



Structural fixings on-site guide

FOR BUILDING CODE COMPLIANCE

01/2018

References NZS 3604:2011
B1 & B2 NZBC



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or NZ training app



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.

Characteristic 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.mitek.nz.co.nz.

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

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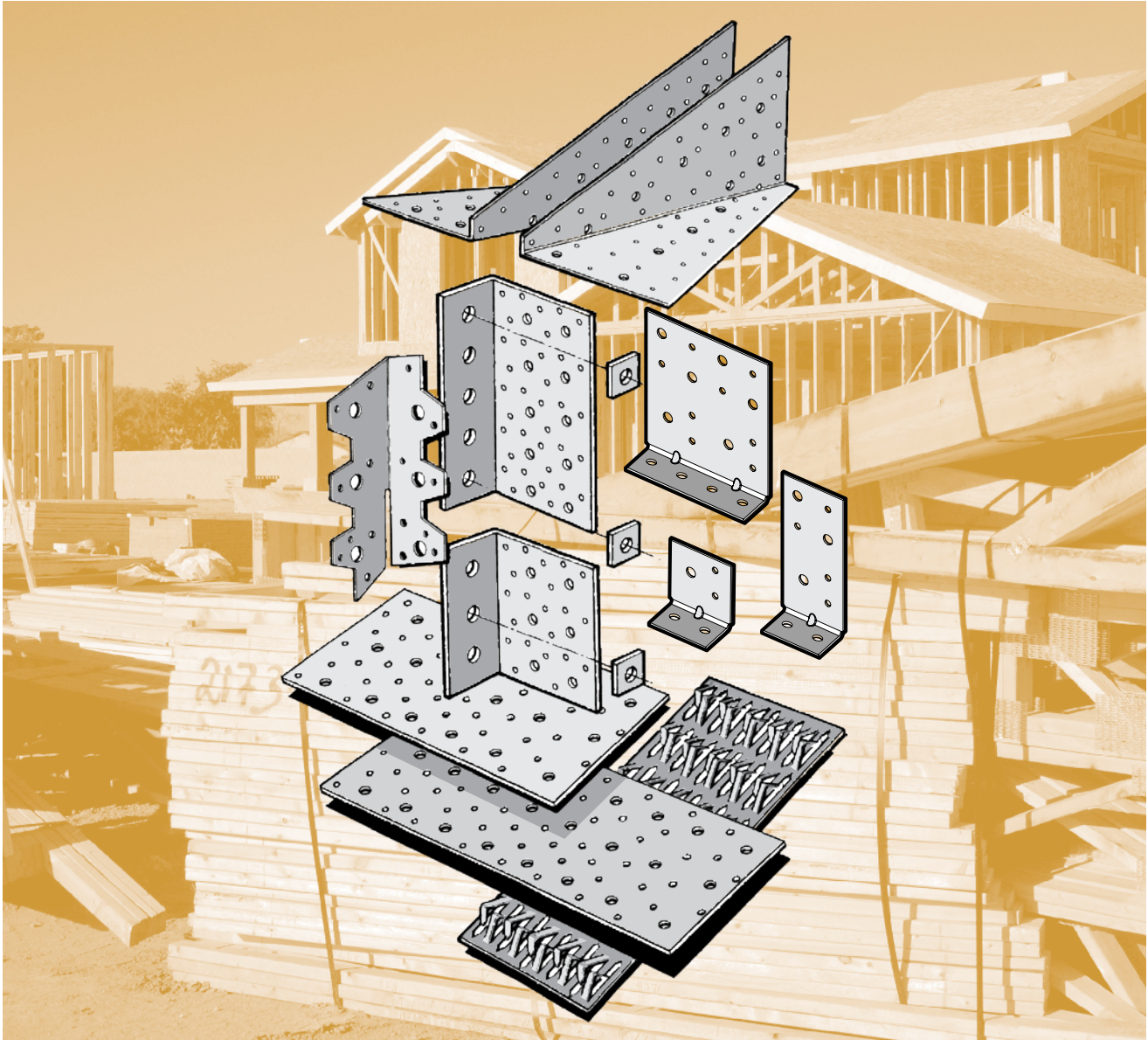


LUMBERLOK®

01/2017

TIMBER CONNECTORS

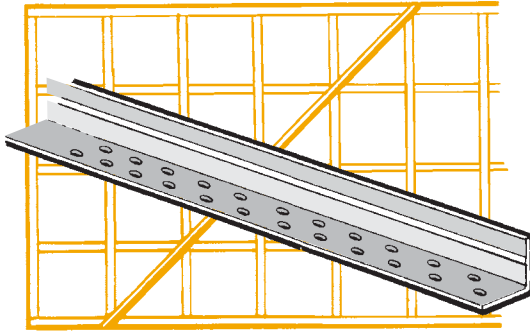
NOT TO BE USED IN
EXTERIOR SITUATIONS
Stainless Steel alternatives
are available where stated



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

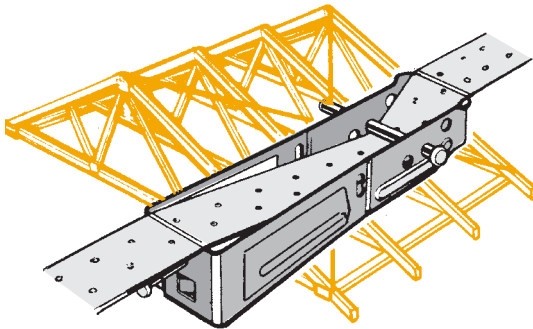
0.85mm G250 Z275 Galvanised Steel

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 on request (2.7m - 5.0m). 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)

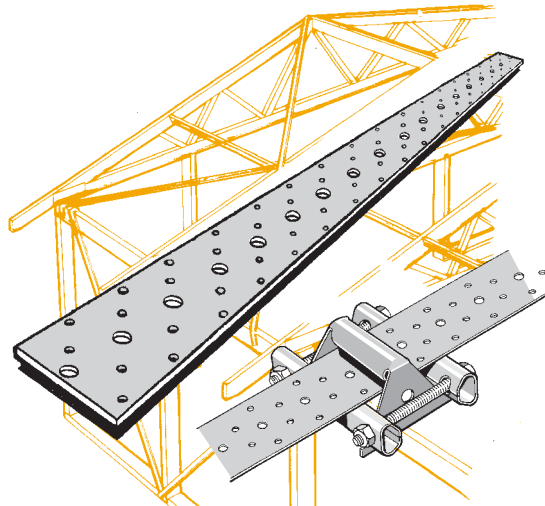
Strip Brace is supplied in 10m, 15m and 30m coils for use as bracing or in short lengths as a jointing material.

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

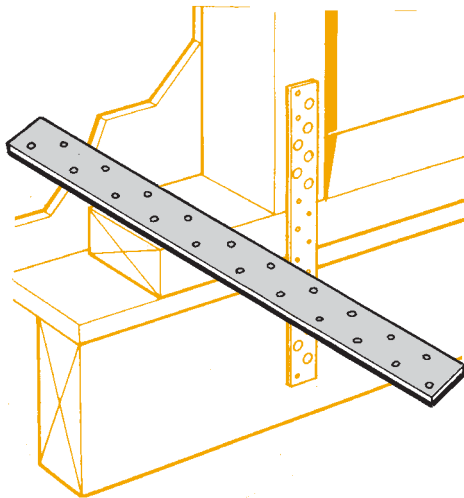
0.91mm x 53mm G300 Z275 Galvanised Steel

This product has been developed for commercial building situations as an alternative to steel rod or timber, as a bracing element. 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 for use where a strong, rigid joint is required between members meeting at 90°, e.g. truss/joist to beam, or rafter to bearer connection.

- 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.

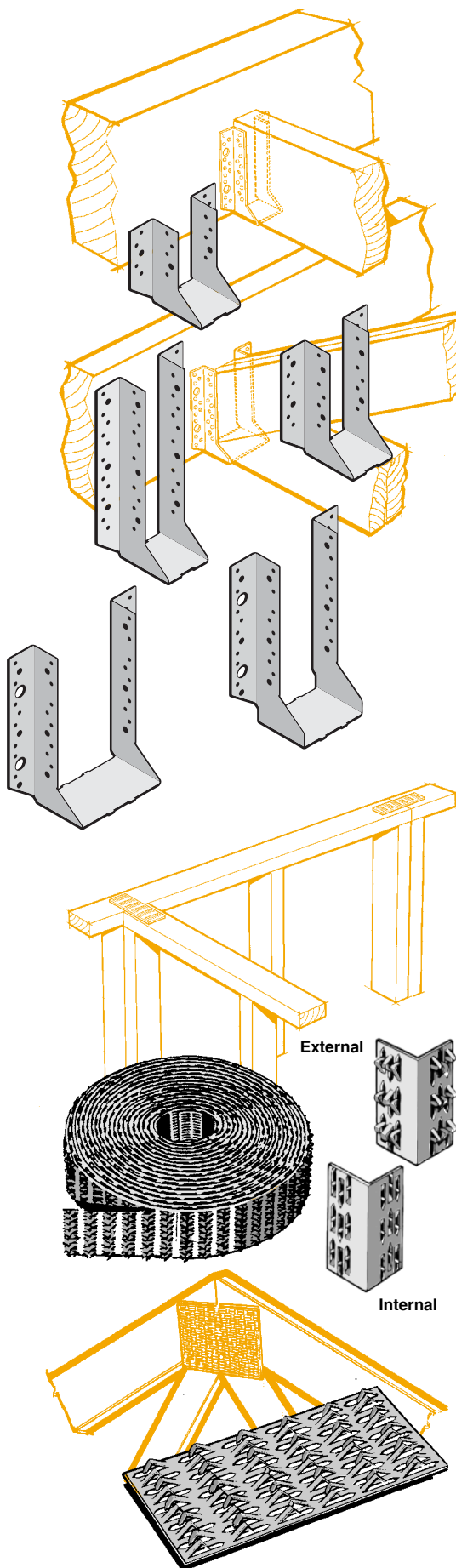
TYLOK ANGLES

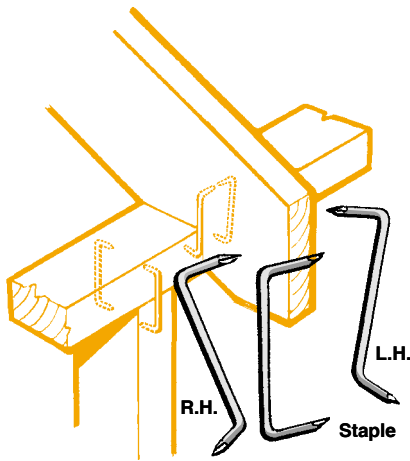
0.95mm G300 Z275 Galvanised Steel

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

- 3A6** 35mm x 35mm x 90mm
- 5A6** 35mm x 35mm x 150mm
- 6A6** 35mm x 35mm x 180mm (Internal only)

*Detailed product sheet available

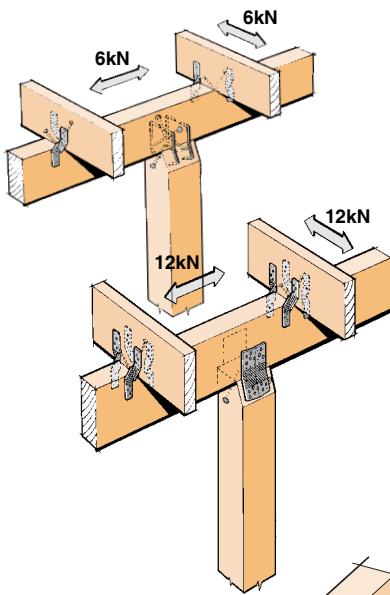




WIRE DOGS (LH, RH or STAPLE)

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. Wire Dogs have been proven by test to be the strongest and most economical timber fastener of its type on the New Zealand market. Typical use in a wind uplift situation, such as truss or rafter to top plate, and top plate to stud connection.

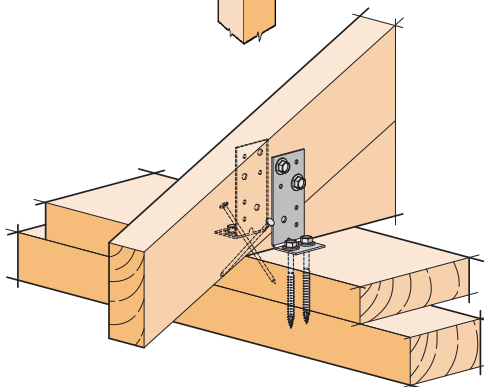
Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.



*12kN & 6kN PILE FIXINGS

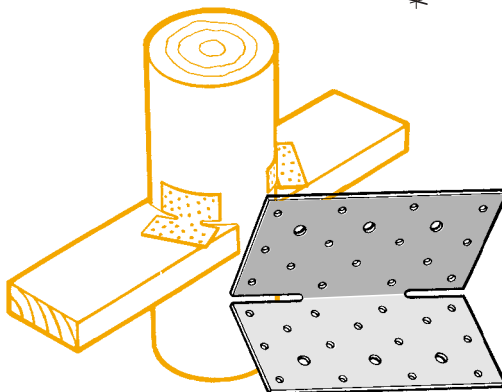
Both these products comply with NZS 3604:2011 as a fixing method for timber piles to bearers to joists. The 12kN product pack is suitable for both Anchor and Brace pile situations whilst the 6kN pack is used with cantilever piles. Each product is manufactured in a hot dip galvanised or stainless steel 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.



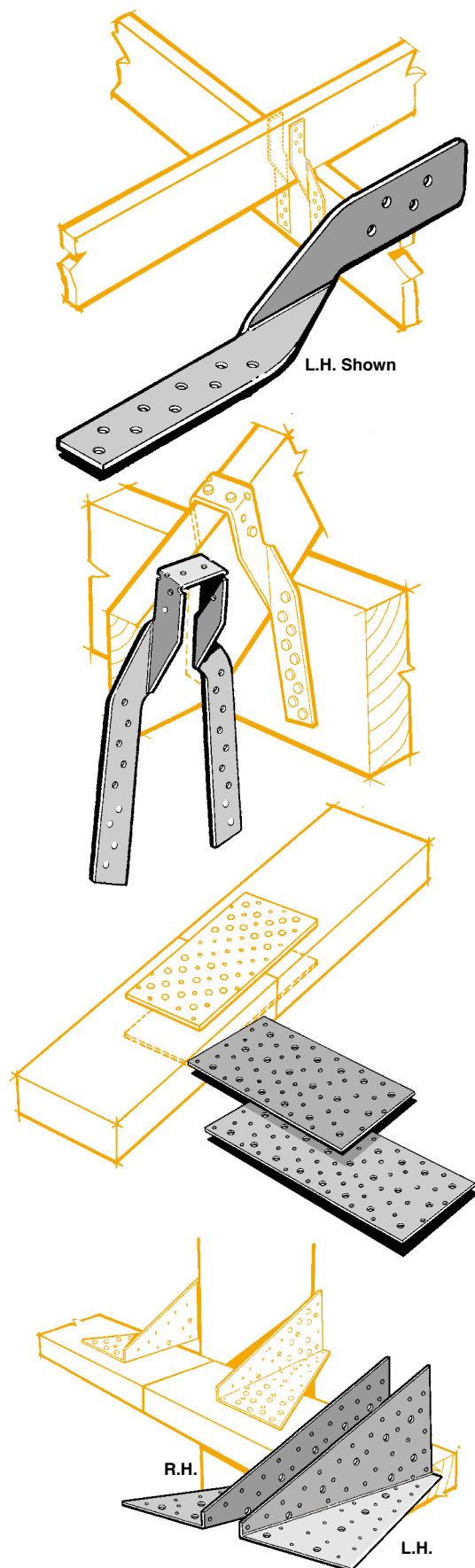
GIRT PLATE

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. 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 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.

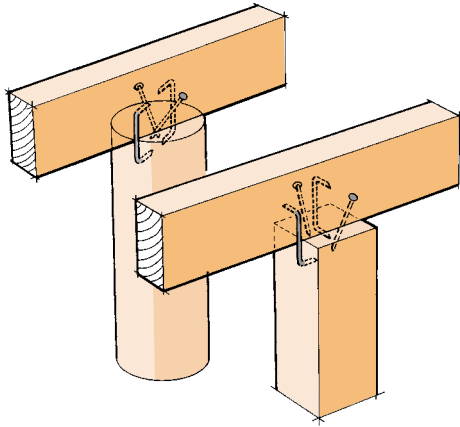
DIAGONAL CLEAT N21 (LH or RH)

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.

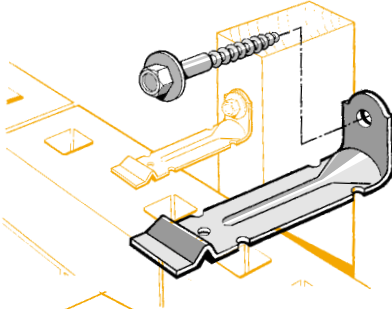
Refer to Characteristic Loadings Brochure for design values.
Available in Stainless Steel 304.

*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.

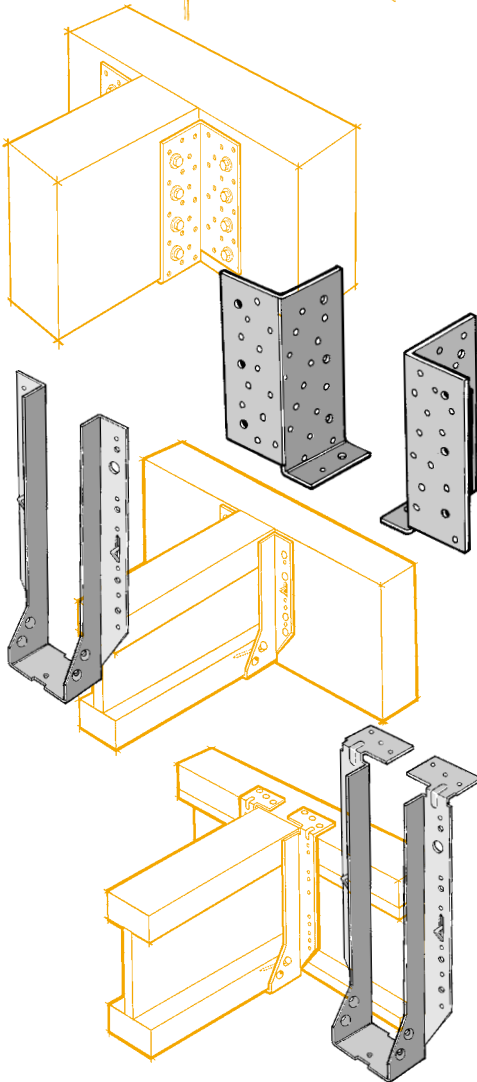


*SCREW TIE

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

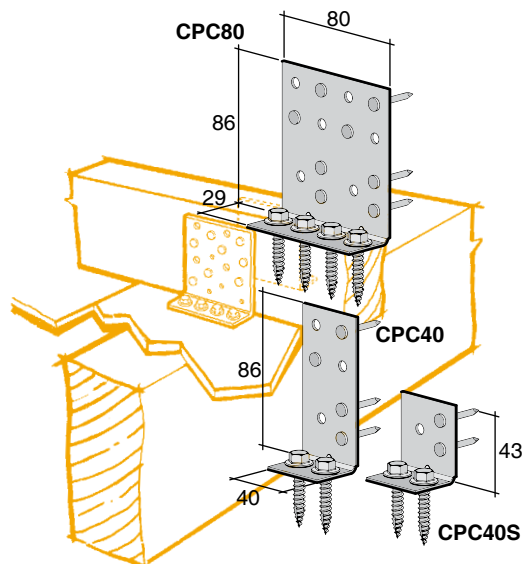
Designed to provide a strong 90 degree connection for larger timber widths and/or double joist/trusses to supporting members. Always used as pairs, Split Hangers are available in depths of 140, 180 and 220mm and are fixed with Type 17-14g x 35mm Hex Head Screws, or LUMBERLOK Product Nails 30mm x 3.15mm diameter (dependent on timber member types and load requirements).

*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

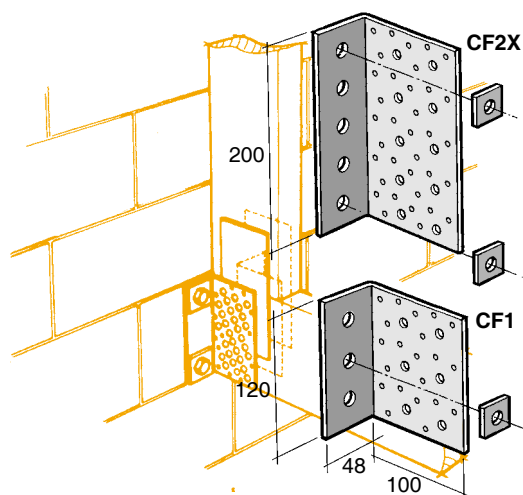
1.55mm G300 Z275 Galvanised Steel

| 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.



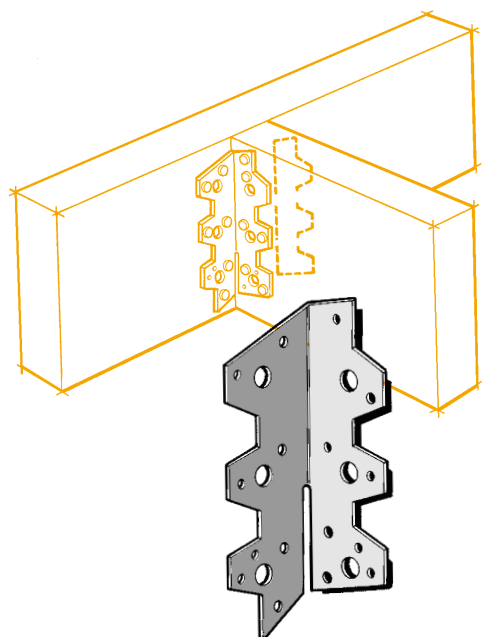
CONCRETE FIXING CLEATS CF1 & CF2X

1.55mm G300 Z275 Galvanised Steel

Both cleats provide a quick and economical method of fixing timber trusses, beams, 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 and appropriate M12 bolts (not supplied with product). 40x40x5mm washer supplied.

Refer to Characteristic Loadings Brochure for design values.



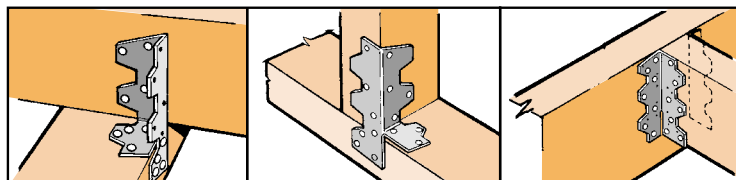
MULTIGRIP

0.91mm G300 Z275 Galvanised Steel

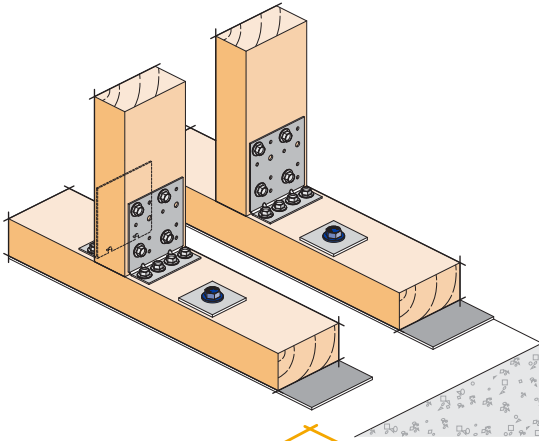
LUMBERLOK Multigrips are a multipurpose product that can be bent into any of five combinations. One product provides for all alternatives with the bending slot enabling easy on-site bending.

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 plastering. 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.

STUD TIE

1.0mm G300 Z275 Galvanised Steel

A fast effective way of securing top and bottom plates to studs. The pre-bent Stud Tie is wrapped over the wall plate and has pre-formed teeth which are hammered into both sides of the stud. Available in 300 & 400mm lengths, the longer option is suitable for double 90 x 45mm top plates.

*FRAMING STUD STIFFENER

1.55mm G300 Z275 Galvanised Steel

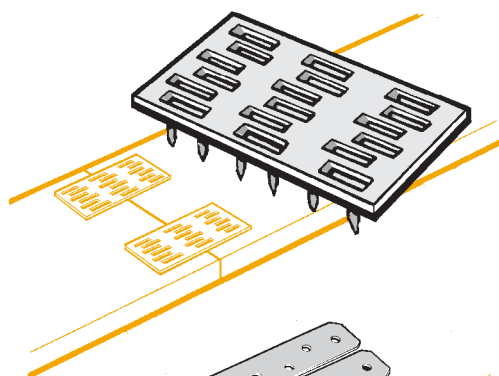
Replace the strength lost in 90 x 45mm framing studs as a result of holes being drilled through timber framing for plumbing or vacuum systems ducting. This solution is for holes up to 60mm diameter. Fixed to side of stud with 3 rows of 4 x Type 17-14g x 35mm Hex Head Screws (supplied).

*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



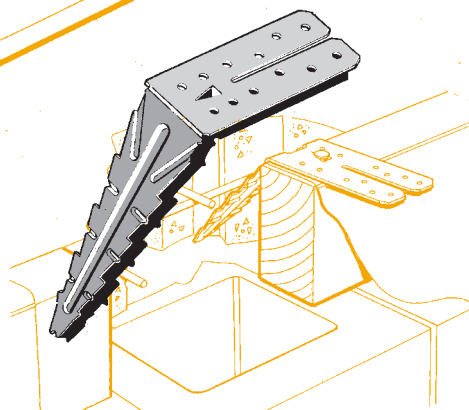
STRAP NAIL

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

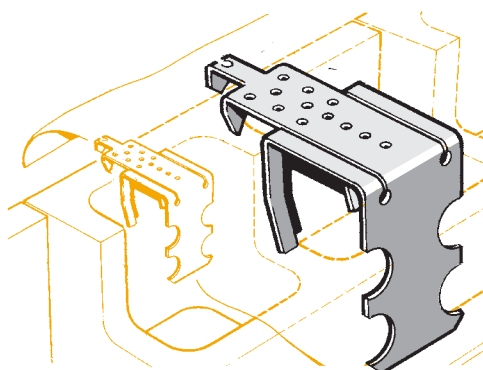
0.95mm G300 Z450 Galvanised Steel

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

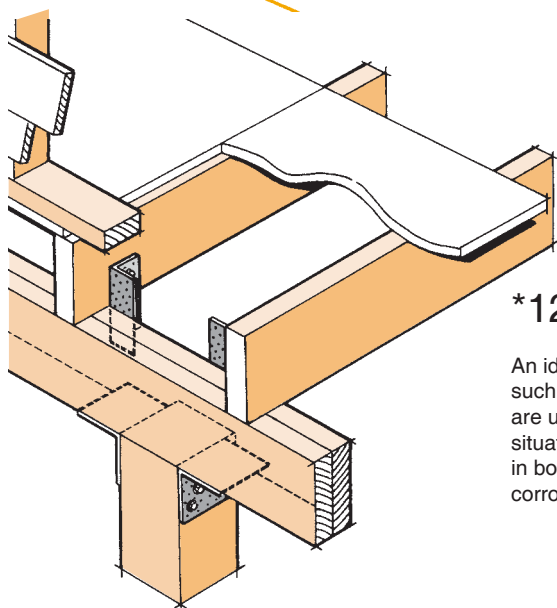
1.15mm G250 Z275 Galvanised Steel

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.

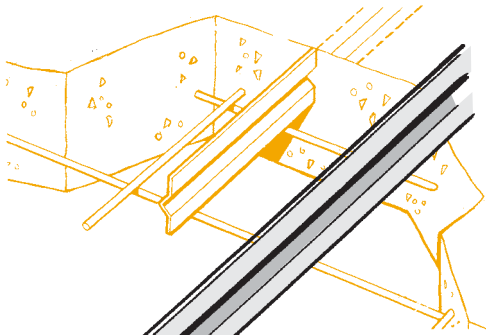
Available in Stainless Steel 304.



*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

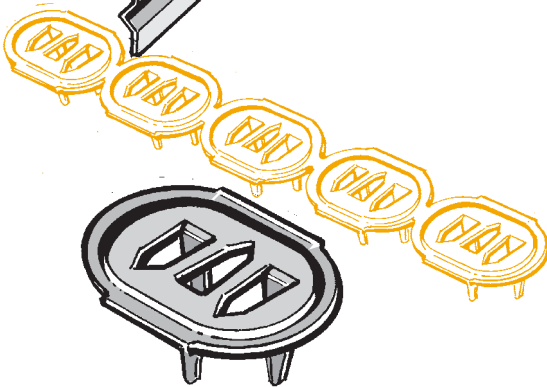


*KRACK MATE

0.85mm G250 Z275 Galvanised Steel

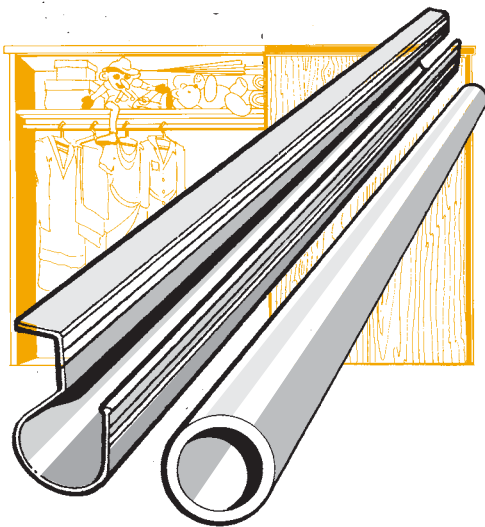
A preformed metal crack inducer for all types of concrete surfaces. Eliminates concrete cutting. 36mm overall width, supplied in 3m lengths. Krack Mate is inserted into wet concrete after screeding stage, flush with surface level.

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 F.H.

Available in 25kg, 5kg packs and 500g bags. To be used for most products requiring nailing.

Also available in Stainless Steel 316.

SPIRAL ROLLED NAILS

90mm x 3.55mm diameter F.H., 45mm x 3.55mm diameter F.H.

Available in 1kg packs.

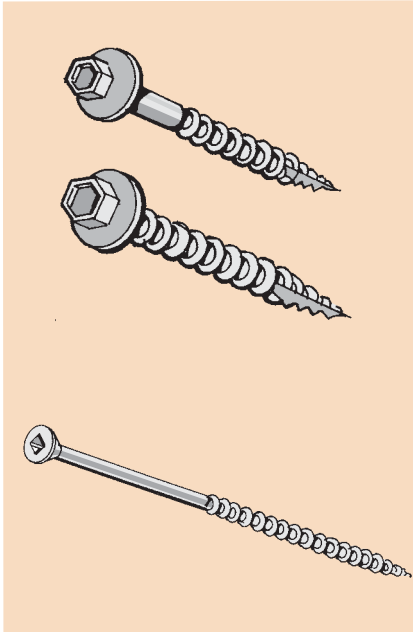
ANNULAR GROOVED NAILS

30mm x 3.15mm diameter F.H., 45mm x 3.3mm diameter F.H.,

90mm x 4.0mm diameter F.H.

Available in Stainless Steel 316.

*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.

