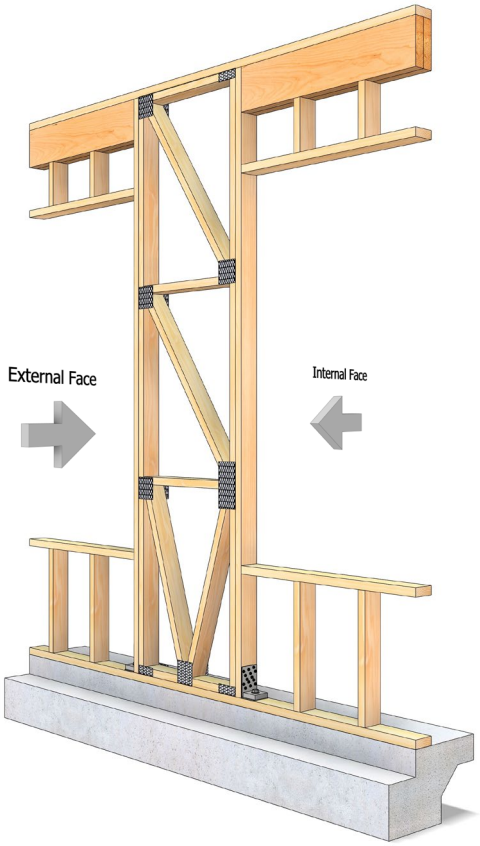
PMB tie-down fixed to the stud.

If the PMB tie-down is fixed to the studs then the studs must be in direct contact with the PMB chords.
Under this condition the studs must be designed for any applied vertical loads (from roof, wall, floor loads) as well as the face wind loads on the external wall (this will depend on wind zone classification).
In addition, the studs must also be designed for the additional uplift force applied from the chords of the PMB unit.
For walls supporting sheet roof this uplift force may be cumulative and higher than the calculated PMB uplift alone.
For walls supporting heavier loads (such as roof tiles) the gravity loads applied to the studs may help to offset some of the uplift on the PMB unit.
As a minimum the studs must be the same depth and grade as the PMB chords.
Under this condition the stud requires specific lamination details (screw fixing) in order for the PMB uplift to be transferred to the stud and consequently the tie-down. These stud lamination details are noted in this datasheet for each PMB unit type.

