MiTek®

STRUCTURAL FIXINGS ON-SITE GUIDE

FOR BUILDING CODE COMPLIANCE

2024 EDITION - References NZS 3604:2011 B1 & B2 NZBC

MiTek® LUMBERLOK®
Timber Connectors

MiTek® BOWMAC®
Structural Brackets

MITEKNZ.CO.NZ

MiTek®

The information in this booklet contains designs which give an easy on-site installation guide when fixing connectors, nail plates and structural brackets in relation to the Building Code Approved Documents B1 Structure and B2 Durability.

Characteristics Loadings Data for LUMBERLOK® Timber Connectors and BOWMAC® Structural Brackets are not covered in their entirety in this booklet. Refer to separate brochures for design values.

The applications in this site guide are to be configured in accordance with the instructions. Substitution of specified or recommended components with alternative brands may compromise performance.

Further design advice on the selection of MiTek products can be provided by contacting our technical support offices in Auckland and Christchurch.

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A downloadable PDF version of this booklet is available on our website **www.miteknz.co.nz**

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(Section numbers refer to relevant section of NZS 3604:2011)

INDEX

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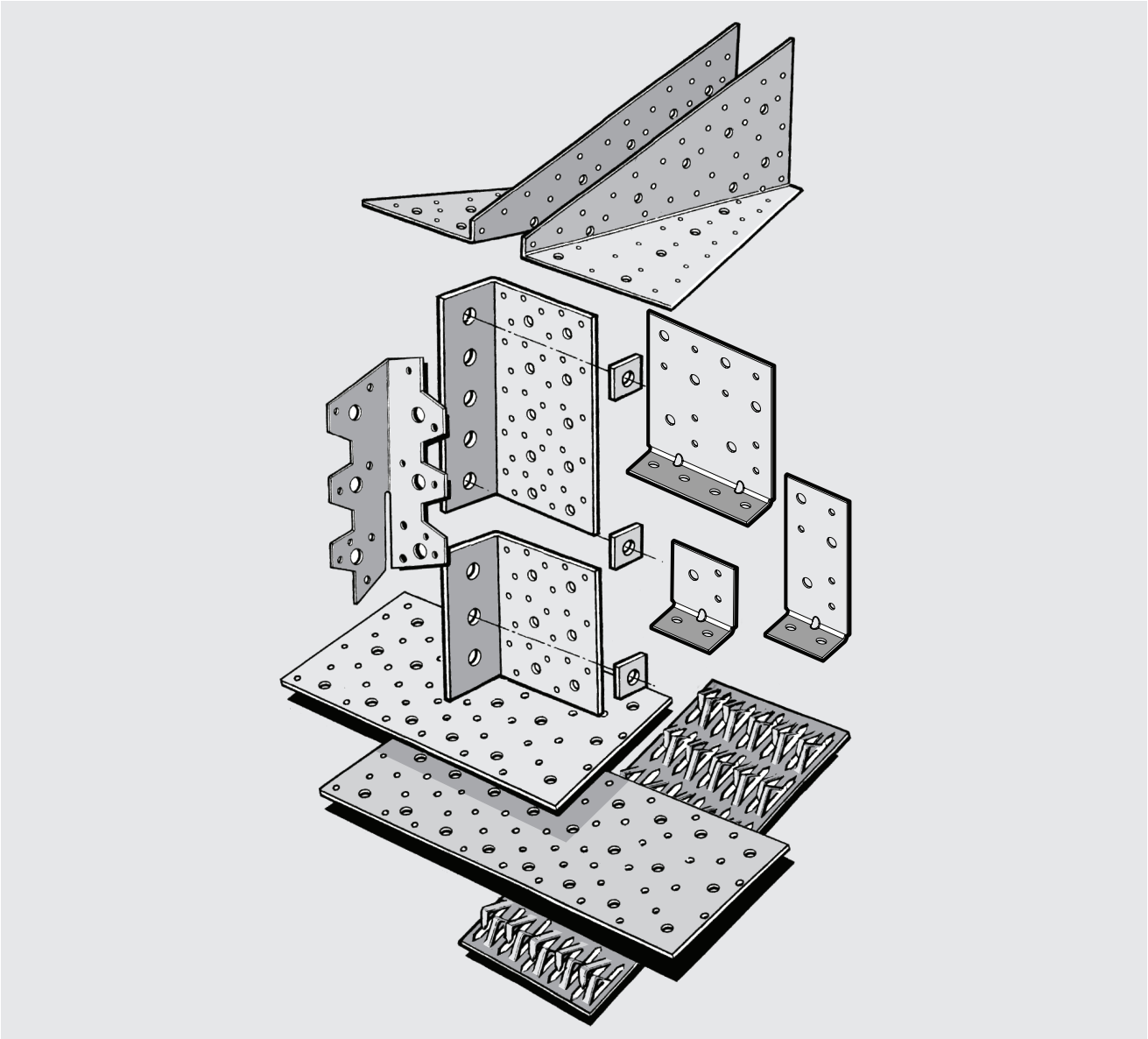
NOT TO BE USED IN EXTERIOR SITUATIONS Stainless Steel alternatives are available where stated

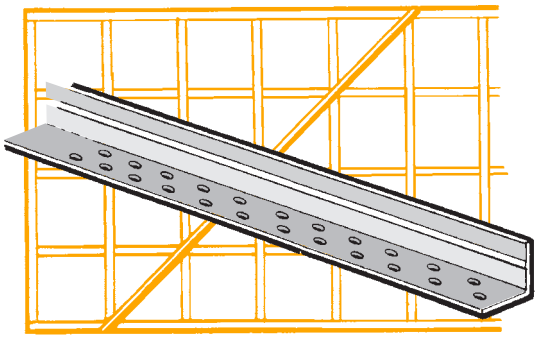
TIMBER CONNECTORS



Timber to Timber - Timber to Concrete - Timber to Steel

MiTek manufactures and markets the range of LUMBERLOK Timber Connectors for the building industry. Each product has been designed and developed to meet the needs of, and changes to building methods, and is tested to conform with the relevant NZ Standards. These include NZS 3603:1993 for timber design and NZS 3604:2011 Timber-framed buildings.

LUMBERLOK Connectors are available from leading Builders Supply Merchants and Hardware outlets throughout New Zealand.



ANGLE BRACE

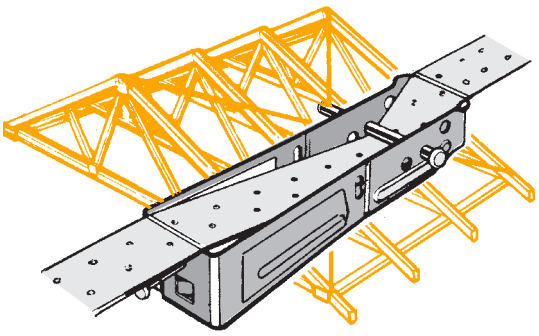
1.2mm G300 Z275 Galvanised Steel

Angle Brace may be used as either compression or tension brace. Nail holes are fully punched for ease of nailing. Fix with 75mm x 3.15mm diameter F.H. nails.

When used as a diagonal wall brace, it should be secured at each end with three nails, and two nails at each stud crossing.

Standard length is 3.6m, other sizes available are 3.0m, 3.3m and 4.2m. Angle Brace can be used as an anti-sag mechanism for purlins or girts.

Refer to Characteristic Loadings Brochure for design values.



STRIP BRACE

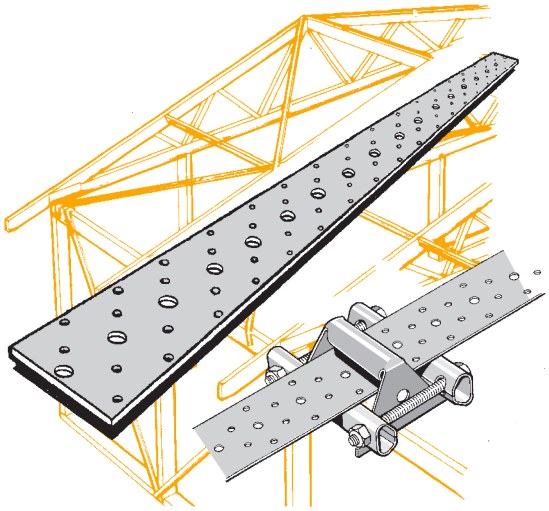
0.55mm x 27mm G550 Z275 Galvanised Steel
0.91mm x 25mm G300 Z275 Galvanised Steel (Export Grade)

Strip Brace is supplied in 10m, 15m and 30m coils for use as bracing or in short lengths as a jointing material.

Strip Brace provides an ideal bracing system for walls, or roof plane. One crossed pair of strips may be used in each location where a diagonal brace is required. Fix using 5 x LUMBERLOK Product Nails 30mm x 3.15mm diameter at each end if strip is folded over timber face. Otherwise use 8 nails each end.

A heavier gauge Export Grade (item suffix EX) is also available in 10m and 30m coils. Tensioners are included with marked boxes of Strip Brace coils or available separately if required.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304. (Stainless Steel tensioners not available)



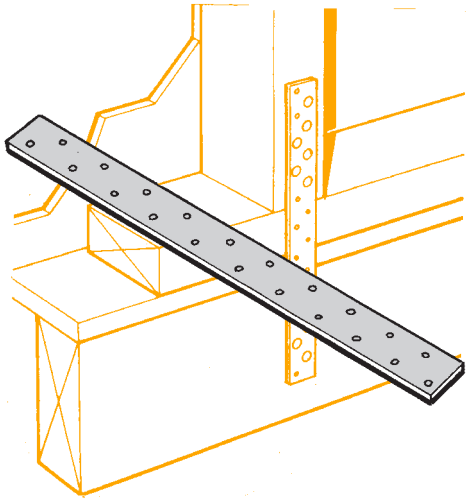
*MULTI-BRACE

0.91mm x 53mm G300 Z275 Galvanised Steel

This product has been developed as a bracing element for commercial building situations as an alternative to steel rod or timber braces. Coils are available in lengths of 10m, 15m and 30m, punched to allow easy fixing. Fix using 11 x LUMBERLOK Product Nails 30mm x 3.15mm diameter at each end if Multi-Brace is folded over timber face. Otherwise use 15 nails each end.

Tensioners are available separately if required.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304. (Stainless Steel tensioners not available)



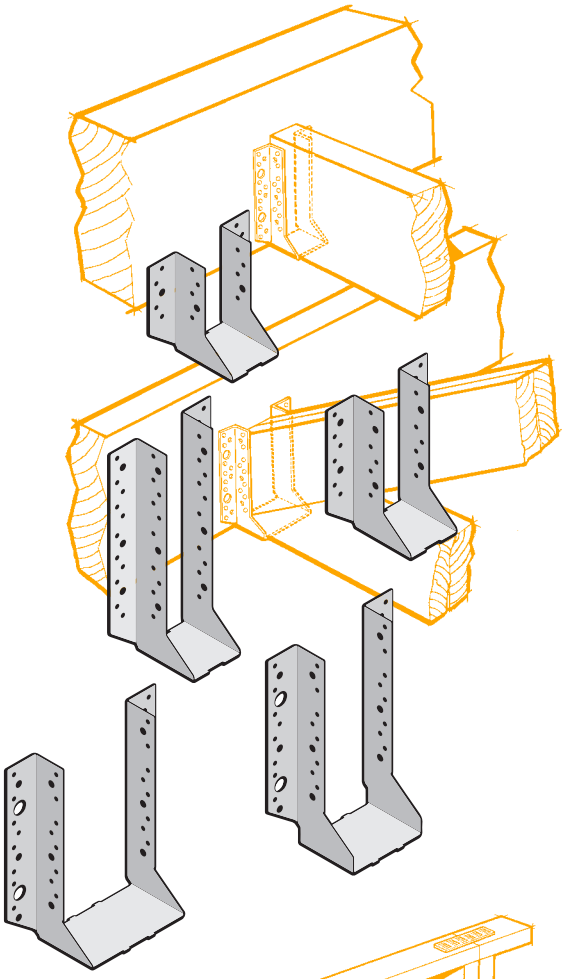
*SHEET BRACE STRAPS

0.91mm x 25mm G300 Z275 Galvanised Steel

Punched strap available in lengths of 200mm, 300mm, 400mm and 600mm, to provide a hold down for use with sheet bracing. As per NZS 3604:2011, a 6kN capacity can be obtained by one strap (6 nails per strap end) or 12kN per two straps (6 nails per strap end). Fixed with LUMBERLOK Product Nails 30mm x 3.15mm diameter.

Refer to brochure for application data.
Available in Stainless Steel 304.

***Detailed product sheet available**



*JOIST HANGERS

0.91mm G300 Z275 Galvanised Steel

Joist Hangers are designed to be used where a strong rigid joint is required between members butting together at 90˚, e.g. floor joist to beam/bearer, truss or rafter to beam.

i) **Joist Hanger 47 x 90**
Designed for use where gauged timber of 47mm width and up to 150mm deep.

ii) **Joist Hanger 47 x 120**
Multi-use bracket suitable for gauged 47mm thick timber up to 200mm deep.

iii) **Joist Hanger 47 x 190**
Used for gauged 47mm thick timber up to 300mm deep.

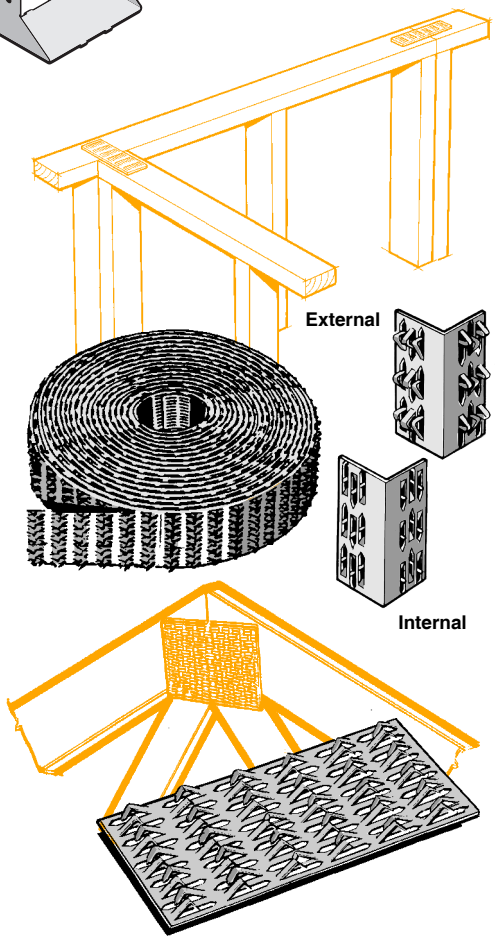
iv) **Joist Hanger 70 x 180**
A special size joist hanger designed for gauged 69mm wide timbers.

v) **Joist Hanger 95 x 165**
For use on gauged 94mm wide timber or double joists/trusses.

Note: Joist Hangers 52mm wide also available for rough sawn timber.

All of the above Joist Hanger connections should be fixed using LUMBERLOK Product Nails 30mm x 3.15mm diameter, or Type 17-12g x 35mm Hex Head Screws.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.



TYLOK PLATES

0.95mm G300 Z275 Galvanised Steel

Tylok Plate is designed for on-site use and can readily be applied by hammer as well as hydraulic press. Tylok Plates are suitable for a wide range of applications such as trusses, formwork, site splicing, etc. Tylok Plates are manufactured from galvanised steel in a range of sizes.

Refer to Characteristic Loadings Brochure for design values.

Plate code example - 6T10 = 6 rows of teeth long x 10 teeth wide.

Code	Width	Length
2T5	34mm	60mm
4T5	34mm	120mm
6T5	34mm	180mm
8T5	34mm	240mm
10T5	34mm	300mm
12T5	34mm	360mm
14T5	34mm	420mm
16T5	34mm	480mm
Coil T5	34mm	15m

Code	Width	Length
2T10	68mm	60mm
4T10	68mm	120mm
6T10	68mm	180mm
8T10	68mm	240mm
10T10	68mm	300mm
12T10	68mm	360mm
14T10	68mm	420mm
16T10	68mm	480mm
Coil T10	68mm	15m

Code	Width	Length
4T15	102mm	120mm
6T15	102mm	180mm
8T15	102mm	240mm
10T15	102mm	300mm
12T15	102mm	360mm
Coil T15	102mm	15m

Code	Width	Length
6T20	136mm	180mm
8T20	136mm	240mm
10T20	136mm	300mm
12T20	136mm	360mm
14T20	136mm	420mm
Coil T20	136mm	15m

Tylok Plate is also available in coil form, in all four widths, as a convenient method of various applications by the builder on-site. By using metal cutters, any length plate can be cut from the 15m coils as required.

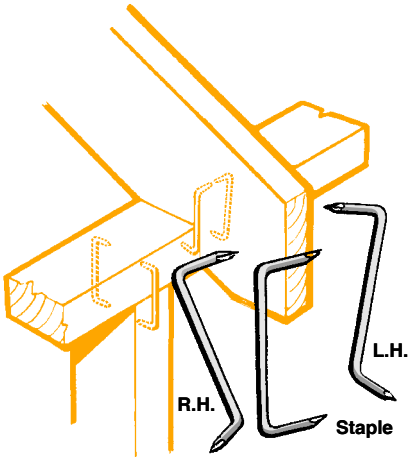
TYLOK ANGLES

0.95mm G300 Z275 Galvanised Steel

Available in internal (Int.) or external (Ext.) versions

3A6 35mm x 35mm x 90mm
5A6 35mm x 35mm x 150mm

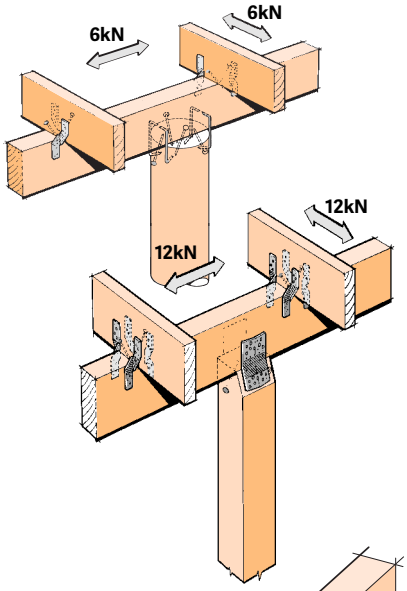
***Detailed product sheet available**



WIRE DOGS (LH, RH or STAPLE)

Wire Dogs are manufactured as left handed, right handed and staples, from 4.9mm diameter galvanised wire. Each has a 95mm shank, and a 35mm leg. Typical use in a wind uplift situation, such as truss or rafter to top plate, and top plate to stud connection.

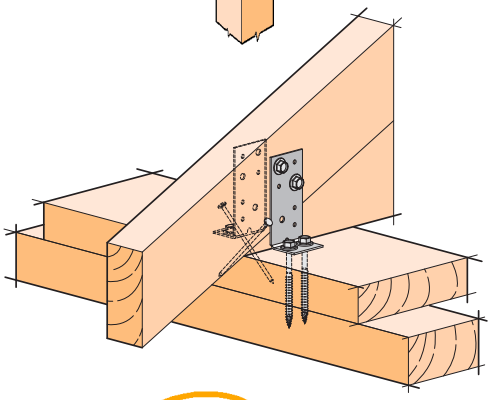
Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.



*12kN & 6kN PILE FIXINGS

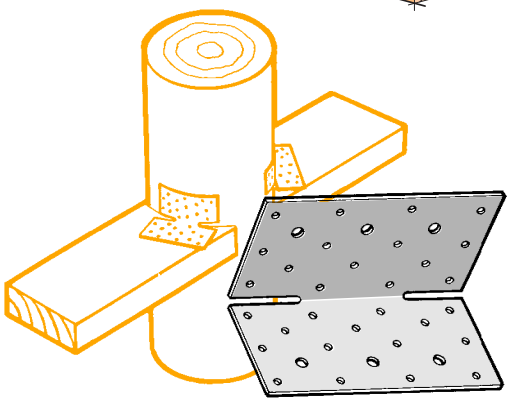
Both these products comply with NZS 3604:2011 as a fixing method for timber piles to bearers to joists. The 12kN product pack is suitable for both Anchor and Brace pile situations whilst the 6kN pack is used with cantilever piles. Each product is manufactured in a hot dip galvanised or stainless steel option to suit the corrosive environment intended to be used in, and all packs are supplied inclusive of all necessary nails.

Refer to brochure for application data.



*9kN & 16kN TRUSS TO TOP PLATE FIXINGS

Used in pairs, the CPC40 cleats achieve 9kN and the CPC80 cleats achieve 16kN. The required pack comes supplied with the appropriate cleats and screws to penetrate through the timber top plate packer and into the top plate. Compliant with NZS 3604:2011, these conveniently top mounted fixings allow additional face fixing if required.



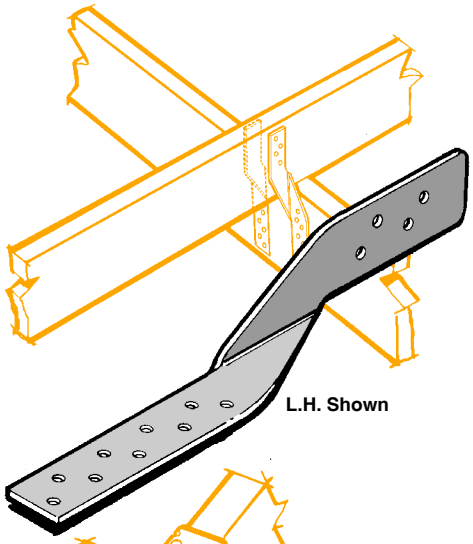
GIRT PLATE

0.91mm G300 Z275 Galvanised Steel

Specifically designed for girt to pole fixing, as per Farm Building Designs. 120mm long Nailon Plate, slit and pre-folded to 90°. Fixed with min. 8 x LUMBERLOK Product Nails 30mm x 3.15mm diameter per flange (16 nails/cleat), or 3 x Type 17-14g x 35mm Hex Head Screws per flange (6 screws/cleat).

Available in Stainless Steel 304.

***Detailed product sheet available**

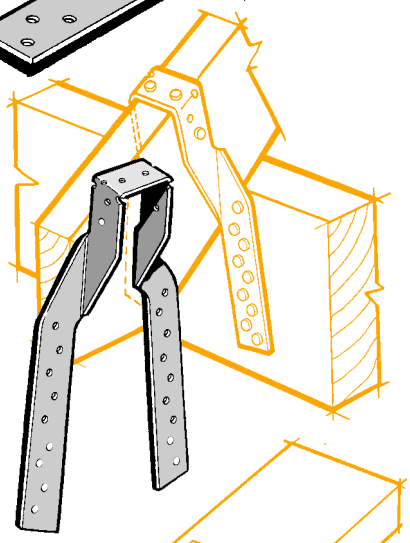


CEILING TIES CT160 & CT200 (LH or RH)

0.95mm NZCC-2D Hot Dip Galvanised Steel (CT160)
0.91mm G300 Z275 Galvanised Steel (CT200)

Overall length 160mm and 200mm – A very useful connector primarily for fixing ceiling joists to rafter or truss members. It also provides an excellent truss or rafter to top plate connection. Fix with LUMBERLOK Product Nails 30mm x 3.15mm diameter.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.

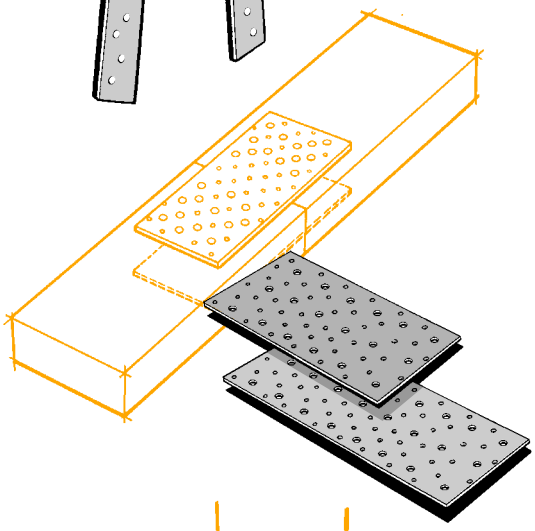


CYCLONE TIES CT400 & CT600

0.91mm G300 Z275 Galvanised Steel

Overall length 400mm and 600mm – Designed specifically for fixing down rafters or purlins in high wind situations. These are produced in straight pre-twisted lengths which are then folded over timber members on-site, accommodating various width purlins or rafters. Fix with LUMBERLOK Product Nails 30mm x 3.15mm diameter.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.



*NAILON PLATES

0.91mm G300 Z275 Galvanised Steel
1.55mm G300 Z275 Galvanised Steel
3.0mm Black Steel NZCC - SD ungalvanised

LUMBERLOK Nailon is produced as a flat steel plate with pre-punched holes to accommodate LUMBERLOK Product Nails 30mm x 3.15mm diameter or Type 17-14g x 35mm Hex Head Screws. Plate sizes vary in thickness, width and length. Standard products are manufactured using Nailon, as well as a range of special products. Use of Nailon Plate fixings is far quicker and more economic than alternative methods.

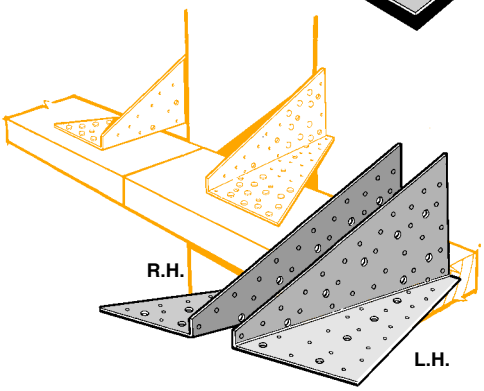
Nailon Plate - Available as a flat plate, cut to required length, in 40mm increments. (min. 80mm, max. 2.4m length)

Refer to Characteristic Loadings Brochure for design values.

Plate thickness	1.0mm	2.0mm	3.0mm
Width	110mm	113 or 150mm	130 or 240mm

Nailon provides a very strong site joint for truss splicing, rafter connections, etc. 3.0mm can also be welded to form timber to steel or concrete connections.

1.0mm Nailon Plate available in Stainless Steel 304.



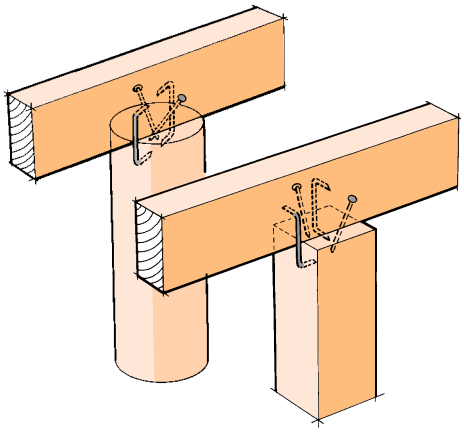
DIAGONAL CLEAT N21 (LH or RH)

0.91mm G300 Z275 Galvanised Steel

This diagonally folded Nailon Plate 240mm long, provides a solution for fixing and aligning girts to timber poles. Can also be used for fixing purlins to rafters in high wind uplift situations, or to provide a strong 90˚ butt joint for large timber sizes. Fixed with LUMBERLOK Product Nails 30mm x 3.15mm diameter, or Type 17-14g x 35mm Hex Head Screws.

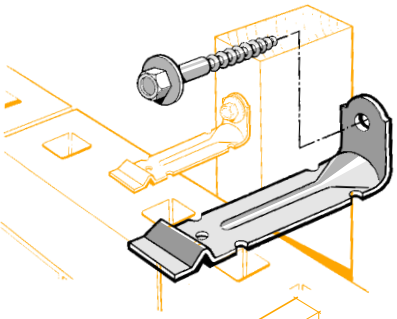
Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.

***Detailed product sheet available**



*ORDINARY PILE FIXING

Stainless Steel Wire Dogs and nails to comply with the fixing of ordinary piles to bearers as per NZS 3604:2011.

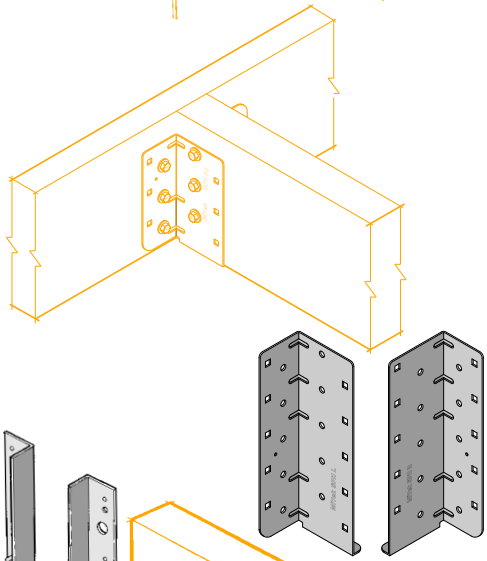


*SCREW TIE

1.2mm NZCC-SD Hot Dip Galvanised Steel

Meets NZS 3604:2011 and AS/NZS 2699.1:2000. This product is used to tie brick veneer to timber framework using a Type 17-12g x 35mm Hex Head Screw. The actual 'Tie' is available in 85mm and 105mm lengths to suit various cavity sizes and brick widths. Suitable for all timber including dry stress graded 90mm x 35mm studs.

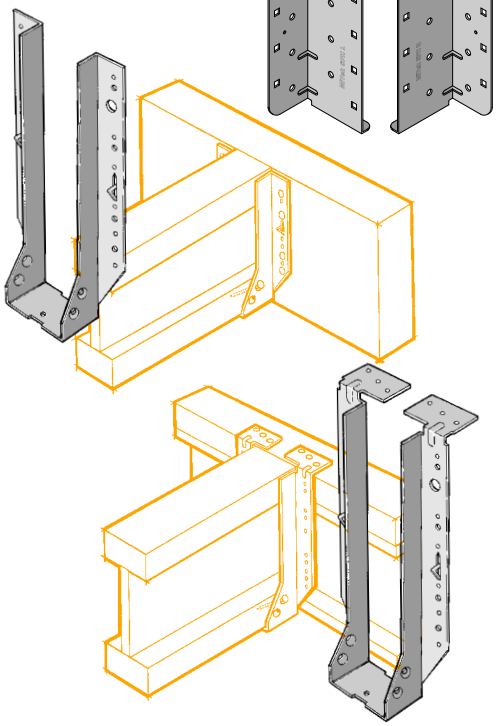
Refer to brochure for application data.
Available in Stainless Steel 316.



*SPLIT HANGERS

1.55mm G300 Z275 Galvanised Steel

Designed to provide a strong 90˚connection for larger timber widths and/or double joist/trusses to supporting members. Always used in pairs, Split Hangers are available in depths of 140, 180 and 220mm and are fixed with Type 17-14g x 35mm Hex Head Screws.

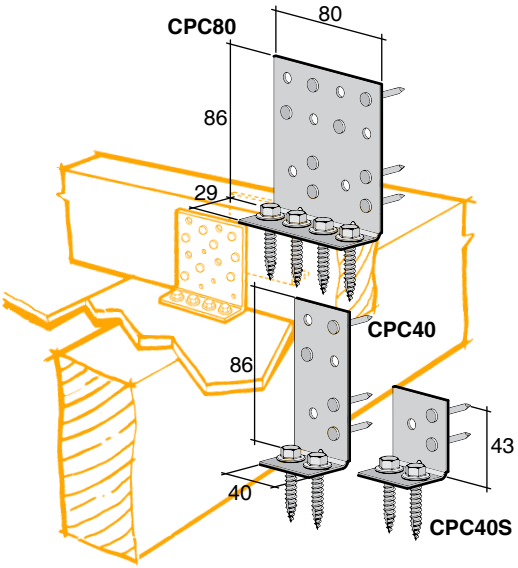


*I-BEAM HANGERS

1.15mm G300 Z275 Galvanised Steel

Developed to provide an effective method of fixing timber I-Beams in floor situations, the Face Fix option is suitable for connecting to supporting timber beams, whereas the Top Fix option can be used to fix to supporting steel beams with a timber top plate. Several sizes are available to accommodate a wide range of I-Beams. Fixed with 40mm x 3.75mm diameter nails (supplied). Face Fix option also allows for fixing with Type 17-12g x 35mm Hex Head Screws.

***Detailed product sheet available**



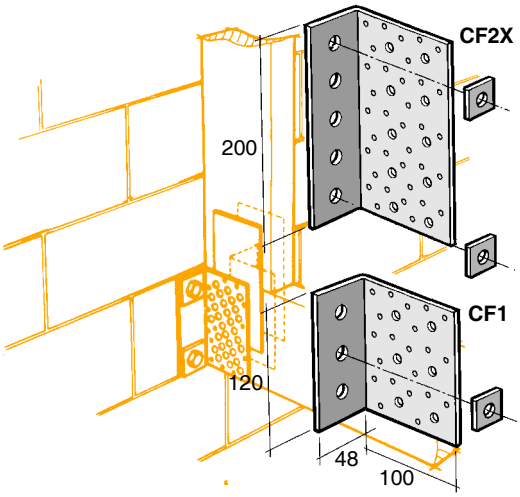
*CONCEALED PURLIN CLEATS CPC40, CPC80, CPC40S

1.55mm G300 Z275 Galvanised Steel

Nominal Rafter Width (mm)	50	100
Cleat	CPC40 or CPC40S	CPC80

CPC cleats provide an excellent purlin/rafter fixing in exposed situations, resisting any wind uplift.
The cleats can also be used for exposed rafter to ridge beam connections. Fixed with Type 17-14g Hex Head Screws and LUMBERLOK Product Nails 30mm x 3.15mm diameter (not supplied with product).

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.

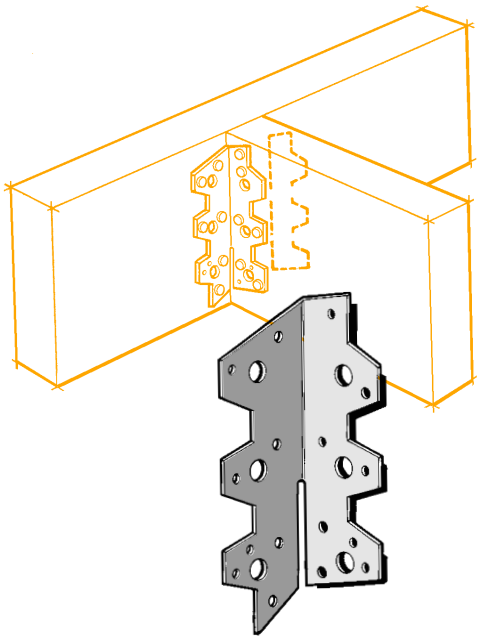


CONCRETE FIXING CLEATS CF1 & CF2X

1.55mm G300 Z275 Galvanised Steel

Both cleats provide a quick and economical method of fixing timber trusses, beams or columns to solid concrete or grouted concrete blockwork.
Both cleats can be used on one or two sides of timber members, depending on the loads required. Fixed with LUMBERLOK Product Nails 30mm x 3.15mm diameter or Type 17-14g x 35mm Hex Head Screws and appropriate M12 bolts (not supplied with product). 40x40x5mm washer supplied.

Refer to Characteristic Loadings Brochure for design values.



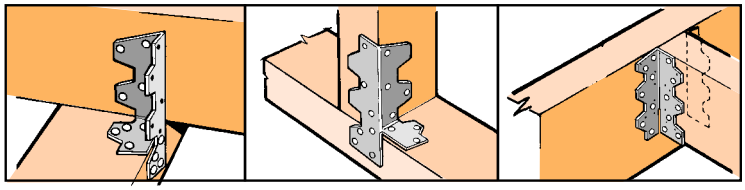
MULTIGRIP

0.91mm G300 Z275 Galvanised Steel

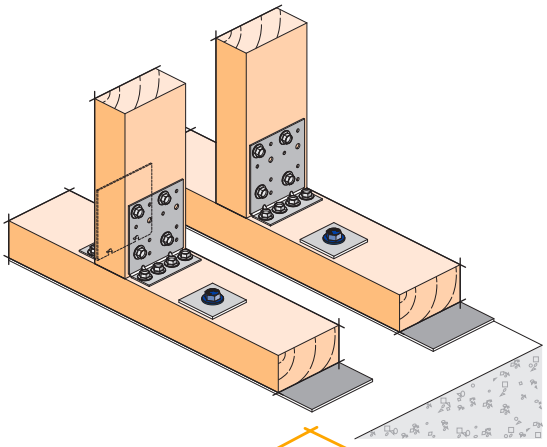
LUMBERLOK Multigrips are a multipurpose product that can be bent into any of five combinations. One product provides for all alternatives with the bending slot enabling easy on-site bending.

Size 125mm high x 38mm flanges. Fix with LUMBERLOK Product Nails 30mm x 3.15mm diameter, or Type 17-14g x 35mm Hex Head Screws. Correct nailing shown below.

Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.

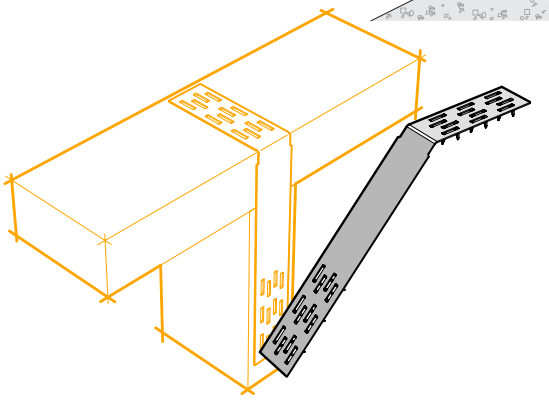


***Detailed product sheet available**



*6kN & 12kN STUD TO BOTTOM PLATE FIXINGS

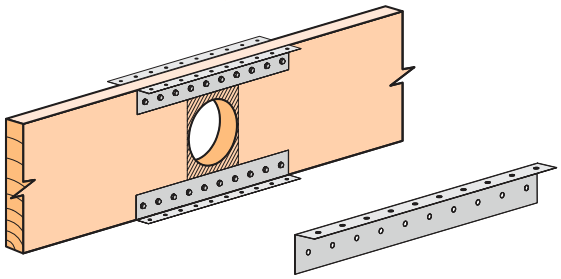
Also referred to as 'Stud Anchor' due to being used for stud to top plate fixing, these are a great alternative to the Sheet Brace Straps as they sit within the wall frame. Also an ideal retro fit fixing after lining/cladding is installed. Packs are supplied with two LUMBERLOK CPC80 cleats and the appropriate screws to provide 1 x 12kN or 2 x 6kN fixings.



STUD STRAP

0.95mm G300 Z275 Galvanised Steel

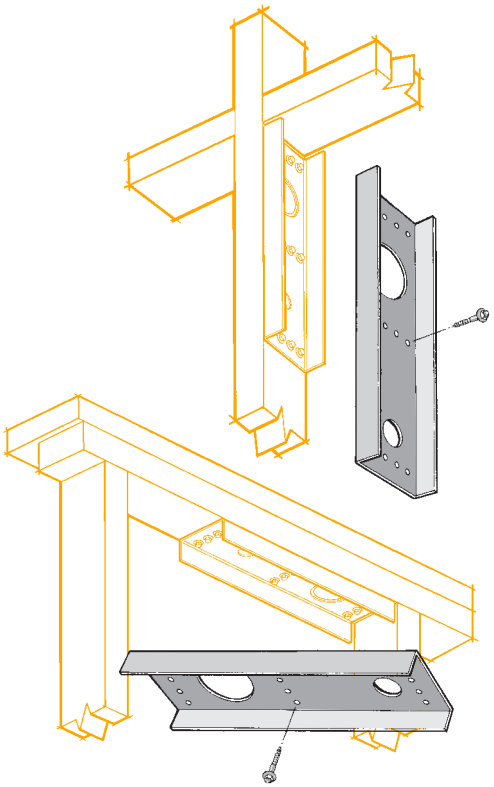
Designed to secure studs to top plate, this pre-bent strap product can be applied to one face only, saving time over alternative fixing methods. In addition, when fixing to the outside of timber stud wall frames, it provides a flat internal surface for plasterboard. The pre-formed teeth are designed to be applied by blows from a broad face hammer. The 185mm length of strap for fixing to the stud makes this product suitable for double 45mm top plates.



FLOOR JOIST STIFFENER

1.55mm G300 Z275 Galvanised Steel

Tested to provide a full strength solution where service holes have been drilled through solid timber floor joists. This one-sized product (4 required per joist hole) is suitable for timber joists from 140 x 45mm up to 290 x 45mm, and can be retro fitted in the case where pipes may already have been fitted. Fixed with LUMBERLOK Type 17-12g Hex Head Screws (not supplied with product).



*FRAMING STUD STIFFENER

1.55mm G300 Z275 Galvanised Steel

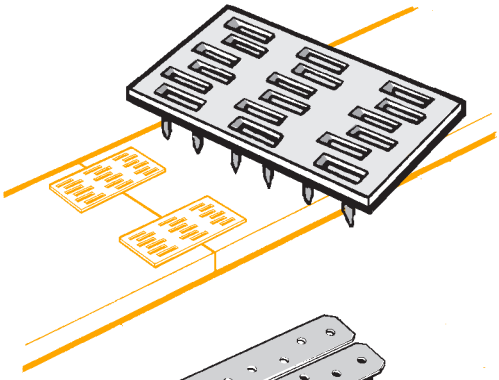
Replace the strength lost in 90 x 45mm framing studs as a result of holes being drilled through timber framing for plumbing or vacuum systems ducting. This solution is for holes up to 60mm diameter. Fixed to side of stud with 3 rows of 4 x Type 17-14g x 35mm Hex Head Screws (supplied).

*TOP PLATE STIFFENER

1.55mm G300 Z275 Galvanised Steel

Tested to re-strengthen timber top plates where holes have been drilled for the installation of internal vacuum system ducting. This is an alternative solution to NZS 3604:2011 and includes holes up to 60mm diameter. Fixed through the top plate and into the timber packer with 3 rows of 4 x Type 17-14g x 75mm Hex Head Screws (supplied).

***Detailed product sheet available**



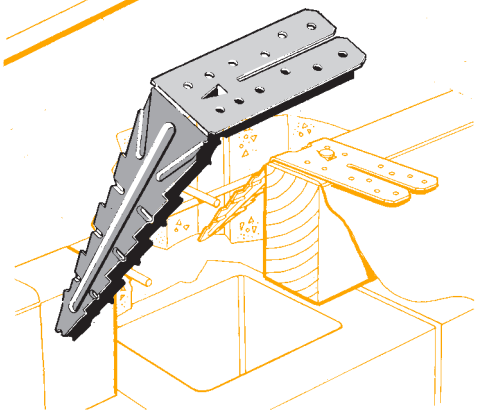
STRAP NAIL

0.95mm G300 Z275 Galvanised Steel

Is specifically designed for on-site use and many general applications where a strong, rigid load-carrying joint is required. Strap Nails eliminate skew nailing, scarf cutting and checking in.

The Strap Nail has many applications in the furniture and packaging industries, plus having many uses for the home handyman. Size 39mm x 76mm.

Refer to Characteristic Loading Brochure for design values.

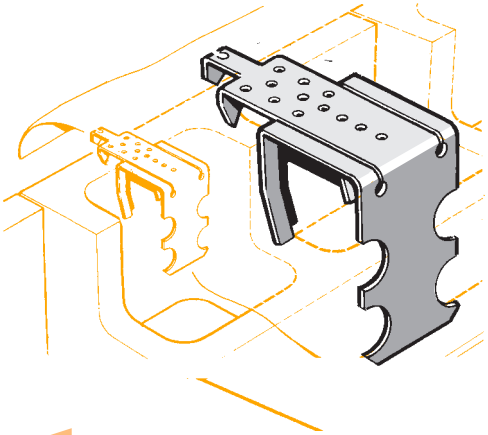


*BOTTOM PLATE FIXING ANCHOR

0.95mm G300 Z450 Galvanised Steel

Ingenious product designed to fix timber wall frames down onto concrete slab floors. Bottom Plate Anchors are temporarily fixed to the perimeter boxing at 900mm centres max. prior to the concrete pour, and folded around the bottom plate when the frames are located. LUMBERLOK Product Nails 30mm x 3.15mm diameter are then applied to secure the frames in position.
Alternative to concrete bolts, or the drilling of bottom plates and lifting of frame over cast-in steel rods.

Refer to brochure for application data.
Available in Stainless Steel 304.

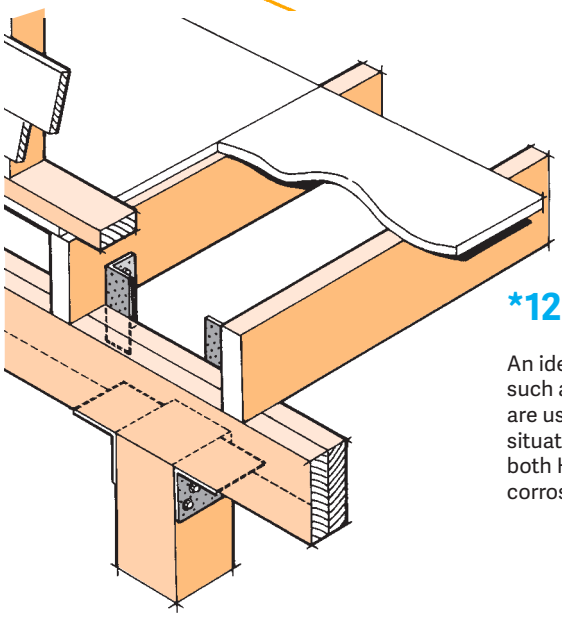


*HEADER BLOCK ANCHOR

1.15mm G250 Z275 Galvanised Steel

This product has been developed to complement the Bottom Plate Anchor, where concrete header blocks are used to form the concrete slab perimeter. The product is clipped onto the block edge at 600mm centres max. and left until the slab is poured and frames ready to stand up.
The tongue is then lifted up off the surface and folded around the bottom plate for nailing using LUMBERLOK Product Nails 30mm x 3.15mm diameter.

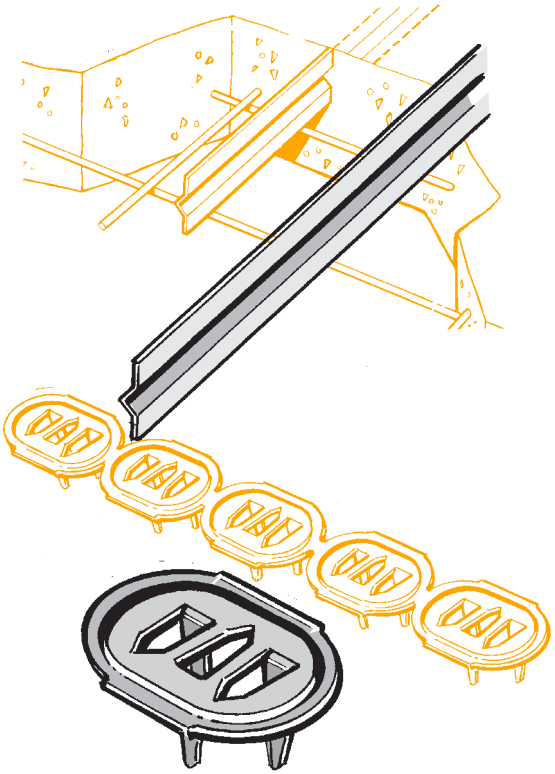
Refer to brochure for application data.
Available in Stainless Steel 304.



*12kN RETRO SUBFLOOR FIXING

An ideal fixing to be used when the outside face of the bearer is not accessible, such as with relocatable houses to piles. The specially developed Retro Plates are used for connecting pile to bearers to joists and are easily fixed in constricted situations with Type 17-12g x 35mm Hex Head Screws (supplied). Manufactured in both Hot Dip Galvanised and Stainless Steel options to suit the required corrosive environment.

***Detailed product sheet available**



*KRACK MATE

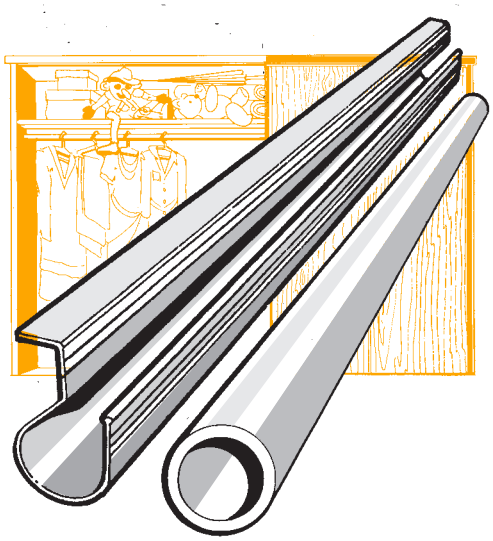
0.85mm G250 Z275 Galvanised Steel

A preformed metal crack inducer for all types of concrete surfaces. Eliminates concrete cutting. 36mm overall width, supplied in 3m lengths. Krack Mate is inserted into wet concrete after screeding stage, flush with surface level.

Refer to brochure for application data.

LITTLE GRIPPER

Available in strips of 5, this hammer on, snap off connector is suitable for economical quick fastening of building paper, shade cloth, plastic sheeting, etc.

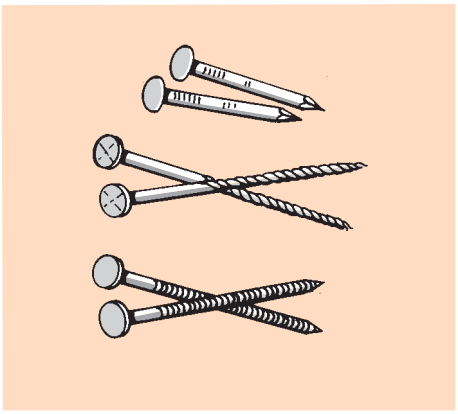


CLOSET RAIL

This attractive product provides an alternative to bar or timber rails in wardrobe situations. Manufactured from extruded aluminium, the closet rail enhances wardrobe appearances and also provides additional support strength to the closet shelf. The product is available in lengths of 1.8m, 2.4m and 3.6m, either standard mill finish or powder-coated white.

CLOSET TUBE

This economical and attractive product is ideal as an alternative to galvanised pipe in wardrobe situations. Closet Tube is available in lengths of 1.8m or 2.4m, and powder-coated finished in white. Strong sockets are also available to support the Closet Tube ends.



PRODUCT NAILS

30mm x 3.15mm diameter Flat Head Galvanised.
Available in 25kg, 5kg packs and 500g bags. To be used for most products requiring nailing.

Also available in Stainless Steel 304.

SPIRAL ROLLED NAILS

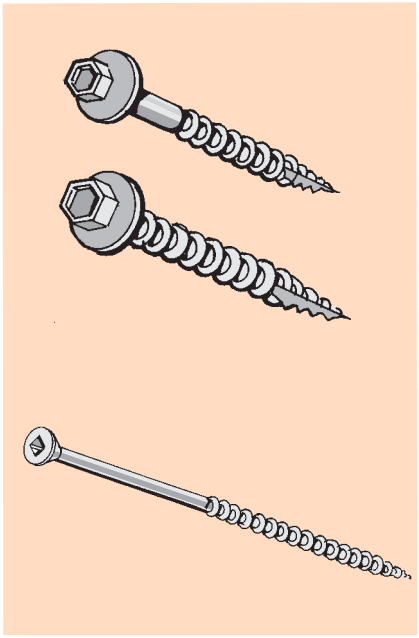
90mm x 3.55mm diameter Flat Head Galvanised, 45mm x 3.55mm diameter Flat Head Galvanised. Available in 1kg packs.

ANNULAR GROOVED NAILS

30mm x 3.15mm diameter Flat Head, 45mm x 3.3mm diameter Flat Head, 90mm x 4.0mm diameter Flat Head.

Available in Stainless Steel 304.

***Detailed product sheet available**



SCREWS

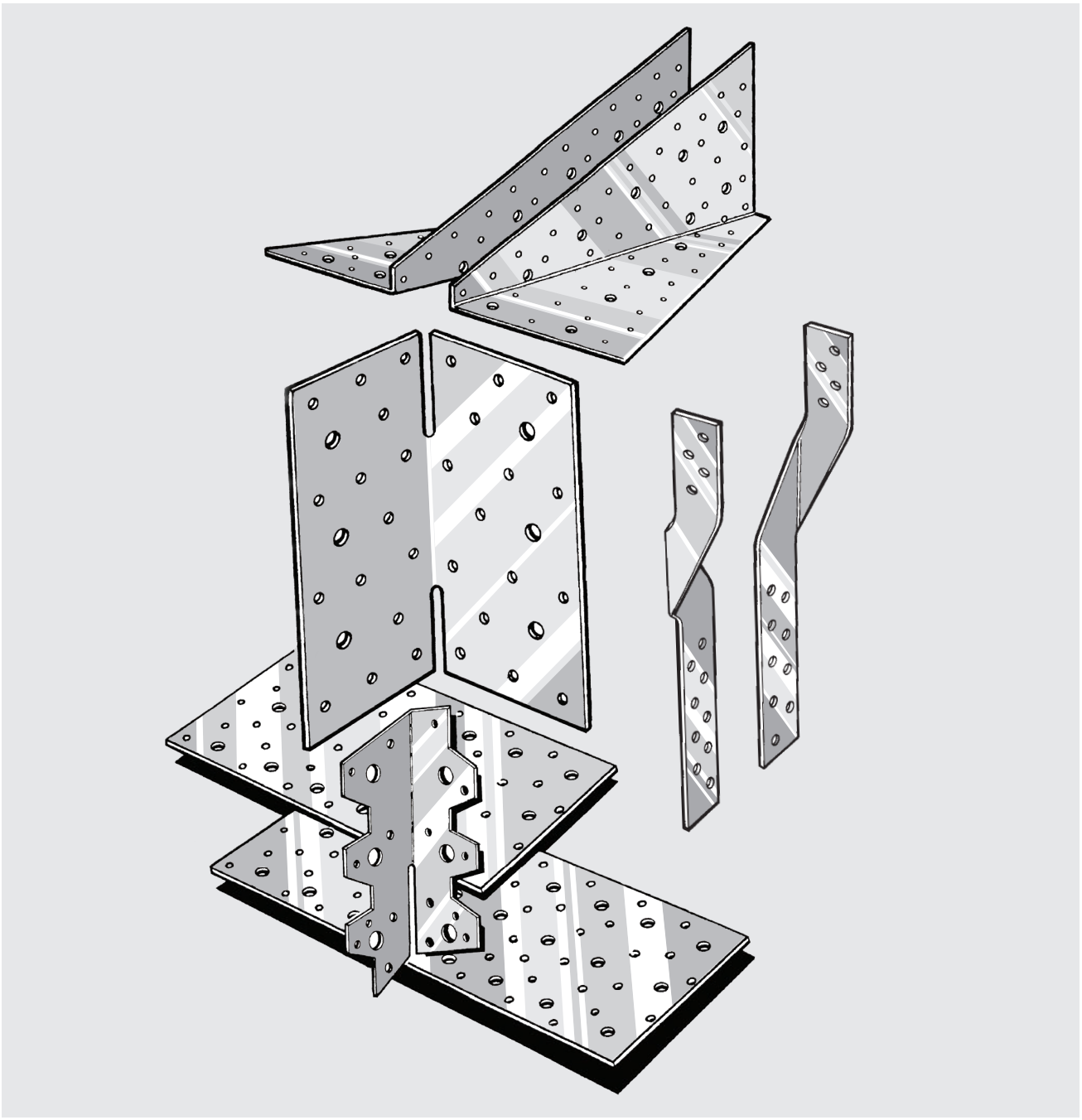
Type 17-12g x 35mm Hex Head Screws Galvanised, Electro Galvanised and Stainless Steel.
Type 17-14g x 35mm Hex Head Screws Electro Galvanised and Stainless Steel.
Type 17-14g x 75mm Hex Head Screws Electro Galvanised and Stainless Steel.
Available in bags of 100.

BLUE SCREW

Specifically developed for use as a purlin and batten fixing. Complies with NZS 3604:2011. This unique 80mm x 10g screw is blue in colour making it easily identifiable.
Available in boxes of 250.

MiTek® LUMBERLOK®

STAINLESS STEEL CONNECTORS
FOR USE IN EXTERIOR SITUATIONS



LUMBERLOK Stainless Steel Connectors are available from leading Builders Supply Merchants and Hardware outlets throughout New Zealand.

MATERIAL Stainless Steel 304-2B (except Screw Ties - 316 Grade)

STANDARDS Applicable Standards are NZS 3603 and NZS 3604:2011 - Section 4 Durability

DURABILITY The selection of LUMBERLOK Stainless Steel fixings should be made in conjunction with the MiTek Durability Product Selection and Durability Flow Charts in Section 4 of the current MiTek Structural Fixings On-Site Guide. These selection charts are an alternative solution to Table 4.1 NZS 3604:2011.

The recommendation and use of LUMBERLOK Stainless Steel fixings prescribed in these selection charts is based on supporting advice from Les Boulton & Associates - Materials and Corrosion Consultants in their report # 99267.

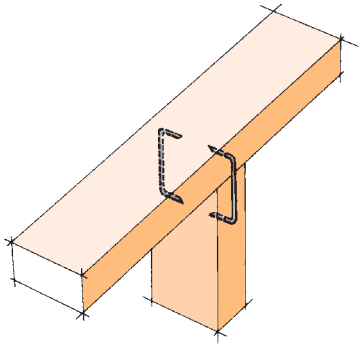
When used, handled and installed in accordance with the above conditions, LUMBERLOK Stainless Steel connectors will meet NZBC Clause B2 for 50 years durability performance requirements.

Depending on specific weather exposure and salt spray environments, there may be evidence of 'tea staining' on the surface of Stainless Steel fixings.

Tea staining is a visual issue only and DOES NOT affect the structural integrity of the fixing. To minimise this occurrence, it is suggested that a regular washing / maintenance cycle be implemented using warm water with a mild detergent and a cold fresh water rinse.

It is NOT advisable for any LUMBERLOK Stainless Steel products to be painted over as this may affect the natural anti-corrosive characteristics of stainless steel.

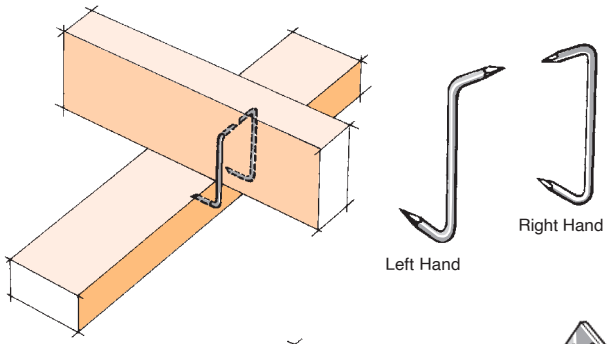
AVAILABILITY Stainless Steel product can be purchased from Builders Supply Merchants or indented through the merchant from our Auckland and Christchurch warehouses.



WIRE DOGS (LH, RH or STAPLE)

Wire Dogs are manufactured as left handed, right handed and staples, from 4.76mm diameter stainless steel wire. Each has a 95mm shank, and a 35mm leg.

Refer to Characteristic Loadings Brochure for design values.

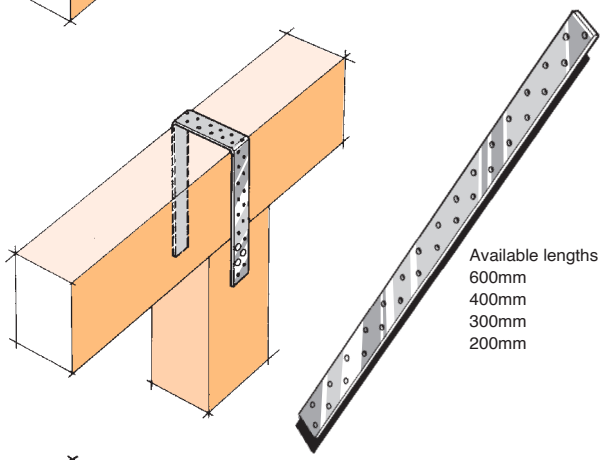


*SHEET BRACE STRAPS

0.9mm x 25mm Stainless Steel 304-2B

Punched strap available in lengths of 200mm, 300mm, 400mm and 600mm. Fixed with LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter.

Refer to brochure for application data.

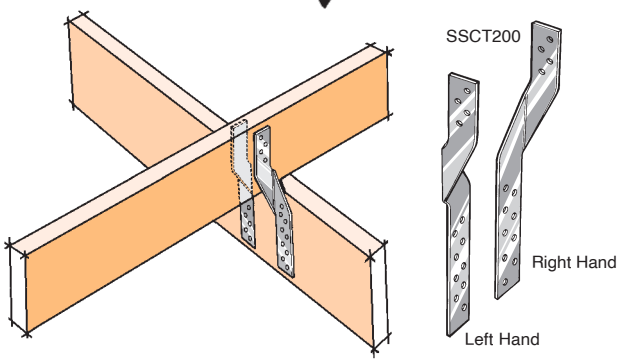


CEILING TIES SSCT160 & SSCT200 (LH or RH)

0.9mm Stainless Steel 304-2B

Overall length 160mm and 200mm. Fixed with LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter.

Refer to Characteristic Loadings Brochure for design values.



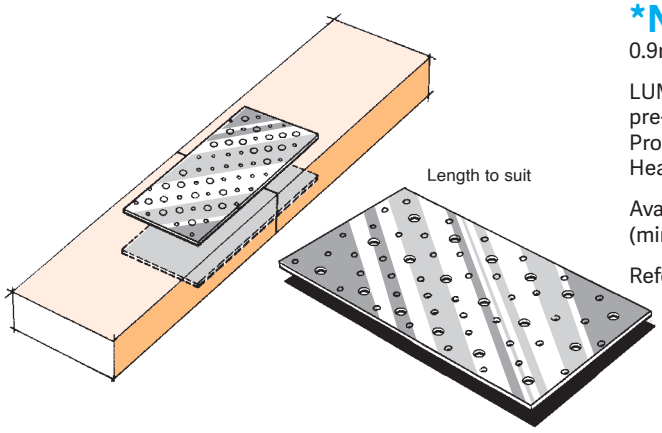
*NAILON PLATE

0.9mm x 110mm Stainless Steel 304-2B

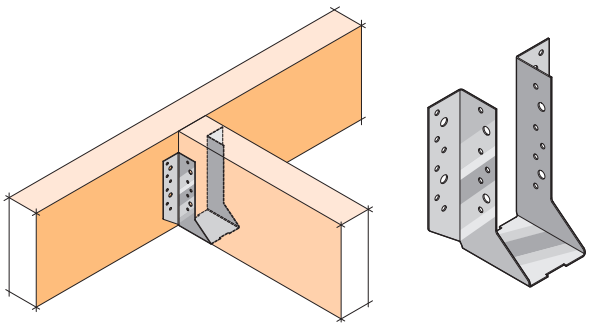
LUMBERLOK Nailon is produced as a flat stainless steel plate with pre-punched holes to accommodate LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter, or Type 17-12g x 35mm Hex Head Stainless Steel Screws.

Available as a flat plate, cut to required length, in 40mm increments. (min. 80mm, max. 2.4m length)

Refer to Characteristic Loadings Brochure for design values.



***Detailed product sheet available**



*JOIST HANGERS

0.9mm Stainless Steel 304-2B

Joist Hangers are designed for use where a strong, rigid joint is required between members meeting at 90˚, e.g. floor joist to beam/bearer, truss or rafter to beam.

i) **Joist Hanger 47 x 90**
Designed for use where gauged timber of 47mm width and up to 150mm deep.

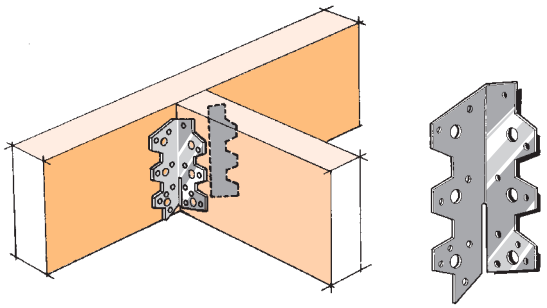
ii) **Joist Hanger 47 x 120**
Multi-use bracket suitable for gauged 47mm thick timber up to 200mm deep.

iii) **Joist Hanger 47 x 190**
Used for gauged 47mm thick timber up to 300mm deep.

iv) **Joist Hanger 70 x 180**
A special size joist hanger designed for gauged 69mm wide timbers.

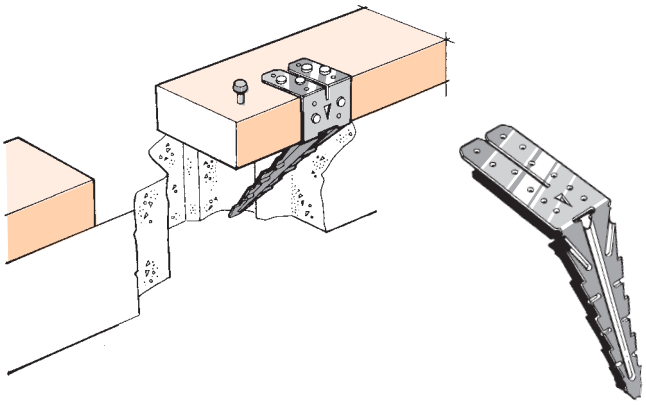
v) **Joist Hanger 95 x 165**
For use on gauged 94mm wide timber or double joists/trusses.

Note: Joist Hangers 52mm wide also available for rough sawn timber.



All of the above Joist Hanger connections should be fixed using LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter, or Type 17-12g x 35mm Hex Head Stainless Steel Screws.

Refer to Characteristic Loadings Brochure for design values.

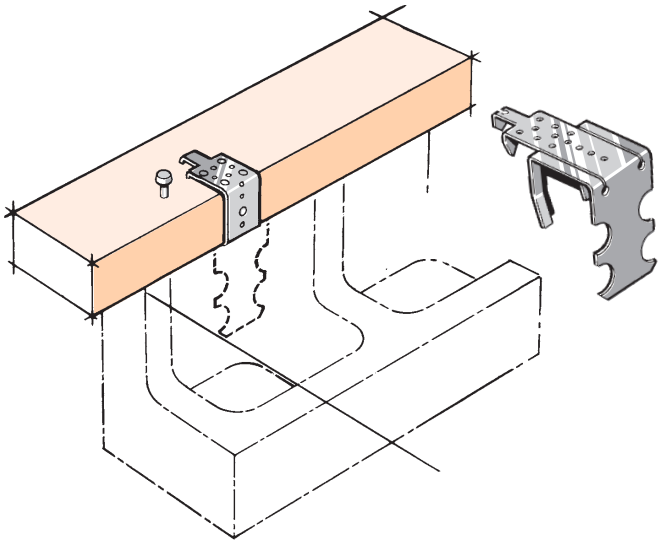


MULTIGRIP

0.9mm Stainless Steel 304-2B

LUMBERLOK Multigrips are a multipurpose product that can be bent into any of five combinations. One product provides for all alternatives with the bending slot enabling easy on-site bending. Size 125mm high x 38mm flanges. Fix with LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter, or Type 17-14g x 35mm Hex Head Stainless Steel Screws.

Refer to Characteristic Loadings Brochure for design values.



*BOTTOM PLATE FIXING ANCHOR

0.9mm Stainless Steel 304-2B

Ingenious product designed to fix timber wall frames down onto concrete slab floors. Bottom Plate Anchors are temporarily fixed to the perimeter boxing at 900mm centres max. prior to the concrete pour, and folded around the bottom plate when the frames are located. LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter are then applied to secure the frames in position. Alternative to concrete bolts, or the drilling of bottom plates and lifting of frame over cast-in steel rods.

Refer to brochure for application data.

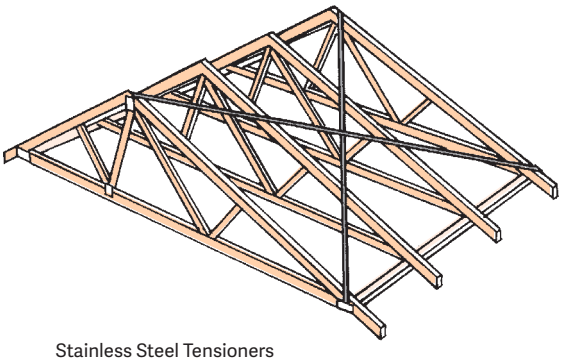
*HEADER BLOCK ANCHOR

0.9mm Stainless Steel 304-2B

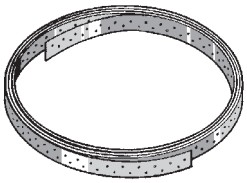
This product has been developed to complement the Bottom Plate Anchor, where concrete header blocks are used to form the concrete slab perimeter. The product is clipped onto the block edge at 600mm centres max. and left until the slab is poured and frames ready to stand up.
The tongue is then lifted up off the surface and folded around the bottom plate for nailing using LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter.

Refer to brochure for application data.

***Detailed product sheet available**



Stainless Steel Tensioners not available



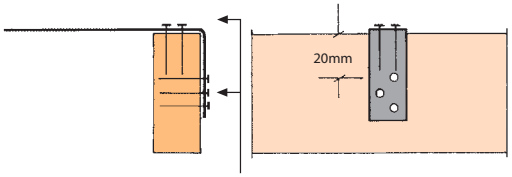
STRIP BRACE

0.9mm x 25mm Stainless Steel 304-2B

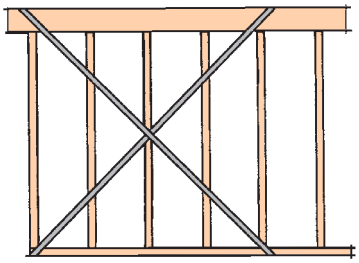
Strip Brace is supplied in 10m and 30m coils for use as bracing or in short lengths as a jointing material.
Strip Brace provides an ideal bracing system for walls, or roof plane. One crossed pair of strips may be used in each location where a diagonal brace is required. Fix using 5 x LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter at each end if strip is folded over timber face. Otherwise use 8 nails each end.

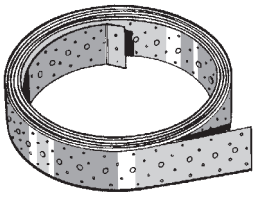
Stainless Steel tensioners are not available so tension must be provided during installation phase.

Refer to Characteristic Loadings Brochure for design values.



2 nails top edge, 3 nails vertical face (not in same line)





*MULTI-BRACE

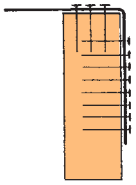
0.9mm x 53mm Stainless Steel 304-2B

This product has been developed as a bracing element for commercial building situations as an alternative to steel rod or timber braces. Coils are available in lengths of 10m, 15m and 30m, punched to allow easy fixing. Fix using 11 x LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter at each end if Multi-Brace is folded over timber face. Otherwise use 15 nails each end.

Stainless Steel tensioners are not available so tension must be provided during installation phase.

Refer to Characteristic Loadings Brochure for design values.

Stainless Steel Tensioners not available



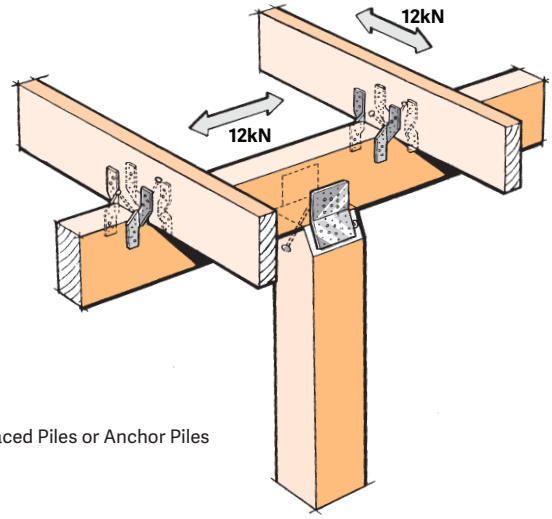
3 nails top edge,
8 nails vertical face
(not in same line)

*12kN & 6kN PILE FIXINGS

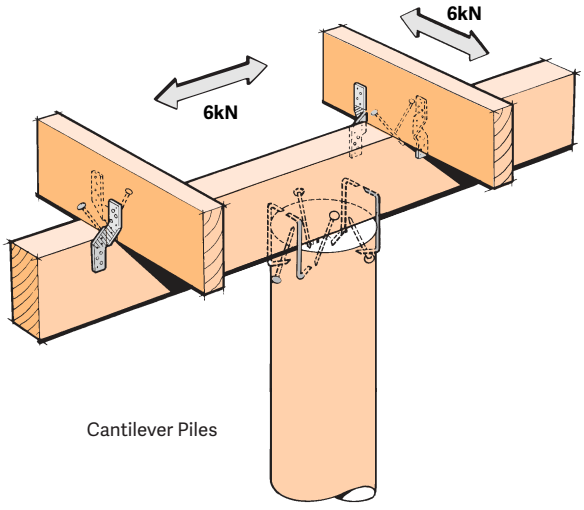
Both these products comply with NZS 3604: 2011 as a fixing method for timber piles to bearers to joists. The 12kN product pack is suitable for both Anchor and Brace pile situations whilst the 6kN pack is used with cantilever piles. Manufactured in stainless steel to suit high corrosive environments. Packs are supplied inclusive of all necessary nails.

12kN Retro Subfloor Fixings and Ordinary Pile Fixings also available in Stainless Steel.

Refer to brochure for application data.

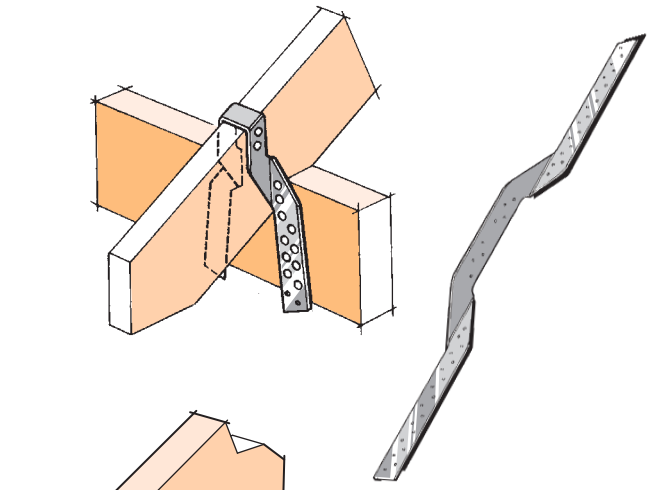


Braced Piles or Anchor Piles



Cantilever Piles

***Detailed product sheet available**

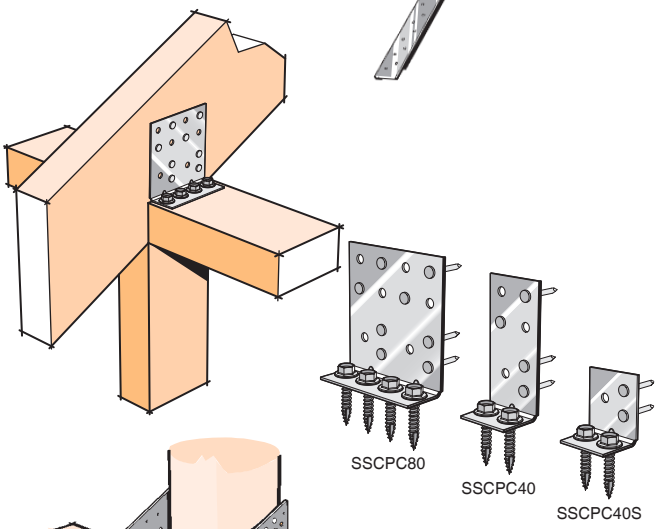


CYCLONE TIES SSCT400 & SSCT600

0.9mm Stainless Steel 304-2B

Overall length 400mm and 600mm – Designed specifically for fixing down rafters or purlins in high wind situations. These are produced in straight pre-twisted lengths which are then folded over timber members on-site, accommodating various width purlins or rafters. Fix with LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter.

Refer to Characteristic Loadings Brochure for design values.

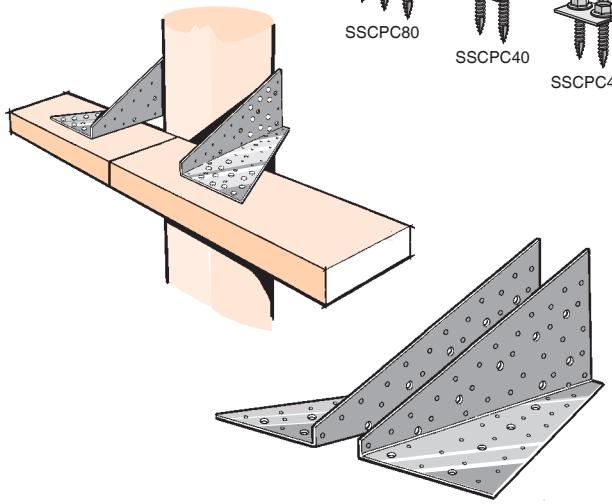


*CONCEALED PURLIN CLEATS SSCPC40, SSCPC80, SSCPC40S

1.5mm Stainless Steel 304-2B

CPC cleats provide an excellent purlin/rafter fixing in exposed situations, resisting any wind uplift.
The cleats can also be used for exposed rafter to ridge beam connections. Fixed with Type 17-14g Hex Head Stainless Steel Screws and LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter (not supplied with product).

Refer to Characteristic Loadings Brochure for design values.

