

BPB Plasterboard - Bracing Manual



*A world leader
committed to
New Zealand*

*Quality plasterboard products and systems
Comprehensive and competitive product range
Fully certified for New Zealand conditions
Nationwide distribution
Responsive customer support*

Warranty and Appraisal For BPB Plasterboard Bracing

BPB Plasterboard Bracing Systems

The BPB Plasterboard systems described in this technical manual have been fully tested in accordance with NZS 3604 : 1999 P21 Racking test procedures. The publication of this technical manual may be superseded and updated or have information added.

Liability

BPB Plasterboard will not accept any liability for its bracing products and systems which are not correctly installed as stipulated in this manual.

Durability

BPB Bracing Systems, when installed in accordance with this manual, satisfy NZBC Clause B1 Structure. BPB Bracing Systems satisfy the requirements of NZBC Clause B2 Durability when maintained in dry internal conditions.

Warranty

BPB Plasterboard wall and ceiling linings carry the following warranty:

"This Warranty is made by BPB Asia Limited (BPB) for and on behalf of the Thai Gypsum Products PCL and BPB Malaysian Gypsum Sdn. Bhd. (the Manufacturers) (all of which are wholly owned subsidiaries of BPB plc) under power of attorney granted to it by those companies. BPB warrants that the plasterboard products produced by Manufacturers shall be free of defects in materials and manufacture. If the plasterboard products produced by the Manufacturers do not meet BPB standards, they will, at their option, replace or repair it, supply an equivalent product or pay for doing one of these.

BPB advises that only products, components and systems recommended by BPB or its associated group of companies be used. At all times these must be used in accordance with the relevant product usage recommendations. If this is not done, BPB will need to be satisfied that any defect in its product is attributable to the failure of the plasterboard manufacturers to meet the BPB standard (and not another cause) before this warranty applies.

This warranty excludes all other warranties and liability for damage or loss in connection with the defects in the Manufacturers' product, other than those imposed by legislation."

Element NZ Limited is the exclusive New Zealand and Pacific Island distributor for BPB Plasterboard Products and warrants BPB Plasterboard in the same terms as the Manufacturers.



www.bpb.co.nz



Technical/Sales
Ph 0800 272 262

THE LEADER IN FAST TRACK, LIGHT WEIGHT BUILDING SYSTEMS

BPB Bracing Manual Contents

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Environmental Choice Category

GYP SUM PLASTERBOARD EC-19-07

Element NZ Ltd (Licence No. 1909052)

As the world's leading supplier of plasterboard and lining systems the Saint-Gobain Group is renowned for its innovation, quality control and environmental commitment.

Element NZ Ltd and the Saint-Gobain Group share a commitment to continuous improvement of environmental practices and reducing their impact on the environment.

The full range of BPB Plasterboard is manufactured to meet Environmental Choice licencing criteria for Gypsum Plasterboard EC-19-07. BPB Plasterboard can be used, with confidence, on green build projects.

The following BPB Plasterboard products are covered by the Environmental Choice Licence.

- BPB Standard 10 mm*
- BPB Standard 13 mm
- BPB Aquastop 10 mm
- BPB Aquastop 13 mm
- BPB Firestop 10 mm
- BPB Firestop 13 mm
- BPB Firestop 16 mm
- BPB Braceboard/Noiseblock 10mm
- BPB Duraline/Noiseblock 13mm

* Board manufactured in Thailand.



Saint-Gobain is a world leader in the manufacture and distribution of construction products, employing 200,000 people and operating in 57 countries.

Saint-Gobain's ambition is worldwide leadership in construction markets, with innovative solutions to meet fundamental global challenges of growth, energy and the environment.

With the acquisition of British Plasterboard Group (BPB) and British Gypsum in 2006 Saint-Gobain is now the world leader in interior lining solutions, and is the world's number 1 manufacturer of superior plasterboard products and systems.

Element NZ has the exclusive licence to distribute the Saint-Gobain range of BPB Plasterboard ceiling and lining products into the New Zealand and Pacific markets. These include drywall, wet area, impact resistant, bracing, fire and noise control boards and systems.

BPB Bracing Systems - Standard Board

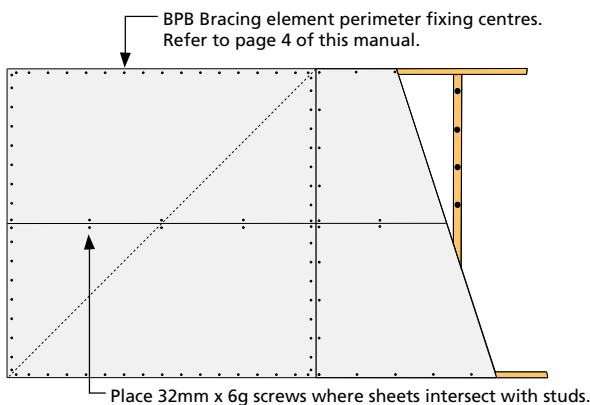
Bracing ratings for BPB Standard Plasterboard have been obtained from product tested in accordance with NZS 3604 : 1999 P2.1 bracing test procedures. The bracing values stated in the below table apply to both timber and concrete floor constructions.

BPB Bracing System Reference							
BPB System Requirements	BPB1S			BPB2S			
BPB Lining Requirement	10mm BPB Standard Plasterboard one face fixed vertical or horizontal			10mm BPB Standard Plasterboard both sides fixed vertical or horizontal			
Minimum Length (mm)	1200mm	1800mm	2400mm	1200mm	1800mm	2400mm	
Hold Down Anchors	No	No	No	No	No	No	
Diagonal Brace	Yes	Yes	Yes	No	No	No	
Bracing Units Per Meter	Wind	55	65	75	70	80	90
	Earthquake	50	55	65	60	70	75
Calculation for wall heights greater than 2.4m	Adjusted rating equals = $\frac{2.4m}{\text{Actual wall height}}$ x Value from above table						
Maximum Height (mm)	4800mm	4800mm	4800mm	4800mm	4800mm	4800mm	

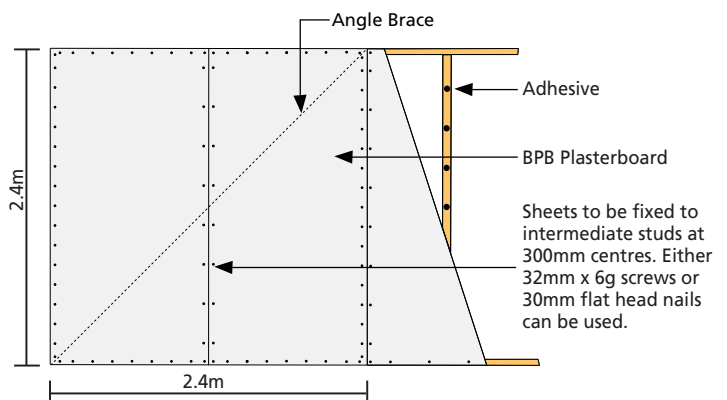
To comply with the above ratings, wall-bracing elements must be constructed in accordance with the following specification:

BPB Bracing System Components (BPB1S & BPB2S)	
BPB Plasterboards	The following BPB Plasterboard products can be used with these bracing systems. 10mm & 13mm BPB Standard, 10mm & 13mm BPB Aquastop, 10mm, 13mm & 16mm BPB Firestop. 10mm BPB Braceboard & 13mm BPB Duraline.
Framing	Framing to be MSG8 kiln dried timber. Minimum framing sizes for internal and external walls to be in accordance with NZS 3604:1999 Section 8.
Fixings	Use drywall screws (32mm x 6g) or galvanised flat head nails (30mm x 2.5mm) for fixing BPB Plasterboard to the framing. For fastener corner and perimeter fixing centre detail, please refer to Corner and Perimeter Fixing Details which is on page 4 of the BPB Bracing manual.
Adhesive	The use of adhesive is permitted to the intermediate studs only and is to be placed at 300mm centres. Please note that fixings must not pass through adhesive as this can cause protrusion of the fixing. (This is known as popping).
Jointing	For sheets which are installed vertically or horizontally, all joints are to be paper taped and stopped in accordance with AS/NZS 2589.1.

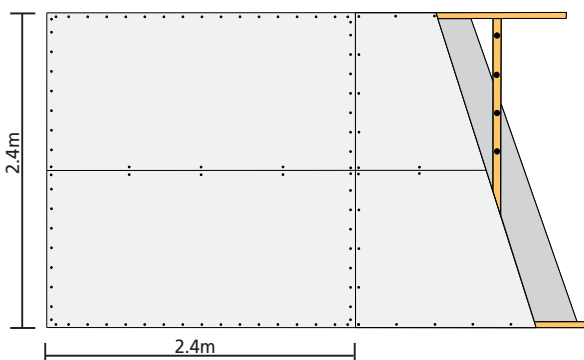
Installation Instructions (2.4m Bracing Elements Are Illustrated)



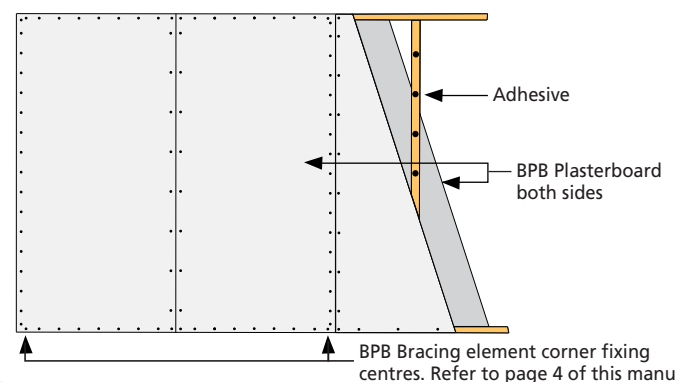
BPB1S Vertical fixing on one side



BPB2S Horizontal fixing on both sides



BPB2S Vertical fixing on both sides



- For BPB1S and BPB2S bracing systems use drywall screws (32mm x 6g) or galvanised flat head nails (30mm x 2.5mm) for fixing BPB standard plasterboard to framing.

BPB Bracing Systems - Standard Board - Option A

Bracing ratings for BPB Standard Plasterboard have been obtained from product tested in accordance with NZS 3604 : 1999 P2.1 bracing test procedures. The bracing values stated in the below table apply to both timber and concrete floor constructions.

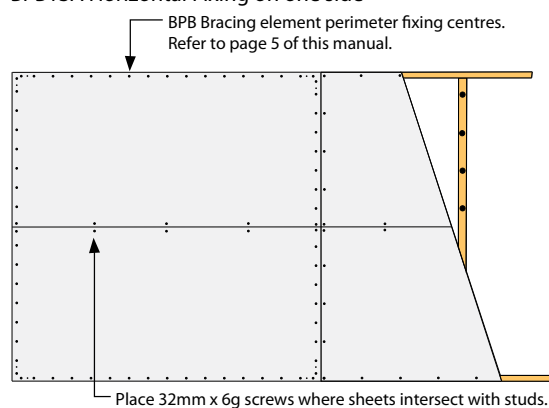
		BPB Bracing System Reference			
BPB System Requirements		BPB1SA		BPB2SA	
BPB Lining Requirement		10mm BPB Standard Plasterboard one face fixed vertical or horizontal		10mm BPB Standard Plasterboard both sides fixed vertical or horizontal	
Minimum Length (mm)		400mm	1200mm	600mm	1800mm
Hold Down Anchors		No	No	No	No
Diagonal Brace		No	No	No	No
Bracing Units Per Meter	Wind	65	65	75	80
	Earthquake	65	55	65	65
Calculation for wall heights greater than 2.4m		Adjusted rating equals = $\frac{2.4m}{\text{Actual wall height}} \times \text{Value from above table}$			
Maximum Height (mm)		2400mm	4800mm	3600mm	4800mm

To comply with the above ratings, wall-bracing elements must be constructed in accordance with the following specification:

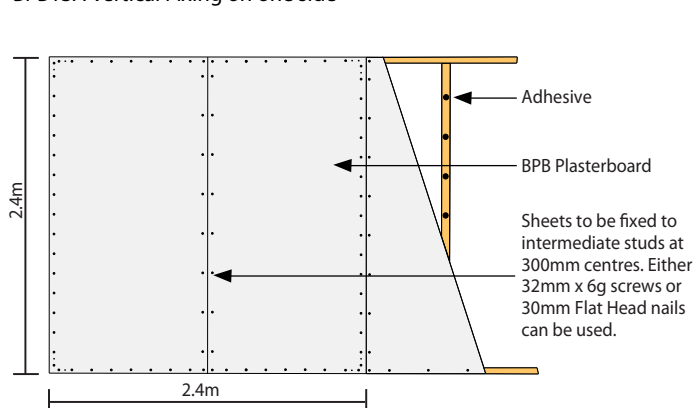
BPB Bracing System Components (BPB1SA and BPB2SA)	
BPB Plasterboards	The following BPB Plasterboard products can be used with these bracing systems. 10mm & 13mm BPB Standard, 10mm & 13mm BPB Aquastop, 10mm, 13mm & 16mm BPB Firestop, 10mm BPB Braceboard & 13mm BPB Duraline.
Framing	Framing to be MSG8 kiln dried timber. Minimum framing sizes for internal and external wall to be in accordance with NZS 3604:1999 Section 8.
Fixings	Used drywall screws (32mm x 6g) or galvanised flat head nails (30mm x 2.5mm) for fixing BPB Plasterboard to the framing. For fastener corner and perimeter fixing centre detail please refer to Corner and Perimeter Fixing Details (Indicator B) which is on page 5 of this manual.
Adhesive	The use of adhesive is permitted to the intermediate studs only and is to be placed at 300mm centres. Please note that fixings must not pass through adhesive as this can cause protrusion of the fixing. (This is known as popping).
Jointing	For sheets which are installed vertically or horizontally all joints are to be paper taped and stopped in accordance with AS/NZS 2589.1.