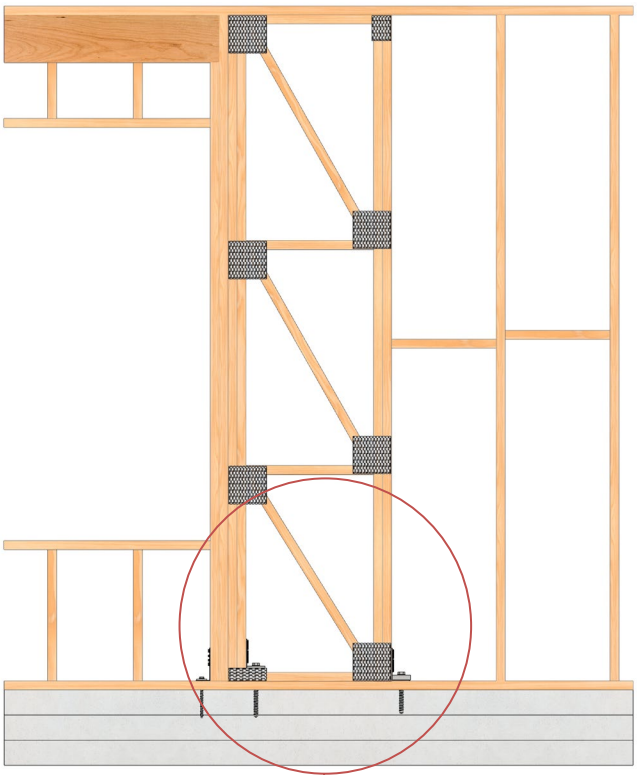
PMB – HOW TO DEAL WITH OPENINGS

PMB located adjacent to openings in load bearing external walls – this is a common scenario for PMB's. The optimum use of PMB will depend on the roof loads supported by the prop and jamb stud combinations that form a part of the opening.
If the PMB is installed adjacent to the prop and jamb stud then typically openings supporting heavy loads, such as roof tiles (up to N3) can help to reduce the net tie-down requirement on the PMB unit. Alternatively, if the opening is supporting light weight sheet roof loads, then the additional uplift on the jamb/prop studs may increase the tie-down requirement.

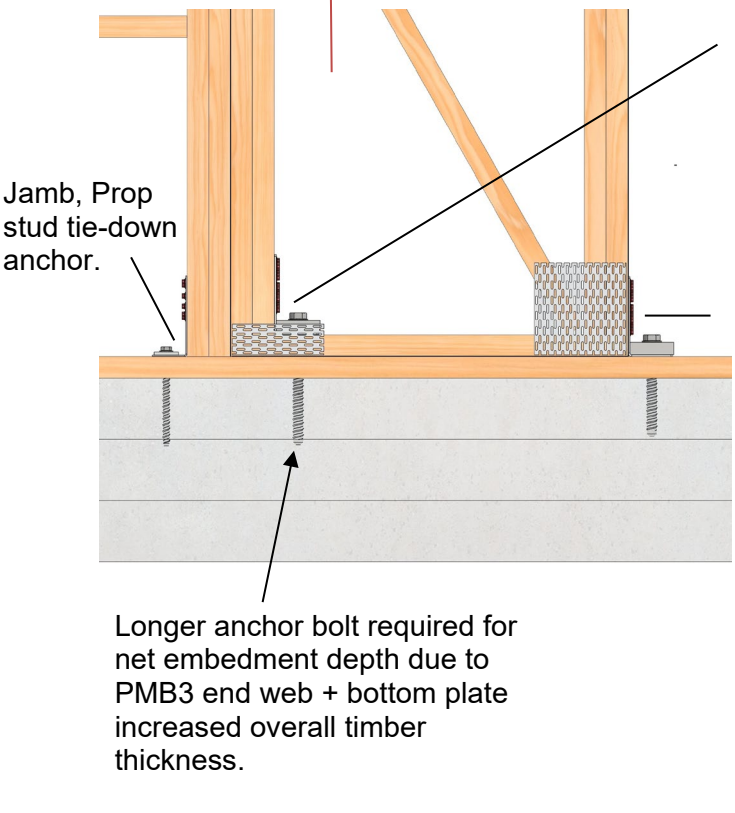


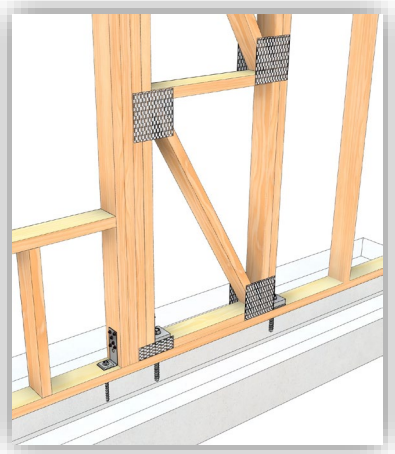


Often it is prudent when using PMB in **sheet roof applications** to isolate the tie-down fixings to avoid overloading the connections. This can often be done by orienting the PMB unit so the tie-down can be fixed to the inside leg of the chord on the side adjacent to the opening.
An example is shown following with an opening (e.g., window, sliding door etc) on one side of the PMB:

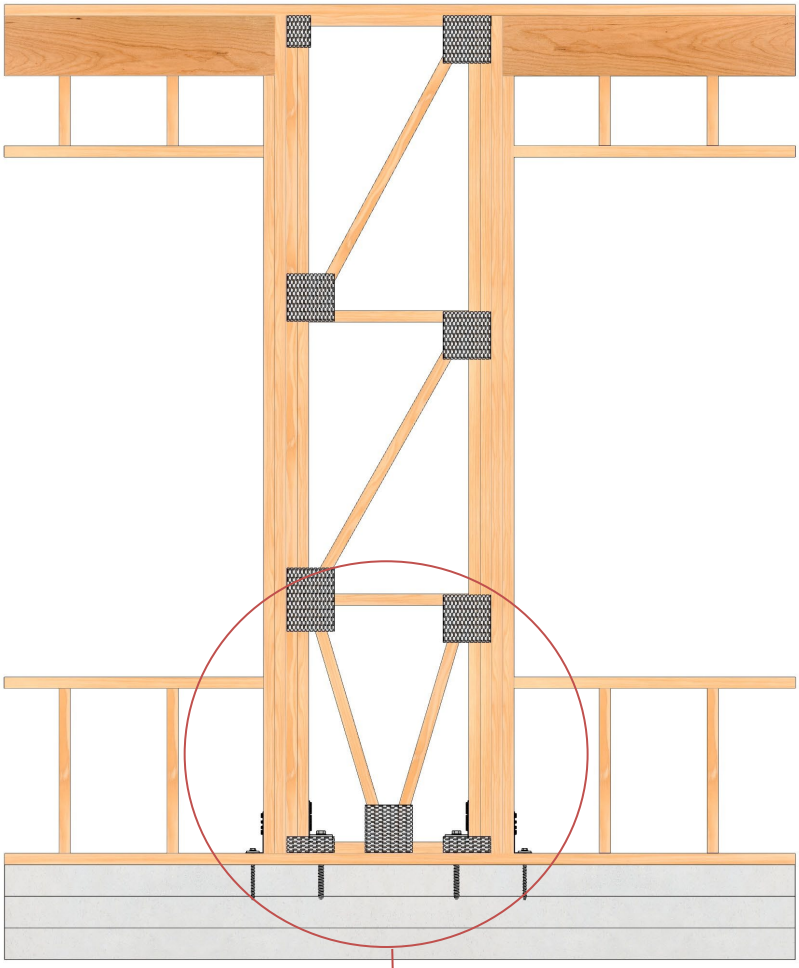


Orient the PMB with a standard end type so that there is no diagonal web at the tie-down connection point adjacent to the opening. That way the PMB tie-down can be fixed inside the chord on the side of the opening. By doing this a separate tie down can then be installed to the jamb/prop studs, and this will alleviate potential overloading of the PMB tie-down. The other benefit is the prop/jamb stud combination won't require special Engineering design as it won't have to transfer the tie-down force from the PMB unit. With the tie-down fixings separated in this fashion the lamination between the PMB chords and the jamb/ prop stud may only require nail fixing.