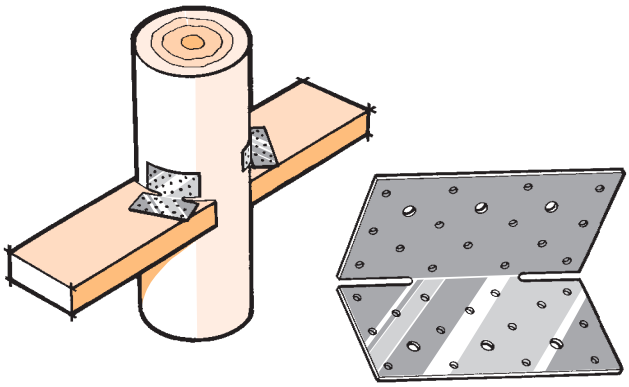


DIAGONAL CLEAT SSN21 (LH or RH)

0.9mm Stainless Steel 304-2B

This diagonally folded Nailon Plate 240mm long, provides a solution for fixing and aligning girts to timber poles.
Can also be used for fixing purlins to rafters in high wind uplift situations, or to provide a strong 90˚ butt joint for large timber sizes. Fixed with LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter, or Type 17-12g x 35mm Stainless Steel Hex Head Screws.

Refer to Characteristic Loadings Brochure for design values.

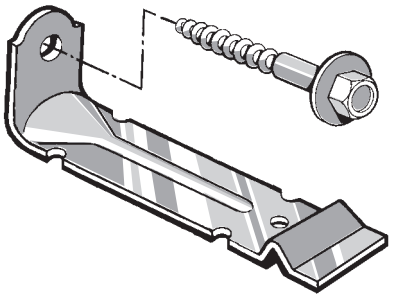


GIRT PLATE

0.9mm Stainless Steel 304-2B

Specifically designed for girt to pole fixing, as per Farm Building Designs. 120mm long Nailon Plate, slit and pre-folded to 90˚. Fixed with min. 8 x LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter per flange (16 nails/cleat), or 3 x Type 17-14g x 35mm Hex Head Stainless Steel Screws per flange (6 screws/cleat).

***Detailed product sheet available**

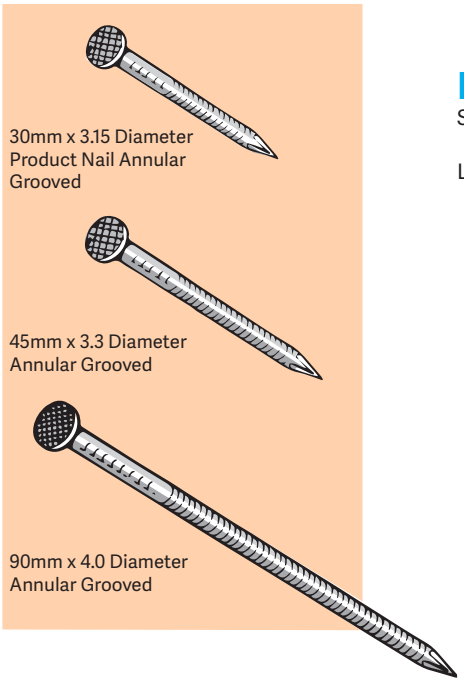


*SCREW TIE

Stainless Steel 316

Meets NZS 3604:2011 and AS/NZS 2699.1:2000. This product is used to tie brick veneer to timber framework using a Type 17-12g x 35mm Hex Head Stainless Steel Screw. The actual 'Tie' is available in 85mm and 105mm lengths to suit various cavity sizes and brick widths.
Suitable for all timber including dry stress graded 90mm x 35mm studs.

Refer to brochure for application data.



30mm x 3.15 Diameter Product Nail Annular Grooved

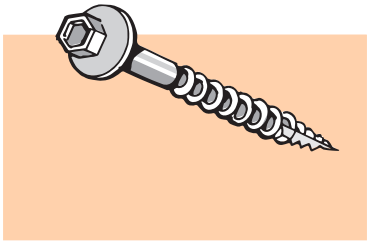
45mm x 3.3 Diameter Annular Grooved

90mm x 4.0 Diameter Annular Grooved

PRODUCT NAILS (ANNULAR GROOVED)

Stainless Steel 304

LUMBERLOK Product Nails	30mm x 3.15mm diameter F.H. (500gm bags & 2kg packs)
	45mm x 3.3mm diameter F.H. (500gm bags)
	90mm x 4.0mm diameter F.H. (1kg bags)



SCREWS

Type 17-12g x 35mm, 14g x 35mm & 14g x 75mm Hex Head Stainless Steel Screws.
Available in bags of 100.

***Detailed product sheet available**

May 2023

PRODUCT STATEMENT

FOR

LUMBERLOK® TIMBER CONNECTORS

This document is issued by MiTek New Zealand Limited for the purpose of informing users of **LUMBERLOK** Connectors as to the appropriate conditions under which they are to be used and their durability, as required by the New Zealand Building Code, Clause B2, Durability.

1. PRODUCT DESCRIPTION

The **LUMBERLOK** Connector is a metal plate connector manufactured from pre-galvanised steel (Z275) coil or wire. A selection of **LUMBERLOK** products is also available in stainless steel Grade 304-2B.

2. PRODUCT USE

LUMBERLOK Connectors are designed and manufactured for use in connecting timber to timber, timber to steel, and timber to concrete, and as braces and supports for various types of timber construction.

LUMBERLOK Connectors should be used only for the purpose for which each of them is designed and manufactured in accordance with technical information supplied. In case of doubt as to use, MiTek New Zealand Limited should be contacted for guidance.

3. HANDLING, STORAGE, AND INSTALLATION

Pending use, **LUMBERLOK** Connectors should be stored in a weatherproof environment, protected from weather and moisture, remain in original packaging and be handled in such a manner as to avoid damage to the galvanised surface.

Structures incorporating **LUMBERLOK** Connectors should also be handled and installed in such a manner as to avoid stress or damage to the connector.

4. DURABILITY

This Product Statement is to be read in conjunction with the MiTek Durability Product Selection and Durability Flow Chart in Section 4 of the current MiTek Structural Fixings On-Site Guide. These selection charts are an alternative solution to Table 4.1 NZS 3604:2011.

When used, handled, stored and installed in accordance with the above conditions **LUMBERLOK** Connectors will meet the NZBC Clause B2 requirement for 50 years life expectancy.

5. GENERAL

This statement is limited to the use of **LUMBERLOK** Connectors in New Zealand. No statement, representation or warranty is made or given in relation to any other country.

LUMBERLOK makes and gives no statement, representation, or warranty except as expressly set out in this statement and all conditions, statements, representations, or warranties implied by law or trade custom are excluded.

Correspondence from:

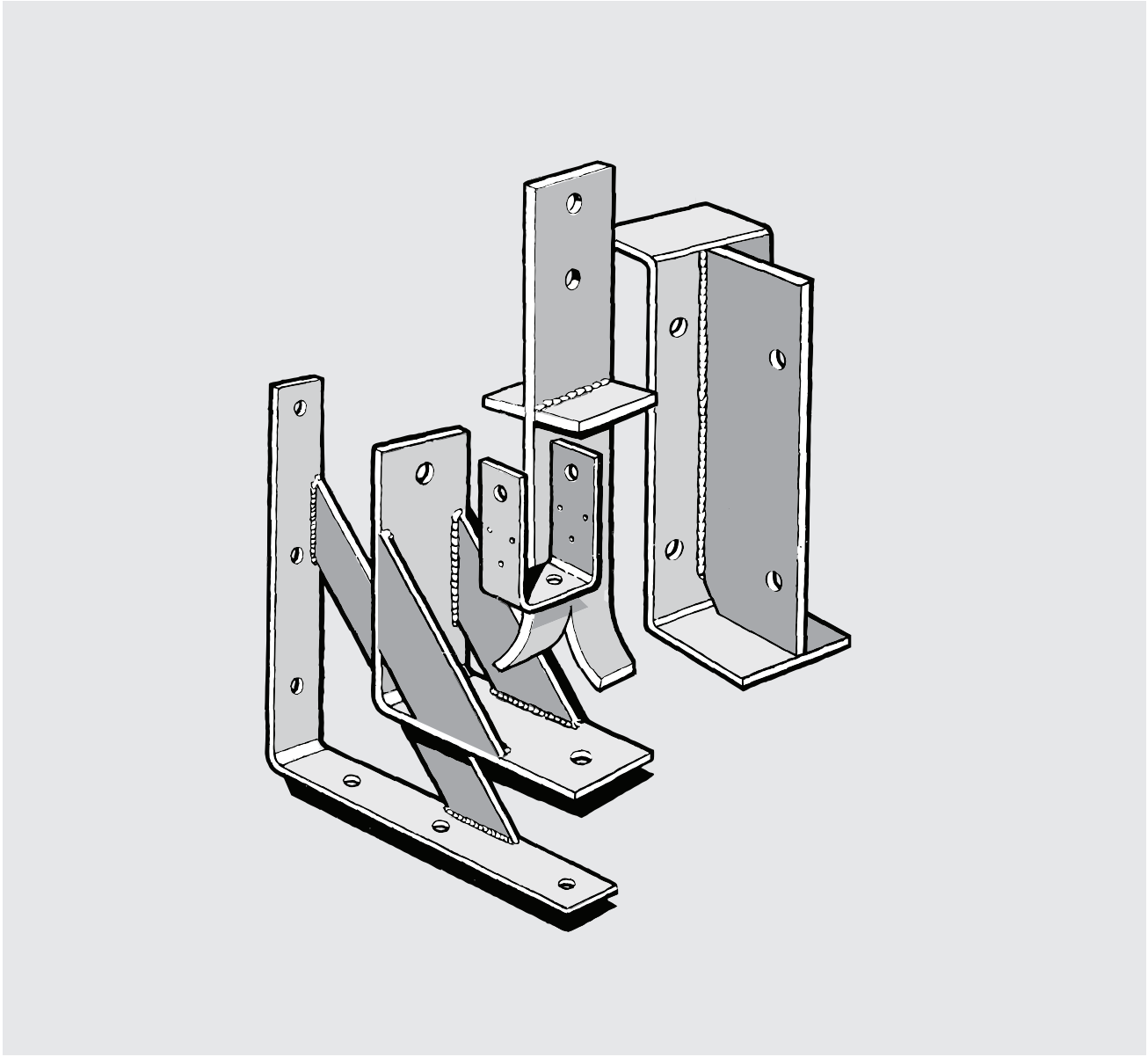
AUCKLAND
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
Phone: 09-274 7109

CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03-348 8691

MITEKNZ.CO.NZ

MiTek® BOWMAC®

STRUCTURAL BRACKETS CATALOGUE



Superior Quality - Hot Dip Galvanised - Heavy Duty
Timber to Timber - Timber to Concrete - Timber to Steel

The BOWMAC product range is designed to cut building costs. The extensive range of brackets suits all types of timber construction, and provides the designer and builder with a versatile, economic and very extensive joining system.

BOWMAC Brackets are available from leading Builders Supply Merchants and Hardware outlets throughout New Zealand.

DESCRIPTION

The BOWMAC product range of fixing brackets, supports and braces is specifically designed for use in all types of timber construction. All products utilise Grade 300 steel, and rigorous quality control ensures a quality product.

STANDARDS

Applicable Standards are NZS 3603 and NZS 3604:2011.

GALVANISING

All components are hot dip galvanised to AS/NZS 4680 to 600g/m^2.

DESIGN LOADINGS

These can be derived from the characteristic strength of bolts in timber, using the relevant design code. Recommended loadings for pole to brace cleats B128, B145 & B155 only are shown here.

STANDARD PRODUCT RANGE

This catalogue details the standard range of BOWMAC products. Refer to separate brochure for Stainless Steel 304-2B product.

SPECIAL PRODUCTS

BOWMAC also manufactures custom-made products to suit specific requirements. A lead time, by discussion, is required to allow for manufacture.

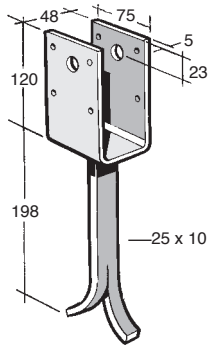
AVAILABILITY

The BOWMAC product range is available from leading Builders Supply Merchants throughout New Zealand.

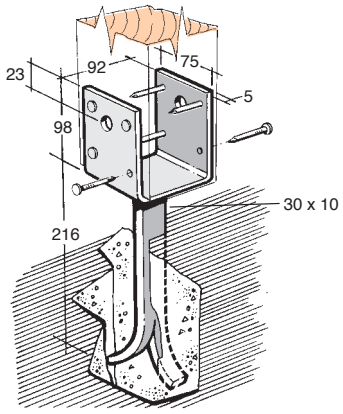
END USE

The purchaser is responsible for checking the suitability of any component for its intended use.

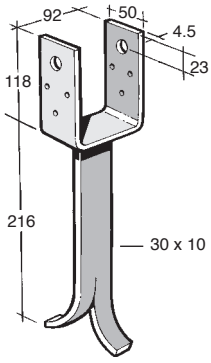
POST AND BEARER BRACKETS



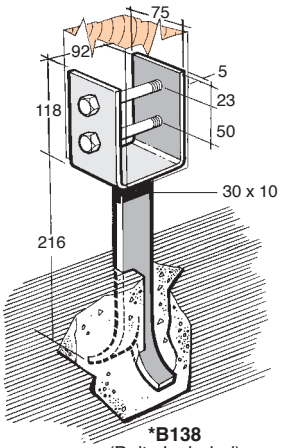
B132
(Nails Included Only)



B134
(Nails Included Only)

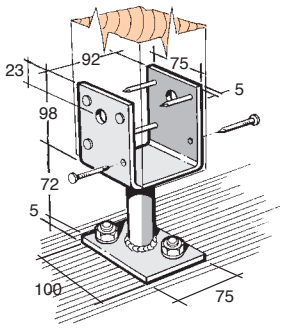


***B135**
(Nails & Bolt Included)

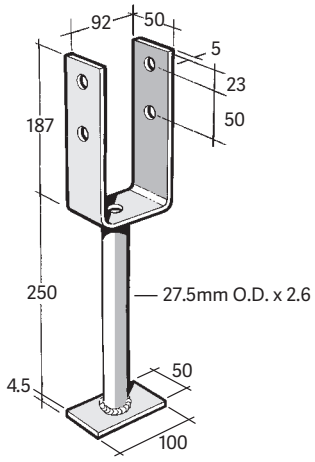


***B138**
(Bolts Included)

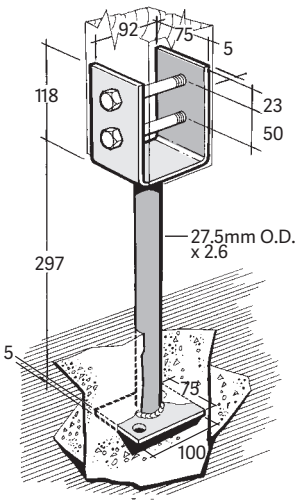
*Similar also available in stainless steel 304-2B Refer to brochure



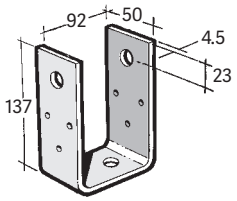
B12
(Nails Included Only)



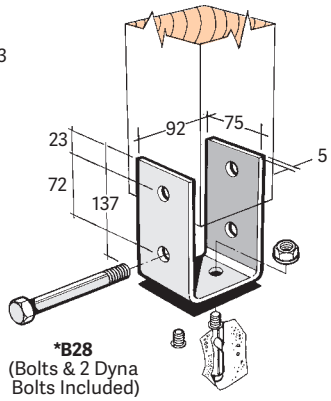
B16
(Bolts Not Included)



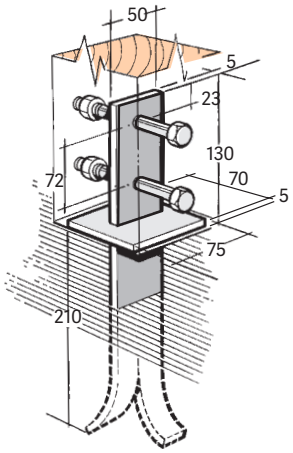
B18
(Bolts Included)



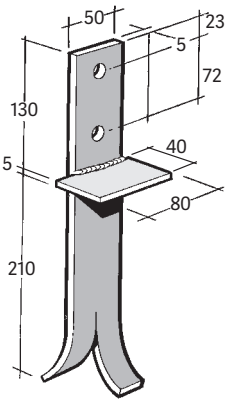
***B25**
(Nail, Bolt & 2 Dyna
Bolts Included)



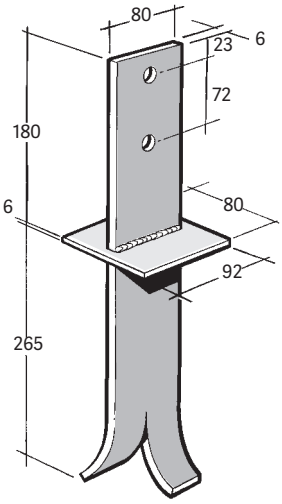
***B28**
(Bolts & 2 Dyna
Bolts Included)



B195



B196



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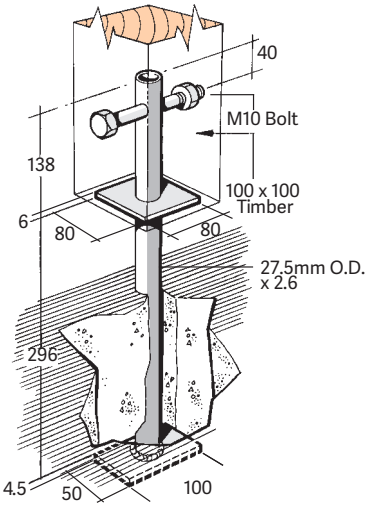


B198

BOLT & NAIL SIZES

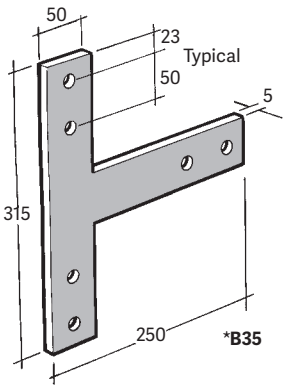
FIXING NOTE

All bolt holes to accommodate M12 Bolts unless noted otherwise. Nail holes to accommodate nails as supplied.

BOLTS NOT INCLUDED UNLESS NOTED

*Similar also available
in stainless steel 304-2B.
Refer to brochure

STRAPS



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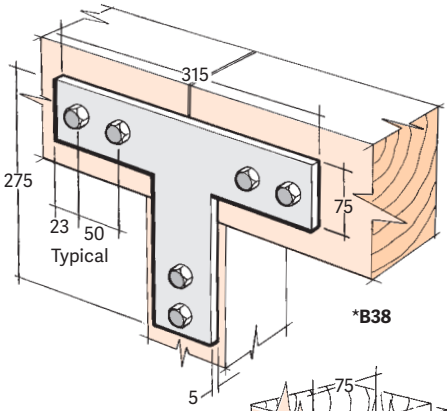
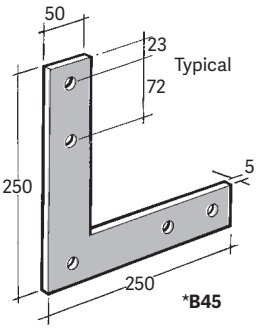


***B38**



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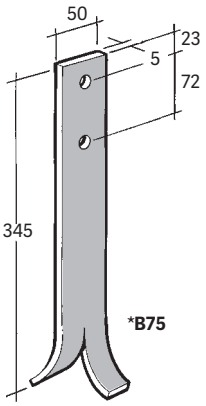
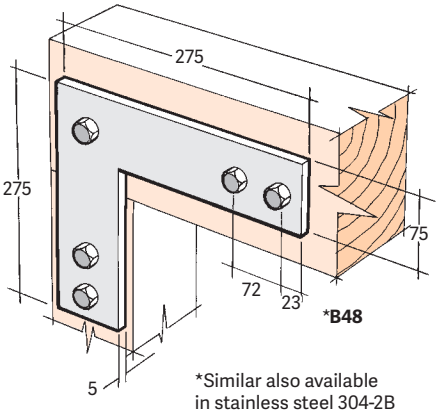
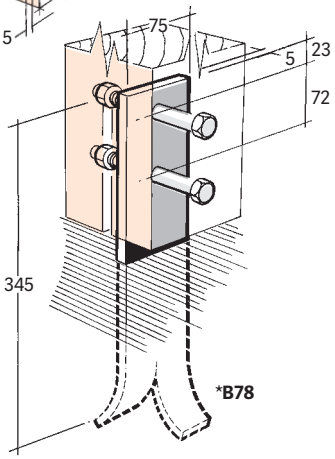


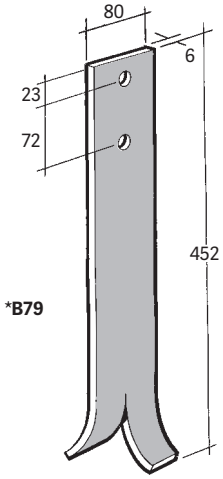
***B75**



***B48**



***B78**



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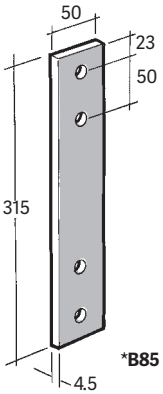
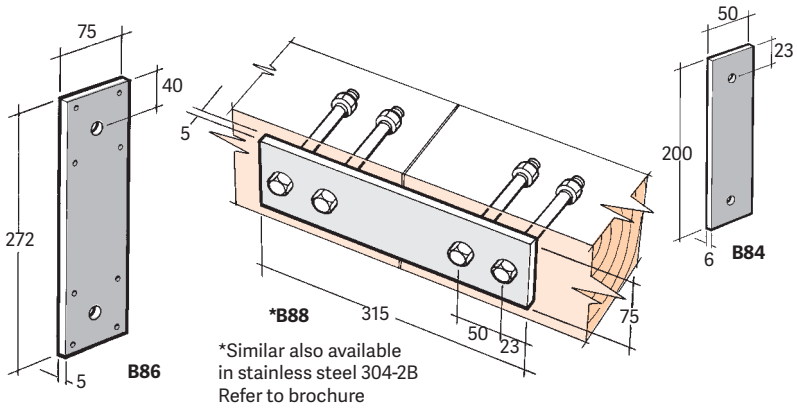


***B85**

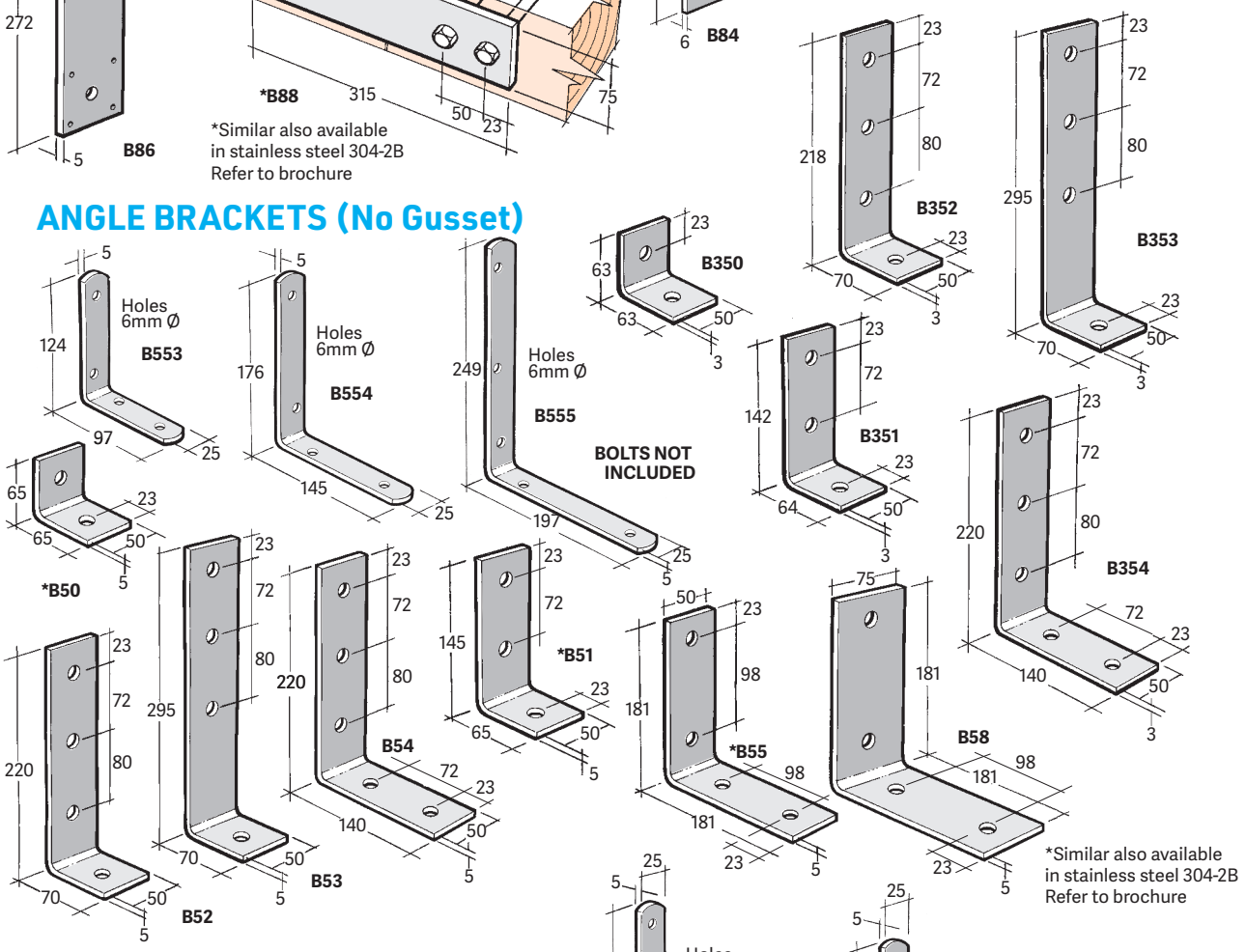
*Similar also available
in stainless steel 304-2B
Refer to brochure



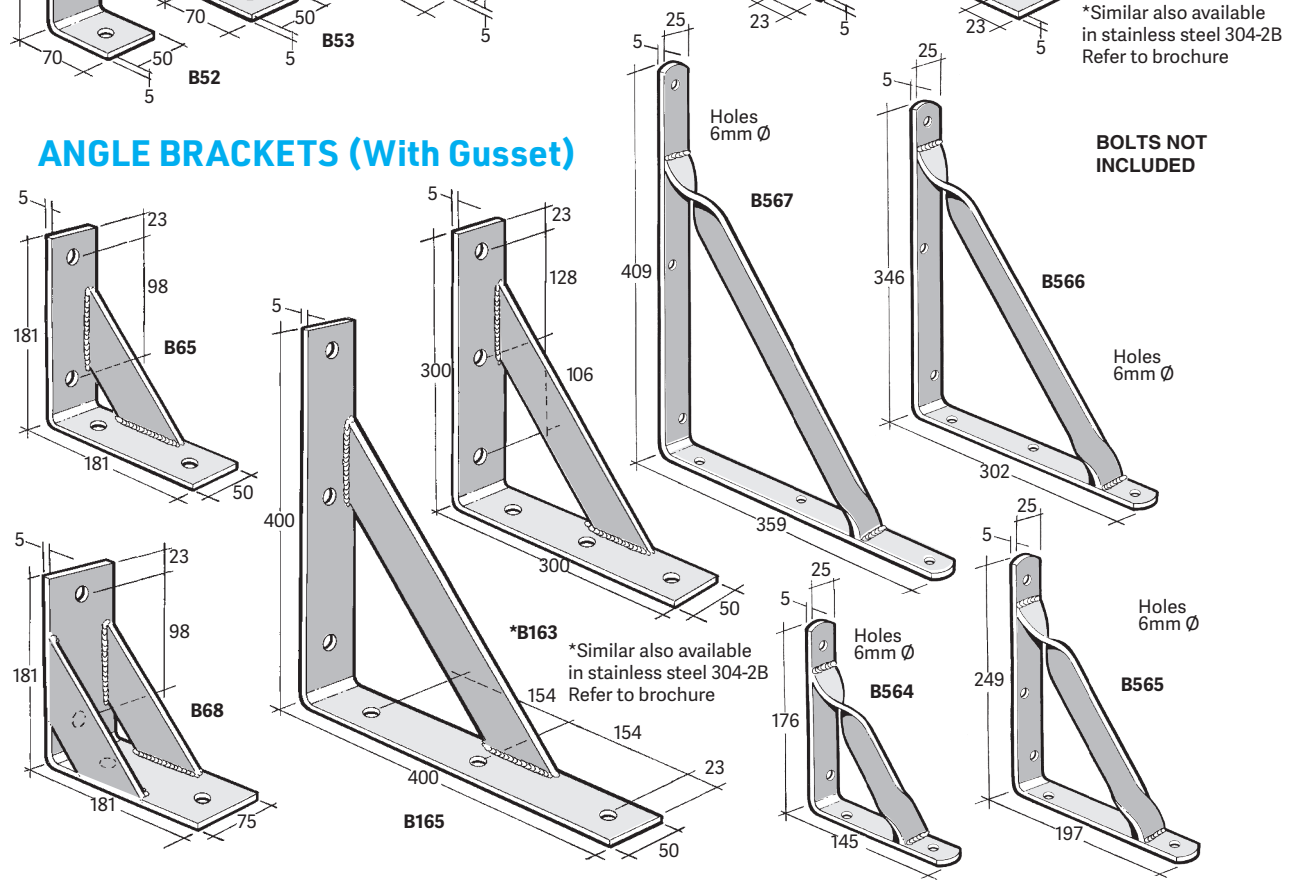
BOLT & NAIL SIZES

All bolt holes to accommodate M12 Bolts unless noted otherwise.

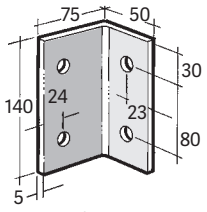
ANGLE BRACKETS (No Gusset)



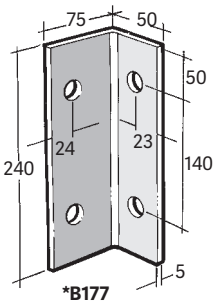
ANGLE BRACKETS (With Gusset)



ANGLES

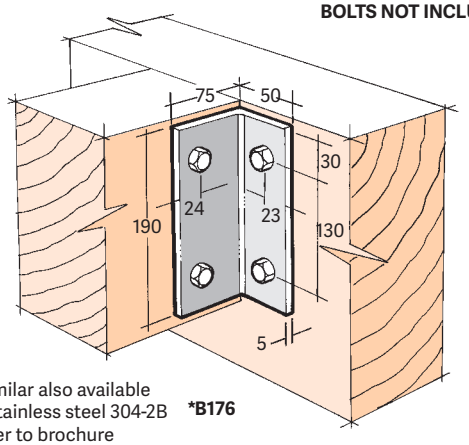


*B175

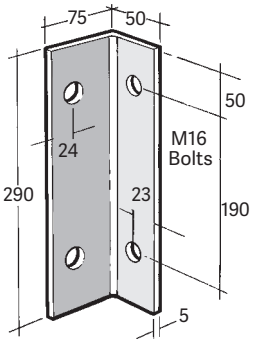


*B177

BOLTS NOT INCLUDED



*B176



B178

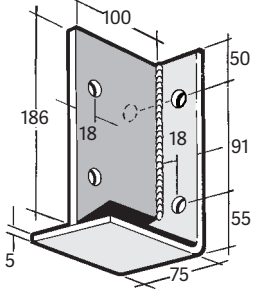
BOLT SIZES

All bolt holes to accommodate M12 Bolts unless noted otherwise.

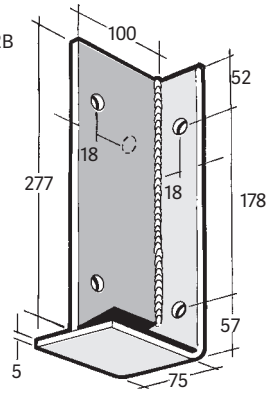
*Similar also available in stainless steel 304-2B Refer to brochure

Z & L BEAM SUPPORTS

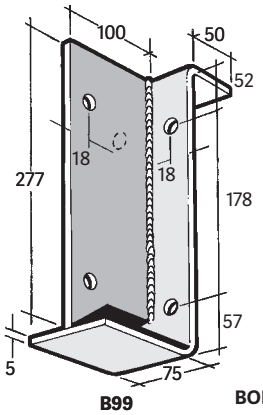
*Similar also available in stainless steel 304-2B Refer to brochure



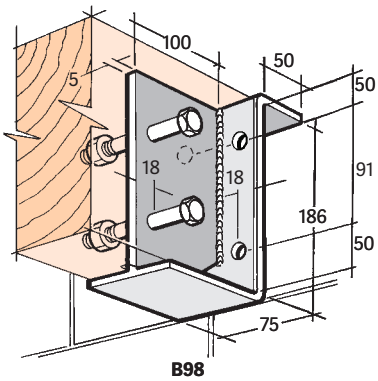
*B108



*B109



B99



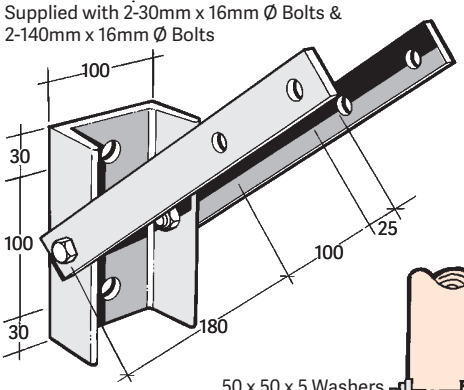
B98

BOLTS NOT INCLUDED

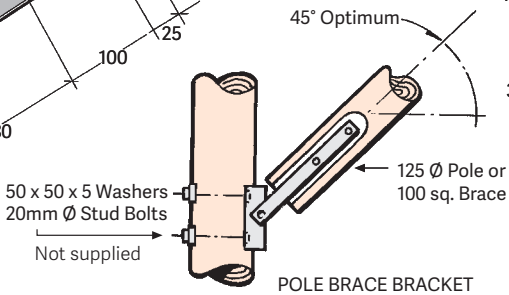
*B155 POLE BRACE BRACKET

Ex 50 x 5mm Plate 100 x 50 Channel Spacer. Supplied with 2-30mm x 16mm Ø Bolts & 2-140mm x 16mm Ø Bolts

*Similar also available in stainless steel 304-2B Refer to brochure

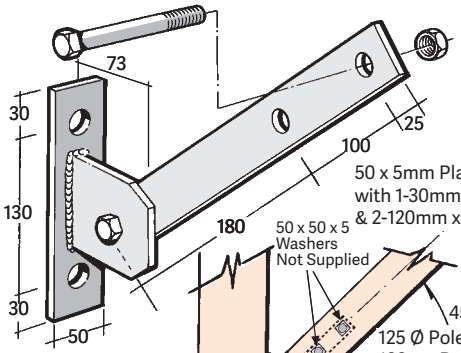


42kN CHARACTERISTIC LOAD TENSION AND COMPRESSION



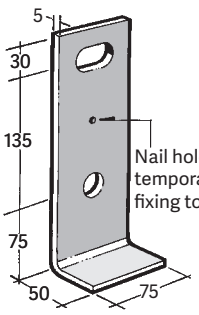
POLE BRACE BRACKET

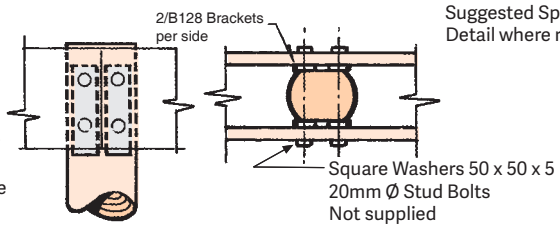
*B145 POLE BRACE BRACKET



30kN CHARACTERISTIC LOAD TENSION AND COMPRESSION

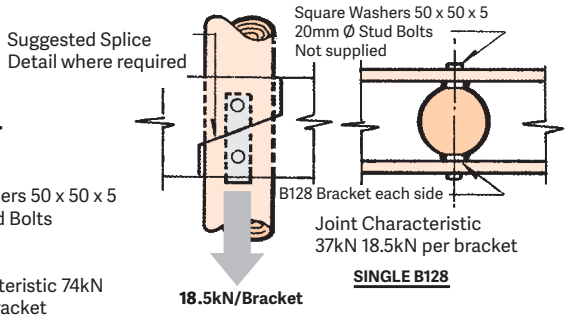
*B128 POLE BEAM BRACKET





DUAL B128

Joint Characteristic 74kN
18.5kN per bracket

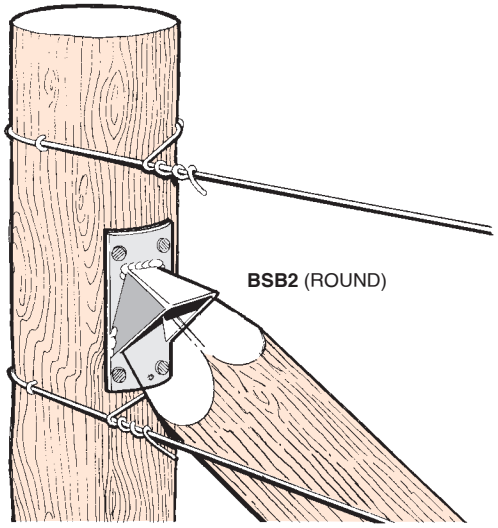


18.5kN/Bracket

SINGLE B128

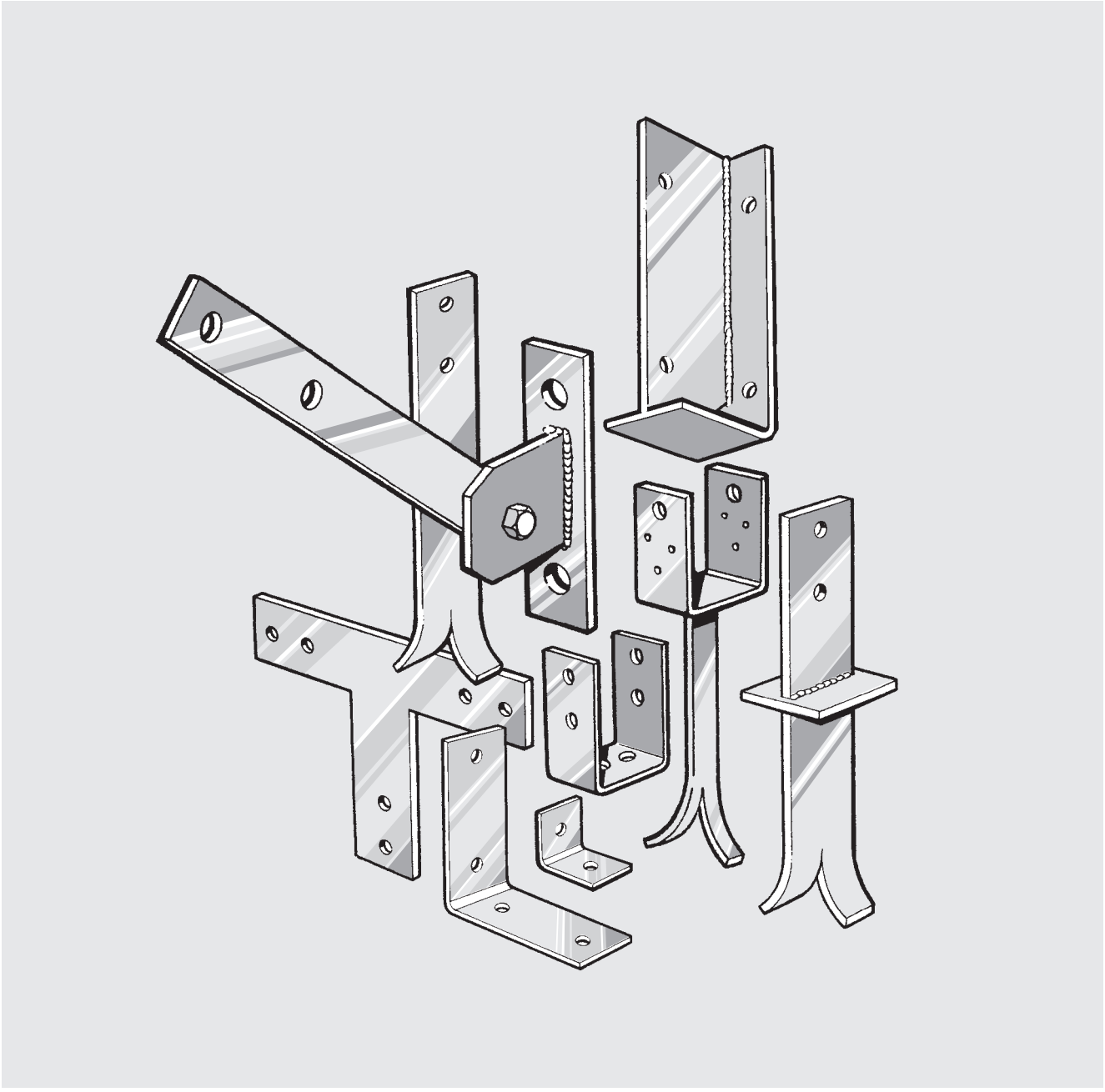
POLE CONSTRUCTION DETAILS
(BOLTS & WASHERS NOT INCLUDED)

FENCE STAY BRACKET



MiTek® BOWMAC®

STAINLESS STEEL STRUCTURAL BRACKETS CATALOGUE



The BOWMAC Stainless Steel range provides a system of timber fixing brackets for use in highly corrosive or aesthetic environments. The Stainless Steel range supplements the extensive Hot Dip Galvanised range of BOWMAC Brackets.

BOWMAC Stainless Steel Brackets are available from leading Builders Supply Merchants and Hardware outlets throughout New Zealand.

PRODUCT RANGE This catalogue details the Stainless Steel 304 range of BOWMAC products. Refer to separate brochure for the Hot Dip Galvanised range of BOWMAC products.

STANDARDS Applicable Standards are NZS 3603 and NZS 3604:2011 - Section 4 Durability.

DESIGN LOADING These can be derived from the characteristic strength of bolts in timber, using the relevant design code NZS 3603.

DURABILITY The selection of BOWMAC Stainless Steel brackets should be made in conjunction with the MiTek Durability Product Selection and Durability Flow Charts in Section 4 of the current MiTek Structural Fixings On-Site Guide. These selection charts are an alternative solution to Table 4.1 NZS 3604:2011.

The recommendation and use of BOWMAC Stainless Steel brackets prescribed in these selection charts is based on supporting advice from Les Boulton & Associates - Materials and Corrosion Consultants in their report # 99267.

When used, handled and installed in accordance with the above conditions, BOWMAC Stainless Steel brackets will meet NZBC Clause B2 for 50 years durability performance requirements.

Depending on specific weather exposure and salt spray environments, there may be evidence of 'tea staining' on the surface of Stainless Steel brackets.

Tea staining is a visual issue only and DOES NOT affect the structural integrity of the bracket. To minimise this occurrence, it is suggested that a regular washing / maintenance cycle be implemented using warm water with a mild detergent and a cold fresh water rinse.

It is NOT advisable for any BOWMAC Stainless Steel products to be painted over as this may affect the natural anti-corrosive characteristics of stainless steel.

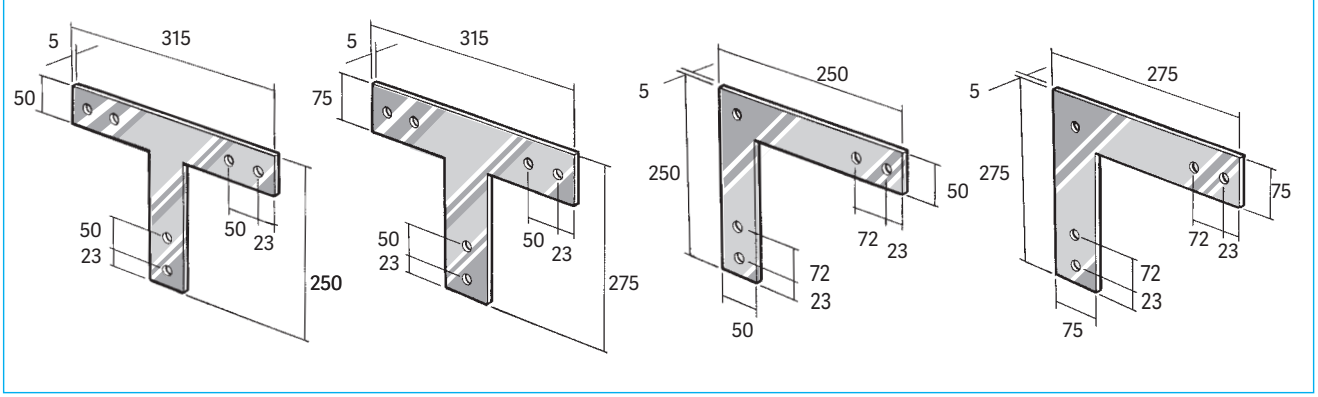
CUSTOM PRODUCTS BOWMAC also manufactures custom-made products to suit specific requirements, using Stainless Steel 304. A lead time by discussion is required to allow for manufacture.

AVAILABILITY Stainless Steel BOWMAC Brackets can be purchased from Builders Supply Merchants or indented through the merchant from our Auckland and Christchurch warehouses.

END USE The purchaser is responsible for checking the suitability of any component for its intended use.

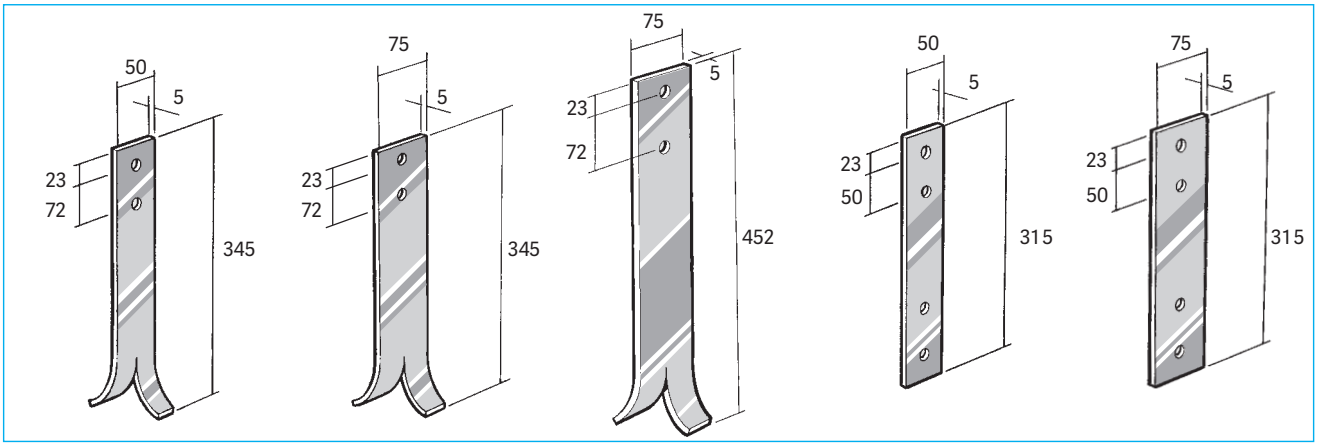
STRAPS

BS35 BS38 BS45 BS48



Holes for M12 Bolts

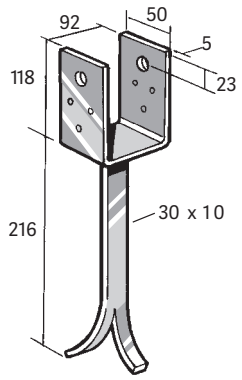
BS75 BS78 BS79 BS85 BS88



Holes for M12 Bolts

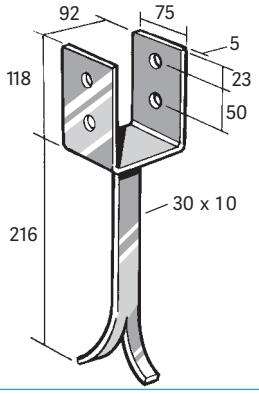
POST AND BEARER BRACKETS

BS135



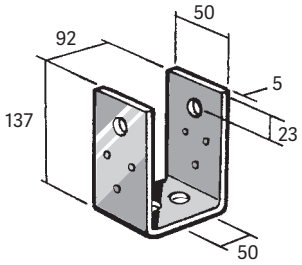
M12 Bolt and Nails Included

BS138



2 – M12 Bolts Included

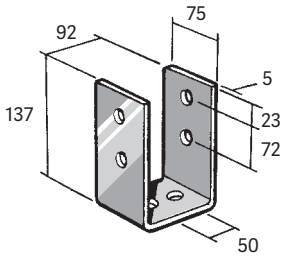
BS25



M12 Bolt and Nails Included

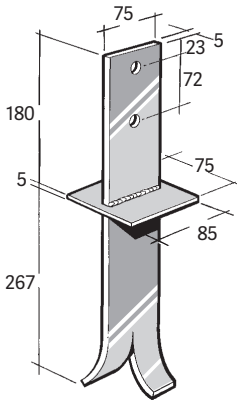
POST AND BEARER BRACKETS — POLE BRACKET

BS28



2 – M12 Bolts Included

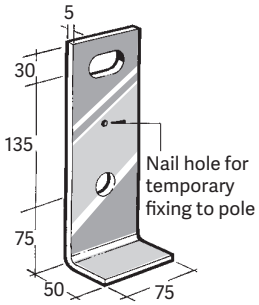
BS197



Bolts not included unless specified

Holes for M12 Bolts

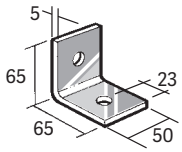
BS128



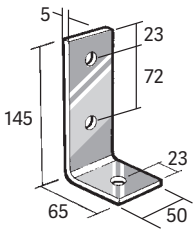
Holes for M20 Bolts

ANGLE BRACKETS

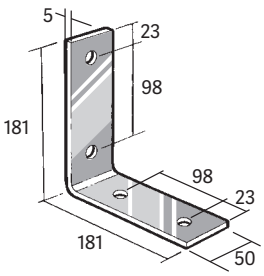
BS50



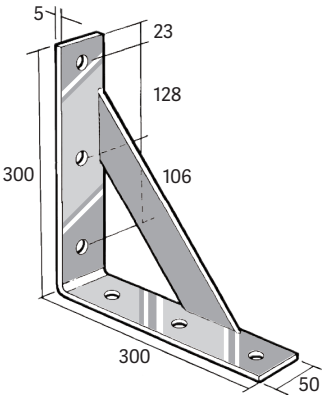
BS51



BS55



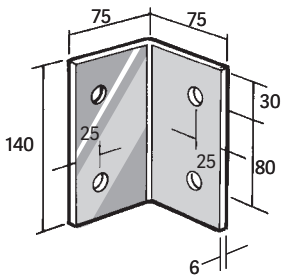
BS163



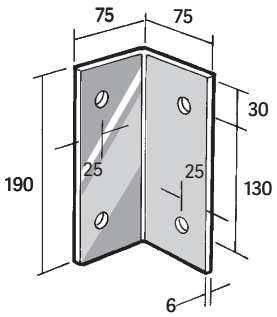
All Holes for M12 Bolts

ANGLES

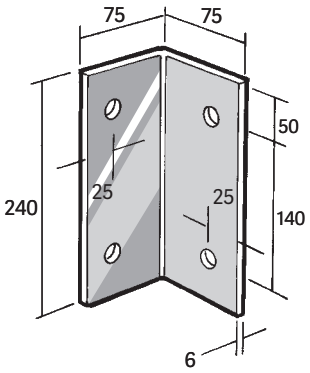
BS175



BS176



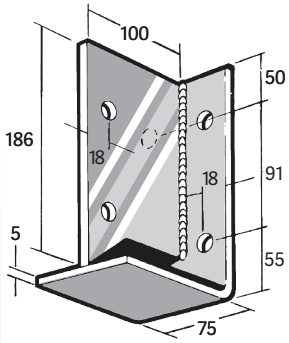
BS177



All Holes for M12 Bolts

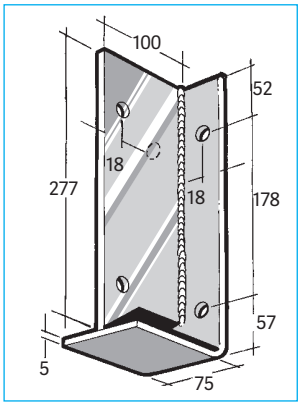
BEAM SUPPORTS

BS108



BEAM SUPPORTS

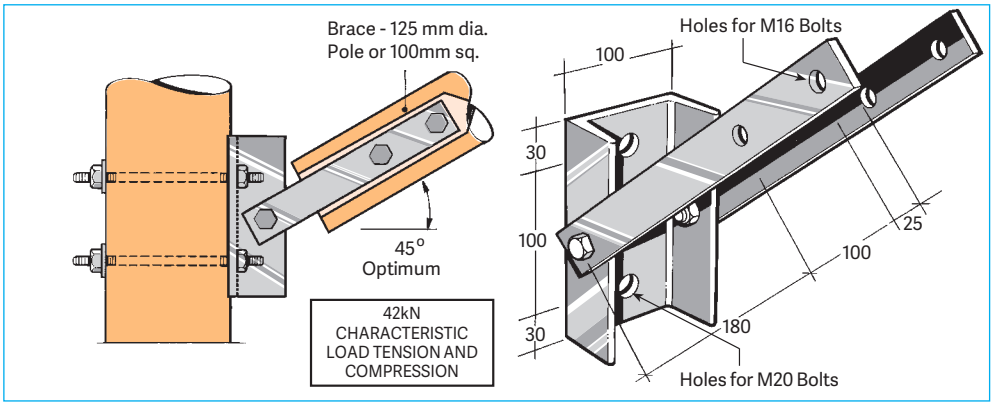
BS109



All Holes for M12 Bolts

POLE BRACE BRACKET

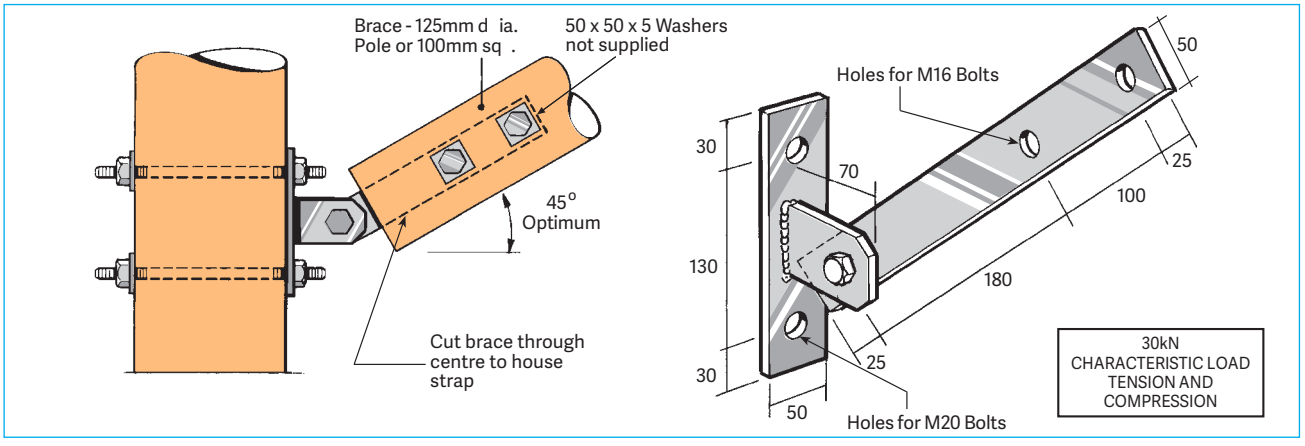
BS155



2 – M16 x 30mm Assembly Bolt only supplied

POLE BRACE BRACKET

BS145



1 – M16 x 30mm Assembly Bolt only supplied

MiTek®

May 2023

PRODUCT STATEMENT

FOR

BOWMAC® STRUCTURAL BRACKETS

This document is issued by MiTek New Zealand Limited for the purpose of informing users of **BOWMAC** Structural Brackets as to the appropriate conditions under which they are to be used and their durability, as required by the New Zealand Building Code, Clause B2, Durability.

1. PRODUCT DESCRIPTION

BOWMAC Structural Brackets are fixing brackets, supports and braces manufactured from steel hot dip galvanised after manufacture. A selection of **BOWMAC** Structural Brackets is also available in stainless steel Grade 304-2B.

2. PRODUCT USE

BOWMAC Structural Brackets are designed and manufactured for use in connecting timber to timber, timber to concrete, and timber to steel, and to provide structural support to timber constructions.

BOWMAC Structural Brackets should be used only for the purpose for which each of them is designed and manufactured in accordance with technical information supplied. In case of doubt as to use, MiTek New Zealand Limited should be contacted for guidance.

3. HANDLING, STORAGE, AND INSTALLATION

Pending use, **BOWMAC** Structural Brackets should be stored in a weatherproof environment, protected from weather and moisture, remain in original packaging and be handled in such a manner as to avoid damage to the galvanised surface.

Structures incorporating BOWMAC Structural Brackets should also be handled and installed in such a manner as to avoid stress or damage to the galvanised surface.

4. DURABILITY

This Product Statement is to be read in conjunction with the MiTek Durability Product Selection and Durability Flow Chart in Section 4 of the current MiTek Structural Fixings On-Site Guide. These selection charts are an alternative solution to Table 4.1 NZS 3604:2011.

When used, handled, stored and installed in accordance with the above conditions **BOWMAC** Structural Brackets will meet the NZBC Clause B2 for 50 years durability performance requirements.

5. GENERAL

This statement is limited to the use of **BOWMAC** Structural Brackets in New Zealand. No statement, representation or warranty is made or given in relation to any other country.

BOWMAC makes and gives no statement, representation, or warranty except as expressly set out in this statement and all conditions, statements, representations, or warranties implied by law or trade custom are excluded.

Correspondence from:

AUCKLAND
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
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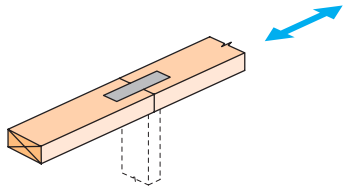
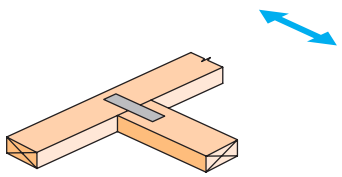
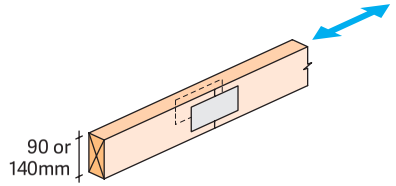
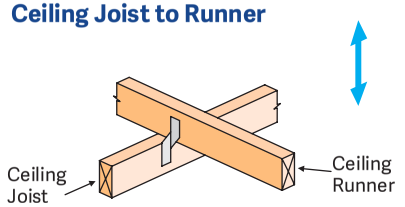
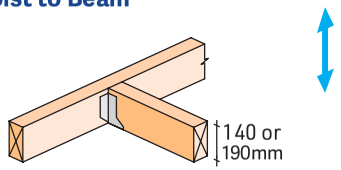
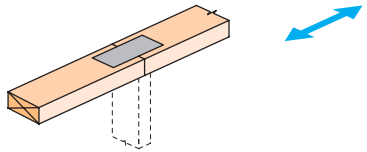
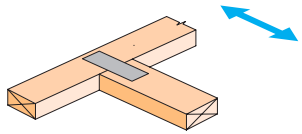
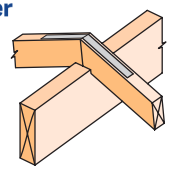
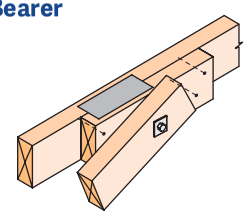
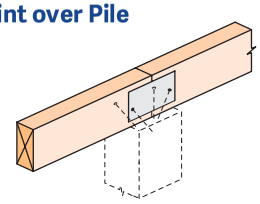
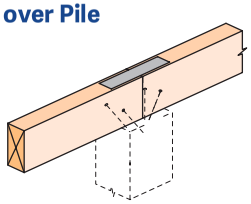
CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03-348 8691

MITEKNZ.CO.NZ

LUMBERLOK EASY-FIX

2023 EDITION

A SIMPLE ON-SITE GUIDE FOR 3kN, 6kN & 12kN LOADS AS SPECIFIED IN NZS 3604:2011

Fixing Load	Connection Type			
3kN	**Top Plate Joint over Stud**  Single Tylok 6T5 or Single Strap Nail Ref. Fig. 8.15 NZS 3604:2011	**Top Plate Joint**  Single Tylok 6T5 Ref. Fig. 8.16 NZS 3604:2011	**Hip Rafter & Ridge Board Joint**  Pair of Tylok 6T10 Ref. Fig. 10.2 NZS 3604:2011	**Ceiling Joist to Runner**  Single CT160 Ceiling Tie fully nailed with 30mm x 3.15 dia. Nails Ref. Fig. 10.10 NZS 3604:2011
6kN	**Joist to Beam**  JH47 x 120 Joist Hanger with 12 x 30mm x 3.15 dia. Nails (3 per flange) Ref. Fig. 7.7 NZS 3604:2011	**Top Plate Joint over Stud**  Single Tylok 6T10 or Single PLATE-LOK Ref. Fig. 8.15 NZS 3604:2011	**Top Plate Joint**  Single Tylok 6T10 or Single PLATE-LOK Add a pair of LUMBERLOK Blue Screws on sides of top plate for Douglas fir and LVL8 only Ref. Fig. 8.16 NZS 3604:2011	**Rafter**  LUMBERLOK Sheet Brace Strap with 6 x 30mm x 3.15 dia. Nails each end Ref. Fig. 10.5 NZS 3604:2011
12kN	**Brace to Bearer**  Single Nailon Plate 1mm x 110 x 160mm with 12 x 30mm x 3.15 dia. Nails each side of joint Ref. Fig. 6.7 NZS 3604:2011	**Bearer Joint over Pile**  Single Nailon Plate 1mm x 160mm long. Fixed with 8 x 45mm x 3.55 dia. Spiral Nails per end (ex 12kN Pile Fixing Pack). No Nails within 18mm of timber edge or 45mm of end of timber. Plus 2 x 90mm skew nails per side Ref. Fig. 6.19 NZS 3604:2011	**Bearer Joint over Pile**  Single Nailon Plate 1mm x 160mm long. Fixed with 8 x 45mm x 3.55 dia. Spiral Nails per end (ex 12kN Pile Fixing Pack). No Nails within 18mm of timber edge or 45mm of end of timber. Plus 2 x 90mm skew nails per side Ref. Fig. 6.19 NZS 3604:2011	

MiTek® LUMBERLOK®

MiTek®

TIMBER CHARACTERISTIC STRENGTH
NZS 3603:1993 AMENDMENT 4

Structural Grades (as defined in NZS 3604:2011 Clause 1.3)
Timber properties are for dry in-service conditions m/c = 16%

Timber Grade	Bending Strength f_b (MPa)	Compress. Strength f_c (MPa)	Tensile Strength f_t (MPa)	Shear Strength f_s (MPa)	Modulus of Elasticity E (GPa)	Lower Bound Modulus of Elasticity E_{lb} (GPa)
SG6	10.0	15.0	4.0	3.8*	6.0	4.0
SG8	14.0	18.0	6.0	3.8*	8.0	5.4
SG10	20.0	20.0	8.0	3.8*	10.0	6.7

*f_s = 3.0MPa for Douglas Fir

Timber Sizes

Call Size	Gauged Kiln Dried Size (in mm) (Actual Size)	Rough Sawn (in mm) (Actual Size)
100 x 50	90 x 45	100 x 50
150 x 50	140 x 45	150 x 50
200 x 50	190 x 45	200 x 50
250 x 50	240 x 45	250 x 50
300 x 50	290 x 45	300 x 50
100 x 100	90 x 90	100 x 100
150 x 100	140 x 90	150 x 100
200 x 100	190 x 90	200 x 100
250 x 100	240 x 90	250 x 100
300 x 100	290 x 90	300 x 100

Note: It is common now to refer to the timber size as the Kiln Dried Size. Where the Call Size refers to the use of Rough Sawn timber the Actual Size then becomes the Call Size. The Actual Size is the size used in the design calculations.

DURABILITY PRODUCT SELECTION
ALTERNATIVE SOLUTION TO TABLE 4.1
NZS 3604:2011

Zones	Fixings	Environment	Product Option
All Zones	Nail plates and timber connectors All other structural fixings	Closed	GANG-NAIL and LUMBERLOK Standard Zinc Coated Product(1) BOWMAC Hot Dip Galvanised(3)
Zone D	Structural fixings	Sheltered and Exposed	LUMBERLOK Stainless Steel 304(2) BOWMAC Stainless Steel 304(2)
Zones B and C	Timber pile fixings MORE than 600mm from ground	Sheltered Subfloors vented 7000mm²/m² or less	LUMBERLOK Hot Dip Galvanised(4) BOWMAC Hot Dip Galvanised(3)
		Exposed Subfloors vented 7000mm²/m² or more	LUMBERLOK Stainless Steel 304(2) BOWMAC Hot Dip Galvanised(3)
	Timber pile fixings LESS than 600mm from ground	Sheltered and Exposed	LUMBERLOK Stainless Steel 304(2)
	All other structural fixings	Sheltered	LUMBERLOK Hot Dip Galvanised(4) BOWMAC Hot Dip Galvanised(3)
		Exposed	LUMBERLOK Stainless Steel 304(2) BOWMAC Hot Dip Galvanised(3)

1. All GANG-NAIL®, LUMBERLOK® and BOWMAC® product complies with Table 4.2 NZS 3604:2011.
2. LUMBERLOK and BOWMAC Stainless Steel product is 304 grade. Regular washing and maintenance will positively affect long term appearance of these items.
3. BOWMAC Hot Dip Galvanised product is to AS/NZS 4680 to 600g/m². Treated timber should have 2 - 3 weeks curing time to allow chemical preservatives to be "fixed" and for moisture content to be 20% or less. Apply grease to bolts for additional protection.
4. LUMBERLOK Hot Dip Galvanised product is to AS/NZS 4680 to 390g/m²

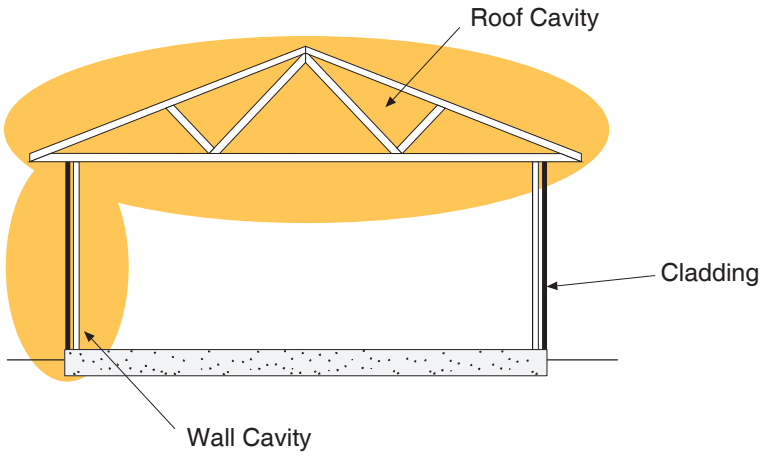
NOTES

Items above refer to GANG-NAIL®, LUMBERLOK® and BOWMAC® product marketed for specific applications with a requirement to last 50 years as an alternative solution to Table 4.1 NZS 3604:2011.

The MiTek New Zealand Limited Durability Flow Chart for product selection is derived from this alternative solution to Table 4.1 NZS 3604:2011. Definitions of zones and environments are derived from NZS 3604:2011.

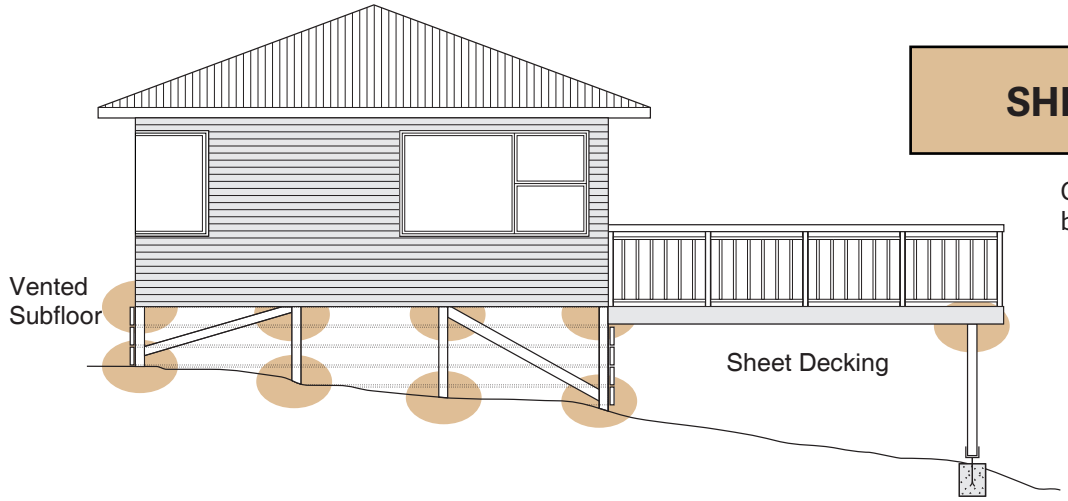
Supporting documents available for this alternative solution:-
Les Boulton and Associates. Materials and Corrosion Consultants Report 00330: Evaluation of Bracket Durability; NZS 3604, Report 01372: Corrosion of BOWMAC Fixings in Treated Timber and Report 181217: Durability Appraisal of BOWMAC Structural Brackets
Optimech Services Metallurgical Consultancy Test Certificate Reports No: 00-134 BOWMAC and No: 01-023 LUMBERLOK Determination of Galvanising Coating thickness.
Product Statements for LUMBERLOK and BOWMAC products.

DURABILITY FLOW CHART



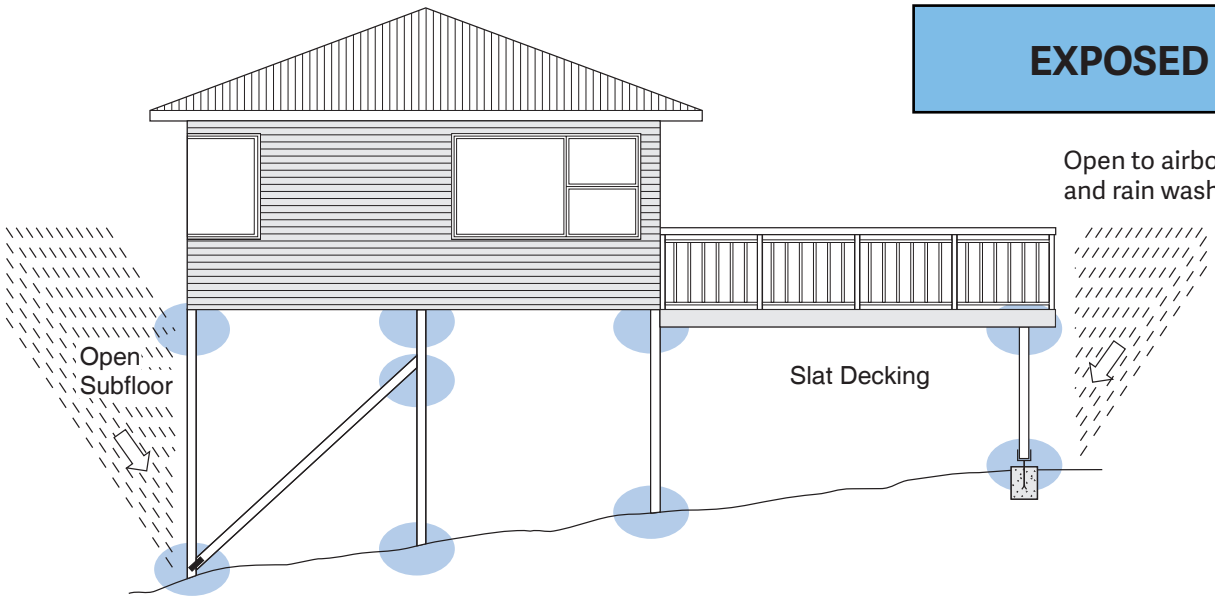
CLOSED

Dry, internal location, not subject to airborne salts or rain wetting.



SHELTERED

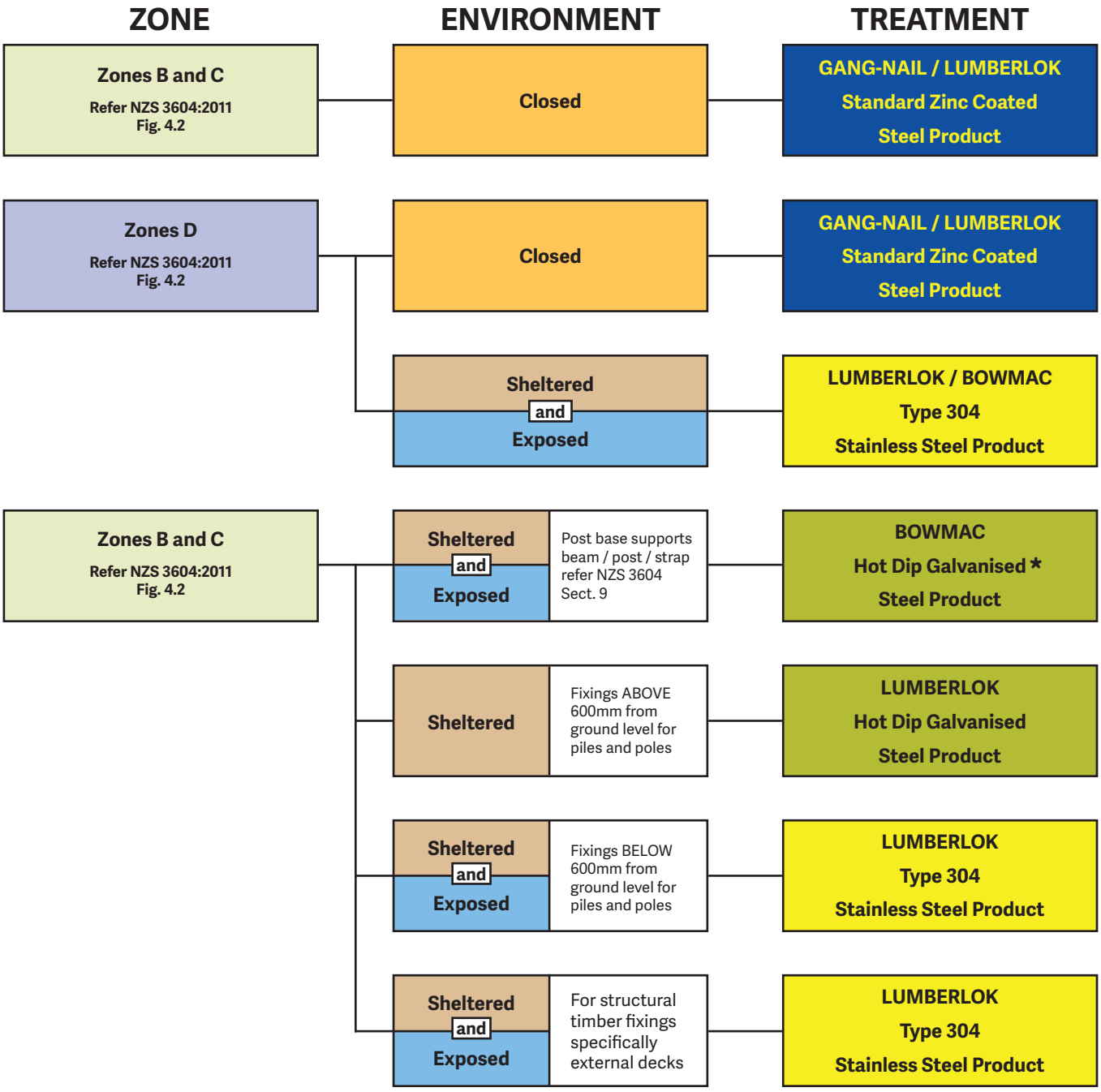
Open to airborne salts, but not rain washed.



EXPOSED

Open to airborne salts and rain washed.

DURABILITY FLOW CHART



Product Key

- Standard Zinc Coated Steel Product
- Hot Dip Galvanised Steel Product
- Type 304 Stainless Steel Product

* See note 3 on Durability Product Selection Table.