Installation Instructions (2.4 Bracing Elements are Illustrated)

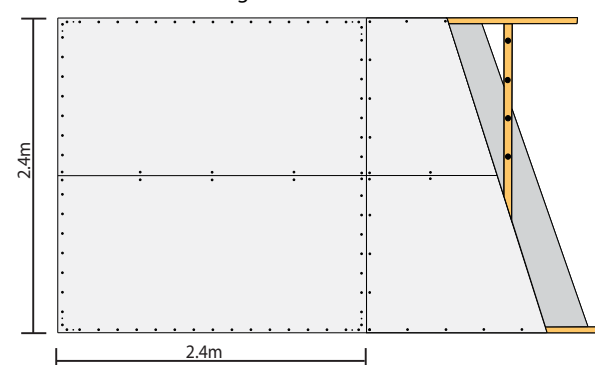
BPB1SA Horizontal Fixing on one side



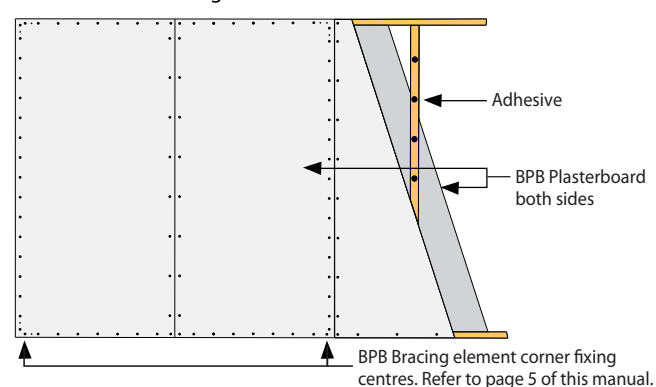
BPB1SA Vertical Fixing on one side



BPB2SA Horizontal Fixing on both sides



BPB2SA Vertical Fixing on both sides



BPB Bracing Systems - Braceboard

Bracing Ratings

Bracing ratings for BPB Braceboard have been obtained from product tested in accordance with NZS 3604 : 1999 P21 bracing test procedures. The bracing values stated in the table below apply to both timber and concrete floor constructions.

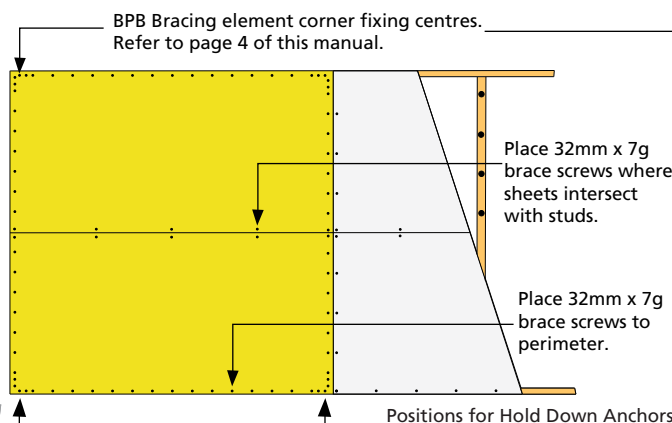
BPB System Requirements		BPB Bracing System Reference							
		BPB1B		BPB1BD	BPB1BP		BPB1BS		
BPB Lining Requirement		BPB Braceboard Plasterboard one face fixed vertical or horizontal			BPB Braceboard Plasterboard one side fixed vertical or horizontal. 7mm DD Plywood on the other		BPB Braceboard Plasterboard one side fixed vertical or horizontal. BPB Standard on the other		
Minimum Length (mm)		400mm	600mm	1800mm	600mm	900mm	600mm	1200mm	
Hold Down Anchors		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Diagonal Brace		No	No	Yes	No	No	No	No	
Bracing Units Per Meter	Wind	90	125	150	150	150	145	150	
	Earthquake	100	115	120	150	150	145	140	
Calculation for wall heights greater than 2.4m		Adjusted rating equals = $\frac{2.4m}{\text{Actual wall height}}$ x Value from above table							
Maximum Height (mm)		2400mm	3600mm	4800mm	3600mm	3600mm	3600mm	4800mm	

To comply with the above ratings, wall-bracing elements must be constructed in accordance with the specifications set below.

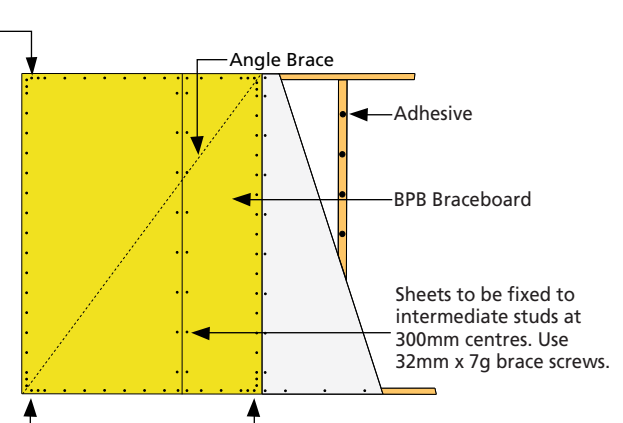
BPB Bracing System Components (BPB1B, BPB1BP & BPB1BS)	
BPB Plasterboards	The following BPB Plasterboard products can be used with these bracing systems. 10mm BPB Braceboard & 13mm BPB Duraline.
Framing	Framing to be MSG8 kiln dried timber. Minimum framing sizes for internal and external walls to be in accordance with NZS 3604:1999 Section 8. Please note: When 70 x 35mm framing is used for internal walls where the minimum bracing element length is less than 800mm BPB recommends an allowance of 10% reduction in bracing values.
Fixings	Use Brace screws (32mm x 7g) for fixing BPB Braceboard Plasterboard to the framing. For fastener corner and perimeter fixing centre detail please refer to Corner and Perimeter Fixing Details which is on page 4 of the BPB Bracing manual.
Adhesive	The use of adhesive is permitted to the intermediate studs only and is to be placed at 300mm centres. Please note that fixings must not pass through adhesive as this can cause protrusion of the fixing.
Hold Down Anchors (12kN Requirement)	Concrete Floor: Use M12 galvanised bolt with 50 x 50 x 3mm washer. Bolt is to be set into the concrete at a minimum of 75mm. Timber Floor: M12 galvanised coach screw with a minimum thread length of 145mm with 50 x 50 x 3mm washer.
Strap	400mm x 25mm x 0.9mm galvanised strap. Refer to page 5 & 6 for installation details.
BPB Bracing Anchor Bracket	The BPB Bracing Anchor Bracket can be used in replacement of the strap. Refer to page 9 of this manual for details of installation.
Jointing	For sheets which are installed vertically or horizontally all joints are to be paper taped and stopped in accordance with AS/NZS 2589.1.