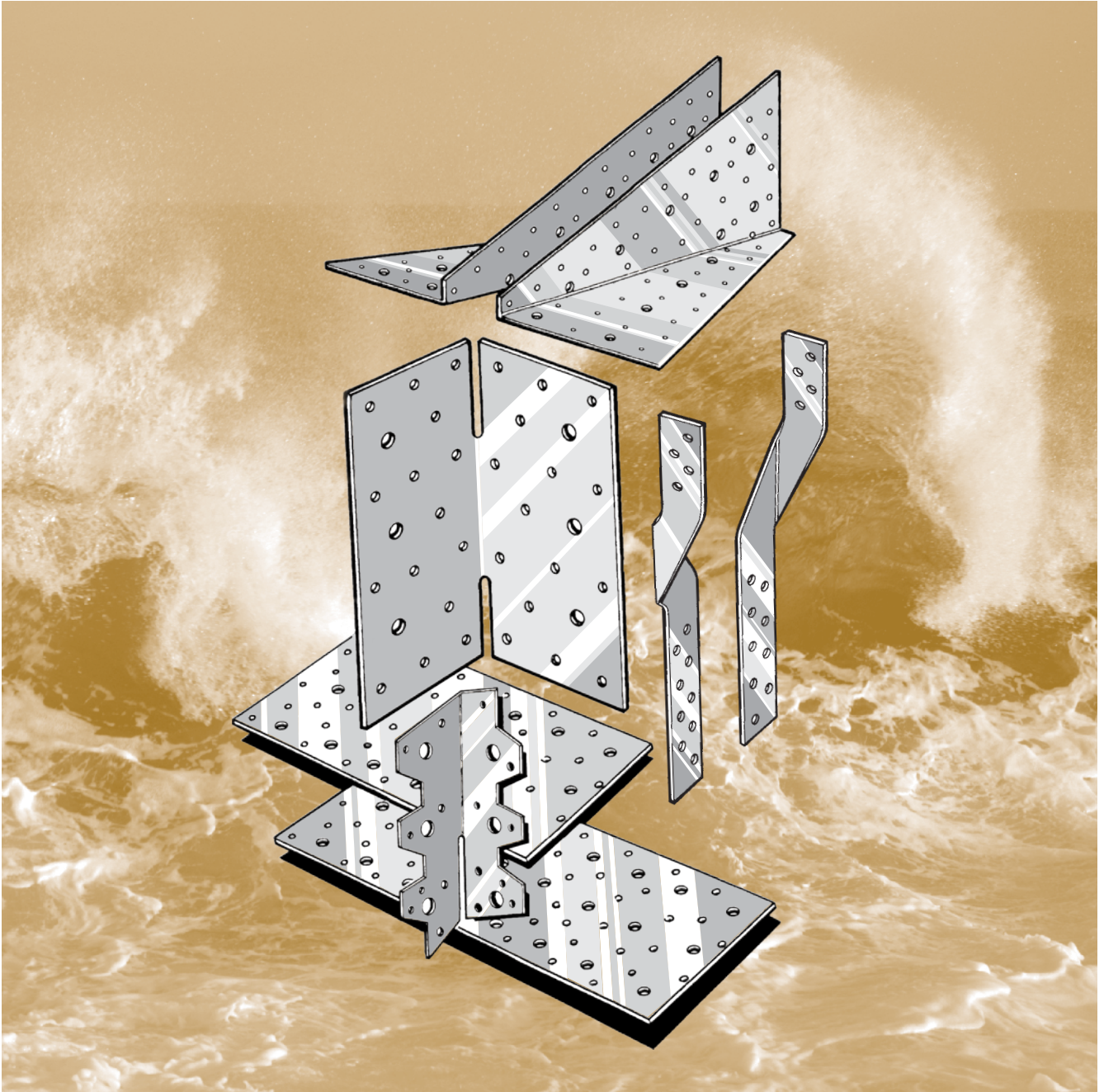
Available in bags of 100.

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.

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, Screws and Nails - 316 Grade)

STANDARDS

Applicable Timber 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 meet NZBC Clause B2 for 50 years durability performance requirements.

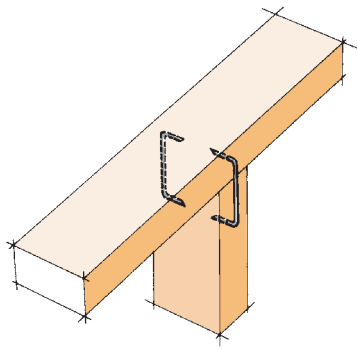
Depending on specific weather exposure and salt spray environments, there may be evidence of 'tea staining' on the surface of Stainless Steel fixings.

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

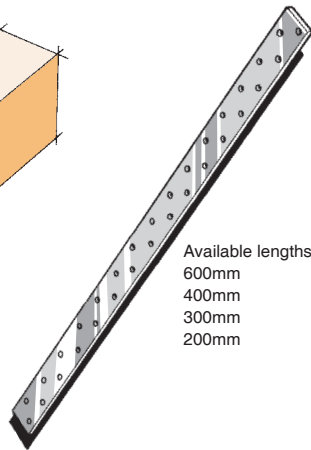
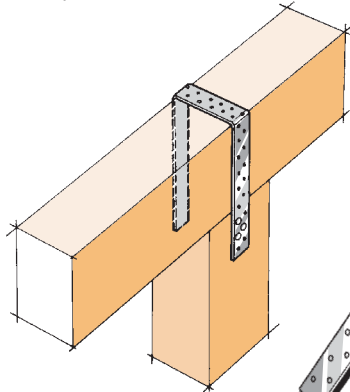
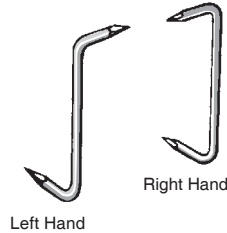
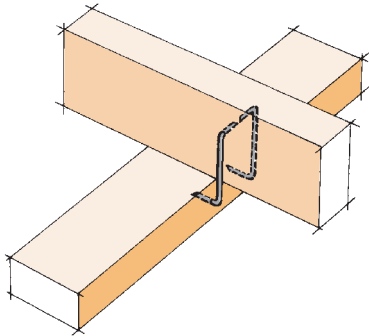
Stainless Steel product can be purchased from Builders Supply Merchants or indented through the merchant from our Auckland and Christchurch warehouses.



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.

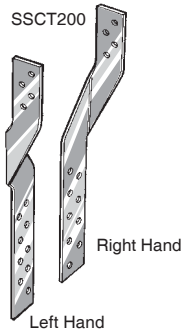
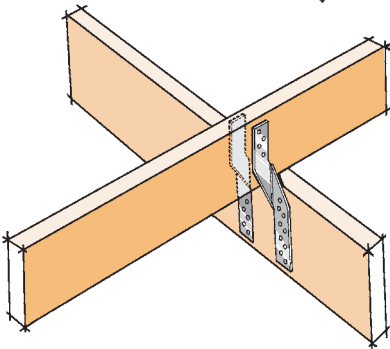


*SHEET BRACE STRAPS

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.

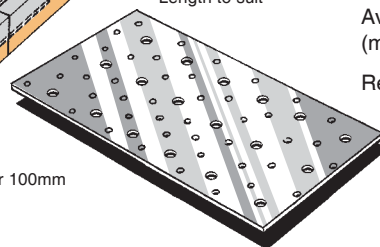
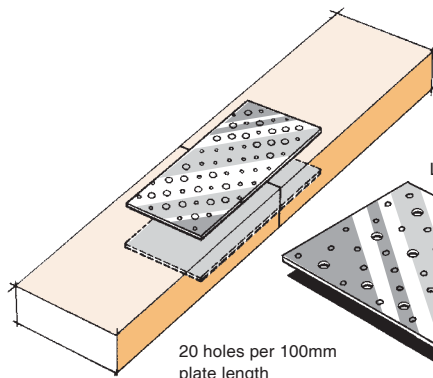


CEILING TIES SSCT160 & SSCT200 (LH or RH)

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

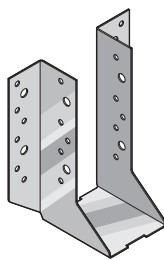
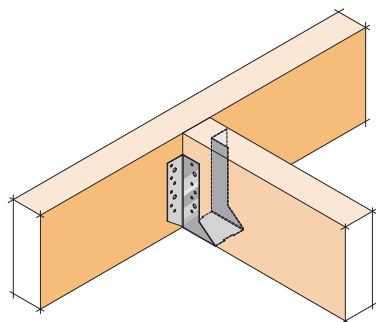
0.9mm x 110mm Stainless Steel 304-2B

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.

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

Refer to Characteristic Loadings Brochure for design values.

*Detailed product sheet available



*JOIST HANGERS

0.9mm Stainless Steel 304-2B

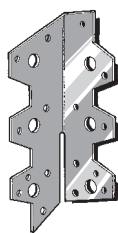
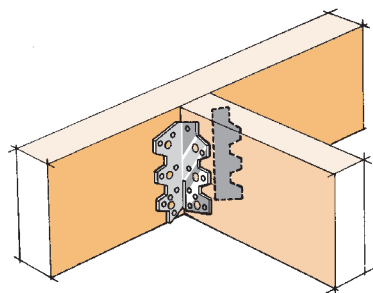
Joist Hangers are designed for use where a strong, rigid joint is required between members meeting at 90°, e.g. truss/joist to beam, or rafter to bearer connection.

- 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.

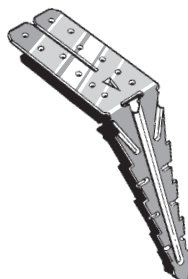
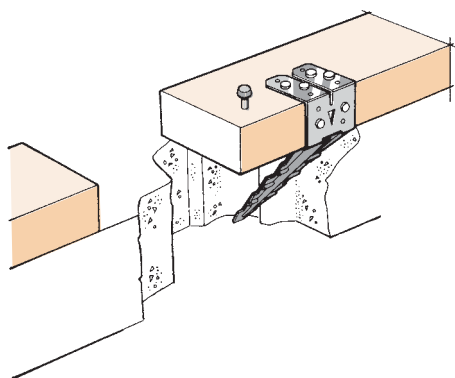


MULTIGRIP

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.

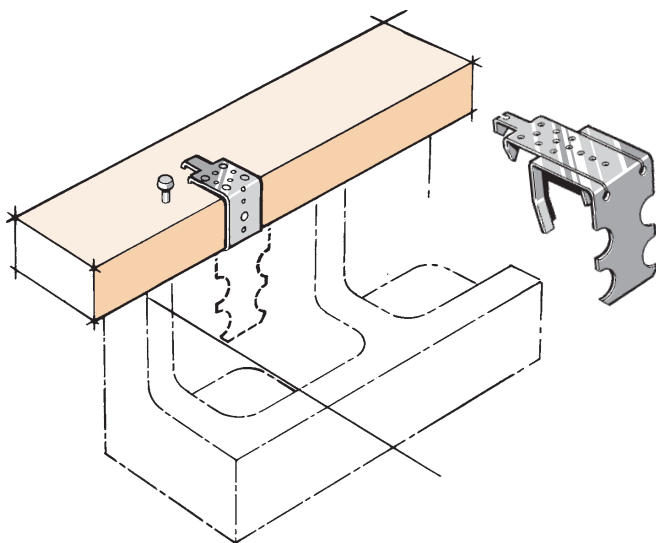


*BOTTOM PLATE FIXING ANCHOR

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.

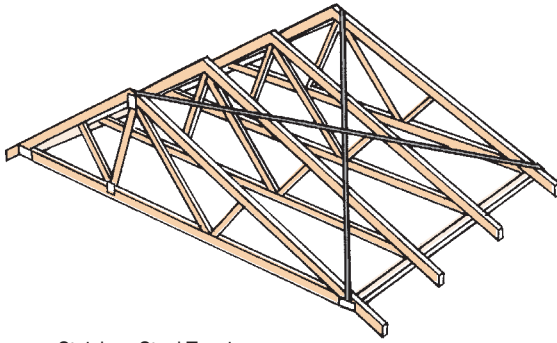
The tongue is then lifted up off the surface and folded around the bottom plate for nailing using LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter.

Refer to brochure for application data.

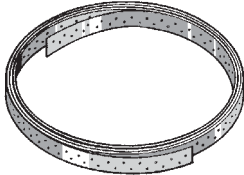
*Detailed product sheet available

STRIP BRACE

0.9mm x 25mm Stainless Steel 304-2B



Stainless Steel Tensioners
not available

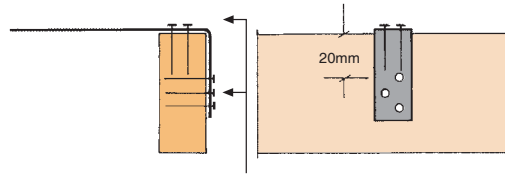


Strip Brace is supplied in 10m and 30m coils for use as bracing or in short lengths as a jointing material.

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 can be folded over timber face. Otherwise use 8 nails each end.

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

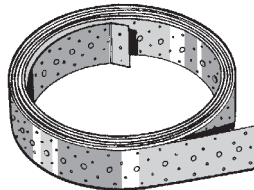
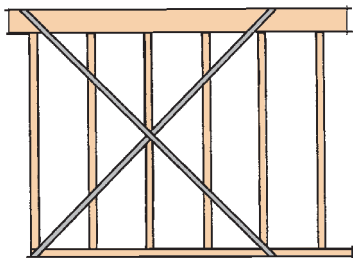
Refer to Characteristic Loadings Brochure for design values.



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

*MULTI-BRACE

0.9mm x 53mm Stainless Steel 304-2B

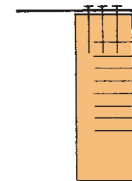


This product has been developed for commercial building situations as an alternative to steel rod or timber as a bracing element. Coils are available in lengths of 10m, 15m and 30m, punched to allow easy fixing. Fix using 11 x LUMBERLOK Stainless Steel Product Nails 30mm x 3.15mm diameter at each end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



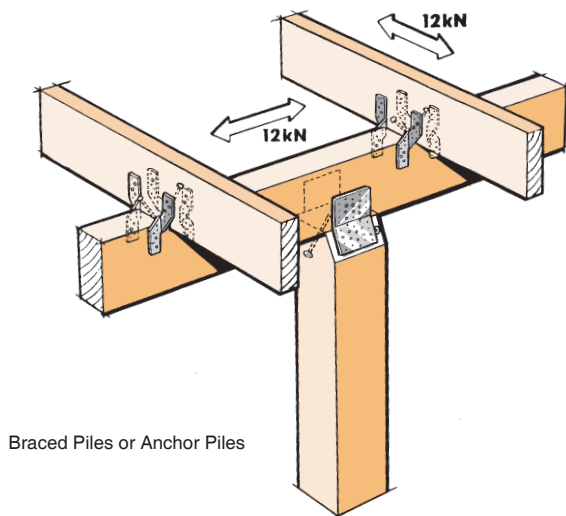
3 nails top edge,
8 nails vertical face
(not in same line)

*12kN & 6kN PILE FIXINGS

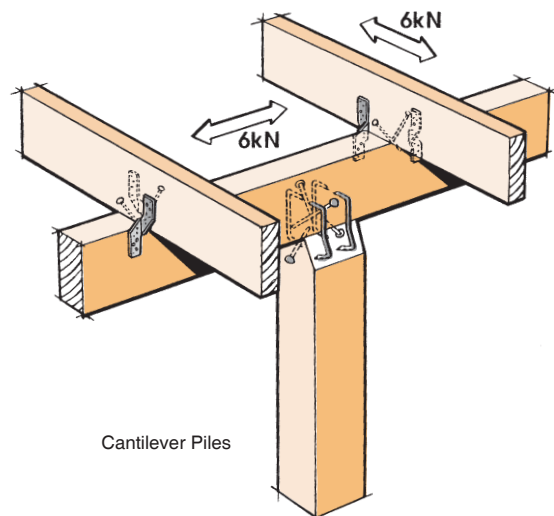
Both these products comply with NZS 3604: 2011 as a fixing method for timber piles to bearers to joists. The 12kN product pack is suitable for both Anchor and Brace pile situations whilst the 6kN pack is used with cantilever piles. Manufactured in stainless steel to suit high corrosive environments.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

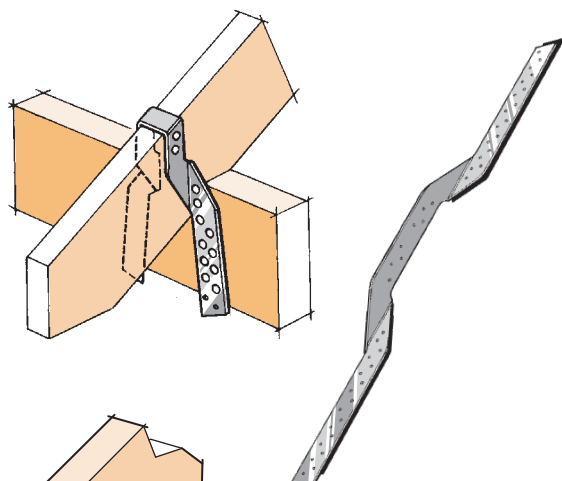


Braced Piles or Anchor Piles



Cantilever Piles

*Detailed product sheet available

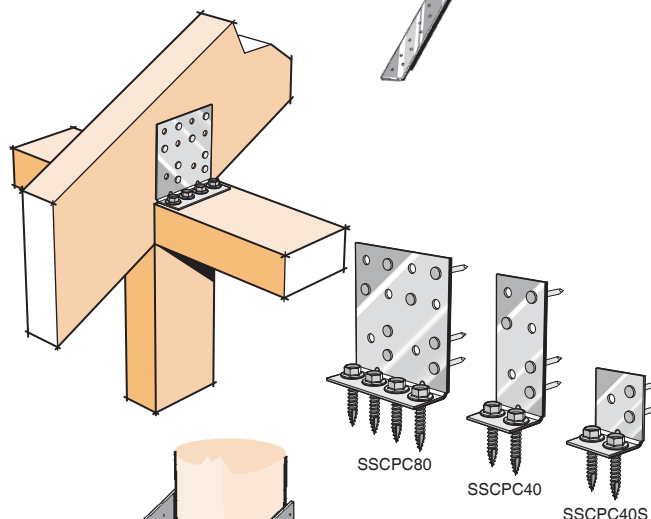


CYCLONE TIES SSCT400 & SSCT600

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

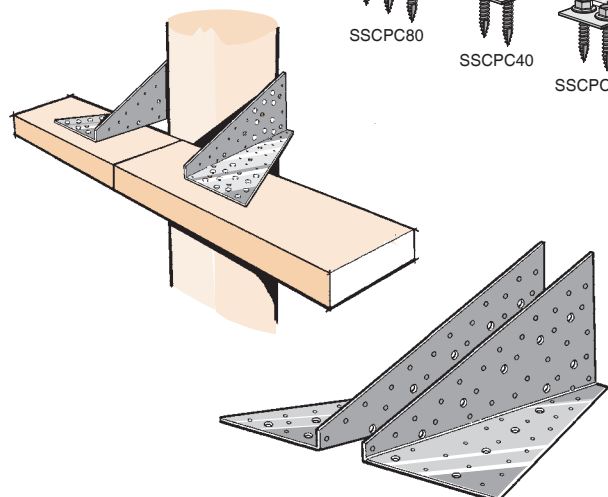
1.5mm Stainless Steel 304-2B (SSCPC40 & SSCPC80)

0.9mm Stainless Steel 304-2B (SSCPC40S)

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.



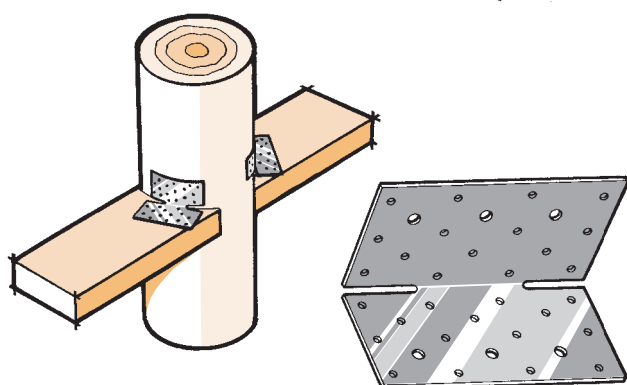
DIAGONAL CLEAT SSN21 (LH or RH)

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.

Refer to Characteristic Loadings Brochure for design values.

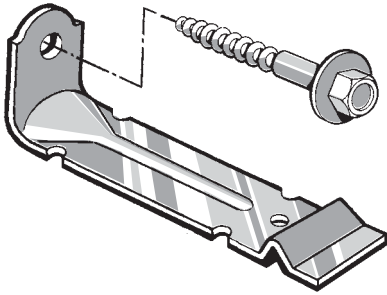


GIRT PLATE

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



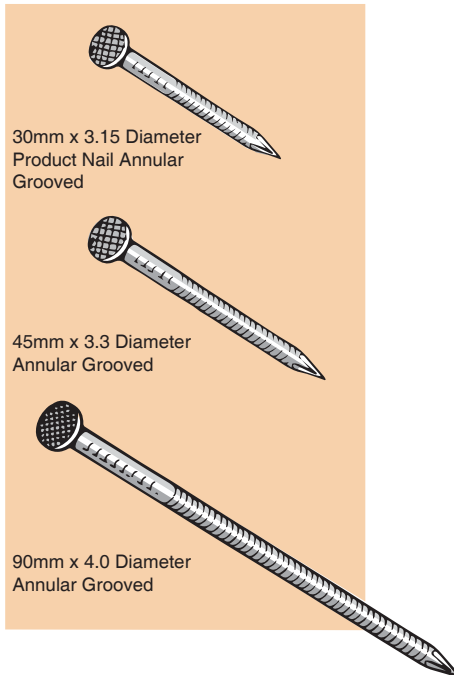
*SCREW TIE

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

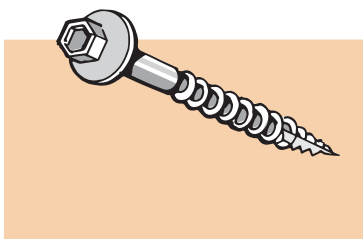
45mm x 3.3 Diameter
Annular Grooved

90mm x 4.0 Diameter
Annular Grooved

PRODUCT NAILS (ANNULAR GROOVED)

Stainless Steel 316

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



MiTek New Zealand Limited

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PO Box 58-014, Botany 2163

Phone: 09-274 7109

Fax: 09-274 7100

www.mitek.nz.co.nz

CHRISTCHURCH

14 Pilkington Way, Wigram 8042

PO Box 8387, Riccarton 8440

Phone: 03-348 8691

Fax: 03-348 0314

MITEK® LUMBERLOK® BOWMAC®

January 2018

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 meet the NZBC clause 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.

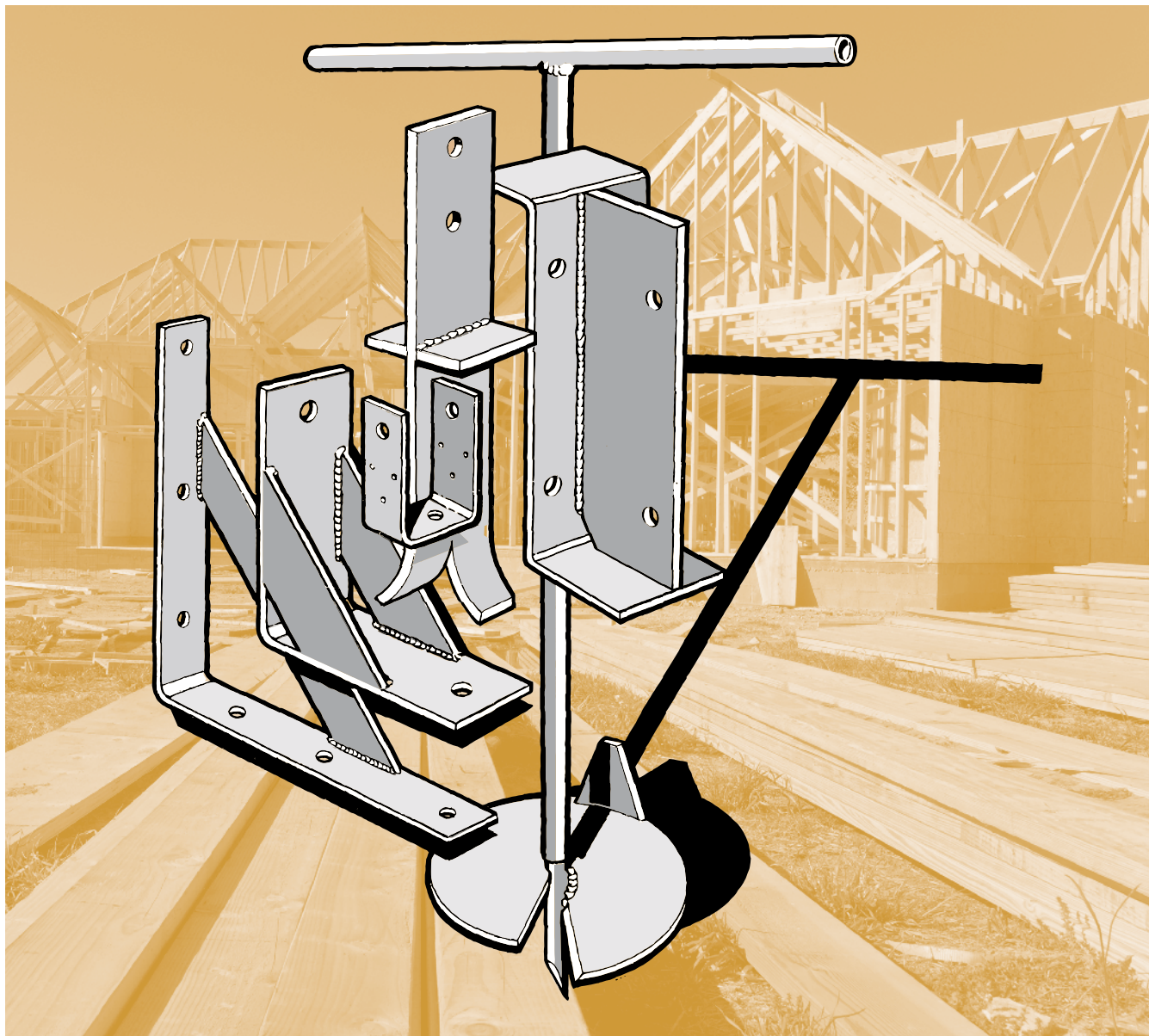


BOWMAC®

01/2017

2. GENERAL

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 high grade steel, and rigorous quality control ensures a quality product.

STANDARDS

Applicable Timber Standards are NZS 3603 and NZS 3604:2011.

GALVANISING

All components are hot dip galvanised to AS/NZS 4680 to 600g/m². (Excludes Bonza Borer).

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.

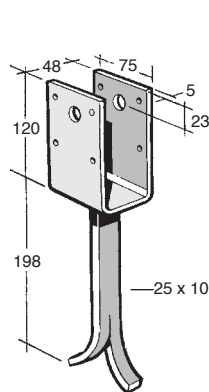
AVAILABILITY

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

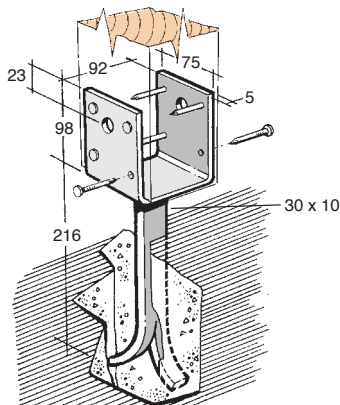
END USE

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

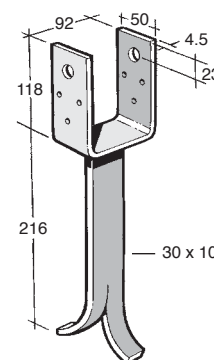
POST AND BEARER BRACKETS



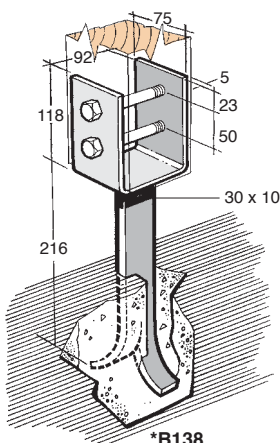
B132
(Nails Included Only)



B134
(Nails Included Only)

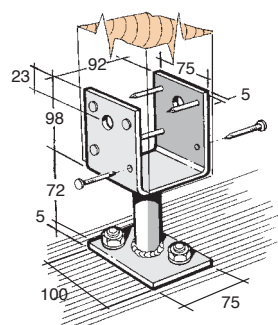


***B135**
(Nails & Bolt Included)

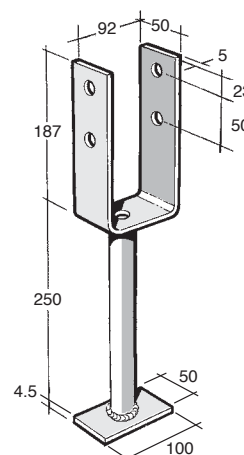


***B138**
(Bolts Included)

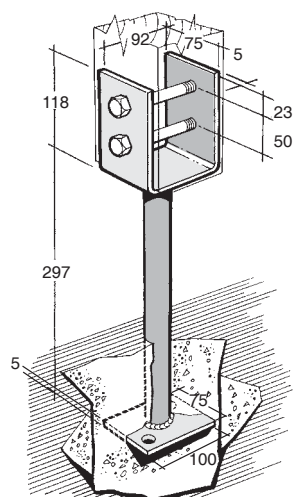
*Similar also available in stainless steel 304-2B
Refer to brochure



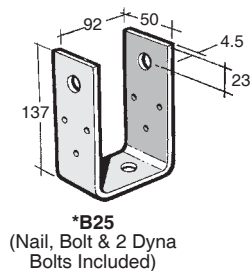
B12
(Nails Included Only)



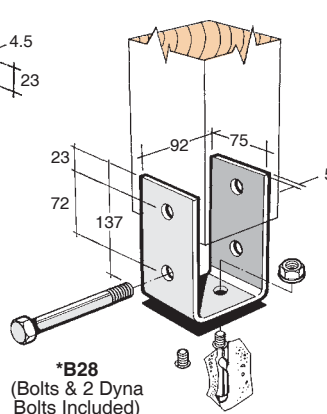
B16
(Bolts Not Included)



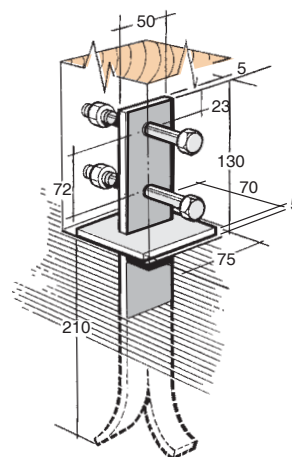
B18
(Bolts Included)



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



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



B195

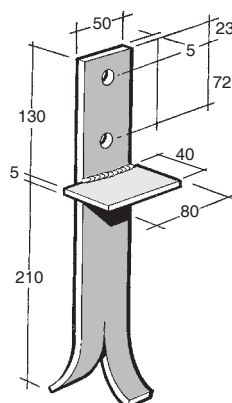
BOLT & NAIL SIZES

FIXING NOTE

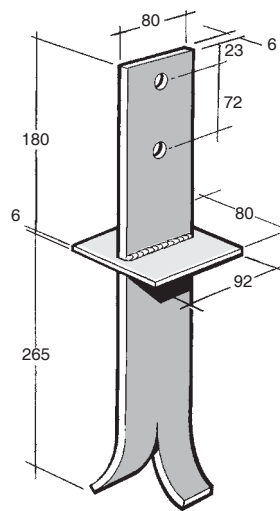
All bolt holes accommodate M12 Bolts unless noted. Nail holes to accommodate 40mm x 3.15Ø F. Head square twisted shank nails. Hot dip galvanised.