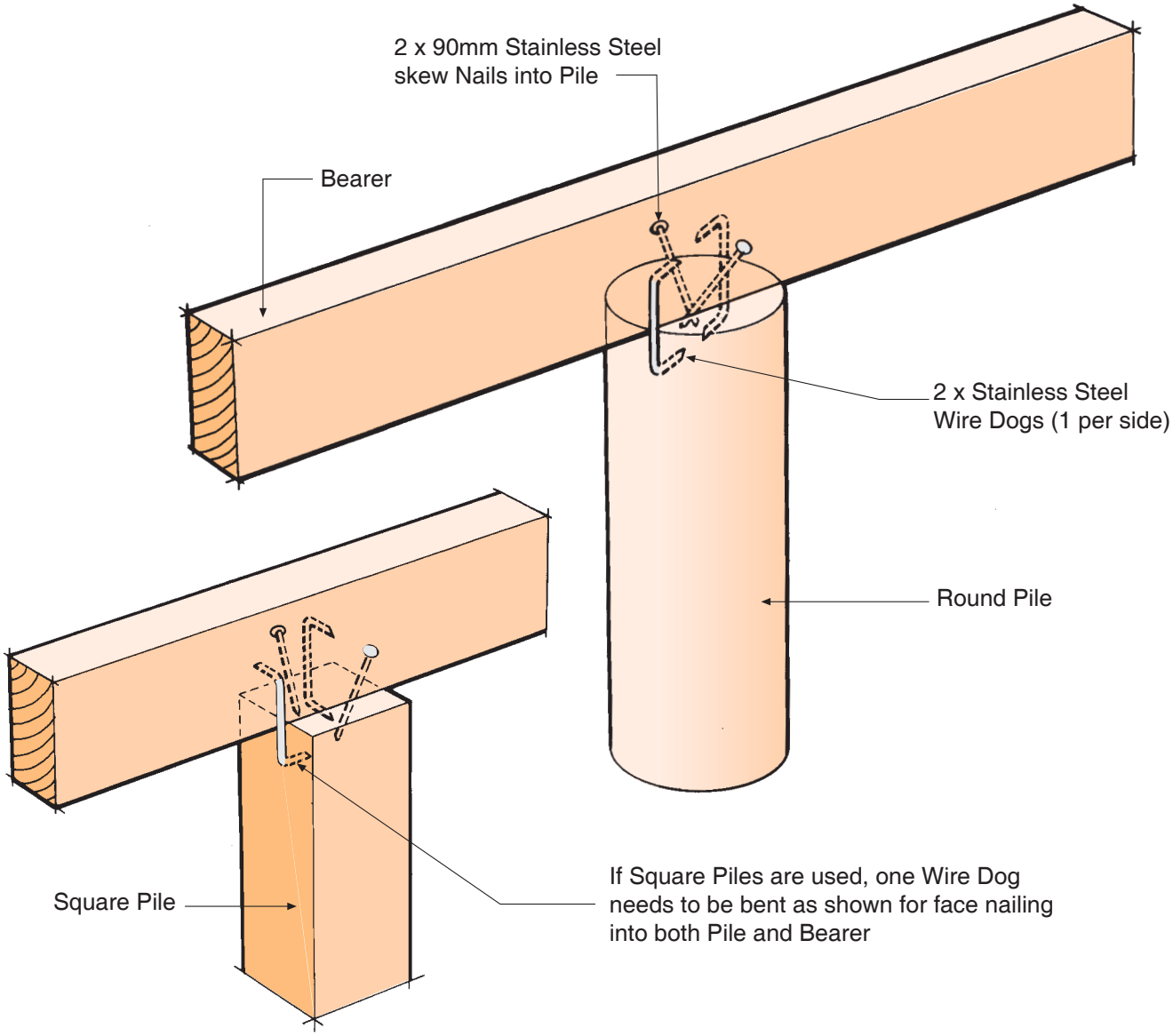
Figure 4.2 – Exposure zone map

Figure 4.2 – Exposure zone map

MiTek® LUMBERLOK®

ORDINARY PILE FIXING

- Complies with NZS 3604:2011
- All Fixings Stainless Steel
- For all Ordinary Piles (Refer Figure 6.3 NZS 3604:2011)



Code: **OPF**

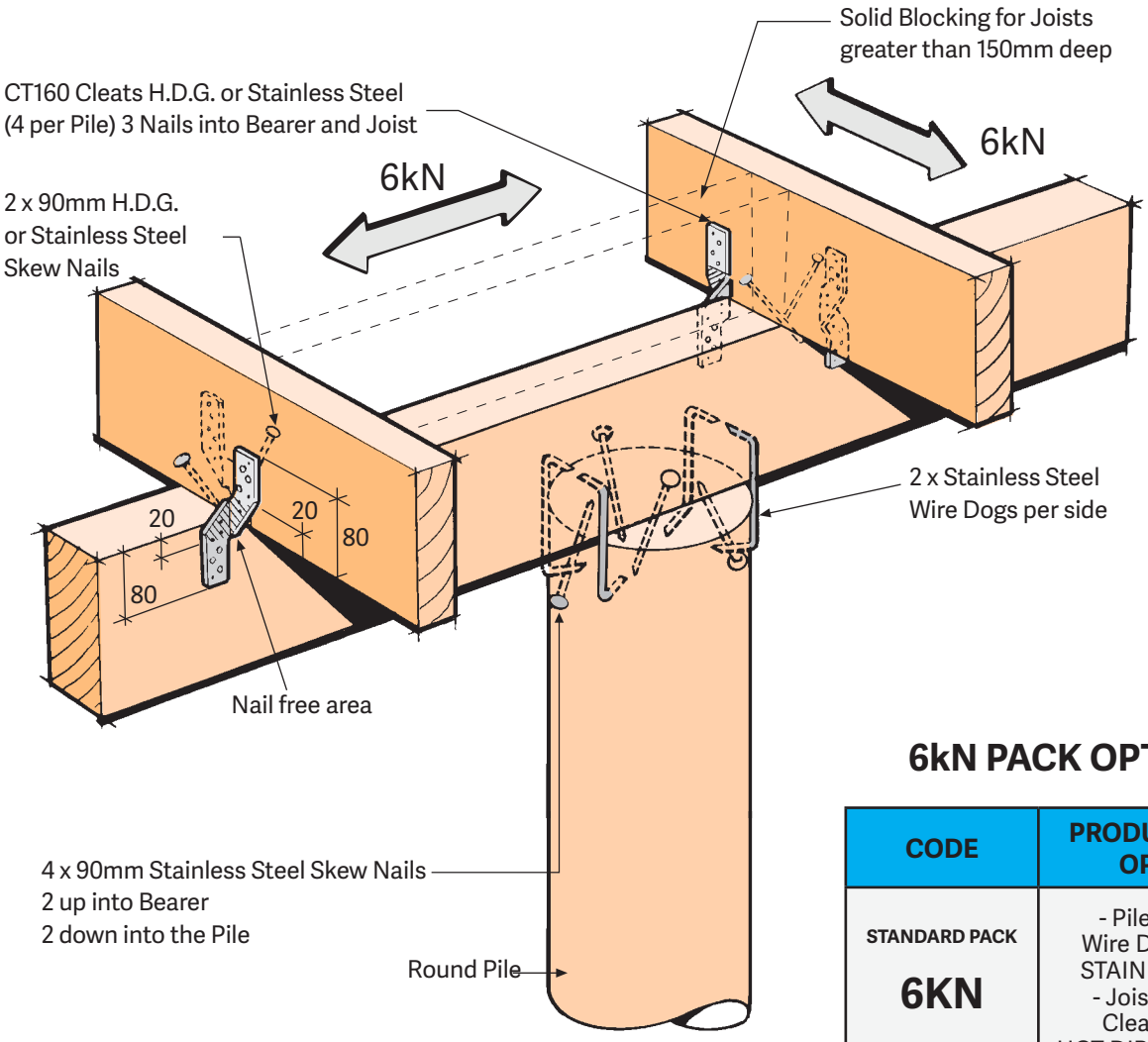
Packed: **20 x Stainless Steel Wire Dog Staples**
20 x Stainless Steel Nails 90mm x 4 dia.

Available from leading Builders Supply Merchants throughout New Zealand

MiTek® LUMBERLOK®

6kN PILE FIXING
FOR CANTILEVER PILES

- The 6kN Pile Fixing must be installed in accordance with this brochure
- Auckland University Tested. Test Ref. 4613
- All subfloor construction must be in accordance with NZS 3604:2011
- NZS 3604 requires lines of lateral support to floor joists within 300mm of bearer or bracing lines, refer to Clause 7.1.2
- Joists deeper than 150mm require solid blocking over cantilever pile

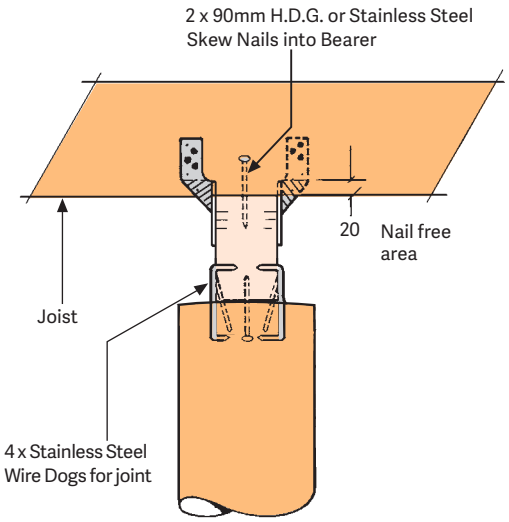


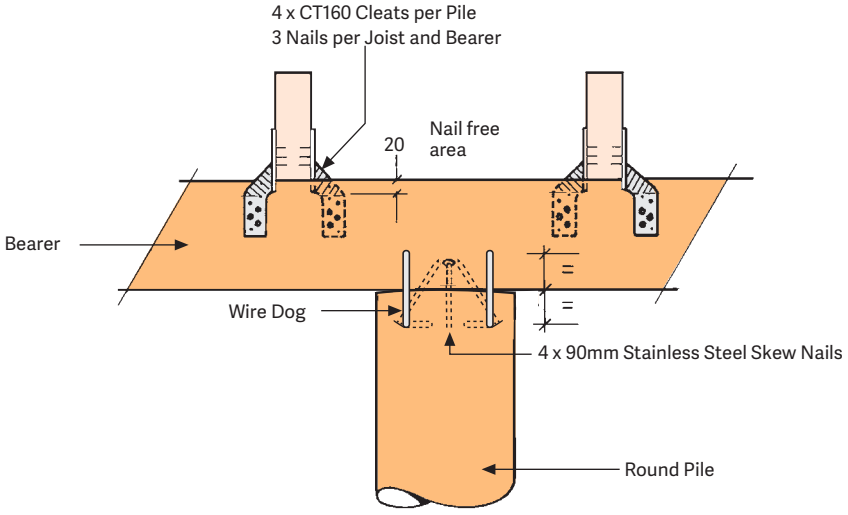
Cantilever Pile Shown
(on internal bracing line)

6kN PACK OPTIONS

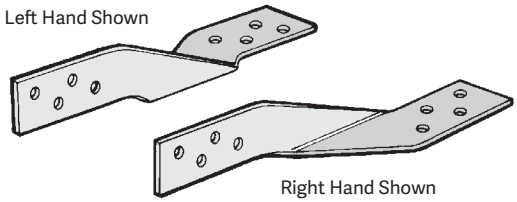
CODE	PRODUCT FINISH OPTIONS
STANDARD PACK **6KN**	- Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer Cleats & Nails HOT DIP GALVANISED
HIGH CORROSION PACK **6KNH**	- Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer Cleats & Nails STAINLESS STEEL

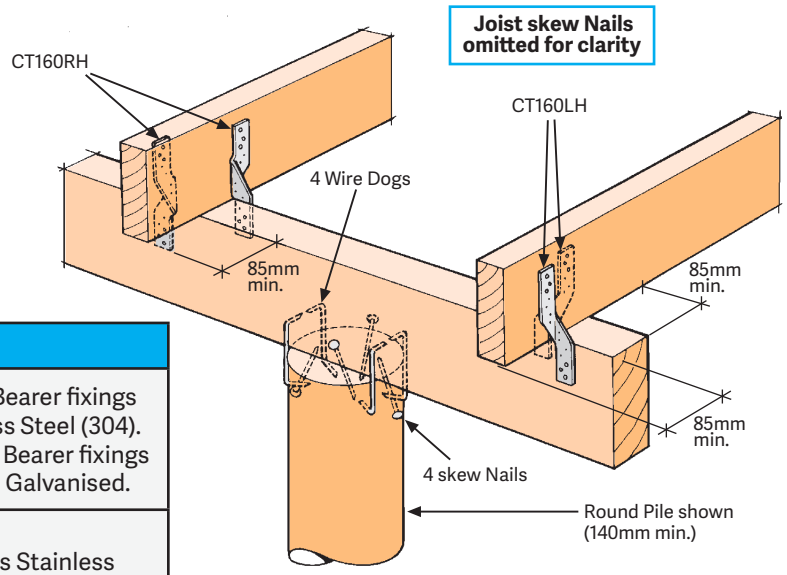
→ See next page for Corrosion Table





Pile Details



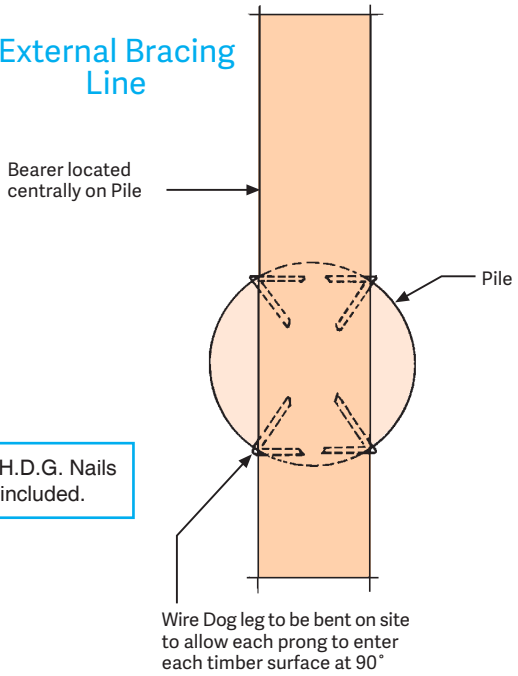


CORROSION HAZARD USE TABLE	
Standard Pack (6KN) - Zones B & C - If Joist to Bearer Fixings ABOVE 600mm from Ground level	Pile to Bearer fixings Stainless Steel (304). Joist to Bearer fixings Hot Dip Galvanised.
High Corrosion Pack (6KNH) - Zone D - All Fixings BELOW 600mm from Ground level	All items Stainless Steel (304).

6kN Joint Fixing Schedule

PILE TO BEARER	- Wire Dog Staples (4 per joint) Stainless Steel - 4 x 90mm skew Nails (1 per face) Stainless Steel
JOIST TO BEARER	- CT160 Cleats (4 per Pile) 160mm long - 3 Nails per Cleat into Joist - 3 Nails per Cleat into Bearer - 2 skew Nails 90mm (1 per side)
NAILS	- 24 x 45mm x 3.55 dia. Spiral Nails (for Joist to Bearer fixings) - 4 x 90mm x 4 dia. Stainless Steel Nails (6KN Pack only - 8 x 90mm x 4 dia. Stainless Steel Nails (6KNH Pack only)

External Bracing Line



90mm H.D.G. Nails not included.

6kN Pile Set Contents

Each set represents 1 x 6kN Pile Fixing
(packed 10 sets per carton)

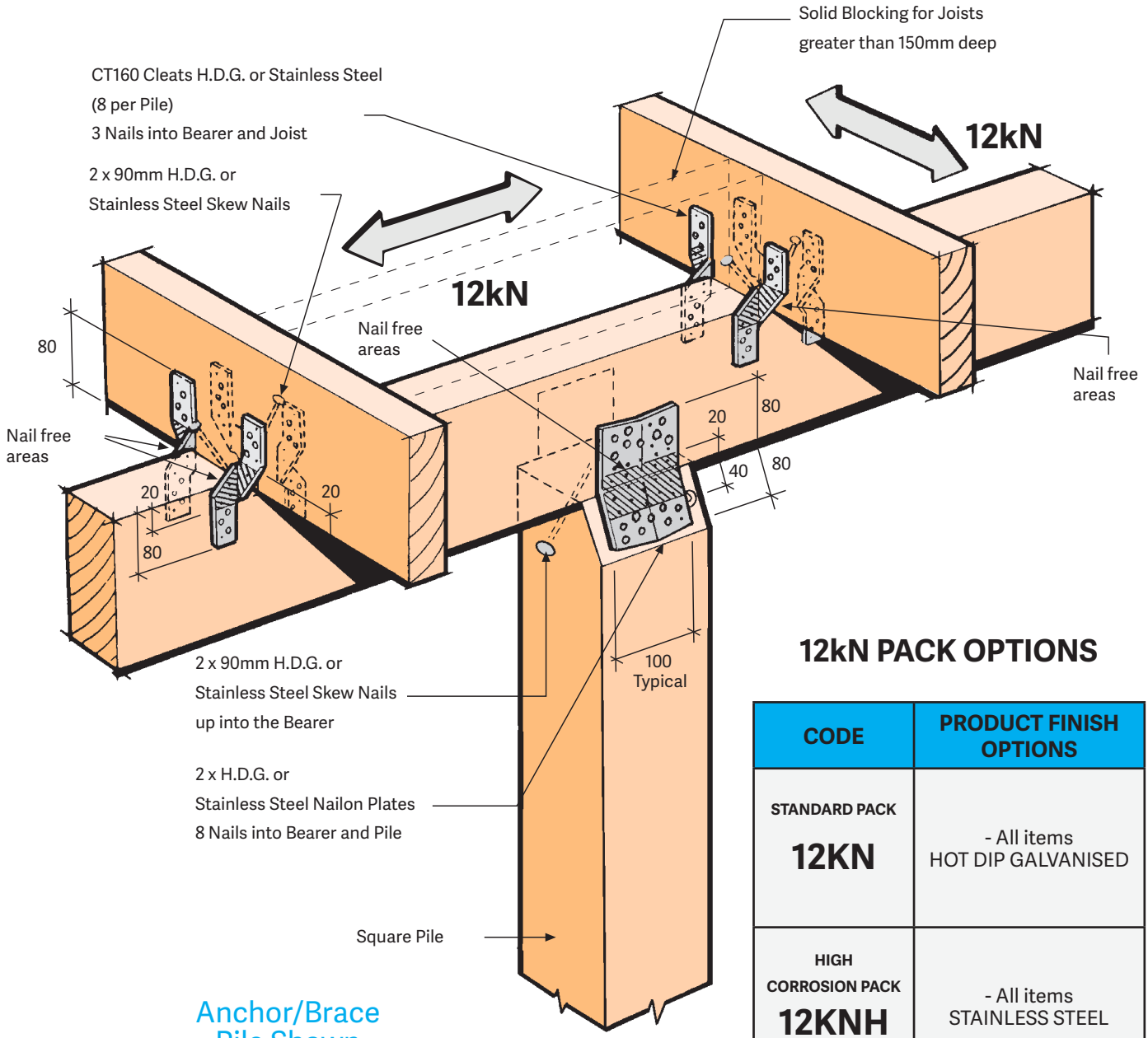
4 x Wire Dog Staples Stainless Steel
4 x CT160 Cleats
24 x 45mm x 3.55 dia. Spiral Nails
4 x 90mm Stainless Steel Nails - 6KN pack
8 x 90mm Stainless Steel Nails - 6KNH pack

} Refer front page for Product Finish Options

12kN PILE FIXING

FOR BRACED PILES OR ANCHOR PILES

- The 12kN Pile Fixing must be installed in accordance with this brochure
- Auckland University Tested. Test Ref. 4613
- All subfloor construction must be in accordance with NZS 3604:2011
- NZS 3604 requires lines of lateral support to floor joists within 300mm of bearer or bracing lines, refer to Clause 7.1.2
- Joists deeper than 150mm require solid blocking over braced or anchor pile



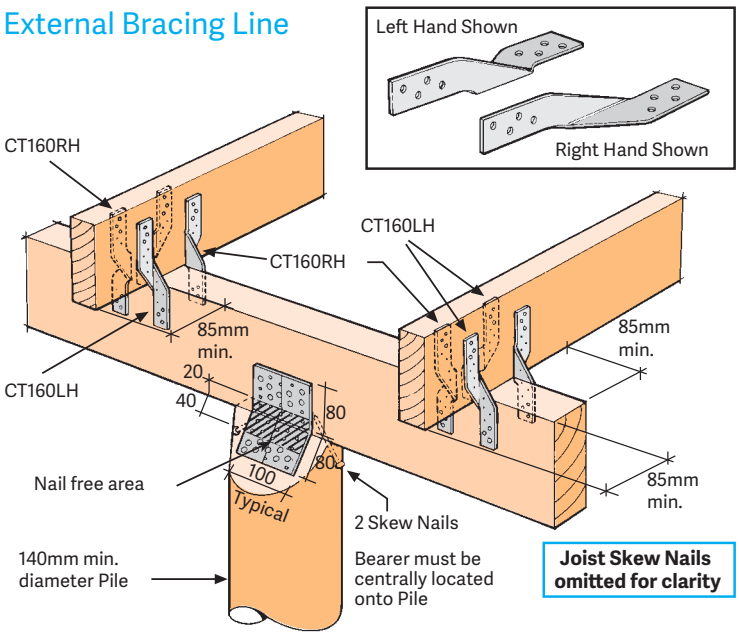
Anchor/Brace
Pile Shown
(on internal bracing line)

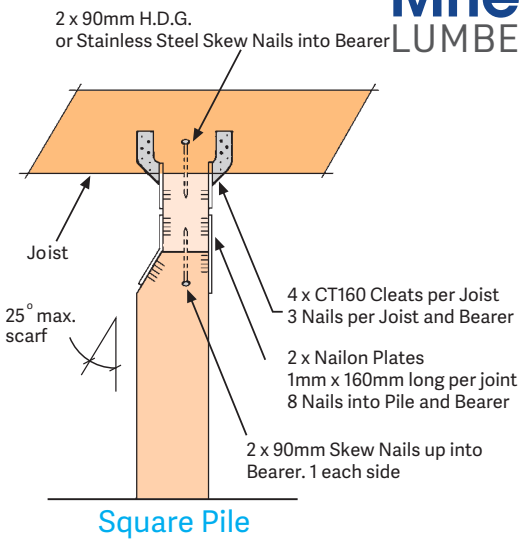
12kN PACK OPTIONS

CODE	PRODUCT FINISH OPTIONS
STANDARD PACK **12KN**	- All items HOT DIP GALVANISED
HIGH CORROSION PACK **12KNH**	- All items STAINLESS STEEL

→ See next page for Corrosion Table

External Bracing Line

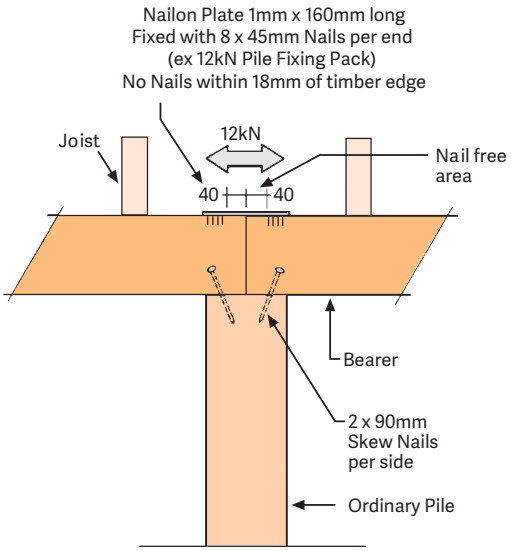




Square Pile

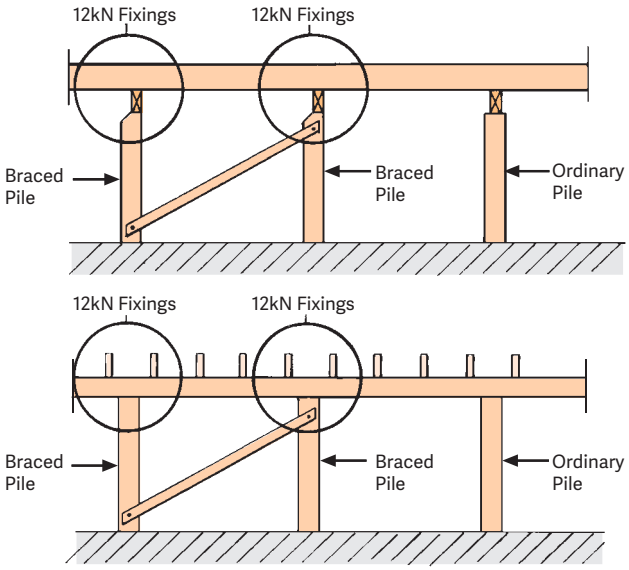
CORROSION HAZARD USE TABLE

Standard Pack (12KN) - Zones B & C - All Fixings ABOVE 600mm from Ground level	All items Hot Dip Galvanised.
High Corrosion Pack (12KNH) - Zone D - All Fixings BELOW 600mm from Ground level	All items Stainless Steel (304).



12kN Bearer Splice

Clause 6.12.7.2
NZS 3604:2011



Sample Subfloor Elevations
12kN Fixing - Pile to Bearer
- Joists to Bearer

12kN Joint Fixing Schedule

PILE TO BEARER	- Nailon Plate (2 per joint) 1mm x 100mm x 160mm long - 8 Nails per Plate into Pile - 8 Nails per Plate into Bearer - 2 skew Nails 90mm (1 per face)
JOIST TO BEARER	- CT160 Cleats (4 per Joist) 160mm long - 3 Nails per Cleat into Joist - 3 Nails per Cleat into Bearer - 2 skew Nails 90mm (1 per side)
NAILS	- 80 x 45mm x 3.55 dia. Spiral Nails - 6 x 90mm x 4 dia. Stainless Steel Nails (12KNH Pack only)

12kN Pile Set Contents

Each set represents 1 x 12kN Pile Fixing
(packed 4 sets per carton)
2 x Nailon Plates 160mm long
8 x CT160 Cleats
80 x 45mm x 3.55 dia. Spiral Nails
6 x 90mm x 4 dia. Stainless Steel Annular Groove Nails - 12KNH Pack

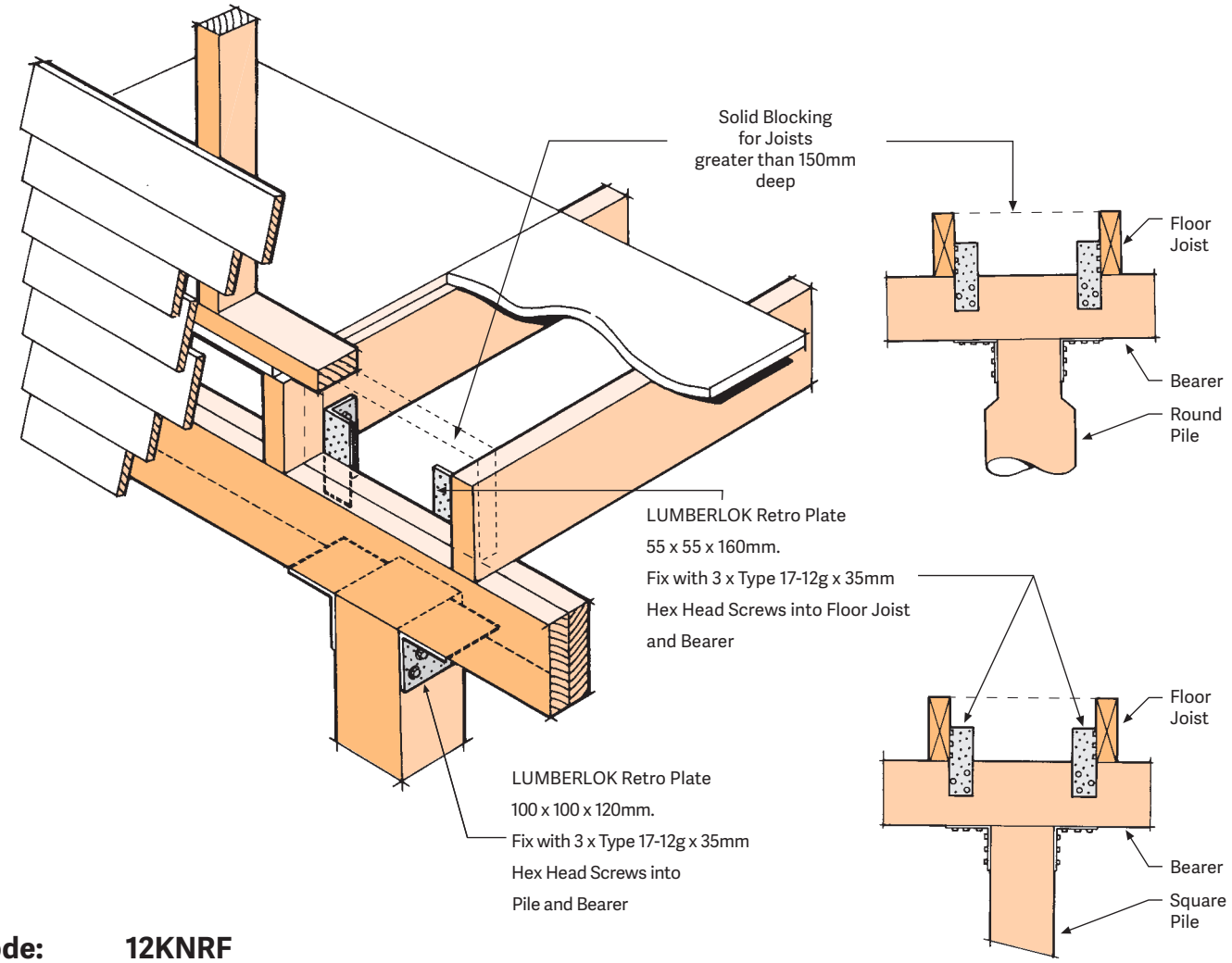
Refer front page for Product Finish Options

90mm H.D.G. Nails not included.

MiTek® LUMBERLOK®

12kN RETRO SUBFLOOR FIXING

- Fixing to be used when the outside face of the bearer is not accessible e.g. fixing relocatable houses to piles
- Hot Dip Galvanised or Stainless Steel options available for required corrosive zone



Code: 12KNRF
Material: 0.91mm G300 Z275 (Hot Dip Galvanised Steel)

Code: 12KNRFH
Material: 0.9mm Stainless Steel 304-2B

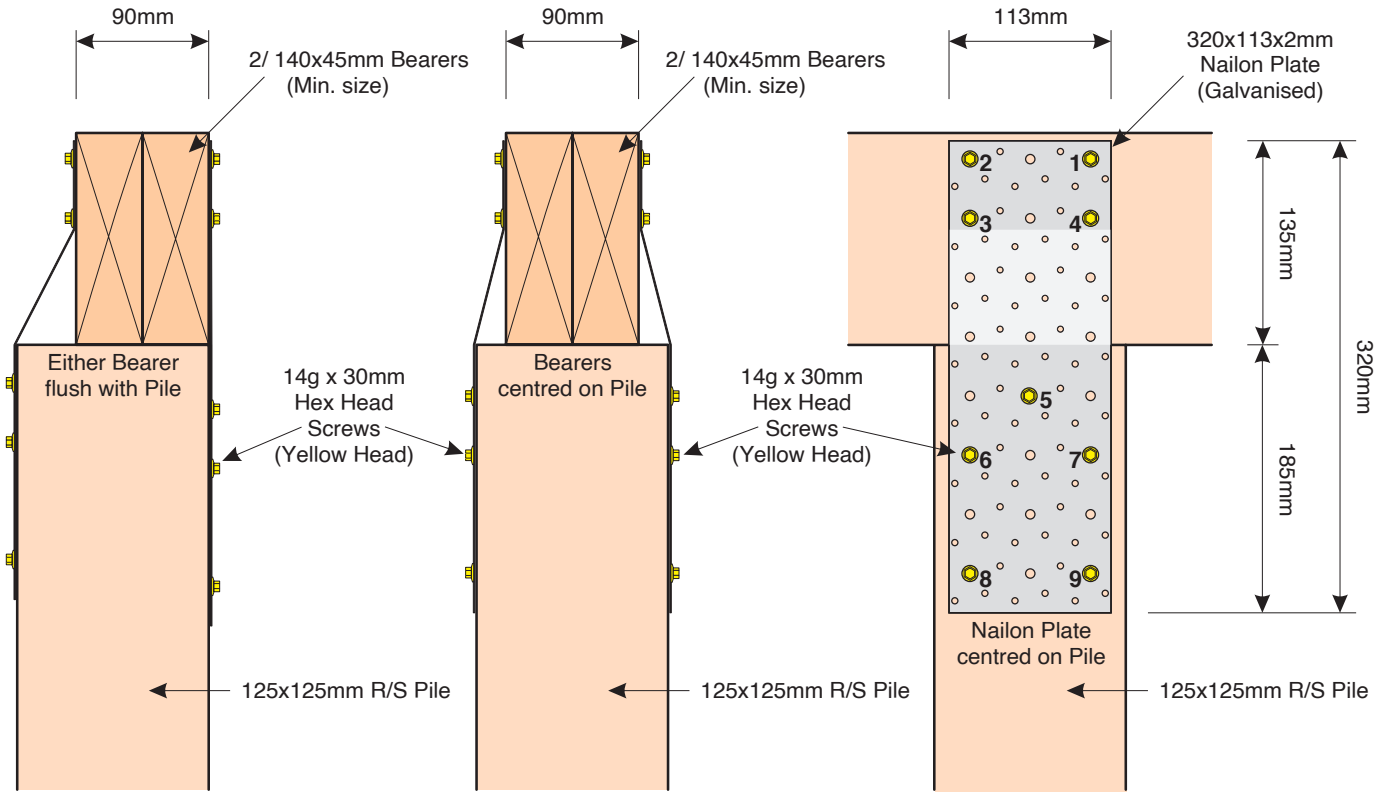
Packed: 8 x Retro Plate 55 x 55 x 160mm
8 x Retro Plate 100 x 100 x 120mm
100 x Type 17-12g x 35mm Hex Head Screws

MiTek® LUMBERLOK®

PILE BEARER CONNECTION

TYPE 2A & TYPE 2B IN EXPOSURE ZONES B & C AS PER NZS 3604:2011 SECTION 4 DURABILITY

(As defined in MBIE document "TC3 Technical Guidance New Foundations" version C)



MAXIMUM PLATE OFFSET
Cross Section

MINIMUM PLATE OFFSET
Cross Section

SCREW PLACEMENT
Elevation

Installation

1. Install screws as indicated, using the larger holes in the Nailon Plate.
2. Install plate against the pile and bearer using the screws in the numbered sequence as shown above. There is no need to scarf the bearer or pre-bend the plate. Use the screw sequence to pull plate flat against bearer and pile.
3. Once screws numbered 1 to 4 are installed, bend the plate by hand against the pile to assist screw No. 5 in pulling the plate flat. Continue installing screws 6 to 9.

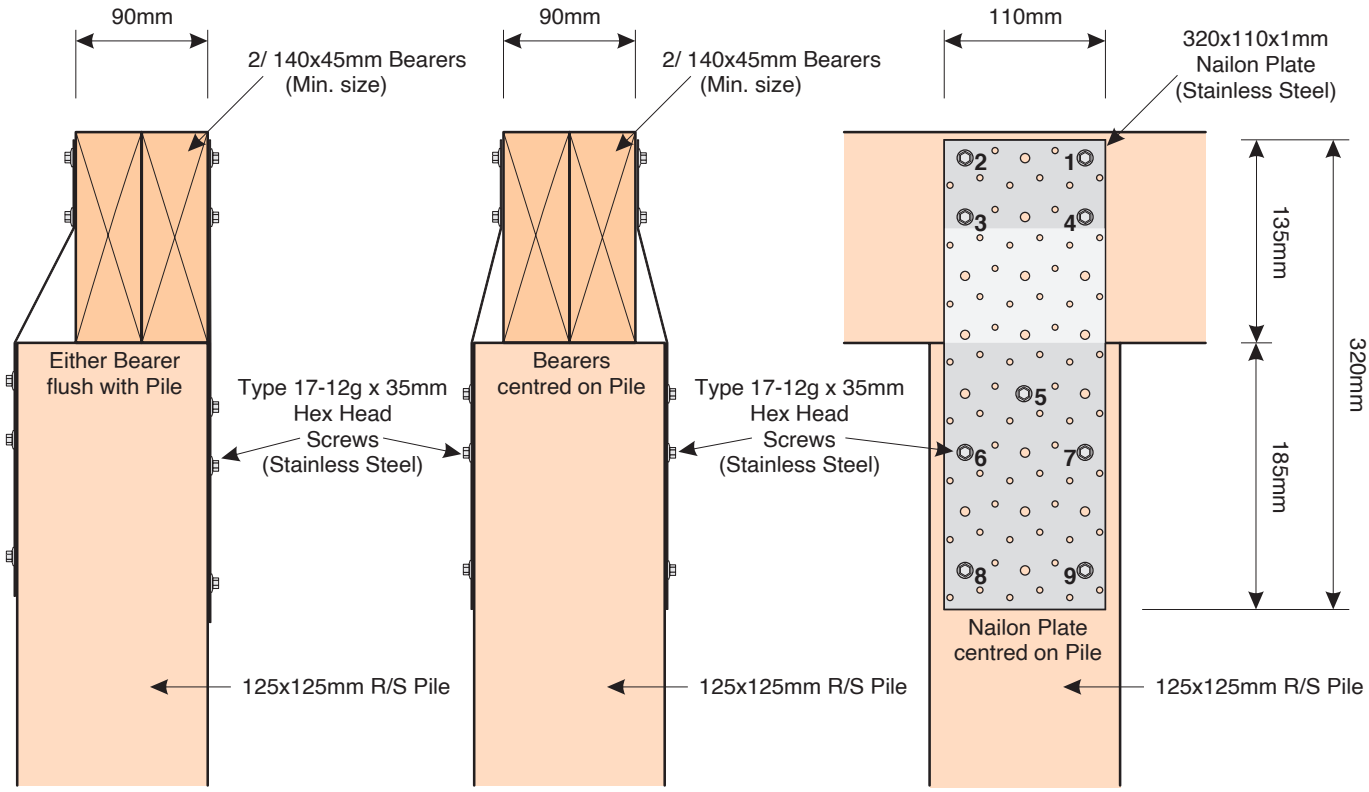
Code: **PB2A2B**
Material: **1.55mm G300 Z275 Galvanised Steel**
Packed: **20 x Nailon Plate 320 x 113mm**
180 x 14g x 30mm Hex Head Galvanised Screws

MiTek® LUMBERLOK®

PILE BEARER CONNECTION

TYPE 2A & TYPE 2B IN EXPOSURE ZONES D AS PER NZS 3604:2011 SECTION 4 DURABILITY

(As defined in MBIE document "TC3 Technical Guidance New Foundations" version C)



MAXIMUM PLATE OFFSET
Cross Section

MINIMUM PLATE OFFSET
Cross Section

SCREW PLACEMENT
Elevation

Installation

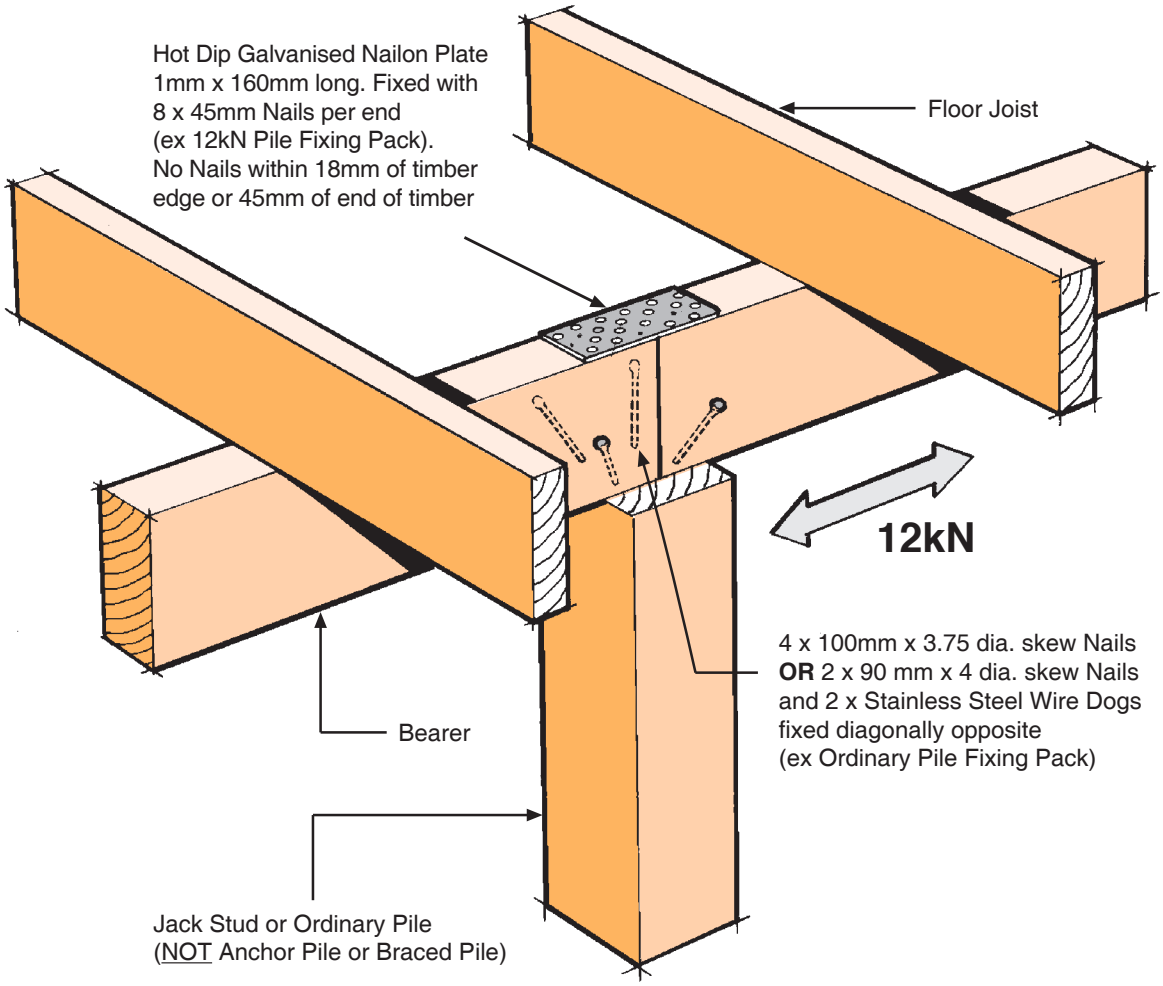
1. Install screws as indicated, using the larger holes in the Nailon Plate.
2. Install plate against the pile and bearer using the screws in the numbered sequence as shown above. There is no need to scarf the bearer or pre-bend the plate. Use the screw sequence to pull plate flat against bearer and pile.
3. Once screws numbered 1 to 4 are installed, bend the plate by hand against the pile to assist screw No. 5 in pulling the plate flat. Continue installing screws 6 to 9.

Code: **SSPB2A2B**
Material: **0.9mm Stainless Steel 304-2B**
Packed: **20 x Nailon Plate 320 x 110mm**
180 x Type 17-12g x 35mm Hex Head Stainless Steel Screws

MiTek® LUMBERLOK®

12kN BEARER SPLICE OVER PILE

AS PER CLAUSE 6.12.7 & FIGURE 6.19 NZS 3604:2011



Stainless Steel Nailon Plate and Nails to be used in high corrosion environments

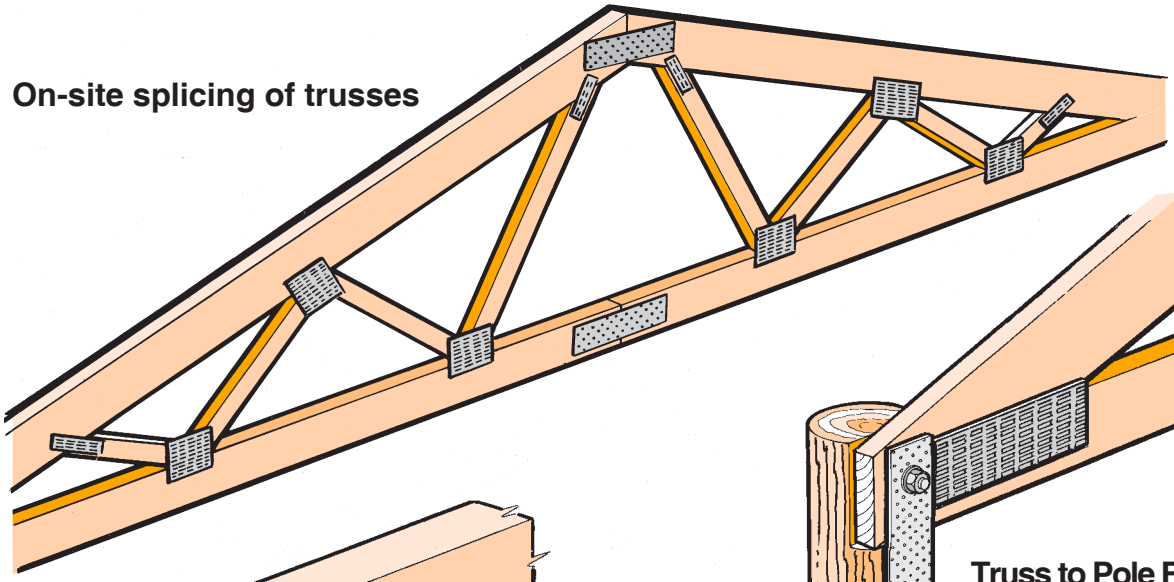
Available from leading Builders Supply Merchants throughout New Zealand

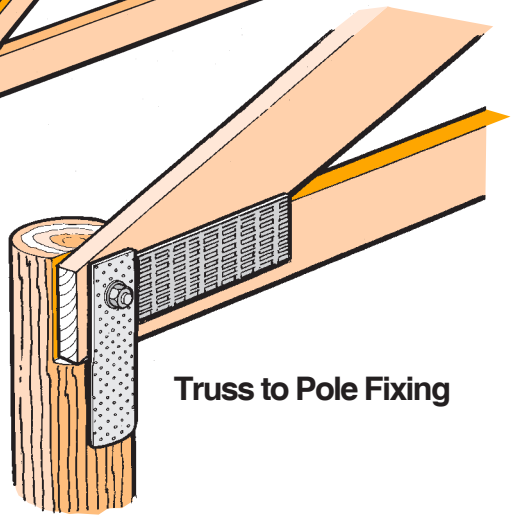
MiTek® LUMBERLOK®

NAILON PLATES

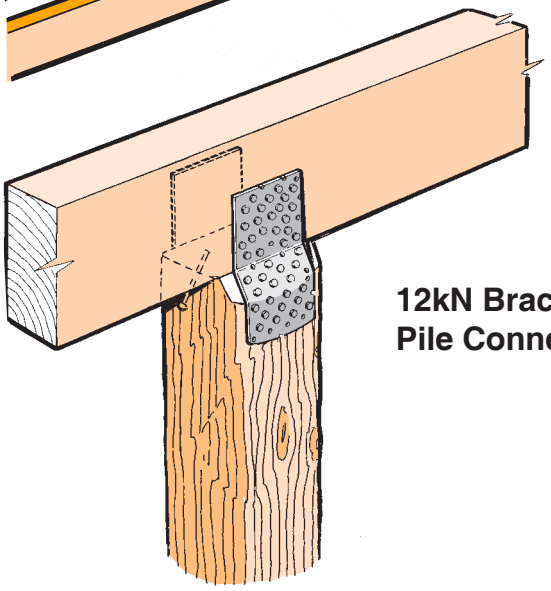
USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS

On-site splicing of trusses



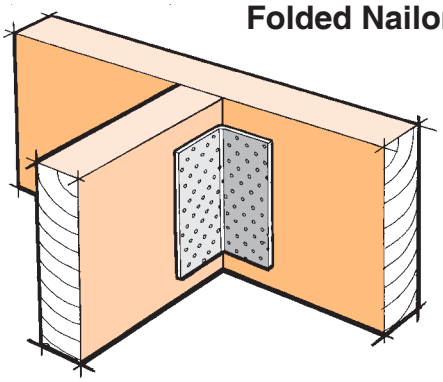


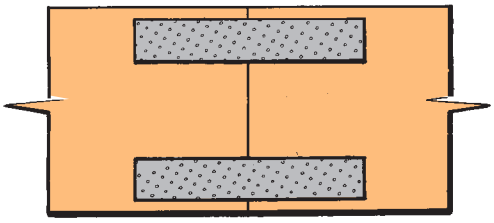
Truss to Pole Fixing



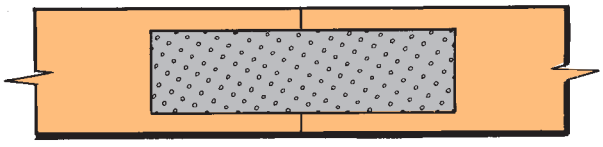
12kN Brace
Pile Connection

Folded Nailon Cleats





Full strength joint splice

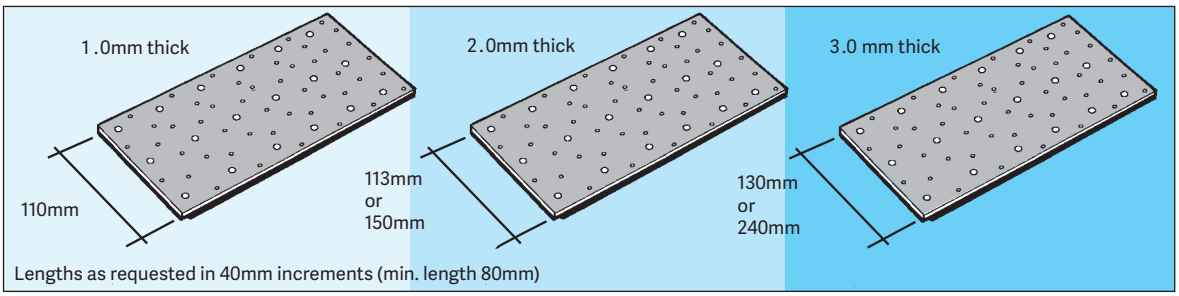


High tension load fixing

Available from leading Builders Supply Merchants throughout New Zealand

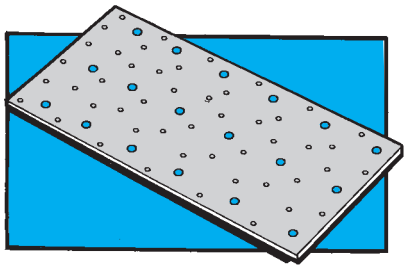
Nailon Plate Dimensions

Nailon is manufactured from steel coil and is available in 1mm, 2mm and 3mm nominal thicknesses of widths shown. LUMBERLOK Nailon is a very versatile steel plate with many applications in timber construction, providing a very strong jointing system. Nailon is easily applied by filling the pre-punched holes with LUMBERLOK Product Nails 30mm x 3.15mm dia. or Type 17 Hex Head Screws.
Flat Nailon Plate can be used for splicing trusses and beams, or as a moment joint when a pair of plates are used. 3mm Nailon can also be welded to form special brackets supporting portal frames, trusses, etc.



Specification

1.0mm x 110mm - 0.91mm G300 Z275 Galvanised Steel
2.0mm x 113mm or 150mm - 1.55mm G300 Z275 Galvanised Steel
3.0mm x 130mm or 240mm - Black Steel NZCC-SD ungalvanised
1.0mm and 2.0mm Nailon is zinc coated prior to punching
3.0mm Nailon is generally supplied ungalvanised, however all Nailon is available hot dipped galvanised on request
Nailon is available in 0.9mm x 110mm Stainless Steel 304-2B.



Nails and Screws

1.0mm x 110mm and 2.0mm x 113mm Nailon, 8 nails or 3 screws per 40mm length
2.0mm x 150mm Nailon, 11 nails or 4 screws per 40mm length
3.0mm x 130mm Nailon, 10 nails or 3 screws per 40mm length
3.0mm x 240mm Nailon, 19 nails or 5 screws per 40mm length

NOTE:
1.0mm and 2.0mm galvanised Nailon - use Type 17-14g Hex Head Screws
3.0mm galvansied and 1.0mm stainless steel Nailon - use Type 17-12g Hex Head Screws
Stainless Steel Nails and Screws are also available.

Availability

As many Nailon products are not stock items, a lead time is sometimes required when ordering. Flat Nailon Plate can be cut to any length, in multiples of 40mm. All folded and special Nailon products are made to order. Order your Nailon requirements through your local LUMBERLOK merchant. Orders directed to us will be charged via your local merchant.

Order to Specify

1. LUMBERLOK Nailon Plate - thickness, width and length in 40mm increments (min. 80mm, max. 2.4m length)
2. Special requirements, preferably accompanied by a sketch
3. Quantity
4. Nail and screw quantity required

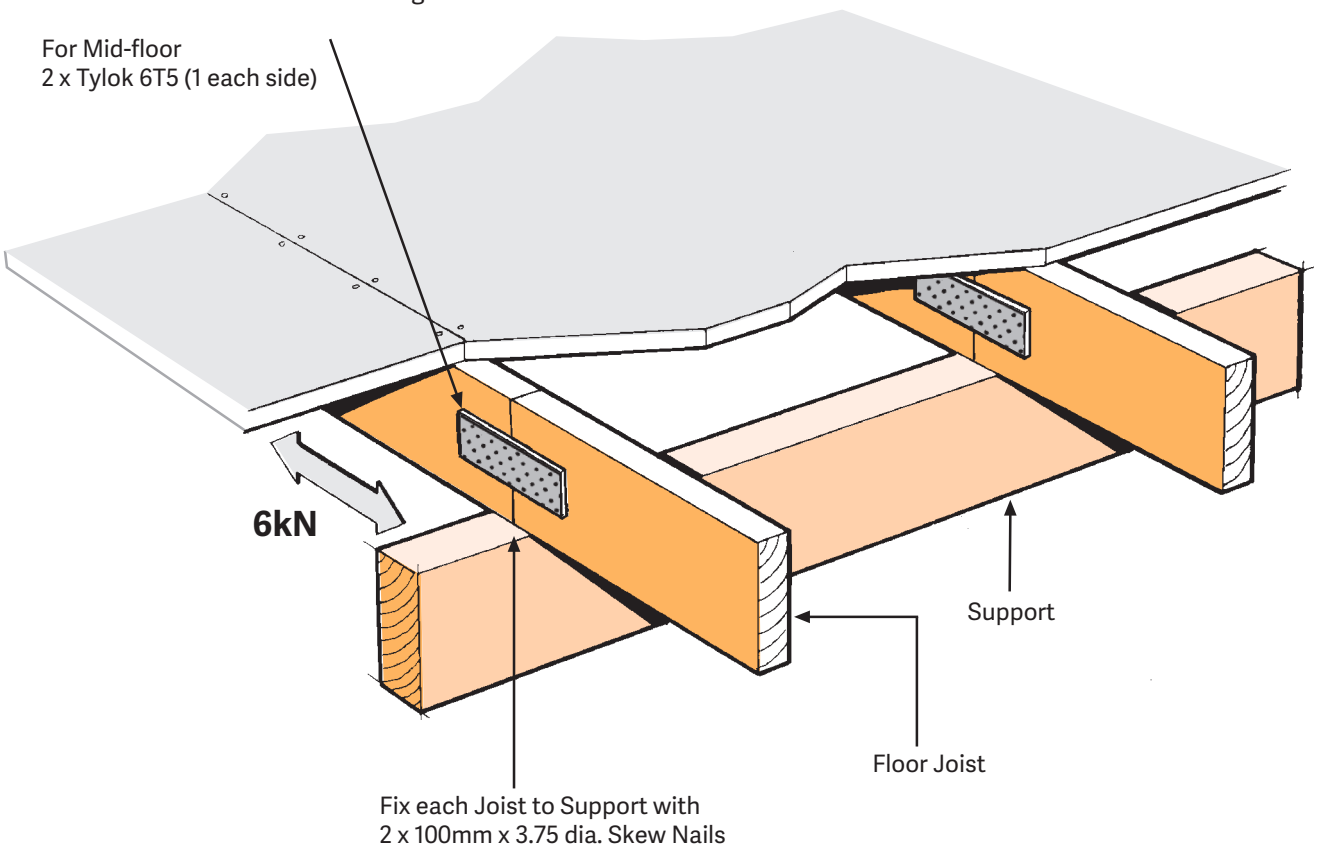
Note: Made to order items are non-returnable.

MiTek® LUMBERLOK®

6kN FLOOR JOIST SPLICE OVER SUPPORT
AS PER CLAUSE 7.1.1.7(c) & FIGURE 7.1(c) NZS 3604:2011

For Subfloor
Nailon Plate 1mm x 160mm long on one side
Fixed with 8 x 45mm Nails per end
(ex 12kN Pile Fixing Pack - H. D. G. or Stainless Steel)
No Nails within 18mm of timber edge or 45mm of end of timber

For Mid-floor
2 x Tylok 6T5 (1 each side)



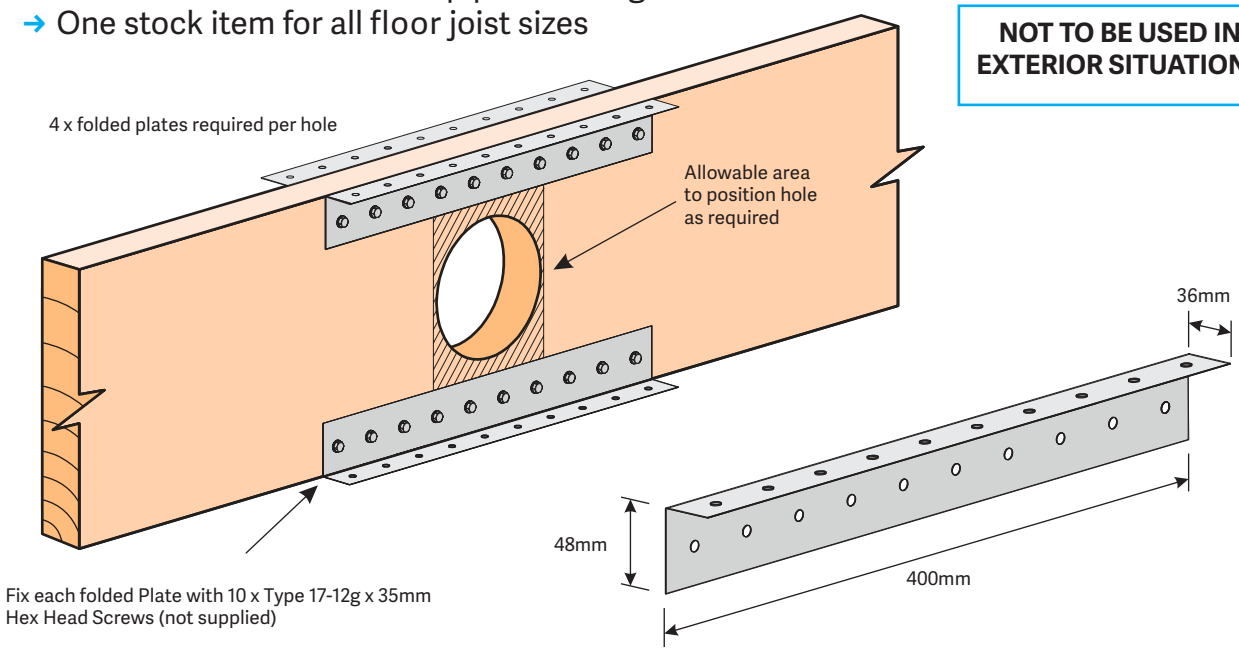
Available from leading Builders Supply Merchants throughout New Zealand

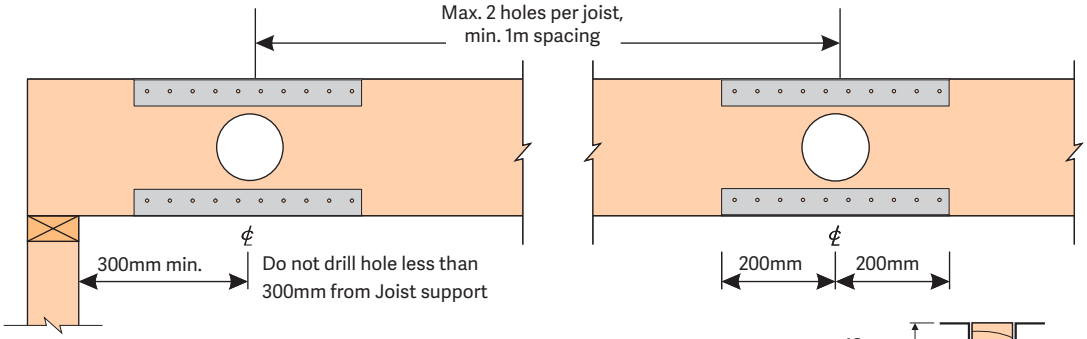
MiTek® LUMBERLOK®

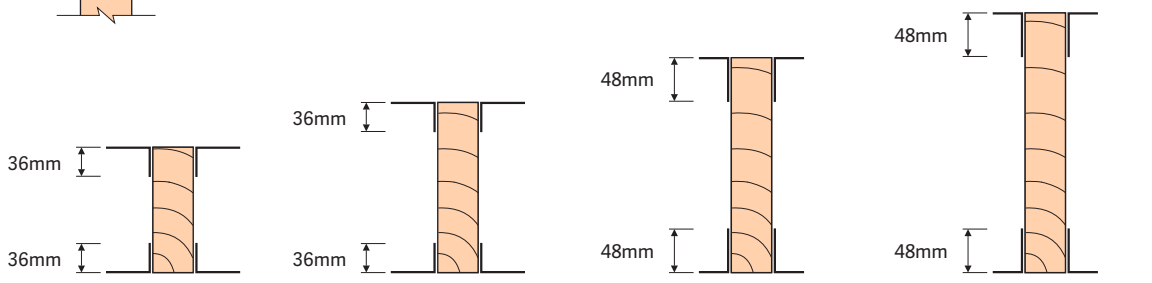
FLOOR JOIST STIFFENER

- Suitable for running pipes/ducting through joists
- Maintains timber joist strength and stiffness
- Allows flexibility of hole location within specific areas
- Max. 2 holes per joist, min. 1m spacing
- Able to be retro fitted after pipes/ducting are installed
- One stock item for all floor joist sizes

NOT TO BE USED IN EXTERIOR SITUATIONS







Joist 140 x 45
Max. 76mm hole

Joist 190 x 45
Max. 126mm hole

Joist 240 x 45
Max. 126mm hole

Joist 290 x 45
Max. 126mm hole

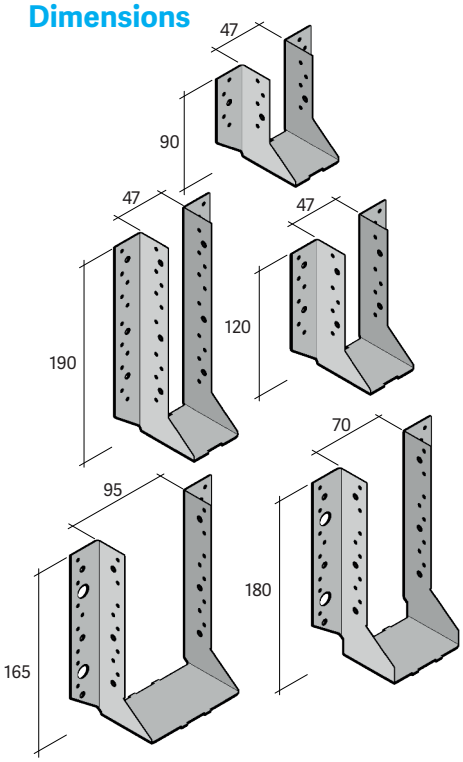
Code: FJS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Folded Plates per Carton (2 sets)

MiTek® LUMBERLOK®

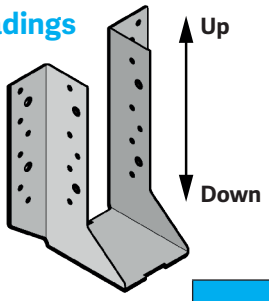
JOIST HANGERS

USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS

Dimensions



Loadings



Joist Hangers are designed to be used where a strong rigid joint is required between members butting together at 90 degrees, e.g. floor joist to beam, truss or rafter to beam/bearer.

Joist Hangers to suit 50mm thick (nominal) timber are available in three sizes

JH47 x 90 - For use on gauged 47mm wide timber up to 150mm deep.

JH47 x 120 - Suitable for gauged 47mm wide timber up to 200mm deep.

JH47 x 190 - For gauged 47mm wide timber up to 300mm deep.

Joist Hanger to suit 75mm thick (nominal) timber

JH70 x 180 - A special size joist hanger designed for gauged 69mm wide timbers.

Joist Hanger to suit 100mm thick (nominal) timber

JH95 x 165 - For use on gauged 94mm wide timber or double joists/trusses.

Joist Hangers are available in 52 x 90, 52 x 120 and 52 x 190, to suit 52mm wide, rough sawn timber.

All sizes are also available in Stainless Steel 304-2B.

IMPORTANT NOTE

For other load conditions, refer to the Characteristic Load Table below for correct product selection and nailing or screw fixing. In some cases it may be necessary to fully nail or screw fix the Joist Hanger.

	Characteristic Load - Nails			Characteristic Load - Screws		
Joist Hanger Type	**No. of Nails per Flange***	**Down**	**Uplift**	**No. of Screws per Flange***	**Down**	**Uplift**
JH 47 x 90	3	9.0kN	6.0kN	1 (+1 Nail)	7.0kN	4.7kN
JH 47 x 120	5	15.0kN	10.0kN	2	14.0kN	12.0kN
JH 47 x 190	9	27.0kN	18.0kN	3	21.0kN	18.0kN
JH 95 x 165	8	24.0kN	16.0kN	3	21.0kN	18.0kN
JH 70 x 180	8	24.0kN	16.0kN	3	21.0kN	18.0kN
Nail with LUMBERLOK Product Nails 30mm x 3.15 dia.				Fix with Type 17-12g x 35mm Hex Head Screws		

*4 Flanges per hanger

NOTE: Loads for 47mm Joist Hangers also apply to 52mm. For roof trusses, Joist Hangers shall be fully nailed or screw fixed.

Material: 0.91mm G300 Z275 Galvanised Steel or 0.9mm Stainless Steel 304-2B

JOIST HANGER SELECTION & FIXING RECOMMENDATION

DOMESTIC FLOOR JOISTS AND COMMERCIAL FLOOR JOISTS UP TO 3.0kPa LIVE LOAD
(Refer Table 3.1 AS/NZS 1170.1:2002)

- **Loads 1.** DOMESTIC FLOORS & BALCONIES **- 1.5kPa & 2.0kPa Live Loads**
  (Allows 1.8kN Point Load & 0.4kPa Dead Load)

  2. COMMERCIAL FLOORS **- 3.0kPa Live Load**
  (Allows 2.7kN Point Load, 0.5kPa Dead Load)

- Floor Joist centres up to 600mm
- These charts cover SG6, SG8 & SG10 timber grades
- The same selection of nail/screw pattern applies to nominal 50mm timber thickness

NAILING RECOMMENDATION

Nail with LUMBERLOK Product Nails 30mm x 3.15 dia.

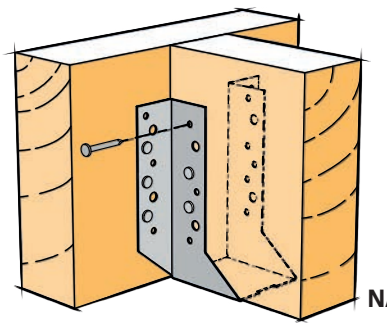
Joist Size	Recommended Joist Hanger	Domestic Floors & Balconies Min. No. of Nails per Flange (4 Flanges Total)	Commercial Floors Min. No. of Nails per Flange (4 Flanges Total)
100 x 50	JH 47 x 90	2	3
150 x 50	JH 47 x 90	2	3
200 x 50	JH 47 x 120	3	4
250 x 50	JH 47 x 190	4	4
300 x 50	JH 47 x 190	4	5

SCREW FIXING RECOMMENDATION

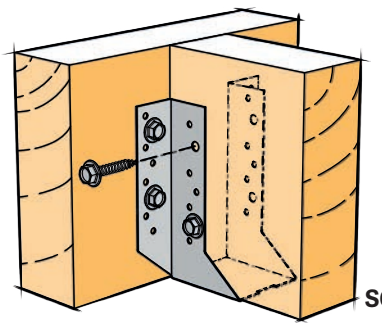
Fix with Type 17-12g x 35mm Hex Head Screws

Joist Size	Recommended Joist Hanger	Domestic Floors & Balconies No. of Screws per Flange (4 Flanges Total)	Commercial Floors No. of Screws and Nails per Flange (4 Flanges Total)
100 x 50	JH 47 x 90	1 Screw + 1 Nail	1 Screw + 1 Nail
150 x 50	JH 47 x 90	1 Screw + 1 Nail	1 Screw + 1 Nail
200 x 50	JH 47 x 120	2	2 Screws + 2 Nails
250 x 50	JH 47 x 190	2	2 Screws + 2 Nails
300 x 50	JH 47 x 190	3	3 Screws + 2 Nails

NOTE: Joist Hangers supporting roof trusses shall be fully nailed or screw fixed.



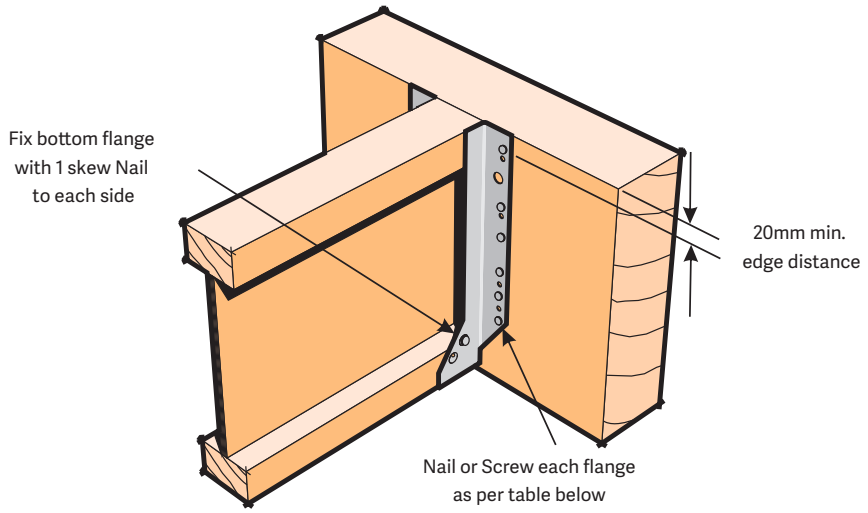
NAIL DETAIL



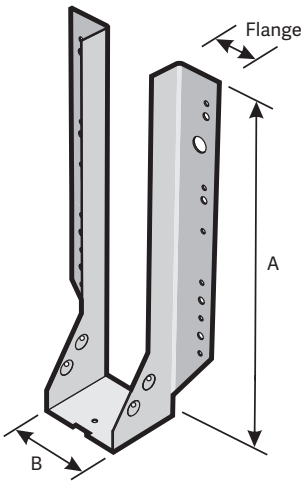
SCREW DETAIL

I-BEAM HANGERS
FOR FACE FIXING OF I-BEAMS TO FLOOR BEAMS

The I-Beam Hanger Face Fix has been developed to provide an effective method of fixing timber I-Beams to supporting timber beams in floor situations.



1. Fix I-Beam Hanger with 40mm x 3.75 dia. galvanised nails to face of supporting beam through small holes (4mm dia.). Alternatively use Type 17 - 14g x 35mm screws in the larger holes (6mm dia.). Refer to table for quantity of nails/screws required.
2. Fix bottom I-Beam flange using 2 x 40mm x 3.75 dia. galvanised nails. Select one dimple each side of the I-Beam which will allow a 40mm long nail to be driven fully home at a 45° angle.



Definition:
Example IBHF30065
IBHF = Face Fix
300 = Height (A)
65 = Width (B)

Material:
1.15 G300 Z275 Galvanised Steel

Loadings

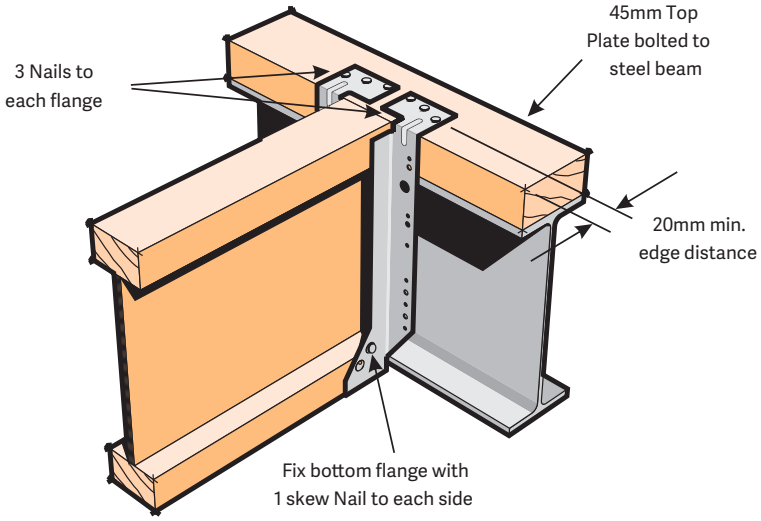
Hanger Type	Characteristic Loads (Down)			
	No. of Nails per Flange	Nails	No. of Screws per Flange	Screws
IBHF20090	4	9.6kN	2	12.0kN
IBHF24050	5	12.0kN	3	18.0kN
IBHF24055	5	12.0kN	3	18.0kN
IBHF24065	5	12.0kN	3	18.0kN
IBHF24090	5	12.0kN	3	18.0kN
IBHF30050	6	14.4kN	4	24.0kN*
IBHF30065	6	14.4kN	4	24.0kN*
IBHF30090	6	14.4kN	4	24.0kN*
IBHF36065	7	16.8kN	5	24.0kN*
IBHF36090	7	16.8kN	5	24.0kN*
IBHF40090	8	19.2kN	6	24.0kN*
Nails - 40mm x 3.75 dia. or Screws - Type 17 - 14g x 35mm Hex Head Additional 2 nails are required for fixing to bottom flange.				

*Maximum hanger load.

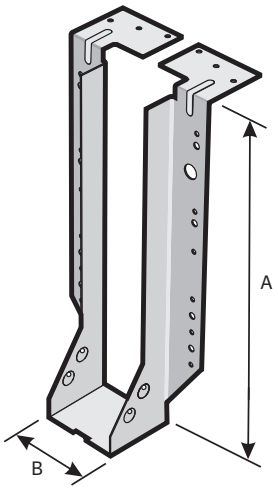
Characteristic Strengths have been derived from tests in accordance with NZS 3603:1993

I-BEAM HANGERS
FOR TOP FIXING OF I-BEAMS TO FLOOR BEAMS

The I-Beam Hanger Top Fix has been developed to provide an effective method of fixing timber I-Beams to supporting steel beams in floor situations.



1. Fix I-Beam Hanger to top of timber plate with 6 x 40mm x 3.75 dia. galvanised nails.
2. Fix bottom I-Beam flange using 2 x 40mm x 3.75 dia. galvanised nails. Select one dimple each side of the I-Beam which will allow a 40mm long nail to be driven fully home at a 45° angle.



Definition:
Example IBHT30065
IBHT = Top Fix
300 = Height (A)
65 = Width (B)

Loadings

Hanger Type	No. of Nails	Characteristic Loads (Down)
IBHT20050	6	13.8kN
IBHT24065	6	13.8kN
IBHT24090	6	13.8kN
IBHT30050	6	13.8kN
IBHT30065	6	13.8kN
IBHT30090	6	13.8kN
IBHT36065	6	13.8kN
IBHT36090	6	13.8kN
IBHT40090	6	13.8kN
Nails - 40mm x 3.75 dia. Additional 2 nails are required for fixing to bottom flange.		

Characteristic Strengths have been derived from tests in accordance with NZS 3603:1993

Material: 1.15 G300 Z275 Galvanised Steel

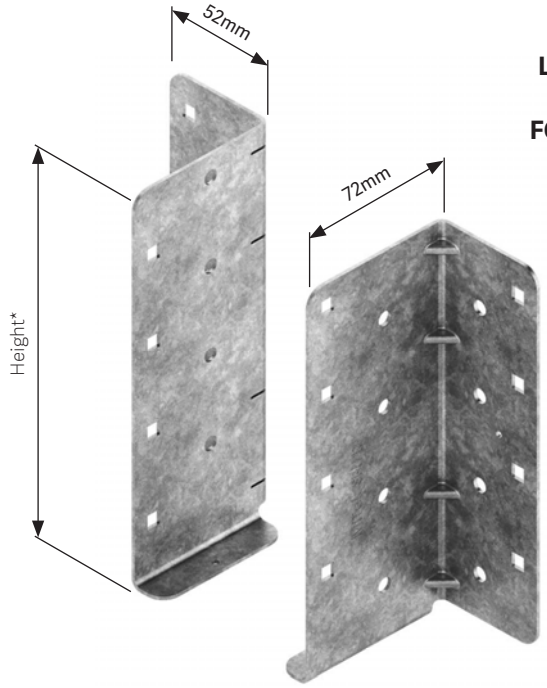
MiTek® LUMBERLOK®

USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS.