Installation Instructions (Representative Of BPB1B Bracing Element)

BPB1B Horizontal fixing on one side (2.4m element)



BPB1BD Vertical fixing on one side (1.8m element)



- For BPB1B, BPB1BD, BPB1BP and BPB1BS bracing systems use brace screws (32mm x 7g) for fixing BPB braceboard plasterboard to framing.

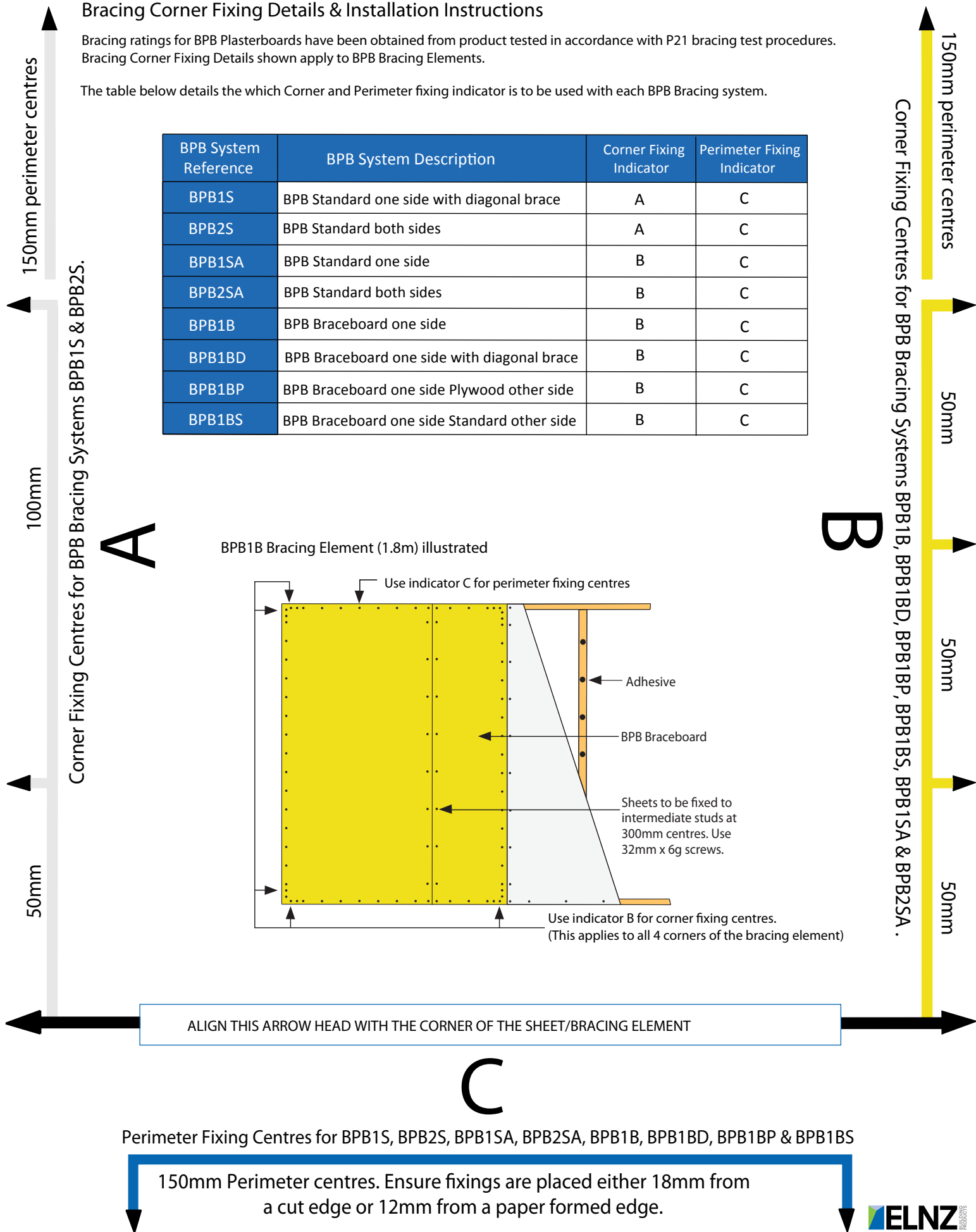
Bracing - Corner & Perimeter Fixing Details

Bracing Corner Fixing Details & Installation Instructions

Bracing ratings for BPB Plasterboards have been obtained from product tested in accordance with P21 bracing test procedures. Bracing Corner Fixing Details shown apply to BPB Bracing Elements.

The table below details the which Corner and Perimeter fixing indicator is to be used with each BPB Bracing system.

BPB System Reference	BPB System Description	Corner Fixing Indicator	Perimeter Fixing Indicator
BPB1S	BPB Standard one side with diagonal brace	A	C
BPB2S	BPB Standard both sides	A	C
BPB1SA	BPB Standard one side	B	C
BPB2SA	BPB Standard both sides	B	C
BPB1B	BPB Braceboard one side	B	C
BPB1BD	BPB Braceboard one side with diagonal brace	B	C
BPB1BP	BPB Braceboard one side Plywood other side	B	C
BPB1BS	BPB Braceboard one side Standard other side	B	C



Perimeter Fixing Centres for BPB1S, BPB2S, BPB1SA, BPB2SA, BPB1B, BPB1BD, BPB1BP & BPB1BS

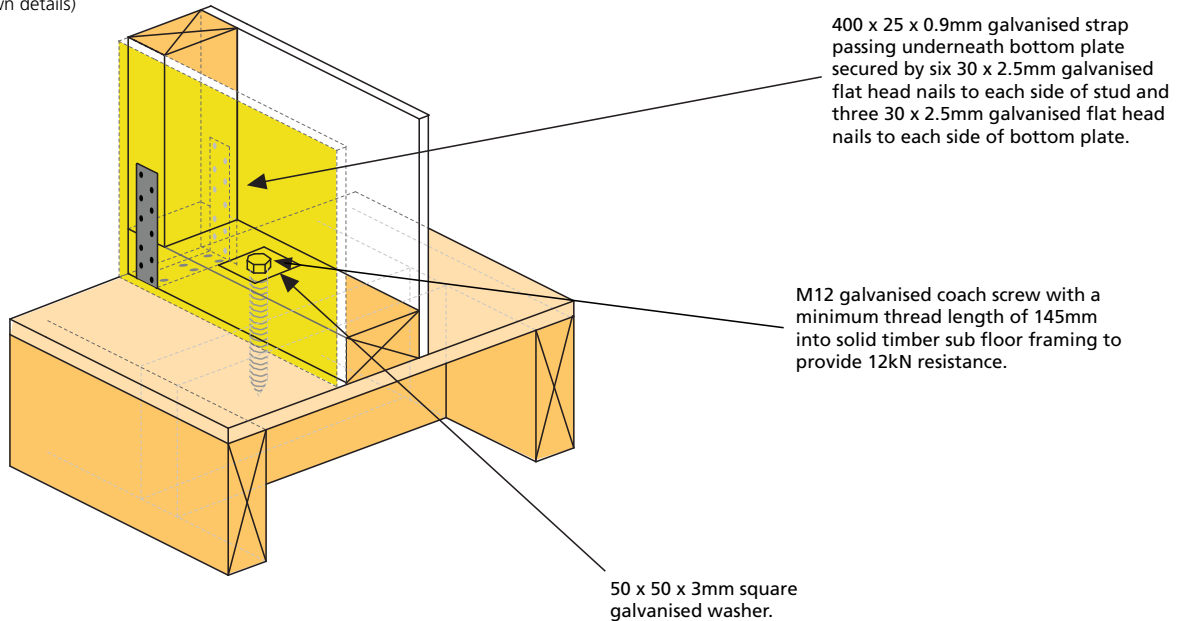
150mm Perimeter centres. Ensure fixings are placed either 18mm from a cut edge or 12mm from a paper formed edge.