BOLTS NOT INCLUDED UNLESS NOTED

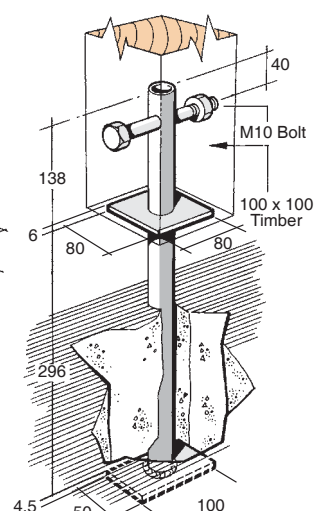
*Similar also available in stainless steel 304-2B. Refer to brochure



B196

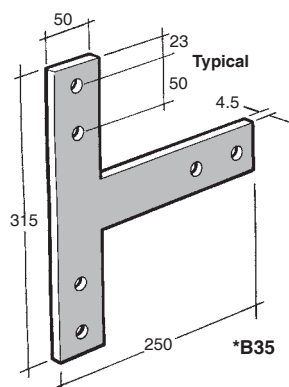


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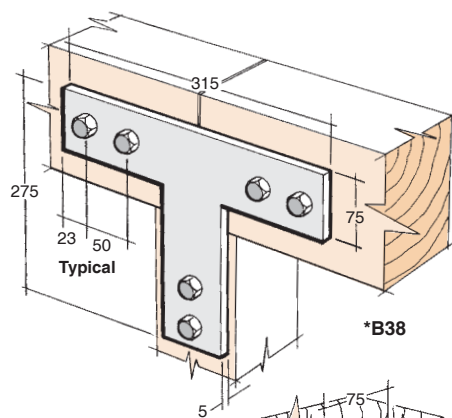


B198

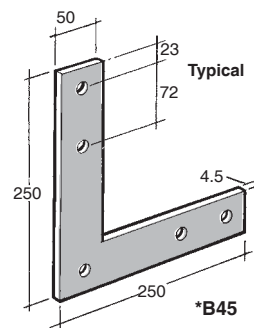
STRAPS



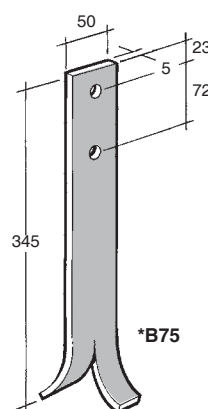
***B35**



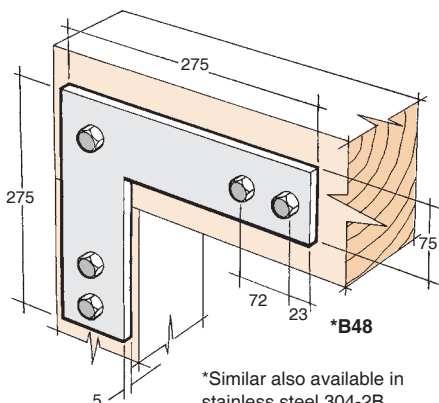
***B38**



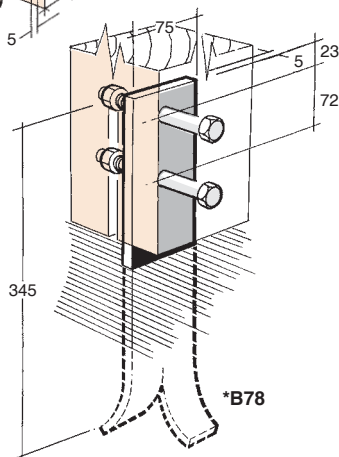
***B45**



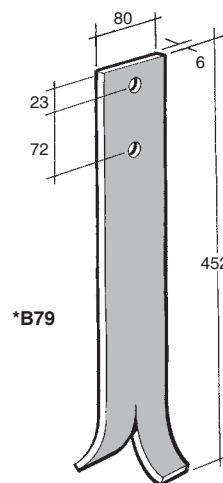
***B75**



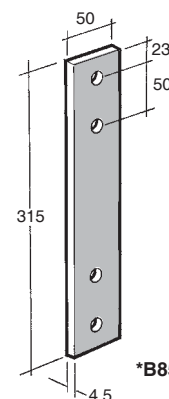
***B48**



***B78**

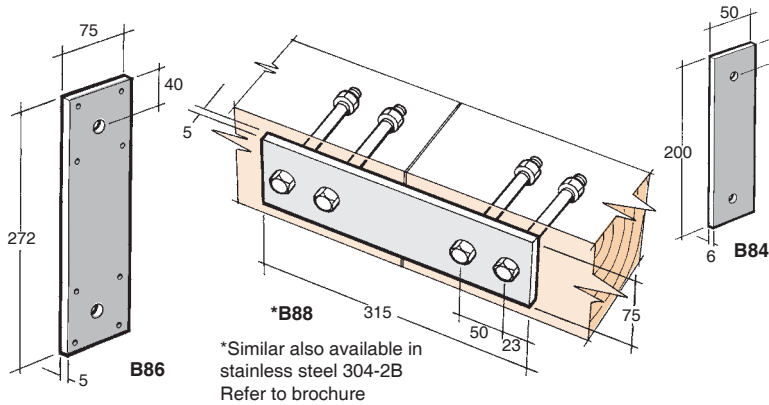


***B79**

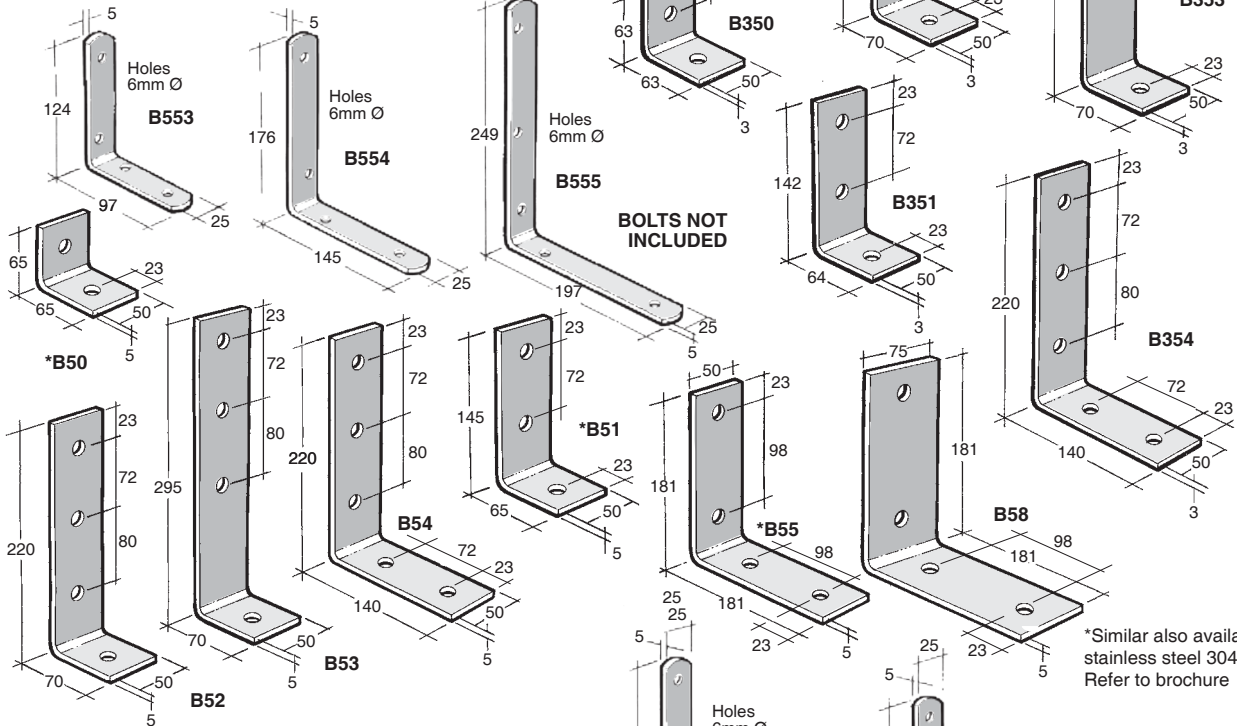
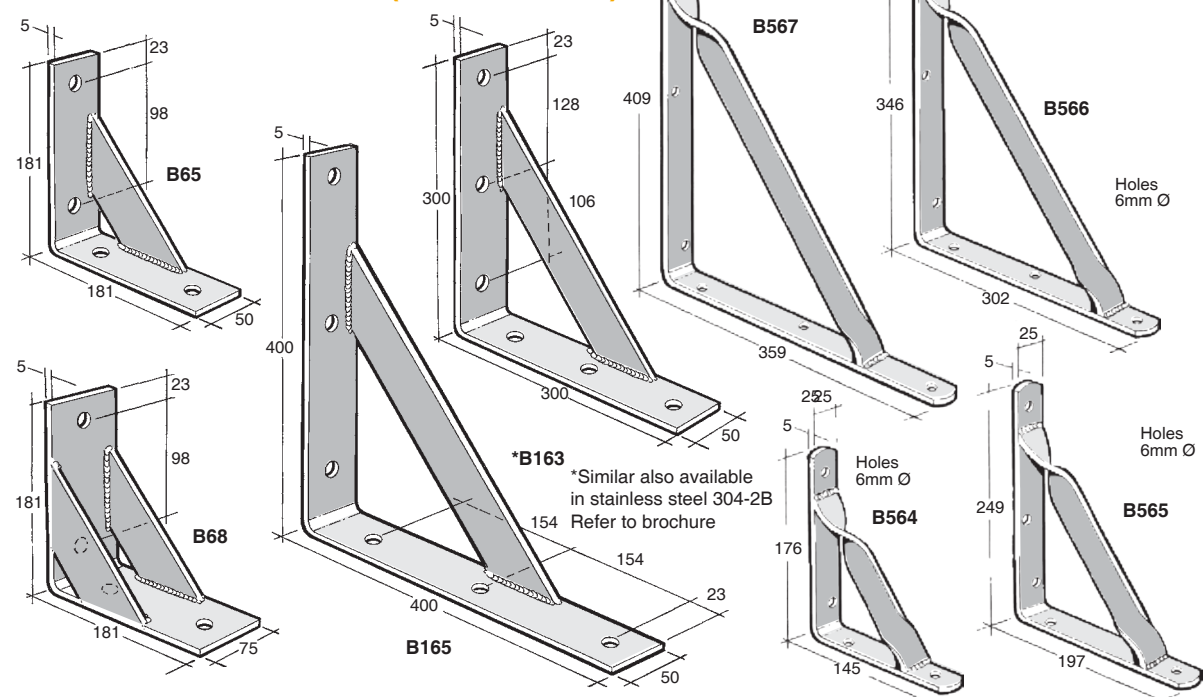


***B85**

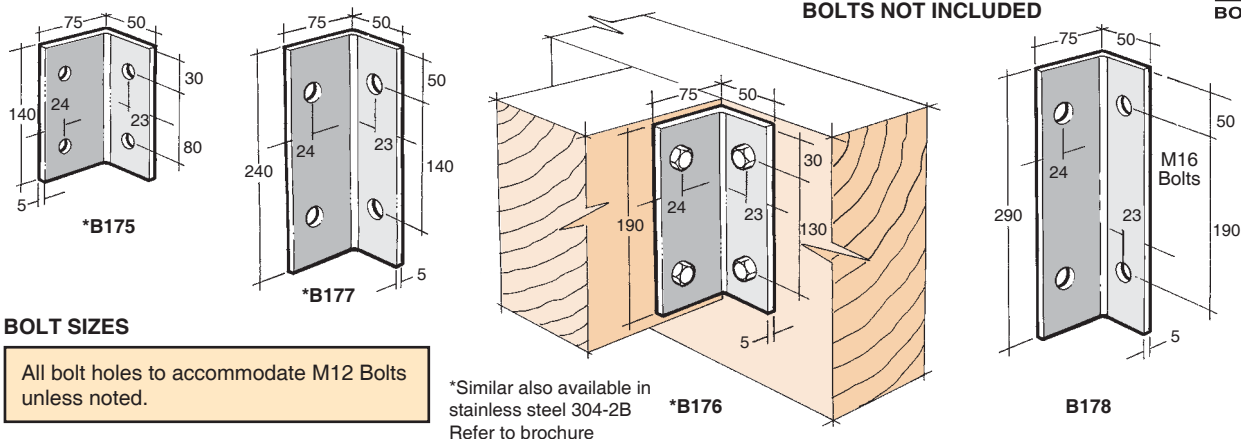
*Similar also available in stainless steel 304-2B. Refer to brochure

**BOLT & NAIL SIZES**

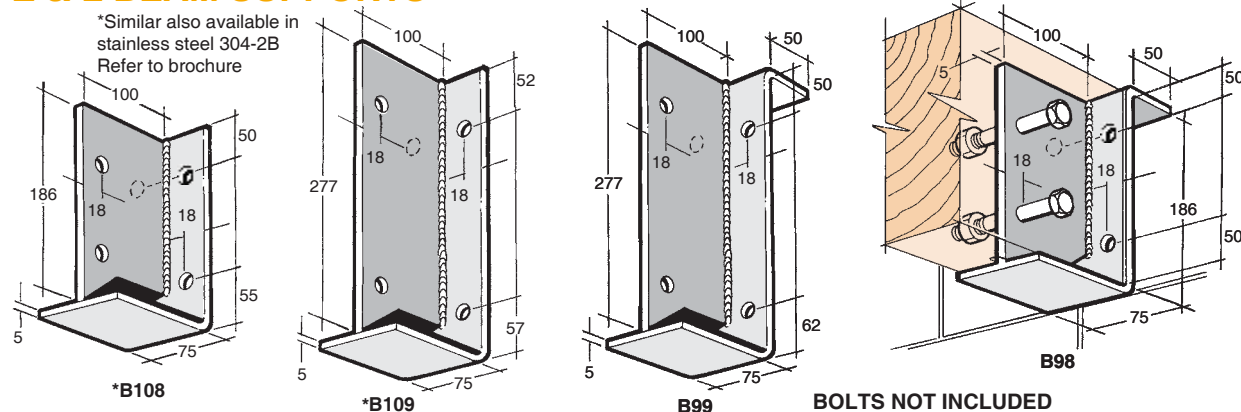
All bolt holes to accommodate M12 Bolts unless noted. Nail holes to accommodate 40mm x 3.15Ø F. Head square twisted shank nails. Hot dip galvanised.

ANGLE BRACKETS (No Gusset)**ANGLE BRACKETS (With Gusset)**

ANGLES

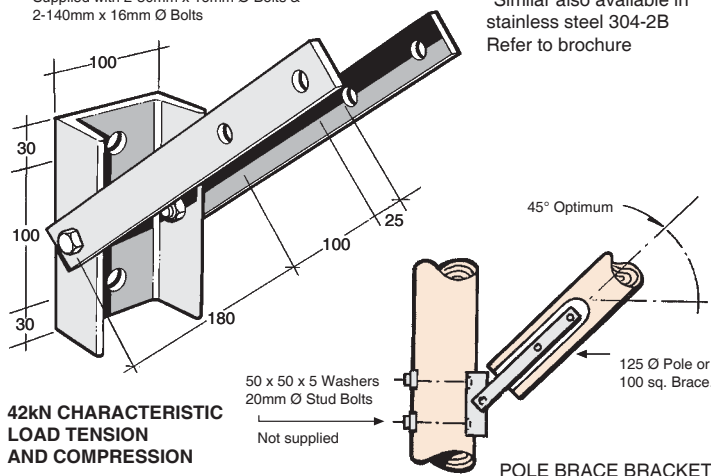


Z & L BEAM SUPPORTS

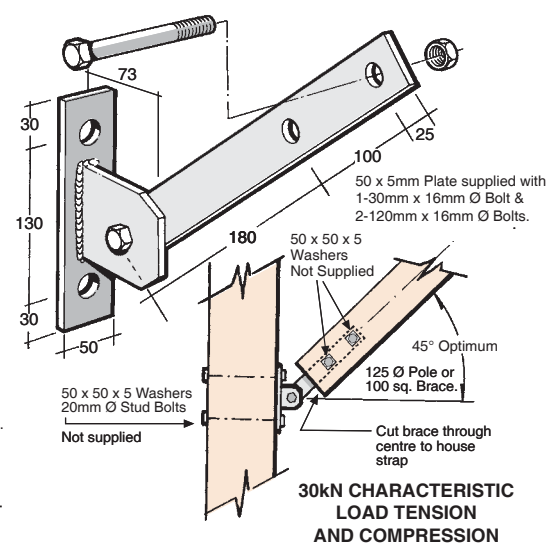


*B155 POLE BRACE BRACKET

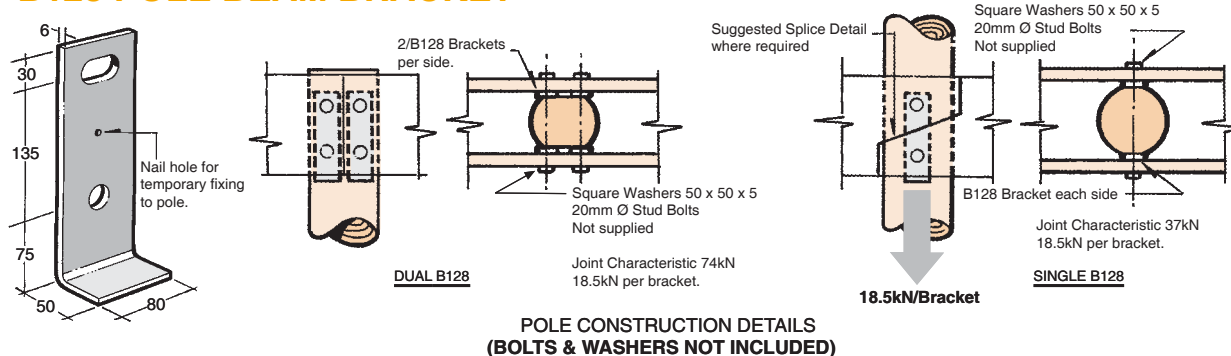
Ex 50 x 5mm Plate 100 x 50 Channel Spacer.
Supplied with 2-30mm x 16mm Ø Bolts &
2-140mm x 16mm Ø Bolts



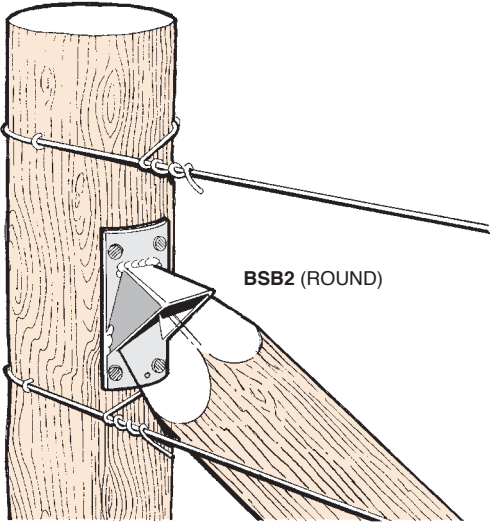
*B145 POLE BRACE BRACKET



*B128 POLE BEAM BRACKET



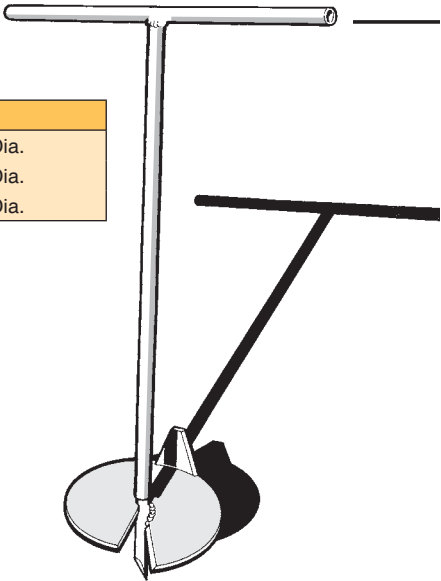
FENCE STAY BRACKET



BSB2 (ROUND)

BONZA BORER

| MODEL | SIZE |
|-------|------------|
| BB150 | 150mm Dia. |
| BB200 | 200mm Dia. |
| BB250 | 250mm Dia. |



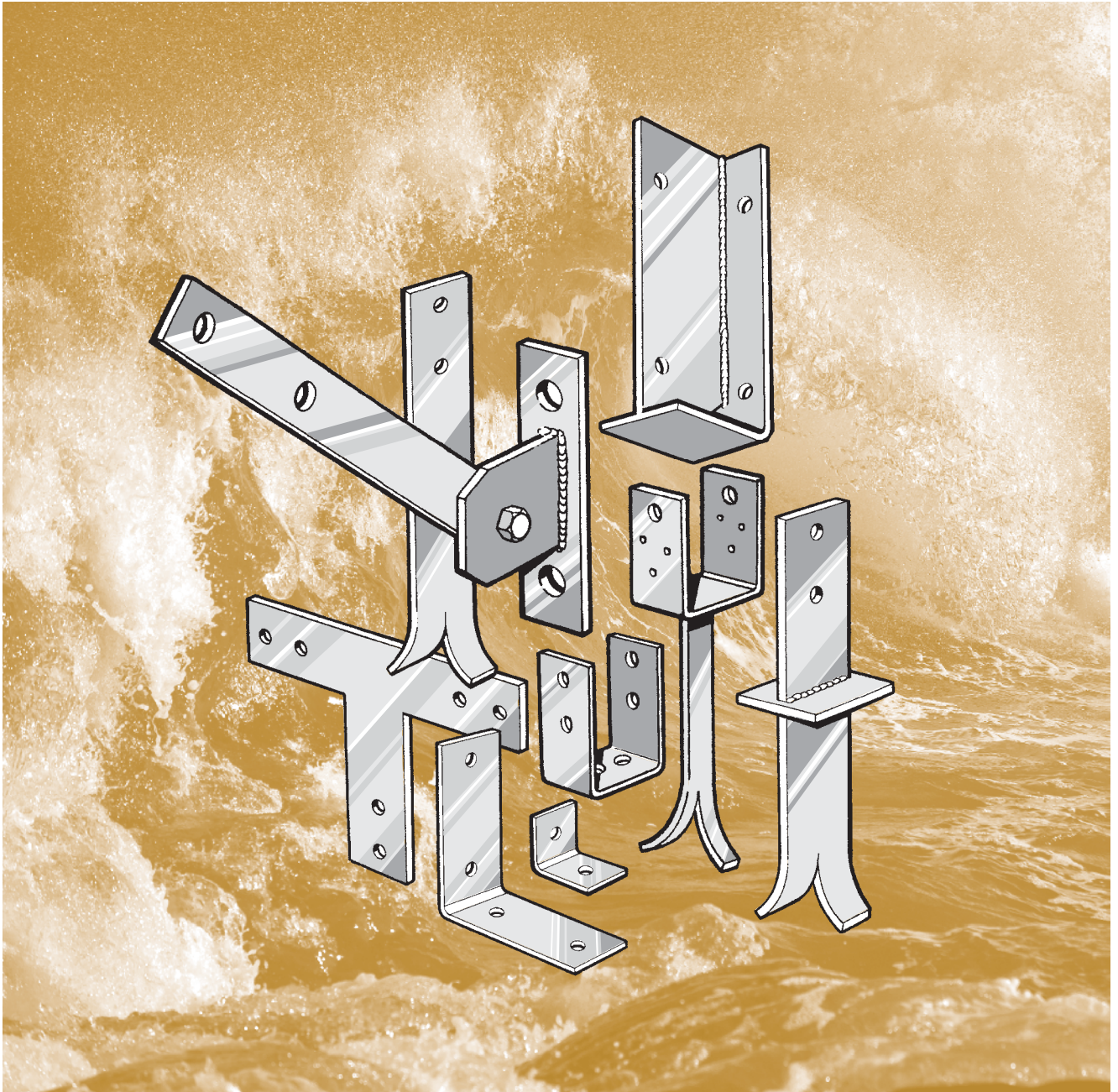


BOWMAC®

01/2017

2. GENERAL

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 range of BOWMAC products. Refer to separate brochure for the Hot Dip Galvanised range of BOWMAC products. |
| STANDARDS | Applicable Timber 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 | <p>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.</p> <p>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.</p> <p>When used, handled and installed in accordance with the above conditions, BOWMAC Stainless Steel brackets meet NZBC Clause B2 for 50 years durability performance requirements.</p> <p>Depending on specific weather exposure and salt spray environments, there may be evidence of 'tea staining' on the surface of Stainless Steel brackets.</p> <p>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.</p> <p>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.</p> |
| CUSTOM PRODUCTS | BOWMAC also manufactures custom-made products to suit specific requirements, using Hot Dip Galvanised Steel and 304 Stainless Steel. 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. |



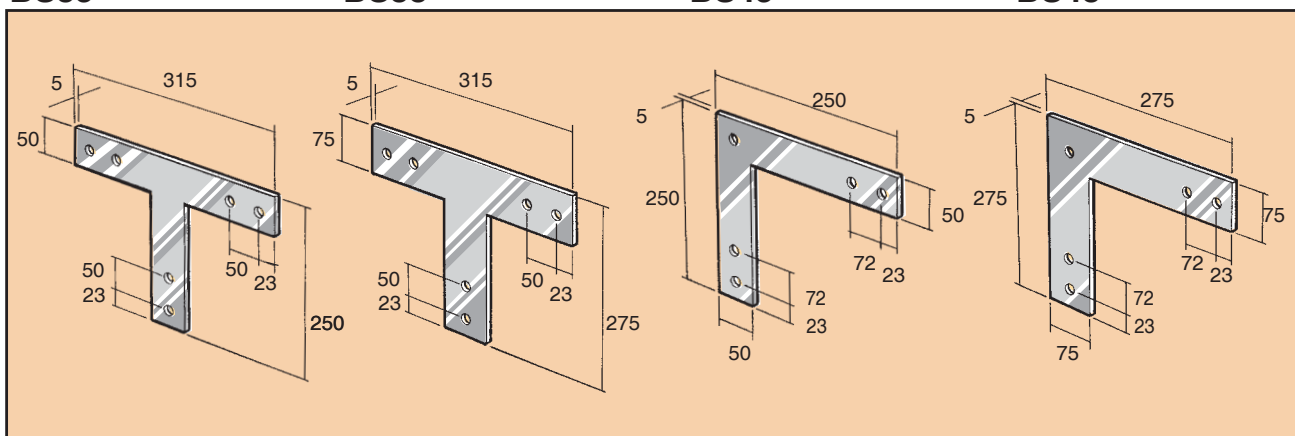
STRAPS

BS35

BS38

BS45

BS48



Holes for M12 Bolts

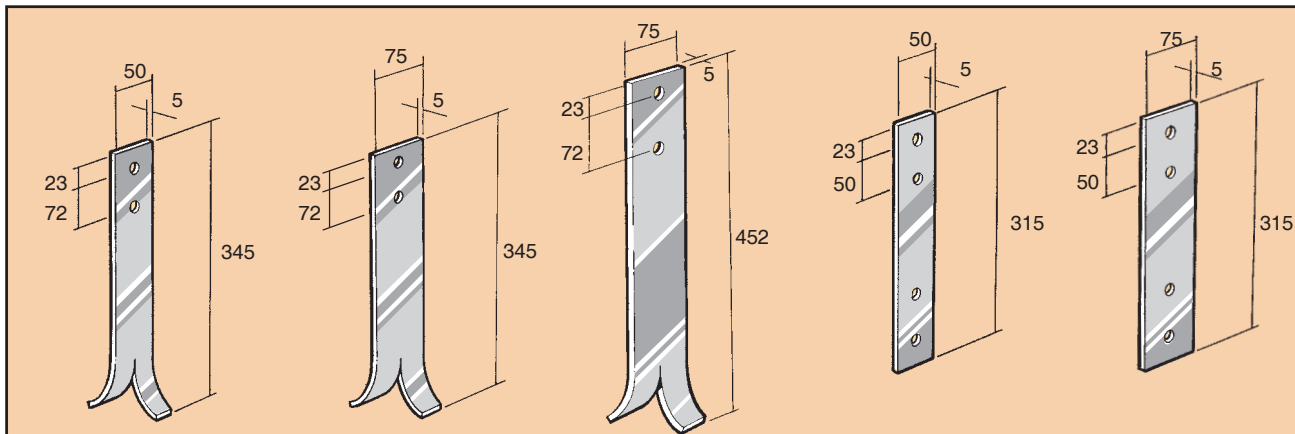
BS75

BS78

BS79

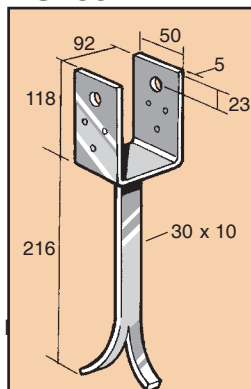
BS85

BS88

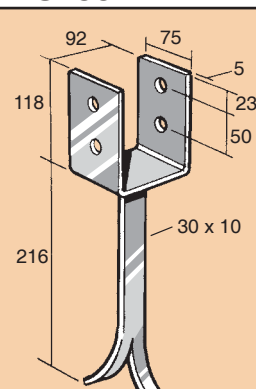


Holes for M12 Bolts

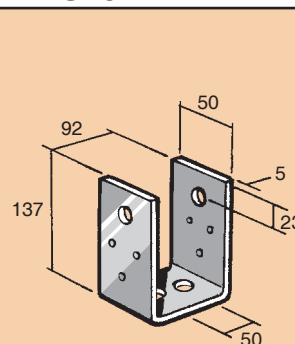
POST AND BEARER BRACKETS

BS135


M12 Bolt and Nails Included

BS138


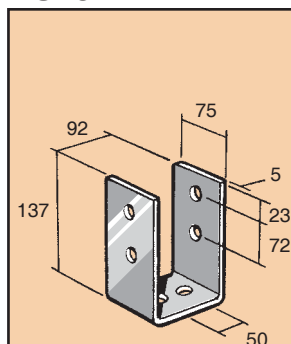
2 - M12 Bolts Included

BS25


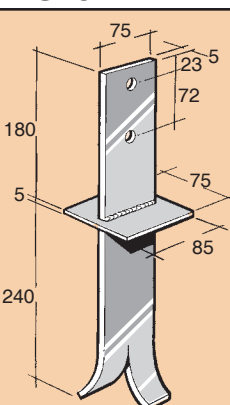
M12 Bolt and Nails Included

POST AND BEARER BRACKETS

POLE BRACKET

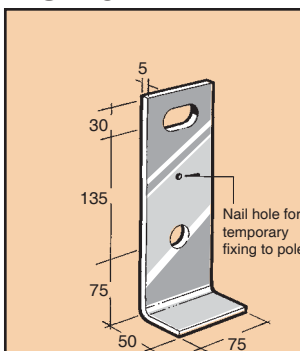
BS28


2 - M12 Bolts Included

BS197


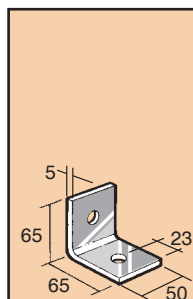
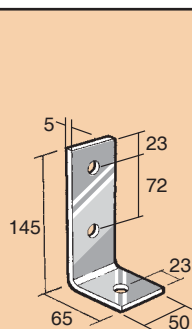
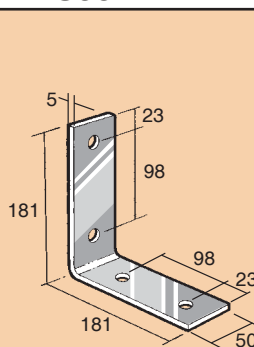
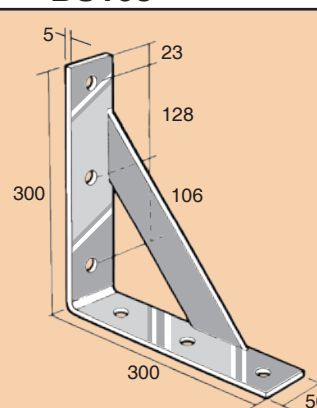
Holes for M12 Bolts

**Bolts not included
unless specified**

BS128


Holes for M20 Bolts

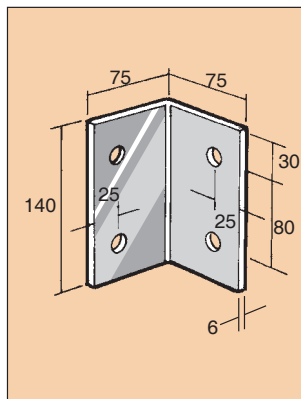
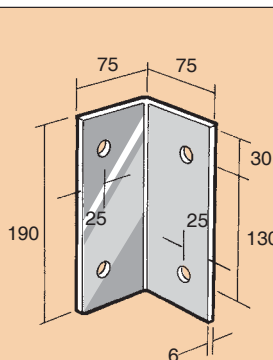
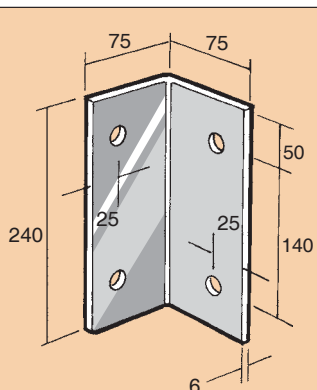
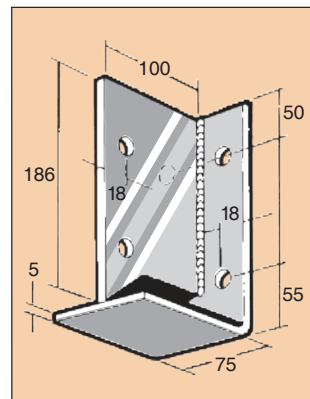
ANGLE BRACKETS

BS50

BS51

BS55

BS163


All Holes for M12 Bolts

ANGLES

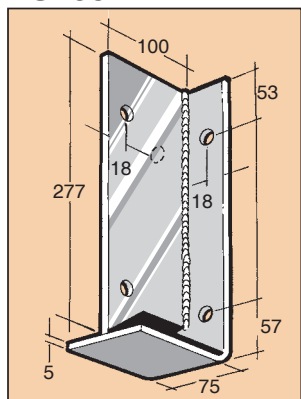
BEAM SUPPORTS

BS175

BS176

BS177

BS108


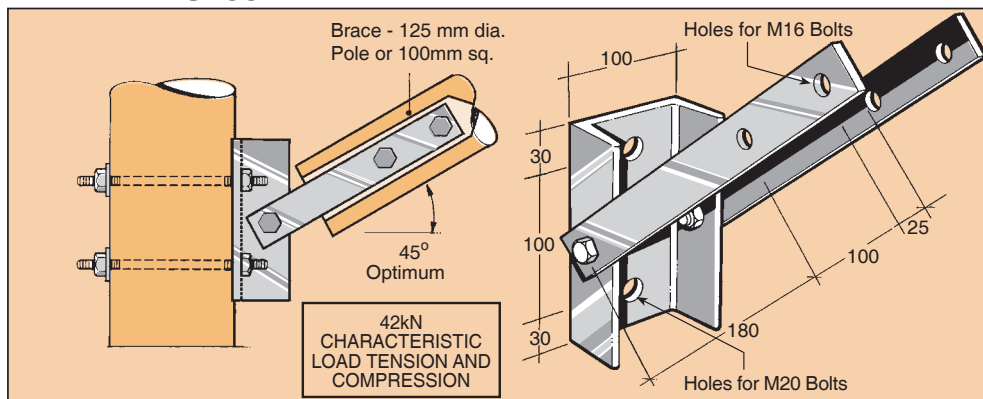
All Holes for M12 Bolts

BEAM SUPPORTS

POLE BRACE BRACKET

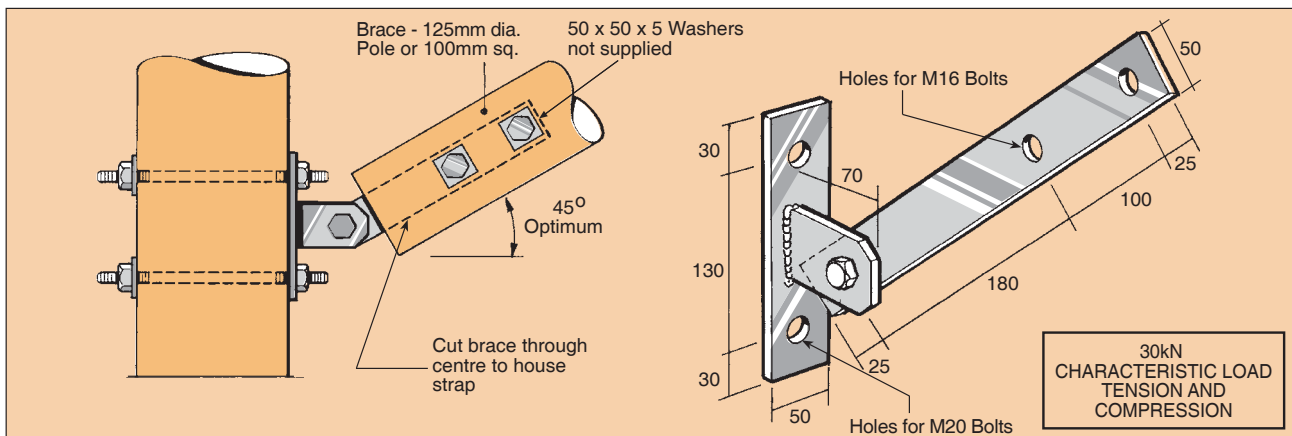
BS109


All Holes for M12 Bolts

BS155


2 – M16 x 30mm Assembly Bolt only supplied

POLE BRACE BRACKET

BS145


1 – M16 x 30mm Assembly Bolt only supplied

January 2018

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 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.