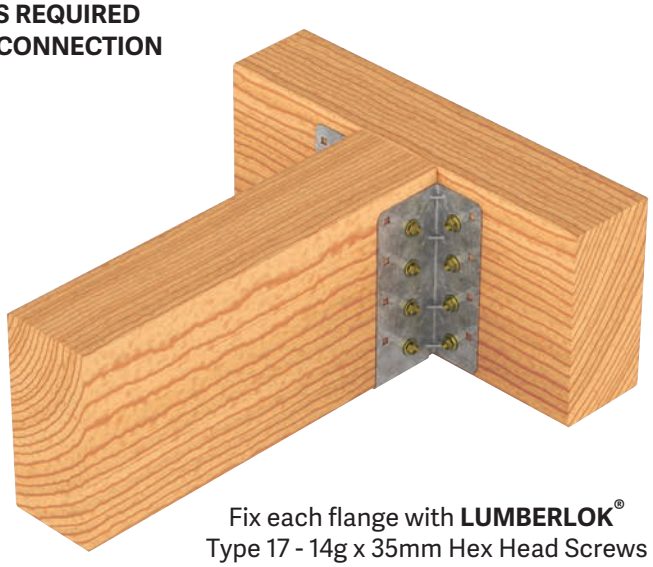
GREEN TIMBER FACTORS IF APPLICABLE TO BE APPLIED TO PUBLISHED CAPACITIES

SPLIT HANGERS
FOR LARGER TIMBER WIDTHS OR DOUBLE MEMBER CONNECTIONS

- Always used in pairs
- Fill all round holes with screws first. If greater loads are required, fill all secondary square holes in addition to round holes with screws as per the table below
- Shear capacity of timber must not be less than the applied loading to hangers
- When both round and square holes are filled the supported beam must be a minimum of double 45mm or 90mm wide
- Stainless Steel Screws to be used with Stainless Steel Hangers, Galvanised Screws to be used with Galvanised Hangers



LEFT AND RIGHT HAND HANGERS REQUIRED FOR EACH CONNECTION



Fix each flange with **LUMBERLOK®** Type 17 - 14g x 35mm Hex Head Screws as per table below

Characteristic Loads per pair of Split Hangers

Hanger Type	Number of Screws per Flange	ULS Capacities [seasoned timber] Strength Reduction factor ϕ = 0.7				Characteristic Strength in kN
		k1 = 0.6	k1 = 0.8	k1 = 1		
SPH140 & SSSPH140	3	5 kN	6.7 kN	8.4 kN		12 kN
	6	10 kN	13.4 kN	16.8 kN		24 kN
SPH180 & SSSPH180	4	7.1 kN	9.5 kN	11.9 kN		17 kN
	8	14.2 kN	19 kN	23.8 kN		34 kN
SPH220 & SSSPH220	5	9.2 kN	12.3 kN	15.4 kN		22 kN
	10	18.4 kN	24.6 kN	30.8 kN		44 kN

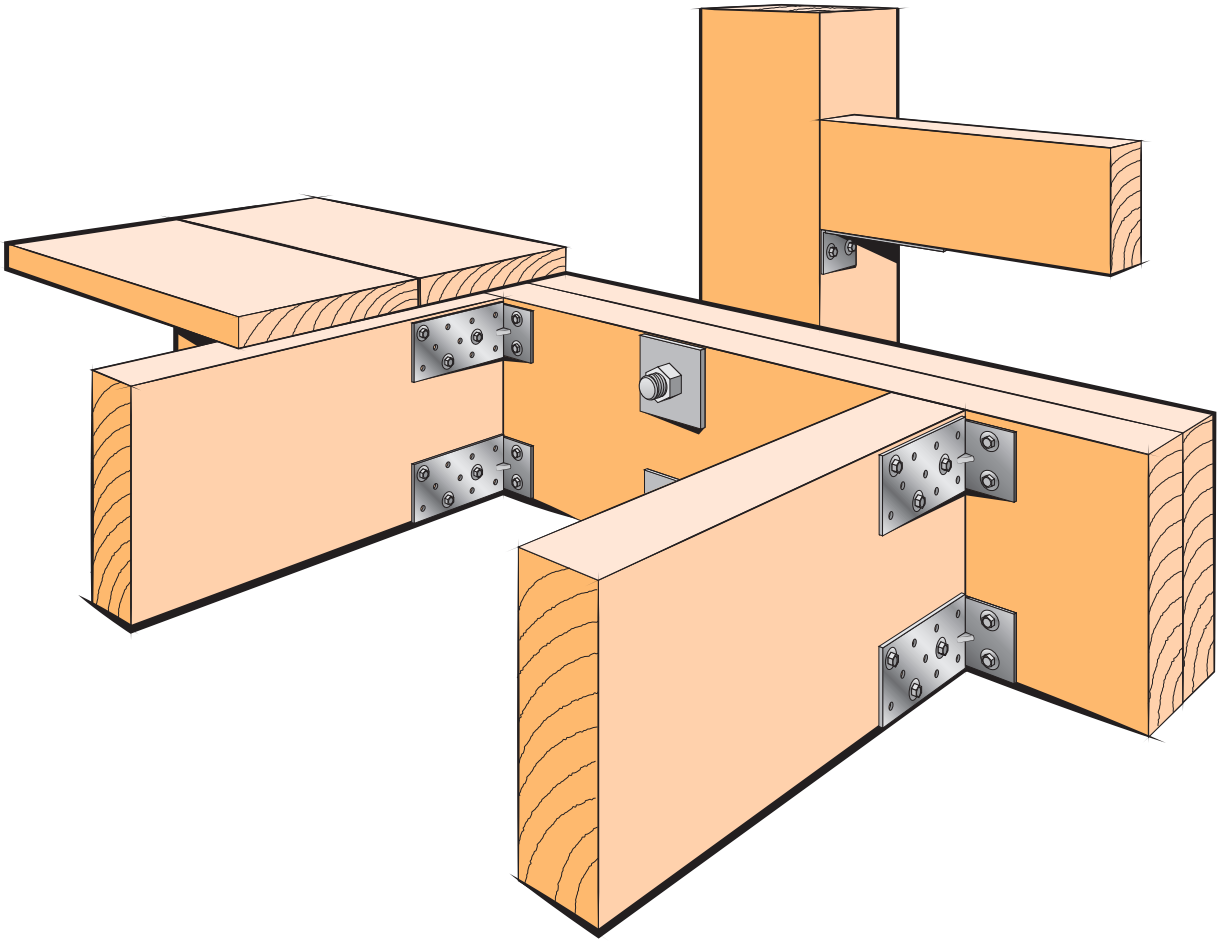
***Split Hangers are available in heights of:**
SPH140 - 137mm
SPH180 - 177mm
SPH220 - 217mm

Material: 1.55 G300 Z275 Galvanised Steel or 1.5mm Stainless Steel 304-2B

DECK JOIST FIXING

ALTERNATIVE SOLUTION TO CLAUSE 7.4.1.3 NZS 3604:2011

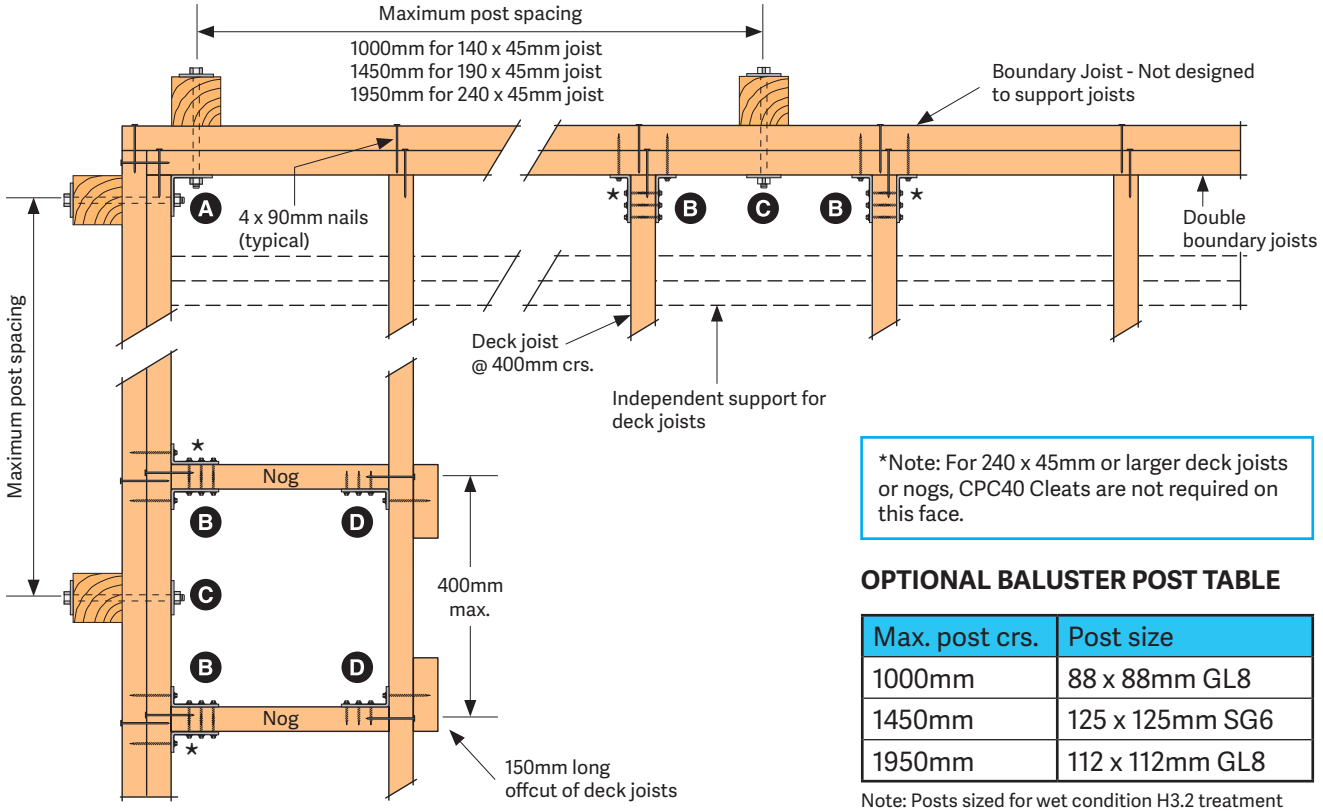
Provides the required fixing between the deck joist and boundary joist to suit a cantilever baluster system



- Simple, cost effective solution
- Suitable for all wind zones including Extra High
- Uses internal connections to allow easy fixing of decking
- For face fixed and top fixed baluster posts
- For continuous cantilever balustrade, all deck joists and nogs shall be fixed to boundary joists
- Provides solution for 140 x 45, 190 x 45, 240 x 45mm and larger joists
- Deck joists shall be independently supported or cantilevered off building
- Boundary joist used as a beam/bearer supporting deck joists is not covered by this fixing solution and is subject to specific engineering design
- Packed: Carton of 50 Stainless Steel (Grade 304) CPC40 Cleats and corresponding screw sizes

FACE FIXED BALUSTER POSTS

- Complies with Table 3.3 AS/NZS 1170.1:2002 for horizontal load of 0.75kN/m on handrail
- All fixings are designed to provide adequate rotational stability to the handrail system to resist the horizontal load at top of baluster post
- Assumes an approved post and balustrade system is used
- Suitable for all wind zones including Extra High, for approved glass or fully clad balustrades

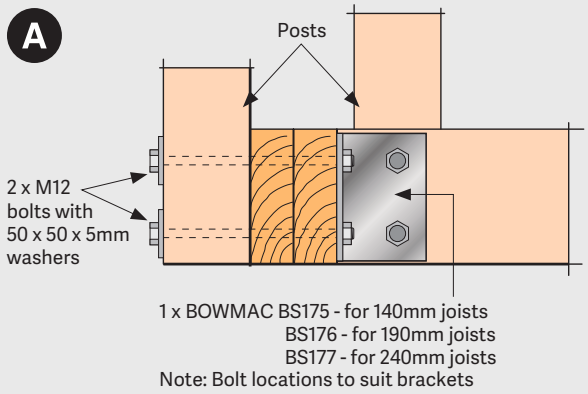


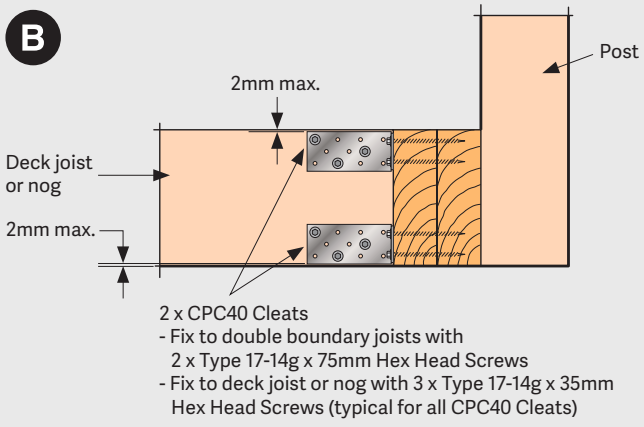
*Note: For 240 x 45mm or larger deck joists or nogs, CPC40 Cleats are not required on this face.

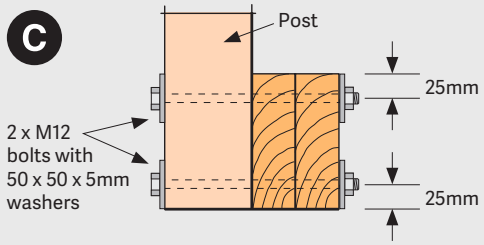
OPTIONAL BALUSTER POST TABLE

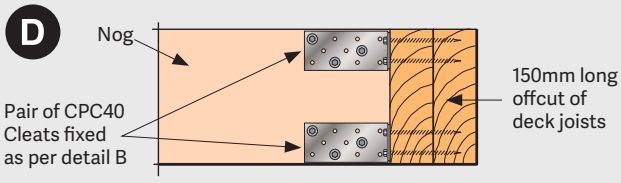
Max. post crs.	Post size
1000mm	88 x 88mm GL8
1450mm	125 x 125mm SG6
1950mm	112 x 112mm GL8

Note: Posts sized for wet condition H3.2 treatment



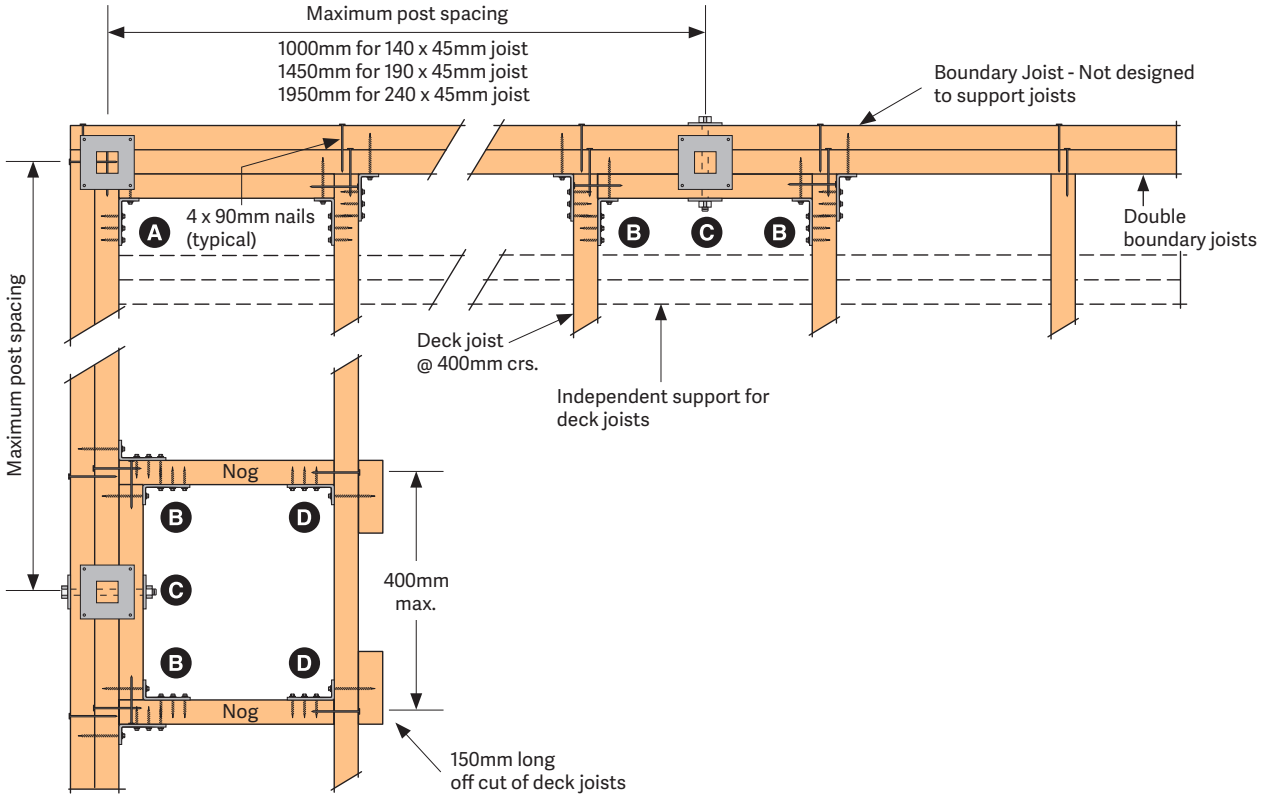


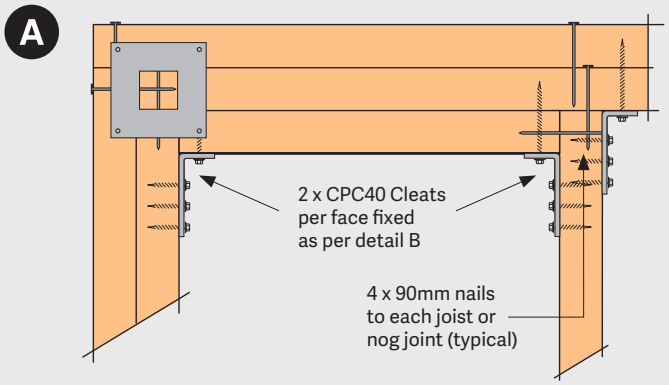


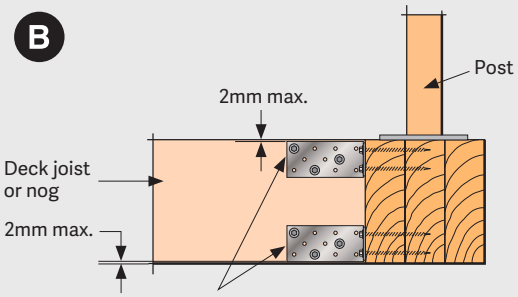


TOP FIXED BALUSTER POSTS

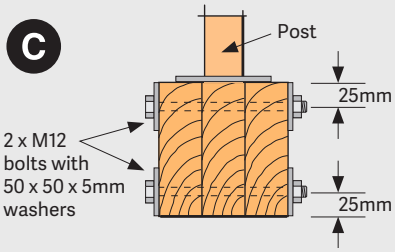
- Complies with Table 3.3 AS/NZS 1170.1:2002 for horizontal load of 0.75kN/m on handrail
- All fixings are designed to provide adequate rotational stability to the handrail system to resist the horizontal load at top of baluster post
- Assumes an approved post and balustrade system is used
- Suitable for all wind zones including Extra High, for approved glass or fully clad balustrades
- Top fixed posts (by others) are usually metal posts with welded base plates

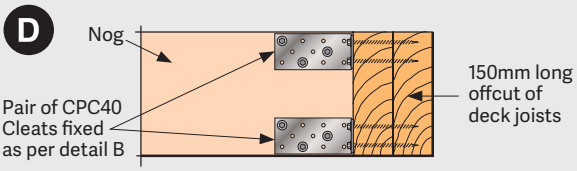






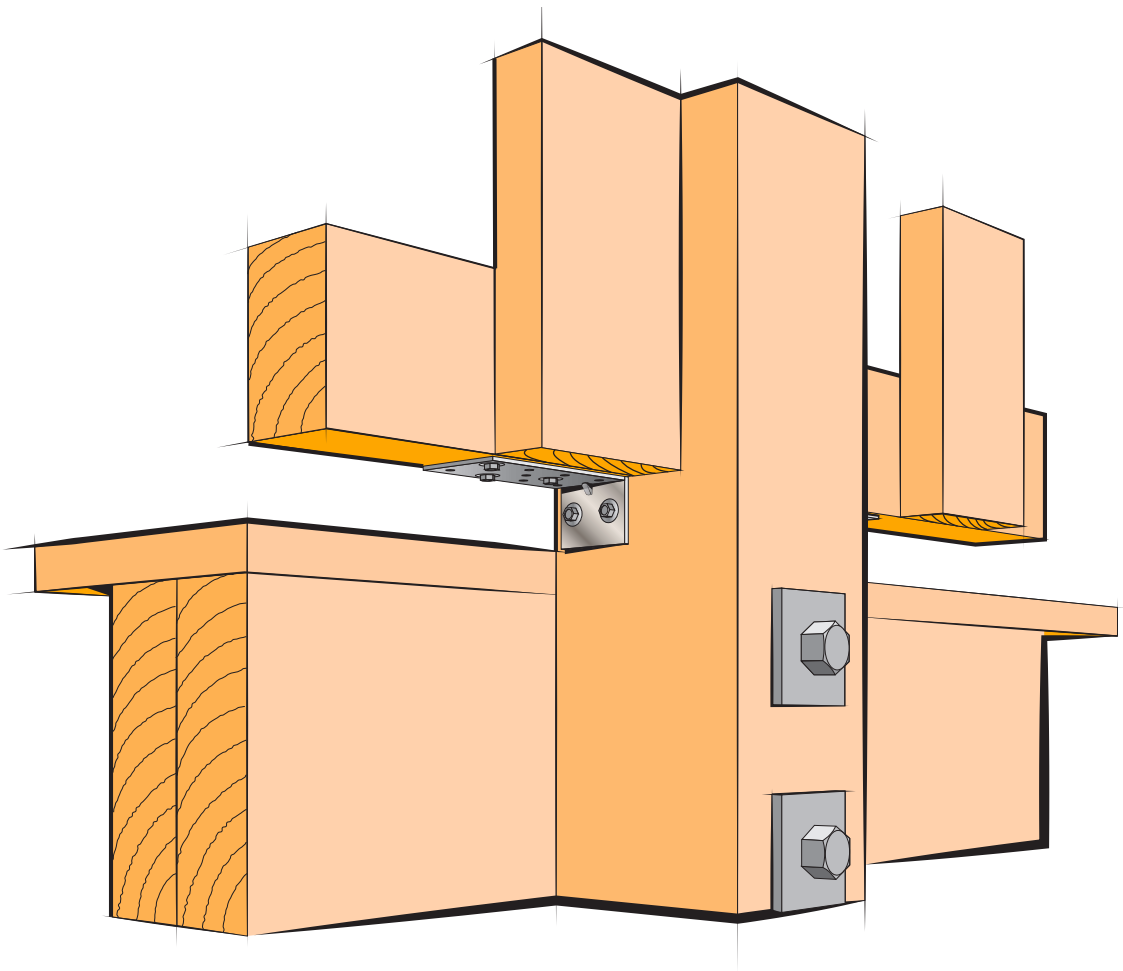
2 x CPC40 Cleats
- Fix to double boundary joists with 2 x Type 17-14g x 75mm Hex Head Screws
- Fix to deck joist or nog with 3 x Type 17-14g x 35mm Hex Head Screws (typical for all CPC40 Cleats)

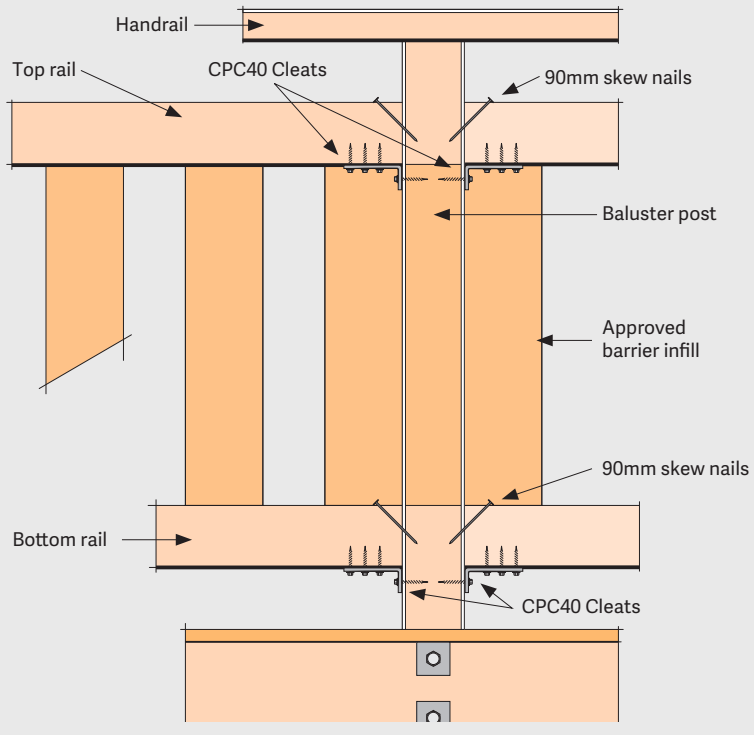


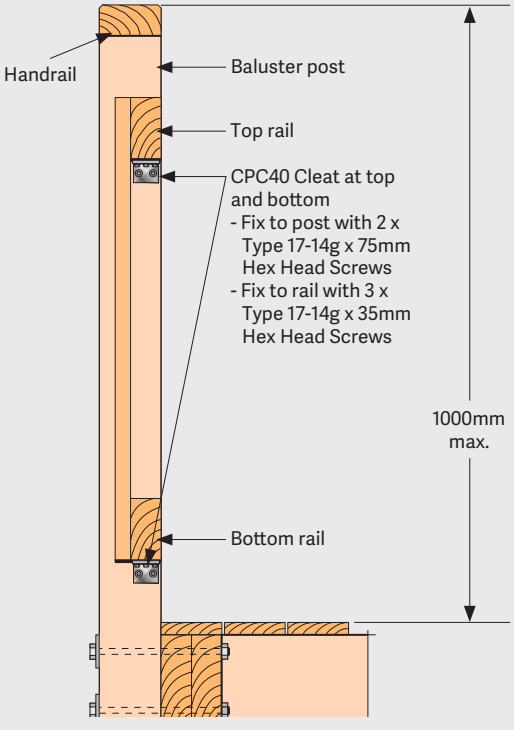


BALUSTER POST TO RAIL FIXING

- Covers post/rail fixing only
- Approved deck baluster post and rail must be used





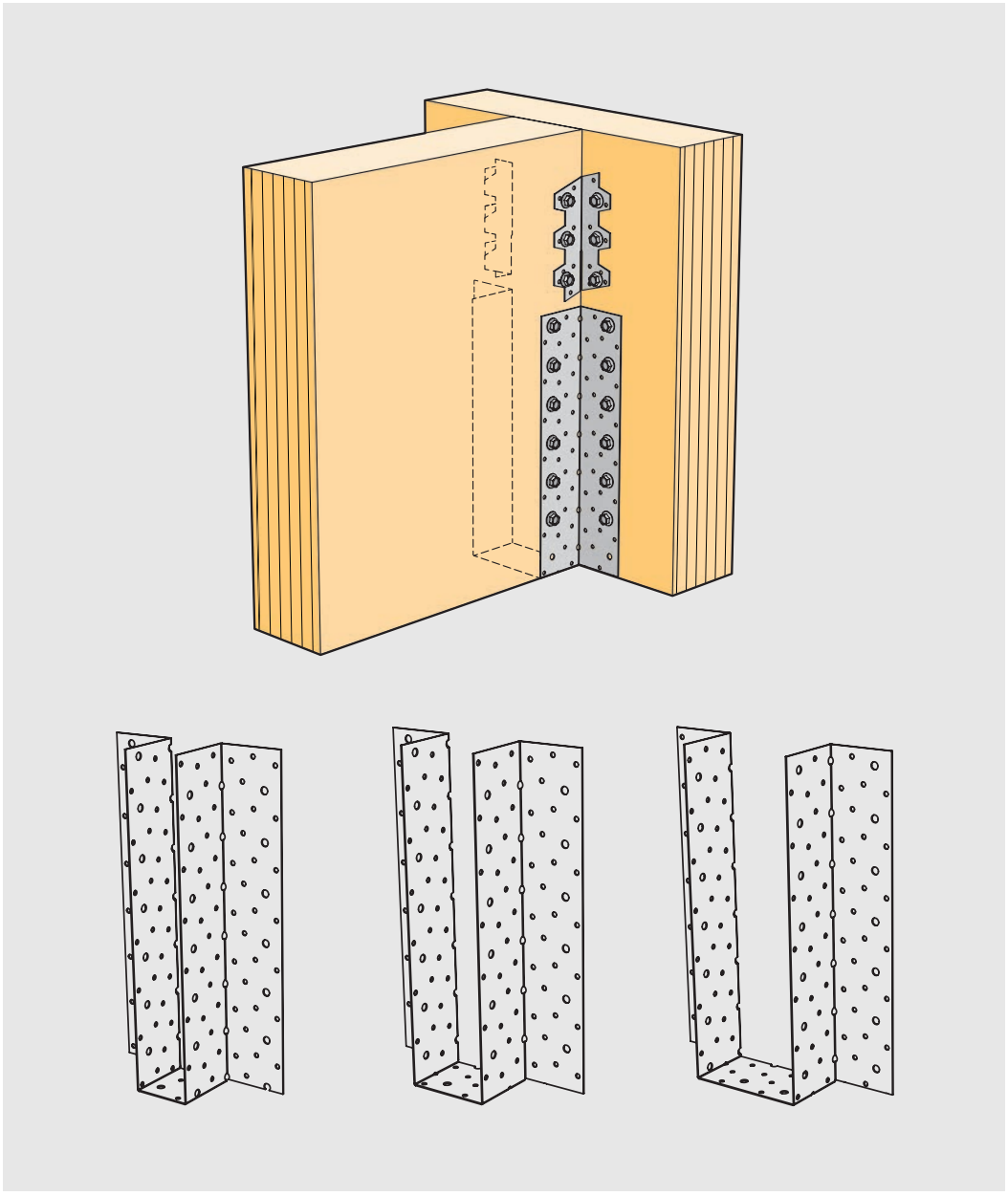


MiTek® LUMBERLOK®

LVL HANGERS

- For LVL widths of 45, 63 or 90mm
- Available height 270mm only
- Suitable for LVL joists for domestic floors (1.5kPa) or commercial floors (3.0kPa)

NOT TO BE USED IN EXTERIOR SITUATIONS



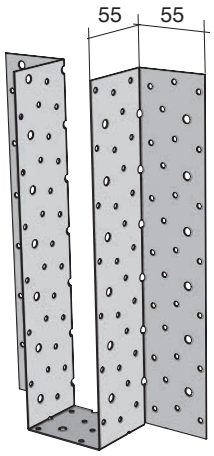
LVL HANGERS

LUMBERLOK® LVL Hangers are available in three sizes 47 x 270mm, 65 x 270mm and 95 x 270mm and are fixed with LUMBERLOK® Type 17-14g x 35mm Hex Head Screws, or LUMBERLOK Product Nails 30mm x 3.15mm diameter.

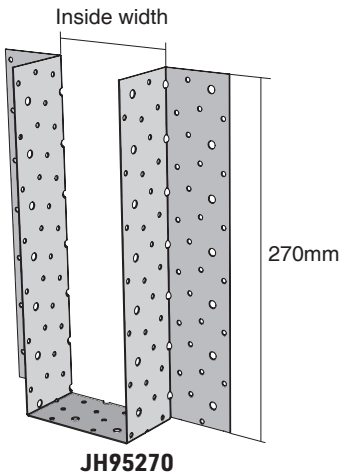
Characteristic Load - Nails					
Code	**Inside Width**	**Height**	**Nails per Flange**	**Down**	**Uplift**
JH47270	47mm	270mm	12	36kN	24kN
JH65270	65mm				
JH95270	95mm				

Characteristic Load - Screws					
Code	**Inside Width**	**Height**	**Screws per Flange**	**Down**	**Uplift**
JH47270	47mm	270mm	6	36kN	30kN
JH65270	65mm				
JH95270	95mm				

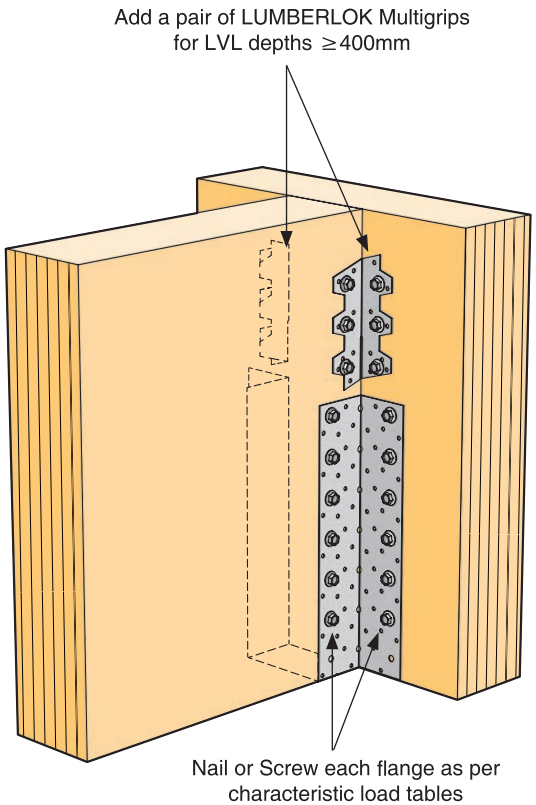
JH47270



JH65270



JH95270



Material: 0.91mm G300 Z275 Galvanised Steel

INTERNAL LOAD BEARING
ON CONCRETE FLOOR SLABS

- Covers floor thickening and supporting stud requirements
- Covers floor slabs on buildings complying with NZS 3604:2011
- All concrete slabs to be constructed as per NZS 3604:2011
- Thickening requirements apply to reinforced floor slabs
- Provides solutions for stud requirements where point loads exceed 10kN
- All slabs assumed to be supported on soils that have Ultimate Bearing Capacity of 300kPa ($Ø_b$=0.50)

ESTABLISHING THICKENING & STUD REQUIREMENTS

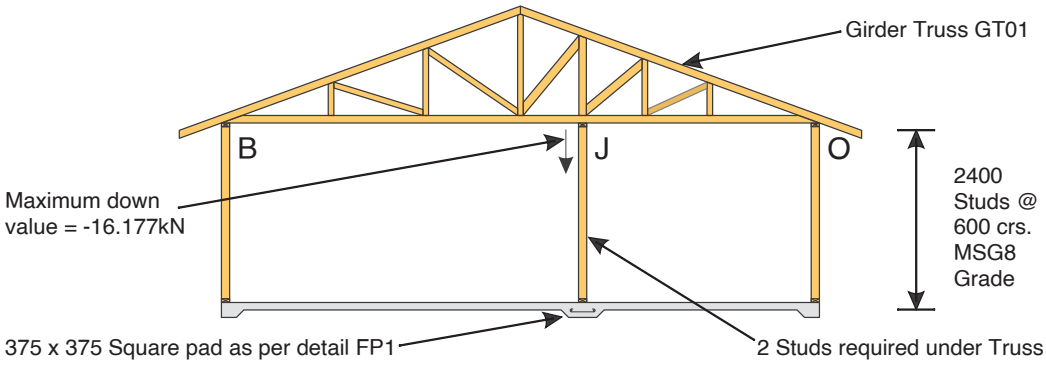
1. Establish the type of load applied to the floor as being either a UDL (uniformly distributed load) or a concentrated load. Girder trusses will always give concentrated loads and a run of two or more trusses with the same loads will give a UDL.
2. Establish the maximum load value via the MiTek 20/20® Truss Design Software by using the Truss Bearings Exceeding 10kN Report (see example below). Choose the maximum DOWN value in kN.
3. Go to the Slab Thickening & Stud Requirement Table on the next page and choose from the appropriate section; either no change for up to 10kN, FP1 and FS1 for up to 20kN, or FP2 and FS2 for up to 30kN.
4. Choose from the selection of stud options (height, centres and grade).
5. Apply the relevant slab and stud requirements as specified and detailed on the next page.
6. Where the maximum positive bearing reaction exceeds 10kN (uplift), refer to MiTek for Special Design.

MITEK 20/20® EXAMPLE SELECTION

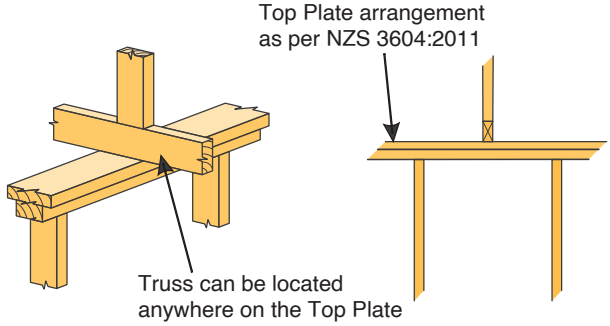
TRUSS BEARINGS EXCEEDING 10kN REPORT

Truss List
Legend: ? = input only, ~~Txx~~ = failed design, Unmarked trusses = designed successfully

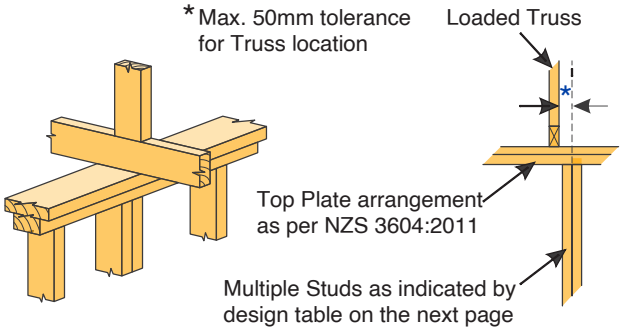
Critical Trusses	Qty	Span (mm)	Joint	Bearing Reactions (kN) Down	Uplift
GT01	1	8000	J	16.177	7.292



SINGLE STUD OPTION



MULTIPLE STUD OPTION



SLAB THICKENING & STUD REQUIREMENT TABLE

CONSTRUCTION SPECIFICATIONS

Max. truss crs. @ 1200mm, Min. truss crs. @ 600mm.
Assume walls are fully lined on at least one face.
Assume full bearing on top plate (i.e. no eccentric loading).

Truss Bearing Reaction	Slab Thickening Detail		Stud Requirements Uniform Dist. Loads or Concentrated Loads		
	Concentrated Load	Uniform Dist. Load	Stud Height	Stud Requirements	
Bearing reaction up to & including 10kN	STANDARD reinforced slab floor as per NZS 3604:2011	STANDARD reinforced slab floor as per NZS 3604:2011	2400	Refer to NZS 3604:2011	
			2700		
			3000		
			Stud Height	No. of Stud under Truss	Min. Timber Size
Bearing reaction up to & including 20kN	TYPE FP1 375 x 375 PAD	TYPE FS1 300 STRIP THICKENING	2400	2	90 x 35
			2700	2	90 x 45
			3000	3	90 x 45
			Stud Height	No. of Stud under Truss	Min. Timber Size
Bearing reaction up to & including 30kN	TYPE FP2 450 x 450 PAD	TYPE FS2 450 STRIP THICKENING	2400	3	90 x 45
			2700	3	90 x 45
			3000	4	90 x 45

TIMBER SPECIFICATIONS

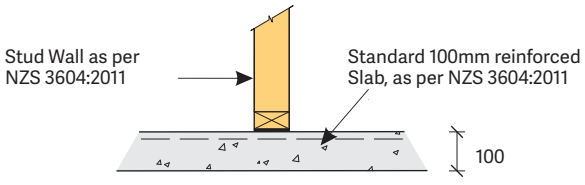
Timber properties based on NZS 3603:1993 Amendment No.4 March 2005
Minimum grade specified is SG8 unless otherwise noted
For SG6 use the studs for the next highest category
i.e. - For loads up to 10kN select studs from the 20kN table
- For loads up to 20kN select studs from the 30kN table
- For loads above 20kN Special Design is required

*Note: The stud requirement for 20kN & 30kN bearing reactions can be applied to external walls as well.

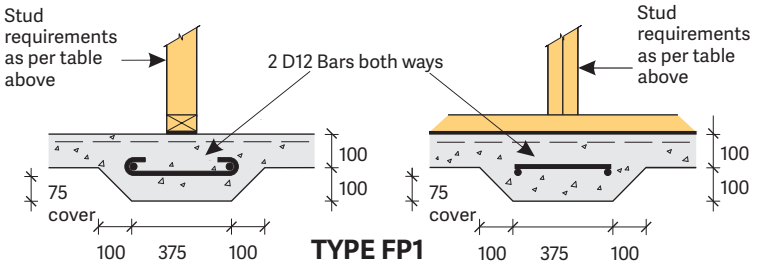
SLAB THICKENING DETAILS

CONCRETE PAD OPTIONS

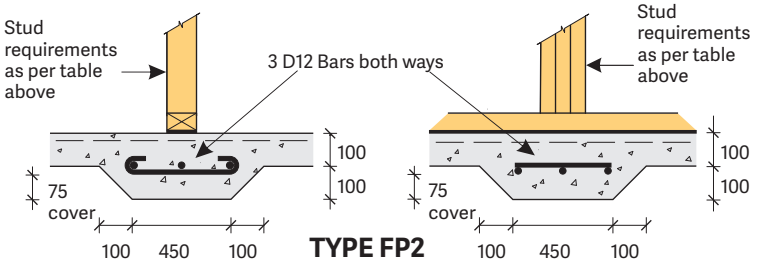
(for concentrated loads)



STANDARD 100mm SLAB



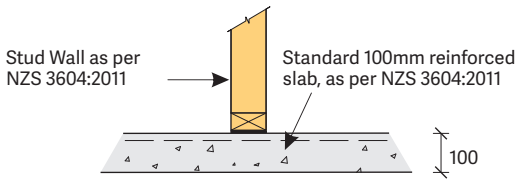
TYPE FP1



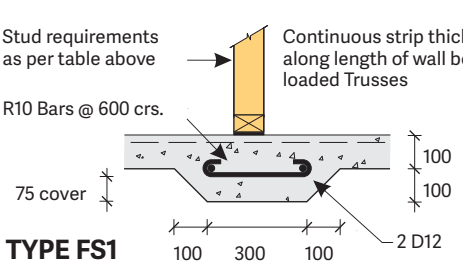
TYPE FP2

CONTINUOUS CONCRETE THICKENING OPTIONS

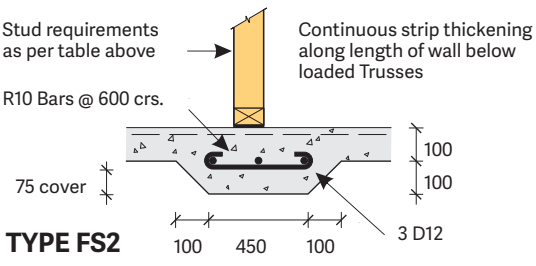
(for uniformly distributed loads)



STANDARD 100mm SLAB



TYPE FS1



TYPE FS2

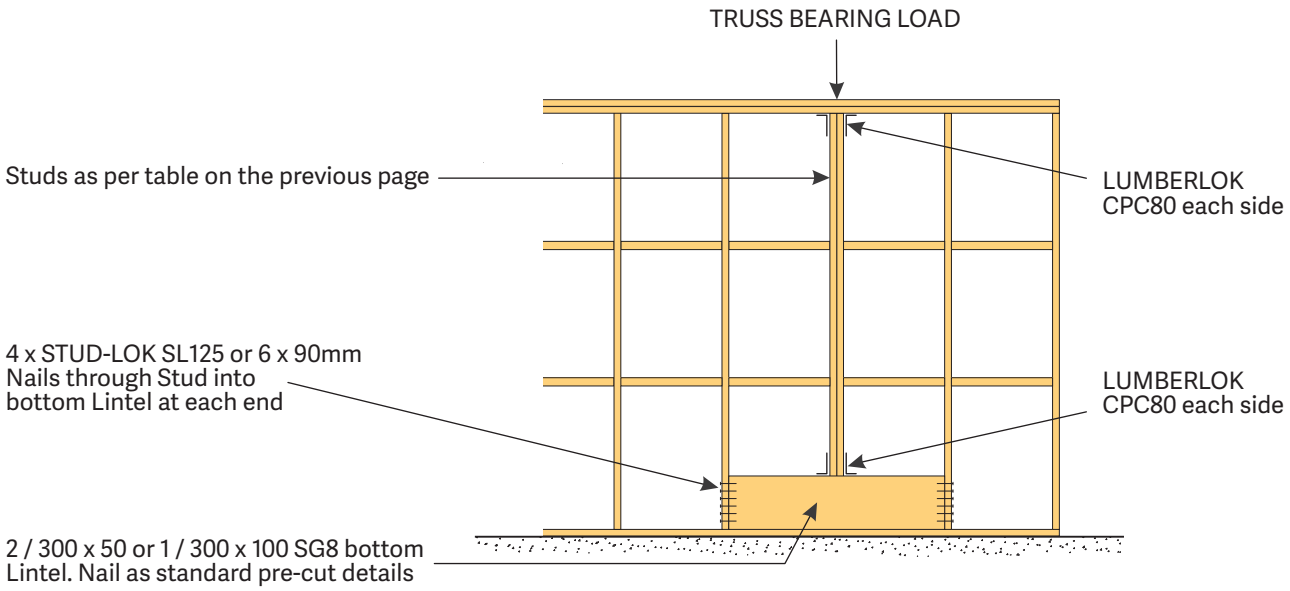
NOTE: FP = Foundation Pad FS = Foundation Strip

RETRO FITTED LOAD BEARING OPTION

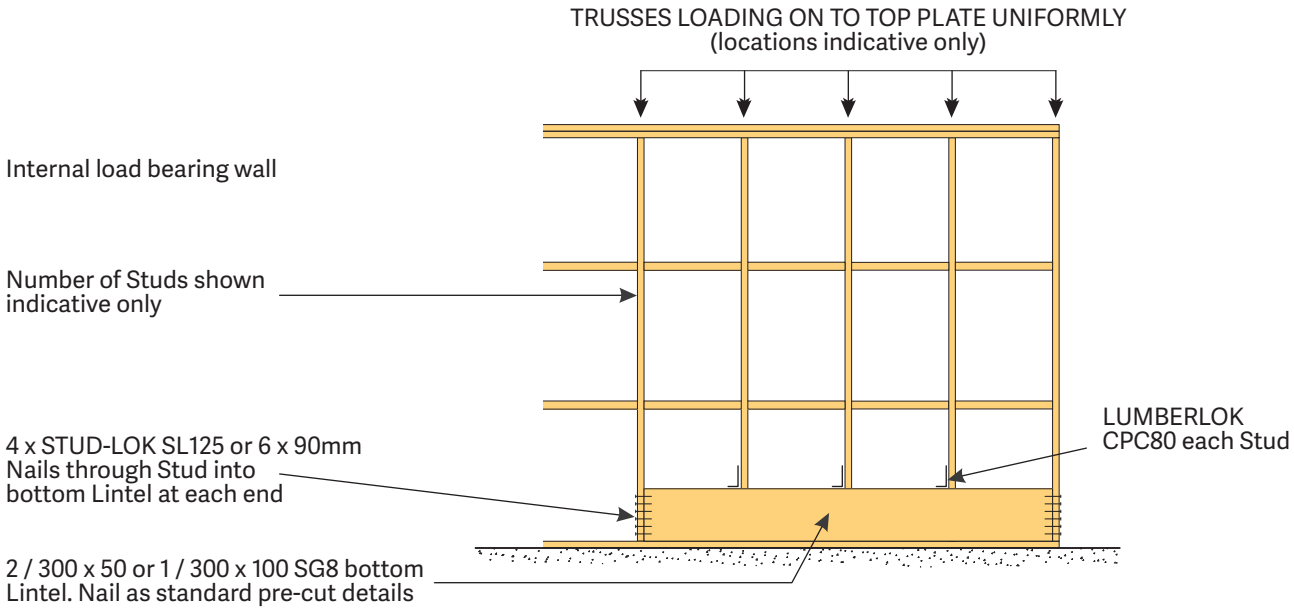
Note:

- Covers slab details where no thickening has been built into the foundation
- For loads exceeding 10kN install bottom lintel (300 x 100) between two adjacent studs as detailed below. For loads 30kN or more, special design is required
- Ensure the studs comply with requirements on the previous page and are located directly under concentrated loads. This may require on-site installation of these studs

CONCENTRATED LOAD



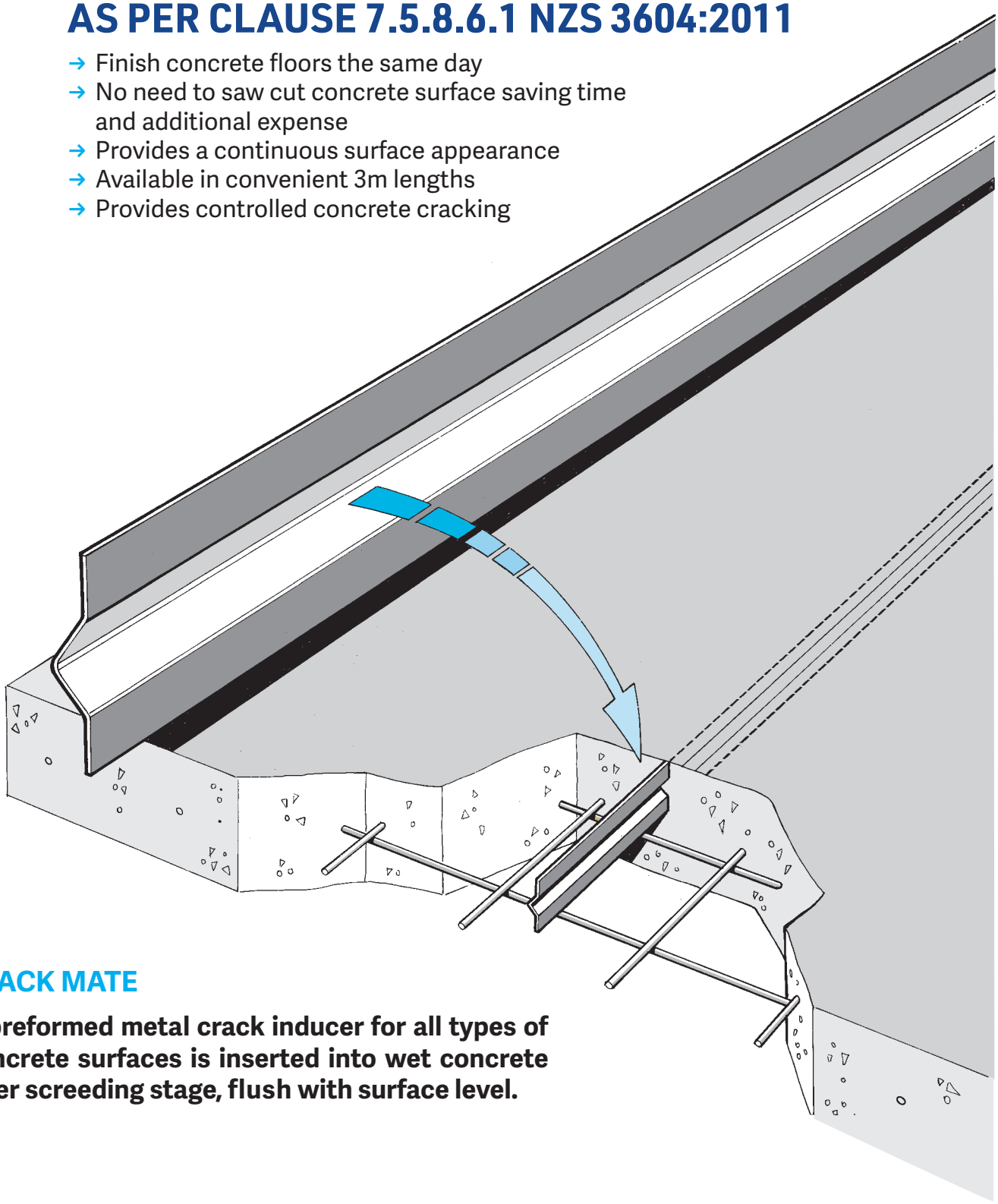
UNIFORMLY DISTRIBUTED LOADS



KRACK MATE

AS PER CLAUSE 7.5.8.6.1 NZS 3604:2011

- Finish concrete floors the same day
- No need to saw cut concrete surface saving time and additional expense
- Provides a continuous surface appearance
- Available in convenient 3m lengths
- Provides controlled concrete cracking



KRACK MATE

A preformed metal crack inducer for all types of concrete surfaces is inserted into wet concrete after screeding stage, flush with surface level.

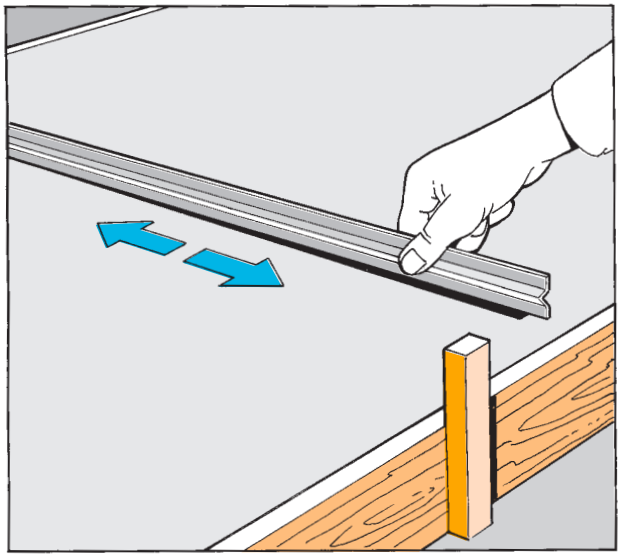
Available from leading Builders Supply Merchants throughout New Zealand

Krack Mate

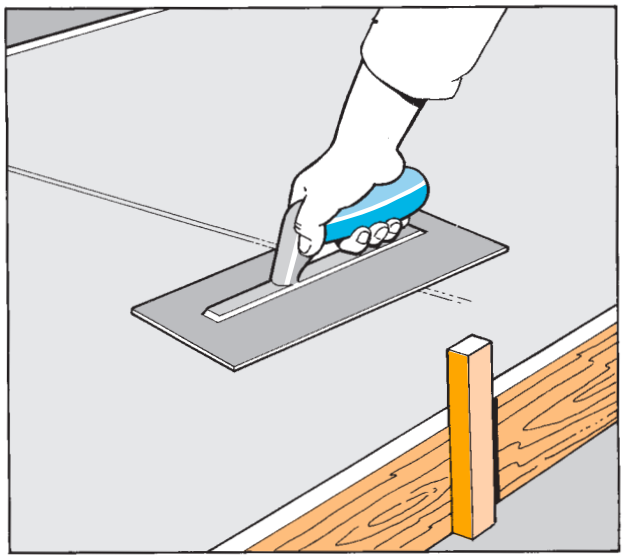
Available in 3.0m lengths which can be bent and snapped to the required length on site, to suit the width of concrete being laid. Alternatively KRACK MATE lengths can be lapped against each other for continuous crack induced locations over greater areas.

Installation

Once the concrete has been screeded and is still relatively wet, KRACK MATE can be installed at predetermined locations by placing the product vertically into the concrete surface. With a series of gentle push/pull movements, the product will slowly immerse itself into the concrete just below, or at surface level.



Immersing KRACK MATE into screeded surface



Floating off for continuous surface finish

Advantages

- Designed for on-ground slabs and can be butted up to any given edge i.e. columns, pilasters and kerbing
- Allows the concrete to crack along the KRACK MATE whilst it cures
- Profile makes KRACK MATE almost impossible to dislodge therefore surface can be floated as normal to obtain a flat continuous surface
- KRACK MATE provides a positive alternative to existing methods and saw cut options
- KRACK MATE ensures no cutting of mesh enabling the continuity of mesh and rebar to be utilised to their maximum strength

Material

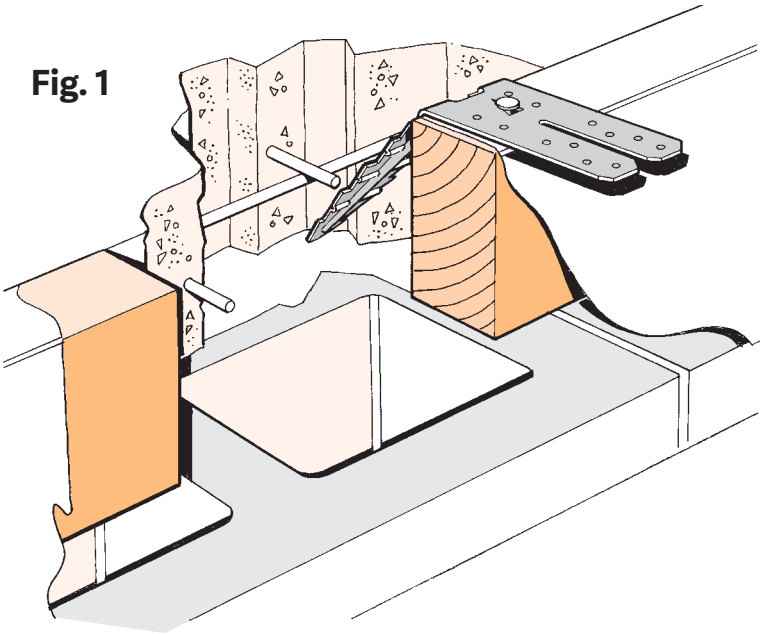
0.85mm G250 Z275 Galvanised Steel
36mm o/a width
Supplied in 3.0m lengths

MiTek® LUMBERLOK®

BOTTOM PLATE FIXING ANCHOR

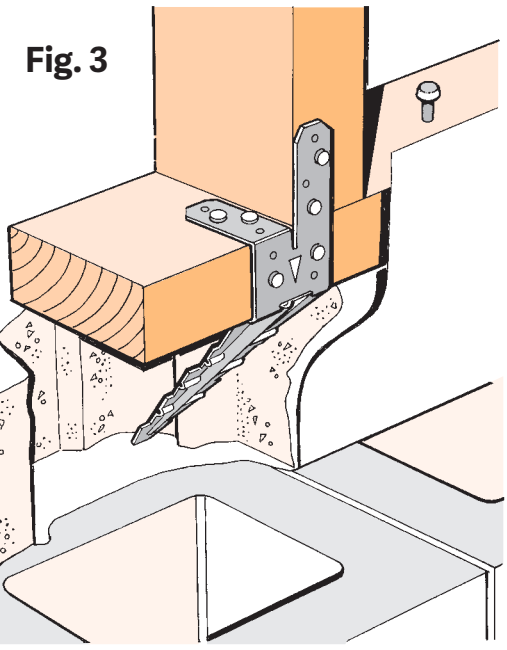
- → Eliminates the drilling of bottom plates
- → Makes the fixing of timber framework easier and quicker
- → Saves hand trowelling around cast-in anchor bolts or rods
- → Use at 900mm centres max.
- → Complies with Clause 7.5.12.2 NZS 3604:2011

Fig. 1



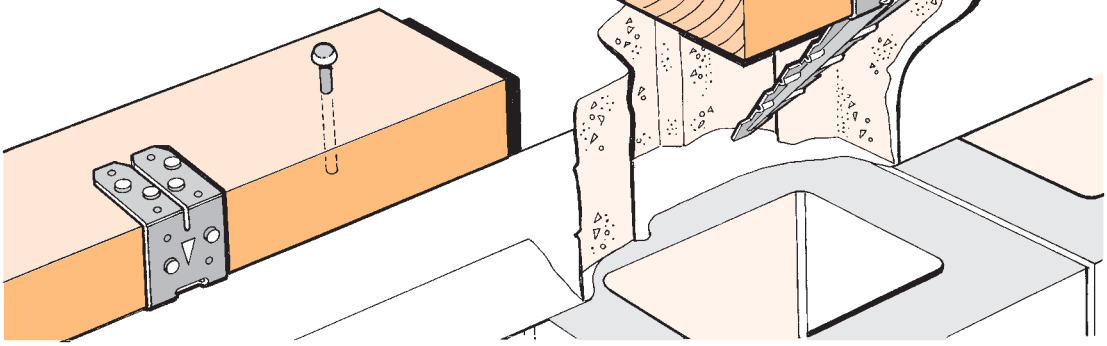
1. Bottom Plate Fixing Anchors shall be fixed at 900mm centres max. to the boxing for concrete floor slabs, over a continuous vapour barrier. Each Fixing Anchor is nailed prior to concrete pour, and shall be left undisturbed until concrete has hardened ready for timber frames to be installed. (Fig.1).
2. When timber framing is in place, the Fixing Anchors are folded up and over the bottom plate. (Fig. 2).
3. Two LUMBERLOK Product Nails 30mm x 3.15 dia. shall then be driven into the side of the bottom plate and two additional nails applied through each of the lugs. Should a stud coincide with the position of a Fixing Anchor, nail as shown in Fig. 3.

Fig. 3

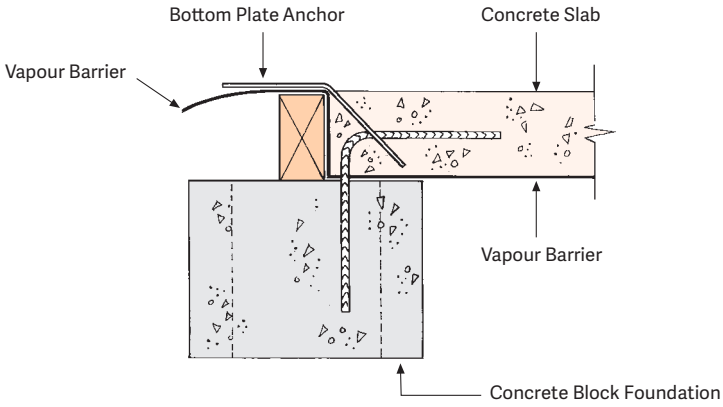


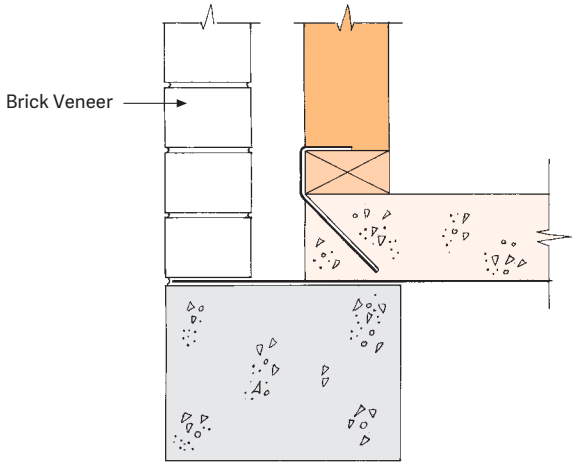
4. A 75mm x 4 dia. concrete nail must be fixed adjacent to each Fixing Anchor, through the bottom plate into the concrete, at no less than 70mm from the concrete edge. When used as a Bracing Wall hold-down, a Fixing Anchor must be positioned within 150mm from the end of that wall. Bracing wall must not exceed 70 BU/m.

Fig. 2

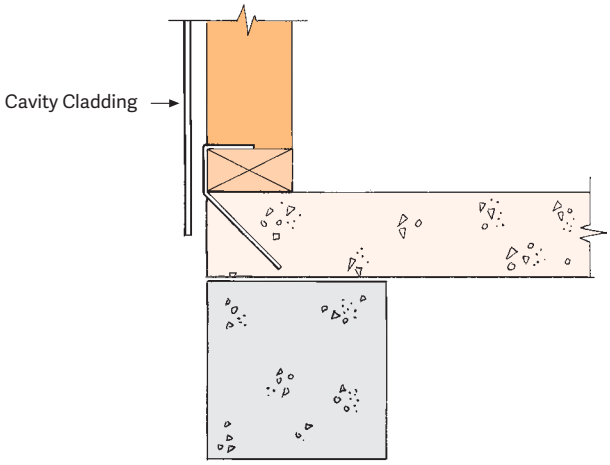


Available from leading Builders Supply Merchants throughout New Zealand



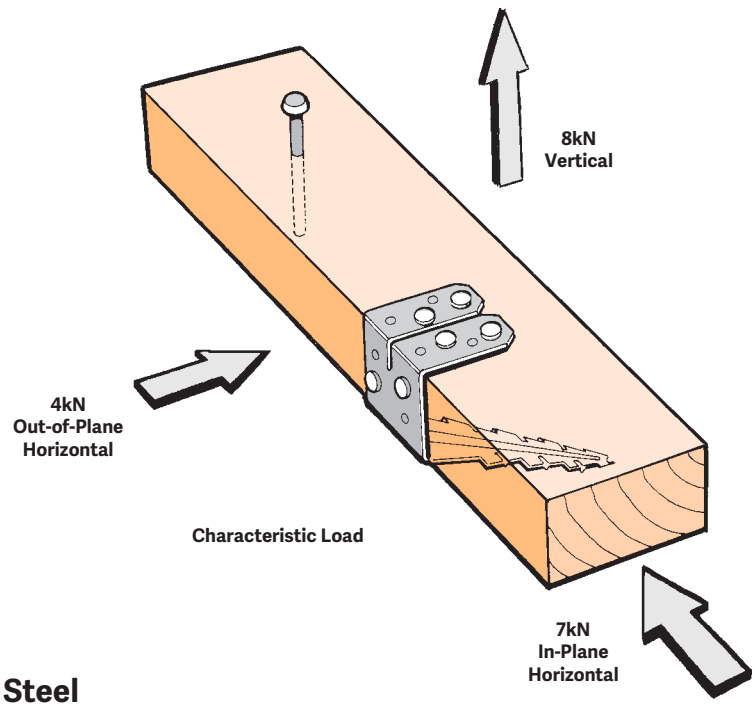


BRICK VENEER



CAVITY CLADDING

Design Loads
Concrete compressive strength 20MPa min.



Code: **BPA**
Material: **0.95mm G300 Z450 Galvanised Steel**
Code: **SSBPA**
Material: **0.9mm Stainless Steel 304-2B**
Packed: **50 per Carton**

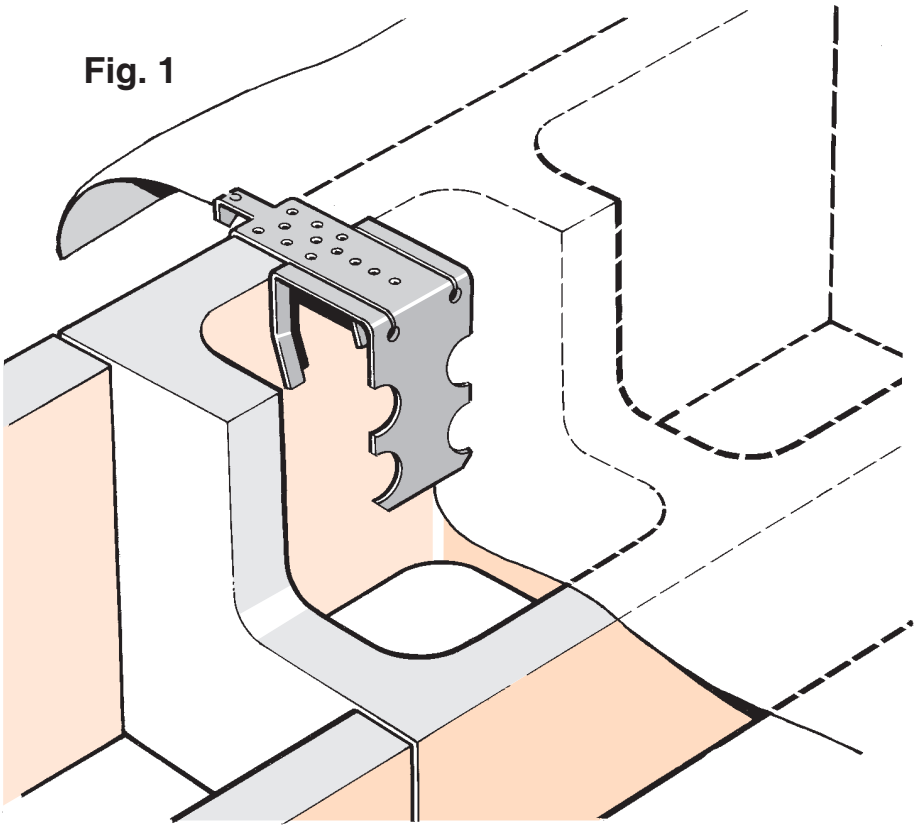
MiTek® LUMBERLOK®

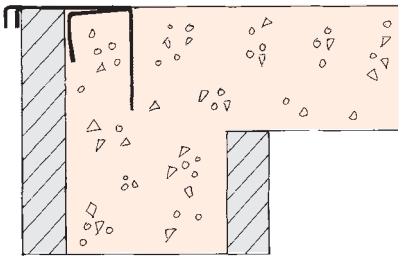
HEADER BLOCK ANCHOR

- For use with concrete header block foundations
- Eliminates the drilling of bottom plates
- No need to use Anchor Bolts
- Use at 600mm crs. max.
- Only for 90 x 45mm bottom plate
- Complies with Clause 7.5.12.2 NZS 3604:2011

NZ Pat. Appln. 264928, 270081, 272507

Fig. 1





1. Header Block Anchors shall be fixed at 600mm centres max. to the upstand edge of the header blocks, over a continuous vapour barrier (Fig.1). Each Header Block Anchor is positioned on to the blockwork prior to concrete pour and shall be left undisturbed until the concrete has hardened sufficiently to locate and position the timber frames.

2. Prior to placing timber frames, the centre flap of the Header Block Anchor must be lifted up from the slab and folded back to allow the wall frame bottom plate to be positioned in place. (Fig. 2)

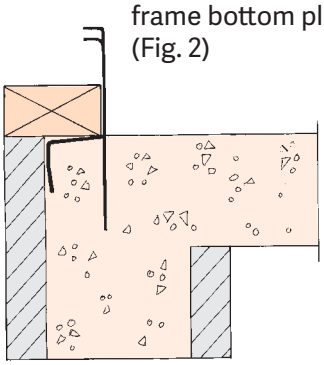
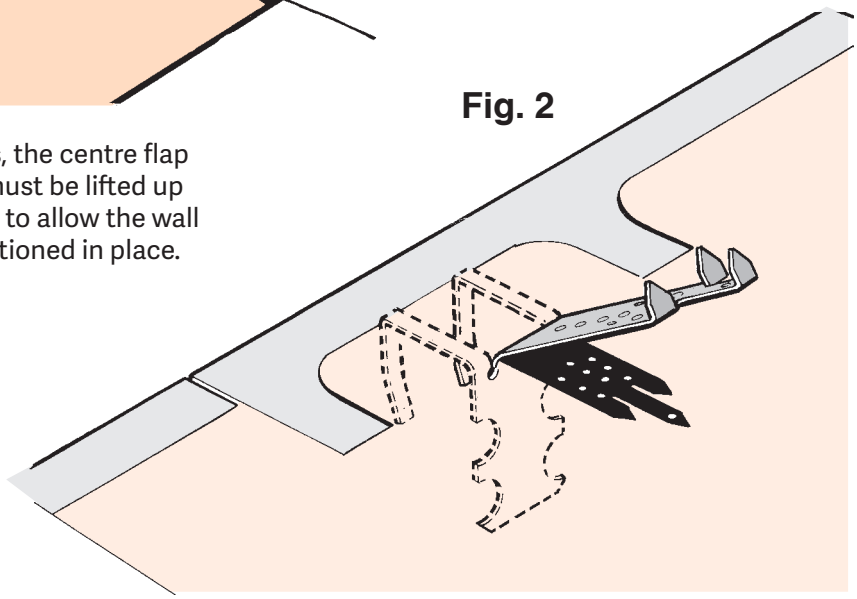


Fig. 2



Available from leading Builders Supply Merchants throughout New Zealand

3. One LUMBERLOK Product Nail 30mm x 3.15 dia. should then be driven into the inside face of the bottom plate and at least four additional nails applied through the remaining flange, which is either wrapped over the top of the bottom plate or fixed to the face of a stud or block should the Header Block Anchor not line up with the stud. (Fig. 3).

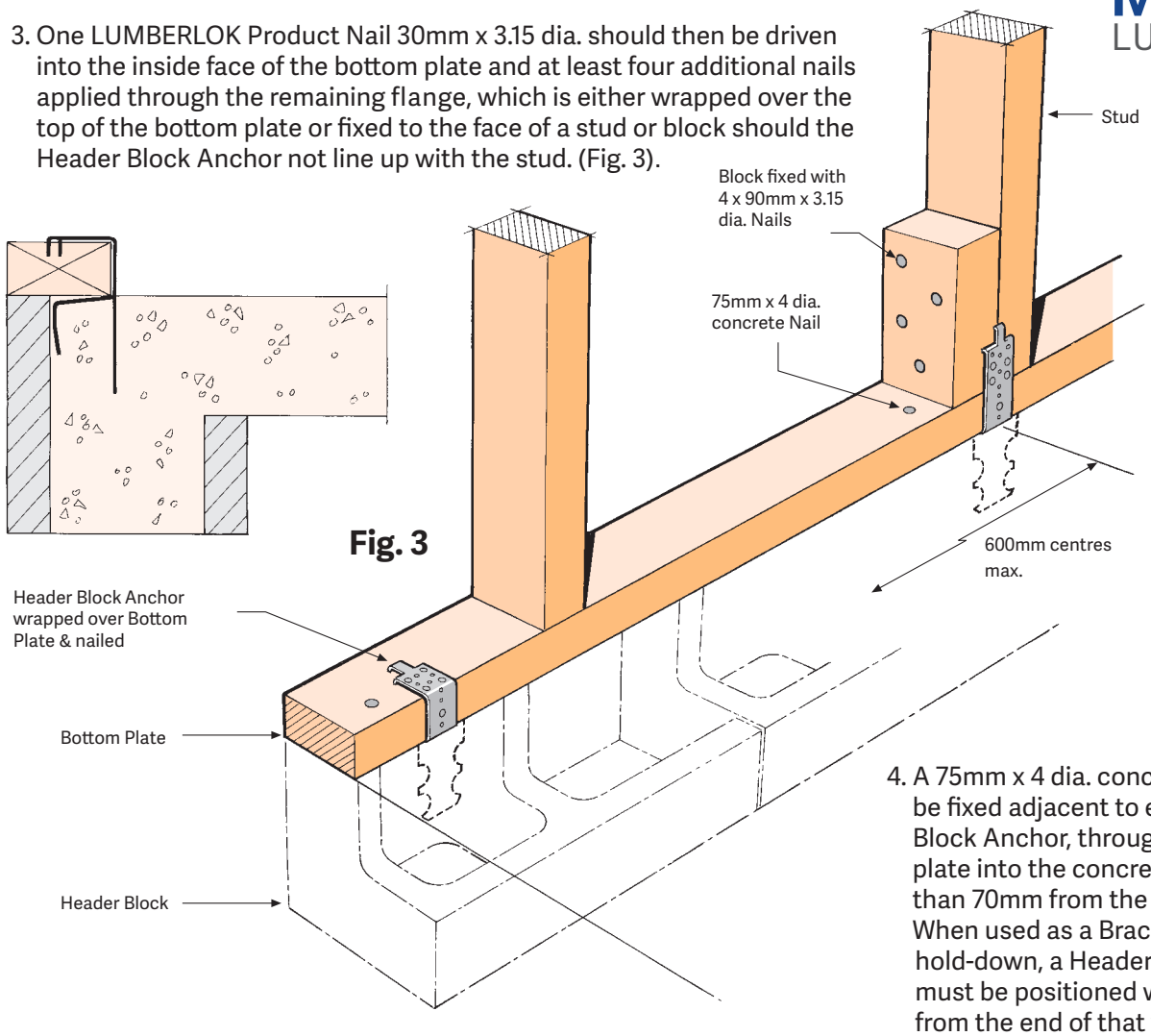


Fig. 3

4. A 75mm x 4 dia. concrete nail must be fixed adjacent to each Header Block Anchor, through the bottom plate into the concrete, at not less than 70mm from the concrete edge. When used as a Bracing Wall hold-down, a Header Block Anchor must be positioned within 150mm from the end of that wall. Bracing wall must not exceed 70 BU/m.

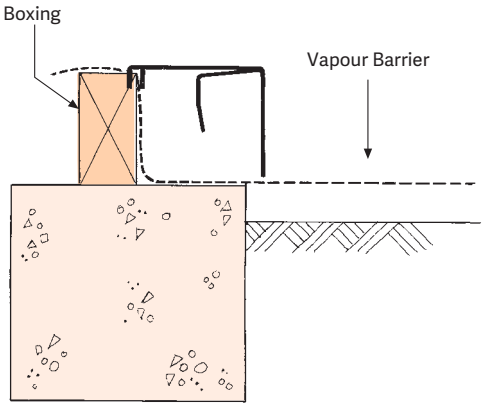
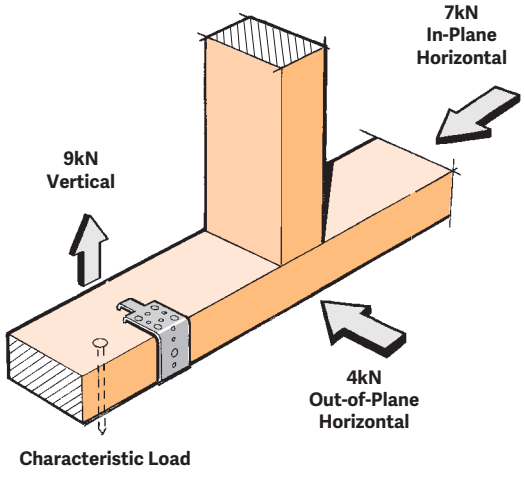


Fig. 4

5. Header Block Anchors have also been designed to enable them to be used with timber boxing, as opposed to using concrete header blocks. (Fig. 4). Note however that the product is fixed around the **inside** face of the bottom plate.