Bracing Hold Down Details & Installation Instructions

Bracing ratings for BPB Braceboard have been obtained from product tested in accordance with P21 bracing test procedures. Bracing hold down details shown apply to BPB bracing systems BPB1B, BPB1BP and BPB1BS.

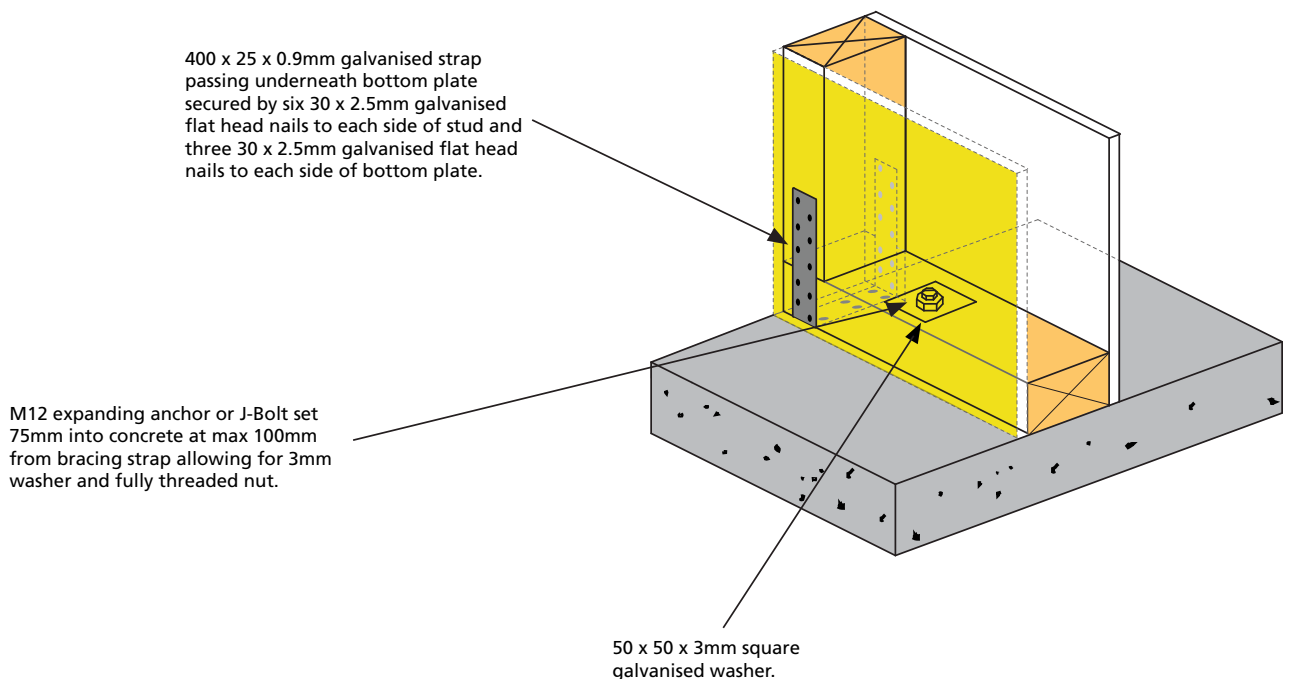
Timber Floor

(Hold-down details)



Concrete Floor

(Hold-down details)



BPB Bracing Systems - Hold Down Details External Wall Options

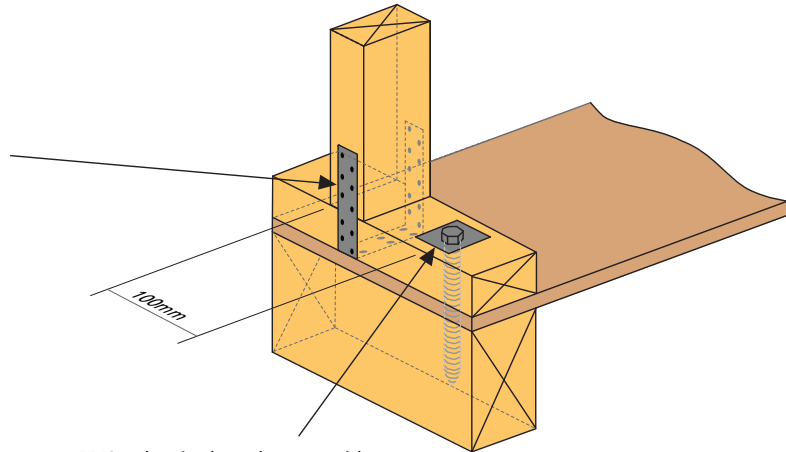
Bracing Hold Down Details & Installation Instructions For External Walls

Bracing ratings for BPB Braceboard have been obtained from product tested in accordance with P21 bracing test procedures. Bracing hold down details shown apply to BPB bracing systems BPB1B, BPB1BP and BPB1BS.

Timber Floor External Wall Option 1

(Hold-down details)

400 x 25 x 0.9mm galvanised strap passing underneath the bottom plate which is secured by six 30 x 2.5mm galvanised flat head nails to each side of the stud and three 30 x 2.5mm galvanised flat head nails to each side of the bottom plate.



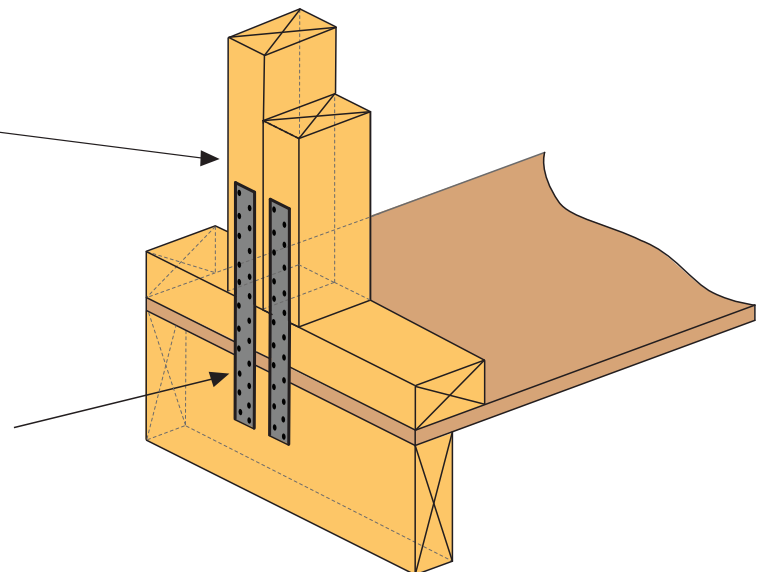
M12 galvanised coach screw with a minimum thread length of 145mm into solid timber sub floor framing to provide 12kN resistance.