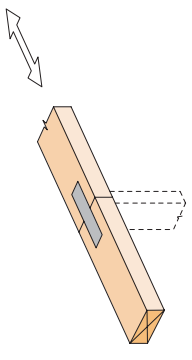
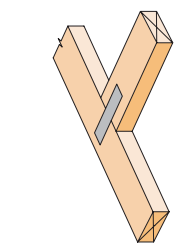
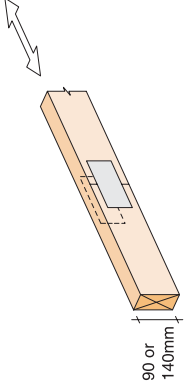
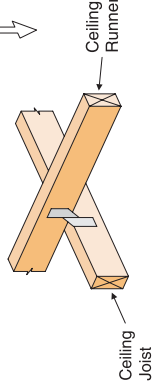
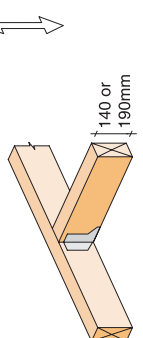
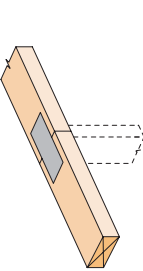
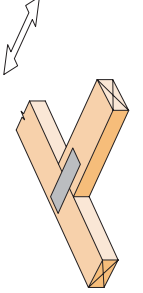
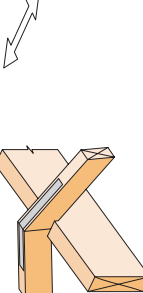
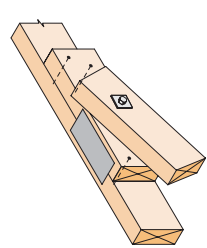
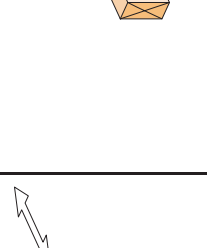
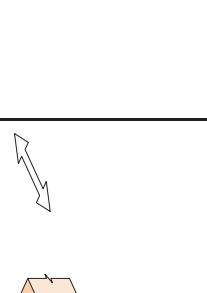


EASY-FIX[®]

01/2017



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 |  | Top Plate Joint |  | Hip Rafter & Ridge Board Joint |  |
| | Single Tylok 6T5 or Single Strap Nail Ref. Fig. 8.15 NZS 3604:2011 | Single Tylok 6T5 Ref. Fig. 8.16 NZS 3604:2011 | Single Tylok 6T5 Ref. Fig. 8.16 NZS 3604:2011 | 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 |  | Top Plate Joint over Stud |  | Top Plate Joint |  |
| | JH47 x 120 Joist Hanger with 12 x 30mm x 3.15 dia. nails (3 per flange) Ref. Fig. 7.7 NZS 3604:2011 | Single Tylok 6T10 or Single PLATE-LOK Ref. Fig. 8.15 NZS 3604:2011 | Single Tylok 6T10 or Single PLATE-LOK Ref. Fig. 8.16 NZS 3604:2011 | Single Tylok 6T10 or Single PLATE-LOK 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 |  | Bearer Joint over Pile |  | Bearer Joint over Pile |  |
| | 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 | Single Nailon Plate 1mm x 110 x 160mm with 12 x 30mm x 3.15 dia. nails each end & 4 x 100mm skew nails Ref. Fig. 6.19 NZS 3604:2011 | Single Nailon Plate 1mm x 110 x 160mm with 12 x 30mm x 3.15 dia. nails each end & 4 x 100mm skew nails Ref. Fig. 6.19 NZS 3604:2011 | Single Nailon Plate 1mm x 110 x 160mm with 12 x 30mm x 3.15 dia. nails each end & 4 x 100mm skew nails Ref. Fig. 6.19 NZS 3604:2011 | | |
| | | | | | | |



SCAN FOR
SPECIFICATION
VIDEO

<https://vimeo.com/117350347>

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

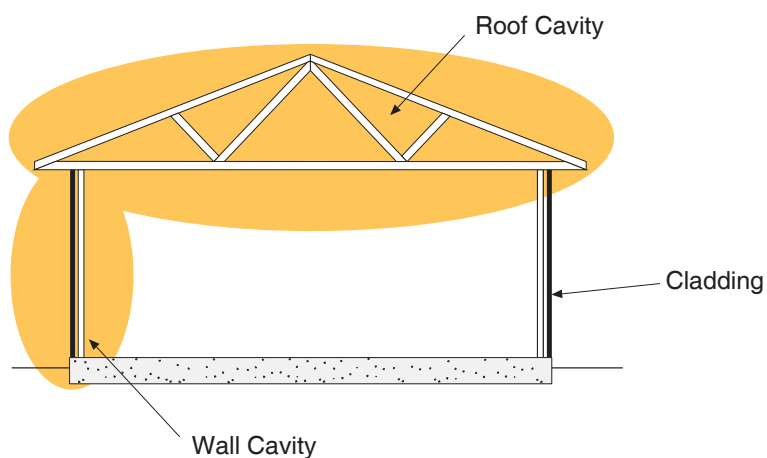
ALTERNATIVE SOLUTION TO TABLE 4.1

NZS 3604:2011

| Zones | Fixings | Environment | Product Option |
|---|---|--|---|
| All Zones | Nail plates and timber connectors | Closed | GANG-NAIL and LUMBERLOK Standard Zinc Coated Product ⁽¹⁾ |
| | All other structural fixings | | 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 7000mm ² /m ² or less | LUMBERLOK Hot Dip Galvanised ⁽⁴⁾ BOWMAC Hot Dip Galvanised ⁽³⁾ |
| | | Exposed Subfloors vented 7000mm ² /m ² 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⁾ |
| | | | |
| <p>1. All GANG-NAIL, LUMBERLOK and BOWMAC product complies with Table 4.2 NZS 3604:2011.</p> <p>2. LUMBERLOK and BOWMAC Stainless Steel product is 304 grade. Regular washing and maintenance will positively affect long term appearance of these items.</p> <p>3. BOWMAC Hot Dip Galvanised product is to AS/NZS 4680 to 600g/m²</p> <p>4. LUMBERLOK Hot Dip Galvanised product is to AS/NZS 4680 to 390g/m²</p> | | | |
| <p>NOTES</p> <p>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.</p> <p>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.</p> <p>Supporting documents available for this alternative solution:- Les Boulton and Associates. Materials and Corrosion Consultants Report 00330: Evaluation of Bracket Durability; NZS 3604:1999 and Report 01372: Corrosion of BOWMAC Fixings in Treated Timber. 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.</p> | | | |

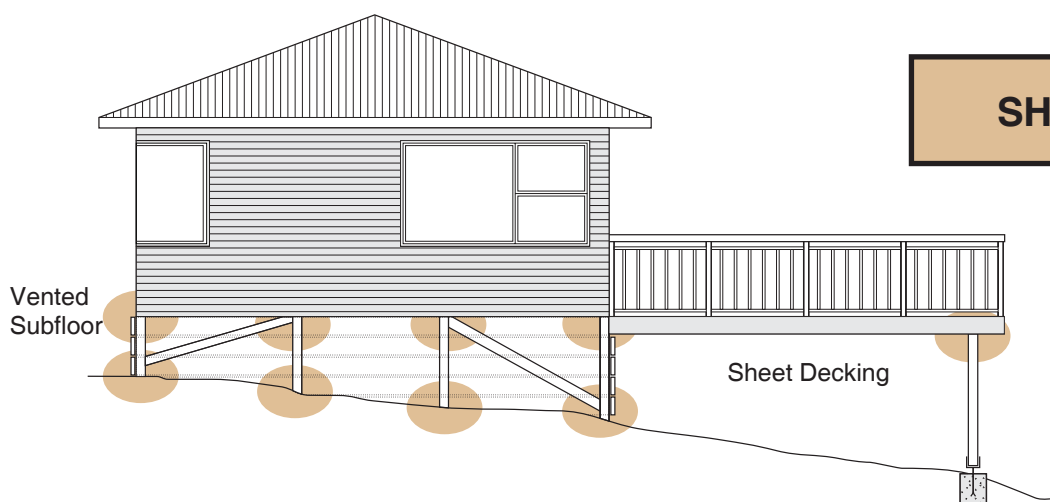
Content from NZS 3604:2011 Table 4.1 adapted by MiTek New Zealand Limited with permission from Standards New Zealand under Copyright Licence 000907. Please see Standard for full details, available from www.standards.co.nz.

DURABILITY FLOW CHART



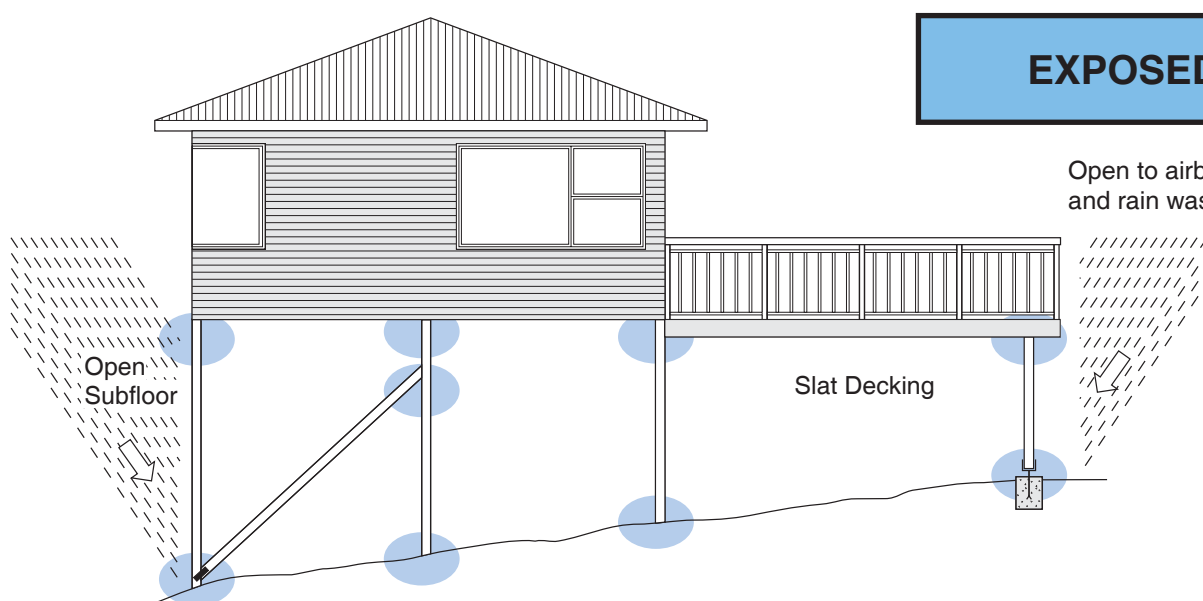
CLOSED

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



SHELTERED

Open to airborne salts, but not rain washed.

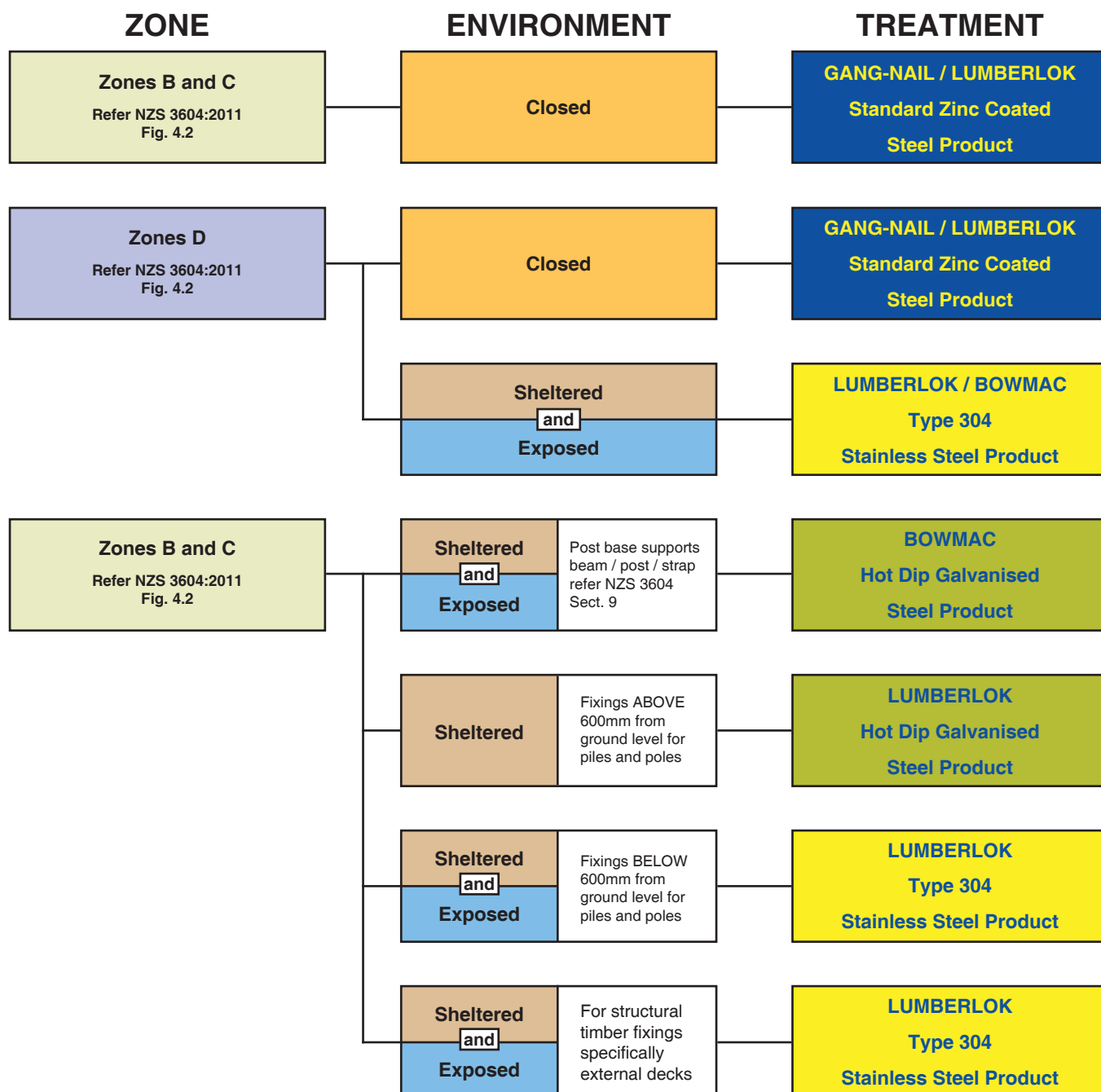


EXPOSED

Open to airborne salts and rain washed.

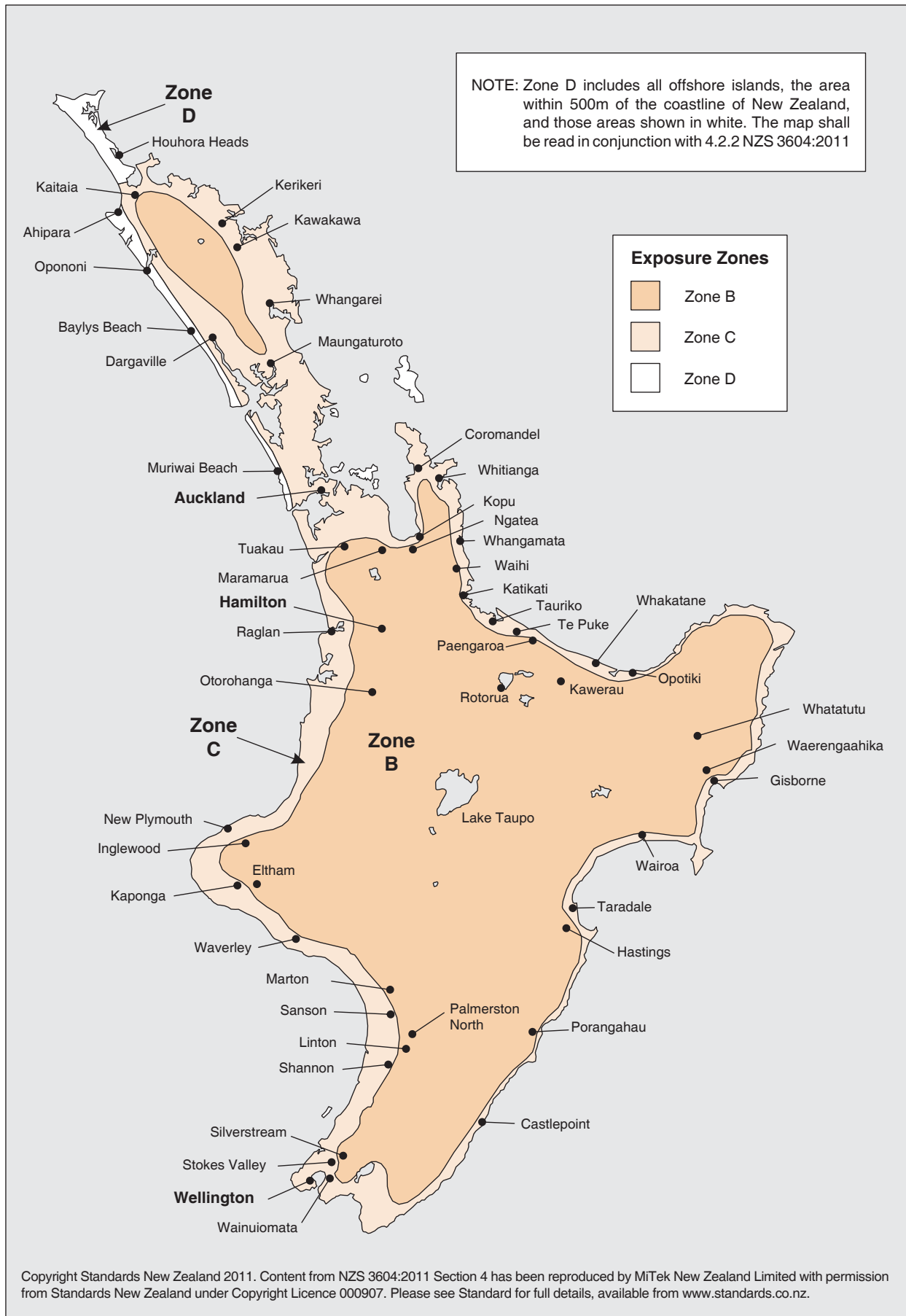
DURABILITY FLOW CHART

4. DURABILITY



Product Key

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



Exposure zone map

SECTION 4 - DURABILITY

NOTE: Zone D includes all offshore islands, the area within 500m of the coastline of New Zealand, and those areas shown in white. The map shall be read in conjunction with 4.2.2 NZS 3604:2011

Exposure Zones

- Zone B
- Zone C
- Zone D

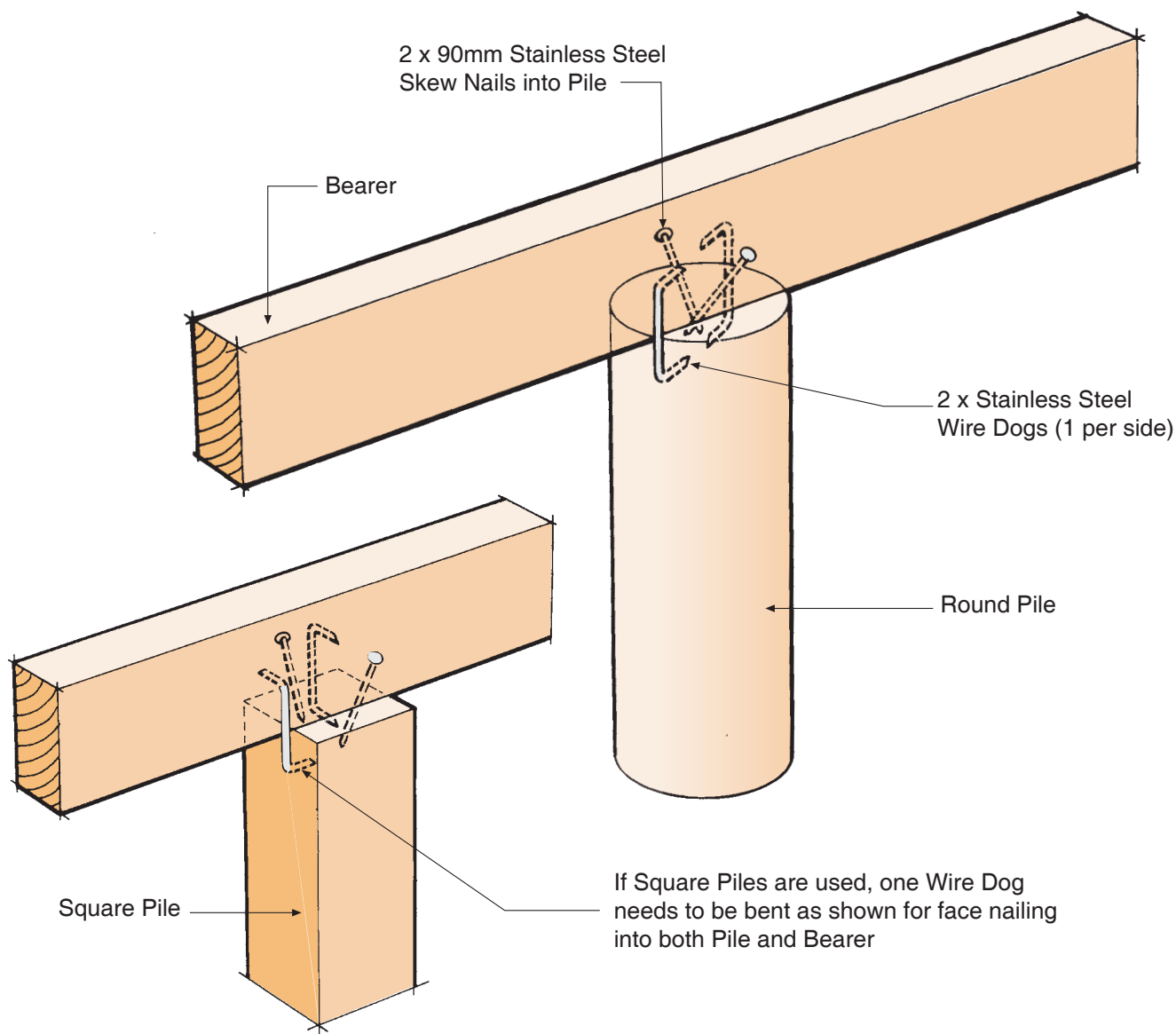


Copyright Standards New Zealand 2011. Content from NZS 3604:2011 Section 4 has been reproduced by MiTek New Zealand Limited with permission from Standards New Zealand under Copyright Licence 000907. Please see Standard for full details, available from www.standards.co.nz.

Exposure zone map

ORDINARY PILE FIXING

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

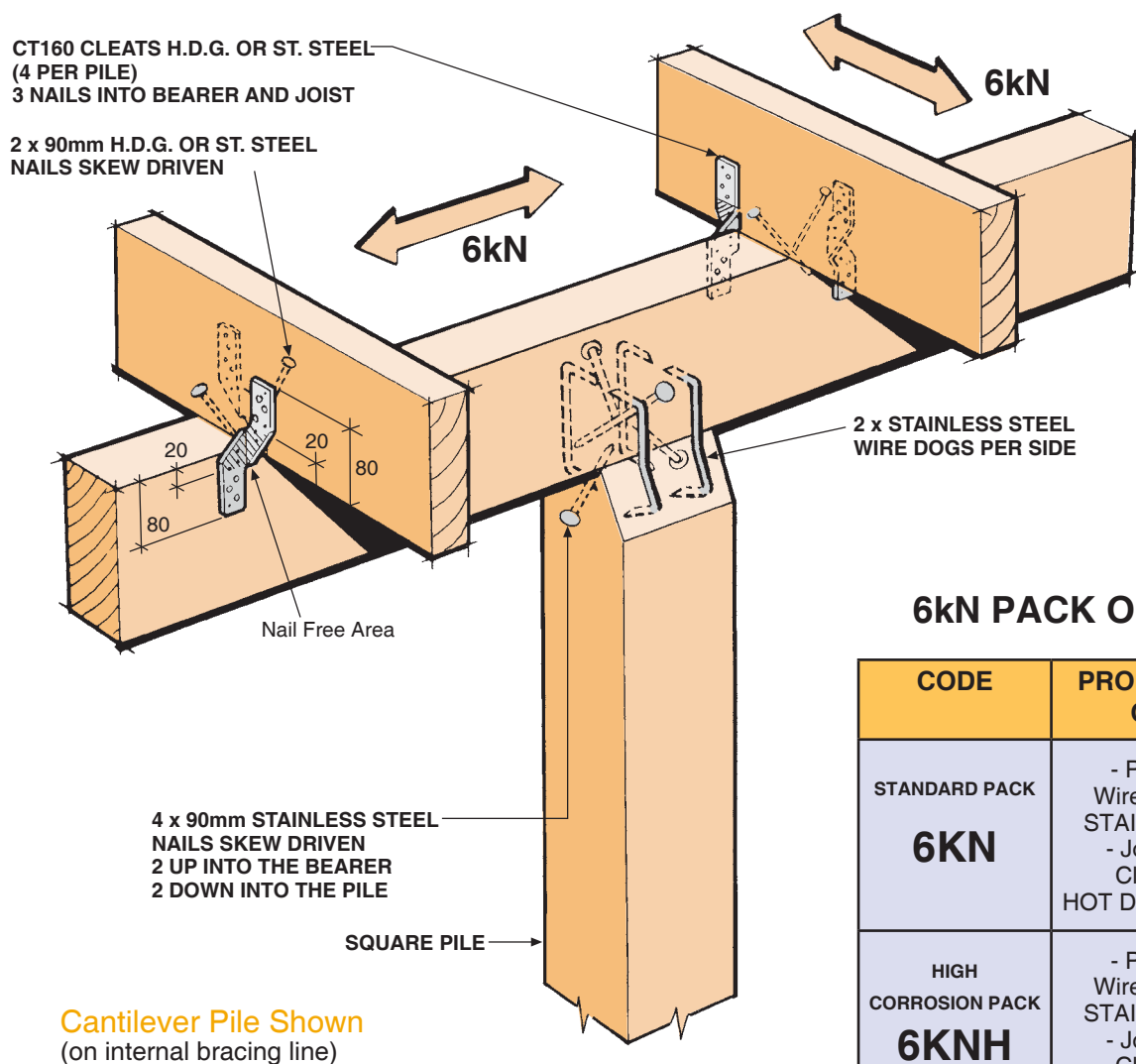


Code: OPF
Packed: 20 x Stainless Steel Wire Dog Staples
 20 x Stainless Steel Nails 90mm x 4 dia.

**Available from leading Builders Supply Merchants
 throughout New Zealand**

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 hogging over cantilever pile



6kN PACK OPTIONS

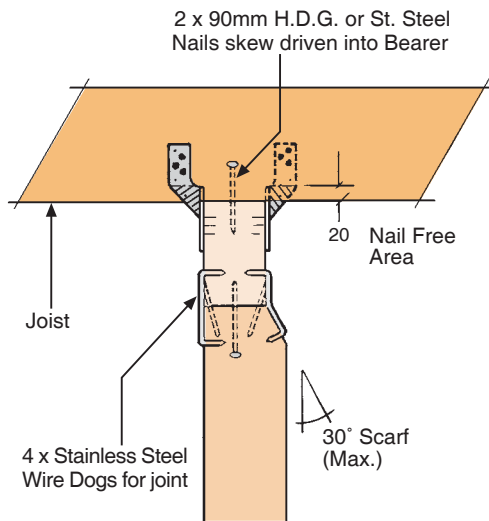
| CODE | PRODUCT FINISH OPTIONS |
|---------------------------------------|---|
| STANDARD PACK 6KN | - Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer Cleats & Nails HOT DIP GALVANISED |
| HIGH CORROSION PACK 6KNH | - Pile to Bearer Wire Dogs & Nails STAINLESS STEEL - Joist to Bearer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

★ See Over For Corrosion Table.