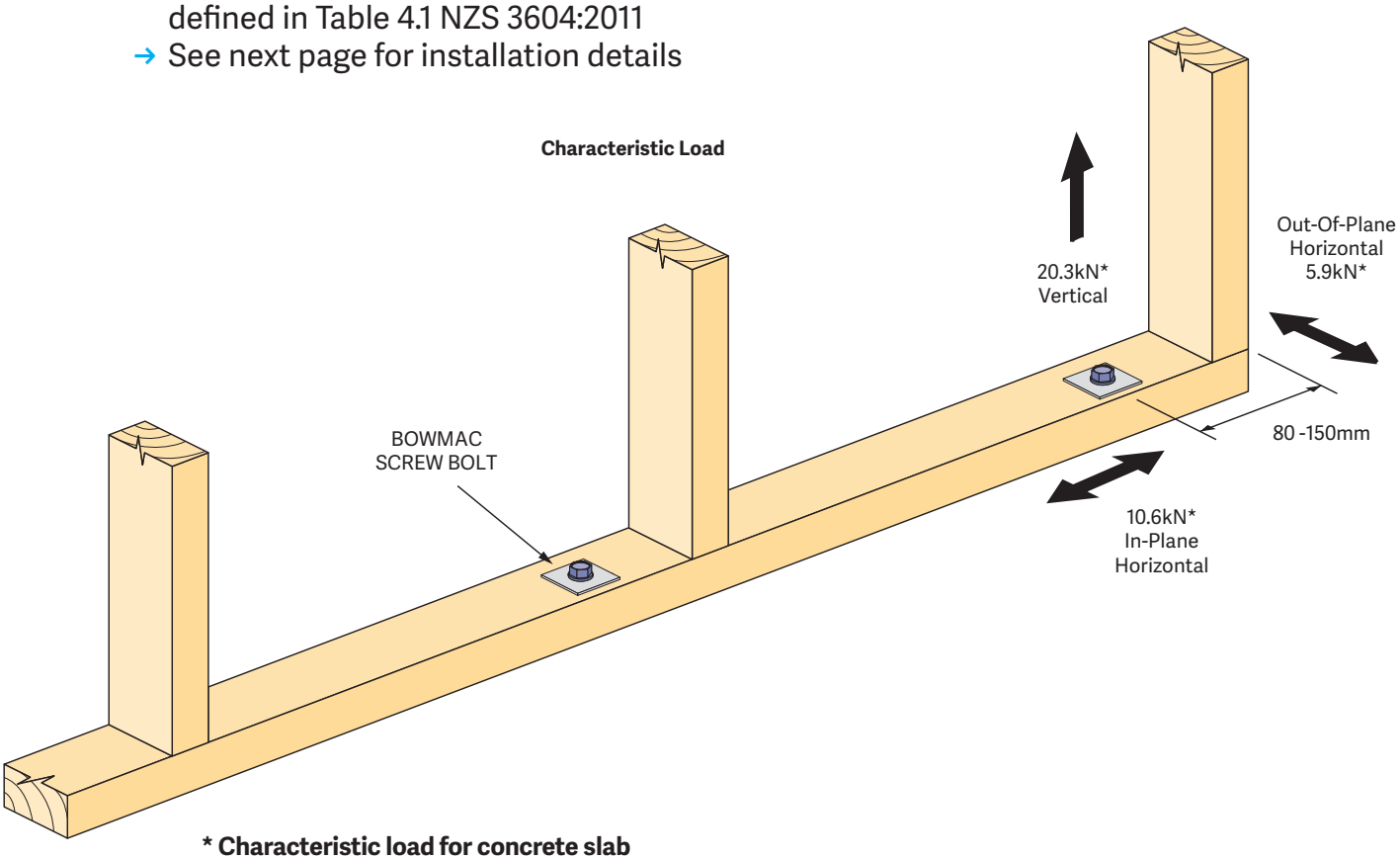
Design Loads
Concrete compressive strength 17MPa min.

Code: **HBA**
Material: **1.15mm G250 Z275 Galvanised Steel**
Code: **SSHBA**
Material: **0.9mm Stainless Steel 304-2B**
Packed: **48 per Carton**

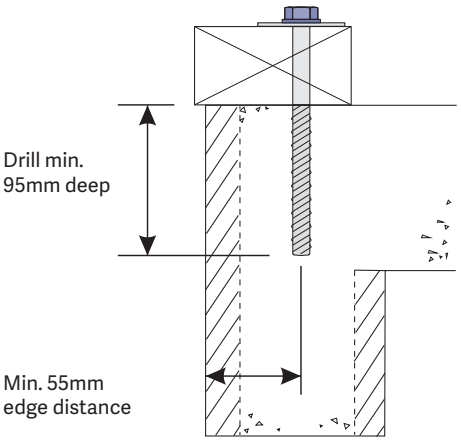
BOTTOM PLATE SCREW BOLT

M10 X 140 BOWMAC BLUE HEAD

- Complies with Clause 7.5.12.2 NZS 3604:2011 Proprietary Post Fixed Anchors
- BRANZ tested. Ref # ST0895 Oct. 2012
- Suitable for both external and internal wall frame anchor to concrete slab or masonry header blocks
- Complies with durability requirements for "All Zones" in a "CLOSED" environment as defined in Table 4.1 NZS 3604:2011
- See next page for installation details



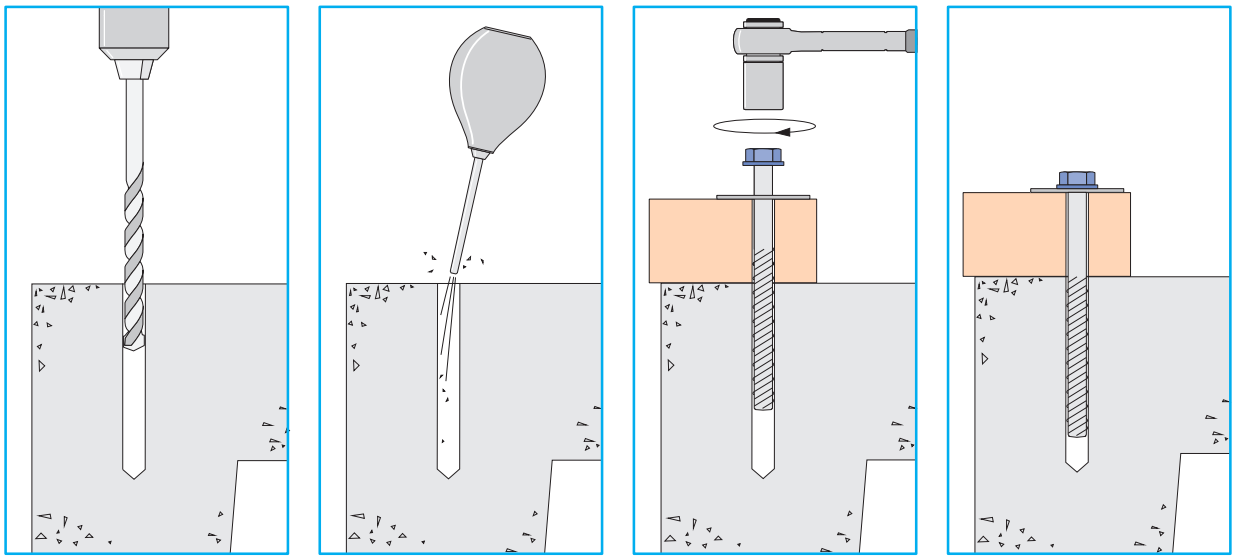
*** Characteristic load for concrete slab edges formed by masonry header blocks**



Available from leading Builders Supply Merchants throughout New Zealand

INSTALLATION DETAILS

→ Install BOWMAC SCREW BOLT and washer supplied to concrete slabs at 900mm max. crs., or 600mm max. crs. when using masonry header blocks
→ SCREW BOLT must be located within 150mm from end of timber wall frame



- Use a 10mm diameter masonry bit for drilling into concrete substrate
- Drill a hole into the concrete base to a minimum depth of 95mm and clean out dust and debris from hole prior to installation of BOWMAC SCREW BOLT
- Insert SCREW BOLT through washer and timber and into the hole
- Begin tightening SCREW BOLT by applying downward pressure when engaging the first thread
- Additional downward pressure may be required for installation in high strength, dense concrete
- Continue tightening SCREW BOLT until the head is firmly seated against the washer
- In extremely dense material, use of an impact wrench is recommended
- Ensure SCREW BOLT is at the required embedment depth
- Don't exceed the maximum clamping torque of 80Nm
- The installation is now complete

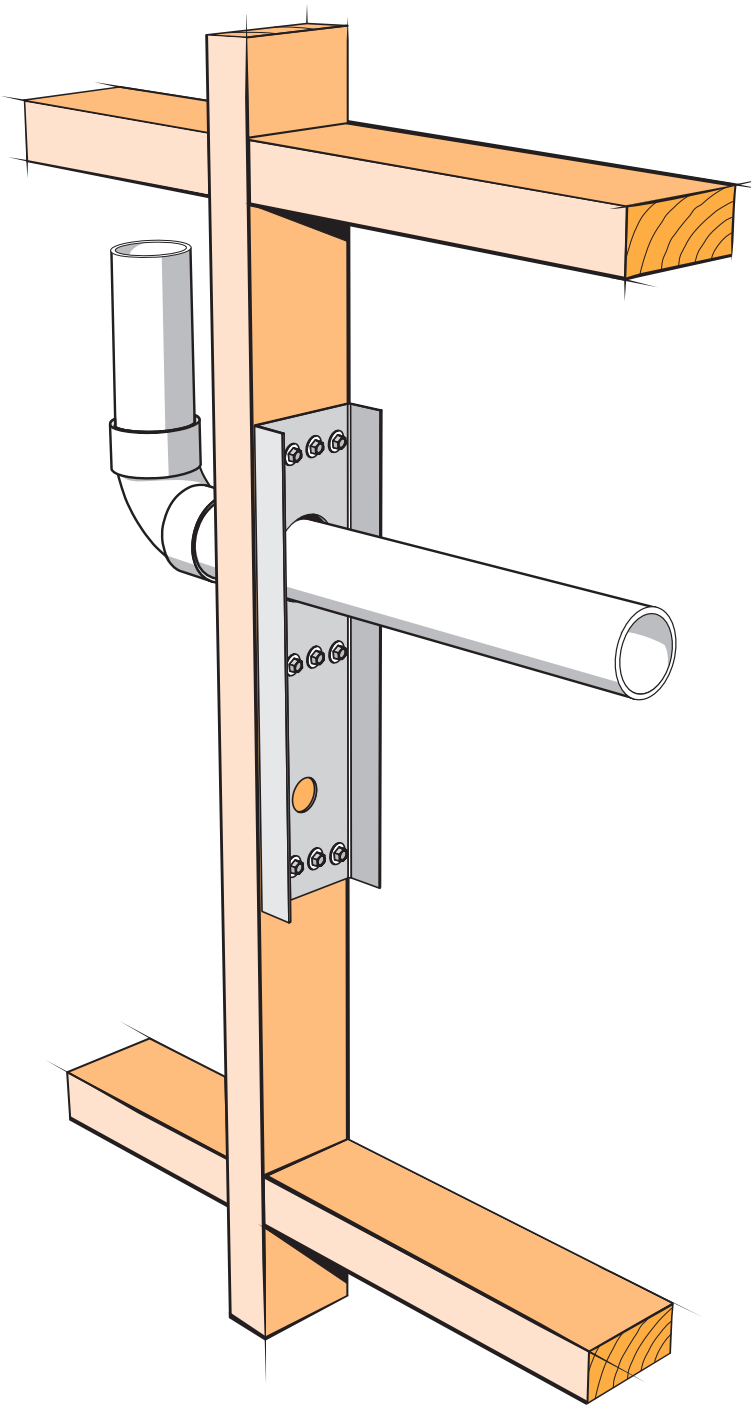
INSTALLATION TIPS

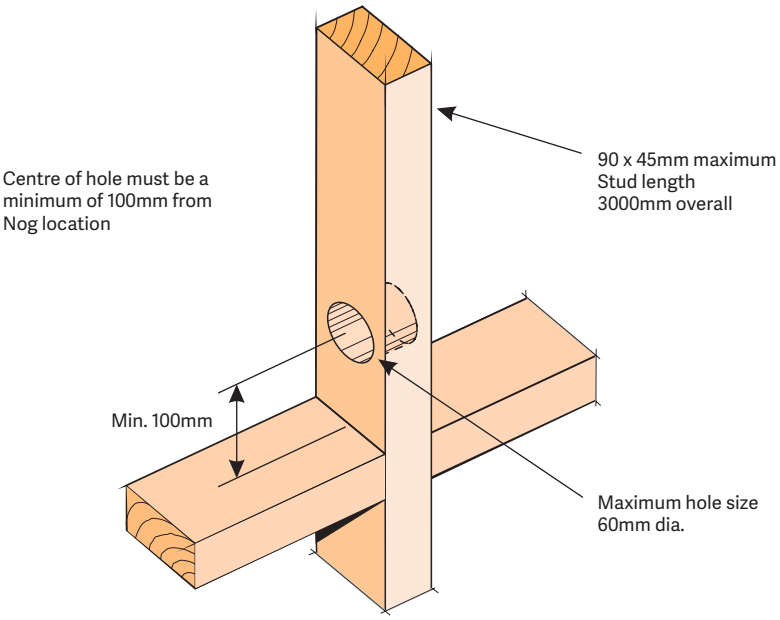
- Use quality hexagonal socket with a ratchet spanner (15mm Hex Head)
- Where substrate allows, a torque controlled wrench can be used
- During installation debris or dust created by the thread cutting action may cause some resistance to be experienced. This is easily overcome by unscrewing the BOWMAC SCREW BOLT for one turn, or more and then continue to fix to the full embedment

Code: BPS
Packed: 10 SCREW BOLTS and washers per bag
5 bags per carton

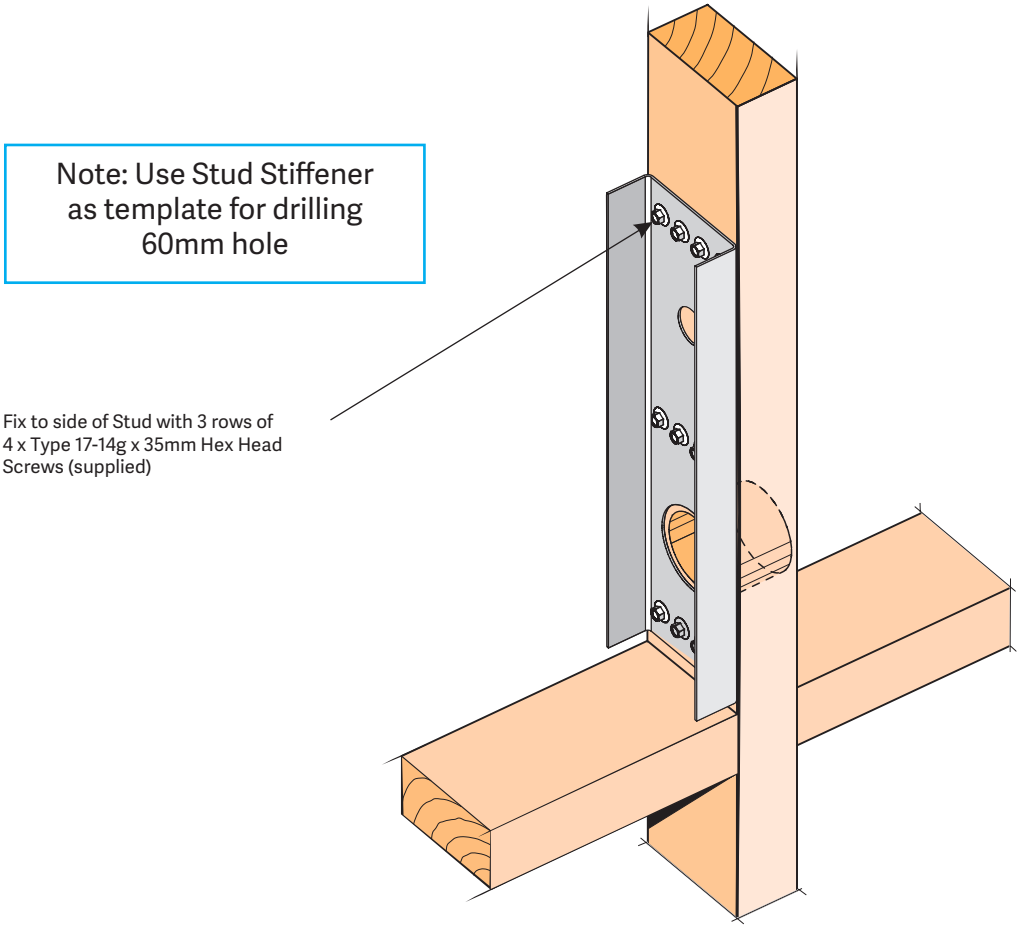
FRAMING STUD STIFFENER

- For plumbing or vacuum system ducting through timber studs
- Reinforces 90 x 45mm timber studs back to FULL STRENGTH!
- Solution to include holes up to 60mm diameter
- Refer Clause 8.5.1.6 NZS 3604:2011
- Suitable for Studs up to 3m high
- For Double Studs, fix bracket to both sides





Note: Use Stud Stiffener as template for drilling 60mm hole



Code: **FSS**
Material: **1.55mm G300 Z275 Galvanised Steel**
Packed: **8 x Framing Stud Stiffeners per Carton**
100 x Type 17-14g x 35mm Hex Head Galvanised Screws

MiTek® LUMBERLOK®

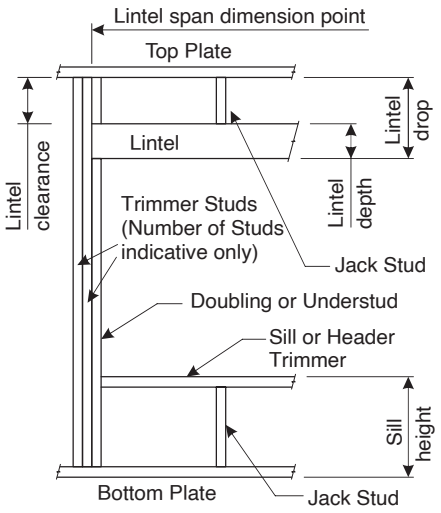
LINTEL FIXING SCHEDULE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

NOTE:

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist horizontal loads
- These fixings assume the correct choice of rafter/truss to top plate connections have been made
- All fixings assume bottom plate thickness of 45mm maximum Note: TYLOK options on timber species
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011

DEFINITIONS



Lintel Supporting Girder Trusses						
Roof Tributary Area	Light Roof			Heavy Roof		
	Wind Zone			Wind Zone		
	L, M, H	VH	EH	L, M, H	VH	EH
8.6m²	G	G	H	G	G	H
11.6m²	G	H	H	G	G	H
12.1m²	G	H	H	G	H	H
15.3m²	H	H	-	G	H	H
19.1m²	H	-	-	G	H	-
20.9m²	H	-	-	H	H	-
21.8m²	H	-	-	H	-	-
34.3m²	-	-	-	H	-	-

NOTES:

1. Roof Tributary Area = approx. 1/2 x (Total roof area on girder and rafter trusses supported by lintel)
2. Assumed girder truss is at mid-span or middle third span of lintel
3. Use similar fixings for both ends of lintel
4. All other cases require specific engineering design

Selection Chart for Lintel Fixing											
Lintel Span (m)	Loaded Dimension (m) (See Fig. 1.3 NZS 3604:2011)	Light Roof Wind Zone					Heavy Roof Wind Zone				
		L	M	H	VH	EH	L	M	H	VH	EH
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
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3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
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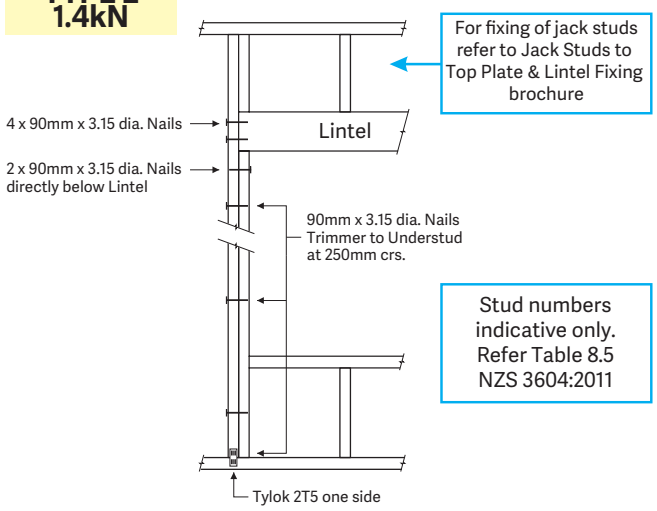
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
5.1	2.0	F	F	G	H	H	E	F	G	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.5	F	G	H	-	-	E	F	G	H	-
	4.0	G	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-
5.4	2.0	F	F	G	H	H	E	F	G	G	H
	2.8	F	G	H	H	-	E	F	G	H	H
	3.0	F	G	H	-	-	E	F	G	H	-
	4.0	G	H	H	-	-	E	F	H	-	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-

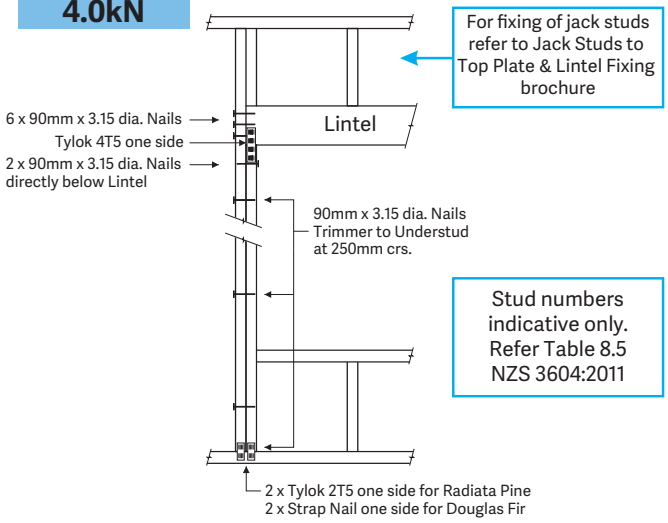
LINTEL FIXING OPTIONS

(Characteristic Uplift)

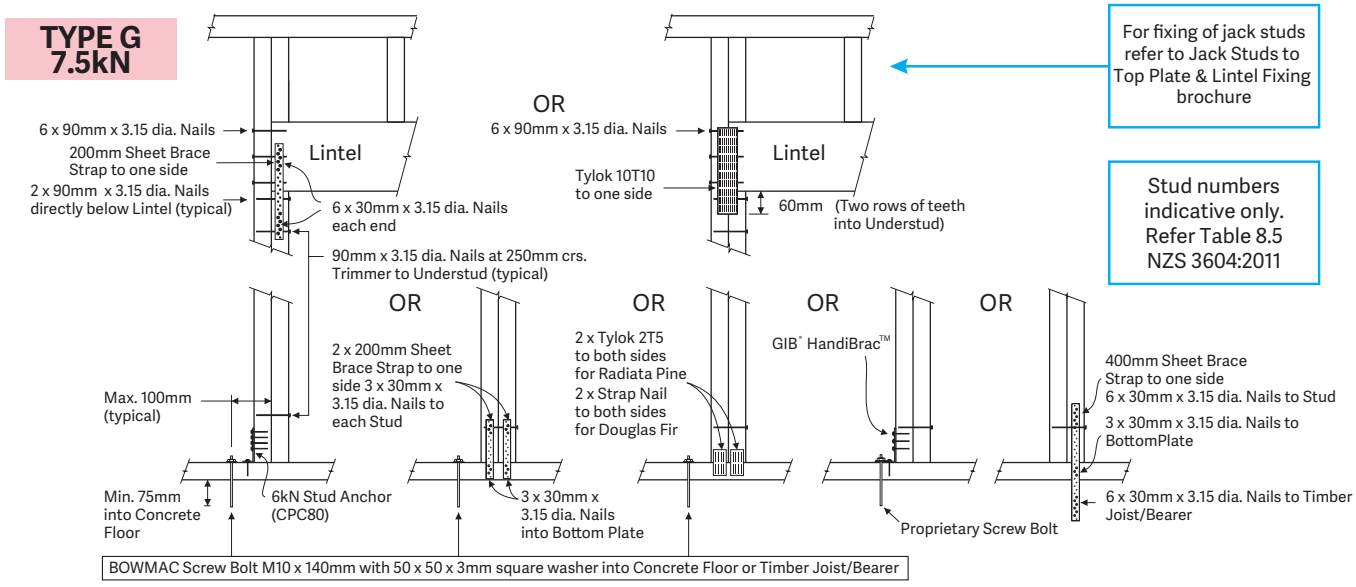
TYPE E 1.4kN



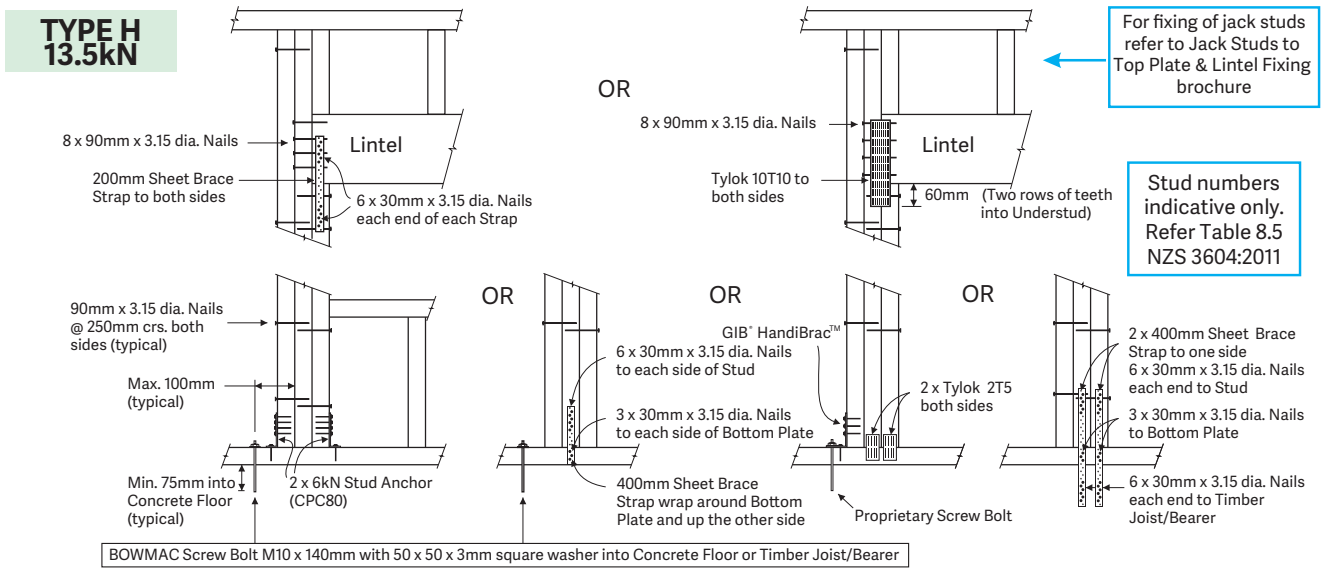
TYPE F 4.0kN



TYPE G 7.5kN



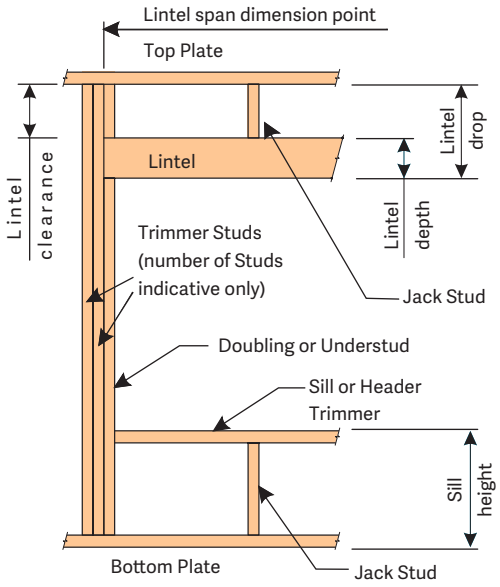
TYPE H 13.5kN



STUD-LOK LINTEL FIXING OPTIONS FOR ON-SITE

ALTERNATIVE TO TABLE 8.14 & FIGURE 8.12 NZS 3604:2011

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa.
- These fixings assume the correct choice of rafter/truss to top place connections have been made.
- All fixings assume bottom plate thickness of 45mm maximum
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011.



LINTEL SUPPORTING GIRDER TRUSSES

	Light Roof			Heavy Roof		
	Wind Zone			Wind Zone		
Roof Tributary Area	Low, Medium, High	Very High	Extra High	Low, Medium, High	Very High	Extra High
8.6m²	G	G	H	G	G	H
11.6m²	G	H	H	G	G	H
12.1m²	G	H	H	G	H	H
15.3m²	H	H	-	G	H	H
19.1m²	H	-	-	G	H	-
20.9m²	H	-	-	H	H	-
21.8m²	H	-	-	H	-	-
34.3m²	-	-	-	H	-	-

NOTES:

1. Roof Tributary Area = approx. 1/2 x (total roof area on girder and rafter trusses supported by lintel)

2. Assumed girder truss is at mid-span or middle third span of lintel

3. Use similar fixings for both ends of lintel

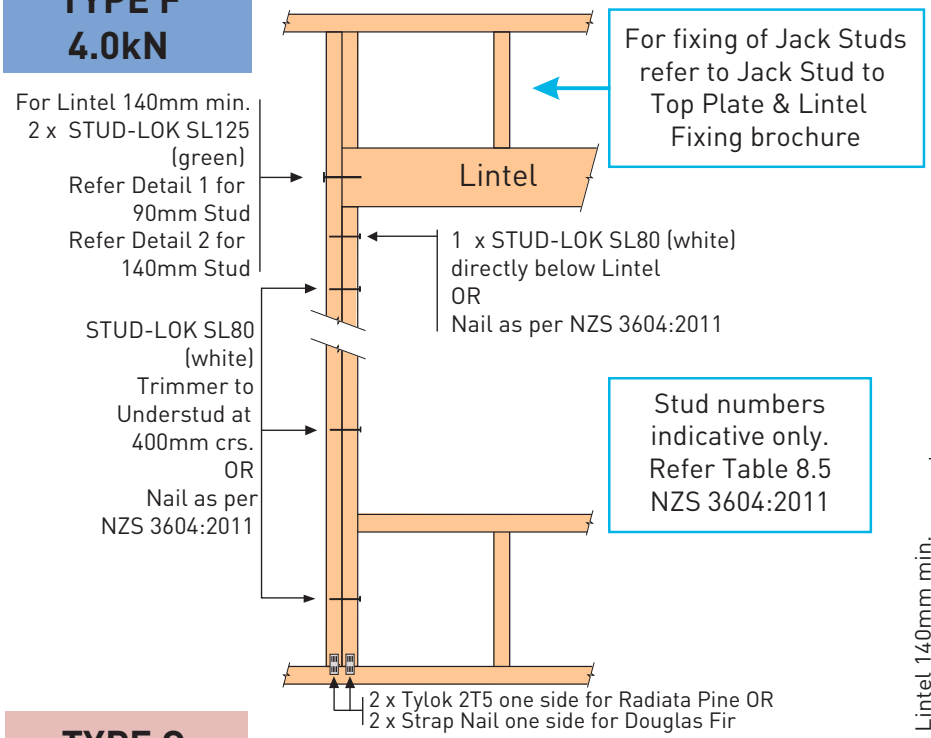
4. All other cases require specific engineering design

SELECTION CHART FOR LINTEL FIXING

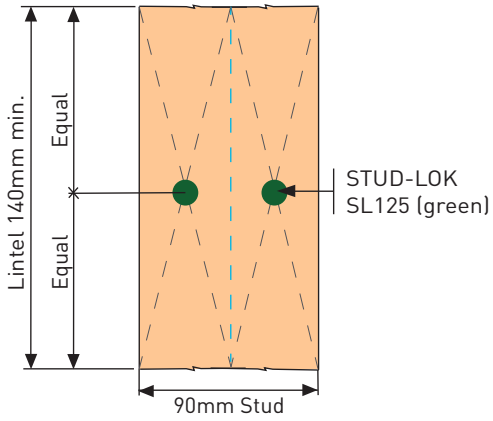
Lintel Span (m)	Loaded Dimension (m)	Light Roof					Heavy Roof				
		Wind Zone					Wind Zone				
		Low	Medium	High	Very High	Extra High	Low	Medium	High	Very High	Extra High
1.0	2.0	E	E	E	F	F	E	E	E	E	F
	3.0	E	E	F	F	F	E	E	E	F	F
	4.0	E	F	F	F	G	E	E	F	F	F
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	E	F	F	G	G	E	E	F	F	G
1.2	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	E	F	F	F	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	E	F	F	G	G	E	E	F	F	G
	6.0	F	F	G	G	H	E	E	F	G	G
1.5	2.0	E	E	F	F	F	E	E	E	F	F
	3.0	E	F	F	F	G	E	E	F	F	F
	4.0	E	F	F	G	G	E	E	F	F	G
	5.0	F	F	G	G	H	E	E	F	G	G
	6.0	F	F	G	H	H	E	E	F	G	H
2.0	2.0	E	F	F	F	G	E	E	F	F	F
	3.0	E	F	F	G	G	E	E	F	F	G
	4.0	F	F	G	G	H	E	E	F	G	G
	5.0	F	F	G	H	H	E	E	F	G	H
	6.0	F	G	G	H	H	E	F	G	H	H
2.4	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	G	H	E	E	F	G	G
	4.0	F	F	G	H	H	E	E	F	G	H
	5.0	F	G	G	H	H	E	F	G	H	H
	6.0	F	G	H	H	-	E	F	G	H	H
3.0	2.0	E	F	F	G	G	E	E	F	F	G
	3.0	F	F	G	H	H	E	E	F	G	H
	4.0	F	G	G	H	H	E	F	G	H	H
	5.0	F	G	H	H	-	E	F	G	H	H
	6.0	F	G	H	-	-	E	F	G	H	-
3.6	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	F	G	H	H	E	F	G	G	H
	4.0	F	G	H	H	-	E	F	G	H	H
	5.0	F	G	H	-	-	E	F	G	H	-
	6.0	G	H	H	-	-	E	F	H	-	-
4.2	2.0	F	F	G	G	H	E	E	F	G	G
	3.0	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	H	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.5	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.4	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	G	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
4.8	2.0	F	F	G	H	H	E	E	F	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.2	F	G	H	H	-	E	F	G	H	H
	4.0	F	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	F	H	-	-
5.1	2.0	F	F	G	H	H	E	F	G	G	H
	3.0	F	G	H	H	-	E	F	G	H	H
	3.5	F	G	H	-	-	E	F	G	H	-
	4.0	G	G	H	-	-	E	F	H	H	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-
5.4	2.0	F	F	G	H	H	E	F	G	G	H
	2.8	F	G	H	H	-	E	F	G	H	H
	3.0	F	G	H	-	-	E	F	G	H	-
	4.0	G	H	H	-	-	E	F	H	-	-
	5.0	G	H	-	-	-	E	F	H	-	-
	6.0	G	H	-	-	-	E	G	H	-	-

STUD-LOK LINTEL FIXING OPTIONS FOR ON-SITE

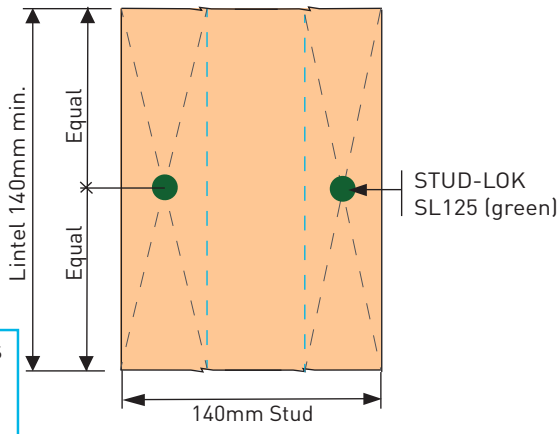
TYPE F 4.0kN



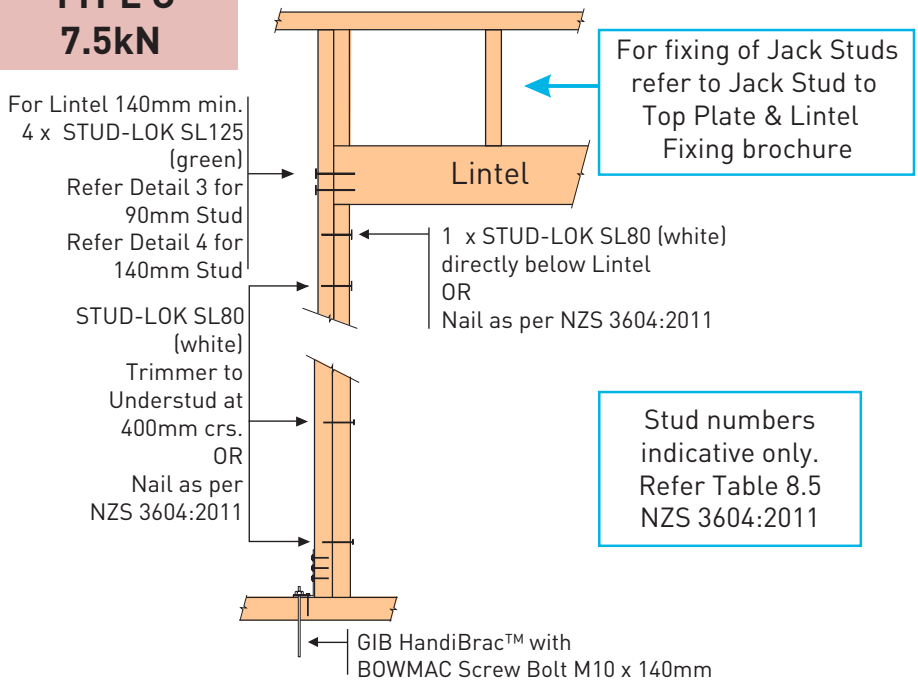
Detail 1



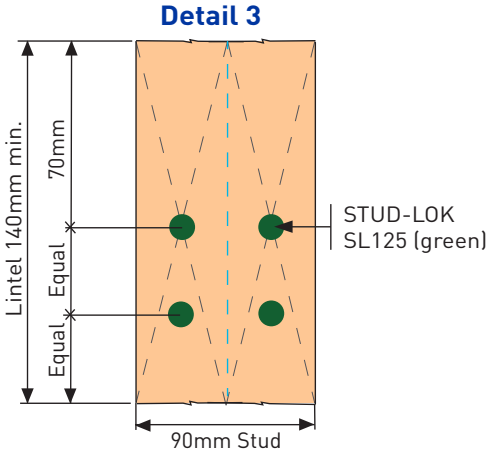
Detail 2



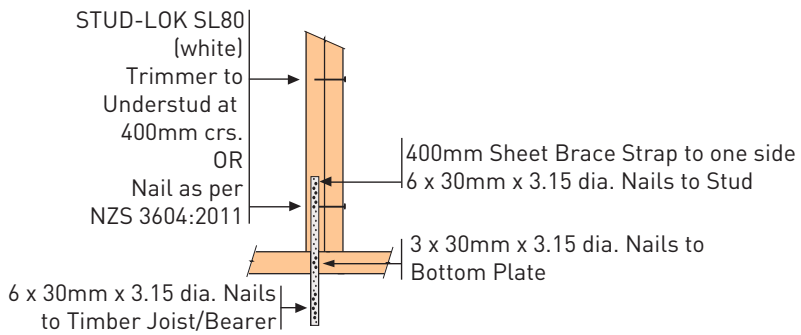
TYPE G 7.5kN



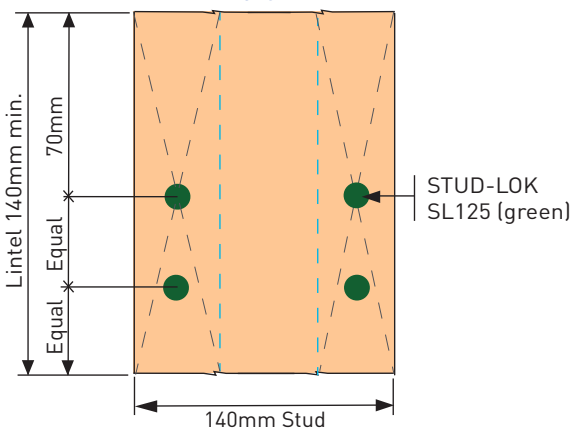
Detail 3



OR

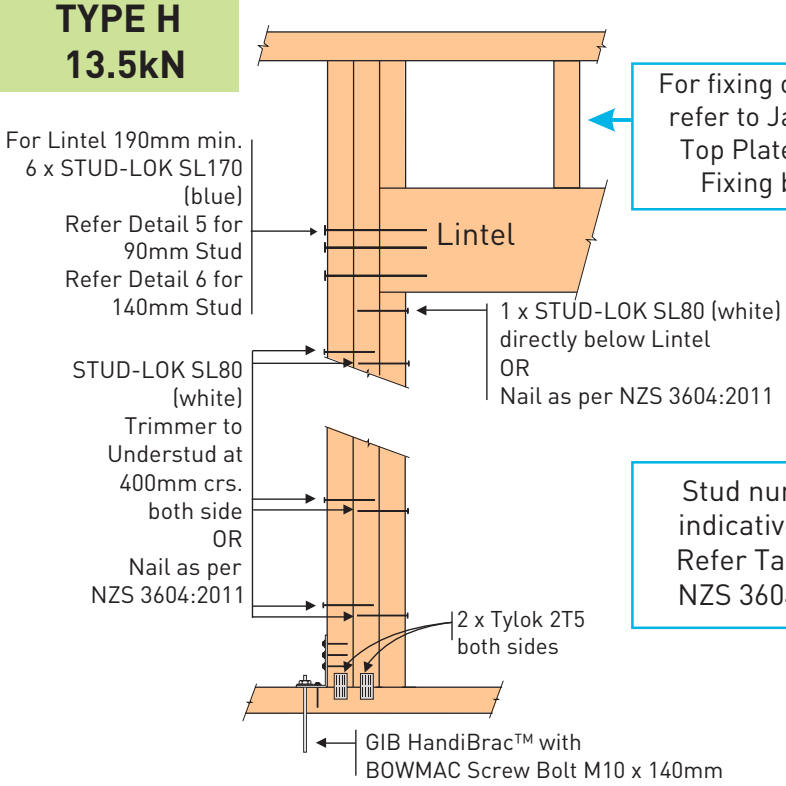


Detail 4



STUD-LOK LINTEL FIXING OPTIONS FOR ON-SITE

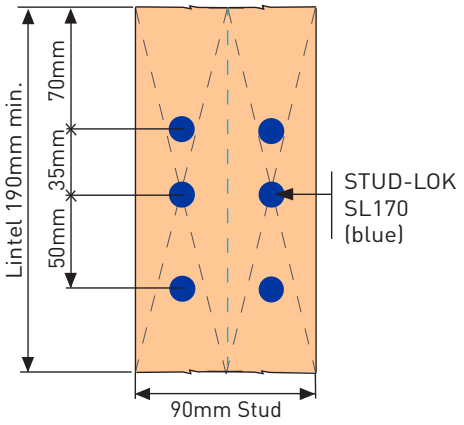
TYPE H
13.5kN



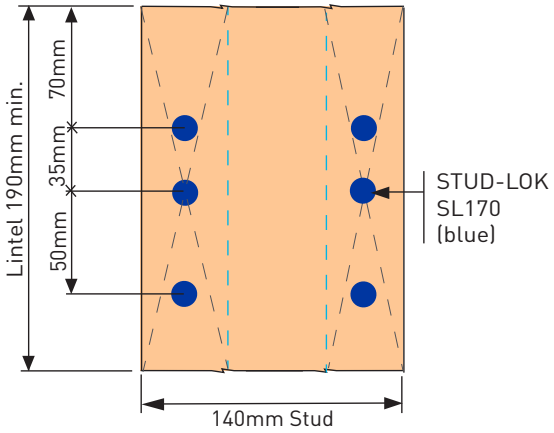
For fixing of Jack Studs refer to Jack Stud to Top Plate & Lintel Fixing brochure

Stud numbers indicative only. Refer Table 8.5 NZS 3604:2011

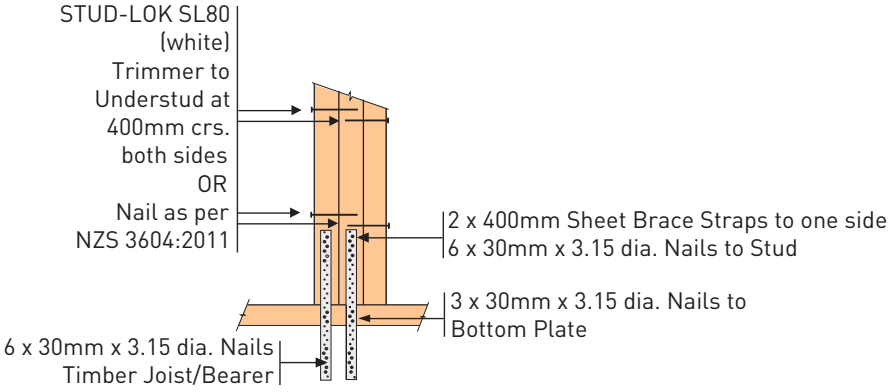
Detail 5



Detail 6



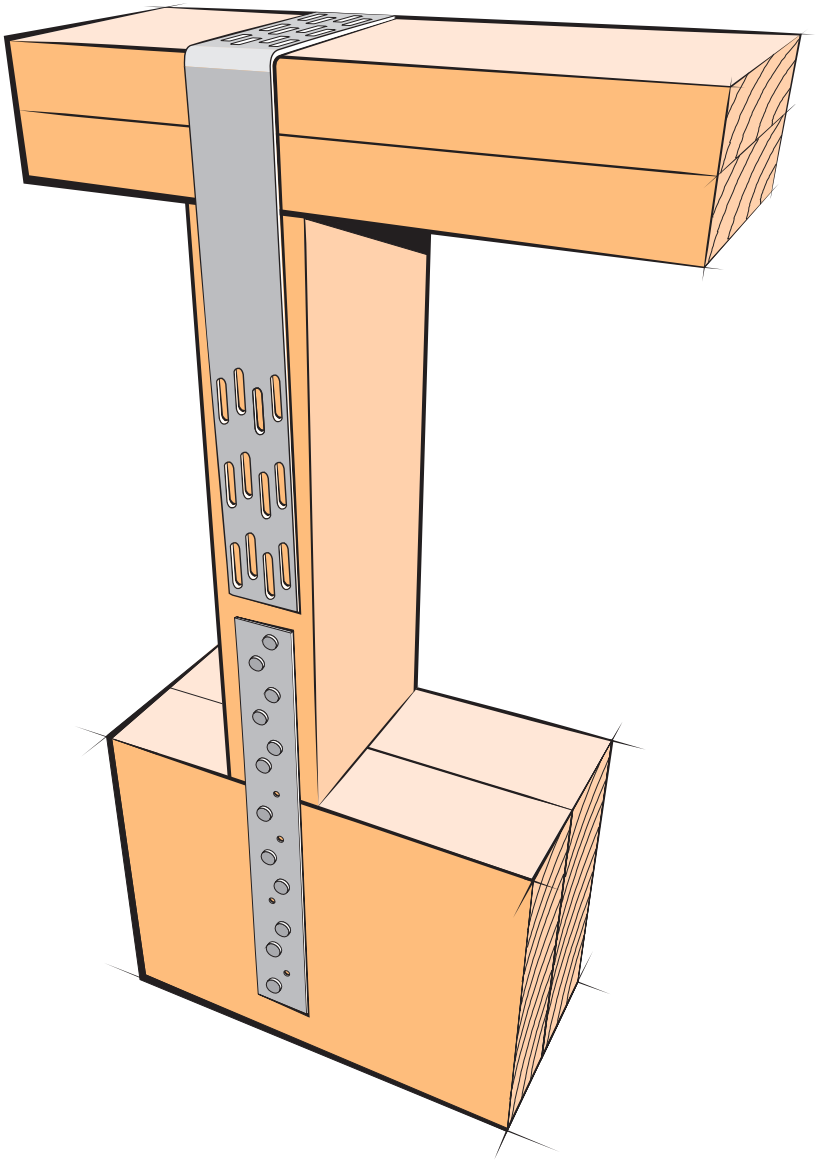
OR



NOTE: STUD-LOK TYPE F 4.0kN fixing can be used for TYPE E 1.4kN fixing

JACK STUD TO TOP PLATE & LINTEL FIXING

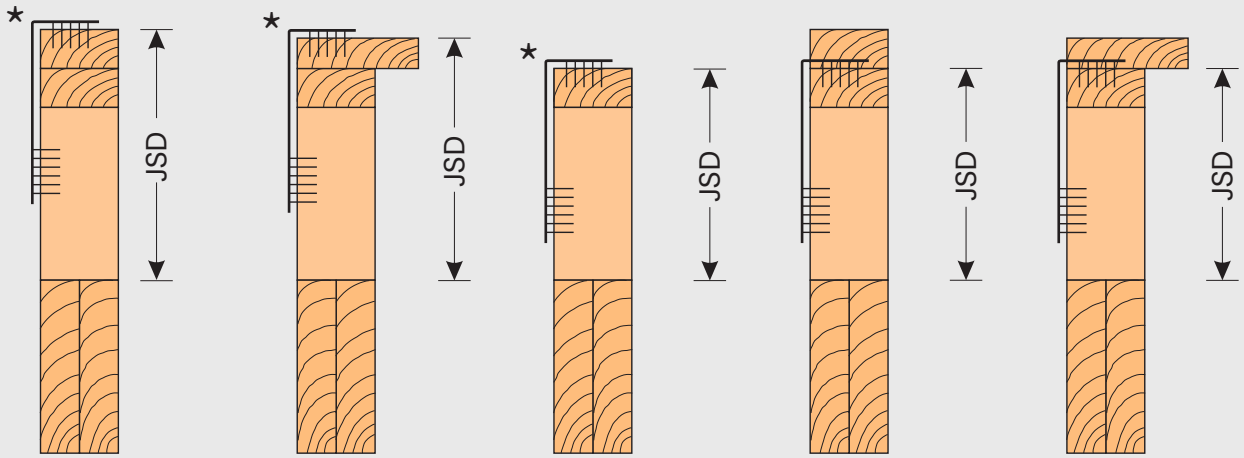
Provides a solution for all jack stud length fixing options



- Covers the requirements for LUMBERLOK® Stud to Top Plate Fixing "Type B - 4.7kN" as required by LUMBERLOK® Lintel Fixing Schedule
- Wall framing and connection details under girder trusses are not covered by this fixing solution and are subject to specific engineering design
- All timber selections are as per NZS 3604:2011

FRAMING ARRANGEMENTS

Jack Stud Dimension Definition **(JSD)**

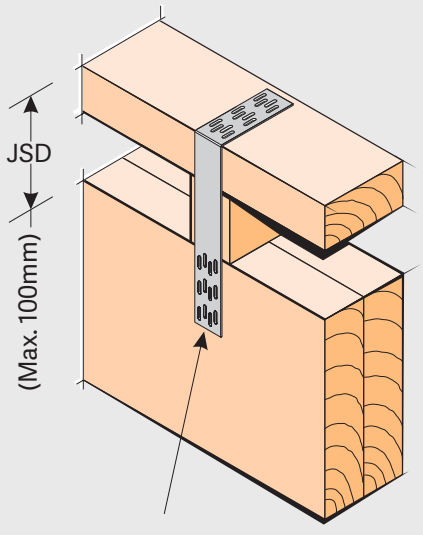


*Note: It is preferable for the top fixing to be located on the uppermost top plate or top plate packer to provide better fixing options for the truss connections

FIXING OPTIONS

FIXING 1

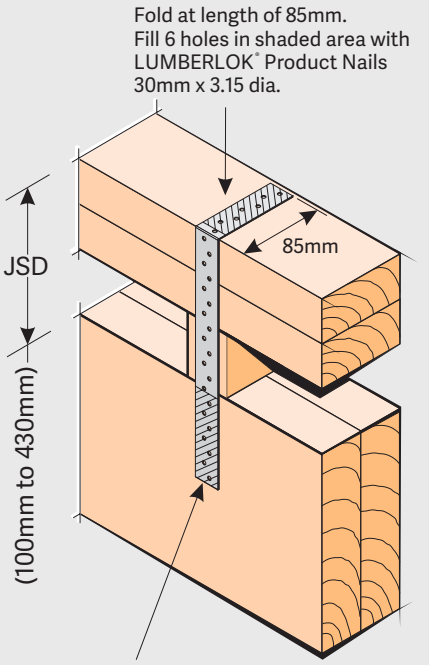
Jack Stud Dimension **(JSD)** up to a maximum of 100mm. Includes top Plate fixed directly onto Lintel i.e. no Jack Stud used.



Note:
Fix Jack Stud with 2/ 90mm x 3.15 dia. nails from top plate and 2/ 90mm x 3.15 dia. skew nails to Lintel (typical)

FIXING 2

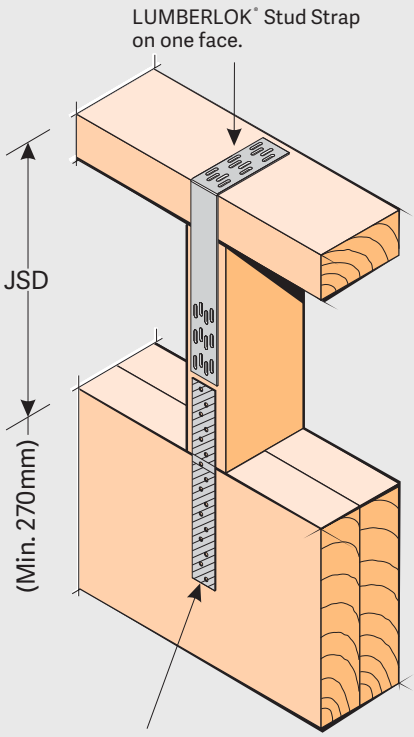
Jack Stud Dimension **(JSD)** from a minimum of 100mm to a maximum of 430mm.



Note:
- JSD up to 230mm use Sheet Brace Strap 400mm.
- JSD from 230mm to 430mm use Sheet Brace Strap 600mm.

FIXING 3

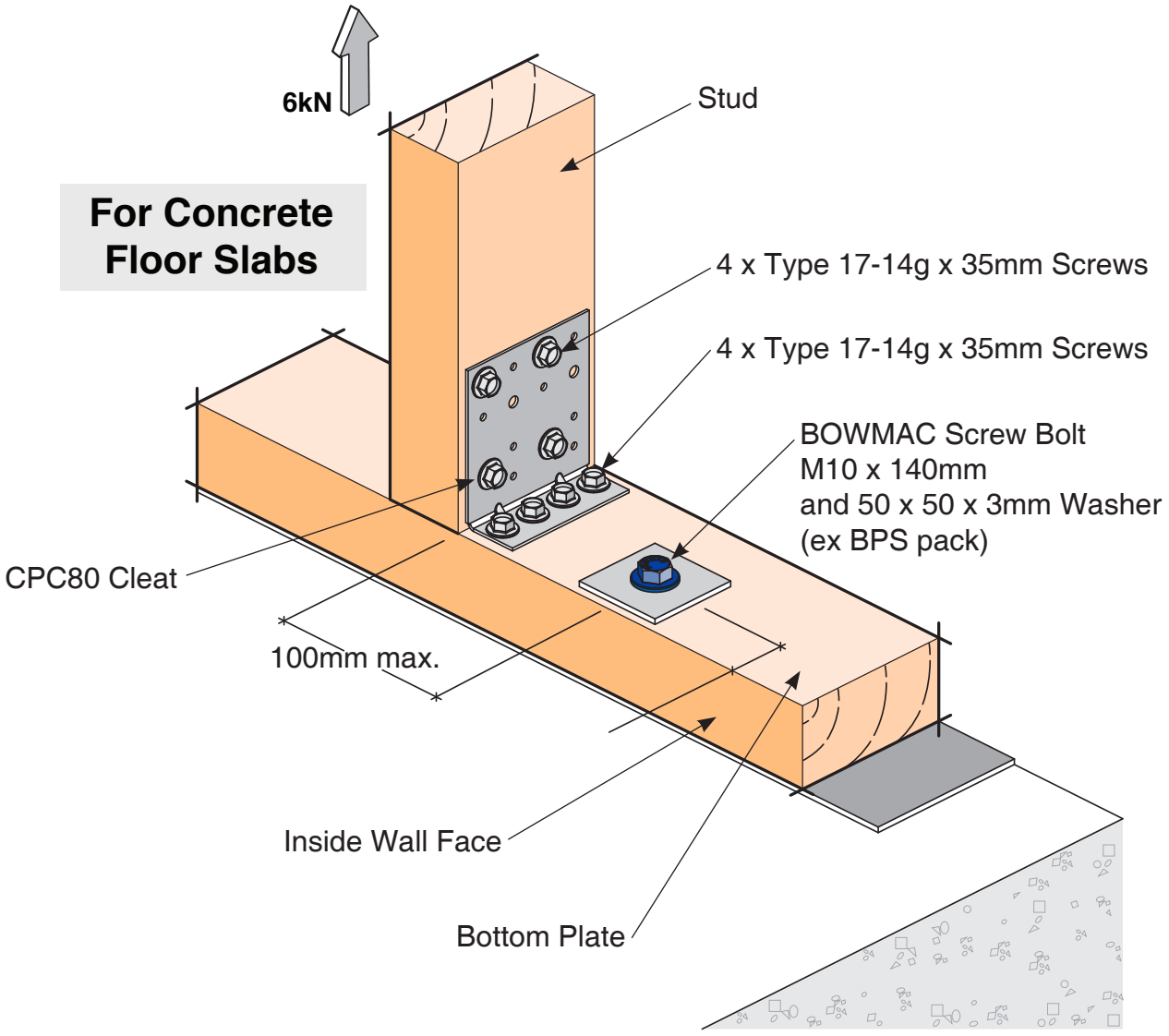
Jack Stud Dimension **(JSD)** from a minimum of 270mm. No maximum dimension.



MiTek® LUMBERLOK®

6kN STUD TO BOTTOM PLATE FIXING

→ Ideal as retro fit fixing after lining/cladding is installed



Code: SBP
Material: CPC80 1.55mm G300 Z275 Galvanised Steel
Packed: 2 x CPC80 Cleats
16 x Type 17-14g x 35mm Hex Head Galvanised Screws

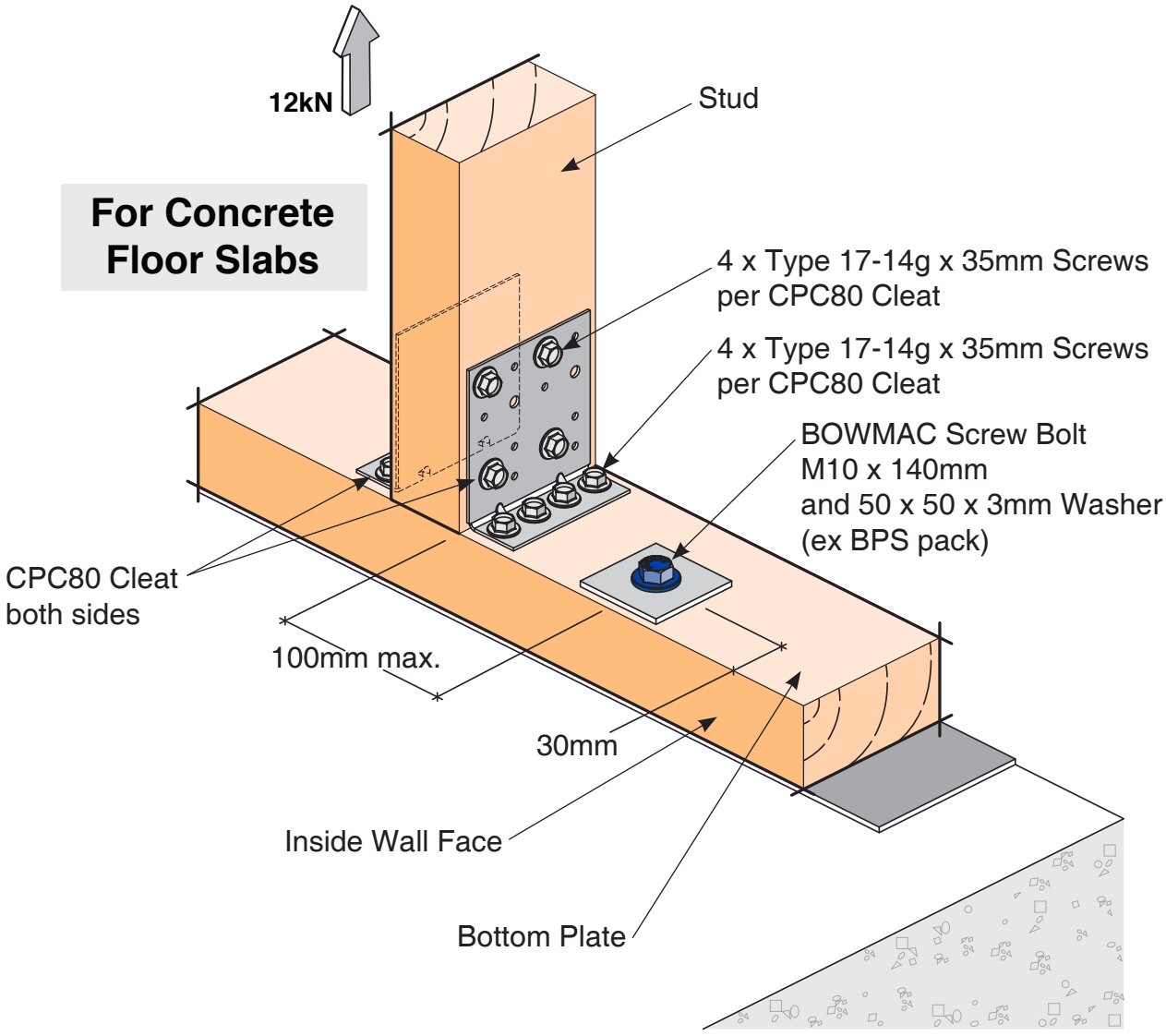
Available from leading Builders Supply Merchants throughout New Zealand

MiTek® LUMBERLOK®

12kN STUD TO BOTTOM PLATE FIXING

- Ideal as retro fit fixing after lining/cladding is installed
- Two fixings per stud as shown

For Concrete Floor Slabs



Code: SBP
Material: CPC80 1.55mm G300 Z275 Galvanised Steel
Packed: 2 x CPC80 Cleats
16 x Type 17-14g x 35mm Hex Head Galvanised Screws

Available from leading Builders Supply Merchants throughout New Zealand

GIB HandiBrac®

Panel Hold-Down Bracket

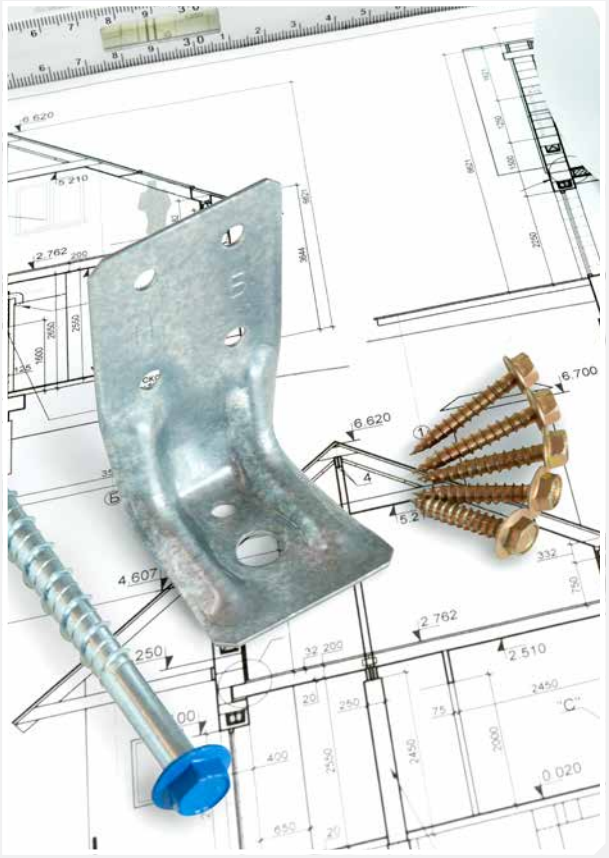
Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- Quick and easy to fit
- May be fitted at any stage before lining
- Framing face is clear to allow flush lining
- Easily inspected

The GIB HandiBrac® with BOWMAC® blue head screw bolt is suitable for timber and concrete floors constructed in accordance with NZS 3604:2011

The GIB HandiBrac® provides quick and easy installation. The registered design provides a flush surface for the wall linings because it is fitted inside the framing.

There is therefore no need to check in the framing as is recommended with conventional straps. Because the GIB HandiBrac® conveniently allows for installation and inspection at any stage prior to fitting internal linings, it is suitable for both new and retrofit construction.



GIB HANDIBRAC® OVERVIEW

COMPONENTS

GIB HandiBrac® is available in boxes of 10, each containing 5 pairs.

Components per paired pack include:

- 2 x GIB HandiBrac® Brackets
- 10 x Tek Screws
- 2 x BOWMAC® screw bolts included within specific GIB HandiBrac® pack

GIB® BRACING ELEMENTS

The GIB HandiBrac® is a proprietary product that has been tested and is suitable for use with specified GIB Ezy Brace® systems.

FIXING TO TIMBER FRAMED FLOORS

BOWMAC® screw bolt to achieve a characteristic uplift strength of 12kN.

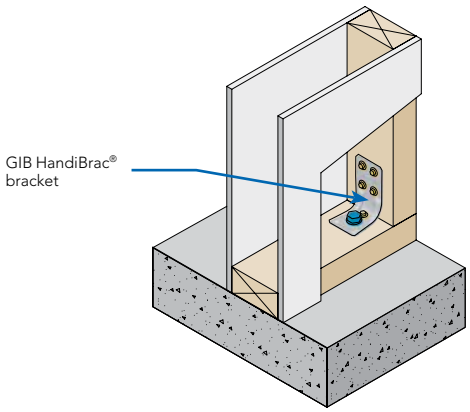
FIXING TO CONCRETE SLABS

BOWMAC® screw bolt to achieve a characteristic uplift strength of 15kN

PANEL HOLD-DOWN DETAILS

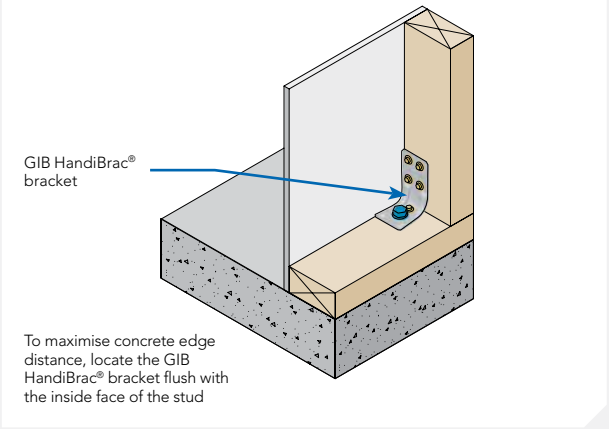
CONCRETE FLOOR – INTERNAL WALL

The bottom plate at both ends of the bracing element is fixed using a BOWMAC® screw bolt. For BOWMAC® screw bolt installation see instructions on next page



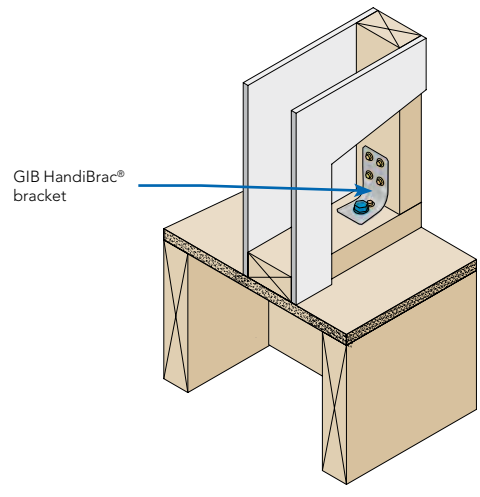
CONCRETE FLOOR – EXTERNAL WALL

The bottom plate at both ends of the bracing element is fixed using a BOWMAC® screw bolt. For BOWMAC® screw bolt installation see instructions on next page.



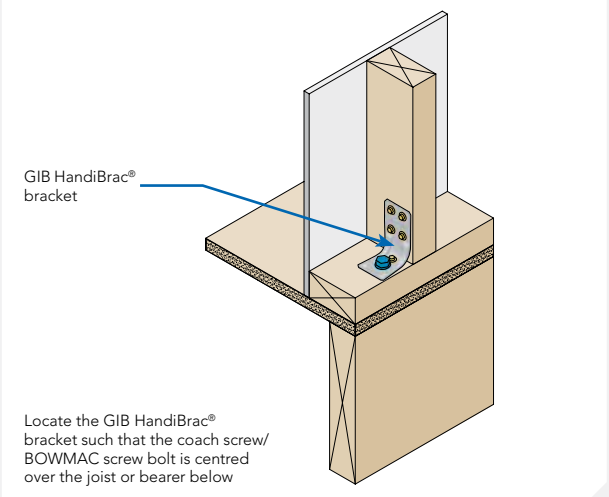
TIMBER FLOOR – INTERNAL WALL

Bottom Plate is fixed using a BOWMAC® screw bolt. For BOWMAC® screw bolt installation see instructions on next page.



TIMBER FLOOR – EXTERNAL WALL

Bottom Plate is fixed using a BOWMAC® screw bolt. For BOWMAC® screw bolt installation see instructions on next page.

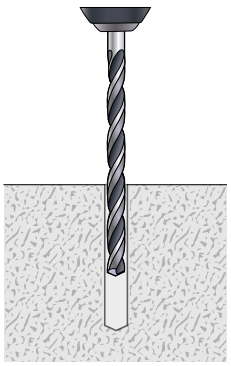


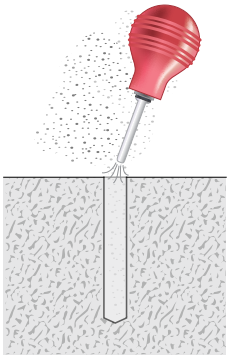
INSTALLATION OF GIB HANDIBRAC® BRACKET

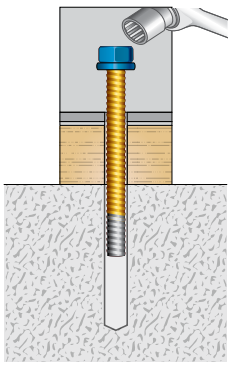
1. Install the screw located in the bracket base
2. Install the BOWMAC® screw bolt as per instructions below
3. Install remaining four screws into the face of the timber stud

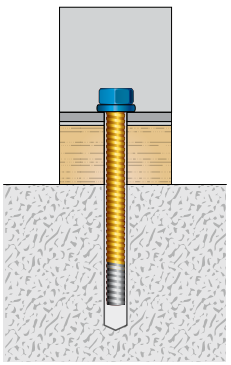
Installation Tips

- Use quality hexagonal socket with a ratchet spanner
- During installation debris or dust created by the thread cutting action may cause some resistance to be experienced. This is easily overcome by unscrewing the BOWMAC® screw bolt for one turn or more and then continuing to fix to the full embedment.









PREPARATION

- Use a 10mm diameter masonry bit for a solid concrete substrate and an 8mm diameter bit for fixing to a timber sub-floor.
- Drill a hole into the base material to depth 8 mm deeper than the required embedment and clean out the hole of dust and debris prior to installation of BOWMAC® screw bolt.

FIXING THE BRACKET

- Insert the bolt through the GIB HandiBrac® plate and bracket and into the hole.
- Begin tightening the bolt by applying forward pressure when engaging the first thread.
- Additional forward pressure may be required for installation in high strength, dense base materials.
- Continue tightening the anchor until the head is firmly seated against the GIB HandiBrac® base.
- In extremely dense material, use of an impact wrench is recommended.
- Be sure the bolt is at the required embedment depth.
- The installation is now complete.

GIB HANDIBRAC®

TRADEMARKS

The name GIB®, GIB HandiBrac® and the shield device are registered trademarks of Fletcher Building Holdings Limited.

NZ Registered Design Application #420161

MANUFACTURER

GIB HandiBrac® is manufactured and distributed by MiTek New Zealand Ltd.

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40 Neales Rd, East Tamaki, Auckland 2013, New Zealand
P O Box 58-014, Botany, Auckland 2163, New Zealand
Ph: 64-9-274 7109, Fax: 64-9-274 7100

Christchurch Office
14 Pilkington Way, Riccarton 8440, Christchurch, New Zealand
P O Box 8387, Riccarton, New Zealand
Ph: 64-3-348 8691, Fax: 64-3-348 0314

www.miteknz.co.nz

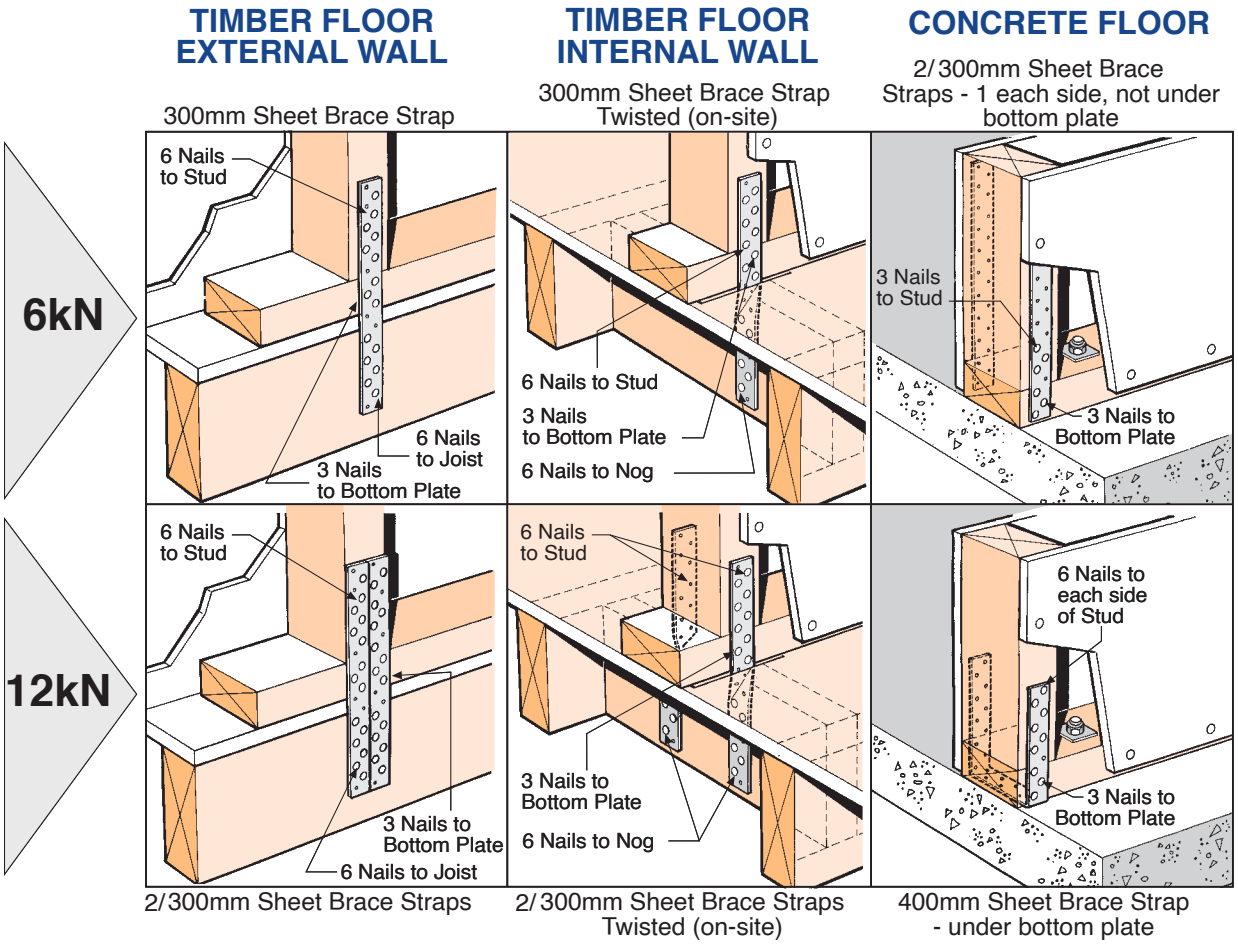
Winstone Wallboards Limited - National Support
37 Felix Street, Penrose, Auckland 1061, New Zealand
P O Box 12 256, Penrose 1642, Auckland, New Zealand
Ph: 64-9-633 0100, GIB® Helpline: 0800 100 442
Fax: 64-9-633 0101, Free Fax: 0800 229 222
Email: info@gib.co.nz
Web: www.gib.co.nz

MiTek® LUMBERLOK®

SHEET BRACE STRAPS

- Complies with Section 8 NZS 3604:2011
- 6kN and 12kN fixings
- 200, 300, 400 and 600mm length
- Quick and easy to apply

USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS



LUMBERLOK Sheet Brace Straps are available in 200, 300, 400 and 600mm lengths.
In addition to a bracing wall hold down, this product can be used for a multitude of 6kN fixings situations, as detailed in NZS 3604:2011.
0.91mm x 25mm G300 Z275 Galvanised Steel.
Nail using LUMBERLOK Product Nails 30mm x 3.15 diameter.
Also available in 0.9mm x 25mm Stainless Steel 304-2B.