Timber Floor External Wall Option 2

(Double strapping hold-down details)

Secure the secondary stud to the primary stud with 100mm x 3.75mm nails at 300mm centres along the full height of the stud.

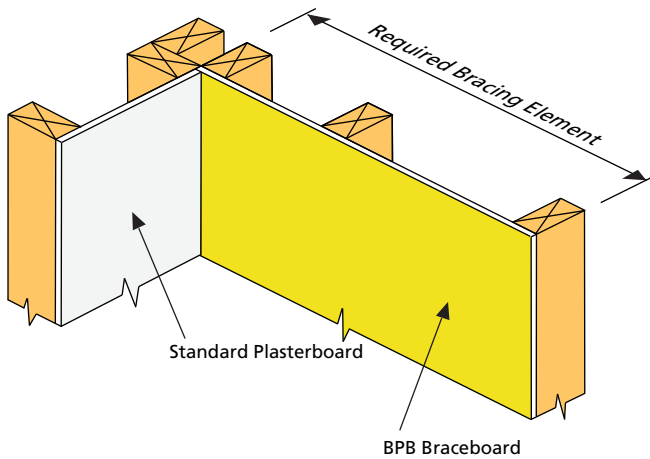
Two 400 x 25 x 0.9mm galvanised straps secured to both studs and joist with twelve 30 x 2.5mm galvanised nails.



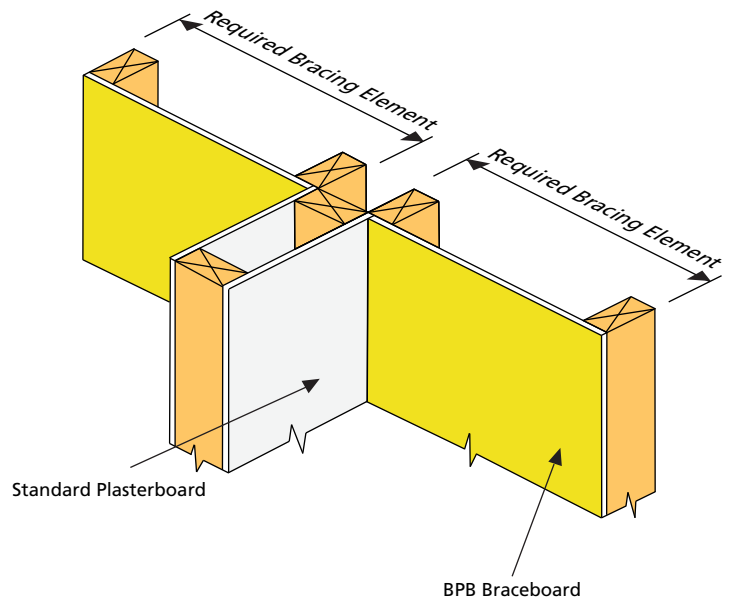
Construction Details For Wall Junctions & Top Plate Connections

For both corner and "T" junctions the fixing pattern is to be in accordance with BPB bracing elements as detailed on pages 2, 3 & 4 of this manual.

Corner Junction Detail



"T" Junction Detail

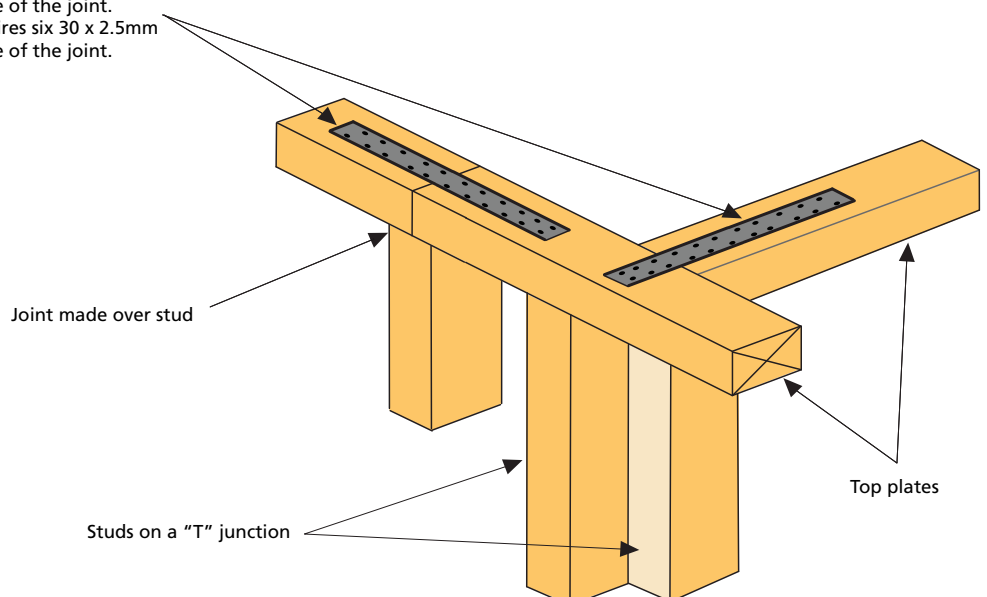


Top Plate Connections

For connection joints along walls & "T" junctions.

All Top Plate Connections for bracing element must be installed in accordance with NZS 3604 : 1999 Section 8.7.3. Joints must be made over blocking or studs with a 6 kN connection if the bracing values are greater than 100 BUs. If the rating is less than 100 BUs a 3 kN connection strap can be used.

400 x 25 x 0.6mm galvanised connection strap.
 A 3 kN connection strap requires three 30 x 2.5mm galvanised nails on either side of the joint.
 A 6 kN connection strap requires six 30 x 2.5mm galvanised nails on either side of the joint.



BPB Bracing Systems - Ceiling Diaphragms

Ceiling Diaphragms & Installation Instructions

- Ceiling diaphragms are a way of providing a horizontal bracing element and are to be constructed in accordance with building code NZS 3604 : 1999. Sections 5.6 and 13.5.
- Ceiling diaphragms are to be constructed when bracing lines of either 5.0m with a single top plate or 6.0m with two top plates are exceeded but are no greater than 10.0m between bracing lines.
- The length of ceiling diaphragms must not exceed twice its width and must be either square or rectangular.
- Fixings are to be spaced at 150mm centres around the whole perimeter of ceiling diaphragms, with the fixings being no less than 12mm from the edge. For corner fixing of ceiling diaphragm refer to the indicator below.
- Penetrations are permitted within ceiling diaphragm but must be positioned within the centre 1/3 of the ceiling diaphragms length and the centre 1/3 of the ceiling diaphragms width with fixings to be placed at 150mm centres to the perimeter of the penetration.
- The fixing of sheets within the ceiling diaphragm are to be in accordance with BPB's standard ceiling fixing instructions. All joints are to be reinforced with paper tape and stopped. All sheet end joints to be formed off the batten framing and back blocked.
- The connection of a ceiling diaphragm must be made to a single member. The single member must be continuous or made continuous. No connection to dwangs between roof trusses are permitted.