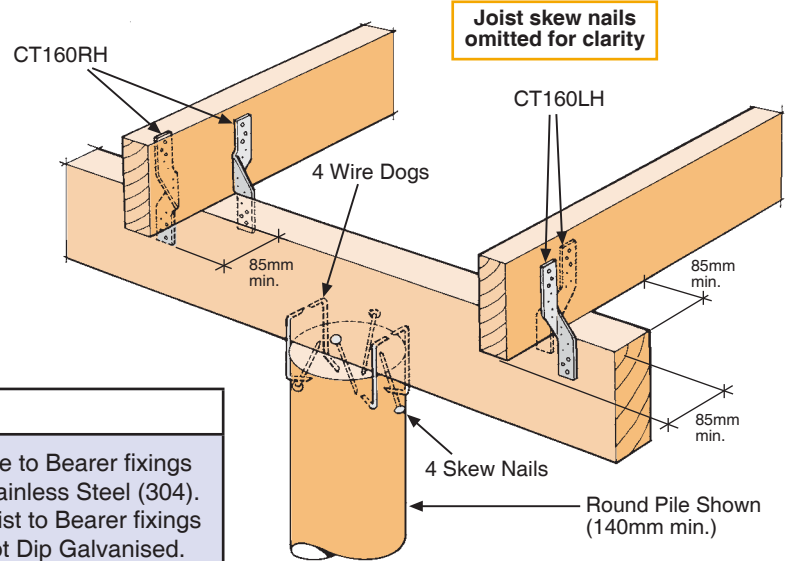
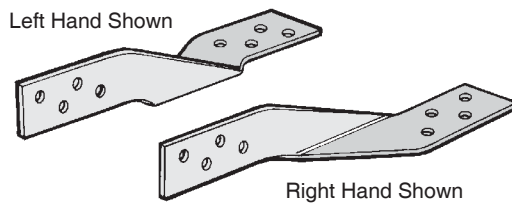
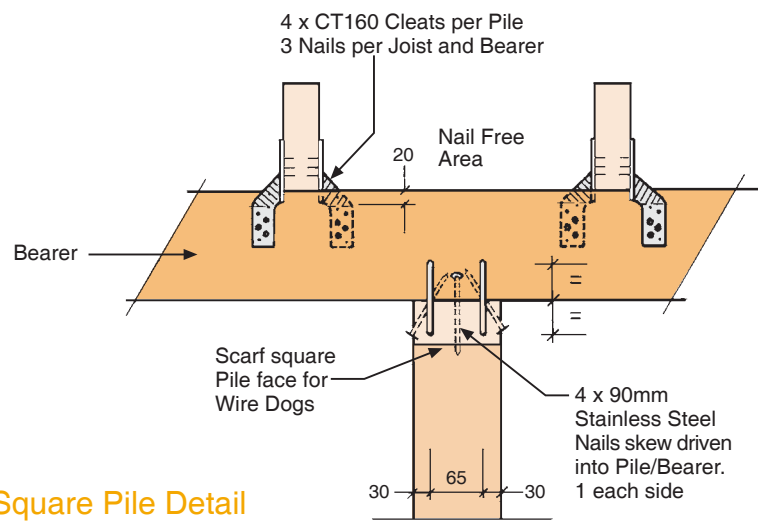


SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117351500>



Square Pile Detail



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. St. Steel Nails (6KN Pack only)
 - 8 x 90mm x 4 dia. St. Steel Nails (6KNH Pack only)

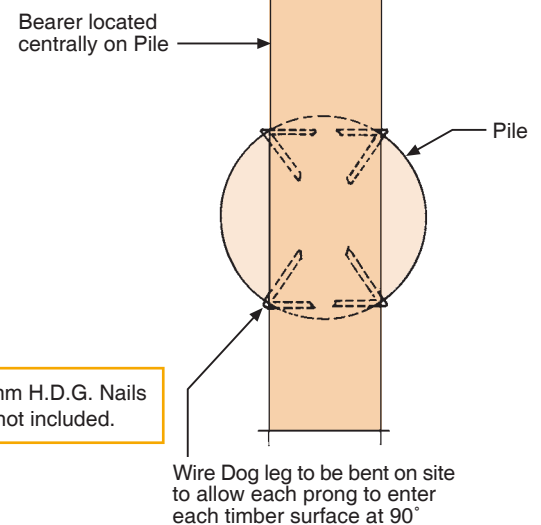
6kN Pile Set Contents

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
- 90mm St. Steel Nails to suit 4 - 6KN pack
- 8 - 6KNH pack

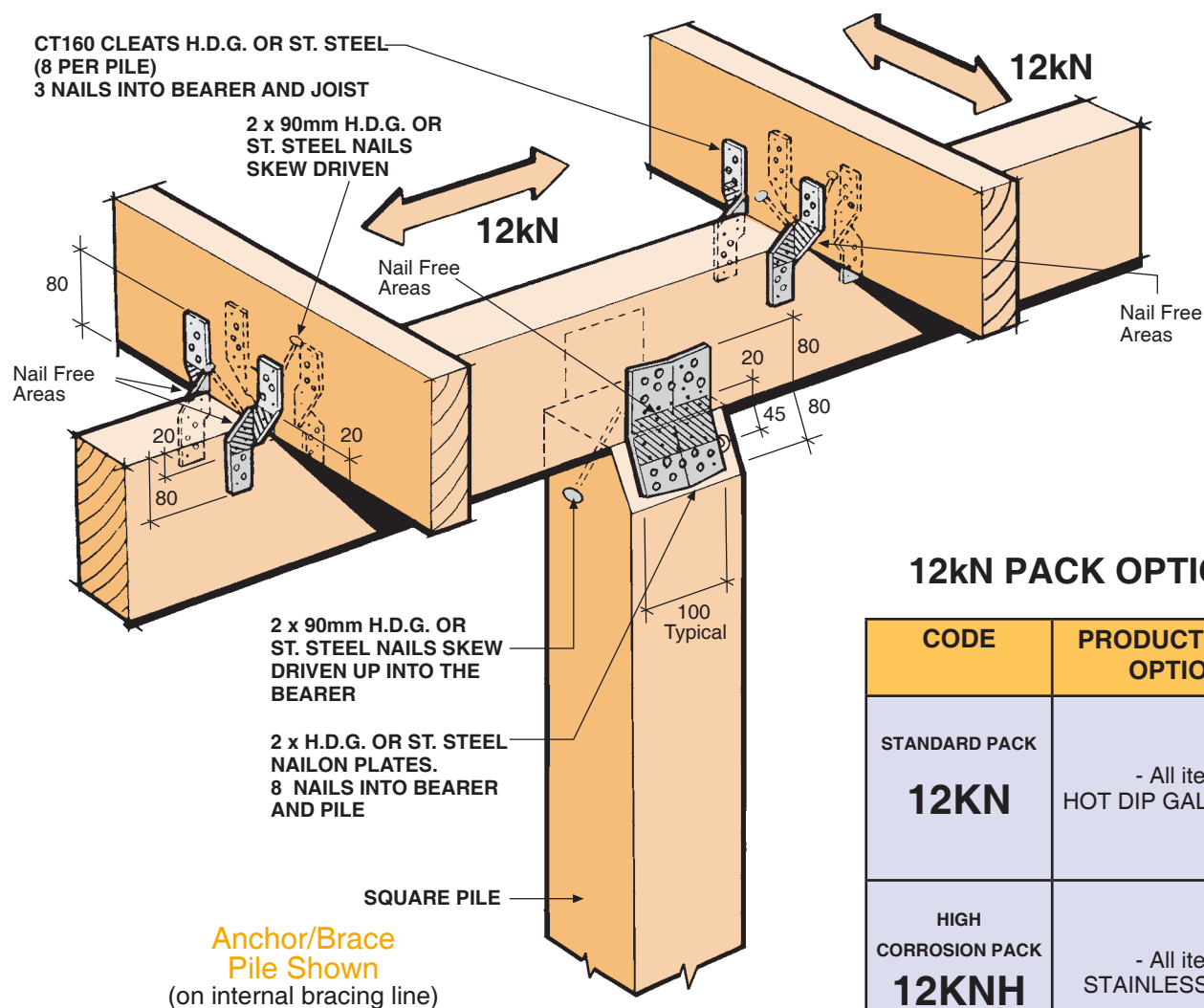
Refer front page for Product Finish Options

External Bracing Line



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 nogging over braced or anchor pile



12kN PACK OPTIONS

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

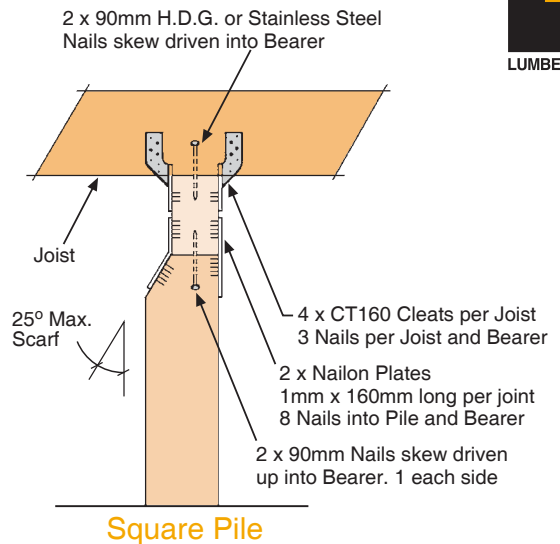
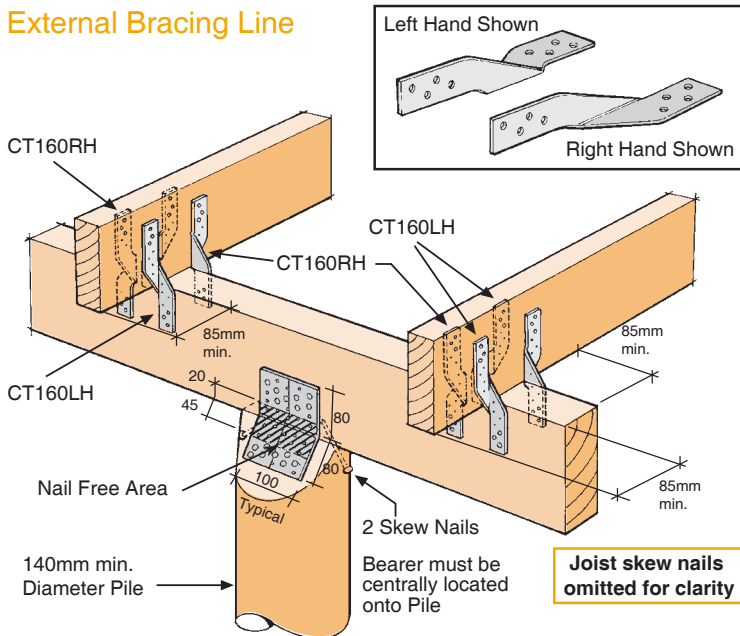
★ See Over For Corrosion Table.



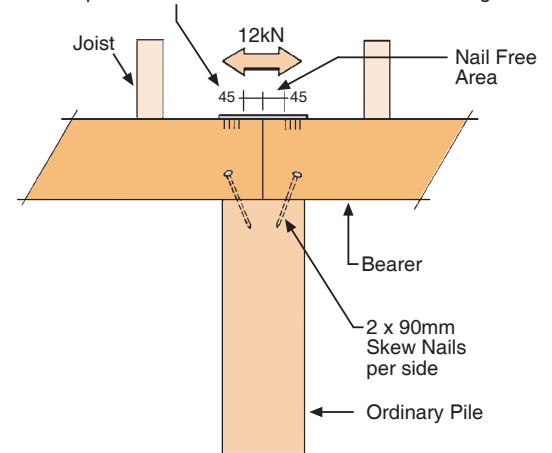
SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117350344>

External Bracing Line



Nailon Plate 1mm x 160mm long (ex 12kN Pack)
8 Nails per end. No Nails within 18mm of timber edge

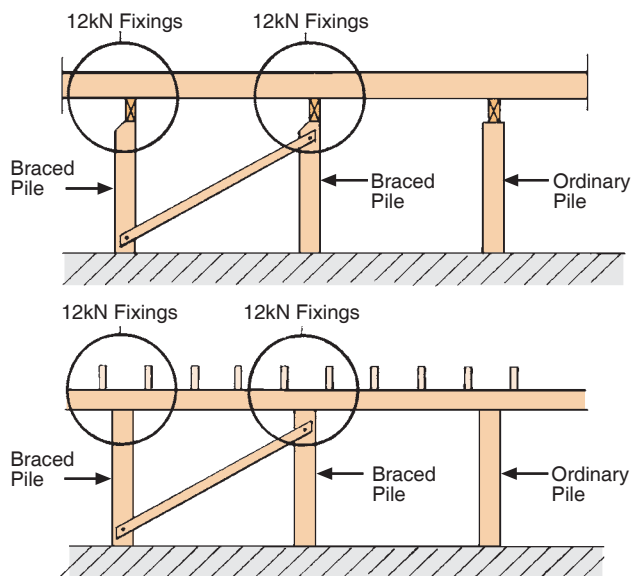


12kN Bearer Splice

Clause 6.12.7.2
NZS 3604:2011

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). |



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 (Typical) 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. St. Steel Nails (12KNH Pack only)

12kN Pile Set Contents

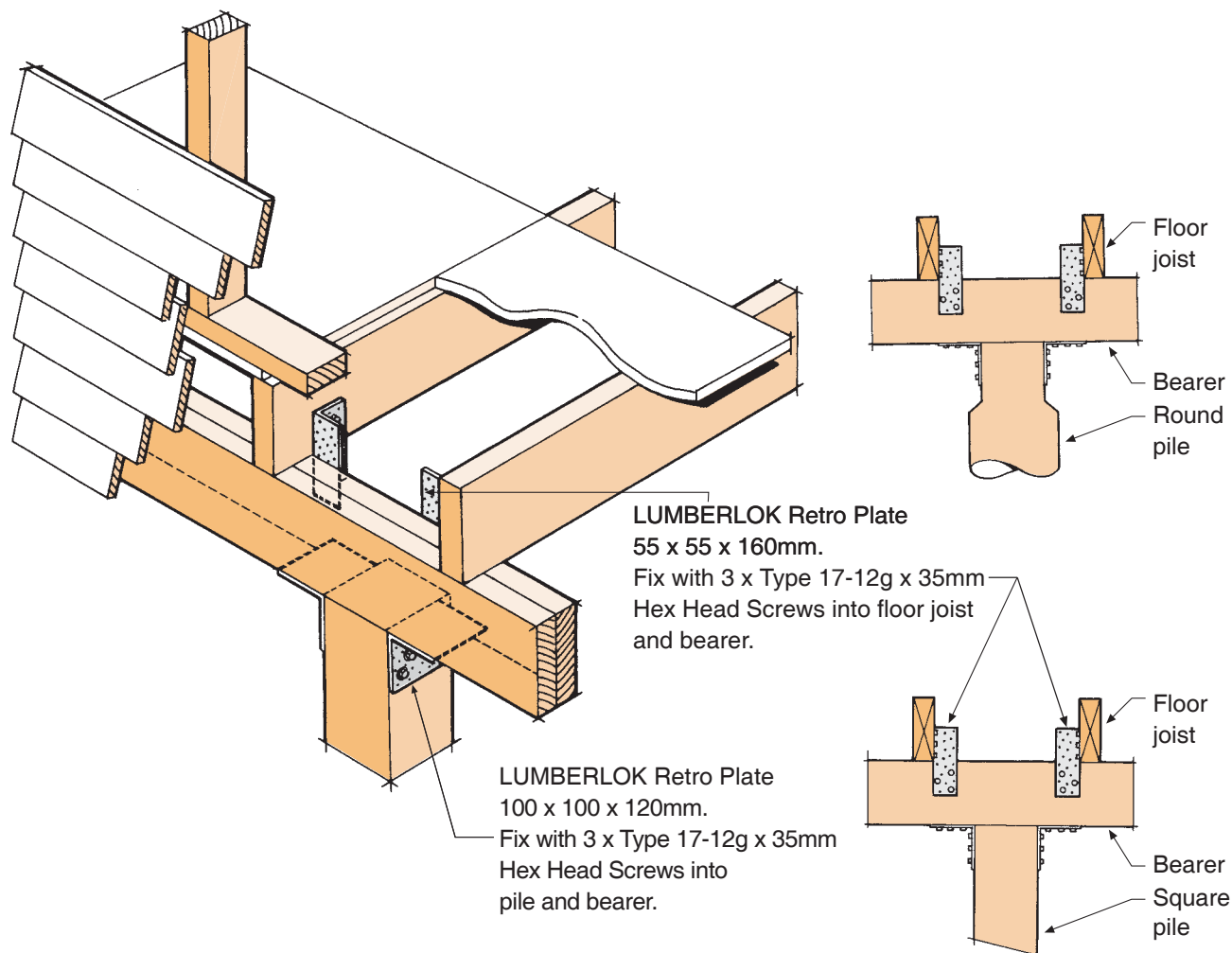
Each set represents 1 x 12kN Pile Fixing
(packed 4 sets per carton)
2 x Nailon Plates 160mm long
8 x CT160 Cleats
80 x 45mm x 3.55 dia. Spiral Nails
90mm x 4 dia. St. Steel Angular Groove 6 - 12KNH Pack

Refer front page
for Product
Finish Options

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

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



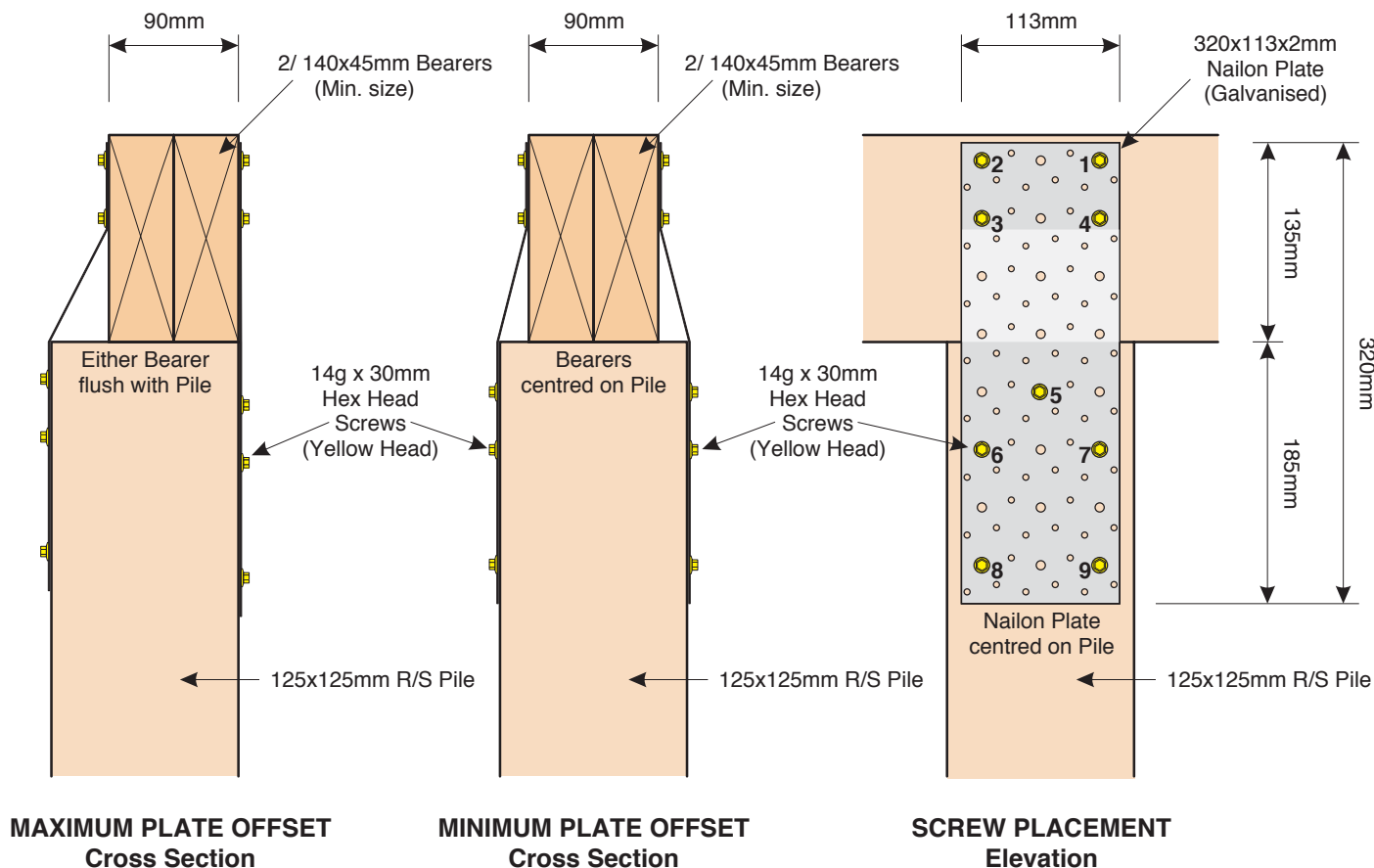
**SCAN FOR
INSTALLATION
VIDEO**

<https://vimeo.com/117351501>

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)



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



SCAN FOR
INSTALLATION
VIDEO

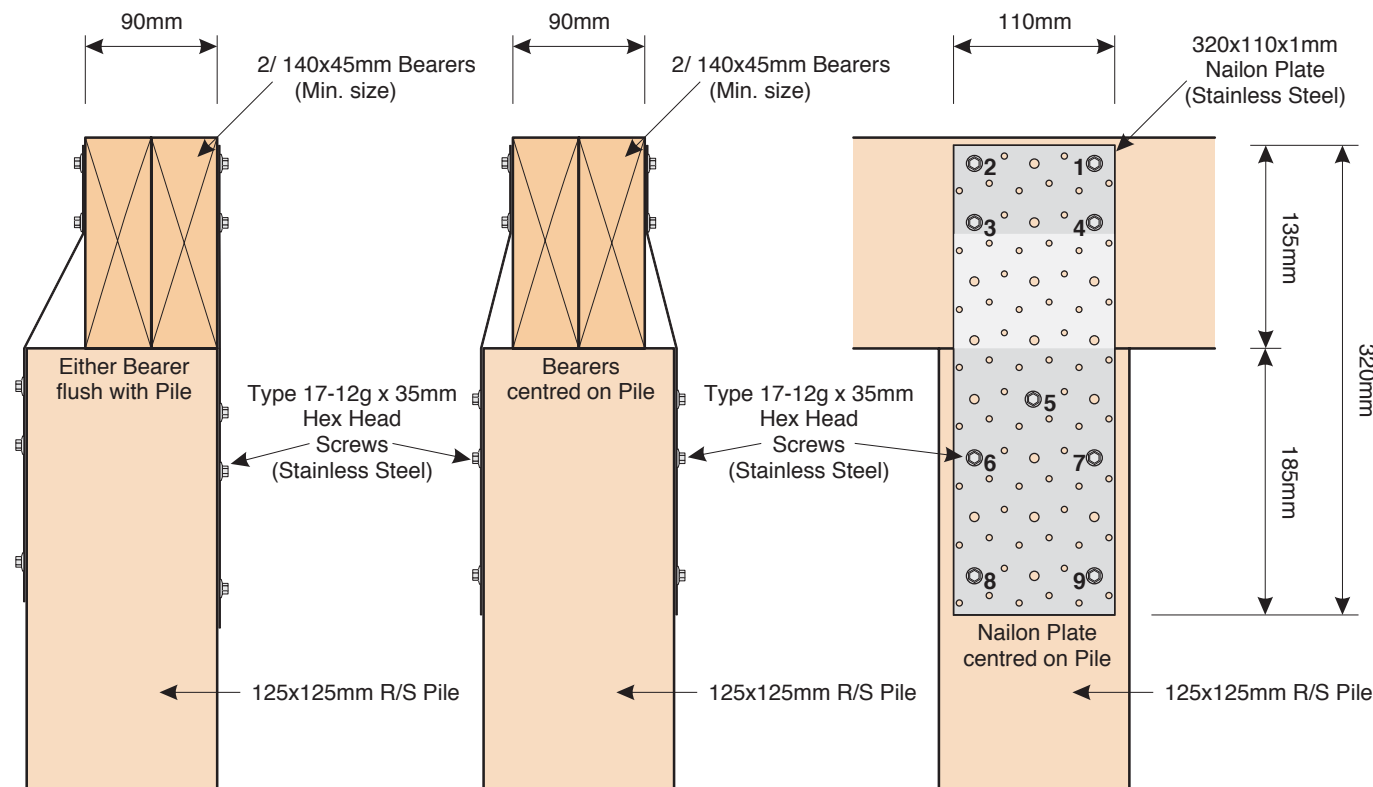
<https://vimeo.com/96667062>

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.

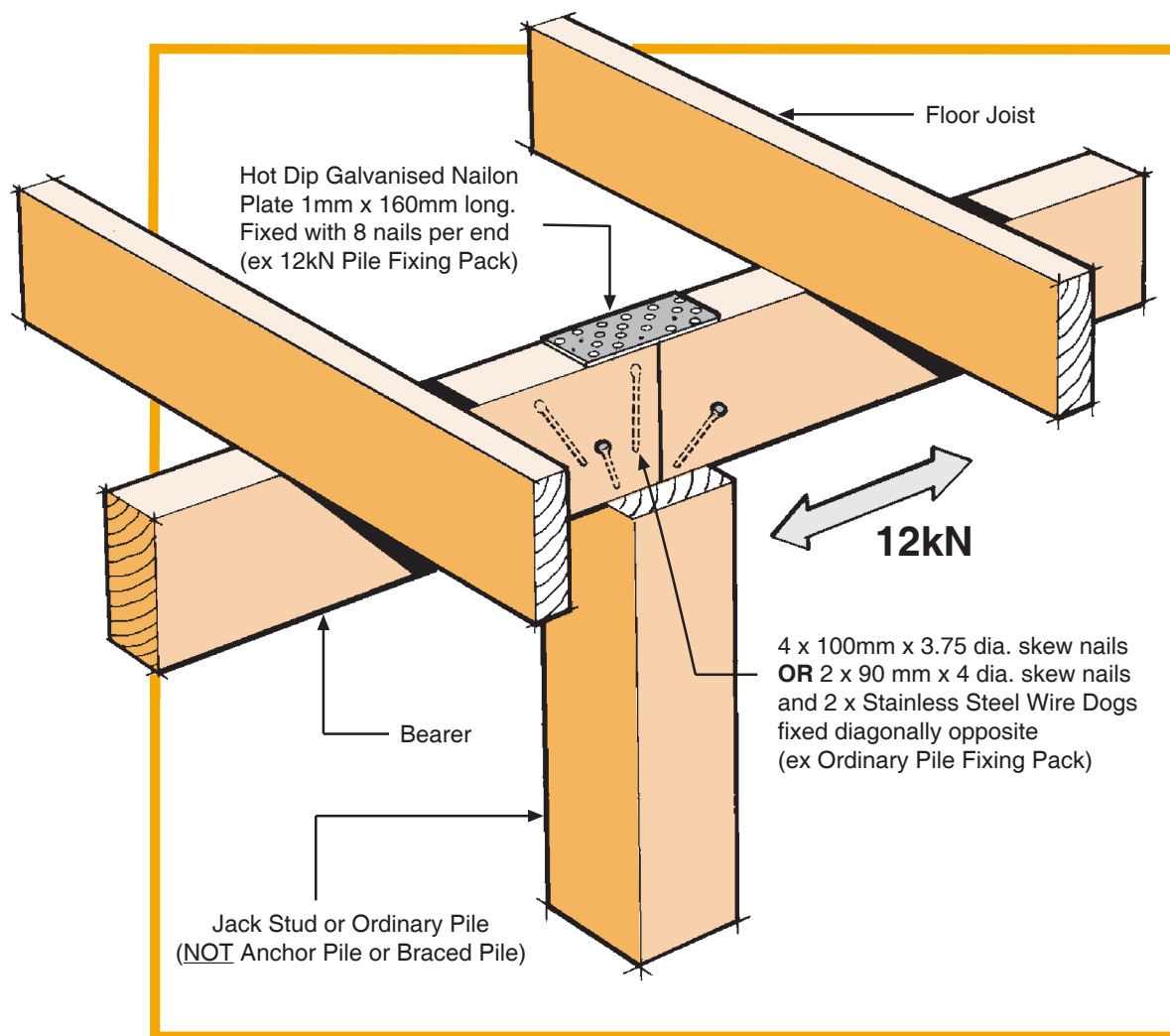
Code: SSPB2A2B
Material: 0.9mm Stainless Steel 304-2B
Packed: 20 x Nailon Plate 320 x 110mm
 180 x Type 17-12g x 35mm Hex Head
 Stainless Steel Screws



**SCAN FOR
INSTALLATION
VIDEO**

<https://vimeo.com/96667062>

12kN BEARER SPLICE OVER PILE AS PER CLAUSE 6.12.7 NZS 3604:2011



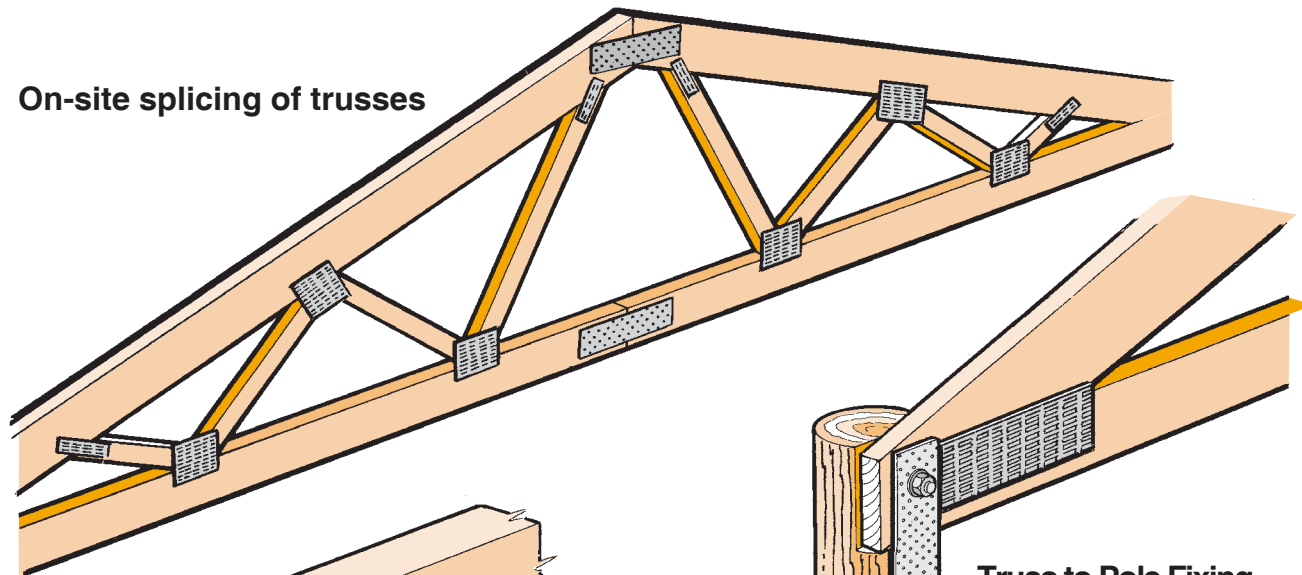
**Stainless Steel Nailon Plate and Nails to be used
in high corrosion environments**

**Available from leading Builders Supply Merchants
throughout New Zealand**

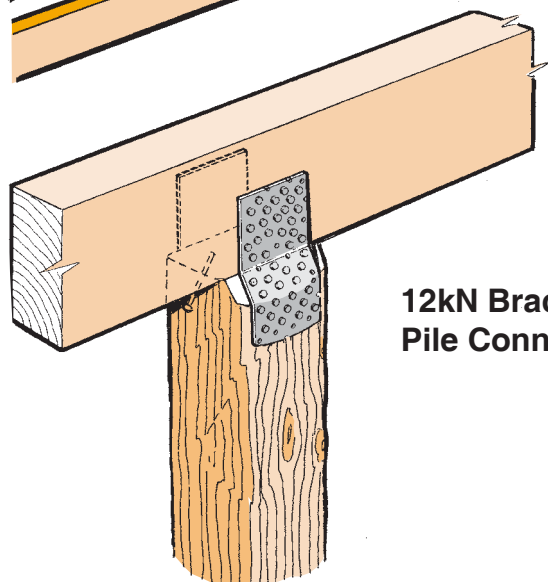
NAILON PLATES

USE STAINLESS STEEL
OPTION IN
EXTERIOR SITUATIONS

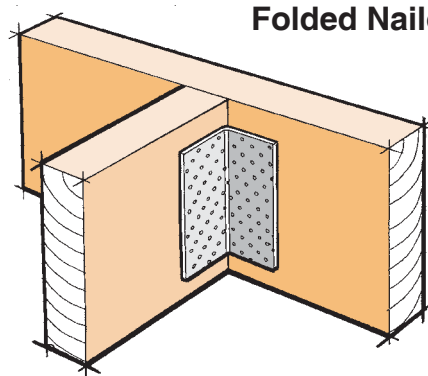
On-site splicing of trusses



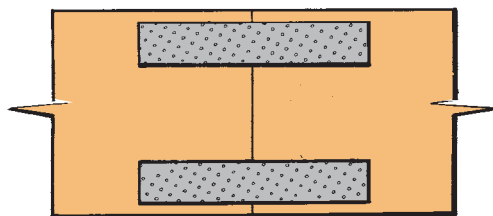
Truss to Pole Fixing



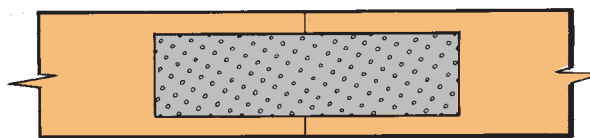
12kN Brace
Pile Connection



Folded Nailon Cleats



Full strength joint splice



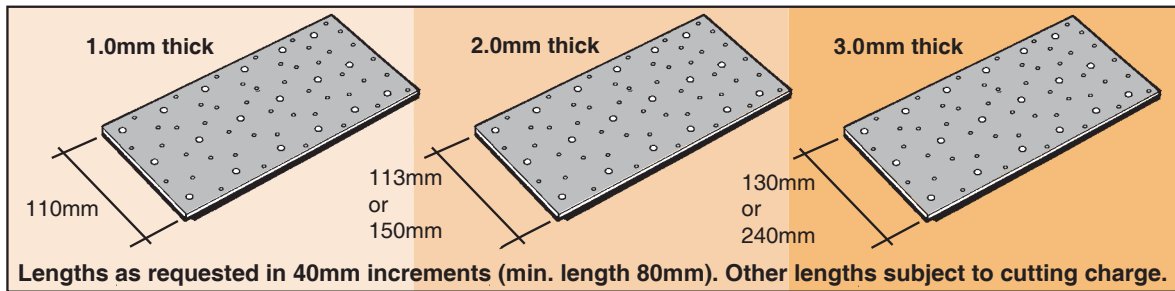
High tension load fixing

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.

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 mild steel 0.91mm G300 Z275 Galvanised Steel

2.0mm x 113mm or 150mm mild steel 1.55mm G300 Z275 Galvanised Steel

3.0mm x 130mm or 240mm mild 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

1.0mm x 110mm and 2.0mm x 113mm Nailon, 20 nails per 100mm plate length.

2.0mm x 150mm Nailon, 28 nails per 100mm plate length.

3.0mm Nailon 130mm wide, 25 nails per 100mm plate length.

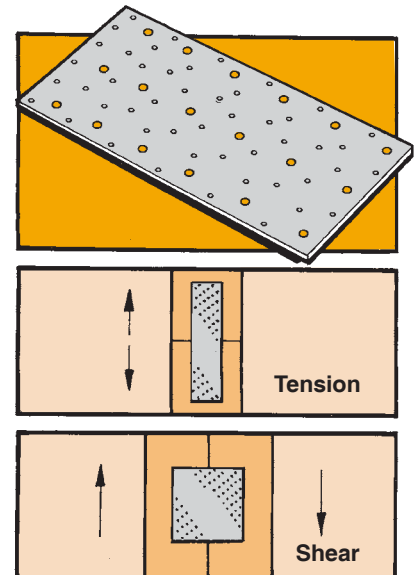
3.0mm Nailon 240mm wide, 47 nails per 100mm plate length.