Available from leading Builders Supply Merchants throughout New Zealand

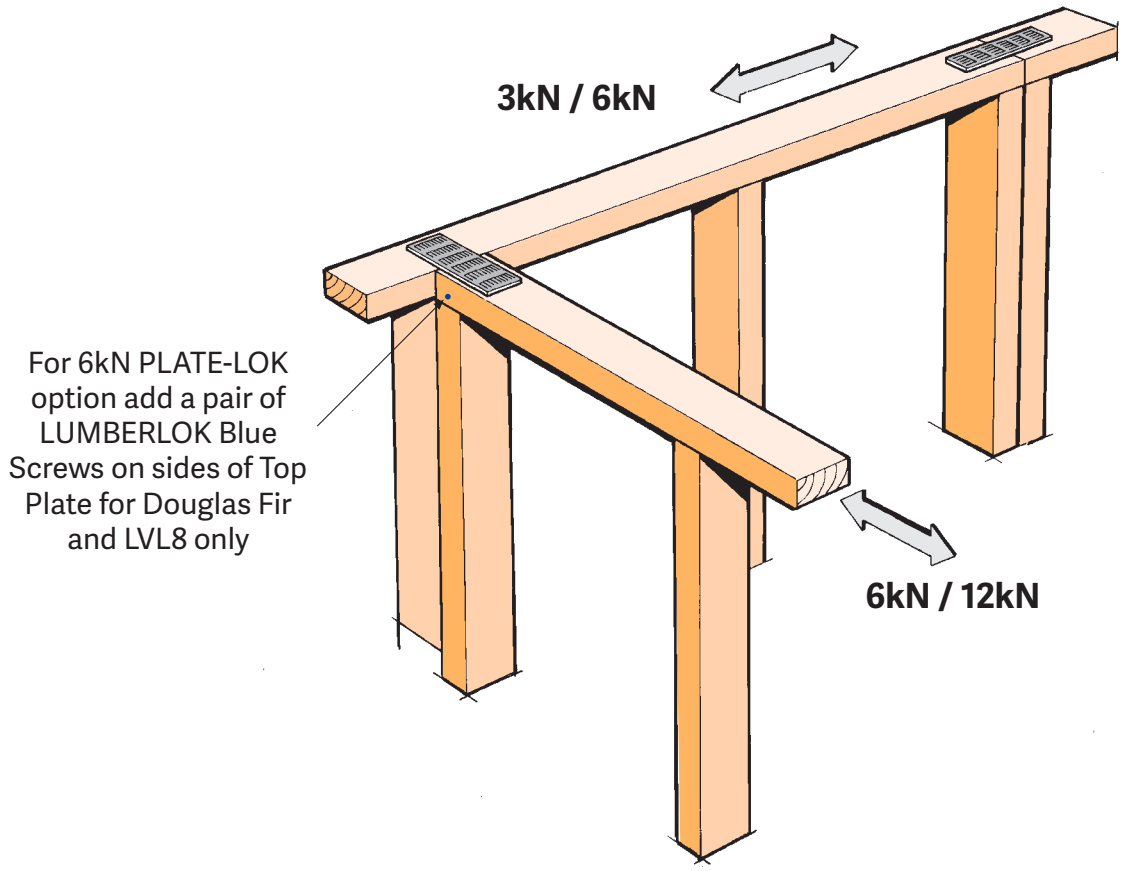
TOP PLATE JOINTING
AS PER CLAUSE 8.7.3 NZS 3604:2011

Top Plates at Right Angles

Connection capacity	LUMBERLOK Connector
6kN	Tylok 6T10 **OR** PLATE-LOK
12kN	2 x Sheet Brace Straps fixed with 6 x LUMBERLOK Product Nails 30mm x 3.15 dia. per end per strap (24 nails total)

Top Plates in Line

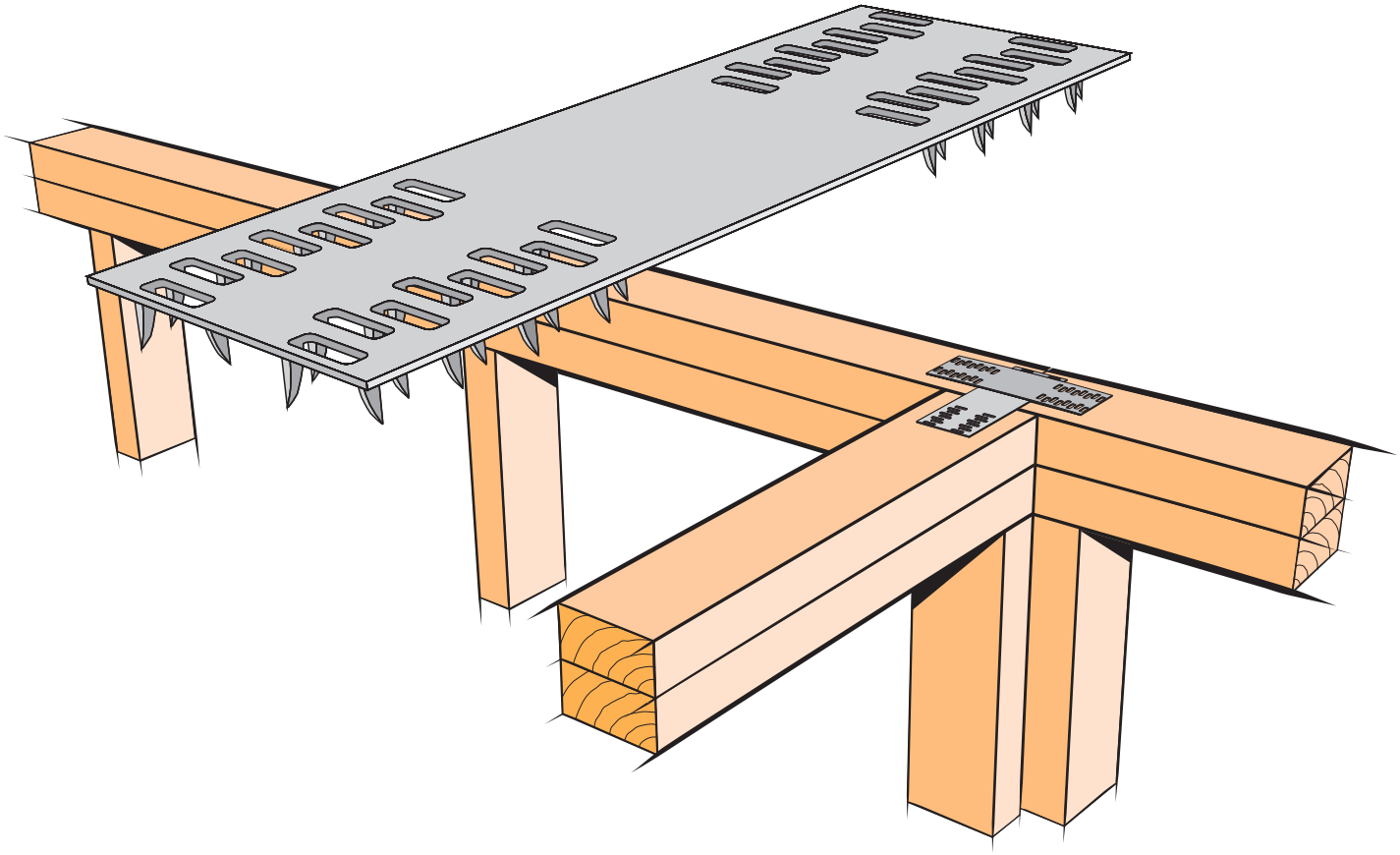
Connection capacity	LUMBERLOK Connector
3kN	Tylok 6T5
6kN	Tylok 6T10 **OR** PLATE-LOK



Available from leading Builders Supply Merchants throughout New Zealand

MiTek® LUMBERLOK®

PLATE-LOK
6kN CAPACITY CONNECTOR



- The LUMBERLOK PLATE-LOK is ideally suited for right angle wall connections with a unique clear centre section to allow easy overlapping
- Suitable for use in SG8 Radiata pine/Douglas fir & LVL8 top plates
- This brochure also provides simple guidelines for the interpretation of Clause 8.7.3 NZS 3604:2011 for top plate connections
- The LUMBERLOK PLATE-LOK also provides a simple solution for a 6kN capacity connection where required by NZS 3604:2011

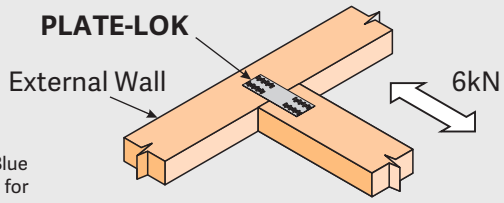
Code: **PLATELOK**
Material: **0.95mm G300 Z275 Galvanised Steel 150x50mm**
Packed: **100 per Carton**

TOP PLATE CONNECTIONS AS REQUIRED BY CLAUSE 8.7.3 NZS 3604:2011

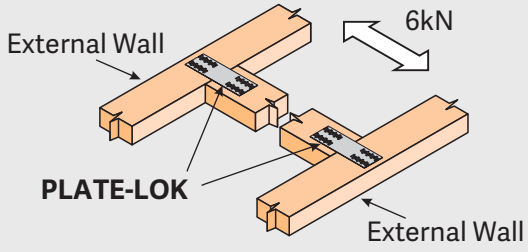
① Top plate joints for walls at right angles to external walls:

(a) Walls with bracing elements not exceeding 125 bracing units (BU) require a 6kN capacity connection to one external wall.

(b) Walls with bracing elements not exceeding 250 BU require a 6kN capacity connection to two external walls.



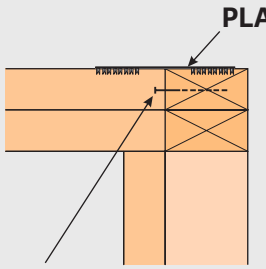
Wall bracing up to 125 BU



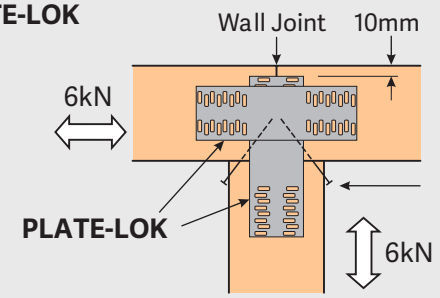
Wall bracing between 125 BU & 250 BU

Note: Add a pair of LUMBERLOK Blue Screws on sides of top plate for Douglas Fir and LVL8 only

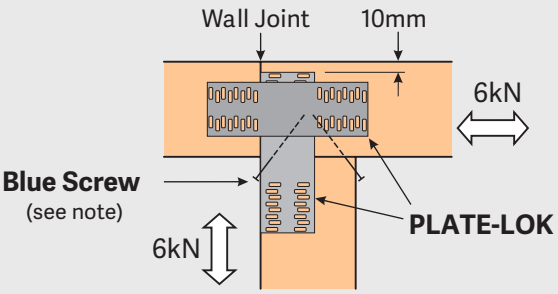
② Details of top plate joints using LUMBERLOK PLATE-LOK at "T" junction walls are shown below:



Note: Add a pair of LUMBERLOK Blue Screws on sides of top plate for Douglas Fir and LVL8 only

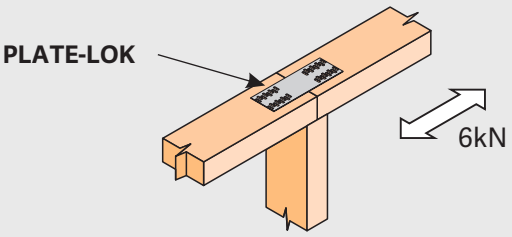


Centre Wall Joint

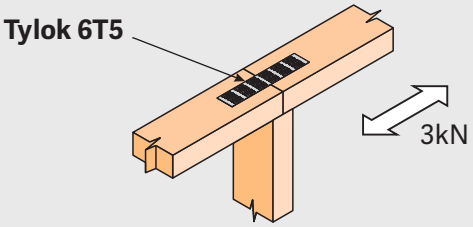


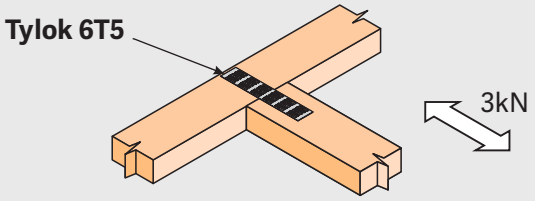
Side Wall Joint

③ Top plate joints for all walls in line that have wall bracing elements exceeding 100 BU or have a ceiling diaphragm attached require a 6kN capacity connection as per Figure 8.15 NZS 3604:2011.



④ Top plate joints for walls at right angles and in line that have either no bracing elements or are on a single storey building only with wall bracing demands not exceeding 100 BU require a 3kN capacity connection as per Figure 8.15 & 8.16 NZS 3604:2011.

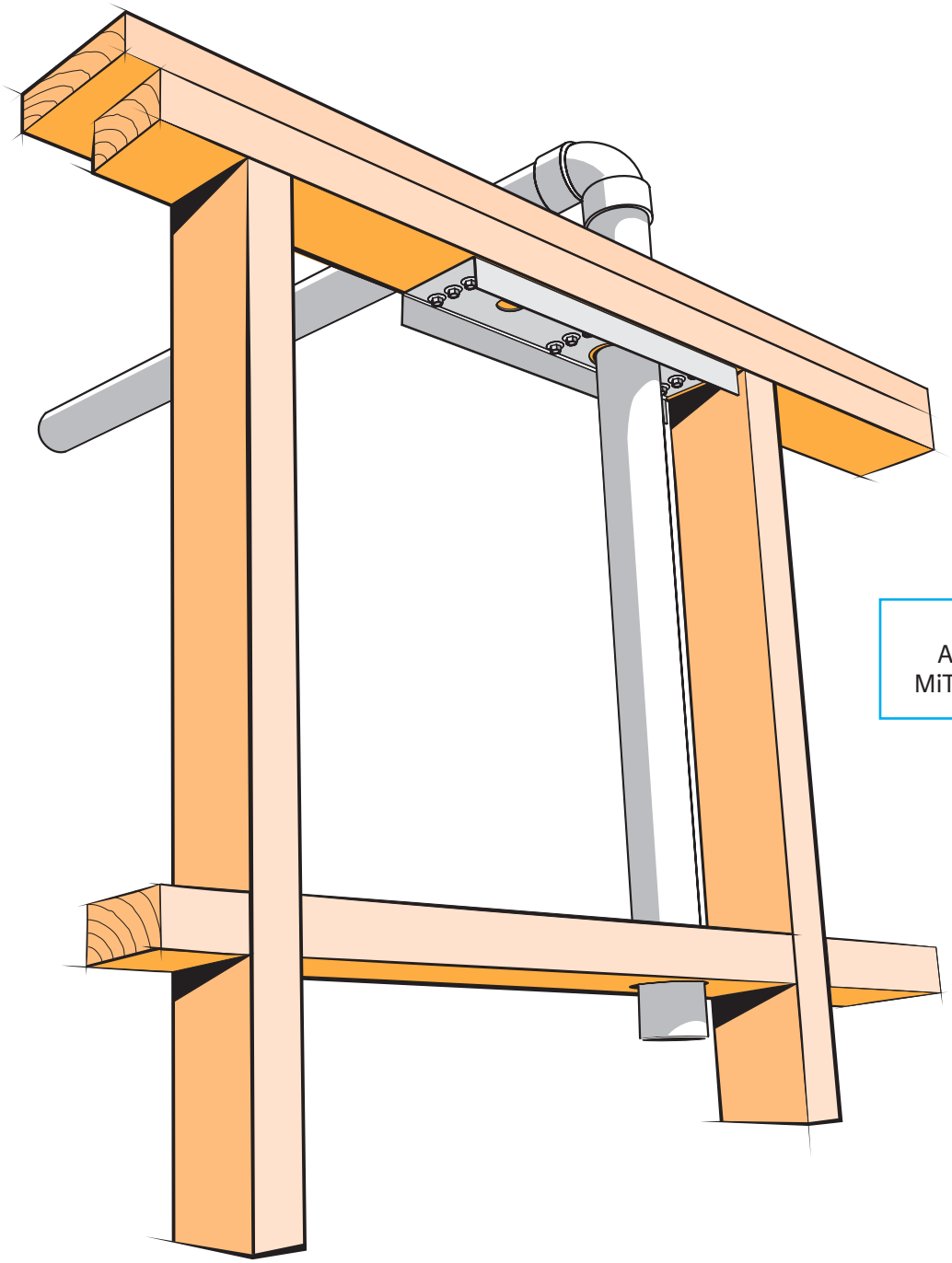


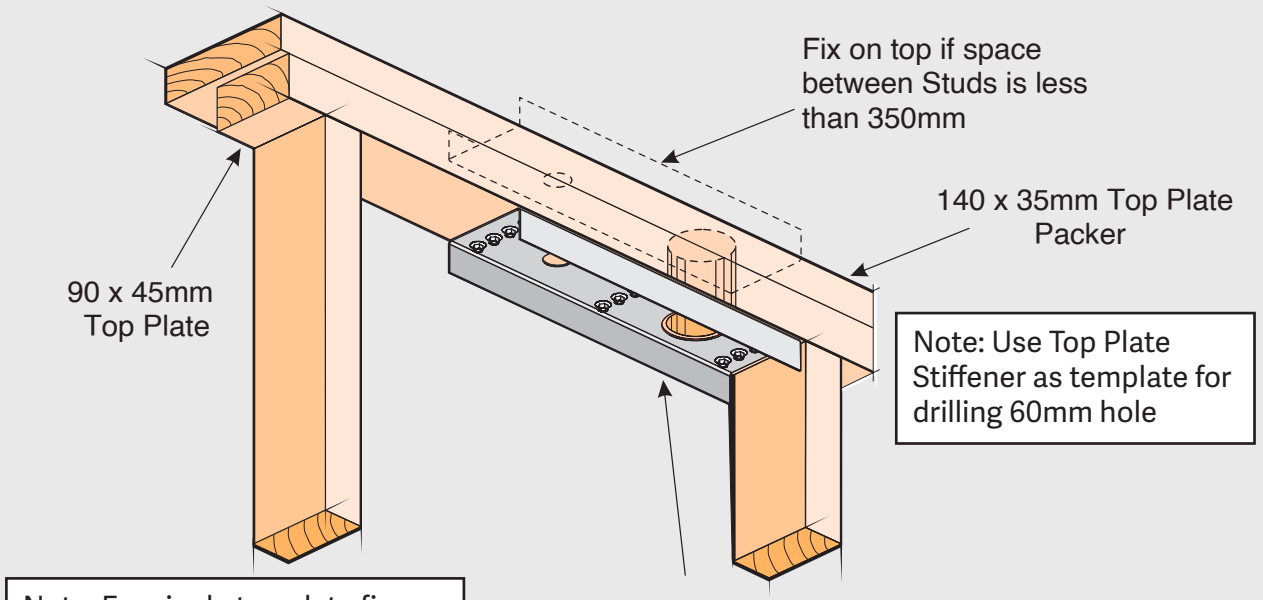


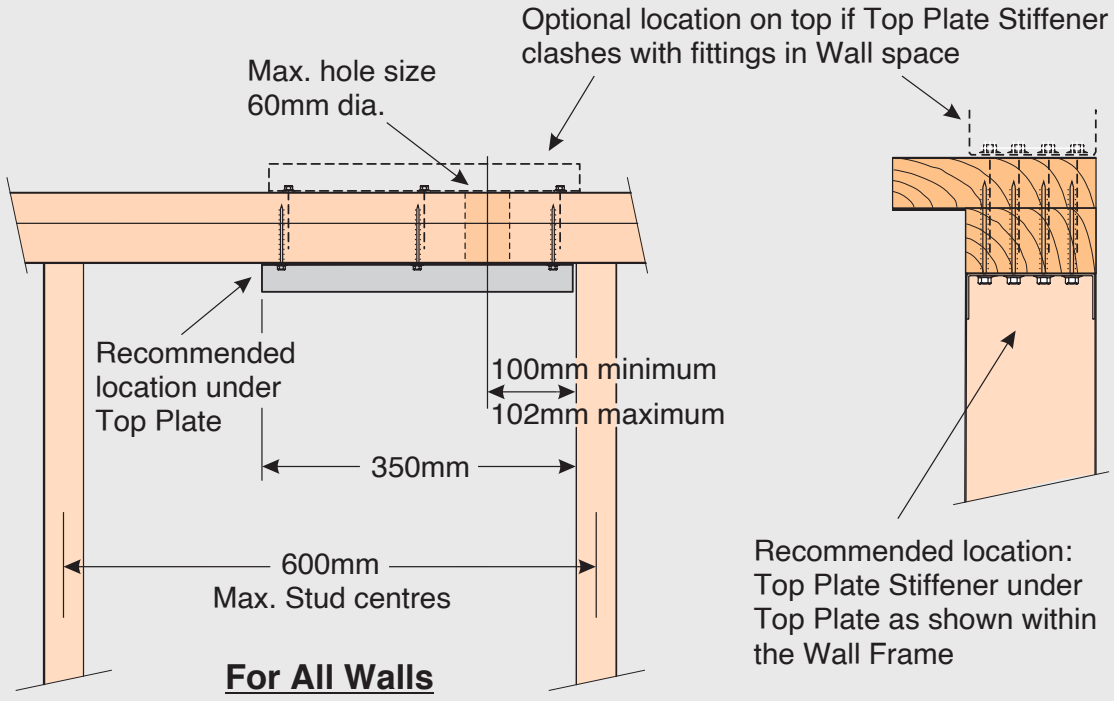
MiTek® LUMBERLOK®

TOP PLATE STIFFENER

- For plumbing or vacuum system ducting through top plates
- Reinforces the top plate back to FULL STRENGTH!
- Alternative solution to Figure 8.20 NZS 3604:2011







Code: **TPS**
Material: **1.55mm G300 Z275 Galvanised Steel**
Packed: **8 x Top Plate Stiffeners per Carton**
100 x Type 17-14g x 75mm Hex Head Galvanised Screws

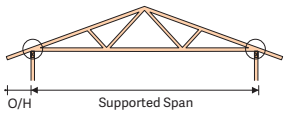
MiTek® LUMBERLOK®

STUD TO TOP PLATE FIXING SCHEDULE
ALTERNATIVE TO TABLE 8.18 NZS 3604:2011

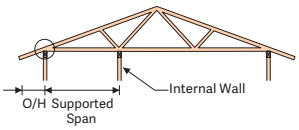
NOTE:

- All fixings are designed to resist vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads
- These fixings assume the correct choice of rafter/truss to top plate connections have been made
- For gable end walls where the adjacent rafter/truss is located within 1200mm and with a maximum verge overhang of 750mm, select stud to top plate fixing using a loaded dimension of 1.5m
- All fixings assume top plate thickness of 45mm maximum
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011

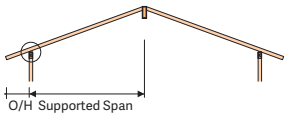
LOADED DIMENSION DEFINITION



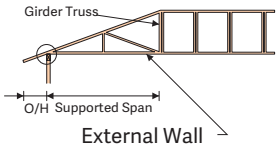
External Wall
Standard Truss



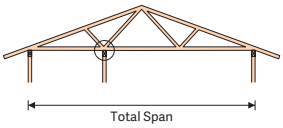
External Wall
Internally supported Truss



External Wall
Rafter roof



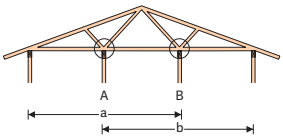
External Wall
Jack Truss



Internal Wall
Internally supported Truss
(overhang dimension does not apply)

EXTERNAL WALL
LOADED DIMENSION =
$\frac{\text{SUPPORTED SPAN}}{2}$ + O/H

INTERNAL WALL
LOADED DIMENSION =
$\frac{\text{TOTAL SPAN}}{2}$



Multiple internal Walls
(overhang dimension does not apply)

MULTIPLE INTERNAL WALL
LOADED DIMENSION FOR
WALL A = $\frac{a}{2}$
WALL B = $\frac{b}{2}$

FIXING SELECTION CHART

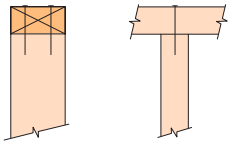
(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	A	A	B	B	B	A	A	B	B	B
4.0	3.0	2.0	A	A	B	B	B	A	A	B	B	B
5.0	3.8	2.5	A	B	B	B	B	A	A	B	B	B
6.0	4.5	3.0	A	B	B	B	B	A	A	B	B	B
7.0	5.3	3.5	A	B	B	B	B	A	A	B	B	B
8.0	6.0	4.0	A	B	B	B	B	A	A	B	B	B
9.0	6.8	4.5	B	B	B	B	B	A	A	B	B	B
10.0	7.5	5.0	B	B	B	B	B	A	A	B	B	B
11.0	8.3	5.5	B	B	B	B	B	A	A	B	B	B
12.0	9.0	6.0	B	B	B	B	B	A	A	B	B	B

FIXING OPTIONS

FIXING TYPE A 0.7kN

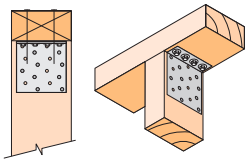
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



FIXING TYPE B 4.7kN

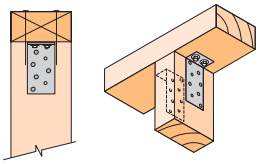
CHOOSE ANY OF THE 3 OPTIONS BELOW

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus
LUMBERLOK
6kN Stud Anchor
(CPC80)

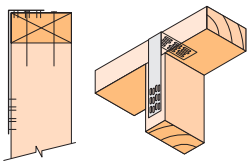
2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.



Plus
2 x LUMBERLOK
CPC40

Recommended for internal wall options to avoid lining issues

2 x 90mm x 3.15 dia. plain steel wire nails driven vertically into stud.

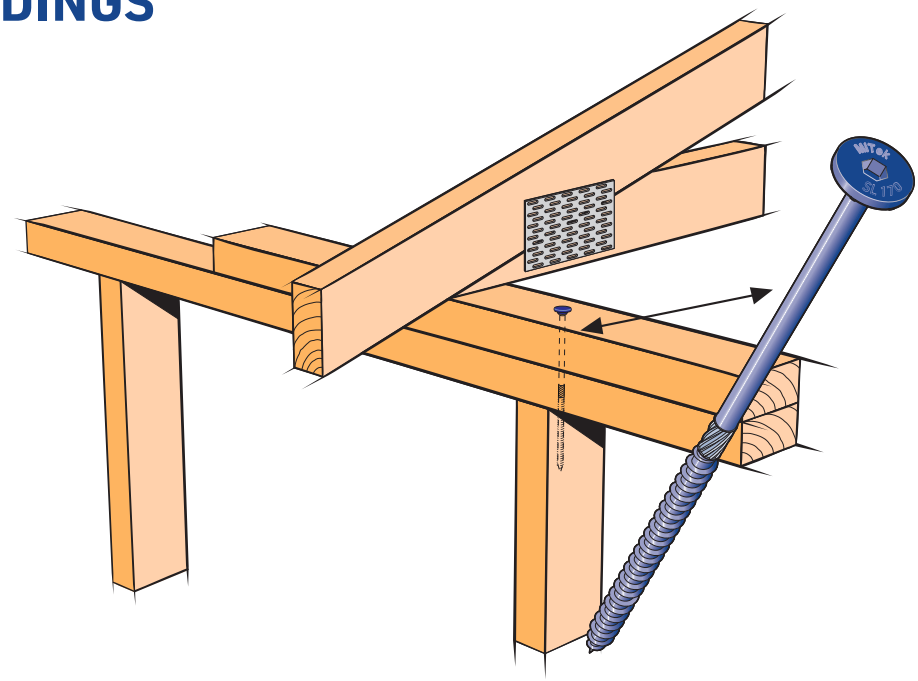


Plus
LUMBERLOK
Stud Strap
(one face only)

NOTE:
To calculate the number of B type fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this number of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

STUD-LOK SL170 (BLUE) TOP PLATE FIXING

PROVIDES A SOLUTION FOR TOP PLATE TO STUD FIXINGS FOR RESIDENTIAL TIMBER FRAME BUILDINGS

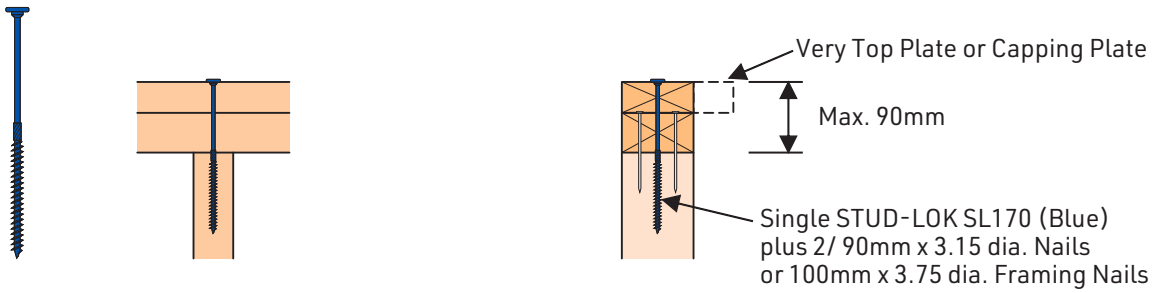


- → Complies with fixing requirements in Section 8 NZS 3604:2011
- → The BOWMAC STUD-LOK forms an integral part of the MiTek Truss & Frame design and layout

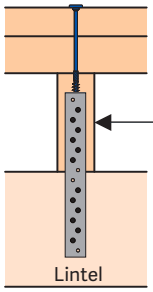
NOTE:

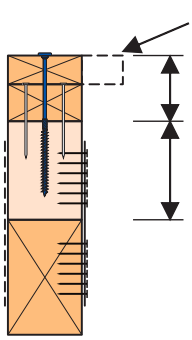
- Refer to Table 8.19 NZS 3604:2011 for nailing schedule to resist lateral loads
- The STUD-LOK connections assume that the correct choice of rafter/truss fixings have been made
- Wall framing arrangements under girder trusses are not covered in this schedule
- All timber selections are as per NZS 3604:2011 and include LVL8 timber grades

FIXING THROUGH VERY TOP PLATE OR CAPPING PLATE TO STUDS



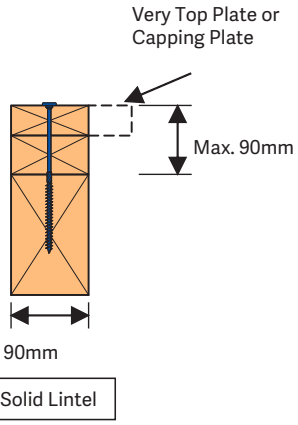
FIXING THROUGH VERY TOP PLATE OR CAPPING PLATE TO LINTEL WITH JACK STUD ARRANGEMENT



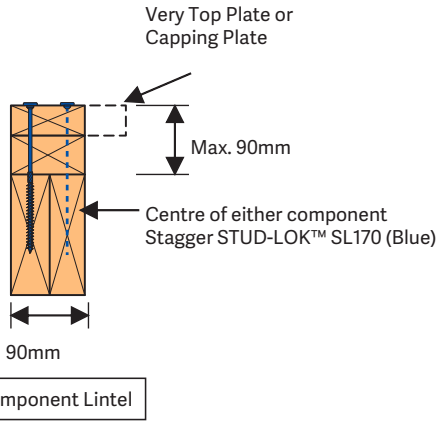


NOTE:
Connect jack stud to lintel with LUMBERLOK Sheet Brace Strap 200mm on one side with 6 x LUMBERLOK Product Nails 30mm x 3.15 dia. each end or a pair of Tylok 6T5 (one side each)

FIXING THROUGH VERY TOP PLATE OR CAPPING PLATE TO LINTELS DIRECTLY UNDER TOP PLATE

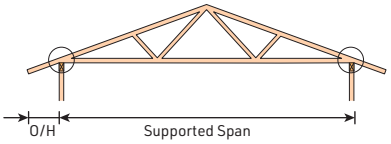


Solid Lintel



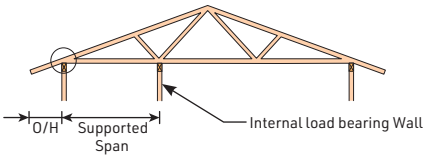
Component Lintel

LOADED DIMENSION DEFINITION

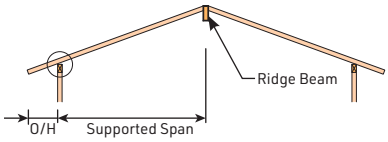


External wall with Standard truss

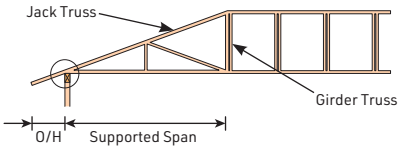
EXTERNAL WALL LOADED DIMENSION = $\frac{\text{SUPPORTED SPAN}}{2}$ + O/H



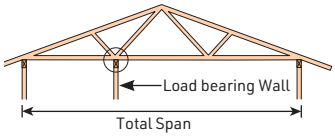
External wall with Internal load bearing wall



External wall with Rafter roof

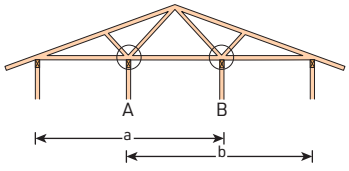


External wall with Jack truss



Internal load bearing wall
(overhang dimension does not apply)

INTERNAL LOAD BEARING WALL LOADED DIMENSION = $\frac{\text{TOTAL SPAN}}{2}$



Multiple internal load bearing walls
(overhang dimension does not apply)

MULTIPLE INTERNAL LOAD BEARING WALLS LOADED DIMENSION FOR
WALL A = $^{a}/_{2}$
WALL B = $^{b}/_{2}$

FIXING SELECTION CHART

(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)

Wind Zones L, M, H, VH, EH as per NZS 3604:2011

Loaded Dimension (m) Stud Centres			Light Roof Wind Zone					Heavy Roof Wind Zone				
300mm	400mm	600mm	L	M	H	VH	EH	L	M	H	VH	EH
3.0	2.3	1.5	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
4.0	3.0	2.0	2N	2N	SL	SL	SL	2N	2N	SL	SL	SL
5.0	3.8	2.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
6.0	4.5	3.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
7.0	5.3	3.5	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
8.0	6.0	4.0	2N	SL	SL	SL	SL	2N	2N	SL	SL	SL
9.0	6.8	4.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
10.0	7.5	5.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
11.0	8.3	5.5	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL
12.0	9.0	6.0	SL	SL	SL	SL	SL	2N	2N	SL	SL	SL

2N = 2/90mm x 3.15 dia. Nails

SL = Single STUD-LOK SL170 (blue)
plus 2/90mm x 3.15 dia. Nails
or 100mm x 3.75 dia. Framing Nails

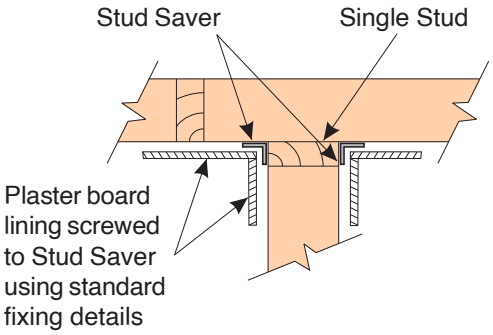
NOTE:
To calculate the number of STUD-LOK fixings required, divide the wall length by the stud centres, add 1 to this figure and locate this numbers of fixings as evenly as possible along the wall length. This figure includes the start and end studs in each wall length.

MiTek® LUMBERLOK®

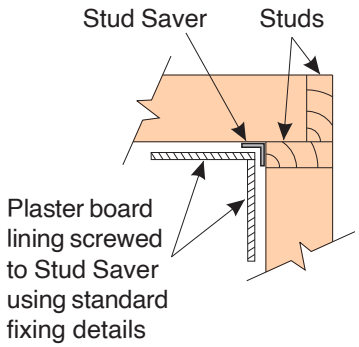
STUD SAVER
FOR WALLS

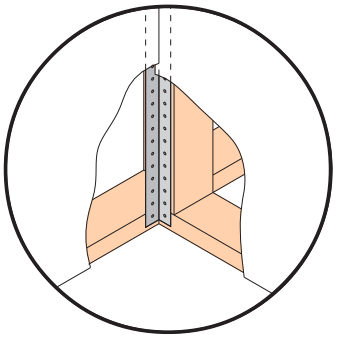
Patent No. 314494

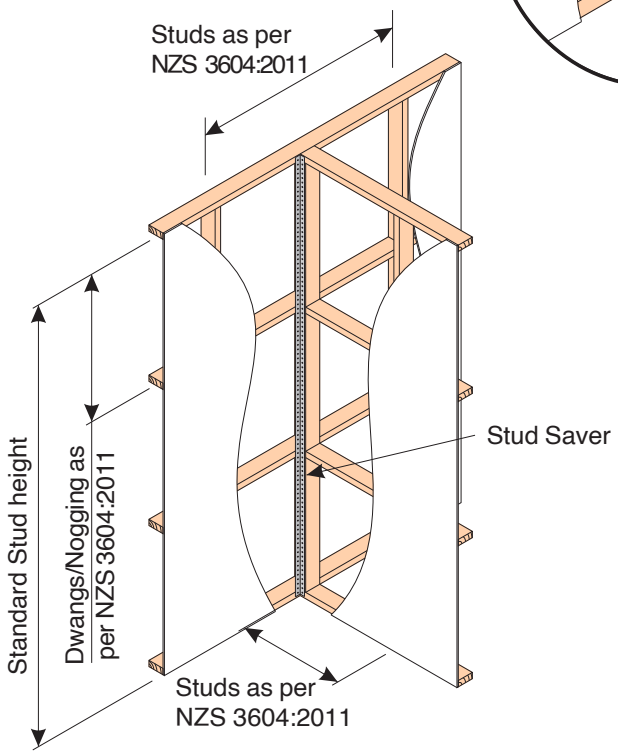
- Eliminates studs and blocks at wall intersections and corners
- Easy location of internal walls
- Repositioning of internal walls can be done without modifying the frame
- Can be fitted easily and quickly on-site before lining
- Wall board linings are attached by use of standard self-tapping screws
- Wall bracing performance can be achieved when fixed according to the standard plaster board fixing details. (BRANZ test report dated 5 May 1999)
- Reduces plaster board cracking in corners
- Supplied in lengths to suit 2400mm wall height

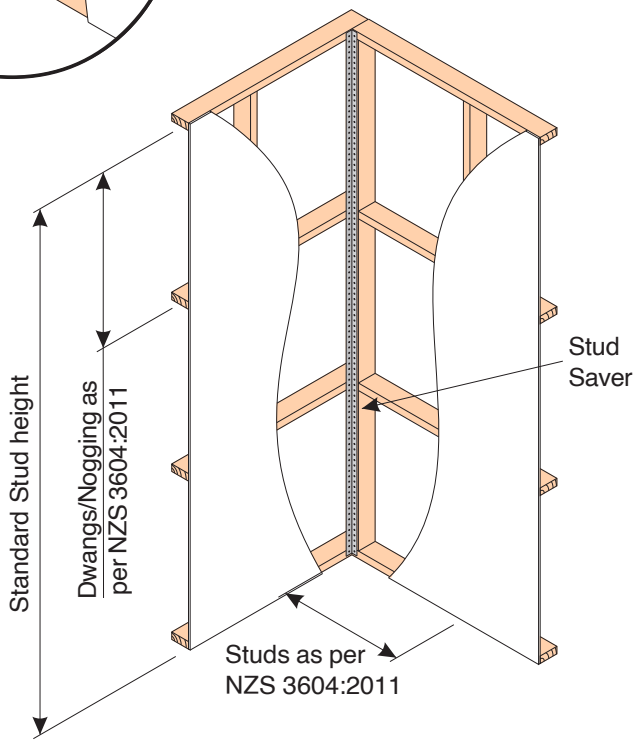


NOTE:
Fix the Stud Saver to the adjacent stud with 30mm x 2.5 dia. clouts at 300mm crs. and 1/ 30mm x 2.5 dia. clout to each dwang/nog and plate.





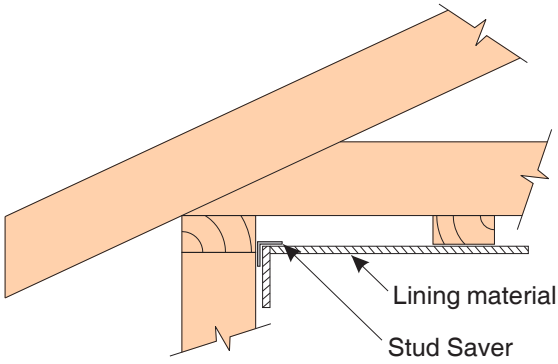


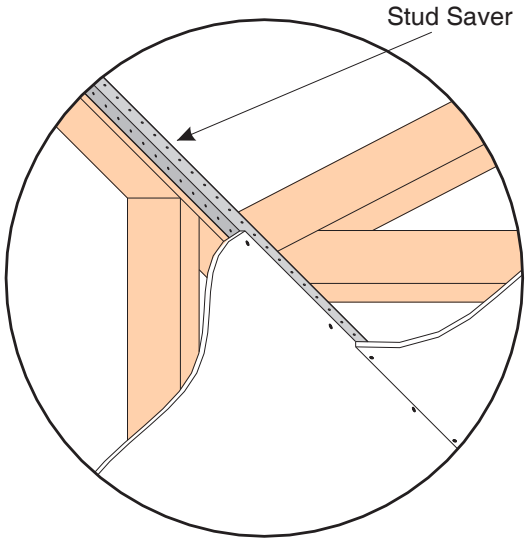


STUD SAVER
FOR CEILINGS

Patent No. 314494

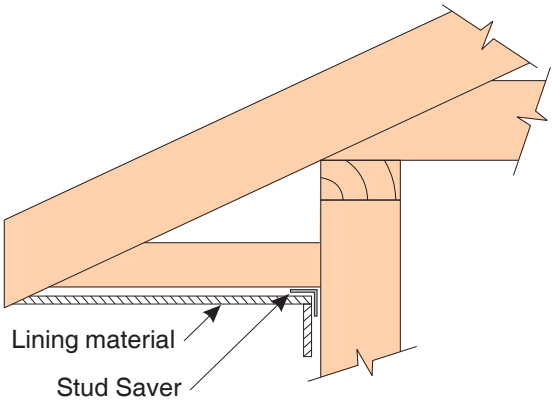
- Alternative to top plate packers
- Can be adjusted in location to suit any size ceiling batten
- Can be located over internal walls at the required level to suit the ceiling line
- Easily fixed to wall plates and studs
- Reduces cracking along the ceiling wall corners
- Ceiling material simply attached by use of standard self tapping screws
- Supplied in 2400mm length
- Not for ceiling diaphragms

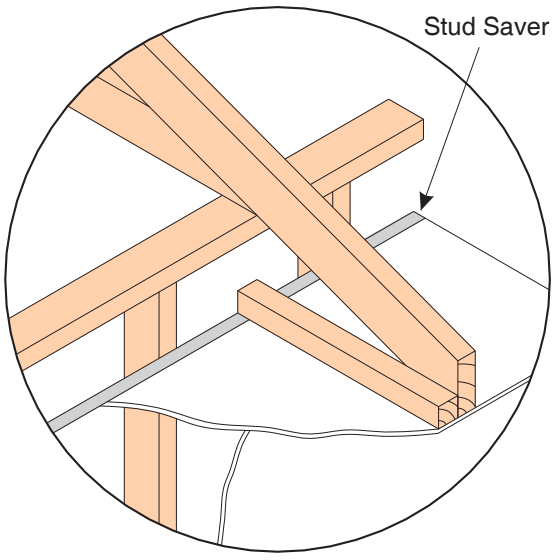




FOR SOFFIT & EXTERIOR CLADDING SUPPORT

- Eliminates dwang/nog for wall lining support
- Eliminates ribbon plate for soffit sprockets and lining support

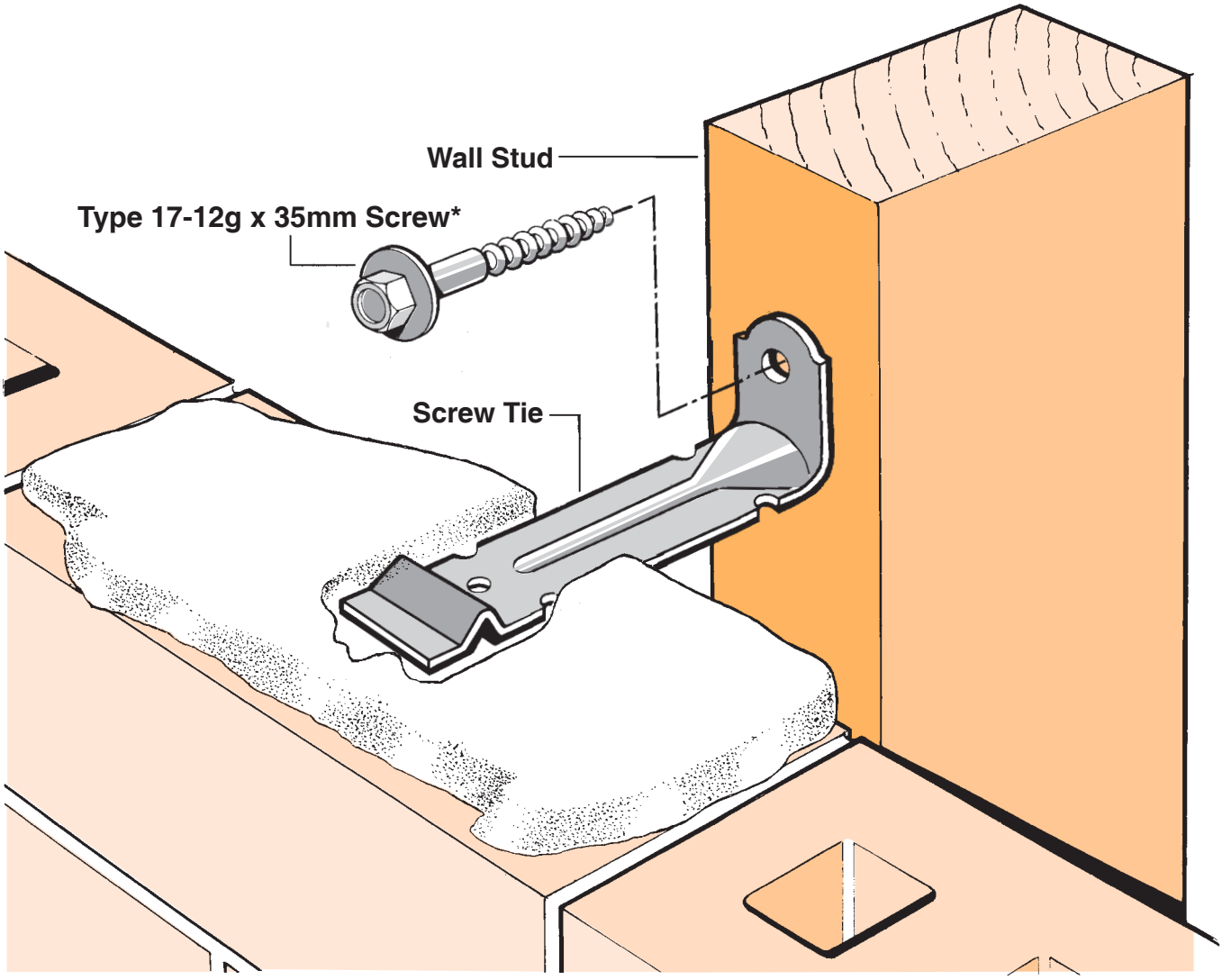




Material: **0.75mm x 67mm G250 Z275 Galvanised Steel**

SCREW TIES
FOR BRICK VENEER FIXING

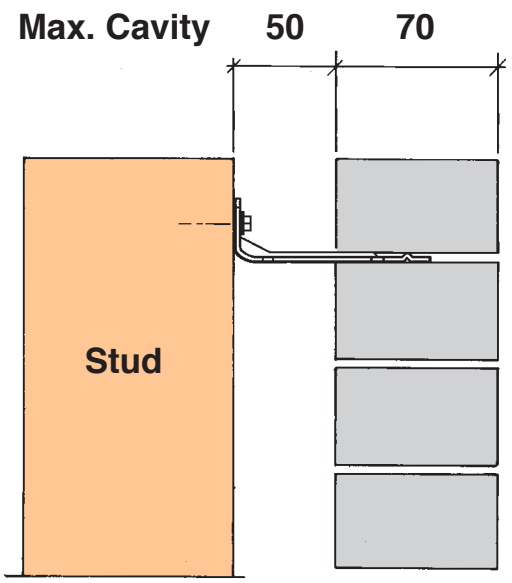
- Medium duty (EM) classification
- Tested by BRANZ in accordance with AS/NZS 2699.1:2000
- BRANZ test report No. ST0725 November 2007
- Suitable for both 'dry bedding' and encapsulated mortar
- Hot Dip Galvanised ties for Zones B & C, and Stainless Steel Grade 316 ties for Zone D meet NZS 3604:2011 Sect. 4 Durability
- Available in 85mm and 105mm sizes



***NOTE:**
Use longer screws for fixing through Rigid Air Barrier (RAB). Maintain 35mm embedment in studs.

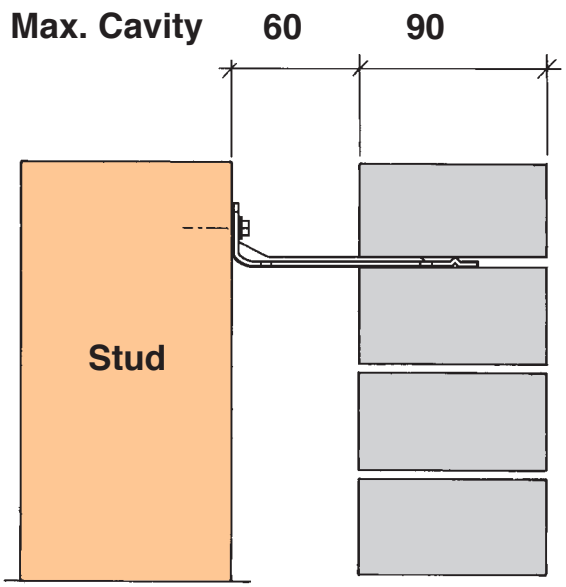
Available from leading Builders Supply Merchants throughout New Zealand

70 SERIES BRICK



Screw Tie Short (85mm)

90 SERIES BRICK



Screw Tie Long (105mm)

- All brick work must be constructed in accordance with NZS 4210:2001 Masonry Construction: Materials and Workmanship. Screw Ties must be applied accordingly and are not to be hammered into timber framing
- Water shedding shoulder prevents transfer of the moisture from tie to building
- Nail hole for Oamaru Stone
- Angled neck encourages increased tie embedment in mortar

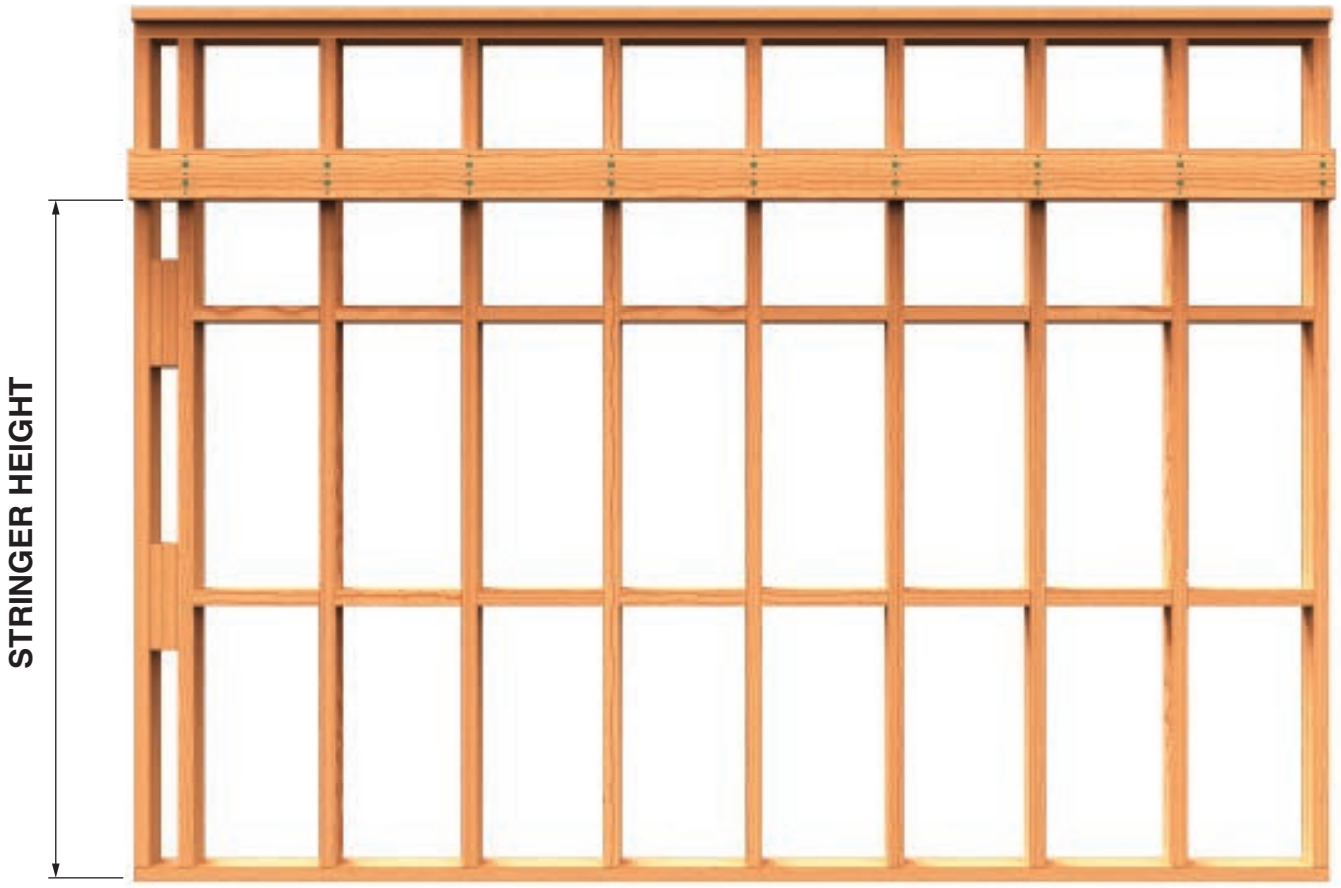
Material: 1.2mm NZCC-SD Hot Dip Galvanised Steel
Screws: Type 17-12g x 35mm Hex Head Hot Dip Galvanised Screws
Packed: 250 ties per box including screws

Also available in Stainless Steel Grade 316 for Zone D.

STUD-LOK STRINGER TO STUD FIXING SCHEDULE

LOADINGS AND DETAILS FOR INSTALLING STRINGERS TO TIMBER STUDS

- Timber stringers must be SG8 Radiata pine only
- Stringer height is measured from base of wall or from floor level
- Stud size and spacing indicated are minimum requirements
- Assume supported trusses are at 900mm centres
- Refer to Truss Fixing Report for maximum Truss Characteristic Reactions (Up or Down)
- Select Stringer Type Characteristics Strength > or = maximum Truss Characteristic Reaction

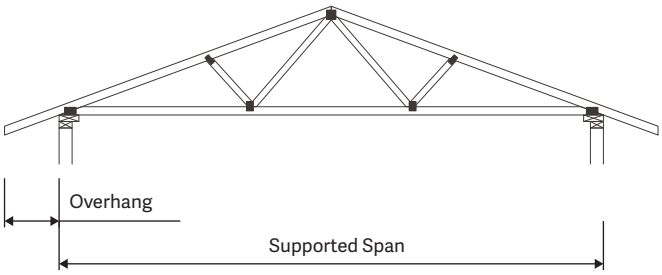


Available from leading Builders Supply Merchants throughout New Zealand

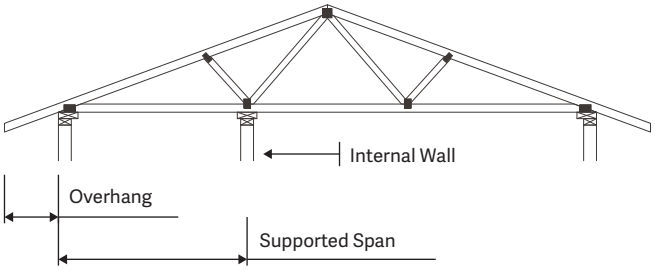
LOADED DIMENSION DEFINITION

EXTERNAL WALL

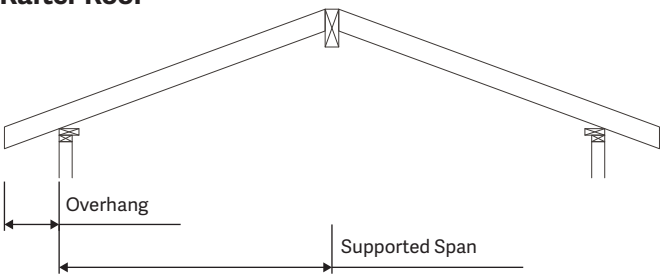
Standard Truss



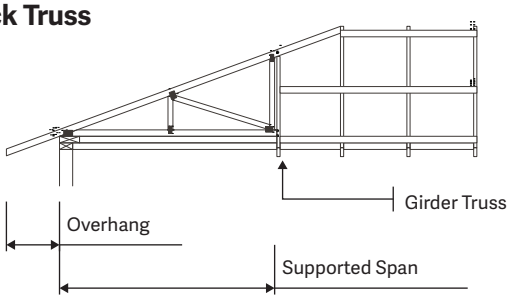
Internally Supported Truss



Rafter Roof



Jack Truss

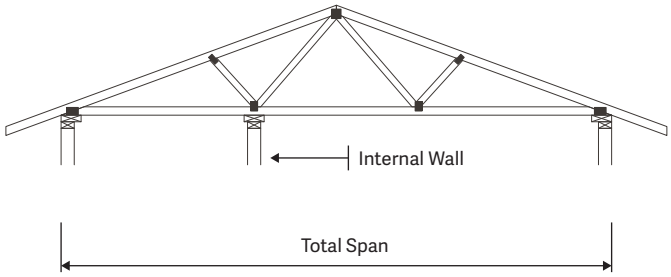


$$\text{External Wall Loaded Dimension} = \left[\frac{\text{Supported Span}}{2} \right] + \text{Overhang}$$

INTERNAL WALL

Internally Supported Truss

(Overhang dimension does not apply)

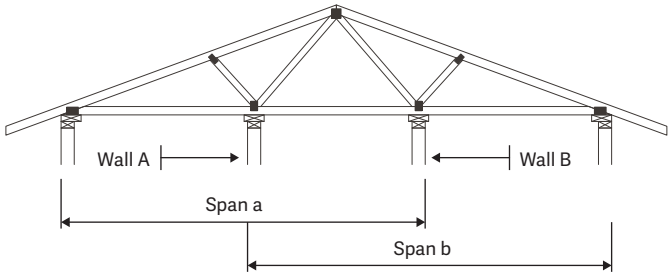


$$\text{Internal Wall Loaded Dimension} = \frac{\text{Total Span}}{2}$$

MULTIPLE INTERNAL WALL

Internally Supported Truss

(Overhang dimension does not apply)



Multiple Internal Wall Loaded Dimension For

$$\text{Wall A} = \frac{\text{Span a}}{2} \qquad \text{Wall B} = \frac{\text{Span b}}{2}$$

STRINGER TO STUD FIXING SCHEDULE

FIXING SELECTION CHARTS

0.9kPa Ground Snow Load

Truss Span (m)	Loaded Dimension (m)	Light Roof					Heavy Roof				
		Wind Zone									
		Light	Medium	High	Very High	Extra High	Light	Medium	High	Very High	Extra High
2.0	1.0	K	K	K	K	K	K	K	K	K	K
3.0	1.5	K	K	K	K	K	K	K	K	K	K
4.0	2.0	K	K	K	K	K	L	L	L	L	L
5.0	2.5	L	L	L	L	L	L	L	L	L	L
6.0	3.0	L	L	L	L	L	L	L	L	L	L
7.0	3.5	L	L	L	L	L	M	M	M	M	M
8.0	4.0	L	L	L	L	M	M	M	M	M	M
9.0	4.5	M	M	M	M	M	M	M	M	M	M
10.0	5.0	M	M	M	M	M	M	M	M	M	M
11.0	5.5	M	M	M	M	M	N	N	N	N	N
12.0	6.0	M	M	M	M	M	N	N	N	N	N

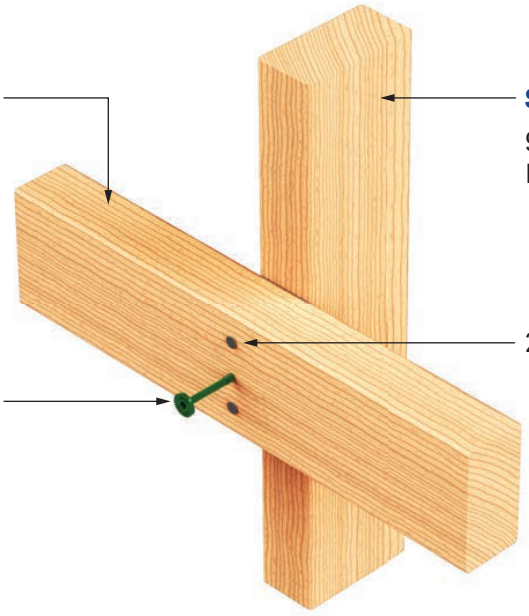
1.5kPa Ground Snow Load

Truss Span (m)	Loaded Dimension (m)	Light Roof					Heavy Roof				
		Wind Zone									
		Light	Medium	High	Very High	Extra High	Light	Medium	High	Very High	Extra High
2.0	1.0	K	K	K	K	K	K	K	K	K	K
3.0	1.5	K	K	K	K	K	L	L	L	L	L
4.0	2.0	L	L	L	L	L	L	L	L	L	L
5.0	2.5	L	L	L	L	L	M	M	M	M	M
6.0	3.0	L	L	L	L	L	M	M	M	M	M
7.0	3.5	M	M	M	M	M	M	M	M	M	M
8.0	4.0	M	M	M	M	M	N	N	N	N	N
9.0	4.5	M	M	M	M	M	N	N	N	N	N
10.0	5.0	M	M	M	M	M	SED	SED	SED	SED	SED
11.0	5.5	M	M	M	M	M	SED	SED	SED	SED	SED
12.0	6.0	N	N	N	N	N	SED	SED	SED	SED	SED

FIXING OPTIONS TABLE

Fixing Type	Description	Minimun Stud Size	Stud Centres	Min. Stringer Size	Characteristic Load
K	2 x 90mm x 3.15 dia. nails + 1 x BOWMAC Stud-Lok SL125 (green)	90 x 45mm	600mm	90 x 45mm	3.93kN
L	3 x 90mm x 3.15 dia. nails +2 x BOWMAC Stud-Lok SL125 (green)	90 x 45mm	600mm	140 x 45mm	7.22kN
M	Fixing Type L + 1 x LUMBERLOK Multigrip with 3 x LUMBERLOK Type 17-14g x 35mm Hex Screws per flange	90 x 45mm	600mm	140 x 45mm	12.67kN
N	Fixing Type L + 1 x LUMBERLOK Split Hanger SPH140 with 3 x LUMBERLOK Type 17-14g x 35mm Hex Screws per flange	90 x 45mm	400mm	140 x 45mm	14.72kN

TYPE K 3.93kN



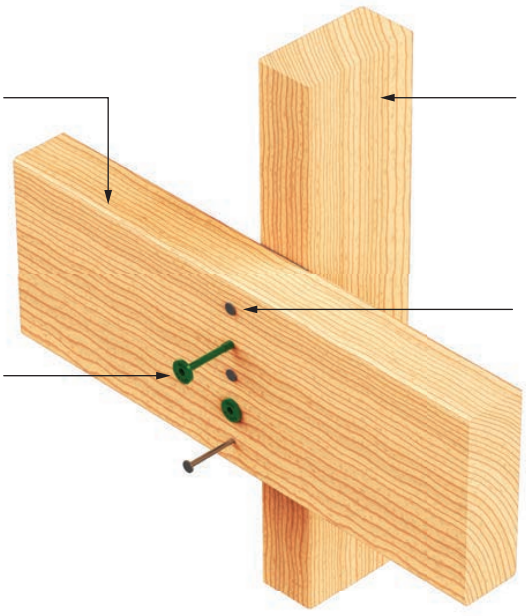
STRINGER
90 x 45mm Timber Stringer

STUD
90 x 45mm Timber Stud at 600mm crs.
Maximum Stringer height 3.0m

2 x 90mm x 3.15 dia. Nails

STRINGER TO STUD
1 x BOWMAC® Stud-Lok SL125 (green)

TYPE L 7.22kN



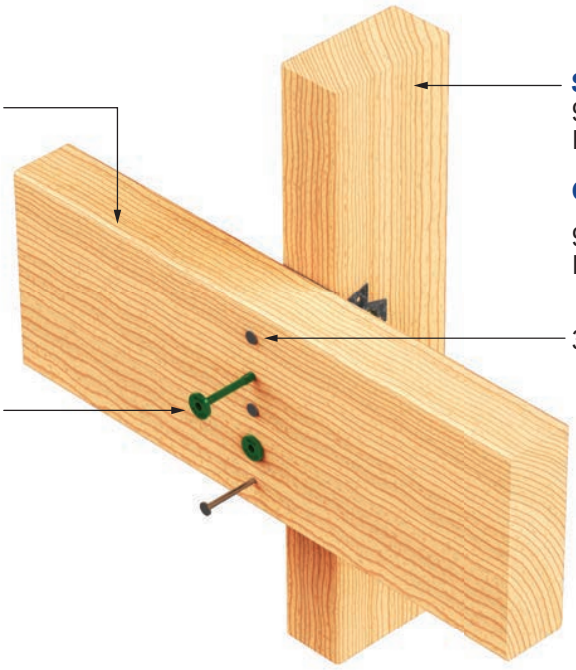
STRINGER
Minimum 140 x 45mm Timber Stringer

STUD
90 x 45mm Timber Stud at 600mm crs.
Maximum Stringer height 3.0m

3 x 90mm x 3.15 dia. Nails

STRINGER TO STUD
2 x BOWMAC® Stud-Lok SL125 (green)

TYPE M 12.67kN



STRINGER
Minimum 140 x 45mm
Timber Stringer

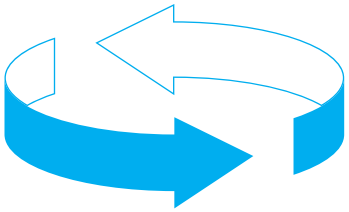
STUD
90 x 45mm Timber Stud at 600mm crs.
Maximum Stringer height 2.45m

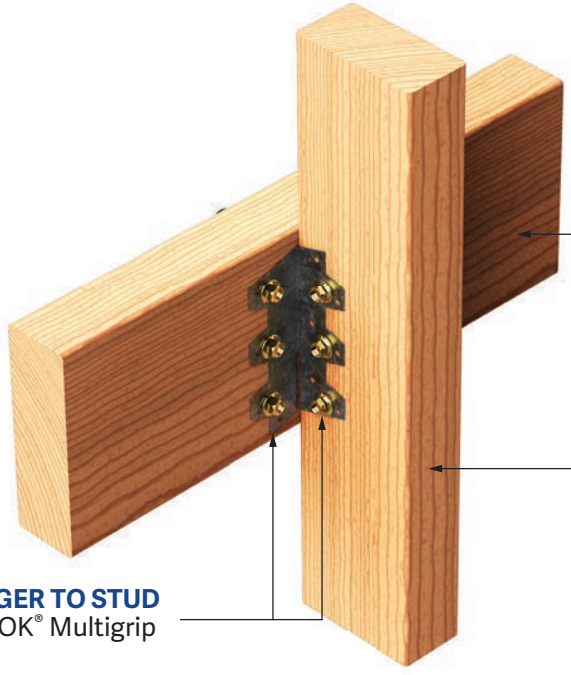
OR

90 x 45mm Timber Stud at 450mm crs.
Maximum Stringer height 3.0m

3 x 90mm x 3.15 dia. Nails

STRINGER TO STUD
2 x BOWMAC® Stud-Lok SL125
(green)





STRINGER
Minimum 140 x 45mm
Timber Stringer

STUD
90 x 45mm Timber Stud at 600mm crs.
Maximum Stringer height 2.45m

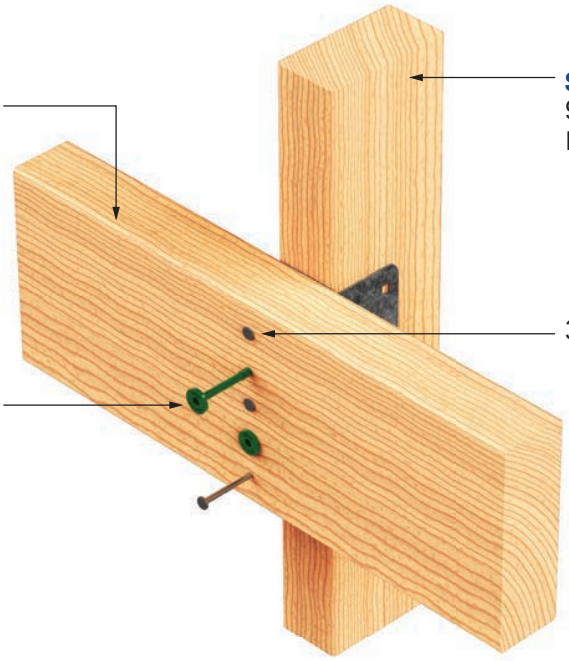
OR

90 x 45mm Timber Stud at 450mm crs.
Maximum Stringer height 3.0m

STRINGER TO STUD
1 x LUMBERLOK® Multigrip

3 x LUMBERLOK® Type 17-14g x 35mm
Hex Head Screws per flange

TYPE N 14.72kN

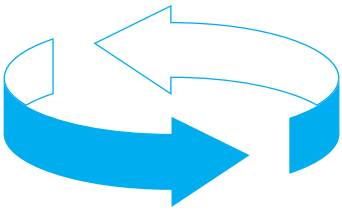


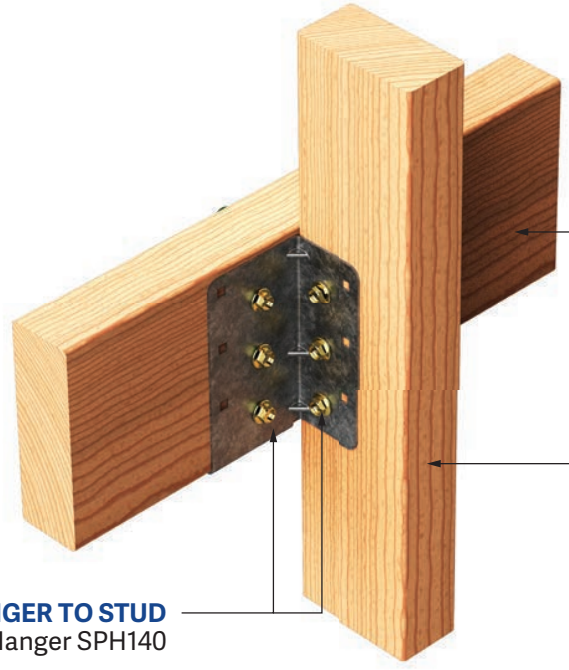
STRINGER
Minimum 140 x 45mm
Timber Stringer

STUD
90 x 45mm Timber Stud at 400mm crs.
Maximum Stringer height 2.45m

3 x 90mm x 3.15 dia. Nails

STRINGER TO STUD
2 x BOWMAC® Stud-Lok SL125
(green)





STRINGER
Minimum 140 x 45mm
Timber Stringer

STUD
90 x 45mm Timber Stud at 400mm crs.
Maximum Stringer height 2.45m

STRINGER TO STUD
1 x LUMBERLOK® Split Hanger SPH140

3 x LUMBERLOK® Type 17-14g x 35mm
Hex Head Screws per flange

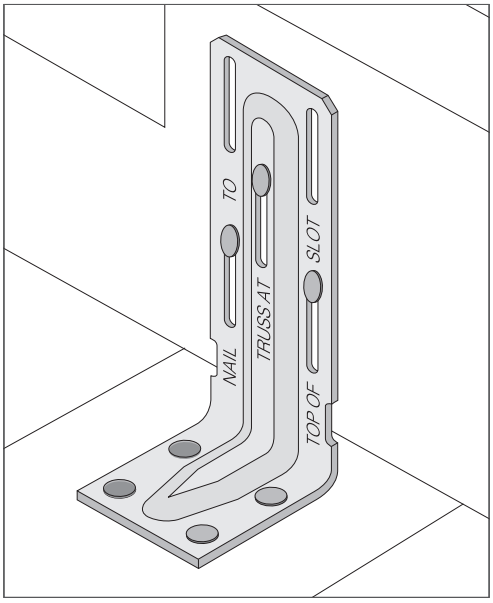
MiTek® LUMBERLOK®

INTERNAL WALL BRACKET
FOR FIXING NON LOAD BEARING WALLS TO TRUSSES

APPLICATION

Internal Wall Brackets are used on internal non load bearing walls to provide restraint against lateral movement to top of wall.

Use Internal Wall Brackets where the unrestrained distance exceeds 1.8m.



INSTALLATION

1. Fix bracket to top plate with 4 / 30mm x 3.15 dia. Product Nails. See Figure 1.

2. Fix to truss using 3 / 30mm x 3.15 dia. Product Nails to top of slot. Place nails in the 3 lowest slots available, ensuring minimum distance of 15mm is maintained to bottom edge of truss bottom chord. See Figure 2.

FIG. 1

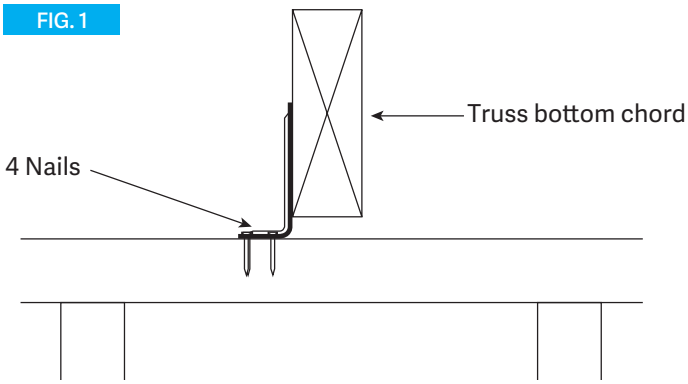
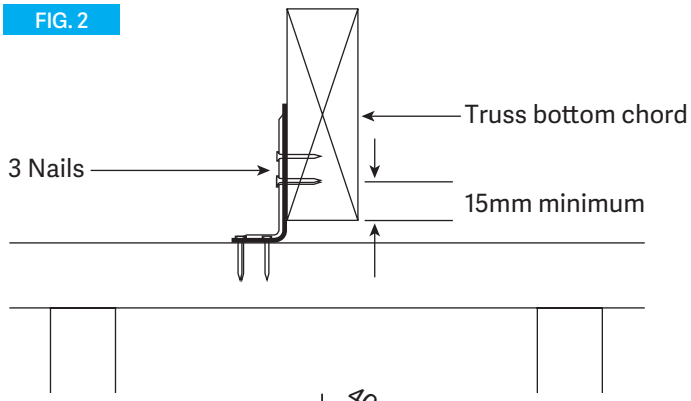
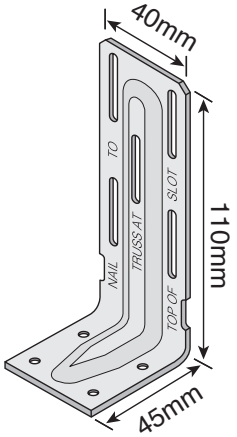


FIG. 2



Code: IWB

Material: 1.0mm G300 Z275 Galvanised Steel



May 2023

PRODUCER STATEMENT - PS1 - DESIGN

ISSUED BY:	MiTek New Zealand Limited
TO BE SUPPLIED TO:	Building Consent Authorities in New Zealand
IN RESPECT OF:	BOWMAC STRUCTURAL BRACKETS On-Site Guide, 2023
AT:	Various Locations in New Zealand

MiTek New Zealand Limited has provided engineering design services in respect of the requirements of Clause B1 of the NZ Building Code for

☐ All ☒ Part only as specified - BOWMAC STRUCTURAL BRACKETS

of the proposed building work.

The selection charts and tables within this guide have been prepared in accordance with **Compliance Documents and Verification Method B1/VM1** of the NZ Building Code and in accordance with sound and widely accepted engineering principles.

On behalf of MiTek New Zealand Limited, and subject to:

1. The verification on the design assumptions within this guide
2. All proprietary products meeting their performance specification requirements including B2 - Durability;

I believe on reasonable grounds that the use of BOWMAC STRUCTURAL BRACKETS in the proposed building, if constructed in accordance with the drawings, specifications and other documents provided, will comply with the relevant provisions of the Building Code.

MiTek New Zealand Limited holds a current policy of Professional Indemnity Insurance of not less than $500,000.