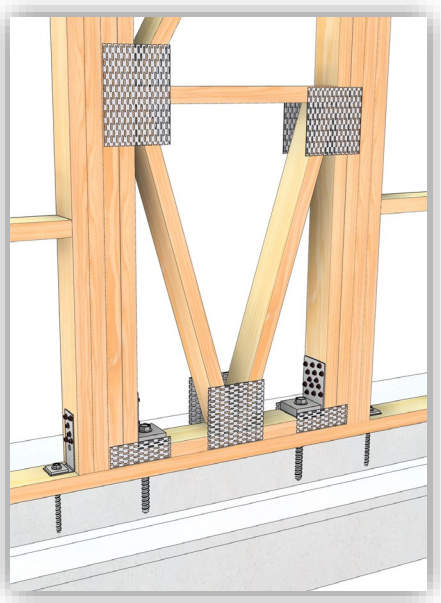


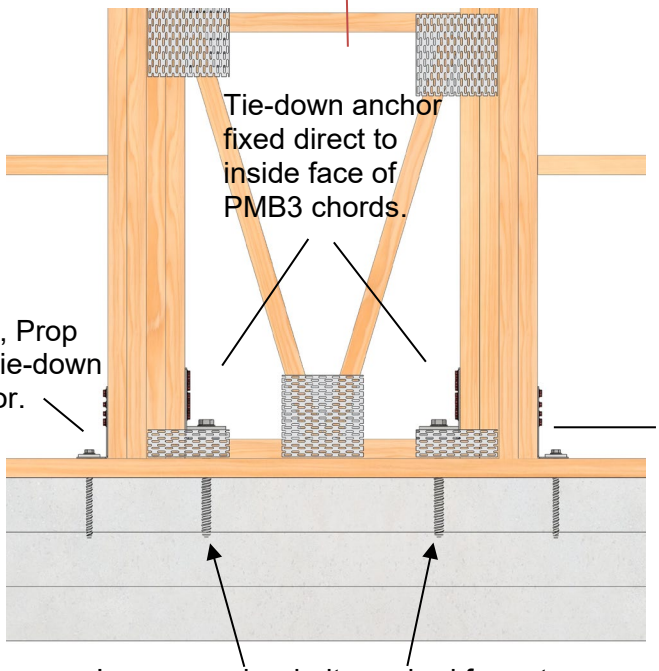


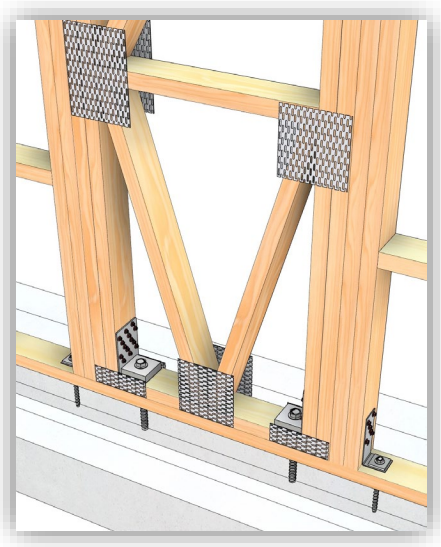
An example of how to treat a PMB with an opening on BOTH sides:



When an opening occurs on each side of the PMB unit a good option is to use the V end type. This will allow tie-down fixing for the PMB to the inside face of the chords on each side and the prop/jamb stud combinations supporting the openings can be tied down separately.

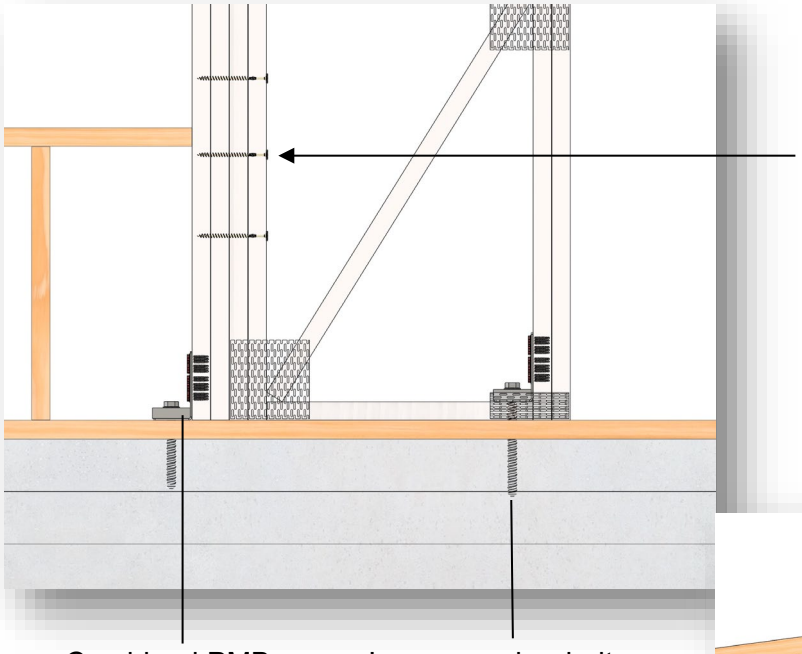






If site conditions, or geometry conflicts prevent isolating the tie-downs for the PMB and the jamb/prop studs, then the PMB tie-down can be fixed to the jamb/prop stud combination with the following provisions:

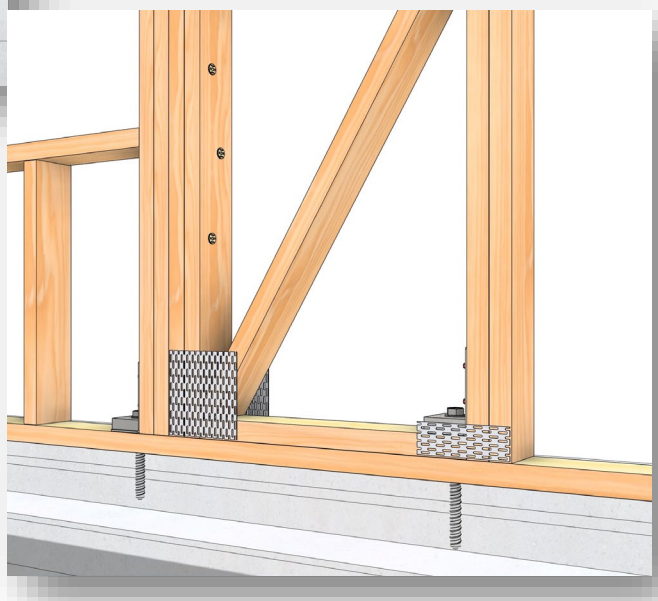
1. The jamb/prop studs are designed for the **combined** loading for the opening and the calculated uplift from the PMB unit. The additional loading on the jamb/prop studs will vary depending on which PMB unit is selected and whether the opening is supporting tiles or sheet roof.
2. The tie-down connector and slab connection detail used can resist the **combined** loading from the PMB and studs supporting the opening.
   Note: for walls supporting sheet roofs this will often result in a higher capacity tie-down connection requirement as the uplift from the opening + uplift from the PMB will be cumulative. For tile roofs this may result in a lower tie-down capacity connector as the gravity loads from the opening will help to offset the uplift from the PMB.
3. The jamb/prop stud combination and the PMB chords must be laminated together with sufficient screws to transfer the uplift reaction from the PMB to the jamb/prop studs.
   Pryda 12-65 TCS screws, 14-gauge Type 17 screws, or Pryda WM8 screws can be used for lamination.
   If there are multiple studs and chords then the screw length selected must longer than the combined PMB chord and stud laminate thicknesses -10mm.
   Screws longer than the combined thickness are also acceptable.



Screw lamination of PMB chords to Jamb/prop studs – Pryda WM8 screws shown.

Combined PMB and jamb/prop stud tie-down.

Longer anchor bolt required for net embedment depth due to PMB3 end web + bottom plate increased overall timber thickness.



PMB UNIT ON UPPER STOREY WALLS

PMB unit can be used on upper storey walls, however care should be taken to ensure there is an adequate support mechanism located in the floor system directly below the PMB location. Alternatively, a suitable pathway for the tie-down rod fixings to enable them to be run through lower storey walls and reach the concrete slab where they can be epoxied directly to the slab. Care should also be taken that the compression force applied at each end of the unit must be suitably supported by the floor system. These details are beyond the scope of this technical guide and advice should be sourced from the Pryda Engineering Team.

PMB AND WALL PENETRATIONS

It is important to verify the location of any wall penetrations do not directly interfere with any part of the PMB and adjacent critical studs. Under no circumstance shall the PMB or critical studs be notched, cut, or modified in any way.