Stainless Steel nails are also available.

Loadings

| Nail Load | Characteristic Load |
|------------------|---------------------|
| 30mm x 3.15 dia. | 1.0kN/Nail |

| Plate Load | Characteristic Load |
|-------------------|---------------------|
| 1mm Plate Tension | 210N/mm per plate |
| 1mm Plate Shear | 157N/mm per plate |
| 2mm Plate Tension | 367N/mm per plate |
| 2mm Plate Shear | 270N/mm per plate |
| 3mm Plate Tension | 425N/mm per plate |
| 3mm Plate Shear | 283N/mm per plate |



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, or in coil form. 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 length)

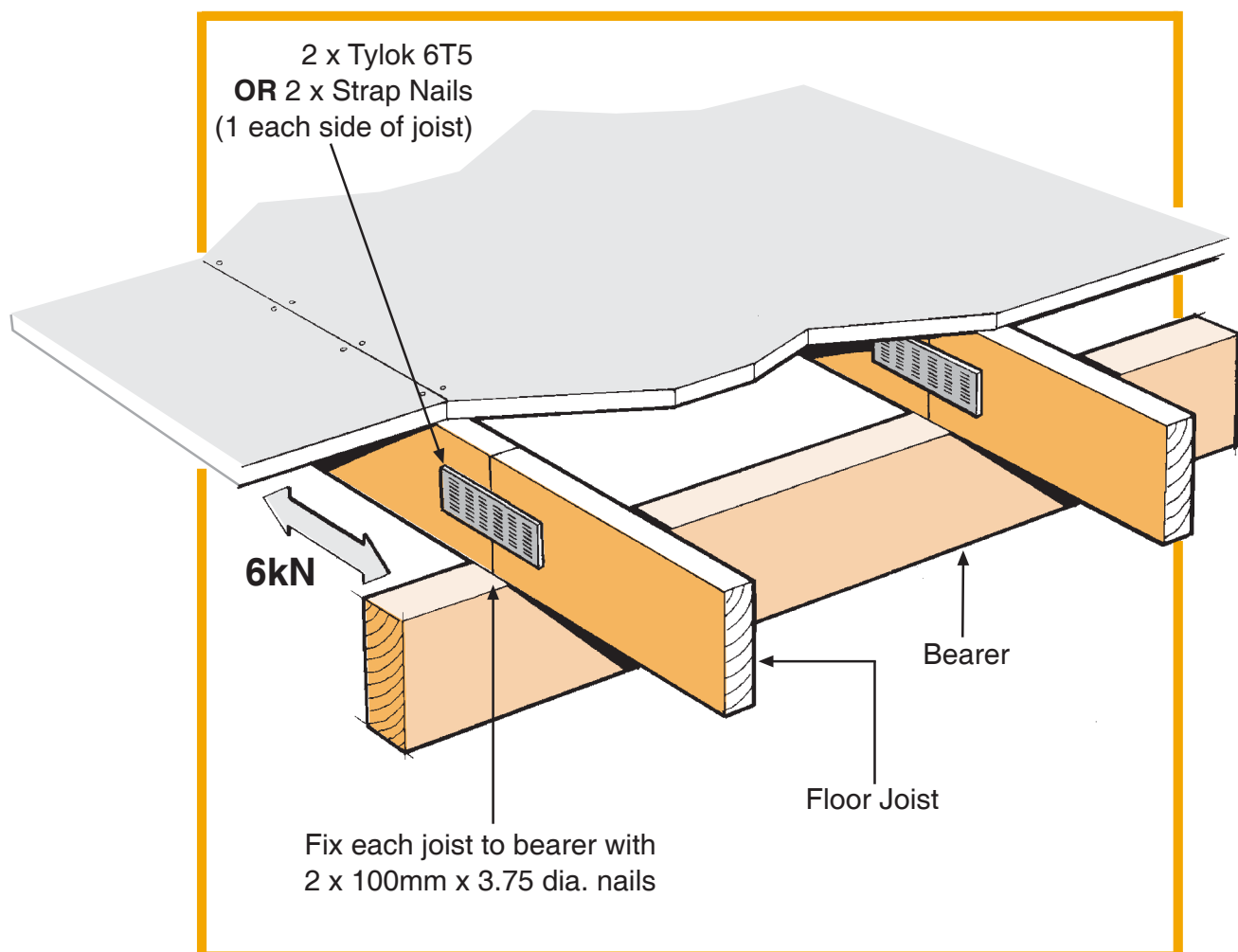
2. Special requirements, preferably accompanied by a sketch.

3. Quantity.

4. Nail quantity required.

Note: Made to order items are non-returnable.

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

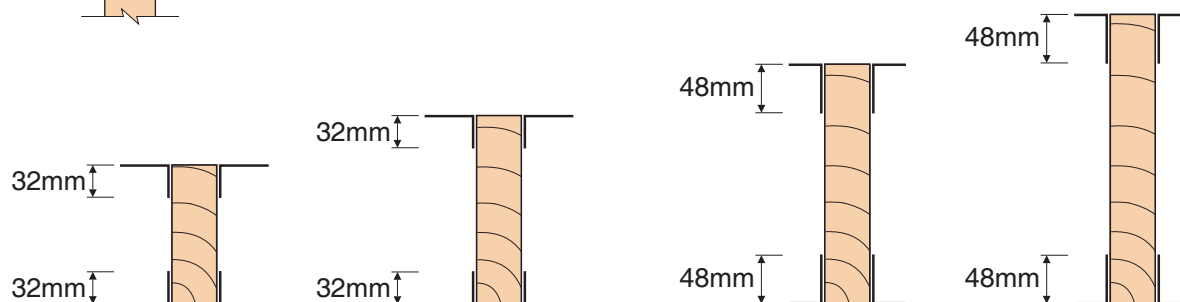
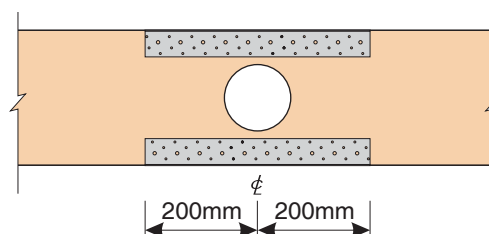
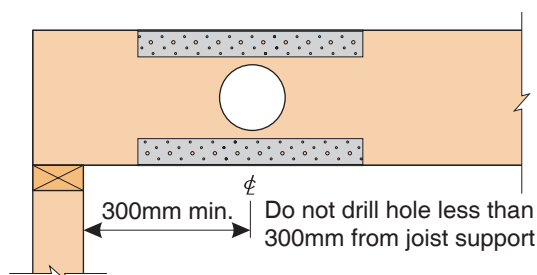
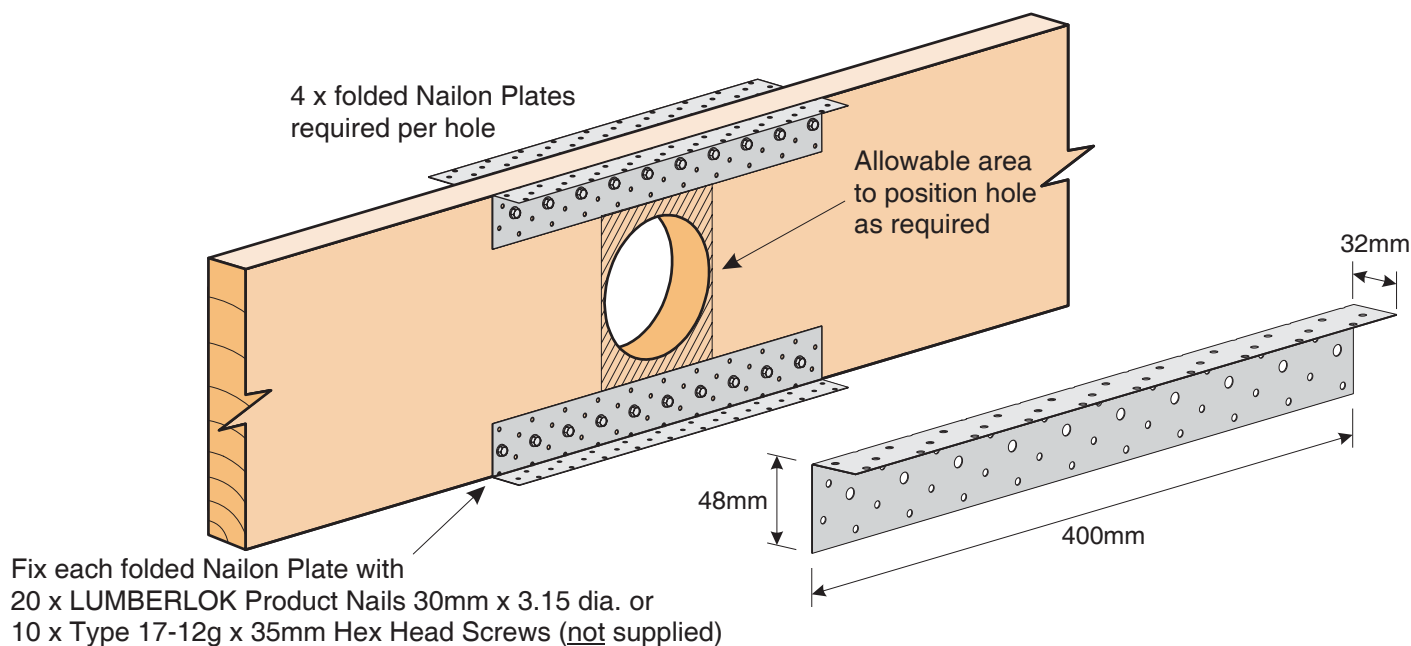


Available from leading Builders Supply Merchants
throughout New Zealand

FLOOR JOIST STIFFENER

- ★ Suitable for running pipes/ducting through joists
- ★ Maintains timber joist strength and stiffness
- ★ Allows flexibility of hole location within specific areas
- ★ 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

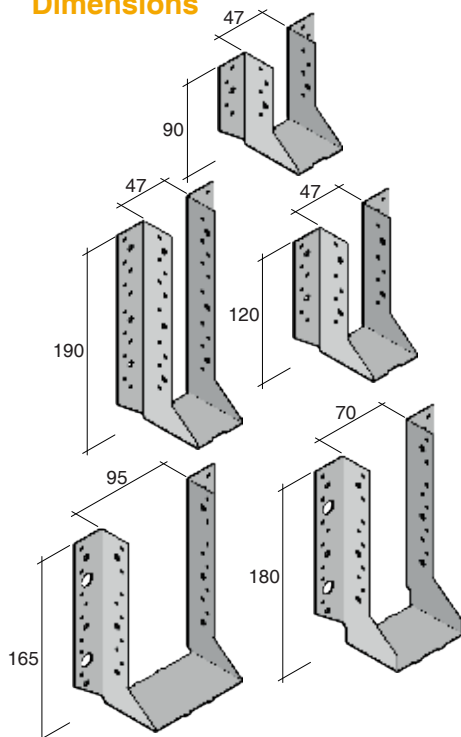
Joist 290 x 45
Max. 126mm hole

Code: FJS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Folded Nailon Plate per Carton

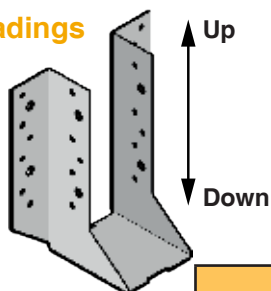
JOIST HANGERS

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.

| Joist Hanger Type | Characteristic Load - Nails | | | Characteristic Load - Screws | | |
|--|-----------------------------|--------|--------|---|--------|--------|
| | No. of Nails per Flange* | Down | Uplift | No. of Screws per Flange* | Down | Uplift |
| JH 47 x 90 | 3 | 9.0kN | 6.0kN | 1 | 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



SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117350348>

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.

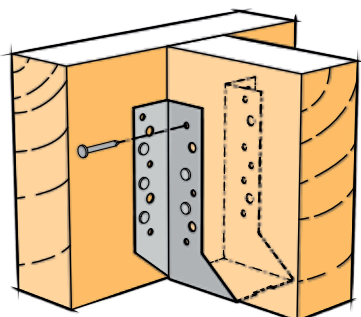
| Joist Size | Recommended Joist Hanger | Domestic Floors & Balconies Min. No. of Nails per Flange (4 Flanges Total) | Commercial Floors Min. No. of Nails per Flange (4 Flanges Total) |
|------------|--------------------------|--|--|
| 100 x 50 | JH 47 x 90 | 2 | 3 |
| 150 x 50 | JH 47 x 90 | 2 | 3 |
| 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

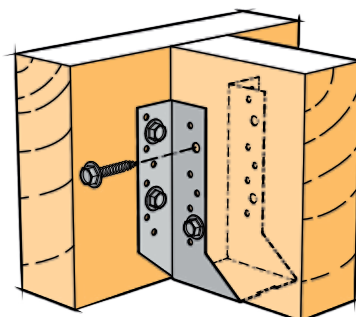
Fix with Type 17-12g x 35mm Hex Head Screws

| 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 | 1 Screw + 1 Nail |
| 150 x 50 | JH 47 x 90 | 1 | 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.



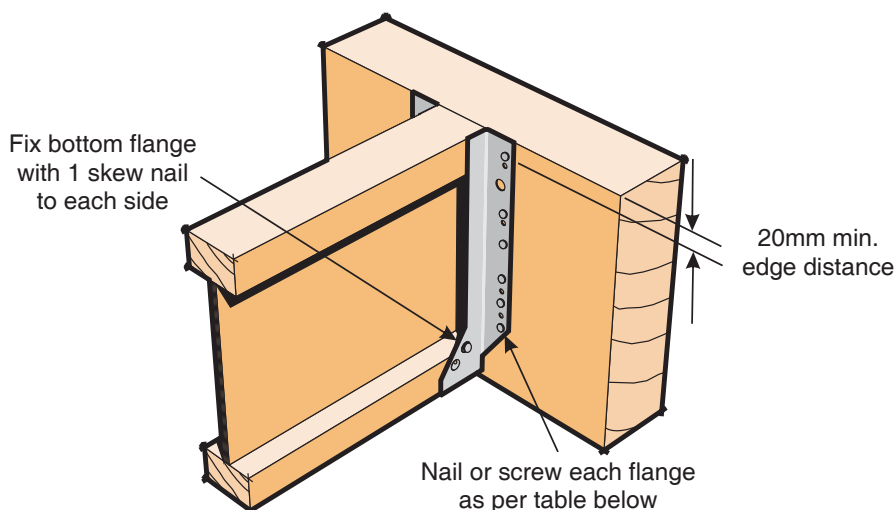
NAIL DETAIL



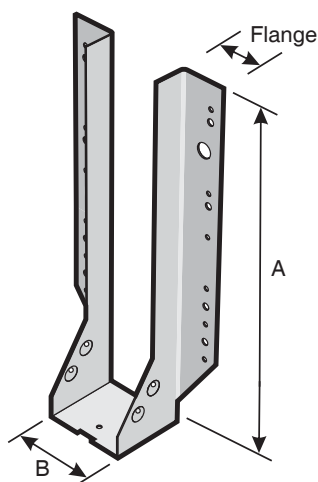
SCREW DETAIL

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 17-12g 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.



Loadings

| Hanger Type | No. of Nails per Flange | Characteristic Loads (Down) | | |
|-------------|-------------------------|-----------------------------|--------------------------|---------|
| | | Nails | No. of Screws per Flange | Screws |
| IBHF24055 | 5 | 12.0kN | 3 | 18.0kN |
| IBHF24065 | 5 | 12.0kN | 3 | 18.0kN |
| IBHF24090 | 5 | 12.0kN | 3 | 18.0kN |
| 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 17-12g 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

Characteristic nail load = 1.2kN/nail

Characteristic screw load = 3.0kN/screw

Definition:

Example IBHF30065

IBHF = Face Fix

300 = Height (A)

65 = Width (B)

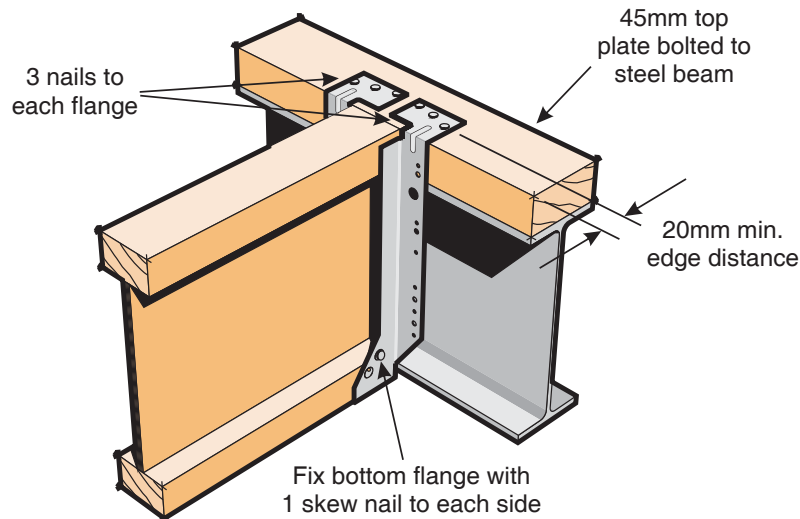
Material:

1.15 G300 Z275 Galvanised Steel

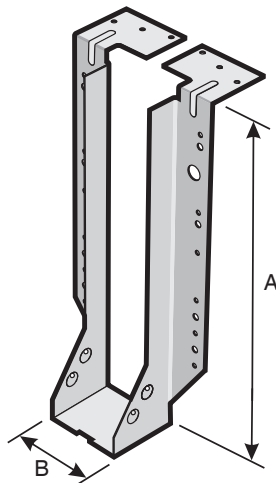
I-BEAM HANGERS

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.



Loadings

| Hanger Type | No. of Nails | Characteristic Loads (Down) |
|--|--------------|-----------------------------|
| IBHT24065 | 6 | 13.8kN |
| IBHT24090 | 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

Definition:

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

Material:

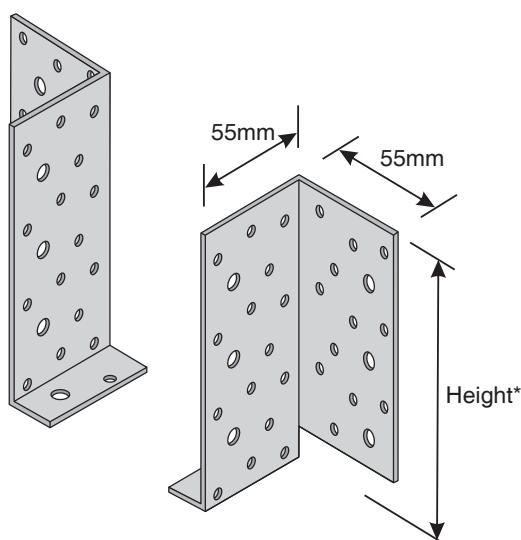
1.15 G300 Z275 Galvanised Steel

SPLIT HANGERS

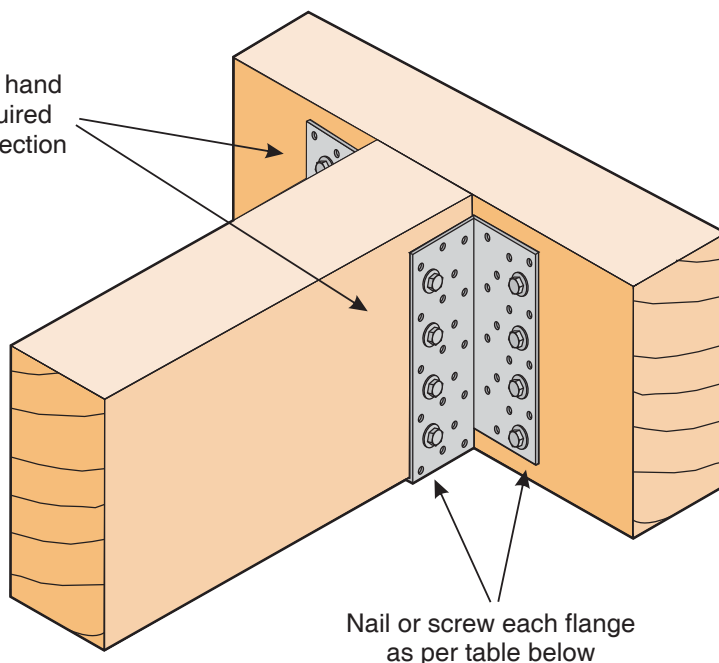
- ★ For larger timber widths or double member connections
- ★ Available in heights of 140, 180 and 220mm
- ★ Always used in pairs

**NOT TO BE USED IN
EXTERIOR SITUATIONS**

Dimensions



Left and right hand
hangers required
for each connection



Nail or screw each flange
as per table below

***Split Hangers are available in heights of:**

SPH140 - 140mm
SPH180 - 180mm
SPH220 - 220mm

Loadings

| Hanger Type | Characteristic Loads (per pair) - Nails | | | Characteristic Loads (per pair) - Screws | | |
|--|---|--------|--------|---|--------|--------|
| | No. of Nails per Flange | Down | Uplift | No. of Screws per Flange | Down | Uplift |
| SPH140 | 8 | 24.0kN | 16.0kN | 3 | 21.0kN | 18.0kN |
| SPH180 | 10 | 30.0kN | 20.0kN | 4 | 28.0kN | 24.0kN |
| SPH220 | 12 | 36.0kN | 24.0kN | 5 | 35.0kN | 30.0kN |
| Nail with LUMBERLOK Product Nails 30mm x 3.15 dia. | | | | Fix with Type 17-14g x 35mm Hex Head Screws | | |

Material: 1.55 G300 Z275 Galvanised Steel



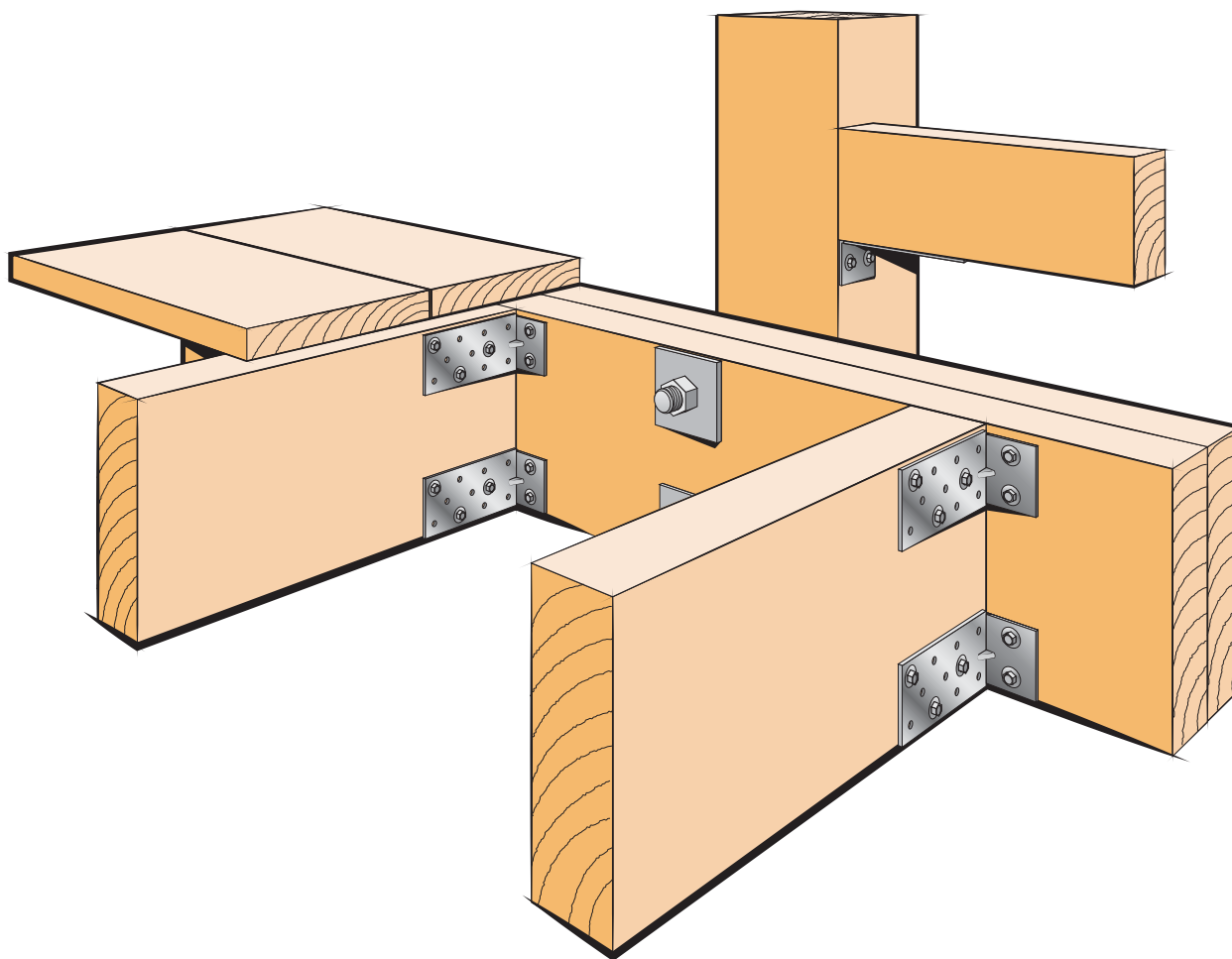
**SCAN FOR
INSTALLATION
VIDEO**

<https://vimeo.com/117353600>

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



7. FLOOR

- ★ Simple, cost effective solution
- ★ Uses internal connections to allow easy fixing of decking
- ★ For face fixed and top fixed baluster posts
- ★ Provides solution for 140 x 45, 190 x 45 and 240 x 45mm joists
- ★ Packed: Carton of 50 Stainless Steel (Grade 304) CPC40 Cleats and corresponding screw sizes



SCAN FOR
INSTALLATION
VIDEO

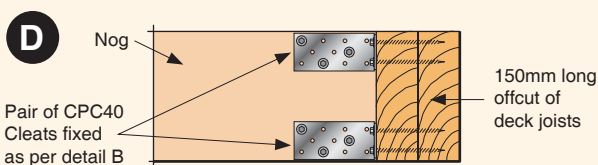
<https://vimeo.com/157949237>

- ## 7. FLOOR



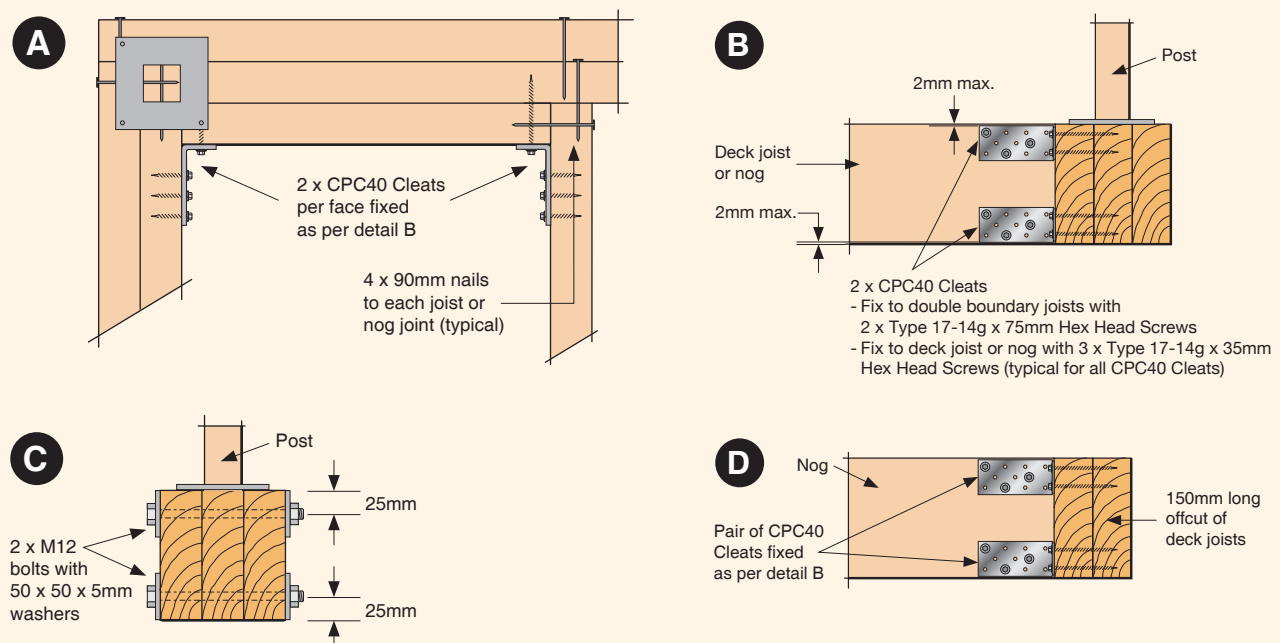
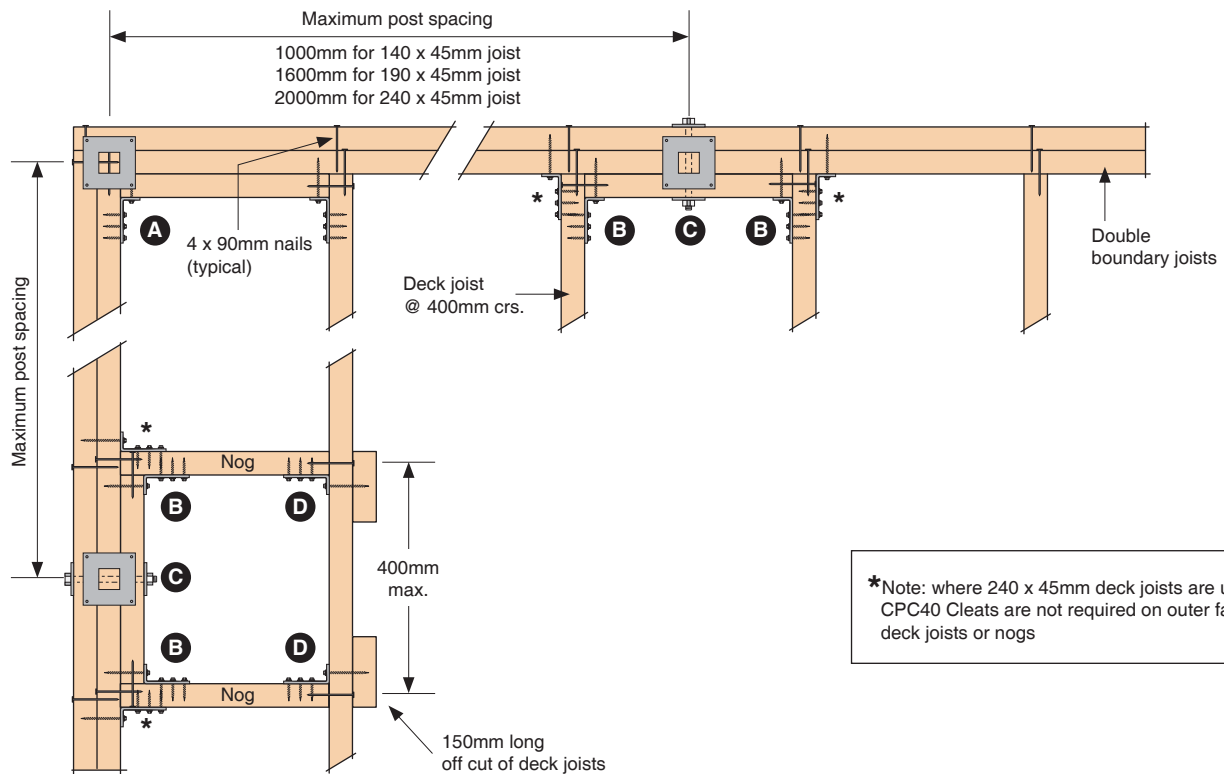
Note: Posts sized for wet condition H3.2 treatment

*Note: where 240 x 45mm deck joists are used, CPC40 Cleats are not required on outer face of deck joists or noggs