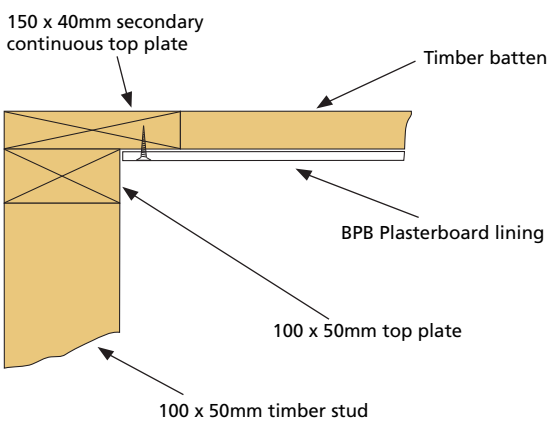
The information detailed in this table is applicable for single and two level buildings and is in accordance with NZS 3604 : 1999.

Lining Type	Maximum Roof Pitch	Maximum Length of Diaphragm	Wind Speed Zone	Batten Centres	Fixing Centres	Minimum Sheet Size	Fixing Type
BPB 10mm Standard BPB 13mm Standard	25°	10.0 metres 15.0 metres	Very high wind zone High wind zone	600mm	150mm	1800 x 900mm	32mm x 6g drywall screws
BPB 10mm Standard BPB 13mm Standard	45°	10.0 metres	Medium wind zone	600mm	150mm	1800 x 900mm	32mm x 6g drywall screws
BPB 10mm Braceboard BPB 13mm Duraline	25°	15.0 metres	Very high wind zone	600mm	150mm	1800 x 900mm	32mm x 7g brace screws
BPB 10mm Braceboard BPB 13mm Duraline	45°	15.0 metres	Very high wind zone	600mm	150mm	1800 x 900mm	32mm x 7g brace screws

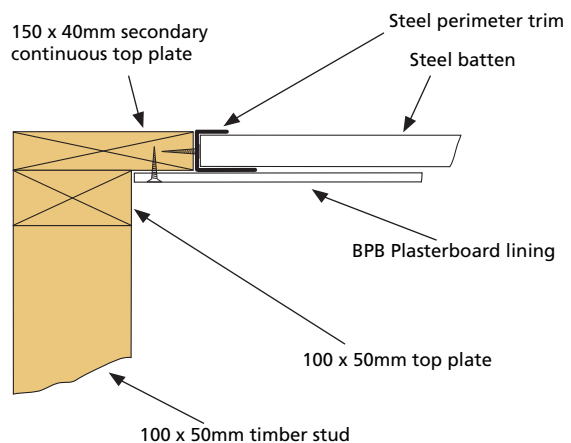
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Ceiling Diaphragm Wall Ceiling Connection Details

Timber Batten Ceiling

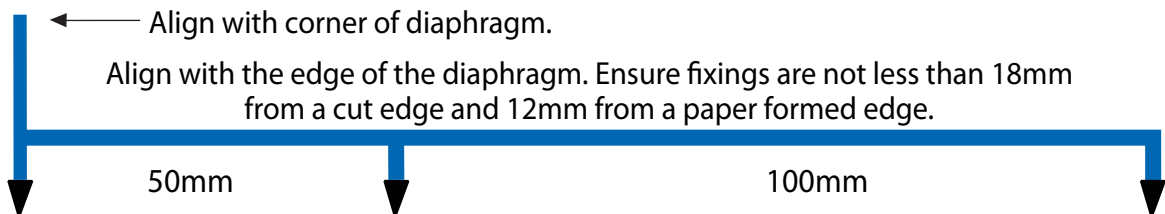


Steel Batten Ceiling



The indicator below is to be used to determine both the corner fixing centres and the perimeter fixing centres of the ceiling diaphragm. No corner fixings permitted and the first fixing to be not less the 50mm from the corner.

Fixing Indicator



Construction Information Details

■ Renovation

With any renovation involving the removal of the interior linings of existing dwellings it is important to ensure that the bracing elements are correctly reinstated as per the original design.

■ Penetrations Within Bracing Elements

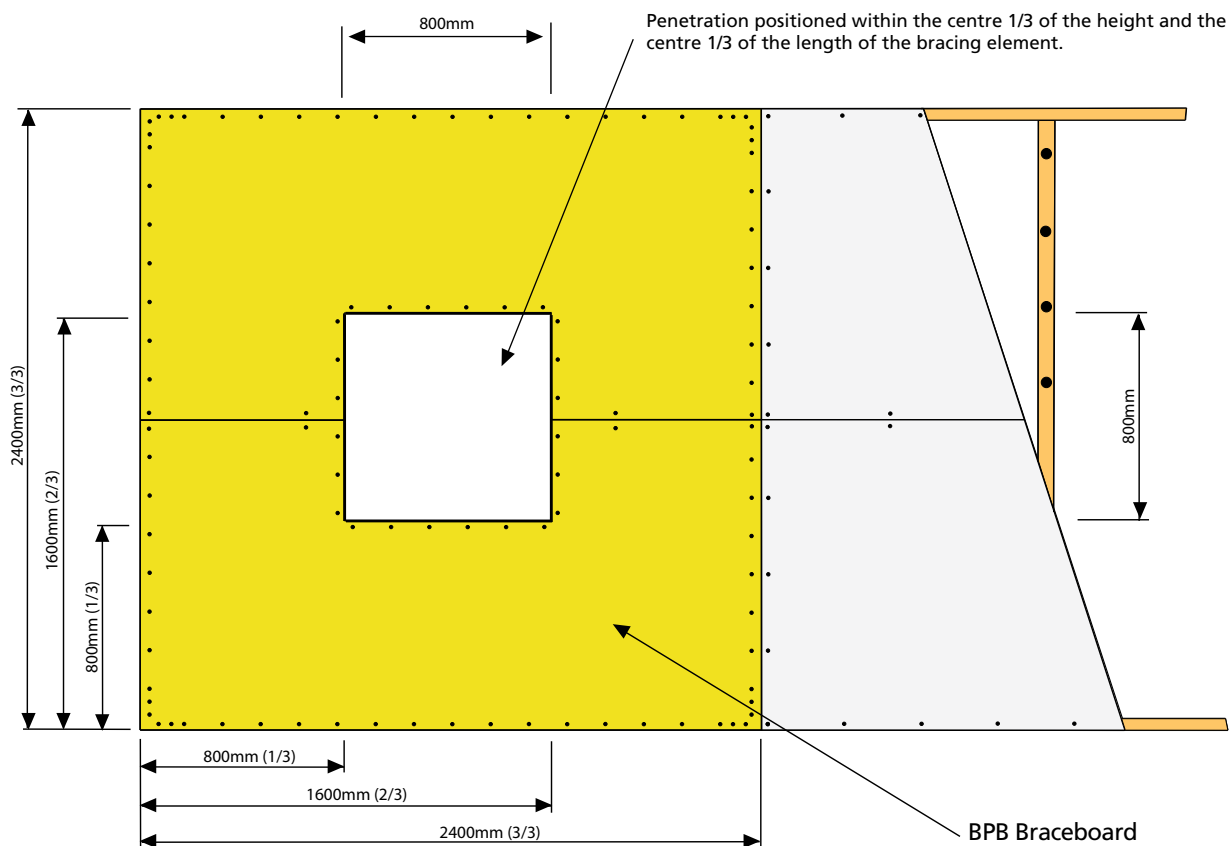
Penetrations are permitted within bracing elements but must be positioned within the centre 1/3 of the bracing elements length and the centre 1/3 of the bracing elements height, with fixings to be placed at 150mm centres to the perimeter of the penetration.