On behalf of MiTek New Zealand Limited

In Ling Ng
Engineering Manager NZ
BE (Hons), CPEng, IntPE, CMEngNZ (146585)

Correspondence from:

AUCKLAND
40 Neales Road, East Tamaki 2013
PO Box 58-014, Botany 2163
Phone: 09-274 7109

CHRISTCHURCH
14 Pilkington Way, Wigram 8042
PO Box 8387, Riccarton 8440
Phone: 03-348 8691

MITEKNZ.CO.NZ

MiTek® BOWMAC®

BUILDING WITH BOWMAC®
DESIGN INFORMATION

TIMBER & DURABILITY

- All structural timber grades to conform to NZS 3603:1993 Amendment 4
- Treatment to NZS 3602:2003
- Timber can be green but fasteners and brackets would then need to be stainless steel
- Our recommendation is to leave treated timber to cure for 2 to 3 weeks for the chemical preservative to set and for moisture content to be 20% or less at time of installation
- Apply a layer of grease to bolts for further protection

DESIGN LOADS

- Dead loads for Light Roof = 0.25kPa, Heavy Roof = 0.65kPa, Ceiling = 0.20kPa
- Dead load includes weight of trusses, purlins, associated framing and roofing material
- Live loads as defined by AS/NZS 1170.1:2002
- Wind zones as defined by NZS 3604:2011
- Earthquake zones 1, 2, 3 or 4 as per NZS 3604:2011
- Snow loads - **ALL** designs up to 1.0kPa Snow load unless otherwise noted
- Soil conditions - **ALL** foundations to be into natural good ground with a minimum ultimate bearing capacity of 300kPa
- Refer to **MiTek New Zealand Limited** for any design modifications required for increase in snow loads or wind loads above those stated on the drawings

DESIGN REFERENCES

NZS 3603:1993
NZS 3604:2011
AS/NZS 1170:2002

LOAD DETAILS

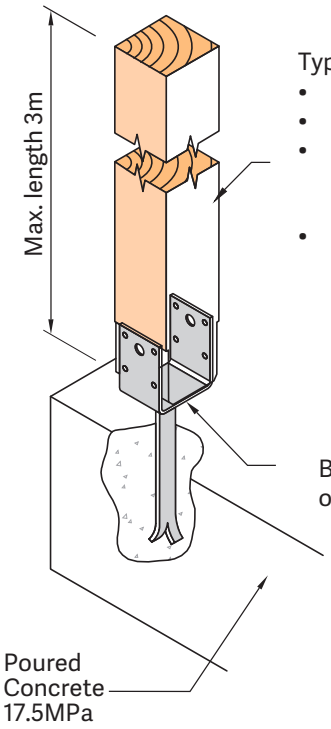
These drawings have been prepared using the above design loads.
It is the responsibility of the user to ensure that the design data and loads are still correct at the time of construction.

PRODUCT SPECIFICATIONS

These details have been designed using specific **MiTek New Zealand Limited BOWMAC** products and the performance of the buildings is reliant on the correct choice of product.
Any product substitutions will invalidate these designs and details.

COPYRIGHT

BUILDING WITH BOWMAC®
POST & BEARER BRACKETS



Typical post sizes:
- B132 – 100x50
- All other brackets – 100x100
- Larger posts can be rebated or centre slotted to suit bracket type
- Timber to be minimum No.1 framing grade Radiata Pine or Douglas Fir, treated to NZS 3602:2003.

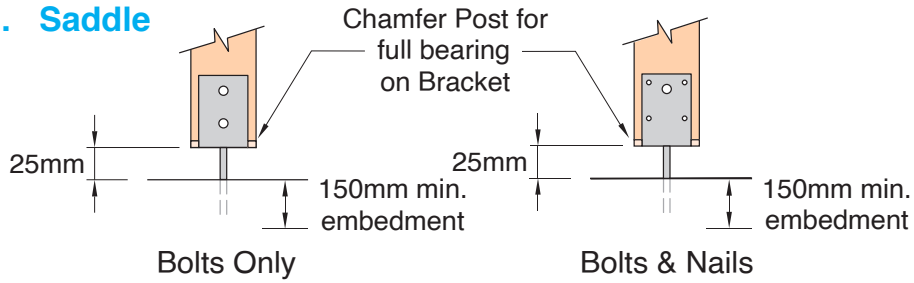
BRACKET RANGE
- B12, B16, B18, B25, B28, B75, B78, B79, B132, B134, B135, B138, B195, B196, B197 and B198*

(*holes for M10 Bolt)

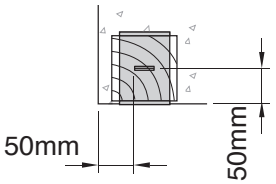
FIXING NOTE
All bolt holes to accommodate M12 Bolts unless noted otherwise. Nail holes to accommodate nails as supplied.

TYPICAL USE

1. Saddle

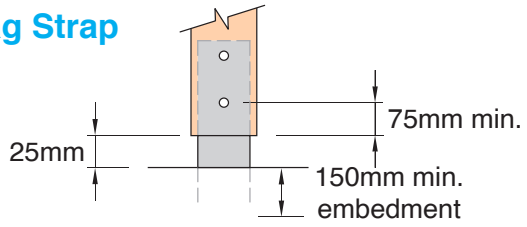


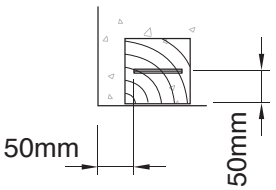
Bolts Only | Bolts & Nails



Min. edge distance for Bracket Stem

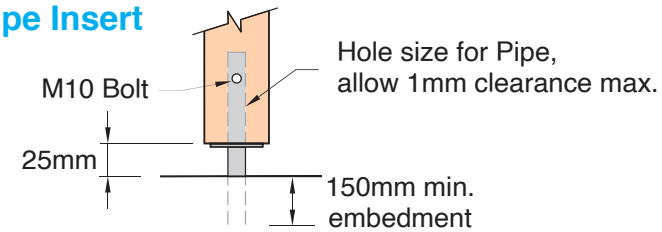
2. Rag Strap

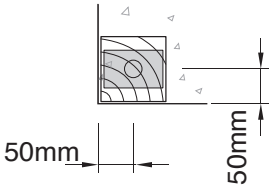




Min. edge distance for Bracket Stem

3. Pipe Insert





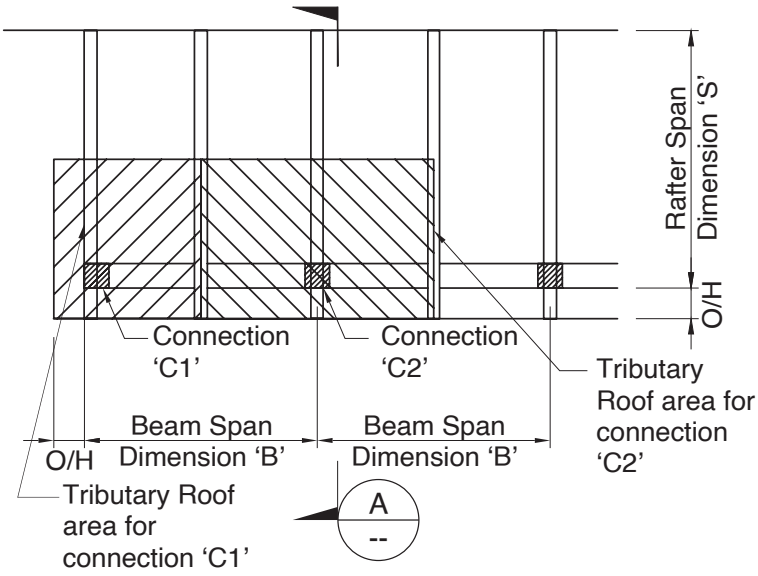
Min. edge distance for Bracket Stem

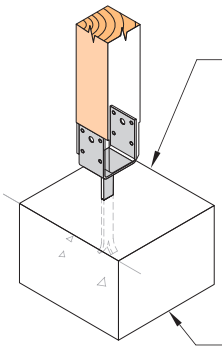
ON-SITE FITTED DIMENSIONS

BOWMAC® Structural Brackets Design Details

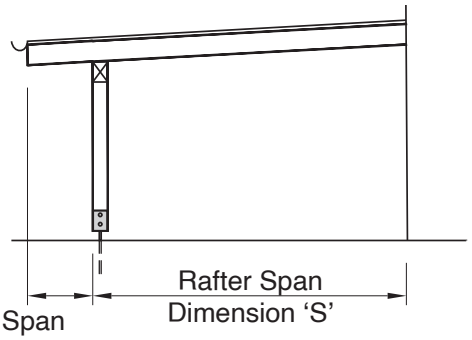
Job No.: CH1000
Revise Date: 05/2023
Sheet No.: Sheet 1

BUILDING WITH BOWMAC®
POST & BEARER BRACKETS





FOUNDATION DETAILS



EXAMPLE AREAS

- Tributary roof area on connection 'C1'=(S/2+O/H)x(B/2+O/H)
- Tributary roof area on connection 'C2'=(S/2+O/H)xB

LAYOUT & LOAD DIMENSIONS

BRACKET TYPE

- **Type 1:** B134 and B198
- **Type 2:** B12, B18, B25, B28, B132, B135, B138, B195 and B196
- **Type 3:** B16, B75, B78, B79 and B197

LOAD TABLE

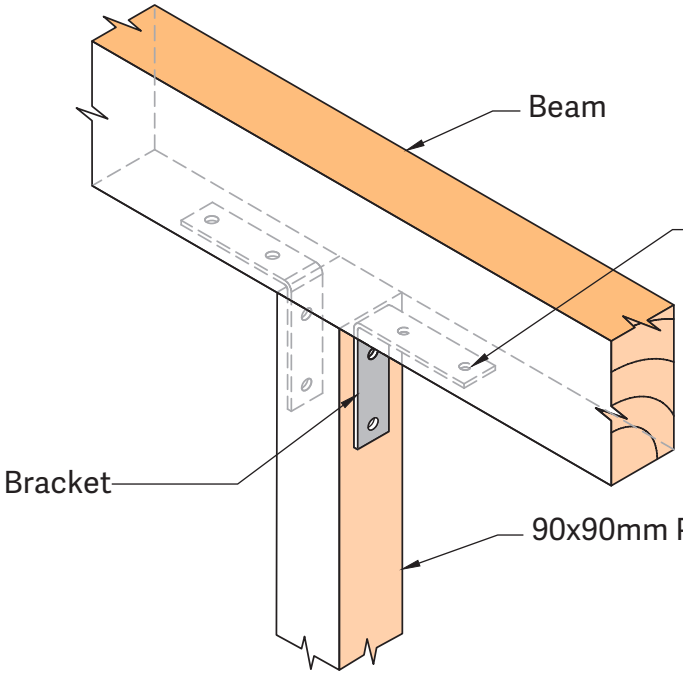
Roof type	Wind zone	Area of roof supported						
		1m²	2m²	4m²	6m²	8m²	10m²	12m²
Light*	Extra high	Type 1	Type 1	Type 2	Type 2	Type 3	Type 3	-
	Very high	Type 1	Type 1	Type 2	Type 2	Type 3	Type 3	Type 3
	High	Type 1	Type 1	Type 1	Type 2	Type 2	Type 2	Type 3
	Medium	Type 1	Type 1	Type 1	Type 1	Type 2	Type 2	Type 2
	Low	Type 1	Type 1	Type 1	Type 1	Type 1	Type 1	Type 2
Heavy*	Extra high	Type 1	Type 1	Type 2	Type 2	Type 3	Type 3	Type 3
	Very high	Type 1	Type 1	Type 1	Type 2	Type 2	Type 2	Type 3
	High	Type 1	Type 1	Type 1	Type 1	Type 2	Type 2	Type 2
	Medium/Low	Type 1	Type 1	Type 1	Type 1	Type 1	Type 1	Type 1

MIN. CONCRETE FOOTING VOLUME TABLE

Roof type	Wind zone	Volume of footing concrete (m³) for area of roof supported						
		1m²	2m²	4m²	6m²	8m²	10m²	12m²
Light*	Extra high	0.09	0.16	0.32	0.49	0.61	0.79	1.00
	Very high	0.07	0.13	0.26	0.40	0.50	0.65	0.80
	High	0.05	0.10	0.20	0.30	0.40	0.50	0.60
	Medium	0.03	0.05	0.10	0.15	0.20	0.25	0.30
	Low	0.02	0.03	0.07	0.10	0.15	0.15	0.20
Heavy*	Extra high	0.05	0.09	0.16	0.25	0.32	0.39	0.49
	Very high	0.04	0.07	0.13	0.20	0.26	0.32	0.40
	High	0.03	0.05	0.10	0.15	0.20	0.25	0.30
	Medium/Low	No securement for uplift required						

* Refer to NZS 3604:2011 for specific roof weights.

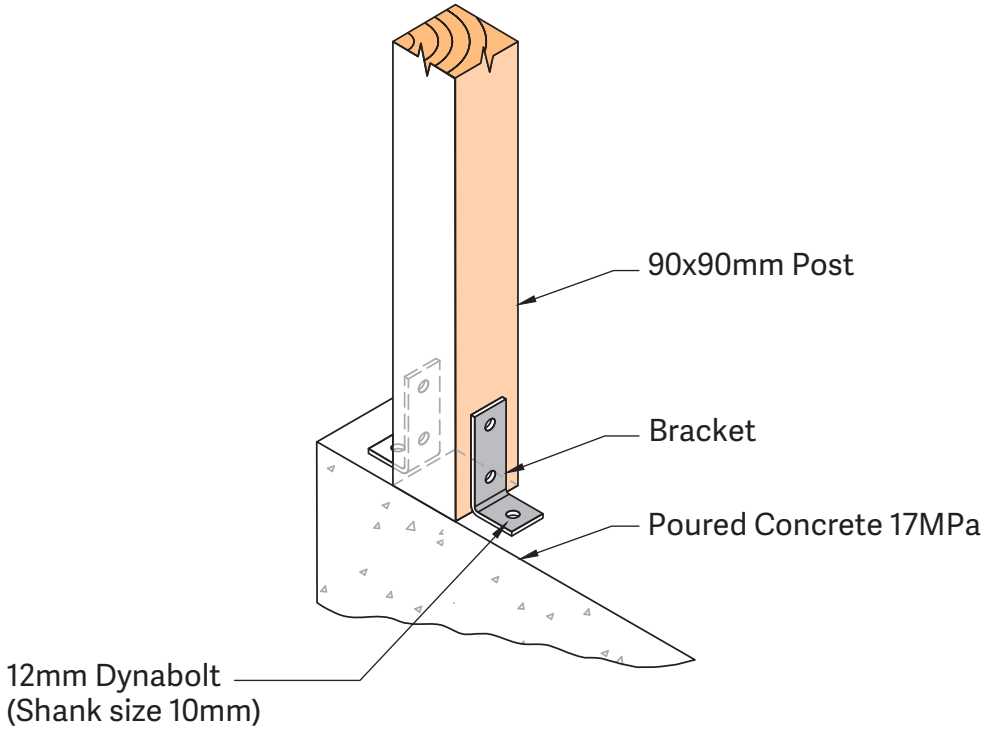
BUILDING WITH BOWMAC®
ANGLE BRACKETS WITHOUT GUSSET



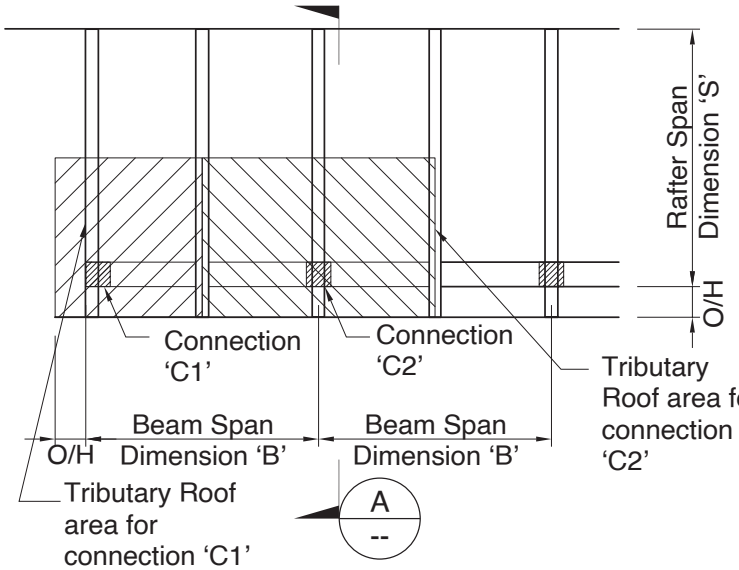
BRACKET RANGE
- B51, B52, B53, B54, B55, B58, B351, B352, B353 and B354

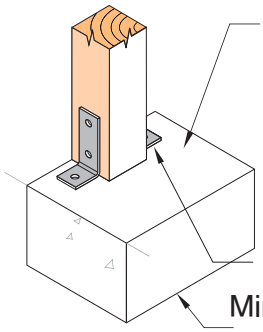
FIXING NOTE
- All bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE



BUILDING WITH BOWMAC®
POST & BEARER BRACKETS



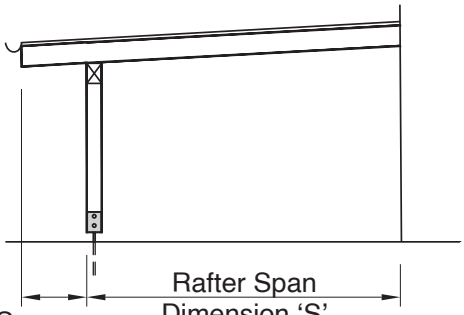


For minimum volume of Concrete required for each Bracket refer to chart below

2 Brackets per Post

Minimum Concrete strength 17MPa

FOUNDATION DETAILS



SECTION A --
SCALE: NTS

EXAMPLE AREAS

- Tributary roof area on connection 'C1'=(S/2+O/H)x(B/2+O/H)
- Tributary roof area on connection 'C2'=(S/2+O/H)xB

LAYOUT & LOAD DIMENSIONS

BRACKET
- B51, B52, B53, B54, B55, B58, B351, B352, B353 and B354

LOAD TABLE

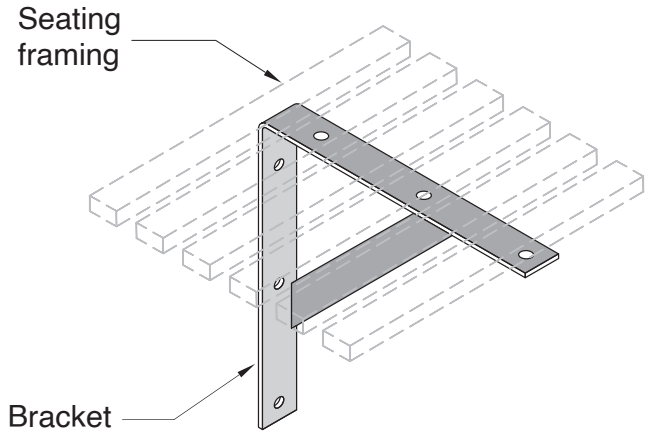
Roof type	Wind zone	Max. Roof Area (m²)
Light*	Extra high	6
	Very high	7
	High	10
	Medium	12
	Low	12
Heavy*	Extra high	7
	Very high	10
	High	12
	Medium/Low	12

*Refer to NZS 3604:2011 for specific roof weights.

MIN. CONCRETE FOOTING VOLUME TABLE

Roof type	Wind zone	Volume of footing concrete (m³) for area of roof supported						
		1m²	2m²	4m²	6m²	8m²	10m²	12m²
Light*	Extra high	0.09	0.16	0.32	0.49	0.61	0.79	1.00
	Very high	0.07	0.13	0.26	0.40	0.50	0.65	0.80
	High	0.05	0.10	0.20	0.30	0.40	0.50	0.60
	Medium	0.03	0.05	0.10	0.15	0.20	0.25	0.30
	Low	0.02	0.03	0.07	0.10	0.15	0.15	0.20
Heavy*	Extra high	0.05	0.09	0.16	0.25	0.32	0.39	0.49
	Very high	0.04	0.07	0.13	0.20	0.26	0.32	0.40
	High	0.03	0.05	0.10	0.15	0.20	0.25	0.30
	Medium/Low	No securement for uplift required						

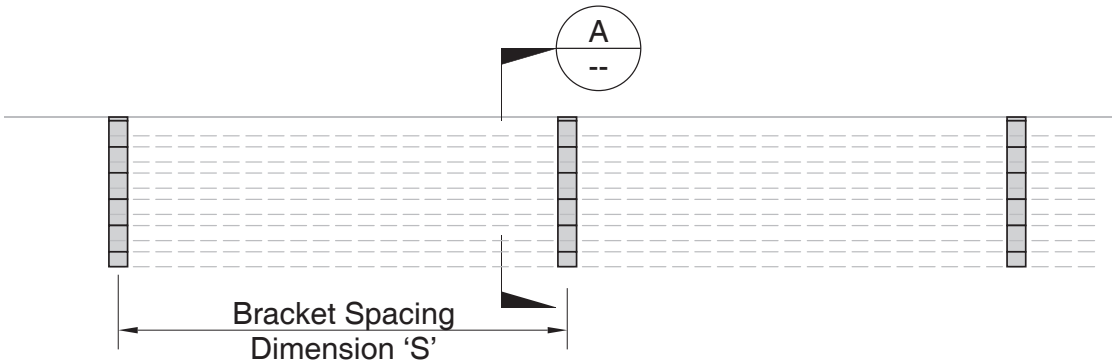
BUILDING WITH BOWMAC®
ANGLE BRACKETS WITH GUSSET

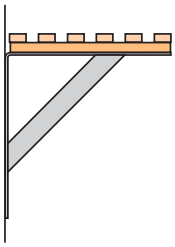


BRACKET RANGE
- B163 and B165

FIXING NOTE
- All bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE





SECTION A --
SCALE: NTS

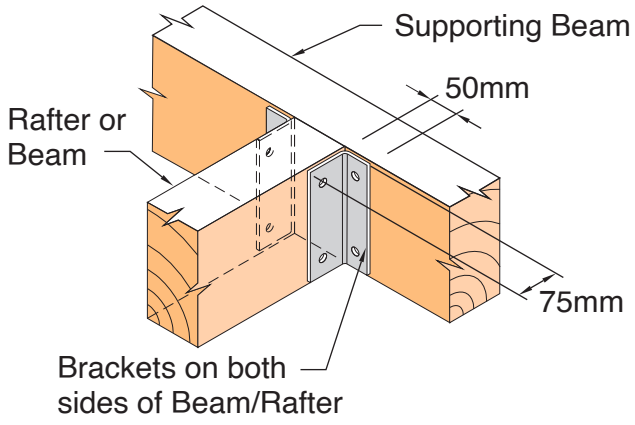
SEATING LOAD
- Bracket designed to carry live load of 3.0kPa.

BRACKET SPACING TABLE

Bracket	Max. Spacing 'S'
B163	2.0m
B165	2.0m

LOAD NOTE
- Bracket selection for B163 & B165 is dependant on seating width only. The same unit load applies to both brackets.

BUILDING WITH BOWMAC®
HEAVY DUTY SHORT ANGLE BRACKETS

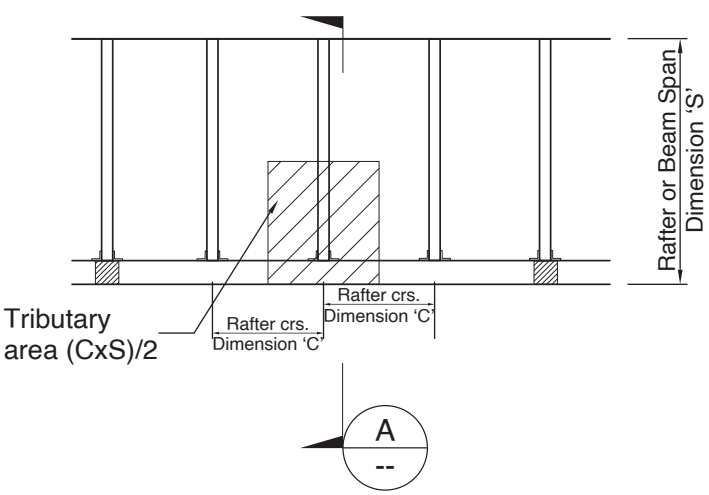


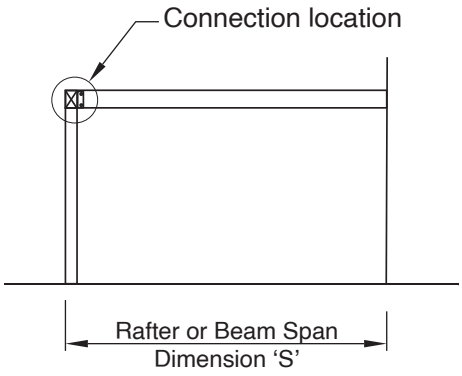
BRACKET RANGE
- B175, B176, B177 and B178*

(*holes for M16 Bolt)

FIXING NOTE
- All Bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE





SECTION A --
SCALE: NTS

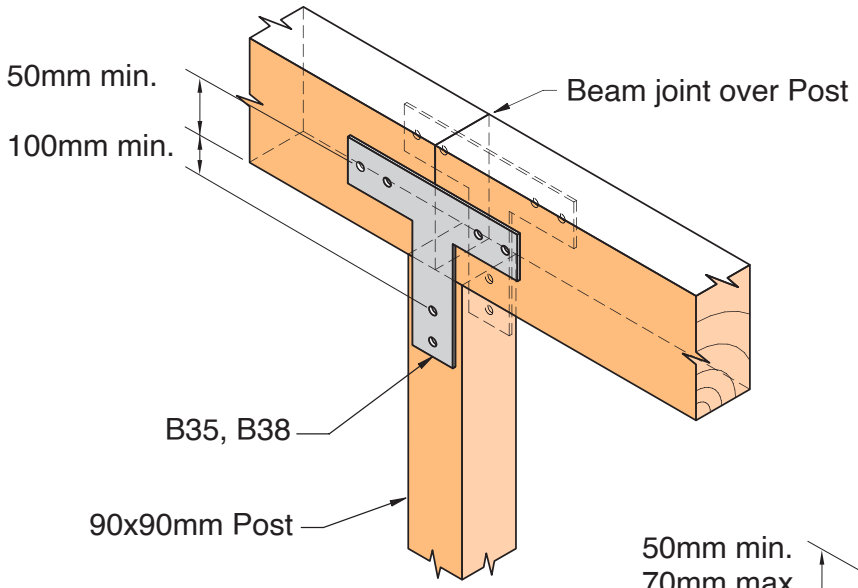
LAYOUT & LOAD DIMENSIONS

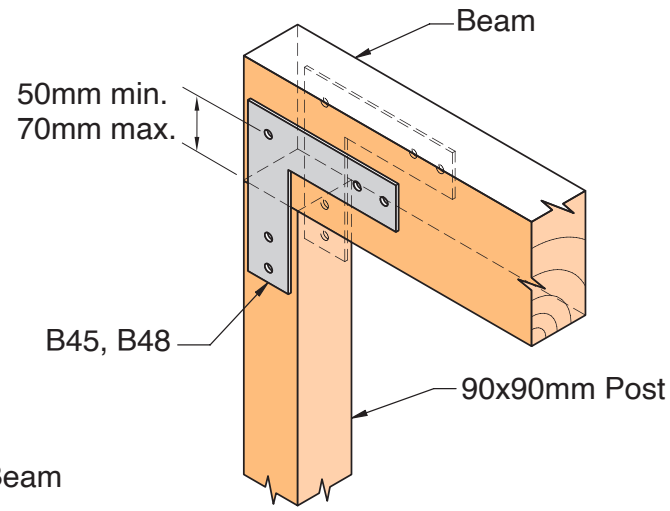
LOAD TABLE

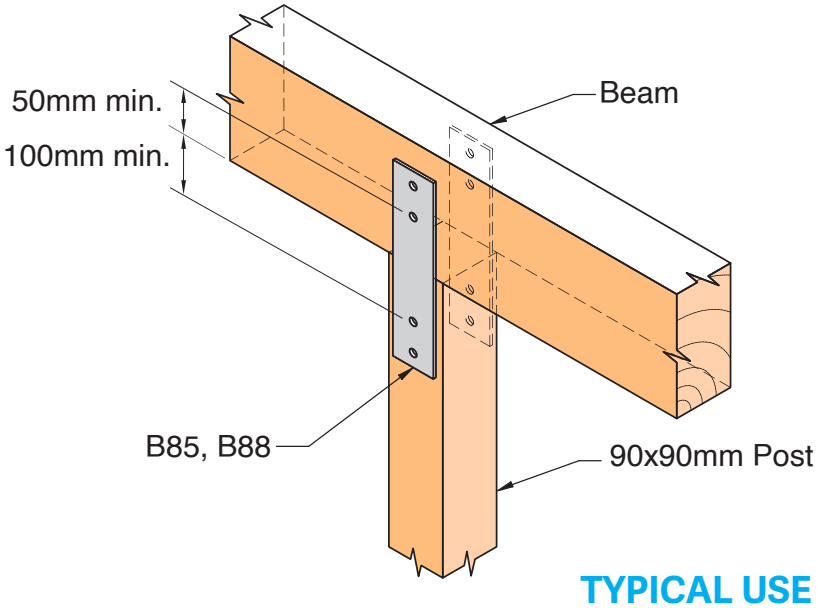
Roof type	Wind zone	Max. Roof Area (m²)	
		1.0kPa Snow	No Snow
Light	Extra high	6	6
	Very high	7	8
	High	7	11
	Medium	7	12
	Low	7	12
Heavy	Extra high	5	8
	Very high	5	10
	High	5	12
	Medium/Low	5	12

Max. design Snow Load S = 1.0kPa

BUILDING WITH BOWMAC®
STRAP, T & L BRACKETS







BRACKET RANGE
- B35, B38 (T)
- B45, B48 (L)
- B85, B88 (Strap)

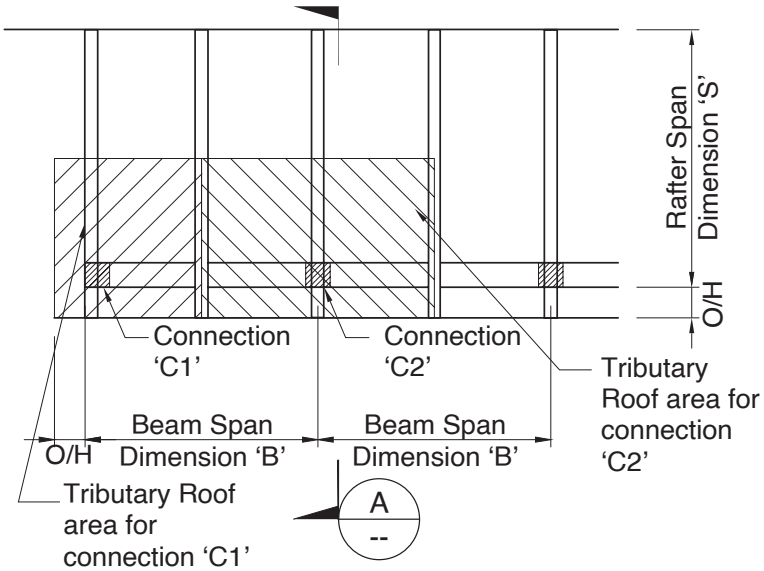
FIXING NOTE
- All bolt holes accommodate M12 Bolt unless noted.

Bracket	Uplift ULS Capacity per pair of brackets
B35 (T)	24.0kN
B38 (T)	30.3kN
B45 (L)	14.5kN
B48 (L)	25.0kN
B85, B88	16.3kN

TYPICAL USE

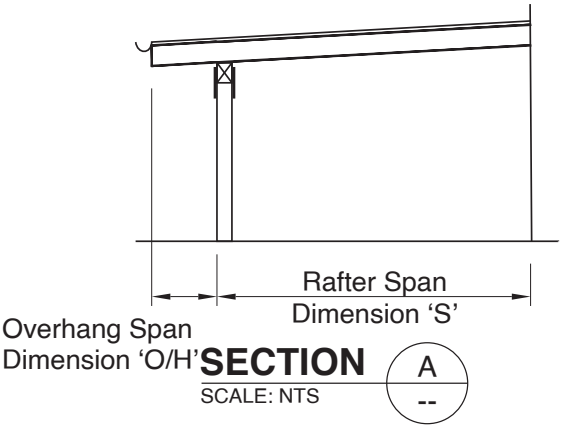
NOTE
- All T's, L's & Straps have two width selections of 50mm and 75mm

BUILDING WITH BOWMAC®
STRAP, T & L BRACKETS



EXAMPLE AREAS
- Tributary roof area on connection 'C1'=(S/2+O/H)x(B/2+O/H)
- Tributary roof area on connection 'C2'=(S/2+O/H)xB

LAYOUT & LOAD DIMENSIONS



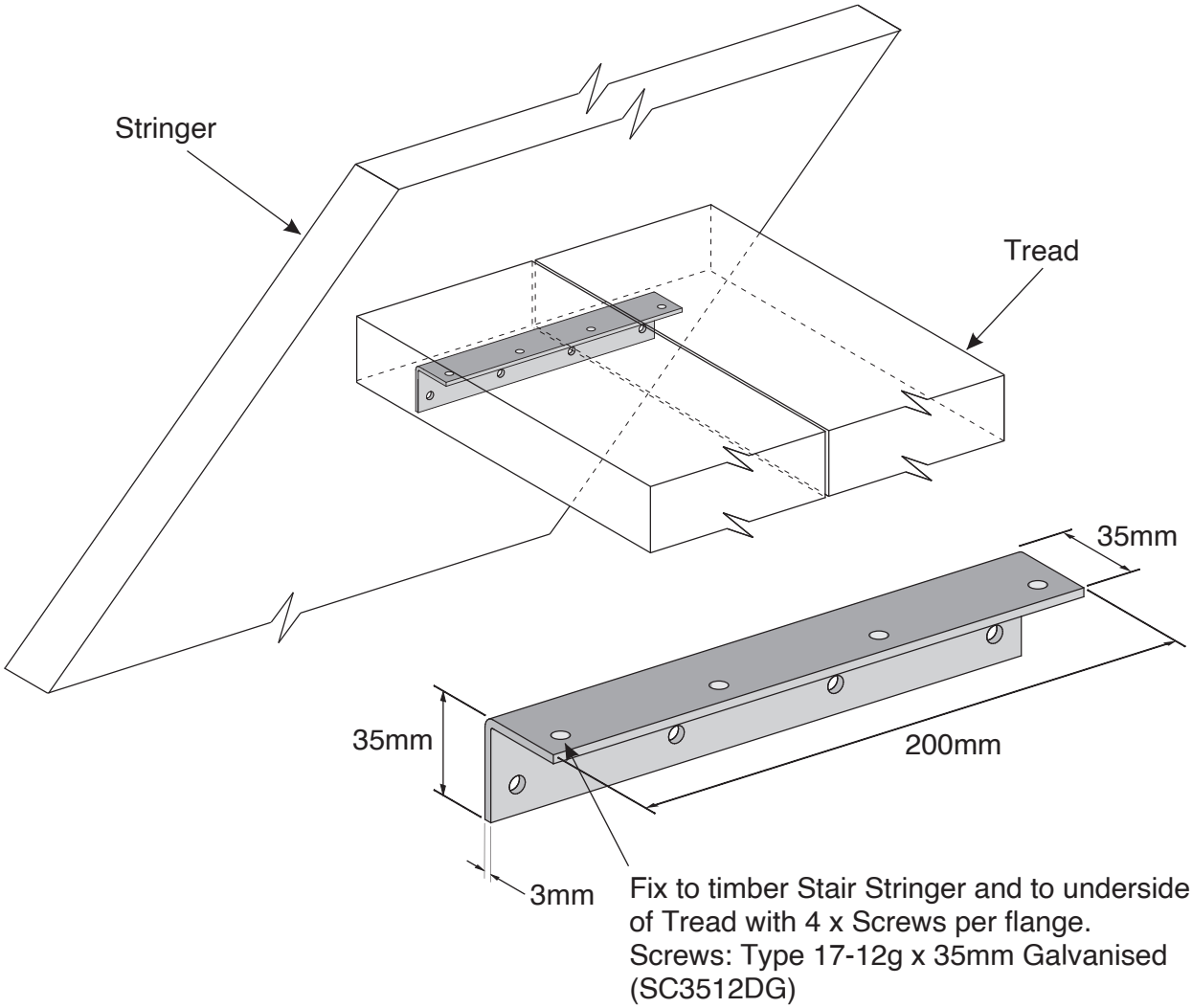
DESIGN NOTE
- The loads shown in the table are vertical in direction and principally upwards, i.e. wind loads.
- Design assumes brackets are on both sides of joints.

LOAD TABLE

Roof type	Wind zone	Max. Roof Area (m^2)
Light*	Extra high	8
	Very high	10
	High	12
	Medium	12
	Low	12
Heavy*	Extra high	9
	Very high	12
	High	12
	Medium/Low	12

STAIR TREAD BRACKET

- Suitable for single tread sizes up to 300mm wide or 2 x 140mm wide
- Quick and easy to install
- No need to rebate tread to stringer
- Hot Dip Galvanised - for external use

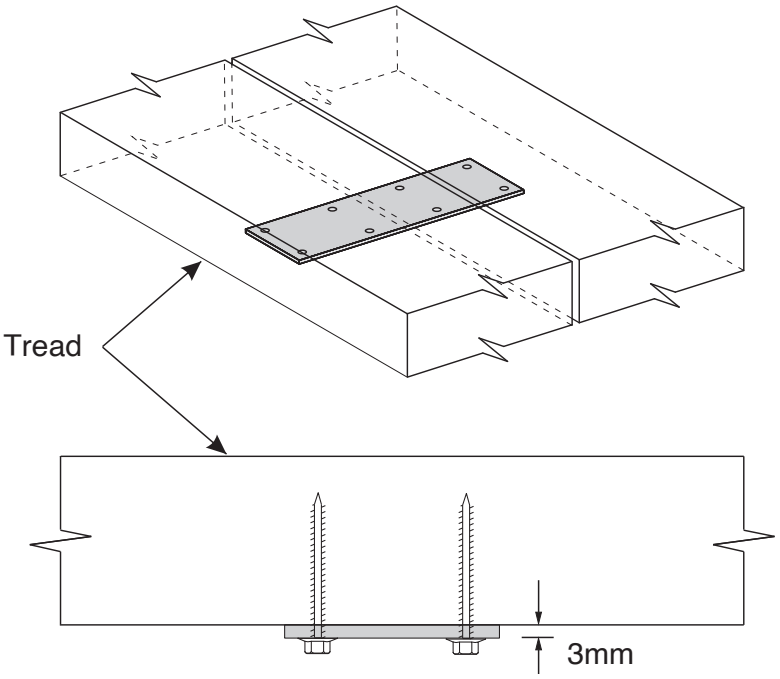


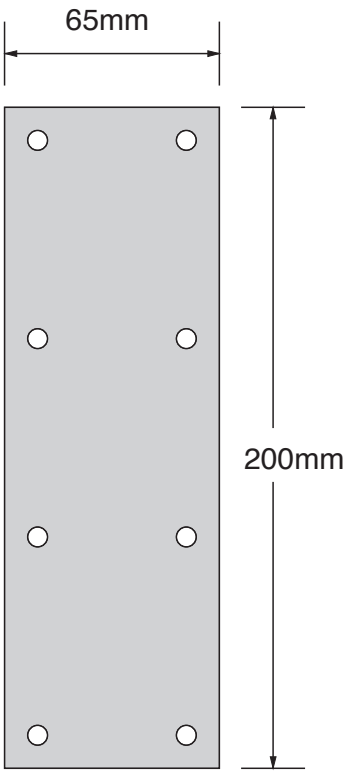
Code: **B65200F**
Material: **ex 3mm thick plate 65x200mm (folded) Hot Dipped Galvanised**

STAIR TREAD JOINER

- Suitable for 2 x 140mm stair treads wide
- Enables two steps to perform as one
- Stiffens and strengthens individual stair treads
- Hot Dip Galvanised - for external use

Symmetrically place on underside of Treads
as shown and screw fix with 8 Screws total.
Screws: Type 17-12g x 35mm Galvanised. (SC3512DG)





Code: **B65200**
Material: **ex 3mm thick plate 65 x 200mm Hot Dipped Galvanised**

ROOF TRUSS INSTALLATION

General

The roof trusses you are about to install have been manufactured to precise engineering standards. To ensure that the trusses perform as designed, it is essential that they be handled, erected and braced correctly. The following recommendations apply to roof trusses on standard domestic buildings with roof truss details given by the MiTek 20/20® or Sapphire truss design program. Details for commercial, industrial and non-standard domestic buildings are to be provided by the engineer responsible for overall building design.

Design

1. Trusses are designed for normal residential roof, ceiling, snow and wind loads to suit specific jobs and conditions. Additional loading such as solar units, hot water tanks and air conditioning requires special consideration. Advice should be sought from the truss fabricator prior to commencing construction.
2. Wall frames and beams supporting trusses must be designed for the correct roof loads. Refer NZS 3604 Timber-framed buildings or the MiTek® range of beams and lintels.
3. Wind load is an important loading condition in the design and performance of roof trusses. Ensure that you have correctly advised the truss fabricator with regard to wind load requirements and that adequate provision has been made to fix trusses to the supporting structure to withstand wind uplift forces.
4. Trusses are usually designed to be supported on the outer wall with internal walls being non-load bearing. Internal walls may be used to control deflections and reduce the camber required. Where it is necessary to use internal walls for load bearing, these will be clearly shown on the layout.
5. Before ordering trusses, ensure that your particular requirements have been provided for and that all relevant information has been supplied to the truss manufacturer. If non-standard trusses are being used, ensure that erection and bracing details are known before erection commences.
6. For environments where the atmosphere may be conducive to corrosion, such as some types of industrial and agricultural buildings, or buildings near the ocean and subject to salt spray, consideration should be given to the use of stainless steel connector plates.

IMPORTANT NOTE

1. It is the builder's responsibility to ensure that all relevant information required for the design is provided to the fabricator at time of ordering trusses, including spans, pitches, profiles, quantities and loading. Final confirmation of dimensions and details between the fabricator and builder is recommended prior to manufacture.
2. It is the responsibility of the principal to ensure that all provisions of the Health and Safety Act are complied with during the installation of MiTek® timber trusses.
3. Trusses are designed for specific loading, geometry and support conditions. Under no circumstances should the truss members be cut, removed or trusses modified in any way without prior approval from the truss fabricator.
4. Make sure all bracing is permanently fixed and all bolts and brackets are tightened prior to the laying of roof.

Transport

Trusses must be fully supported when being transported in either a horizontal or vertical plane. Care must be taken when tying down not to put strain on chords or webs.

Timber or metal right angle protectors are a satisfactory method of avoiding damage. Unloading and handling as described on the next page.

Job Storage and Lifting

Trusses should be inspected on arrival at site. Any damaged trusses should be reported immediately and not site repaired without approval of the truss fabricator.

Where it is anticipated that trusses will be stored on site for an extended period of time before use, adequate provision should be made to protect the trusses against the effects of weather. Protective covering should allow free air circulation around trusses.

Trusses when stored on the job site should be on timber billets clear of the ground and in flat position to avoid distortion.

When lifting, care must be taken to avoid damaging joints and timber. Spreader bars with attachment to the panel points are recommended where span exceeds 9000mm. Never lift by the apex joint only.

The trusses may also be placed on the top plates by pulling them up skids, spread at 3000mm, taking the same precaution as described above. Ensure that the trusses are not distorted or allowed to sag between supports.

The recommended method of lifting trusses will depend on a number of factors, including truss length and shape.

In general, sling the truss from top chord panel points as shown in (Fig 1). Slings should be located at equal distance from truss centreline and be approximately 1/3 to 1/2 the truss length apart.

Chains and hooks should not be used for lifting as these can damage the chords and plates. Polyester web slings are recommended.

The angle between the sling legs should be 60° or less and where truss spans are greater than 9000mm it is recommended that a spreader bar or strongback be used. Some typical examples are shown in (Fig 1).

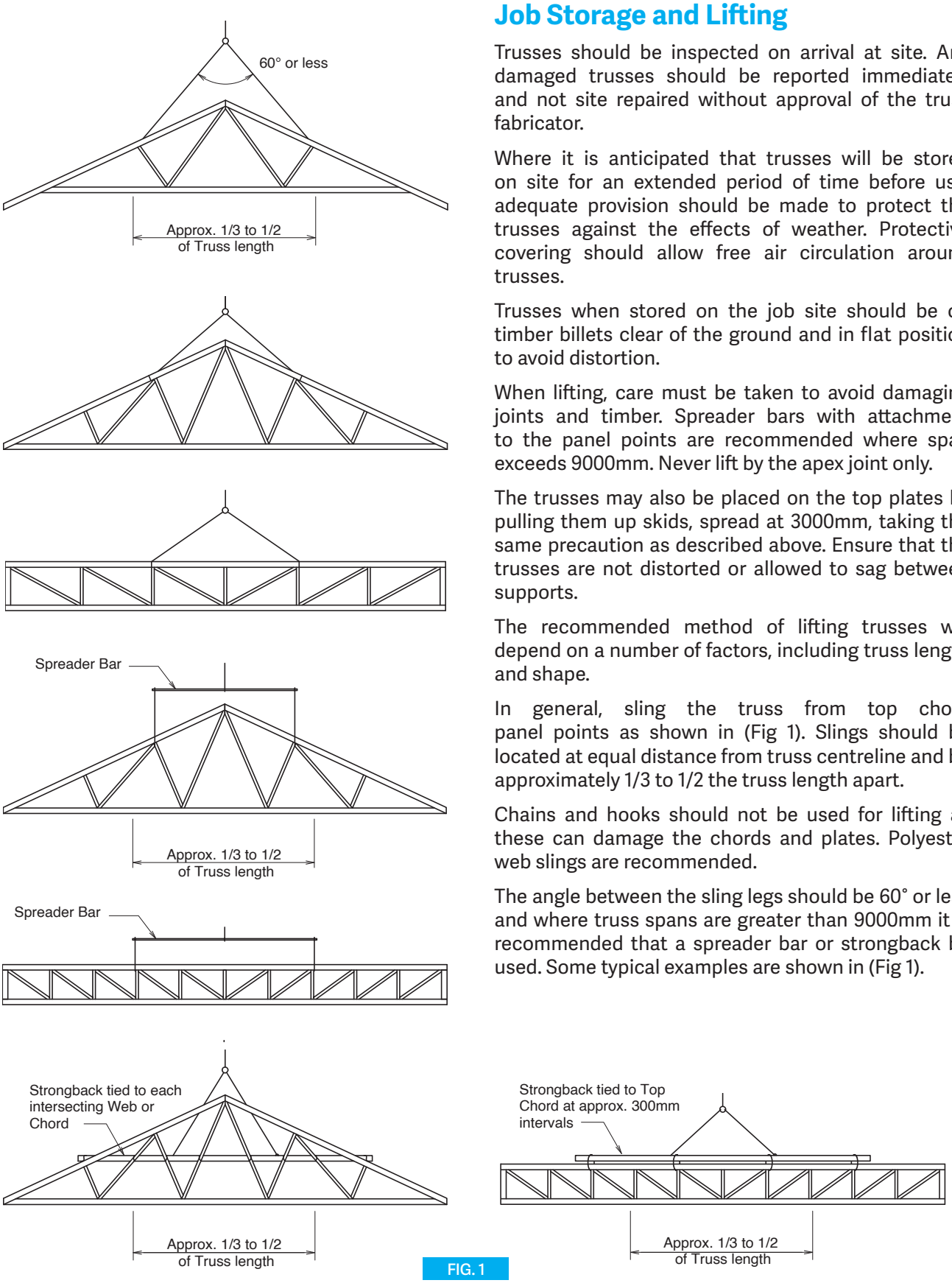
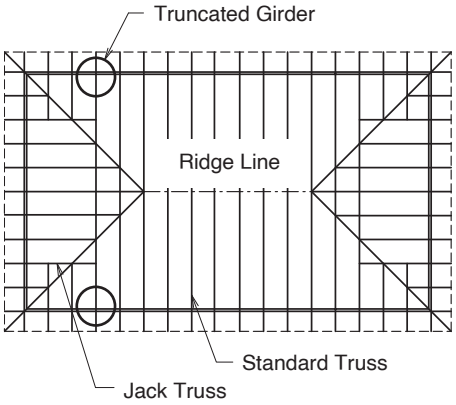


FIG. 1

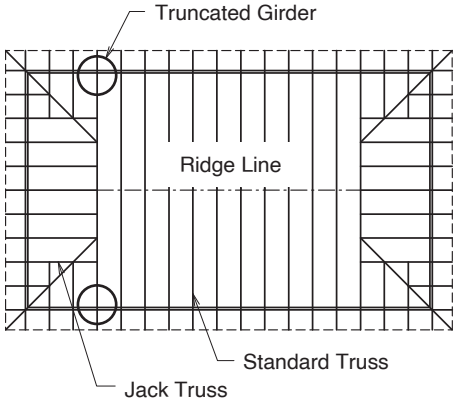
Roof Layout

A layout for trusses must be determined before erection. If in doubt consult your truss fabricator.

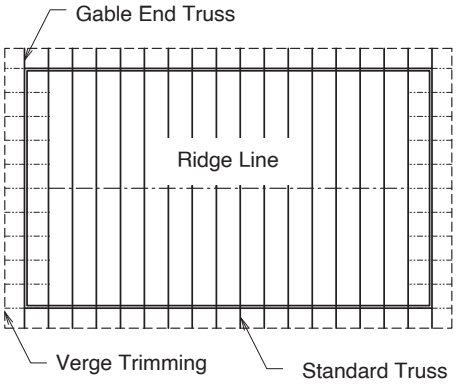
Hip End



Semi Gable



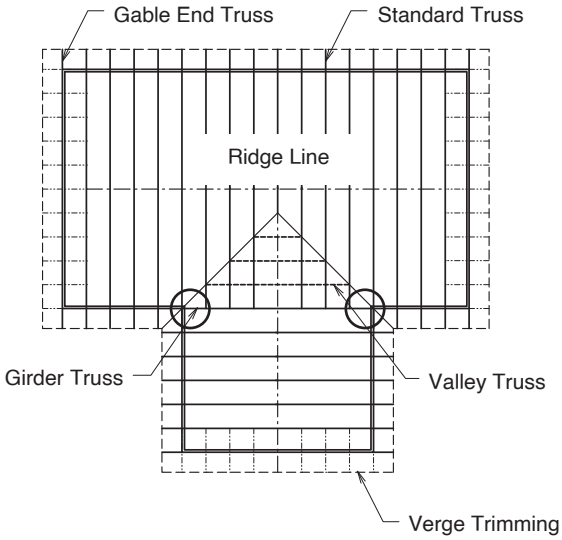
Gable



NOTE: Gable End Truss to be located over end wall unless otherwise advised by supplier.

Load bearing points circled on these layouts may be critical.
Refer to the Wall Frame Construction Notes.

T Shaped



L Shape

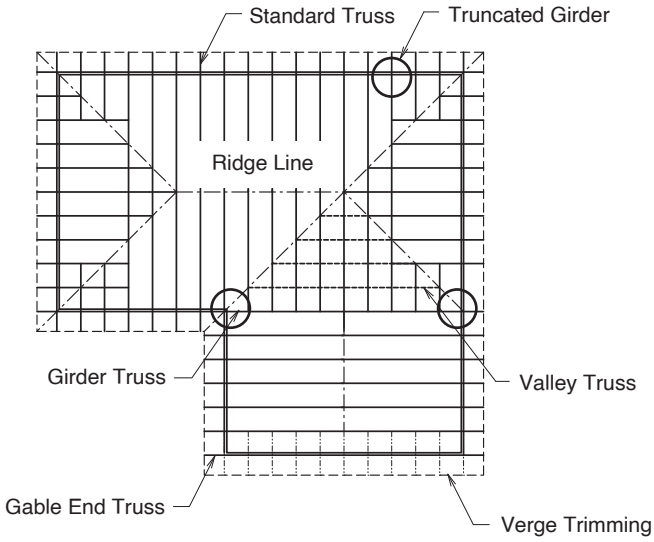


FIG. 2

Wall Frame Construction

The load bearing frames should be checked for:

1. Lintel sizes suitable for truss loading. Consult NZS 3604, the GANGLAM Beam Manual, the MiTek® FLITCH BEAM Manual or your truss fabricator.
2. If trusses are not located directly over the studs the top plate size must be in accordance with NZS 3604 or be reinforced in accordance with NZS 3604.
3. Girder trusses may require the strengthening of studs at the points of support. Check the loading with your truss fabricator. Points circled on the layout notes are critical.
4. The supporting structure construction must be adequate to resist wind uplift forces and must be fully braced, plumb and nailed home before the erection of trusses is commenced.

Erection and Fixing

It is convenient to mark the truss position on the wall plates before lifting the trusses. Use the layout drawing as your guide and note that the truss design spacing must not be exceeded.

Gable Roofs – start with a gable truss at each end, fixing it to the top plate at the position marked. These trusses must be temporarily braced back to the ground or frame at the panel points.

Hip or Semi Gable – start with the semi gable girder truss or the truncated girder, placing it on the top plate at the position marked and temporarily bracing it back to the frame. Locate hip and jack trusses and adjust girder truss position before fixing.

Line – Using a stringline along the apex (Fig 3), place each intermediate truss and fix it to the top plate at the position marked, spacing it with gauging rods and ties (Fig 6).

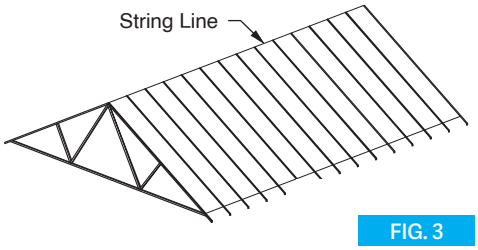


FIG. 3

All trusses should be fixed to top plates and girder trusses in accordance with NZS 3604 or the specific roof truss design.

Camber

Trusses are usually manufactured with a camber built in. The camber is designed to give a flat ceiling and even roofline under long term loading. The camber is progressively taken up as the load from the roof covering and ceiling is applied. Under no circumstances should trusses be supported along the span (unless designed for) by blocking or propping.

If a truss has been designed to be supported internally a **"SUPPORT HERE"** label is affixed at the appropriate point.

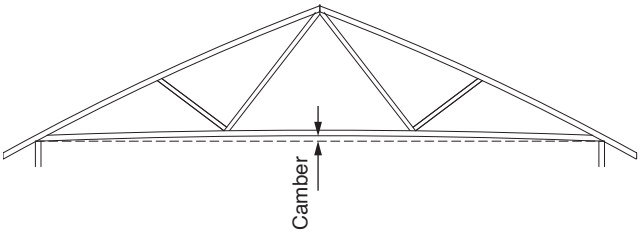


FIG. 4

Erection Tolerances

Tolerance is critical for both a good roofline and effective bracing. A string line, plumb line or level should be used.

1. Trusses should be erected with overall bow or bow in any chord not to exceed the lesser of L/200 or 50mm (L is the chord length).
2. Trusses should be erected with the apex not more than the lesser of the span/200mm or 50mm from a vertical plane through the supports.
3. No section of the truss should be out of plumb by the truss height/50 or max. 50mm.

Generally if a bow or tilt is evident to the eye, the truss has been erected outside the tolerances. See (Fig 5).

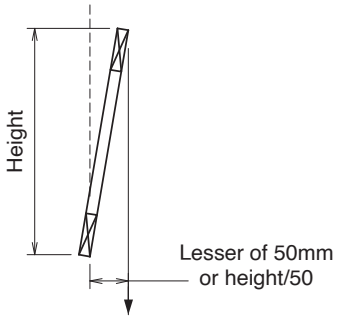
Erection Bracing

The trusses must be braced during erection. If this is not done, then two problems can occur.

1. Collapse during erection.
2. Erection tolerance will be exceeded, causing overloading, buckling and possible permanent damage.

The exact details of erection bracing will, for practical purposes, differ from job to job. The following recommendations are for guidance only as the details employed are the responsibility of the erector.

Plumb



Bow

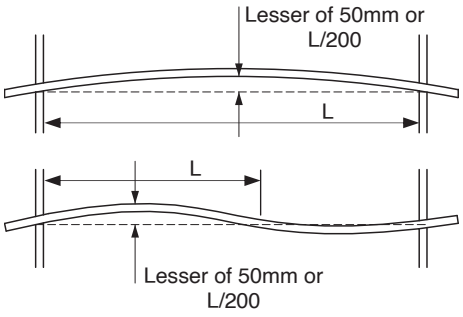


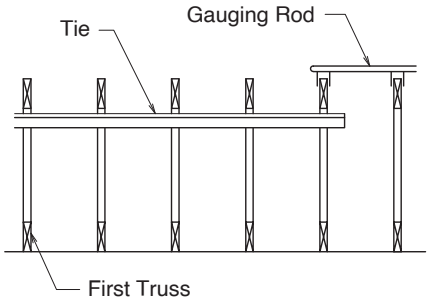
FIG. 5

The first truss should be erected straight and plumb to erection tolerances given previously and temporarily braced to a rigid element, e.g. wall or ground as shown on (Fig 6).

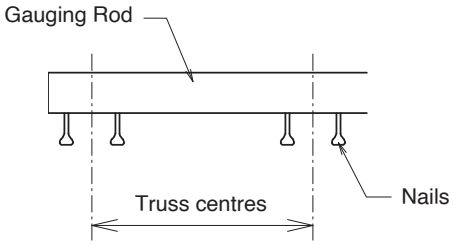
Each successive truss should be spaced using a gauging rod, then fixed back to the first truss with temporary ties at each top chord panel point or at maximum spacing of 3000mm, and to bottom chord at 4000mm max. spacing.

Use 50 x 25 ties for trusses up to and including 900mm centres and 70 x 35 ties for trusses up to 1800mm centres. Fix ties to each truss with one 3.15 diameter nail. Splice by lapping over 2 adjacent trusses.

The purpose of installing temporary bracing is to hold trusses straight and plumb prior to fixing permnent bracing. Temporary bracing is particularly important when the roof cladding is shingles on ply without purlins. All permanent bracing, ties, hold downs, etc. must be fixed prior to laying of roof.



Locate and space each truss using Gauging Rod



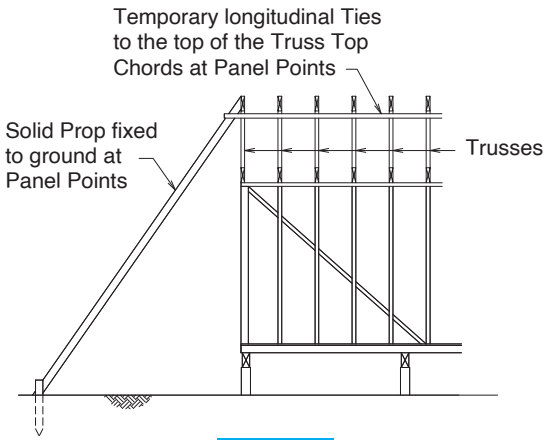


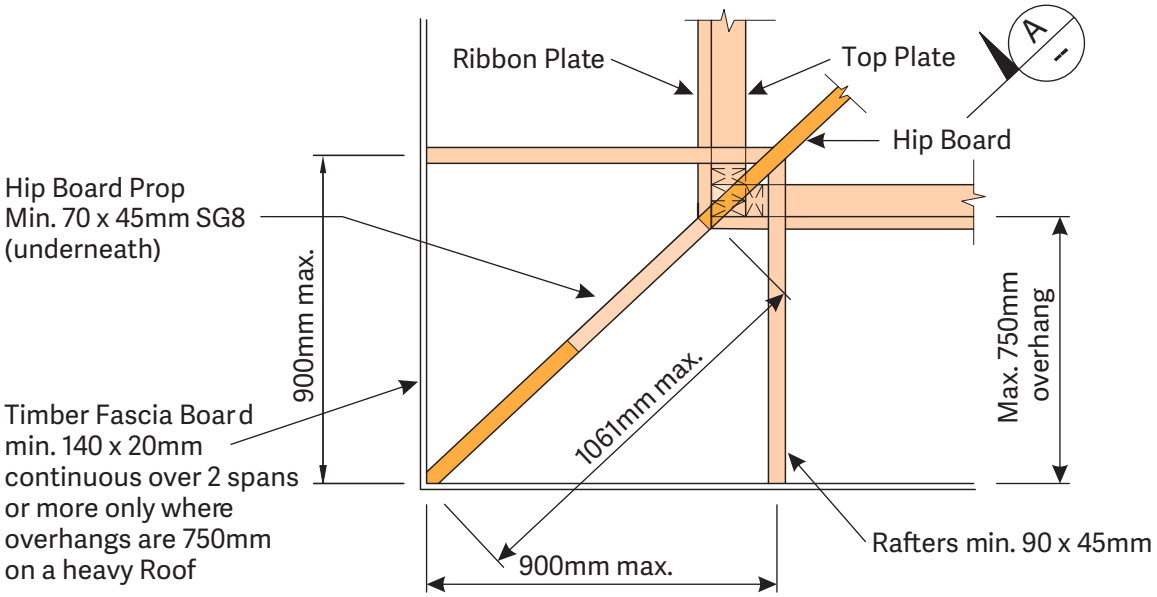
FIG. 6

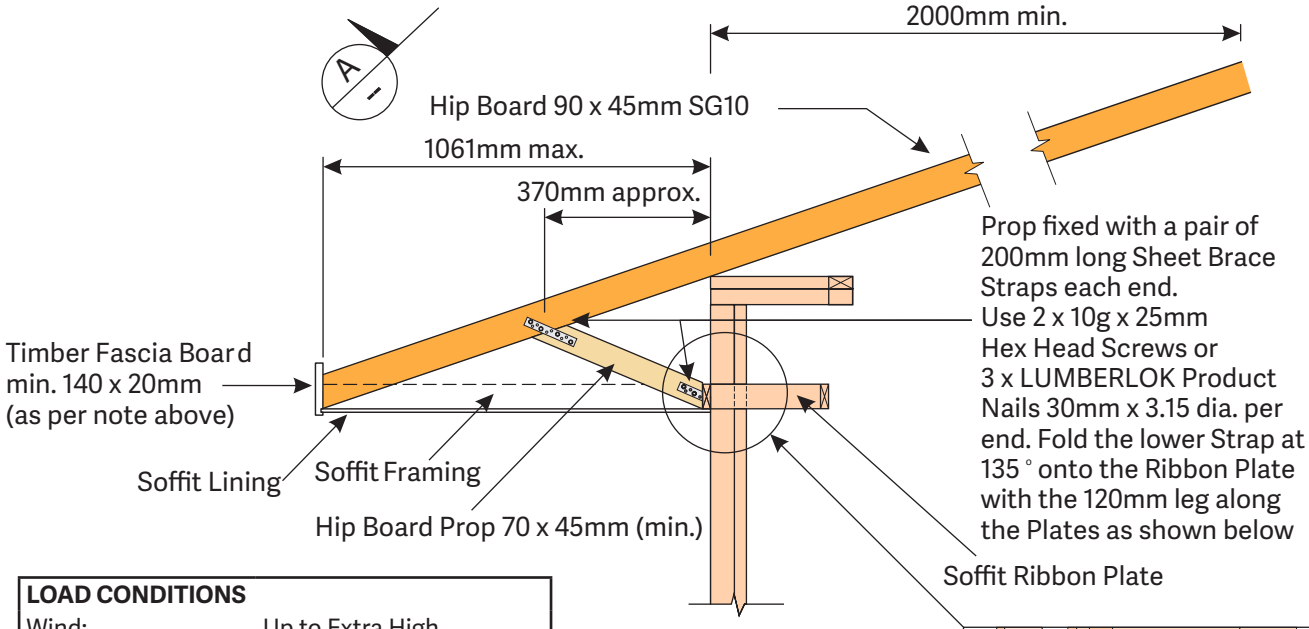
IMPORTANT NOTE

These recommendations are a guide only for the erection of residential roof trusses up to 13000mm span and spaced at centres not exceeding 1200mm. For trusses beyond these conditions, consult your truss fabricator.

MiTek® LUMBERLOK®

HIP BOARD PROP
SUPPORTING EXCESSIVE OVERHANGS





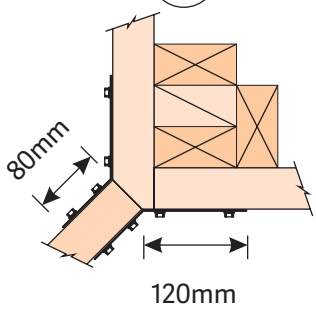
LOAD CONDITIONS	
Wind:	Up to Extra High
Snow (Sg):	Up to 1.0kPa
Roof Material:	Up to 0.65kPa (Heavy)
Soffit:	Light (0.20kPa)
Roof Pitch Range:	15° to 30°
Truss Crs:	600 to 900mm

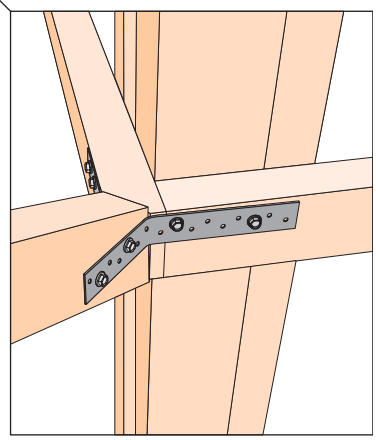
NOTES

All other details as per

- NZS 3604:2011
- MiTek New Zealand Limited design software MiTek® 20/20 or Sapphire

SECTION A





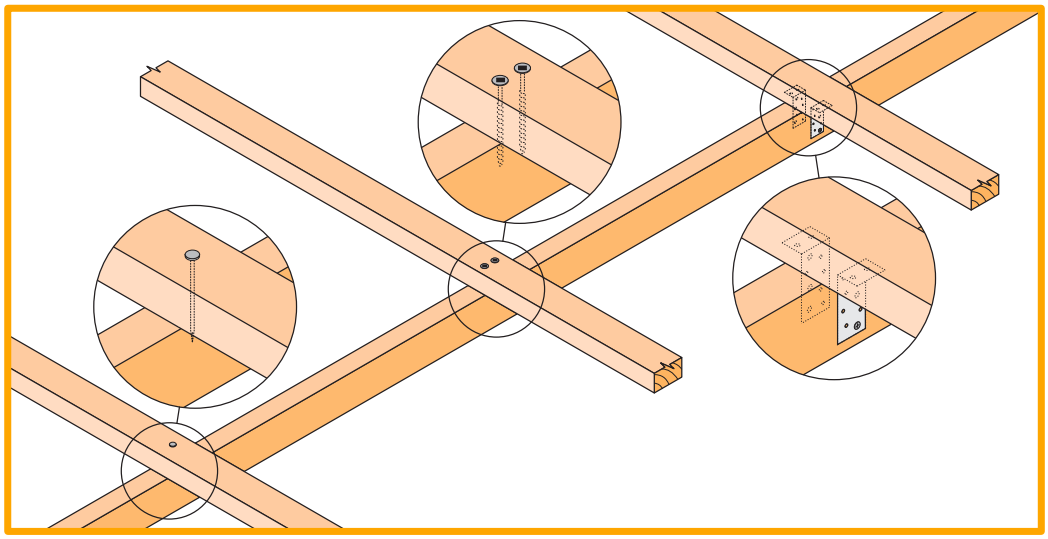
MiTek® LUMBERLOK®

PURLIN & BATTEN FIXING CHART

ALTERNATIVE SOLUTION TO NZS 3604:2011 TABLES 10.10 & 10.12

NOTE:

- All purlin and batten sizes are as per NZS 3604:2011
- All fixings assume that the purlin and battens are installed on their flat over the top of the rafter or truss
- The minimum fixing requirements apply to all purlin locations within the roof area
- The LUMBERLOK BLUE SCREW where specified requires a minimum of 30mm penetration into rafter or truss i.e. it is suitable for rough sawn timber up to 50mm thick at 18% moisture content



SELECTION CHART FIXING OPTIONS

(minimum fixing requirements)

ROOF WEIGHT	MAX. PURLIN SPAN (mm)	MAX. PURLIN CRS. (mm)	WIND ZONE				
			L	M	H	VH	EH
HEAVY ROOF Tile Battens	900	370	A	A	A	B	C
LIGHT ROOF Tile Battens	900	370	A	A	B	C	C
	1200	370	A	B	C	C	C
LIGHT ROOF Purlins	900	900	C	C	C	C	D
	1200	900	C	C	C	D	D
	1200	1200	C	C	D	E	E

Wind Zone:
As per NZS 3604:2011

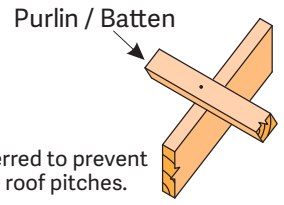
L = Low Wind
M = Medium Wind
H = High Wind
VH = Very High Wind
EH = Extra High Wind

STANDARD FIXING OPTIONS

FIXING TYPE A 0.55kN

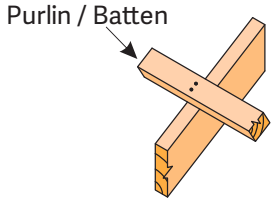
1 NAIL

Note: Two nails maybe preferred to prevent batten rolling over with high roof pitches.



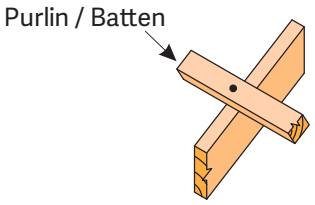
FIXING TYPE B 0.8kN

2 NAILS



FIXING TYPE C 2.4kN

1 BLUE SCREW



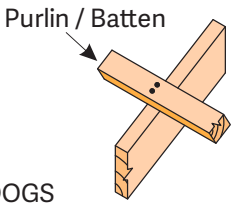
FIXING TYPE D 3.45kN

2 BLUE SCREWS

OR

2 skew NAILS plus 2 WIRE DOGS

(for purlin on edge)

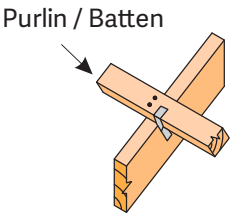


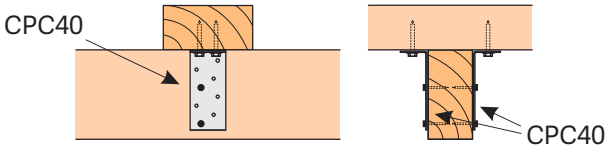
FIXING TYPE E 5.5kN

2 NAILS plus 1 CT200

OR

1 pair of CPC40





FIXING DEFINITIONS

NAIL = Either 90mm x 3.15 dia. power-driven nail or 100mm x 3.75 dia. hand-driven nail

BLUE SCREW = 80mm x 10 gauge LUMBERLOK BLUE SCREW

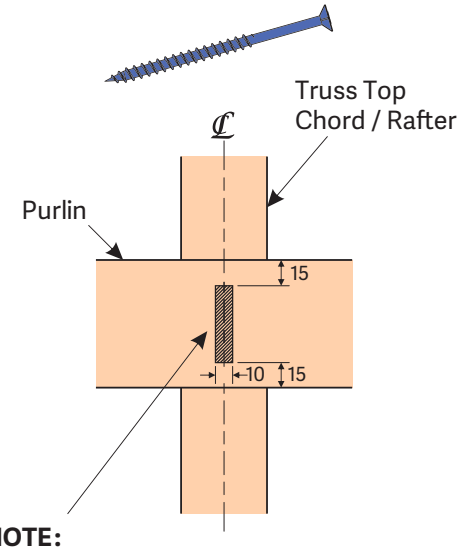
WIRE DOG = LUMBERLOK WIRE DOG either LH or RH

CT200 = LUMBERLOK Ceiling Tie CT200 bend over purlin, 4 x LUMBERLOK Product Nails 30mm x 3.15 dia. each end

CPC40 = LUMBERLOK CPC40 with 2 x Type 17 - 14g x 35mm Hex Head Screws per flange

FIXING TOLERANCES

LUMBERLOK BLUE SCREW



NOTE:

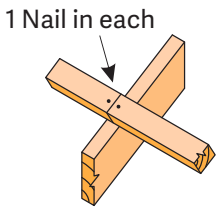
Locate fixings within the shaded area. Care to be taken to avoid over tightening of Screws.