TOP FIXED BALUSTER POSTS

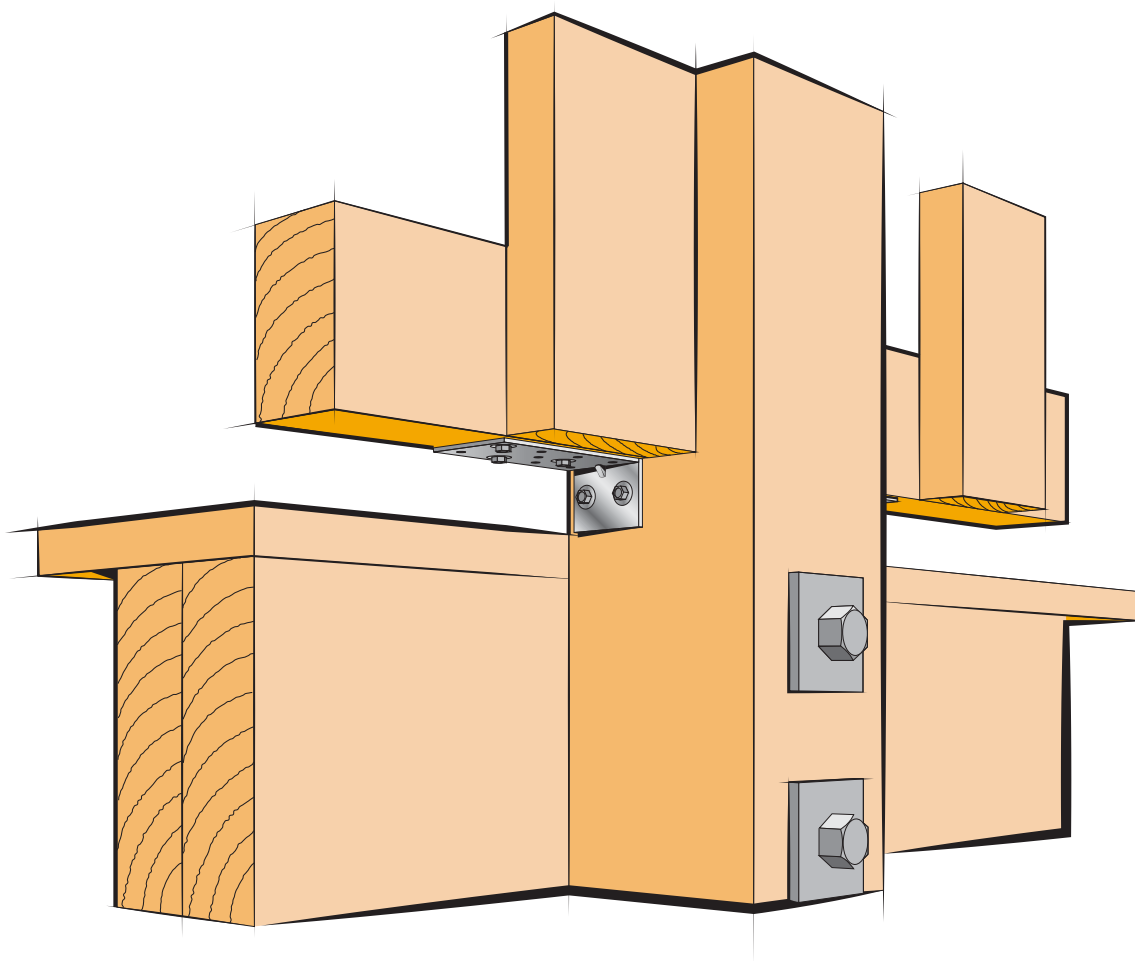
- Assumes a maximum deck live load of 2.0kPa
- Complies with Table 3.3 AS/NZS 1170.1:2002 for horizontal load of 0.75kN/m on handrail
- All fixings are designed to provide adequate rotational stability to the deck system to resist the horizontal load at top of baluster post
- Assumes an approved post and balustrade system is used



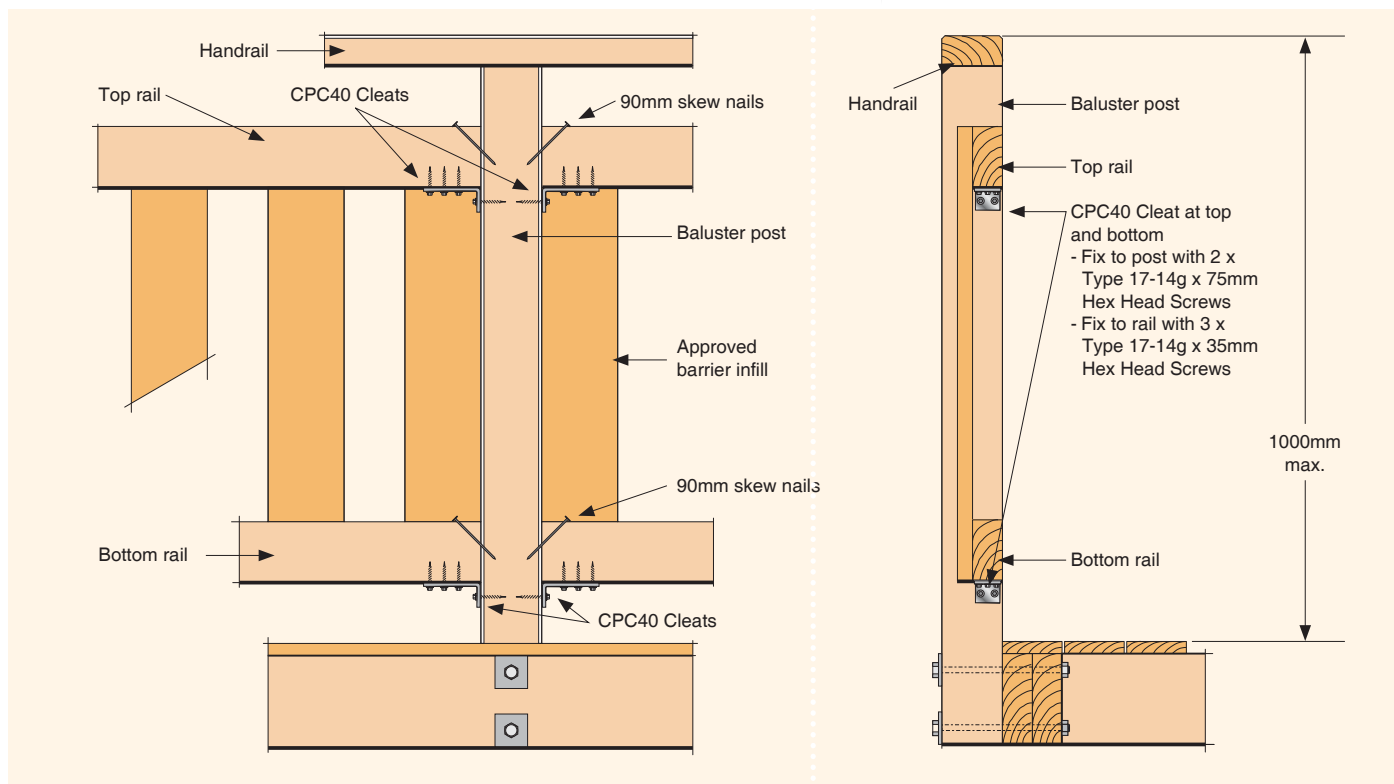
BALUSTER POST TO RAIL FIXING



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



7. FLOOR



INTERNAL LOAD BEARING ON CONCRETE FLOOR SLABS



7. FLOOR

- ★ 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 ($\phi_b=0.50$).



SCAN FOR
SPECIFICATION
VIDEO

<https://vimeo.com/117353607>

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.

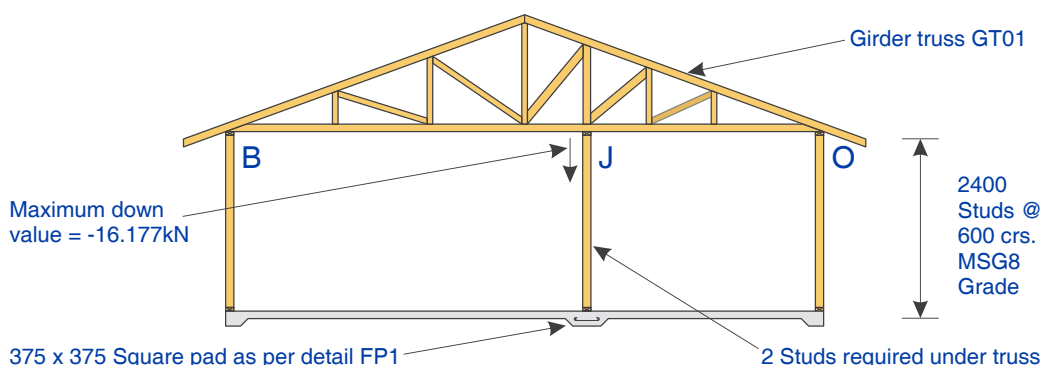
MiTek 20/20® Example Selection

TRUSS BEARINGS EXCEEDING 10kN REPORT

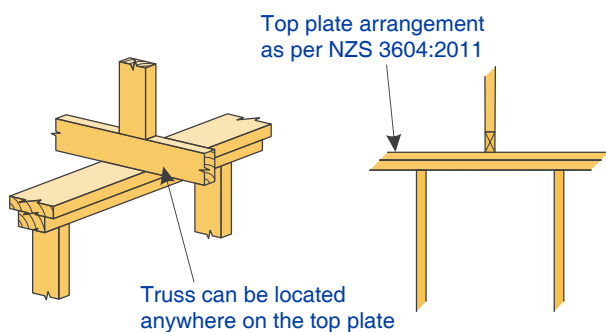
Truss List

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

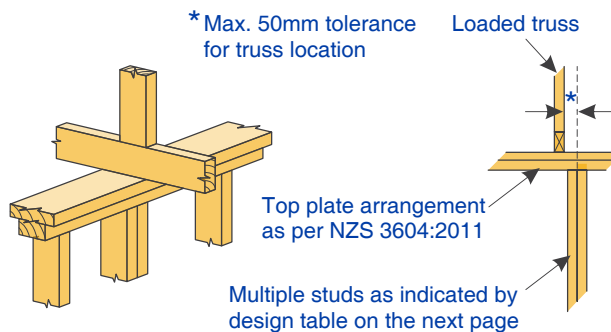
| Critical Trusses | Qty | Span (mm) | Joint | Bearing Reactions (kN) | |
|------------------|-----|-----------|-------|------------------------|--------|
| | | | | Down | Uplift |
| GT01 | 1 | 8000 | J | 16.177 | 7.292 |



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.

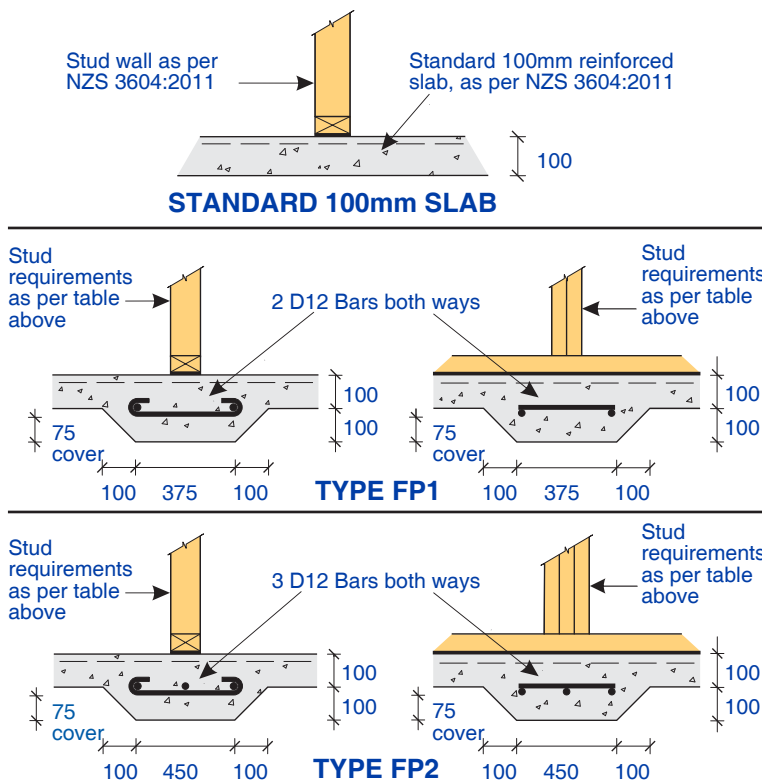
- For loads above 20kN Special Design is required.

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

Slab Thickening Details

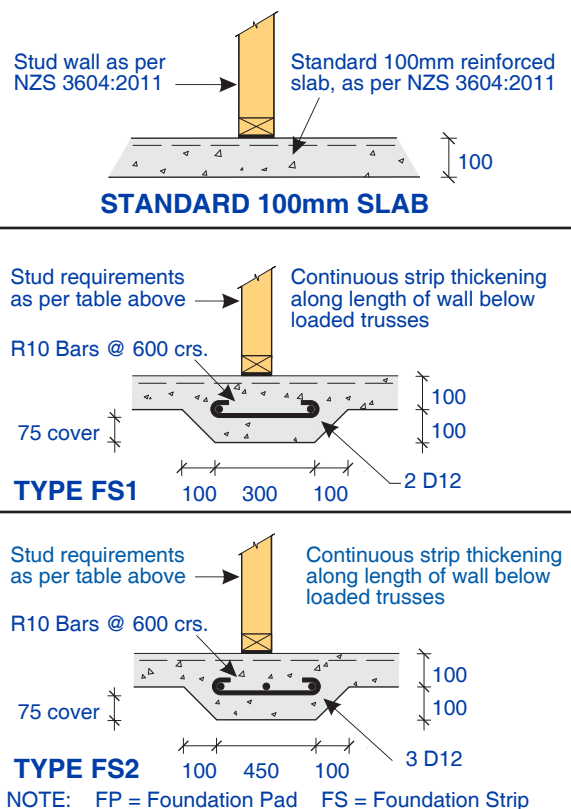
CONCRETE PAD OPTIONS

(for concentrated loads)



CONTINUOUS CONCRETE THICKENING OPTIONS

(for uniformly distributed loads)

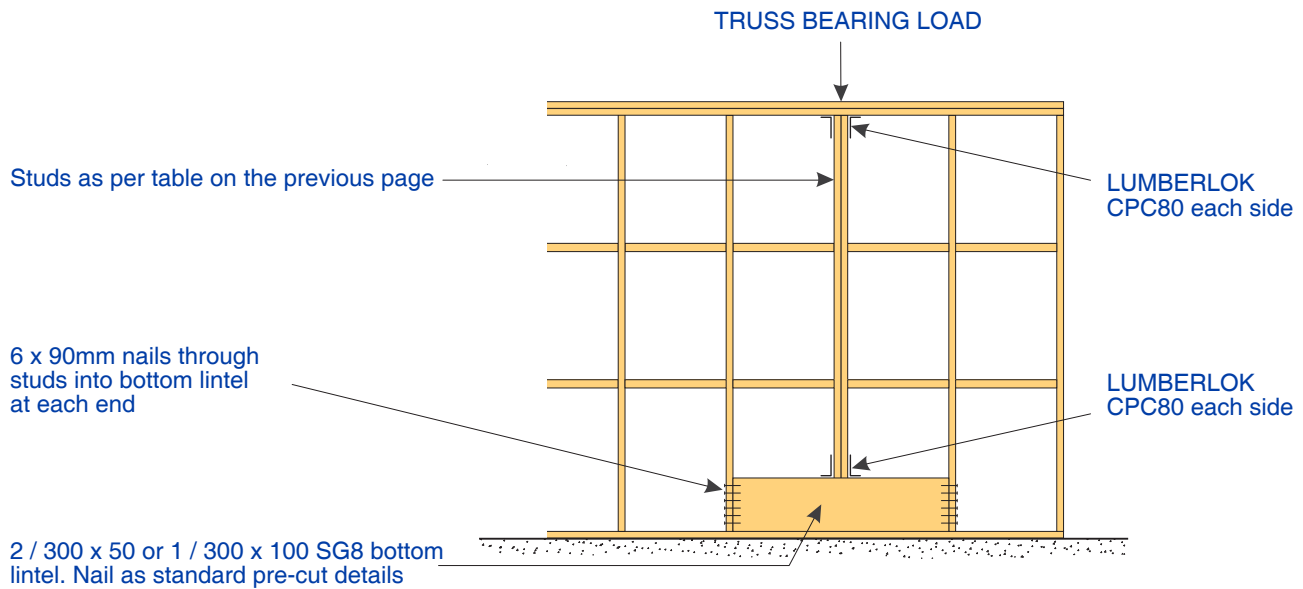


Retro Fitted Load Bearing Option

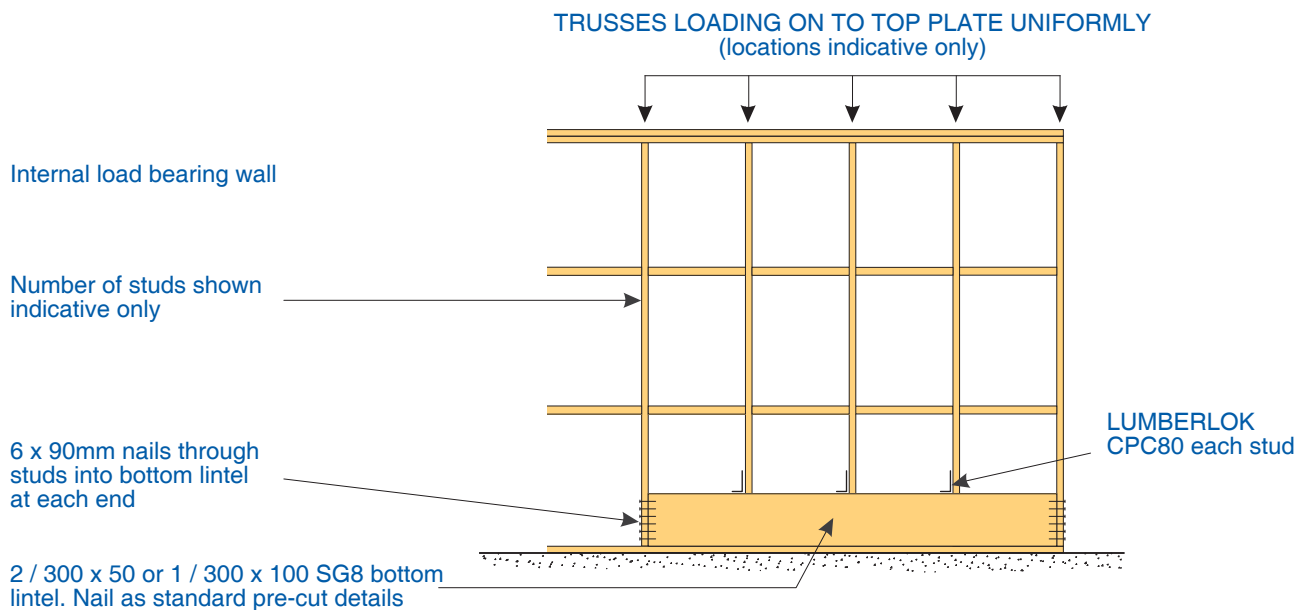
Note:

- 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



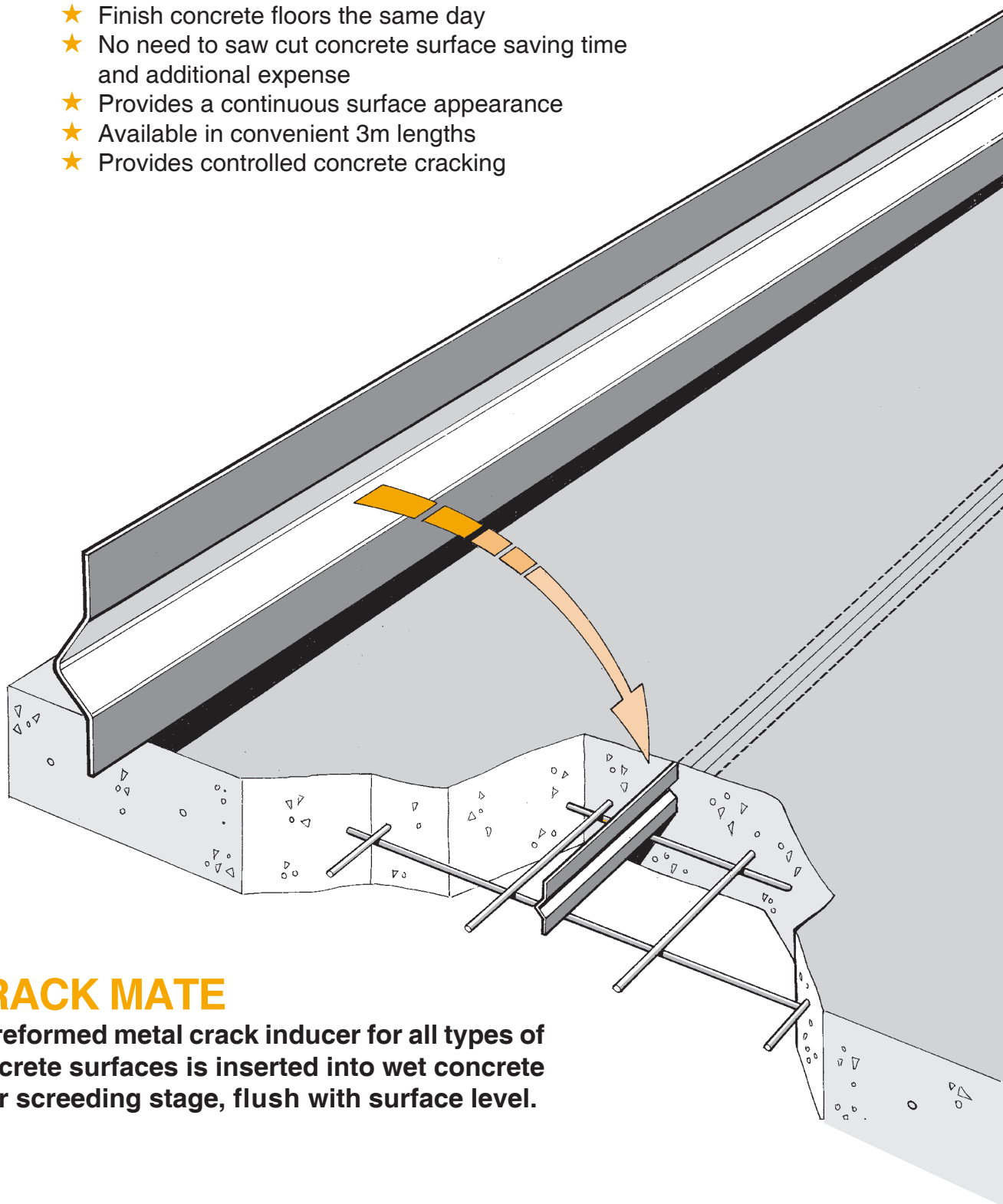
Uniformly Distributed Loads



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.

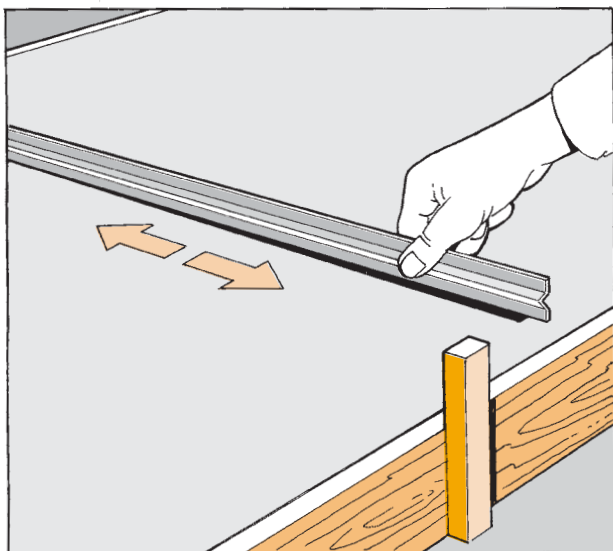
**Available from leading Builders Supply Merchants
throughout New Zealand**

Krack Mate

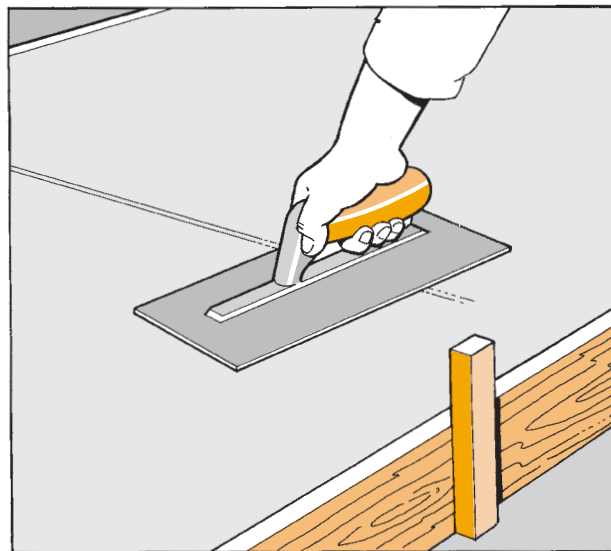
Available in 3.0m lengths which can be bent and snapped to the required length on site, to suit the width of concrete being laid. Alternatively KRACK MATE lengths can be lapped against each other for continuous crack induced locations over greater areas.

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 ie. 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.

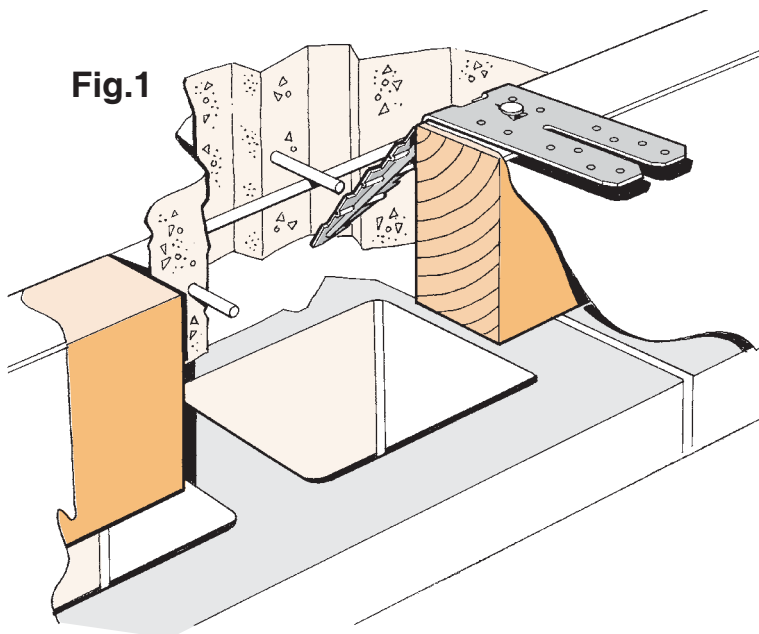
Material

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

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.

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

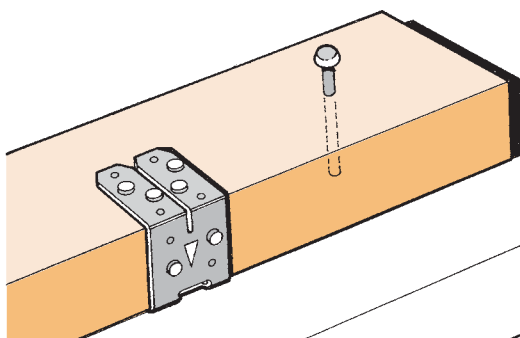
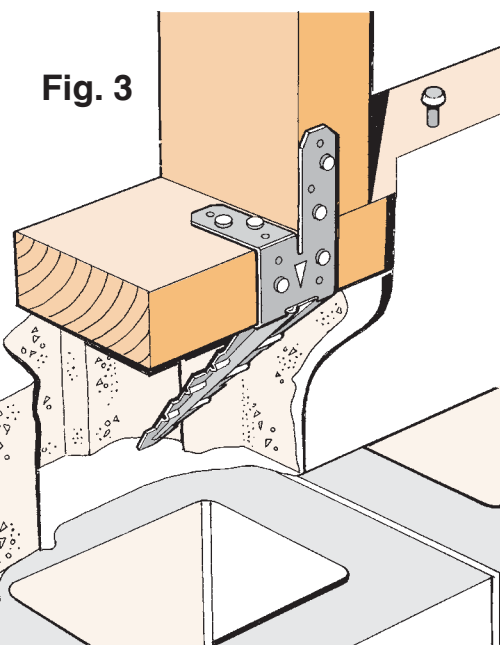
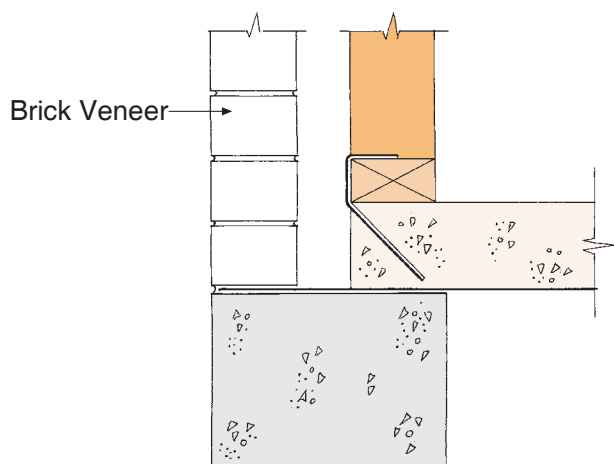
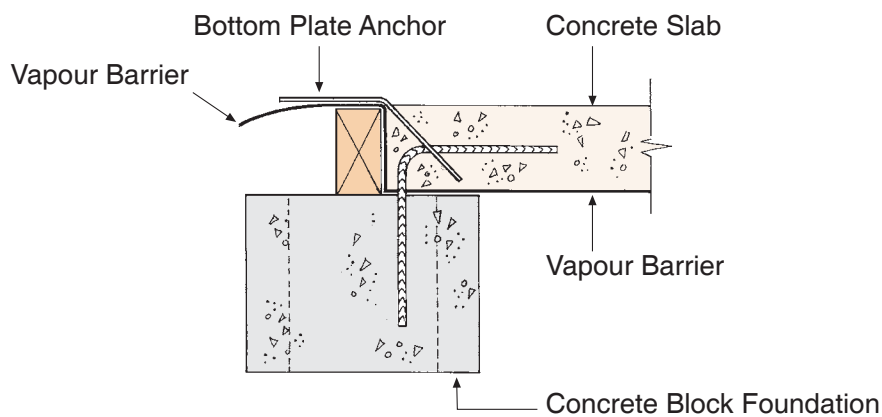


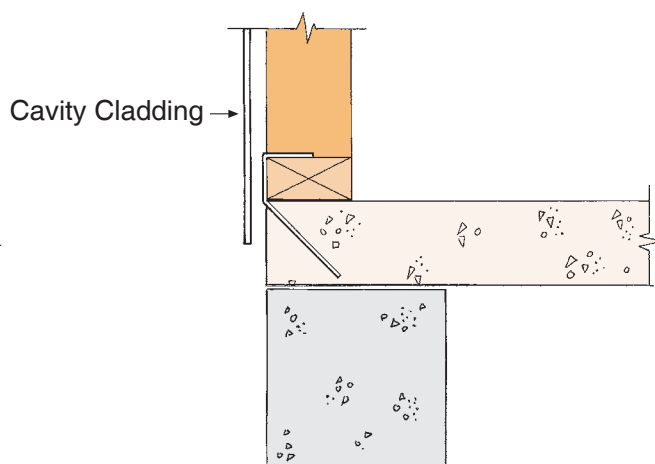
Fig. 3



**Available from leading Builders Supply Merchants
throughout New Zealand**



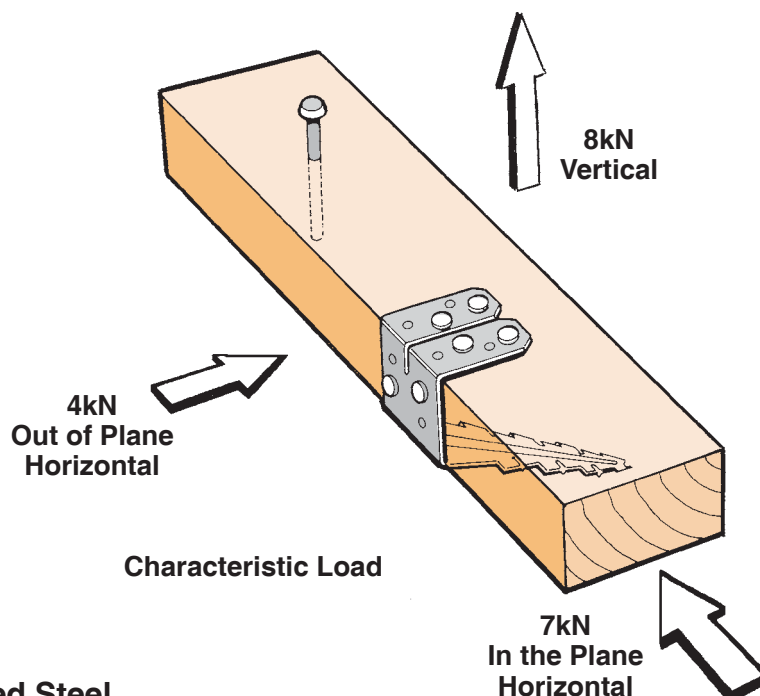
BRICK VENEER



CAVITY CLADDING

Design Loads

Concrete compressive strength 20MPa min.