The maximum size of both dimensions of the penetration must not exceed the lesser of 1/3 of the height or width of the bracing element.

Smaller penetrations such as those required for switches and power points are permitted but must be no larger than 90mm x 90mm and positioned no less than 90mm from the edge of the bracing element.

■ Bracing Elements Within Wet Areas

As bracing elements are required to have a durability of not less than 50 years, as per the requirements of the NZBC, it is BPB Plasterboard's requirement that bracing elements are not to be located in wet areas such as behind baths or shower linings unless these areas are maintained impervious for the life of the building as per the NZBC Clause E3.



BPB Bracing Systems - BPB Bracing Anchor

■ BPB Bracing Anchor Bracket (Optional)

The BPB bracing anchor is suitable for both timber floor and concrete floor connections. (Timber floor shown below). Hold down straps are not required when using the BPB bracing anchor system.

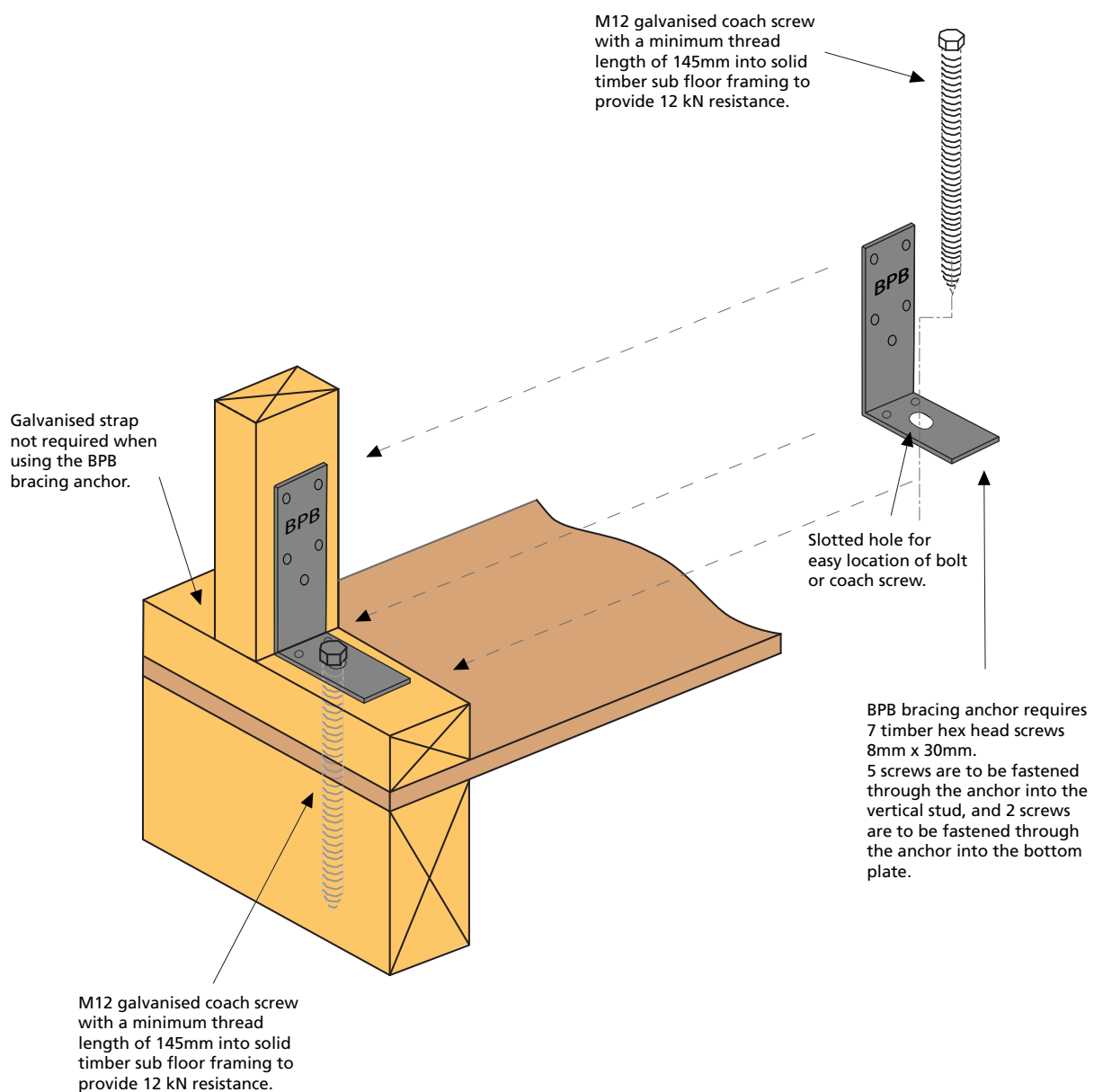
Each bracing element requires 2 BPB bracing anchors and 14 screws (7 screws per anchor).

The BPB bracing anchors are supplied as pairs including 14 screws.

Each BPB anchor is clearly identified with "BPB Bracing Anchor".

Fixing to timber or concrete floors

- For fixing to a timber framed floor (as shown) use a M12 x 150mm galvanised coach screw.
- For fixing to a concrete floor use M12 expanding anchor or J-Bolt set 75mm into concrete.



Notes

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.



SUPPORT AND ASSISTANCE

BPB is committed to providing outstanding support and service to its customers. If you have any questions about our products, systems or programmes, please contact us in any of the following ways:

Toll Free **0800 272 262** or **09 353 2080**

- Email enquiries to info@bpb.co.nz or fax 09 353 2087
- On site technical assistance available
- Refer Masterspec Section 5113B, 5171B, 5174B
- www.bpb.co.nz



Element NZ Ltd is the exclusive distributor of BPB plasterboard wall and ceiling lining products for New Zealand and the Pacific Islands.



Element NZ Ltd, PO Box 614, Auckland 1140

Your local BPB stockist is:



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