PURLIN / BATTEN SPLICE FIXING OPTIONS

FIXING TYPE A & B OVER PURLIN SPLICE

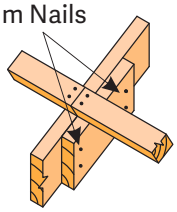
NOTE:

Skew nail when fixing to 35mm rafter or truss



FIXING TYPE C, D or E OVER PURLIN SPLICE

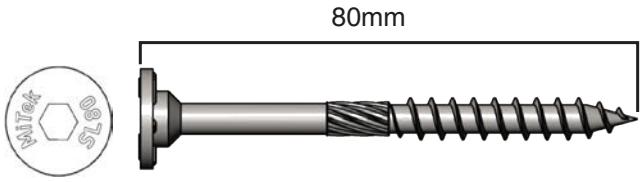
90 x 45mm Block fixed to Chord or Rafter with 4 x 90mm Nails



- TYPE C
  1 BLUE SCREW to each purlin
- TYPE D & E
  1 NAIL plus 1 BLUE SCREW to each purlin

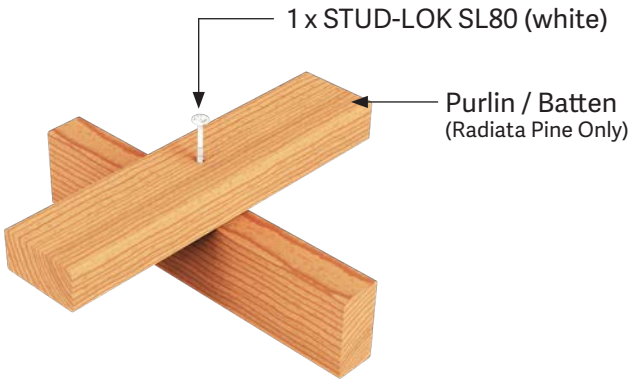
STUD-LOK SL80 (WHITE)
FOR PURLIN & DOUBLE MEMBER CONNECTIONS

- High calibre on-site screw for Purlin and Double Member connections
- Screw conforms to AS3566.1-2002 class 1 with electro galvanising

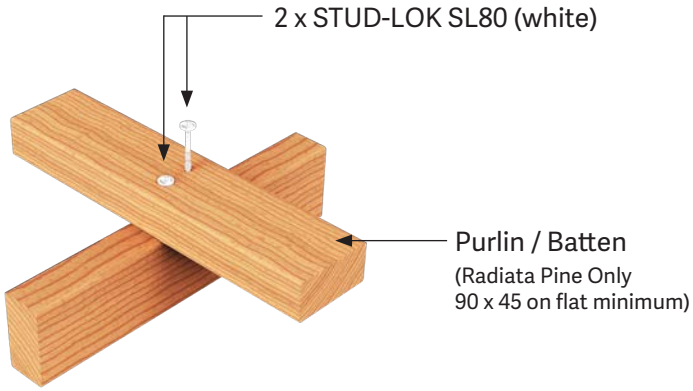


PURLINS

FIXING TYPE D
3.45kN



FIXING TYPE E
5.5kN



SELECTION CHART FIXING OPTIONS
(minimum fixing requirements)

ROOF WEIGHT	MAX. PURLIN SPAN (mm)	MAX. PURLIN CRS. (mm)	WIND ZONE		
			H	VH	EH
LIGHT ROOF Purlins	900	900	D*	D*	D
	1200	900	D*	D	D
	1200	1200	D	E	E

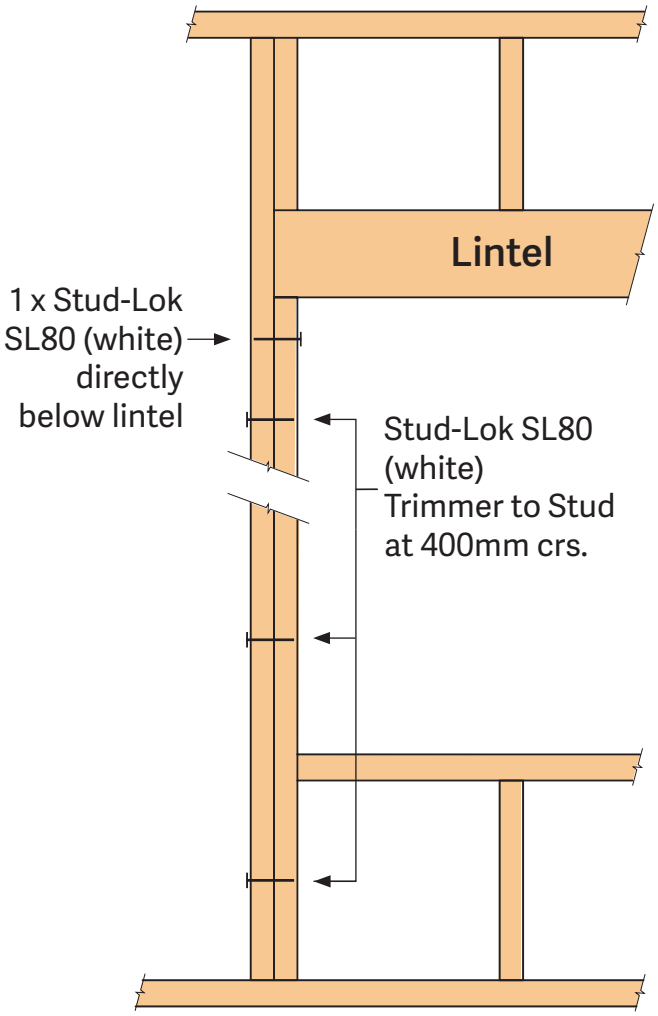
Wind Zone: As per NZS 3604:2011	H = High Wind VH = Very High Wind EH = Extra High Wind

* Type C LUMBERLOK Blue Screws also work for these options

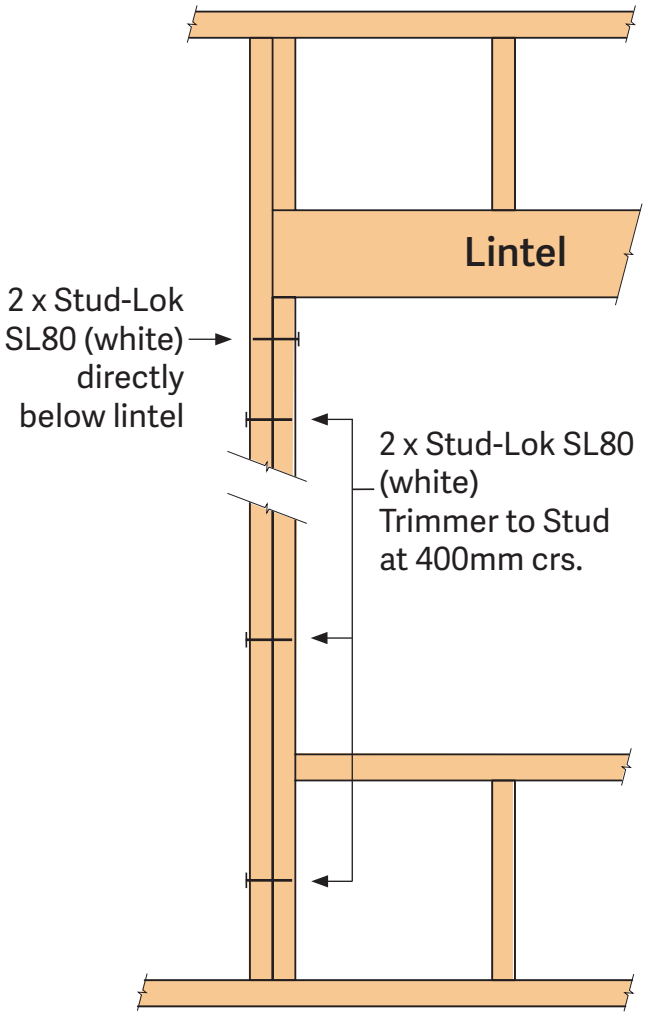
Available from leading Builders Supply Merchants throughout New Zealand

CONNECTION DOUBLE MEMBERS
e.g. Trimmer Studs below Lintels

90mm FRAME



140mm FRAME

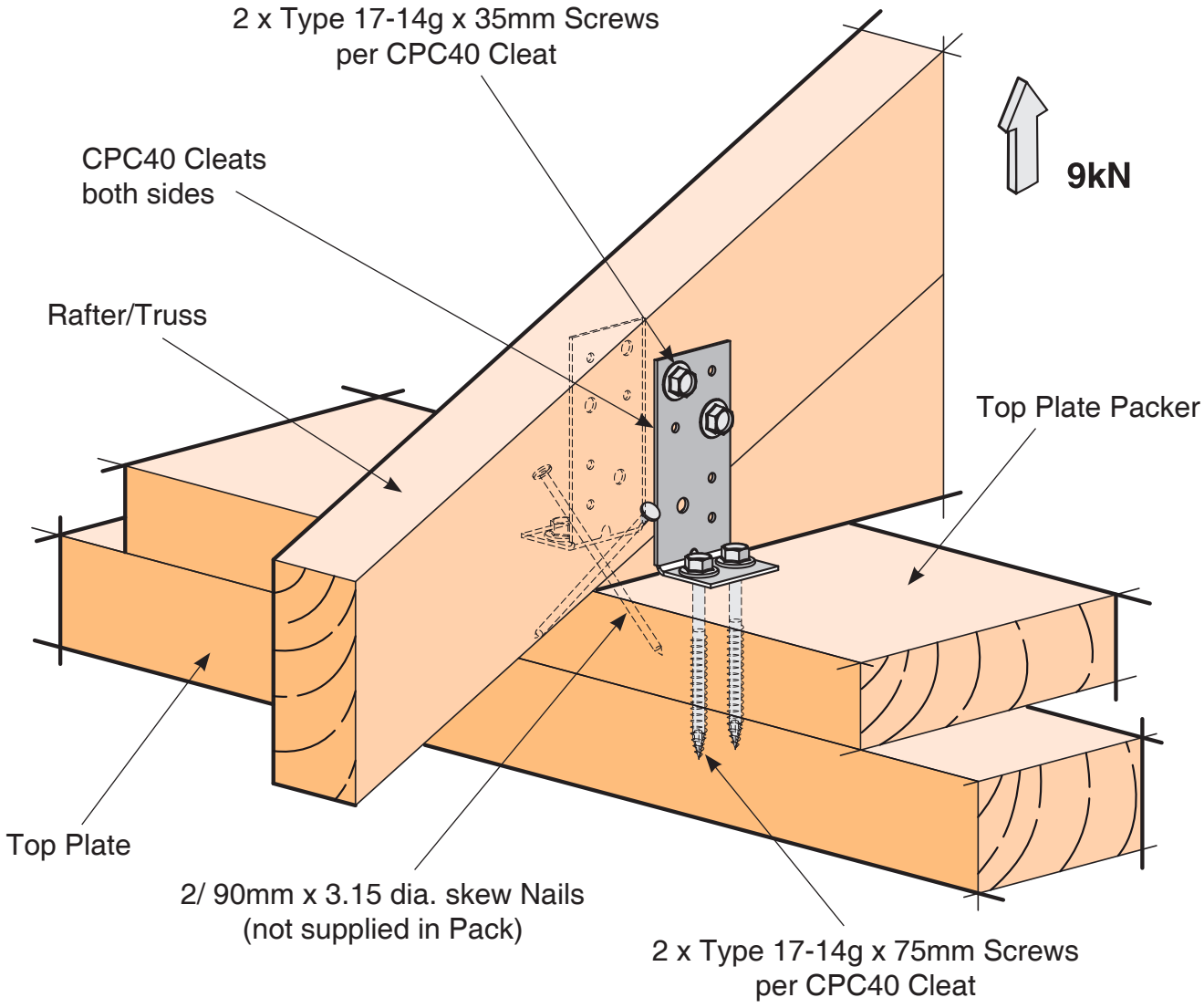


Available from leading Builders Supply Merchants throughout New Zealand

MiTek® LUMBERLOK®

9kN TRUSS TO TOP PLATE FIXING

- → Complies with Table 10.14 NZS 3604:2011
- → Top mounted fixing allows additional face fixing if required

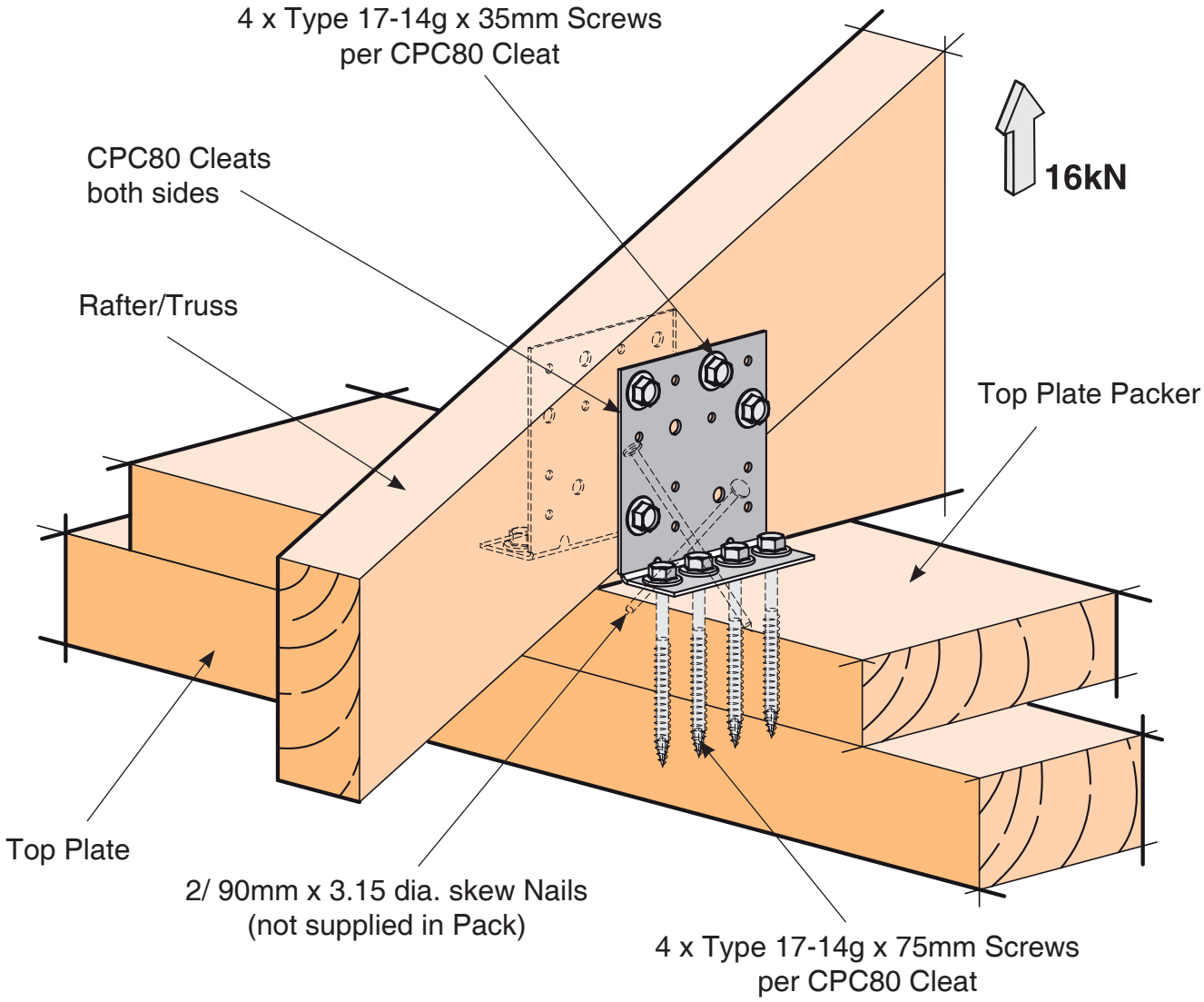


Code: **9KNTTP**
Material: **CPC40 1.55mm G300 Z275 Galvanised Steel**
Packed: **2 x CPC40 Cleats**
4 x Type 17-14g x 35mm Hex Head Galvanised Screws
4 x Type 17-14g x 75mm Hex Head Galvanised Screws

MiTek® LUMBERLOK®

16kN TRUSS TO TOP PLATE FIXING

→ Complies with Table 10.14 NZS 3604:2011
→ Top mounted fixing allows additional face fixing if required

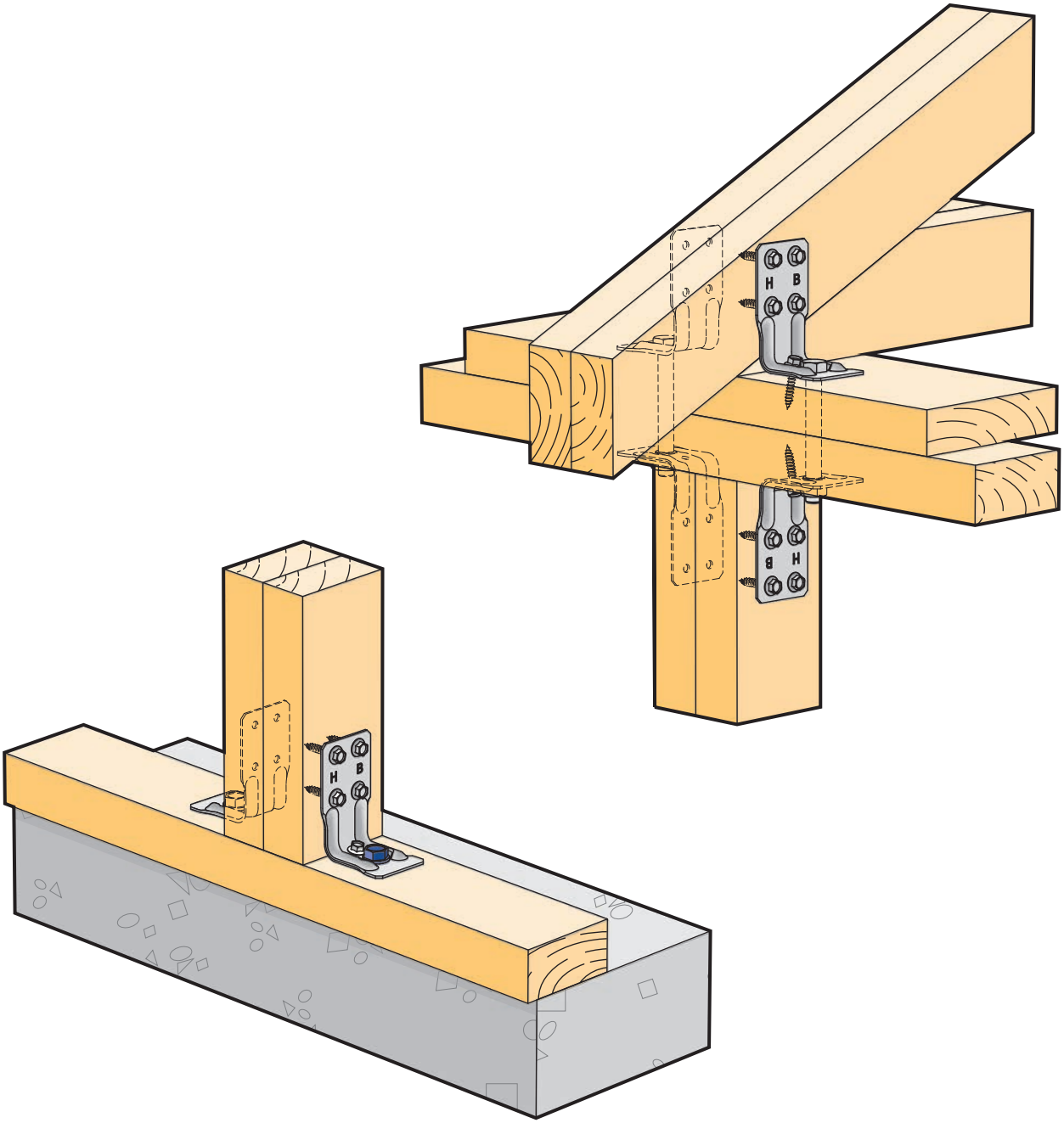


Code: **16KNTTP**
Material: **CPC80 1.55mm G300 Z275 Galvanised Steel**
Packed: **2 x CPC80 Cleats**
8 x Type 17-14g x 35mm Hex Head Galvanised Screws
8 x Type 17-14g x 75mm Hex Head Galvanised Screws

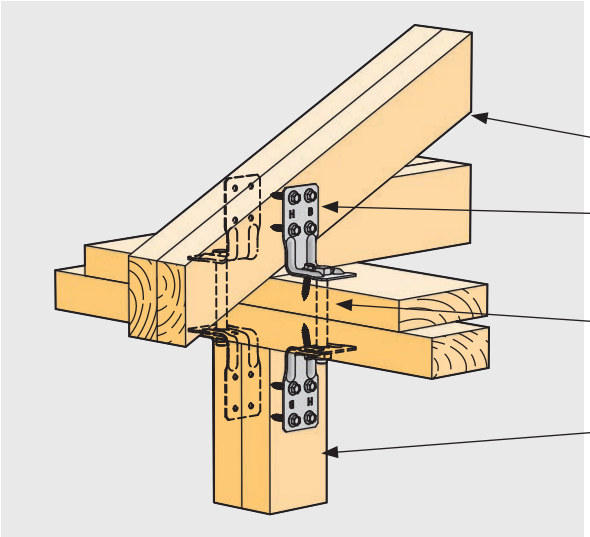
24kN UPLIFT FIXING

INCLUDES BOTH TRUSS FIXING AND BOTTOM PLATE FIXING

→ Top mounted fixing avoids potential obstructions with linings



TRUSS TO TOP PLATE FIXING



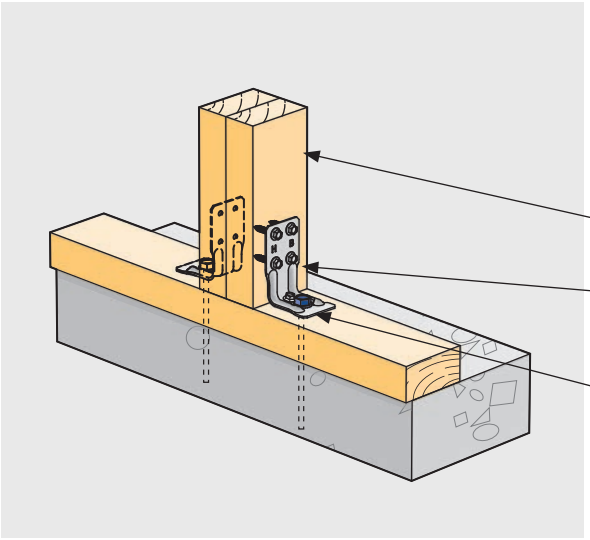
Double Rafter/Truss

GIB HandiBrac fixed both sides with supplied LUMBERLOK Type 17-14g x 35mm Hex Head Screws

M12 Bolts through Top Plate and Packer both sides

Double Stud

STUD TO BOTTOM PLATE FIXING



Double Stud

GIB HandiBrac fixed both sides with supplied LUMBERLOK Type 17-14g x 35mm Hex Head Screws

One BOWMAC Screw Bolt M10 x 140mm per GIB HandiBrac into Concrete Slab

Code: **B24KNUF**

Material: **GIB HandiBrac - 2.0mm G250 Z275 Galvanised Steel**

Packed: **6 x GIB HandiBrac**

2 x M12 x 110mm bolt and nut set

2 x BOWMAC Screw Bolt M10 x 140mm

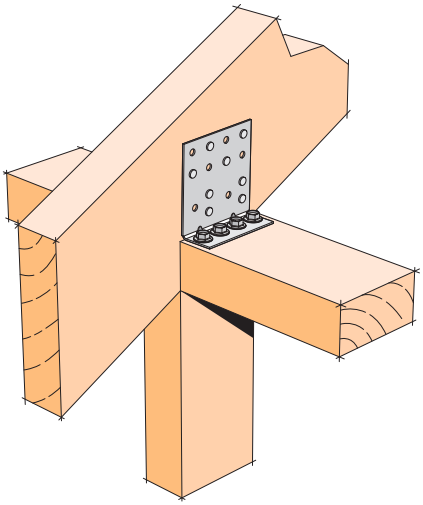
30 x LUMBERLOK Type 17-14g x 35mm Hex Head Screws

MiTek® LUMBERLOK®

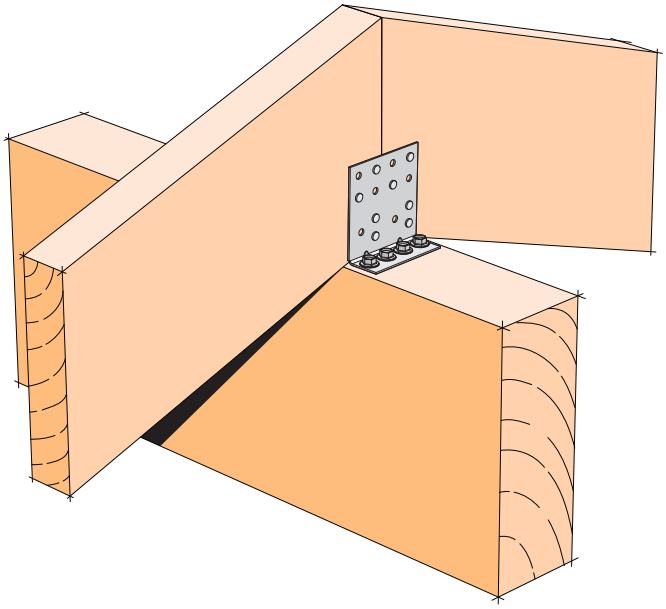
CONCEALED PURLIN CLEATS

- → Quick and easy to install
- → Resists High Wind Uplift

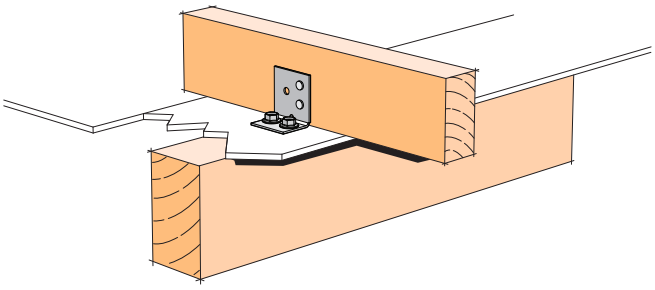
USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS



Exposed Rafter to Wall Fixing

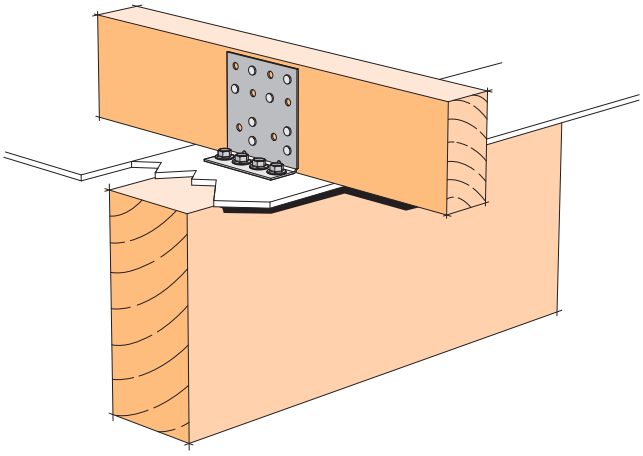


Exposed Rafter to Ridge Beam Fixing



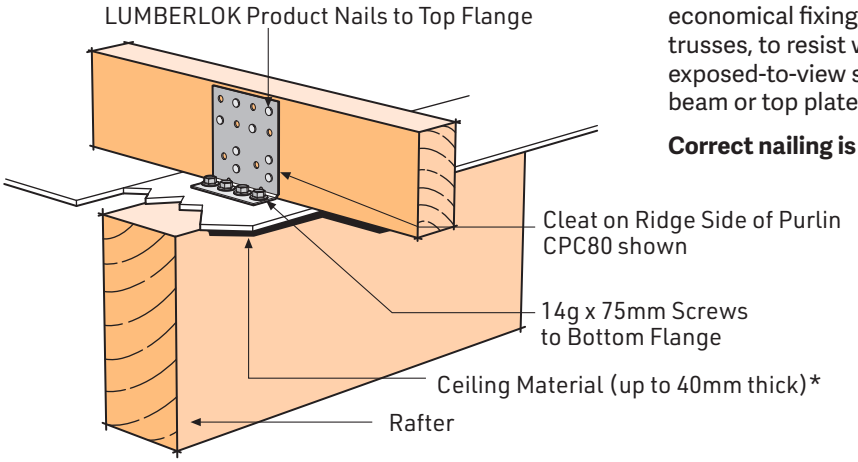
Purlin to Exposed Rafter Fixing

CPC40S Shown



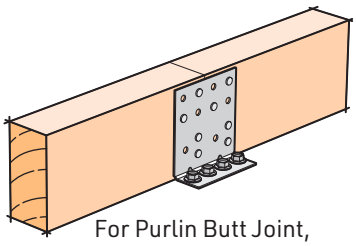
Purlin to Exposed Rafter Fixing

CPC80 Shown



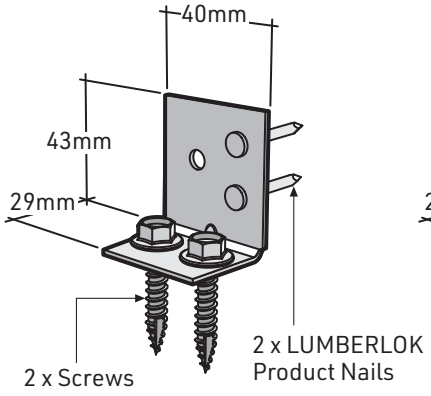
LUMBERLOK Concealed Purlin Cleats provide an economical fixing for purlins to exposed rafters or trusses, to resist wind uplift. They can also be used in exposed-to-view situations, such as a rafter to ridge beam or top plate situation.

Correct nailing is most important. See below.

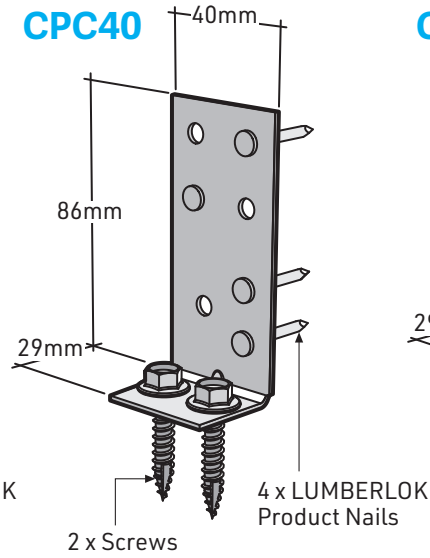


DIMENSIONS AND NAILING

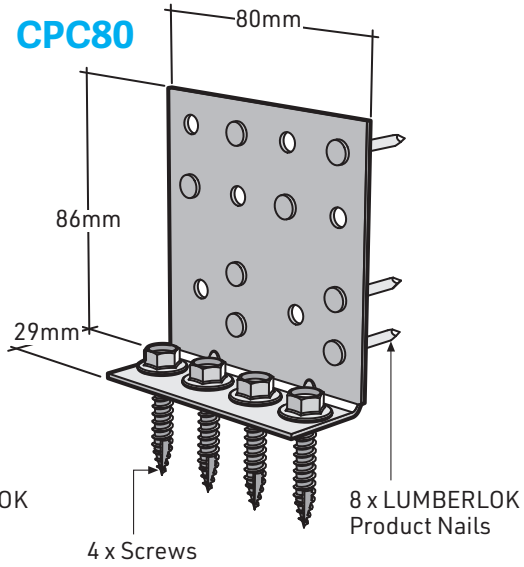
CPC40S (short)



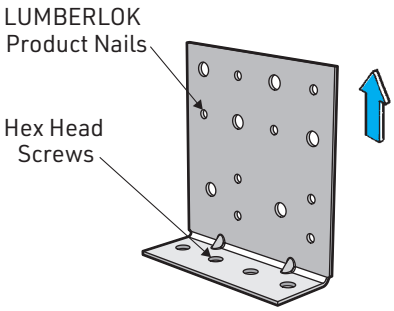
CPC40



CPC80



Rafter Width (nominal)	50mm	50mm	100mm



Uplift Direction	CPC40S	CPC40	CPC80
Characteristic Load	4kN/pair	8kN/pair	16kN/pair
Fix as shown with: LUMBERLOK Product Nails 30mm x 3.15 dia. Type 17-14g x 35mm Hex Head Screws*			

FIXINGS:

To Top Flange: LUMBERLOK Product Nails 30mm x 3.15 dia. or Type 17-14g x 35mm Hex Head Screws

Bottom Flange: Type 17-14g x 35mm Hex Head Screws
*Note: with ceiling material use Type 17-14g x 75mm Screws

Note: For Stainless Steel CPC use Stainless Steel screws and nails

MATERIAL:

1.55mm G300 Z275 Galvanised Steel or
1.5mm Stainless Steel 304-2B

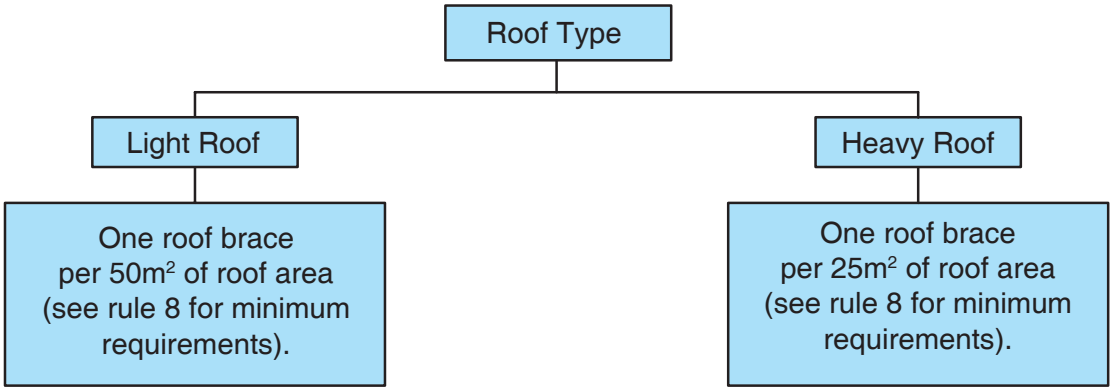
SCREWS AND NAILS NOT INCLUDED WITH PRODUCT

MiTek® LUMBERLOK®

ROOF BRACING SPECIFICATION
AS PER NZS 3604:2011

- → Covers roof bracing requirements to resist horizontal loads as set out in Section 10 NZS 3604:2011
- → A definitive guide to the description and installation of Roof Plane Braces and Roof Space Braces

Roof Bracing Requirements



Roof Bracing - Rules & Definitions

1. The bracing described in this brochure covers both framed roofs and fully trussed roofs.
2. Roof planes less than 6m² (e.g. dormers & porches) do not require bracing.
3. Roof braces can consist of either
   i) Roof Plane Brace or
   ii) Roof Space Brace or combination of the two.
4. Roof braces are not required on roofs where sarking is installed as per Clause 10.4.4 NZS 3604:2011 or where a ceiling diaphragm is installed and is attached to the rafters.
5. Roof area is the actual plan area of the roof and includes overhangs.
6. A hip or valley rafter running continuously from ridge to top plate can be classed as one roof plane brace.
7. A pair of crossed LUMBERLOK Strip Brace (preferred for ease of installation) can be classed as one roof plane brace and shall be installed as detailed in this brochure.
8. There must be at least one roof plane brace in each roof plane. Each ridge line shall have a minimum of two roof braces.
9. Every design effort should be made to distribute the roof braces as evenly as possible over the entire roof area and run alternately in opposite directions.

Roof Bracing Options

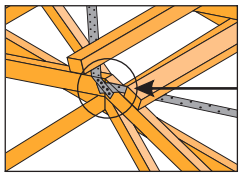
i) ROOF PLANE BRACE

Each roof plane brace can be:

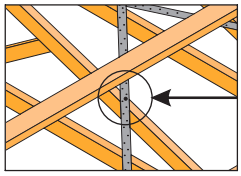
- A hip or valley rafter running continuously from ridge to the top plate in accordance with Clauses 10.2.1.3.2 or 10.2.1.3.3 NZS 3604:2011.

OR

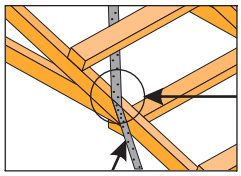
- A pair of tensioned and crossed LUMBERLOK Strip Brace running continuously from ridge to wall frame installed as detailed below.



5 x 30mm x 3.15 dia.
Nails each end



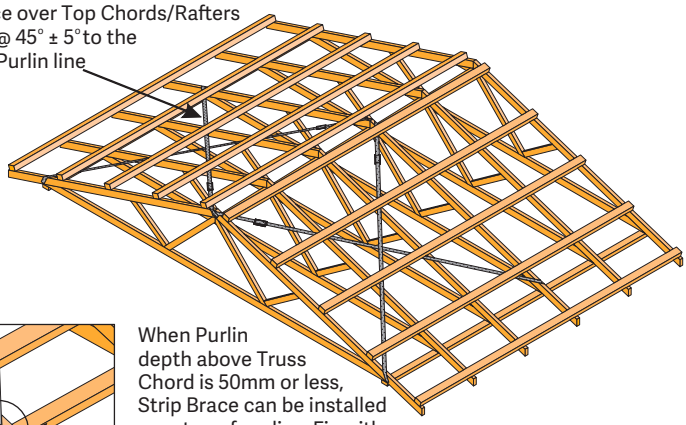
1 x 30mm x 3.15 dia.
Nail at crossing
(after tensioning)

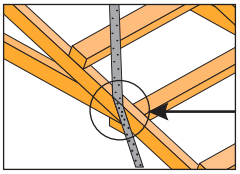


5 x 30mm x 3.15 dia.
Nails each end

6 x 30mm x 3.15 dia.
Nails to Wall Frame

A pair of tensioned and crossed LUMBERLOK Strip Brace over Top Chords/Rafters installed @ 45° ± 5° to the Rafter or Purlin line

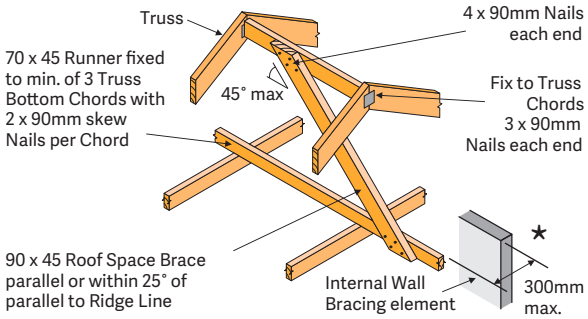




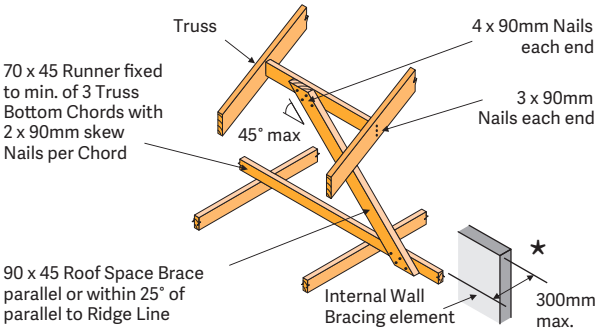
When Purlin depth above Truss Chord is 50mm or less, Strip Brace can be installed over top of purlins. Fix with 1 x 30mm x 3.15 dia. Nail at the Purlin closest to the Rafter/Truss crossing

ii) ROOF SPACE BRACE

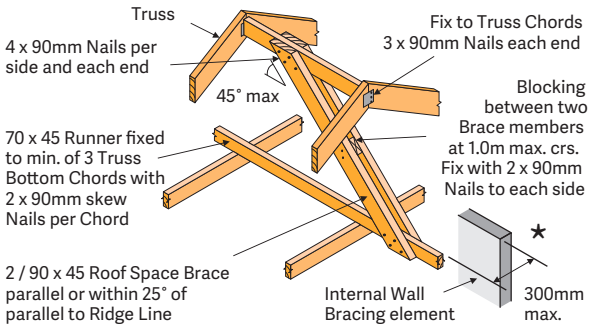
(A) Less than 2m long



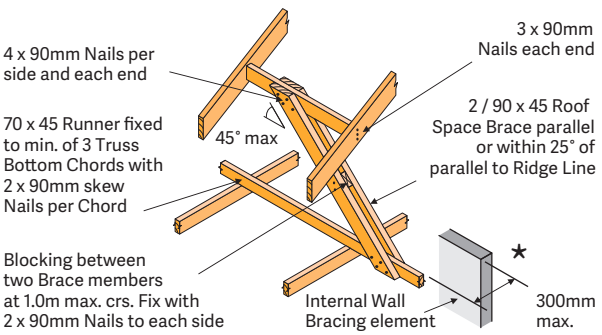
(C) Not directly under the ridge - less than 2m long



(B) More than 2m long (Max. 4.8m)



(D) Not directly under the ridge - more than 2m long



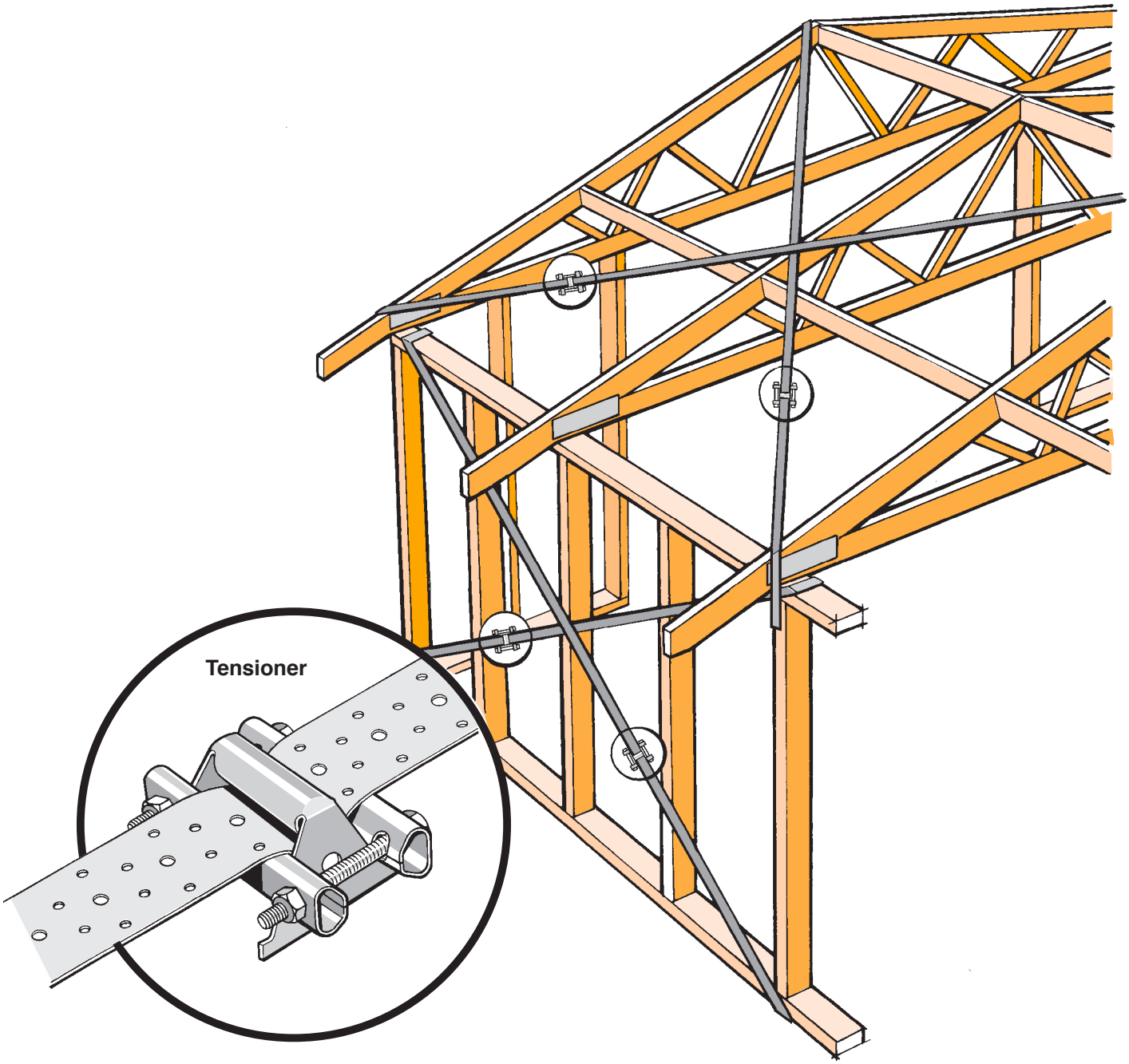
*Not required when a ceiling diaphragm complying with Clause 13.5 NZS 3604:2011 is used.

MiTek® LUMBERLOK®

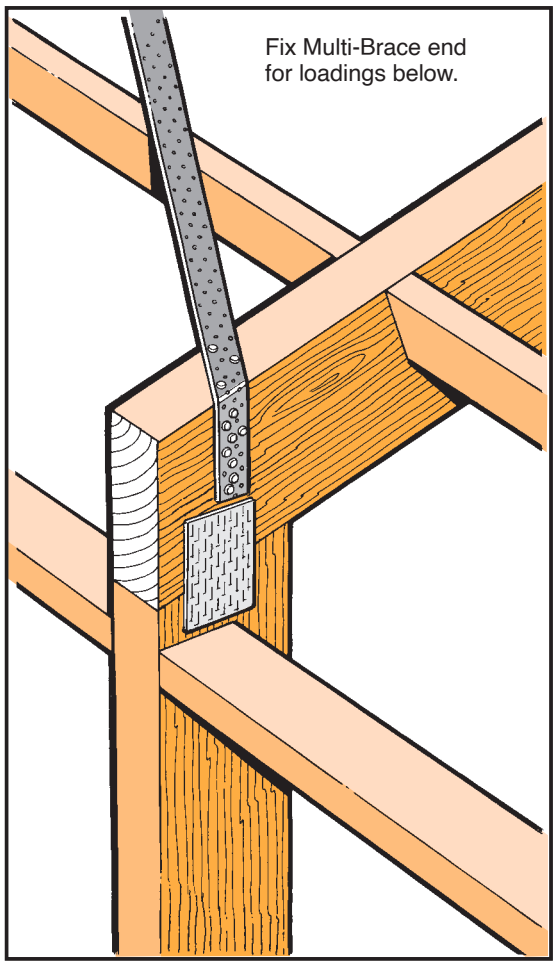
MULTI-BRACE

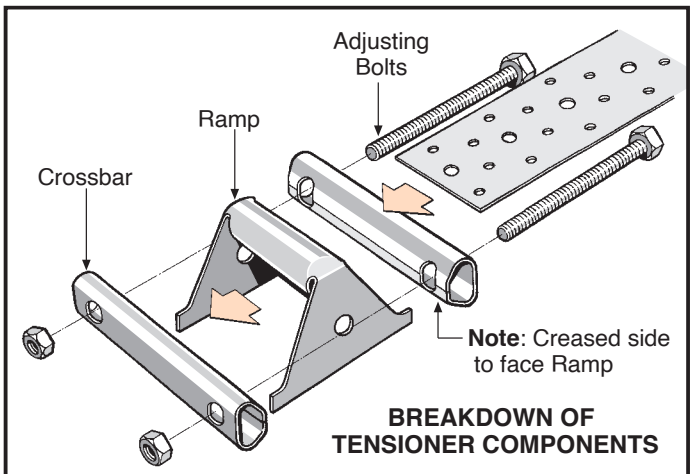
- Commercial and Industrial Roof/Wall Bracing
- Economically comparable to Steel Rod or Timber Bracing systems
- Quick and easy to install

USE STAINLESS STEEL OPTION IN EXTERIOR SITUATIONS

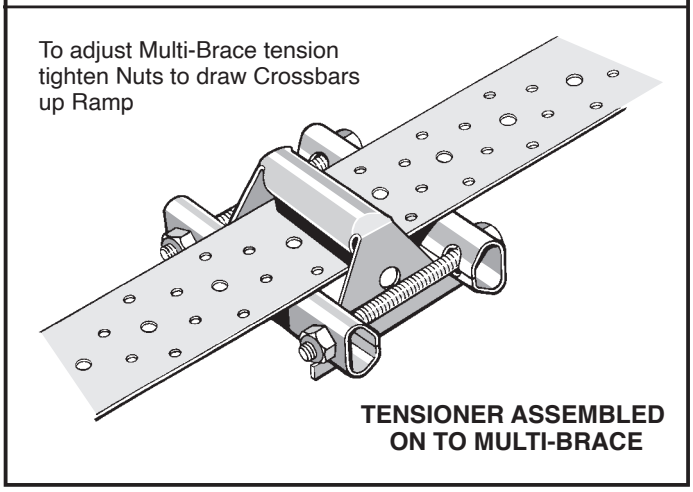


Available from leading Builders Supply Merchants throughout New Zealand





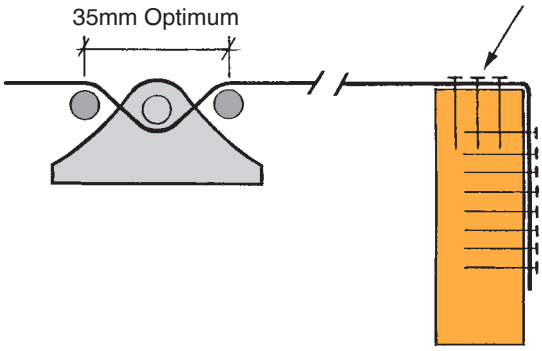
BREAKDOWN OF TENSIONER COMPONENTS



TENSIONER ASSEMBLED ON TO MULTI-BRACE

Loadings

3 Nails top edge, 8 Nails vertical face (not in same line)



0.91mm x 53mm G300 Z275 GALVANISED STEEL
0.9mm x 53mm STAINLESS STEEL 304-2B

Tension	Multi-Brace Only	Multi-Brace With Tensioner*
Characteristic Load	14.8kN	14.8kN
Elongation 0.2mm/m/kN including nail slip		
End nail fixing - 11 x LUMBERLOK Product Nails 30mm x 3.15 dia. if Multi-Brace is folded over timber face. Otherwise use 15 Product Nails.		

Tensioner

Use tensioner to ensure Multi-Brace is taut prior to roof fixing.
*Note: Not available in Stainless Steel so tension must be provided during installation phase.

Availability

Multi-Brace is available in 10m, 15m and 30m coil lengths which may be ordered through your local LUMBERLOK merchant.

GABLE END BRACING
OVER ROOF SECTION OF END WALLS

- Covers bracing of the roof section on gable end construction
- Includes bracing on extra high gables
- All timber to be minimum grade SG8 as defined in NZS 3604:2011 apart from gable end webs which are either SG6 or SG8 (see Tables 1A & 1B)
- Tables cover gable end truss installed as single component 45mm thick, double component 90mm thick, 45x70mm or 45x90mm webs “on flat”
- “On flat” description here refers to truss fabrication terminology
- Design assumes restraints are provided at the ceiling and roof planes
- Bracing covers loading conditions as per NZS 3604:2011 up to Extra High wind and includes full height brick veneer gables
- Height of webs design for wind serviceability deflection limit of H/180 and a maximum of 15mm in accordance with NZS 3604:2011

TABLE 1A - MAXIMUM HEIGHT (H) FOR WEBS @ 600MM CRS.

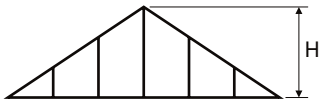
WIND ZONE	MAXIMUM HEIGHT (H)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 "on flat"		45x90 "on flat"	
					2/ 70x45		2/ 90x45					
	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8
LOW	1750	1950	1900	2100	2200	2450	2400	2650	2350	2600	2950	3150
MEDIUM	1600	1750	1750	1900	2000	2200	2200	2400	2150	2350	2750	2950
HIGH	1400	1500	1500	1650	1750	1900	1900	2100	1800	2050	2350	2650
VERY HIGH	1250	1400	1400	1500	1600	1750	1750	1900	1600	1900	2050	2400
EXTRA HIGH	1150	1350	1300	1450	1550*	1700*	1650*	1850*	1450	1700	1850*	2200*

TABLE 1B - MAXIMUM HEIGHT (H) FOR WEBS @ 400MM CRS.

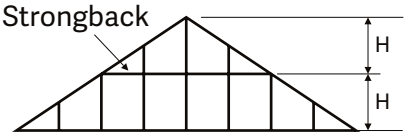
WIND ZONE	MAXIMUM HEIGHT (H)											
	70x45 Web		90x45 Web		Double Component Gable End Webs				45x70 "on flat"		45x90 "on flat"	
					2/ 70x45		2/ 90x45					
	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8	SG6	SG8
LOW	2000	2200	2200	2400	2550	2750	2750	2950	2700	2900	3250	3500
MEDIUM	1800	2000	2000	2200	2300	2550	2500	2750	2450	2700	3050	3300
HIGH	1600	1750	1750	1900	2000	2200	2200	2400	2150	2350	2750	2950
VERY HIGH	1450	1600	1600	1750	1850	2000	2000	2200	1950	2200	2500	2750
EXTRA HIGH	1400	1550	1500	1650	1750*	1950*	1900*	2100*	1800	2100	2300*	2650*

*Use these values for full height brick veneer attached to gable end.
Please note that the maximum height of brick veneer on a gable end wall is 5.5m. Clause 1.1.2 (NZS 3604:2011).

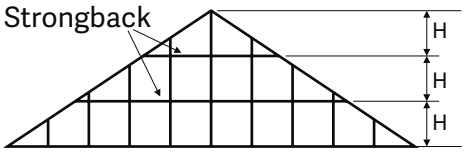
SELECTION PROCESS



- No strongback

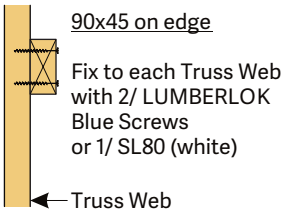


- 1 row of strongback

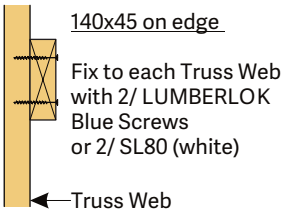


- 2 rows of strongback

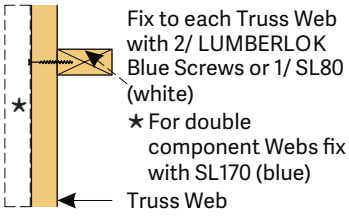
STRONGBACK OPTIONS



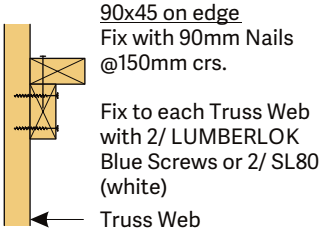
OPTION 1



OPTION 2



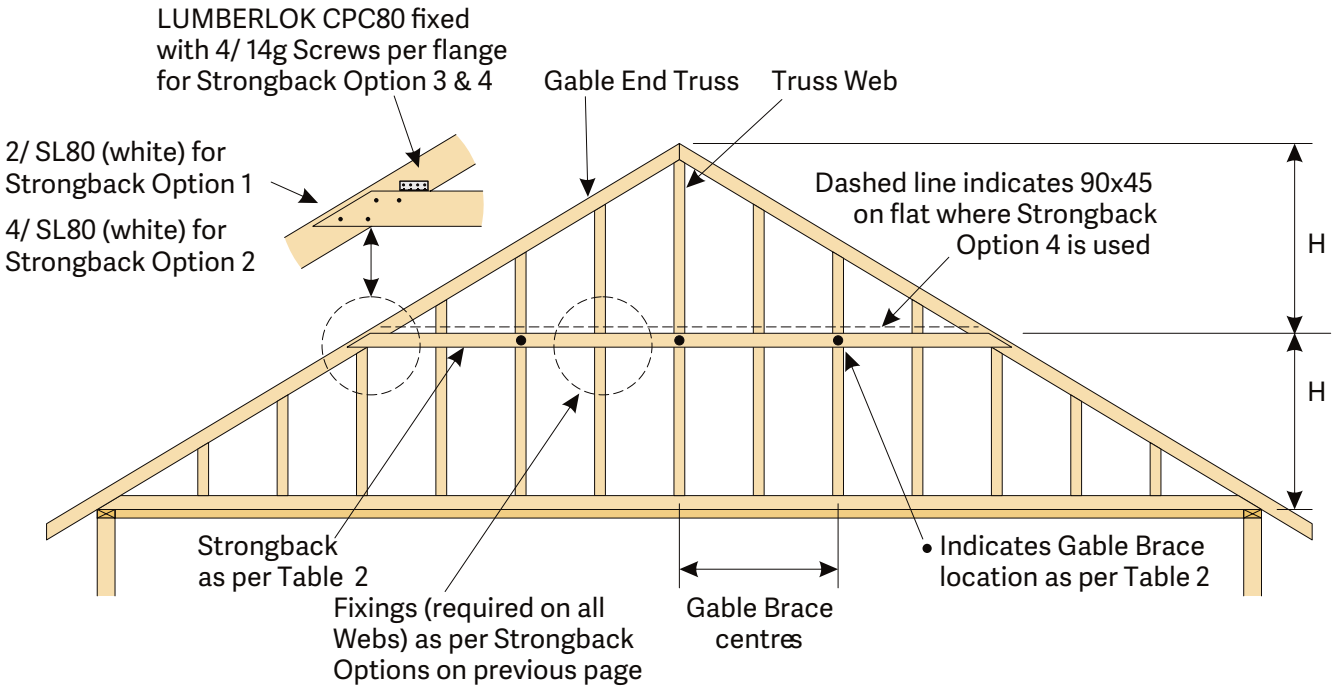
OPTION 3



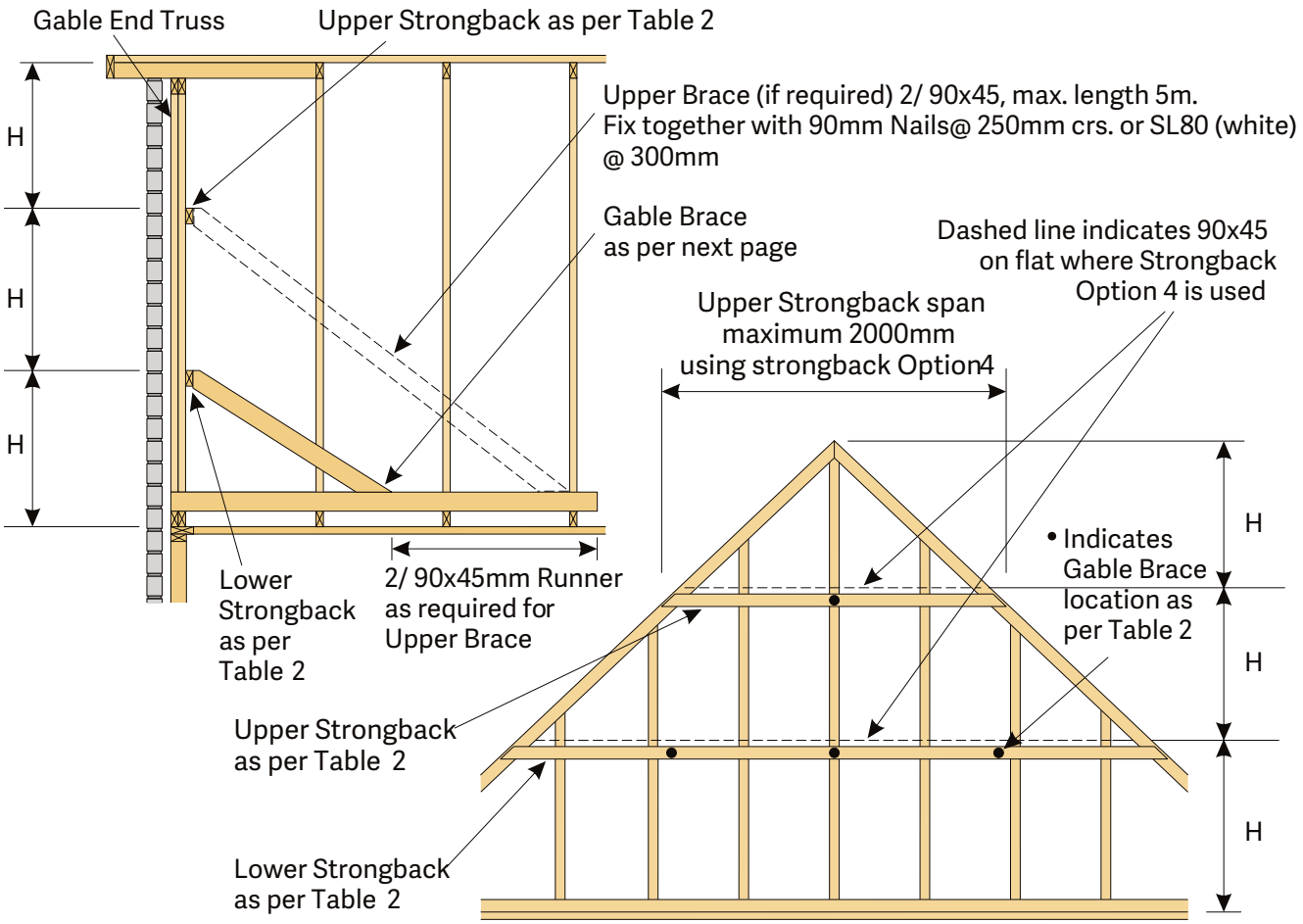
OPTION 4

TABLE 2 - STRONGBACK SPAN AND GABLE BRACE LOCATION

OPTION 1	OPTION 2	OPTION 3	OPTION 4
90x45 on edge	140x45 on edge	90x45 on flat	90x45 on flat plus 90x45 on edge
Max. span and/or gable brace crs. 1200mm	Max. span and/or gable brace crs. 1400mm	Max. span and/or gable brace crs. 1600mm	Max. span and/or gable brace crs. 2000mm

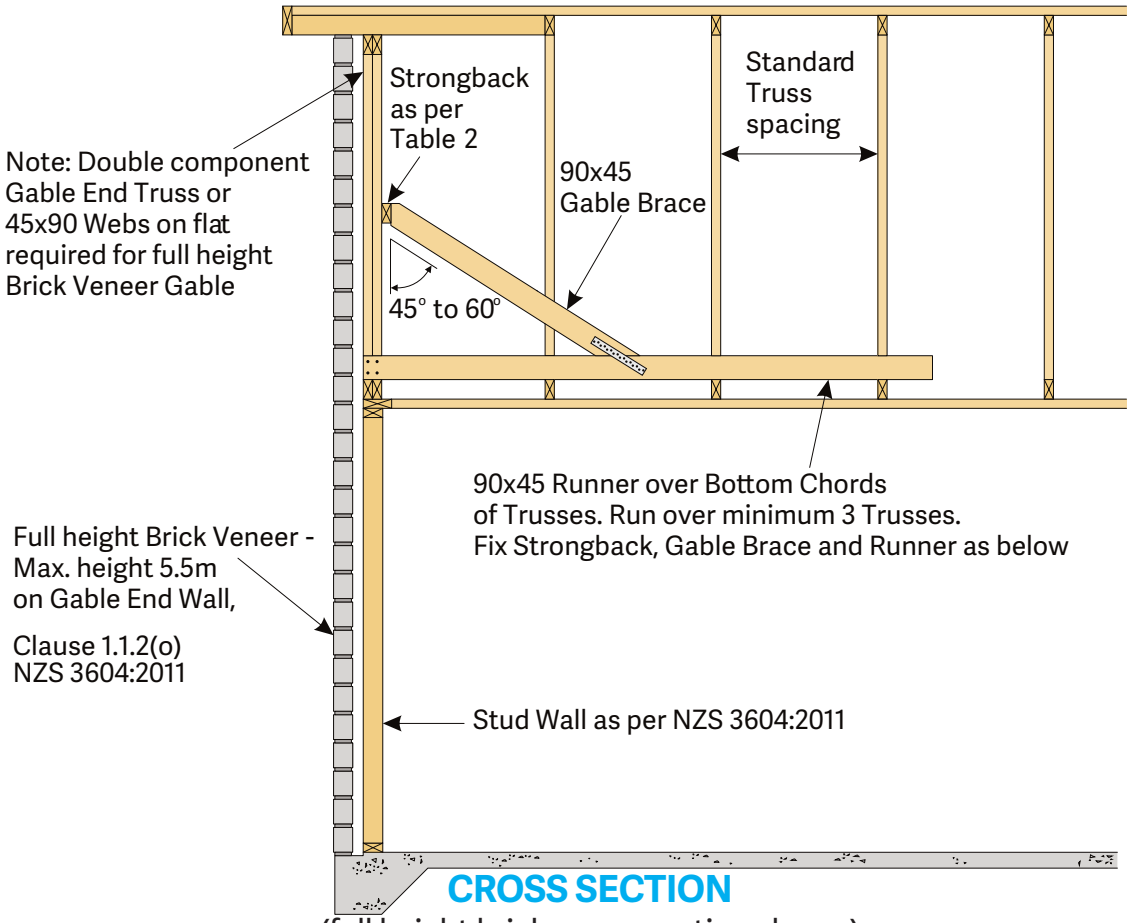


SINGLE STRONGBACK DETAILS



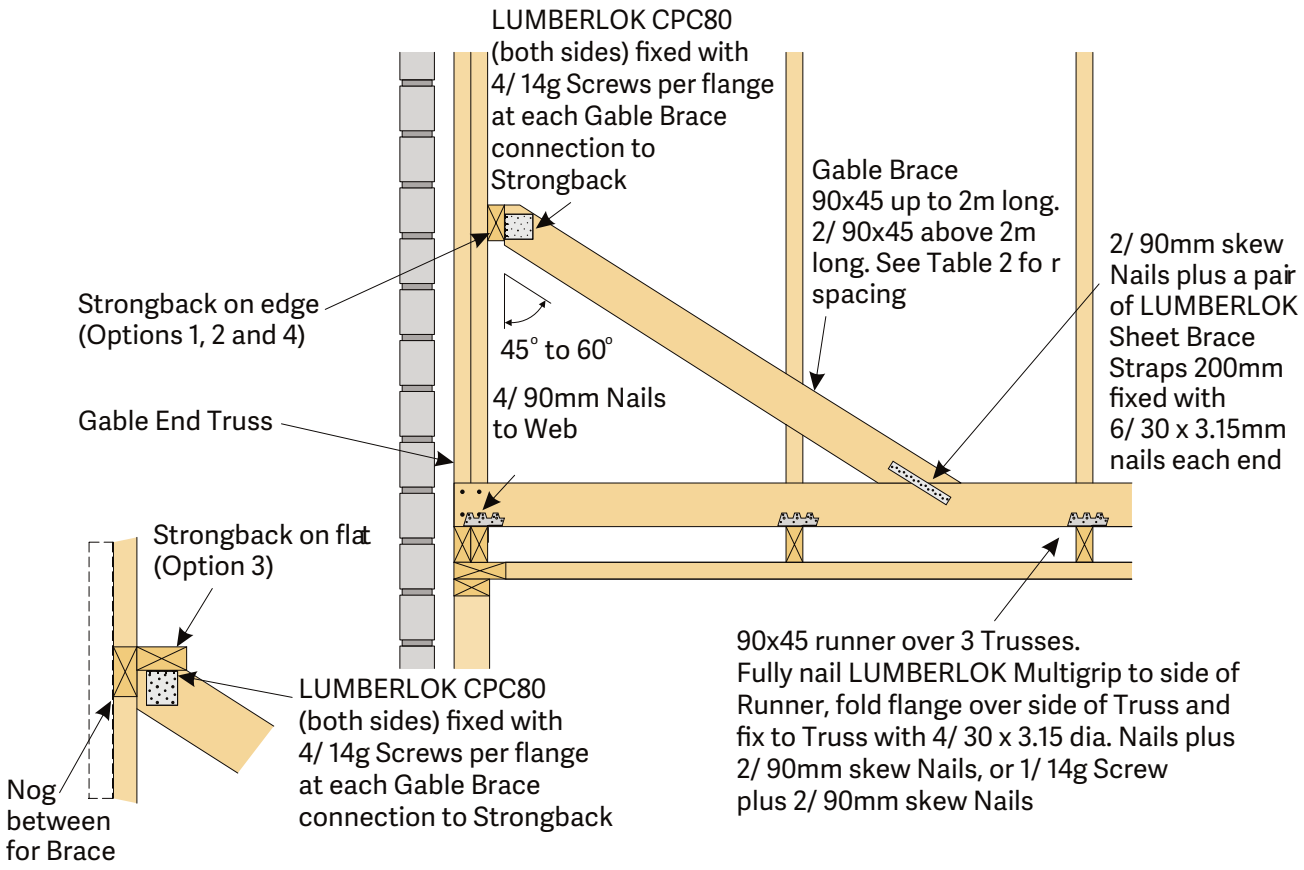
DOUBLE STRONGBACK DETAILS FOR ALL GABLE END OPTIONS

(full height brick veneer option shown)



CROSS SECTION

(full height brick veneer option shown)



GABLE BRACE DETAIL FOR ALL GABLE END OPTIONS

(full height brick veneer option shown)

GABLE END RAKING VERGE
OVERHANG OPTIONS

- Covers raking verge using standard purlin overhang options
- Covers up to 750mm overhang using standard verge outriggers
- Covers up to 1200mm overhang using verge outrigger/purlin combination

OVERHANG OPTIONS

- All gable end loading parameters are based on the design considerations used in NZS 3604:2011 and cover heavy roof weight, extra high wind load and snow load Sg of up to 1.0kPa.
- All live load considerations as per AS/NZS 1170.
- All timber to be minimum grade SG8 as defined in NZS 3604:2011.

CANTILEVER PURLIN OPTION

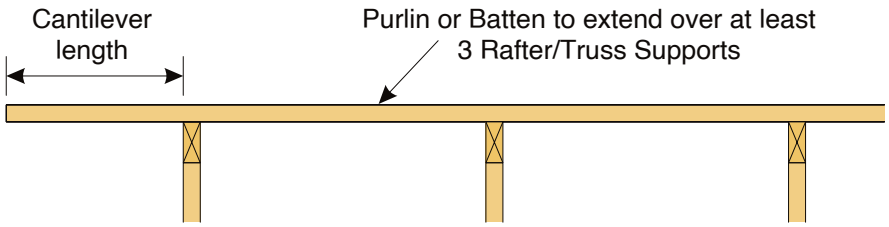


TABLE 1

PURLIN SIZE & ORIENTATION	MAX. CANTILEVER LENGTH (mm)	PURLIN CENTRES (mm)
45x45	200	400
70x45	300	900
90x45	450	900

CANTILEVER OUTRIGGER OPTION

(Note: Maximum sidewall overhang of 750mm)
(See details on next pages)

TABLE 2

MAX. CANTILEVER LENGTH 750mm	OUTRIGGER SIZE & ORIENTATION	MAX. CANTILEVER LENGTH (mm)	OUTRIGGER CENTRES (mm)
	70x45	750	600
		600	900
	90x45	750	900
		600	1200
	90x45	750	400
		600	600

CANTILEVER OUTRIGGER/PURLIN COMBINATION OPTION

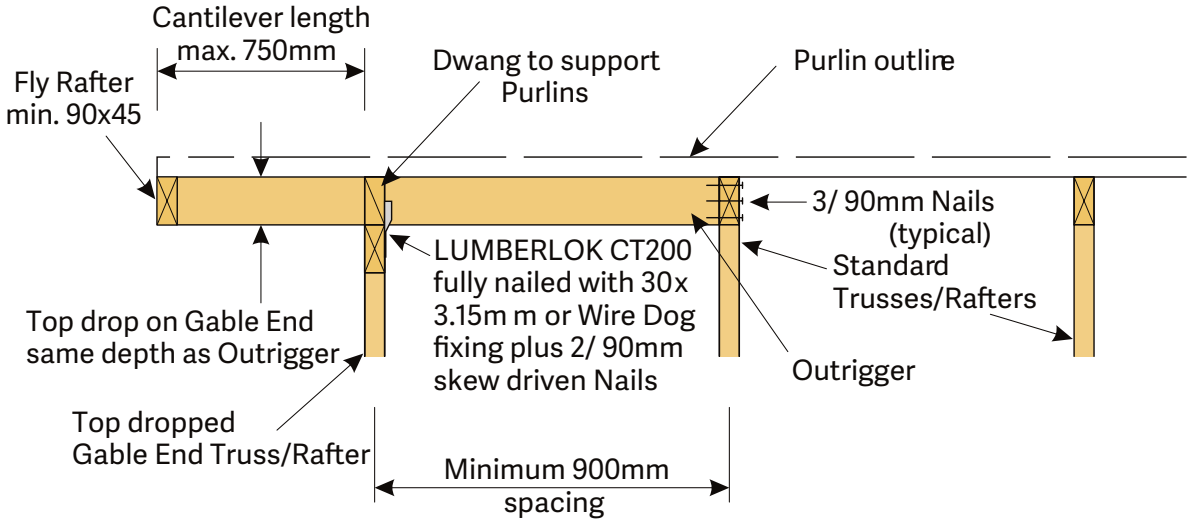
(Note: Maximum sidewall overhang of 1200mm)
(See details on next pages)

TABLE 3

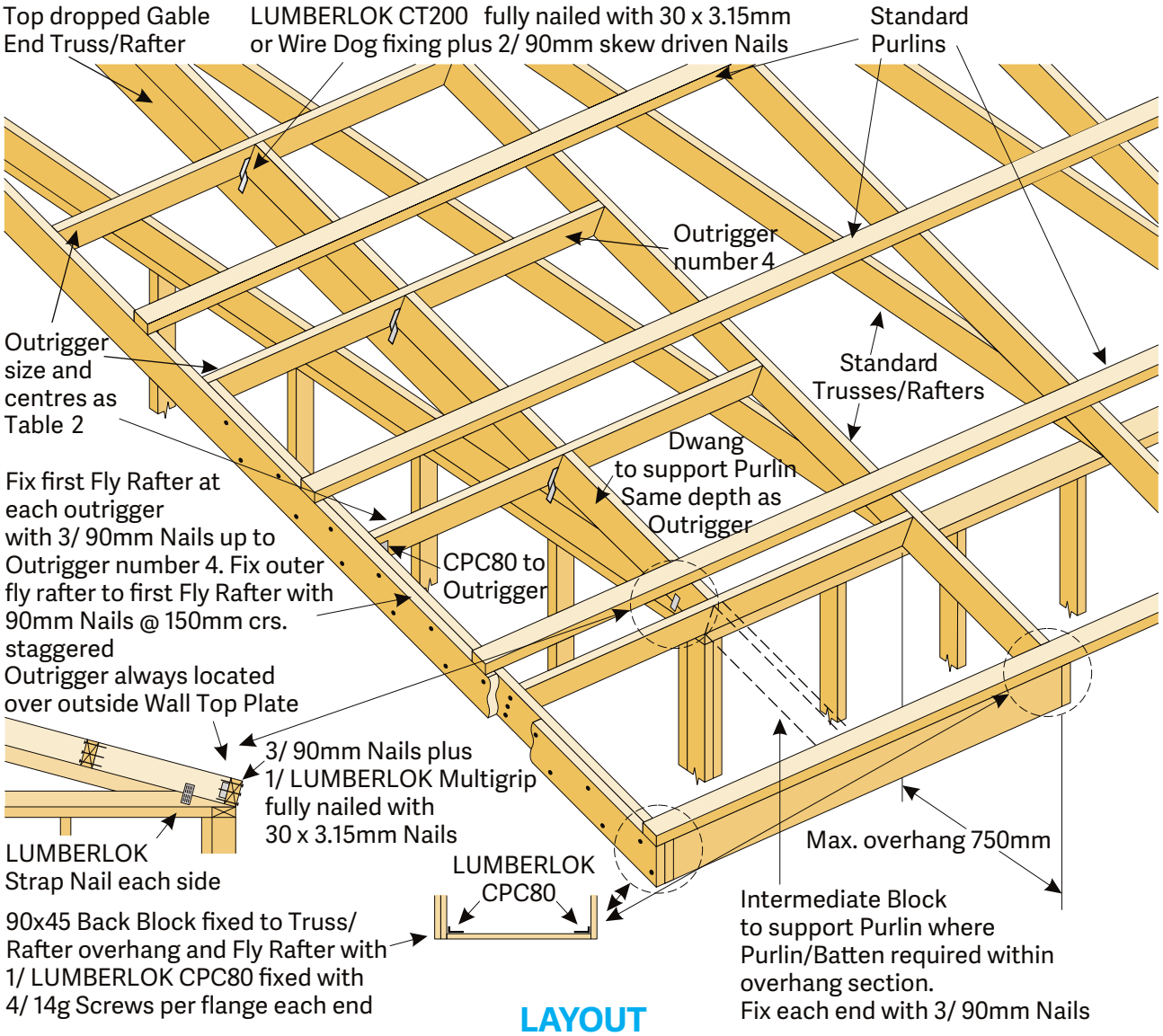
MAX. CANTILEVER LENGTH 1200mm	OUTRIGGER SIZE & ORIENTATION	MAX. CANTILEVER LENGTH (mm)	OUTRIGGER CENTRES (mm)
	45x45 Purlin 90x45 Outrigger	1200	450
	70x45 Purlin 90x45 Outrigger	1200	700
	90x45 Purlin 90x45 Outrigger	1200	900

CONSTRUCTION DETAILS FOR CANTILEVER OUTRIGGER OPTION

(SPANS & CENTRES AS PER TABLE 2)



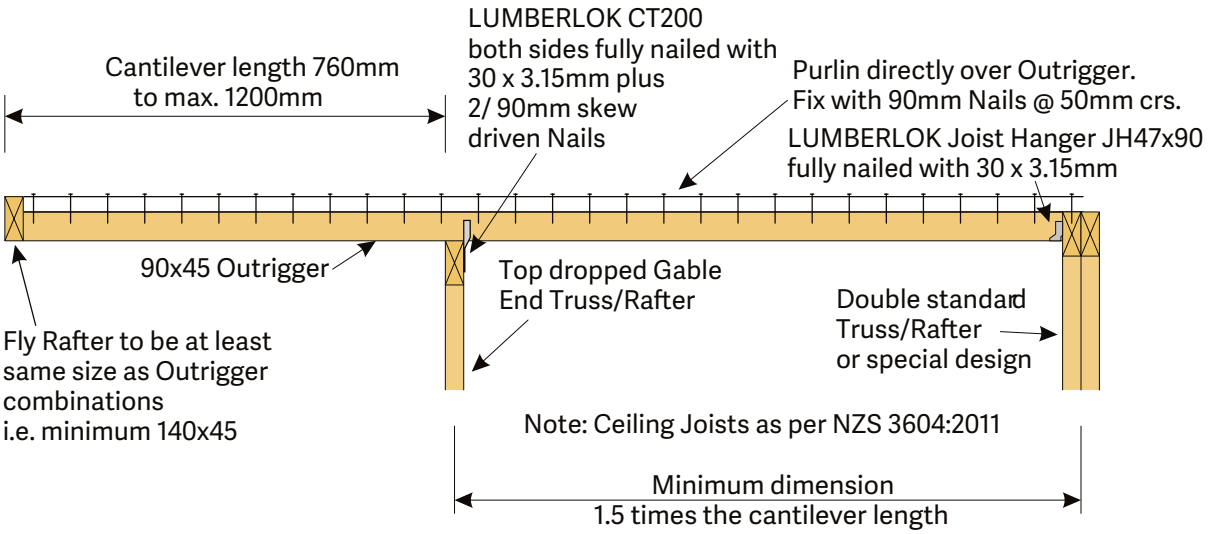
CROSS SECTION



LAYOUT

CONSTRUCTION DETAILS FOR OUTRIGGER/PURLIN COMBINATION

(SPANS & CENTRES AS PER TABLE 3)



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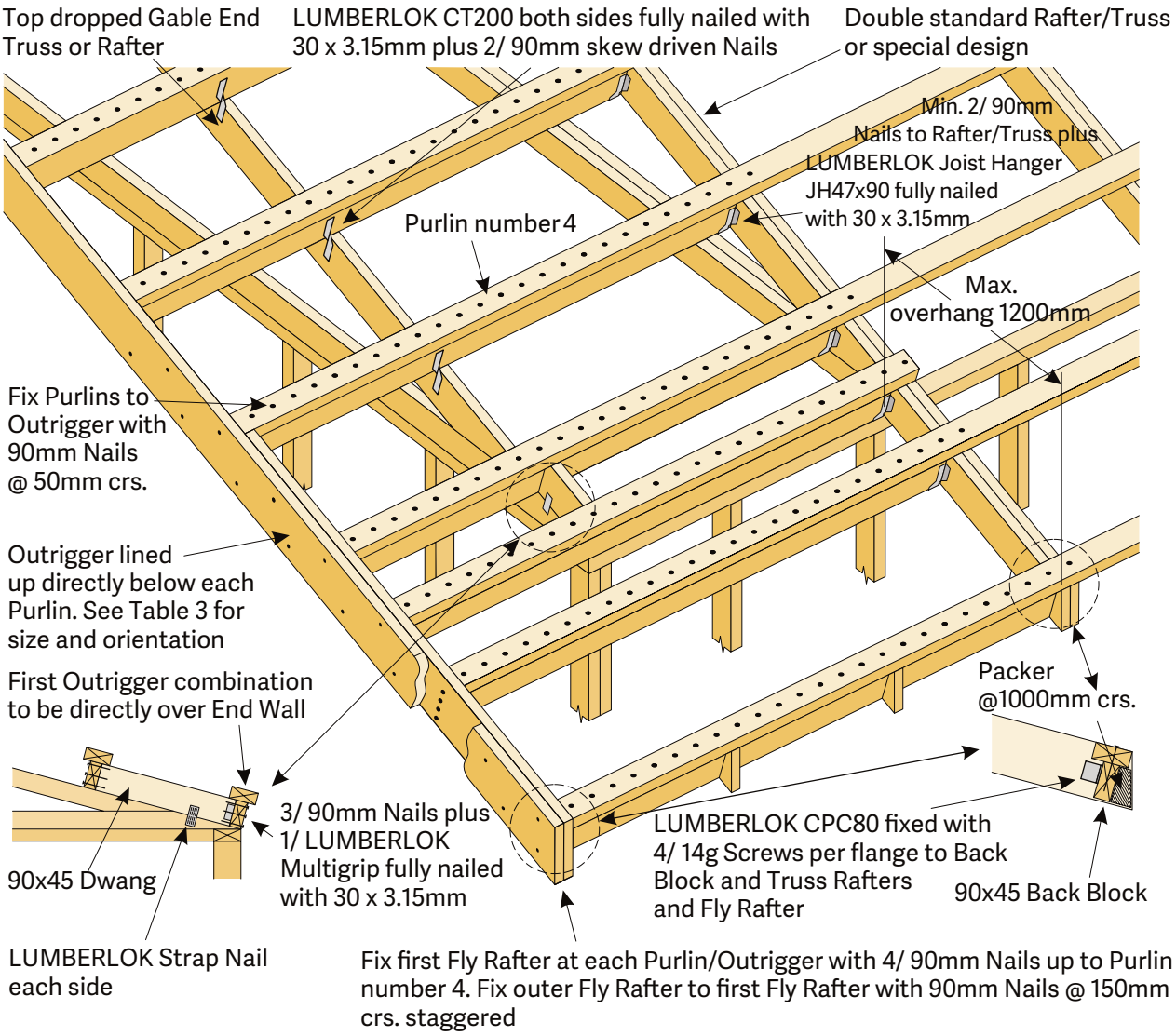

LAYOUT

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