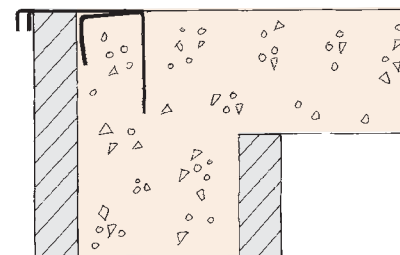
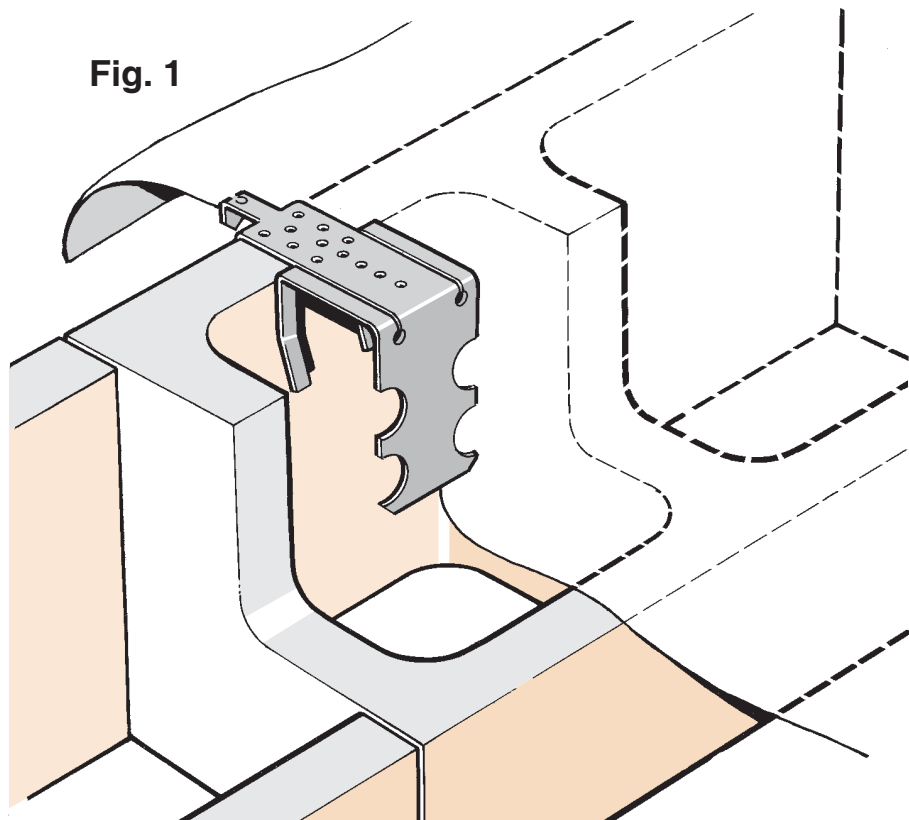
Code: BPA
 Material: 0.95mm G300 Z450 Galvanised Steel
 Code: SSBPA
 Material: 0.9mm Stainless Steel 304-2B
 Packed: 50 per Carton

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.
- ★ 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)

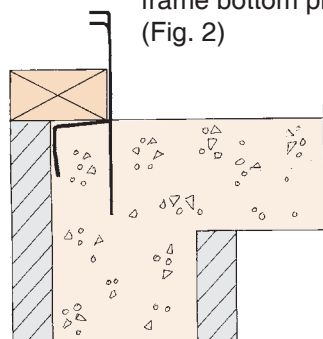
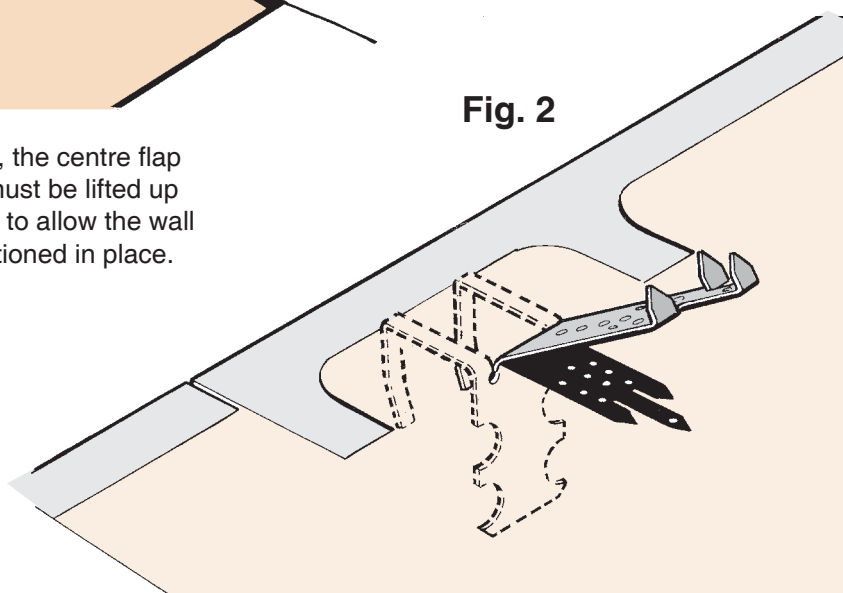
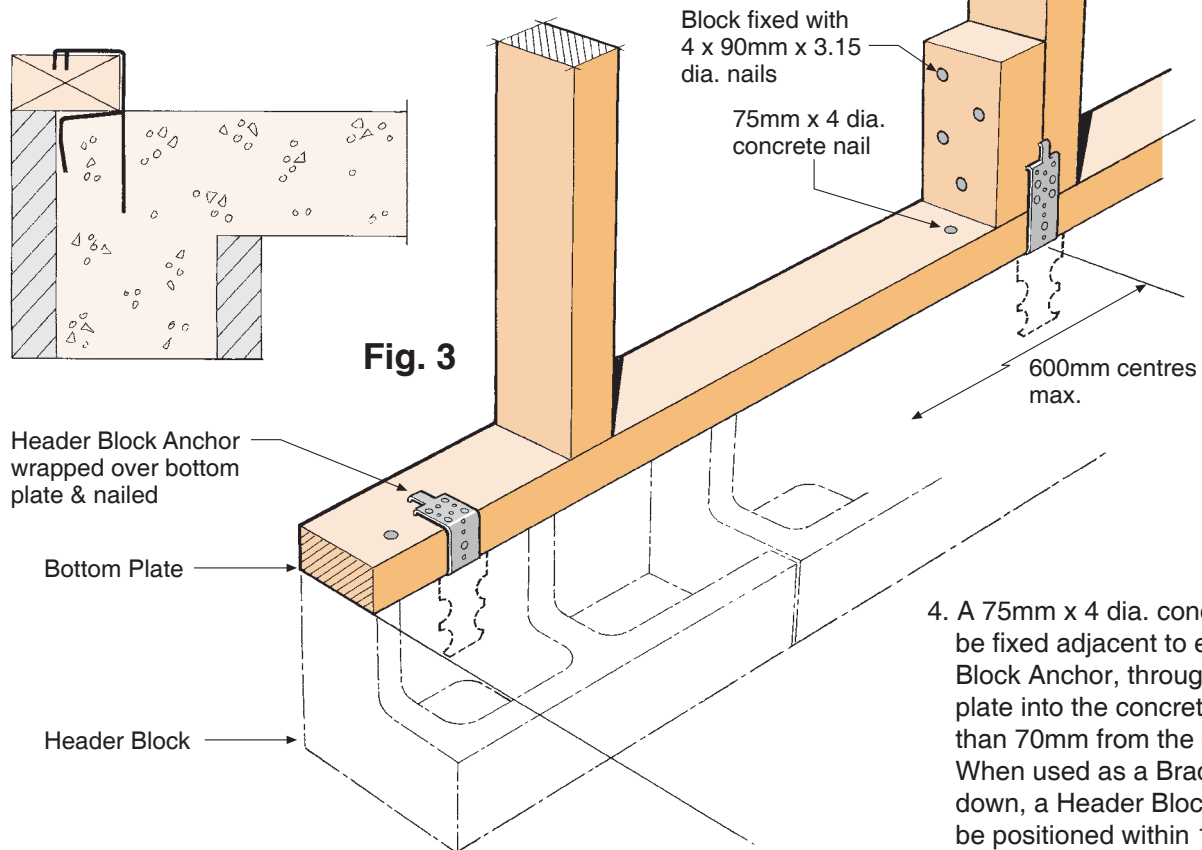


Fig. 2

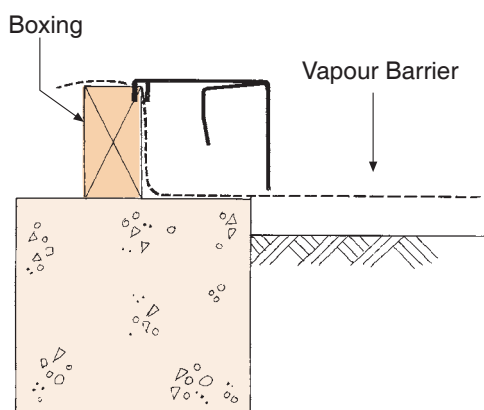


**Available from leading Builders Supply Merchants
throughout New Zealand**

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).



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.



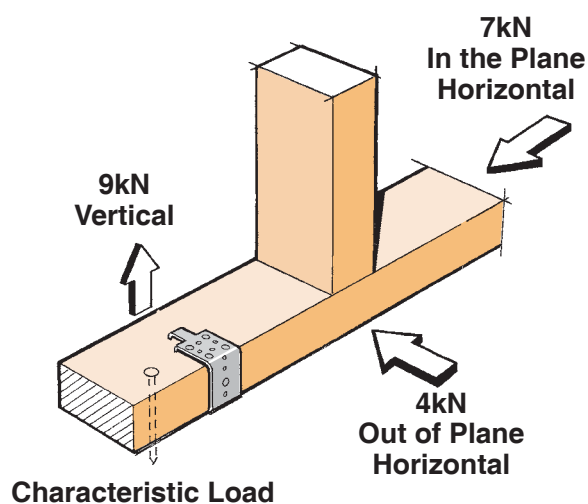
5. Header Block Anchors have also been designed to enable them to be used with timber boxing, as opposed to using concrete header blocks. (Fig. 4). Note however that the product is fixed around the **inside** face of the bottom plate.

Fig. 4

Design Loads

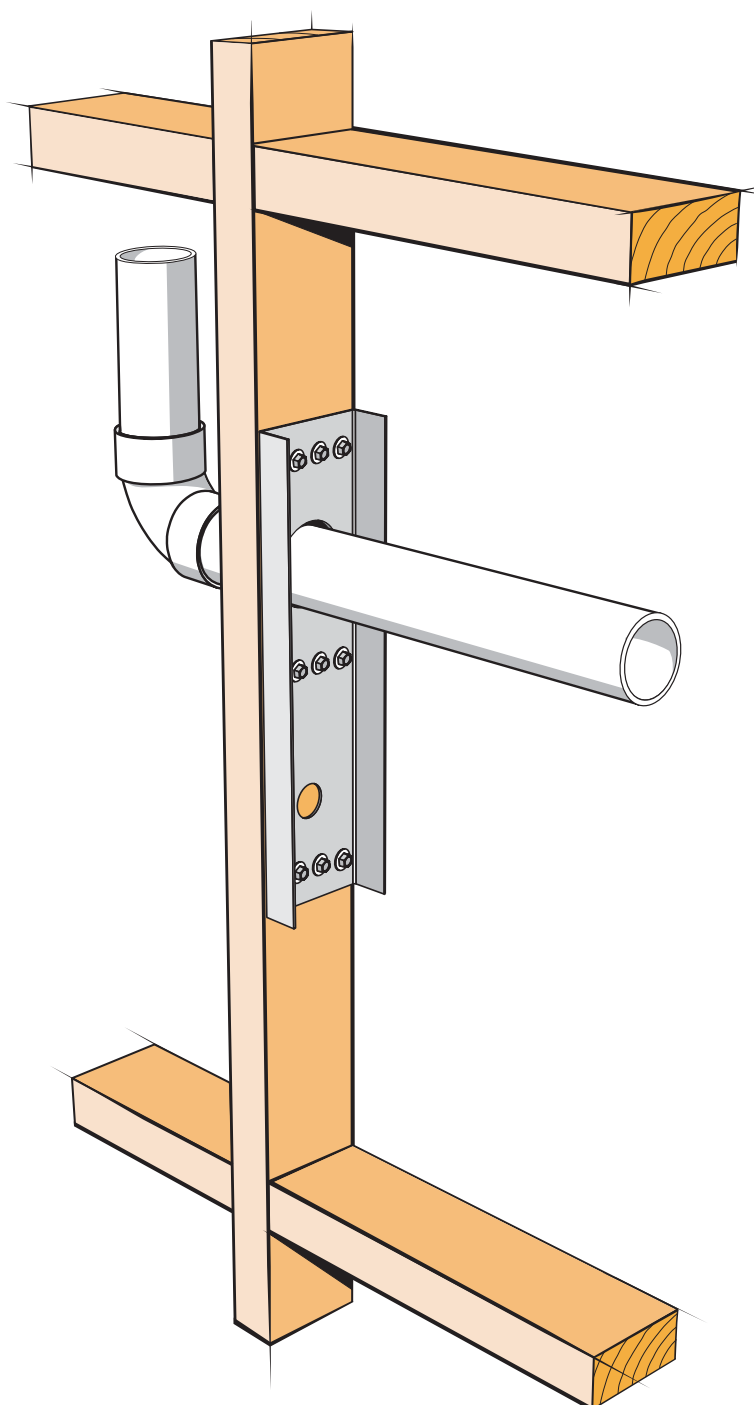
Concrete compressive strength 17MPa min.

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



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



NZ Reg. Design
App. 408133 © 2006
MiTek New Zealand Ltd.



SCAN FOR
INSTALLATION
VIDEO

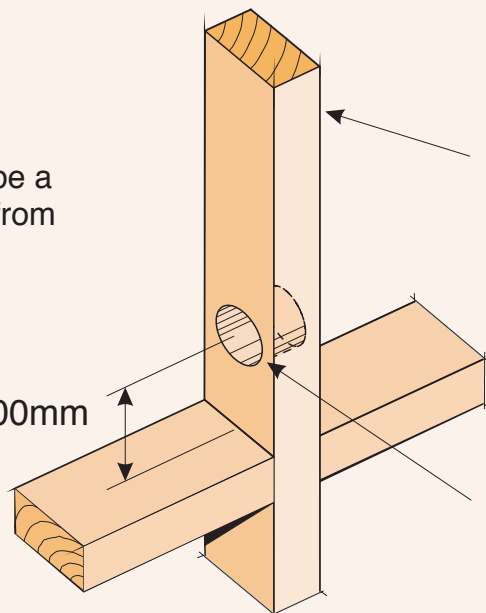
<https://vimeo.com/117353342>

Centre of hole must be a minimum of 100mm from nog location

Min. 100mm

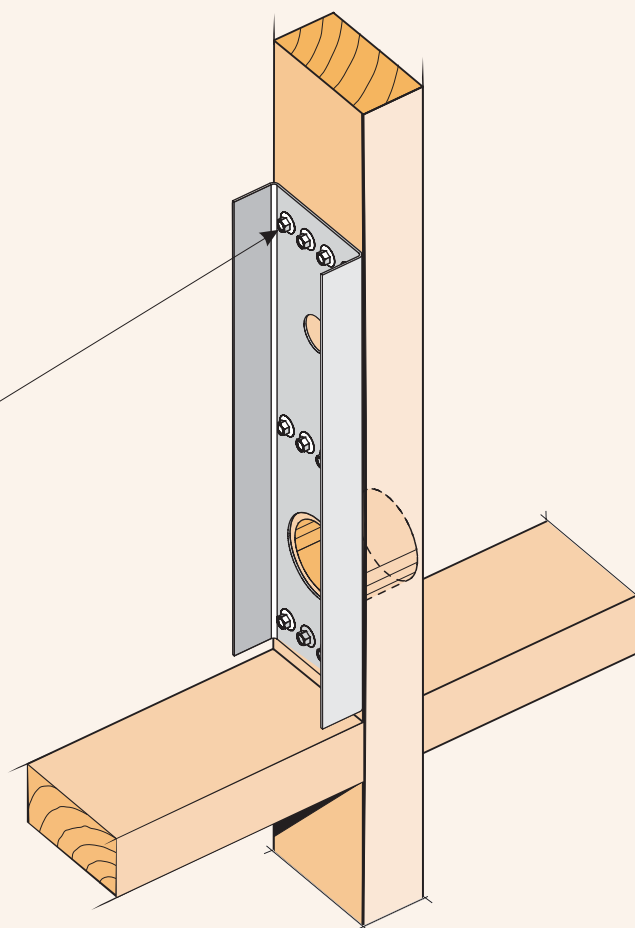
Maximum stud length
2400mm overall

Maximum hole size
60mm dia.



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

Fix to side of stud with 3 rows of
4 x Type 17-14g x 35mm Hex Head
Screws (supplied)



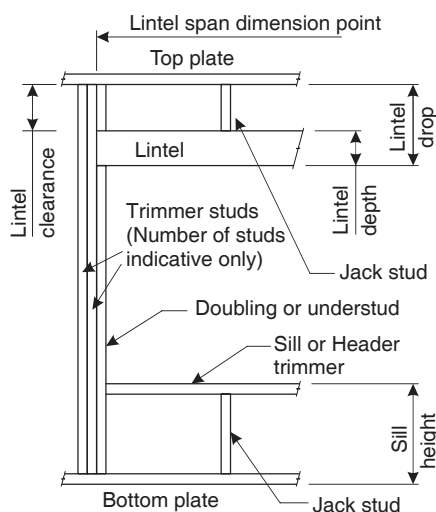
Code: FSS
Material: 1.55mm G300 Z275 Galvanised Steel
Packed: 8 x Framing Stud Stiffeners per Carton
 100 x Type 17-14g x 35mm Hex Head Galvanised Screws

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 |
| 8.6m ² | G | G | H | G | G | H |
| 11.6m ² | G | H | H | G | G | H |
| 12.1m ² | G | H | H | G | H | H |
| 15.3m ² | H | H | - | G | H | H |
| 19.1m ² | H | - | - | G | H | - |
| 20.9m ² | H | - | - | H | H | - |
| 21.8m ² | H | - | - | H | - | - |
| 34.3m ² | - | - | - | H | - | - |

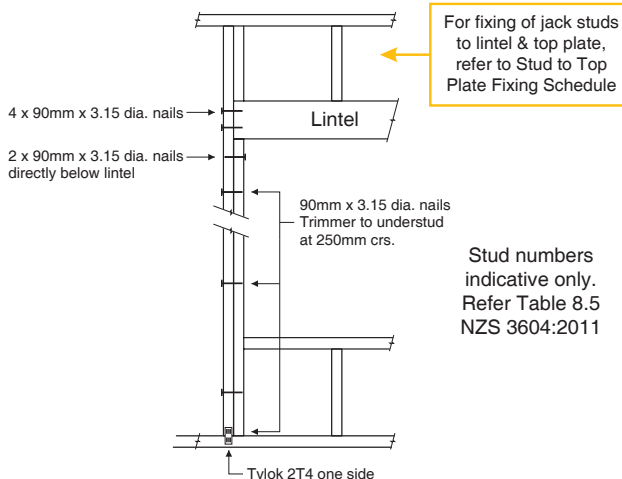
NOTES:

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

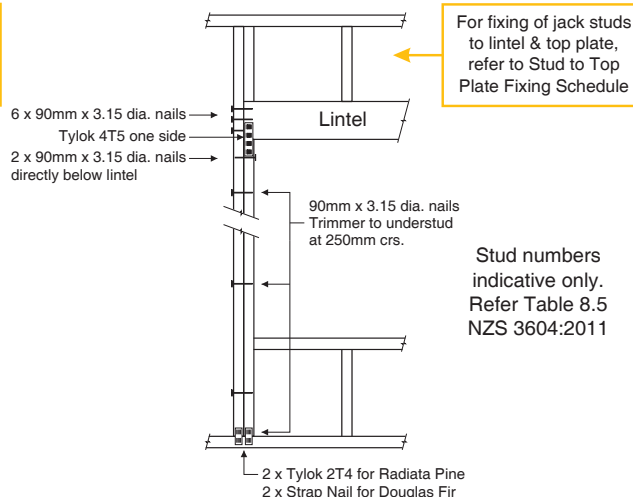
| Lintel Span (m) | Loaded Dimension (m) (See Fig. 1.3 NZS 3604:2011) | Light Roof Wind Zone | | | | | Heavy Roof Wind Zone | | | | |
|-----------------|---|----------------------|---|---|----|----|----------------------|---|---|----|----|
| | | L | M | H | VH | EH | L | M | H | VH | EH |
| 1.0 | 2.0 | 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 |
| | 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 | - | - |
| 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 | - | - |
| 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 | - | - |
| 5.4 | 2.0 | F | F | G | H | H | E | E | F | 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

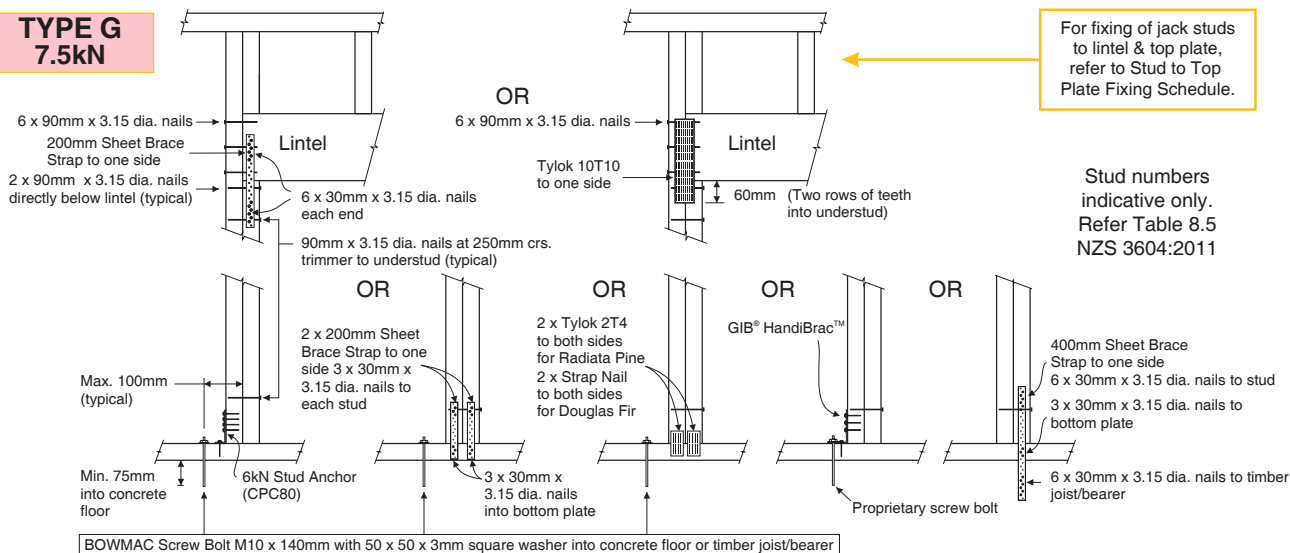
TYPE E 1.4kN



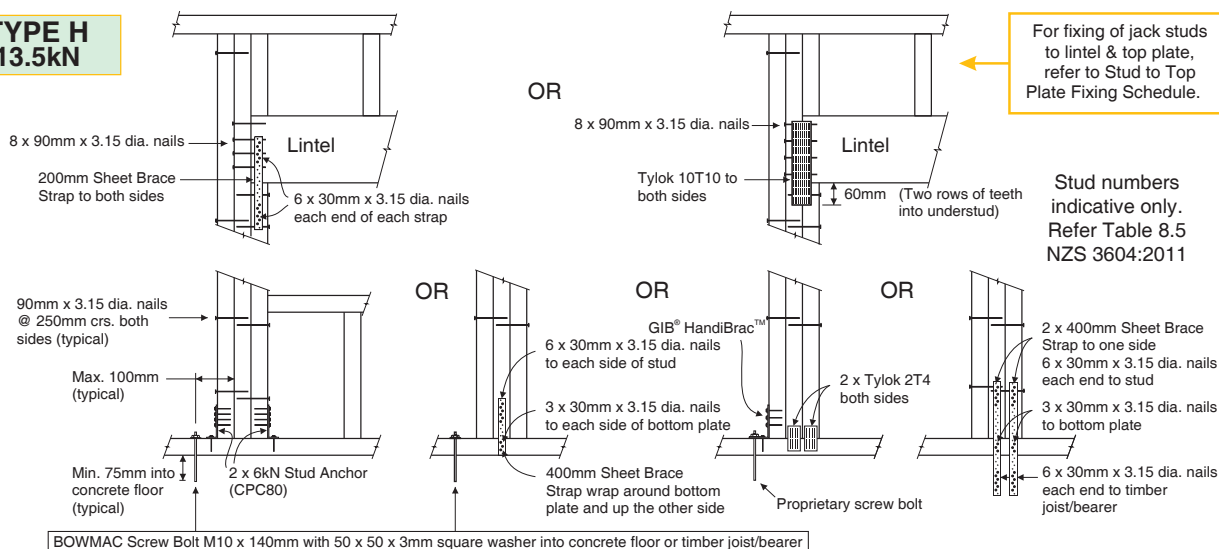
TYPE F 4.0kN



TYPE G 7.5kN

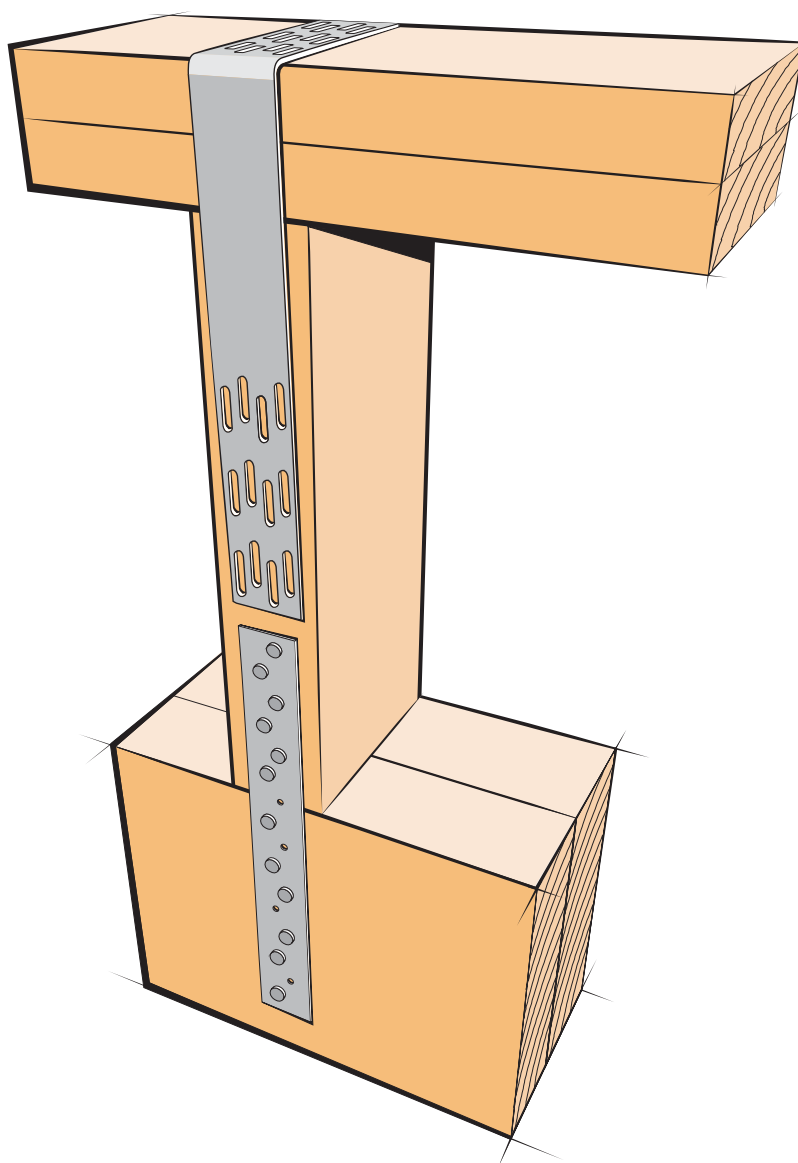


TYPE H 13.5kN



JACK STUD TO TOP PLATE & LINTEL FIXING

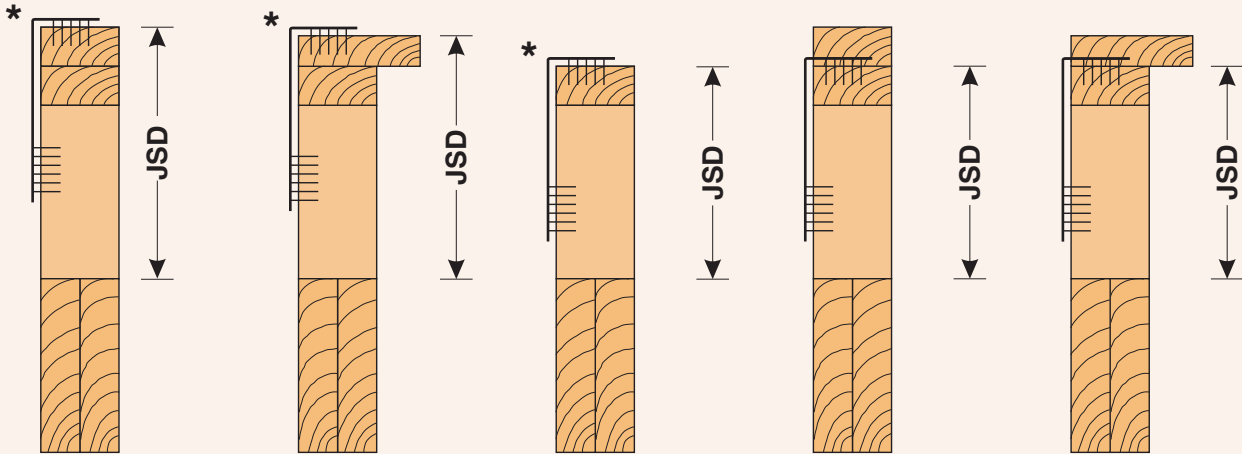
Provides a solution for all jack stud length fixing options



- ★ 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)

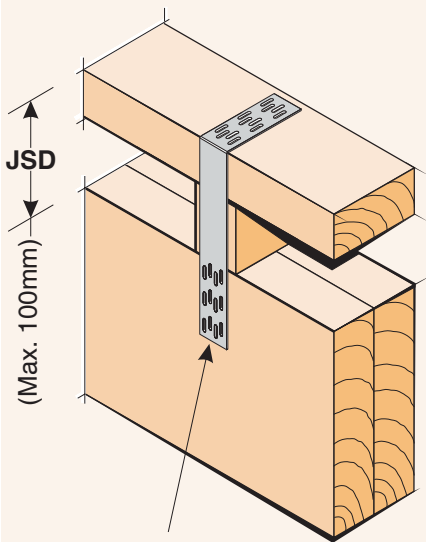


* Note: It is preferable for the top fixing to be located on the uppermost top plate or top plate packer to provide better fixing options for the truss connections

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.



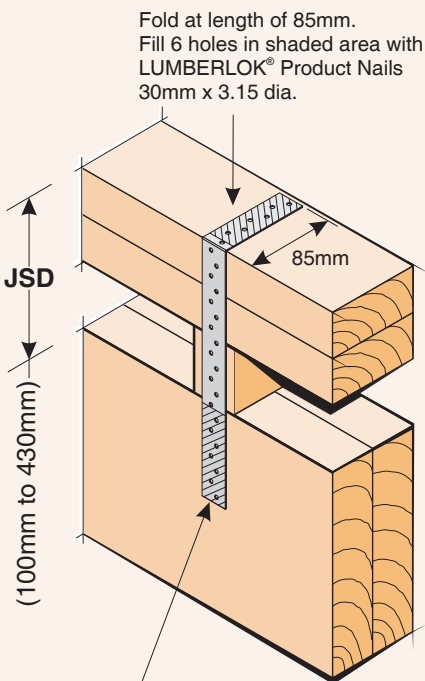
LUMBERLOK® Stud Strap on one face.

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.



LUMBERLOK® Sheet Brace Strap on one face.

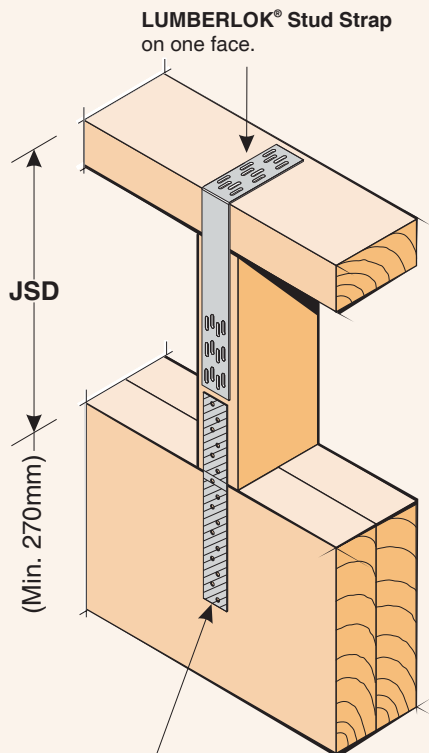
Fill 6 holes in shaded area with LUMBERLOK® Product Nails 30mm x 3.15 dia.

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.

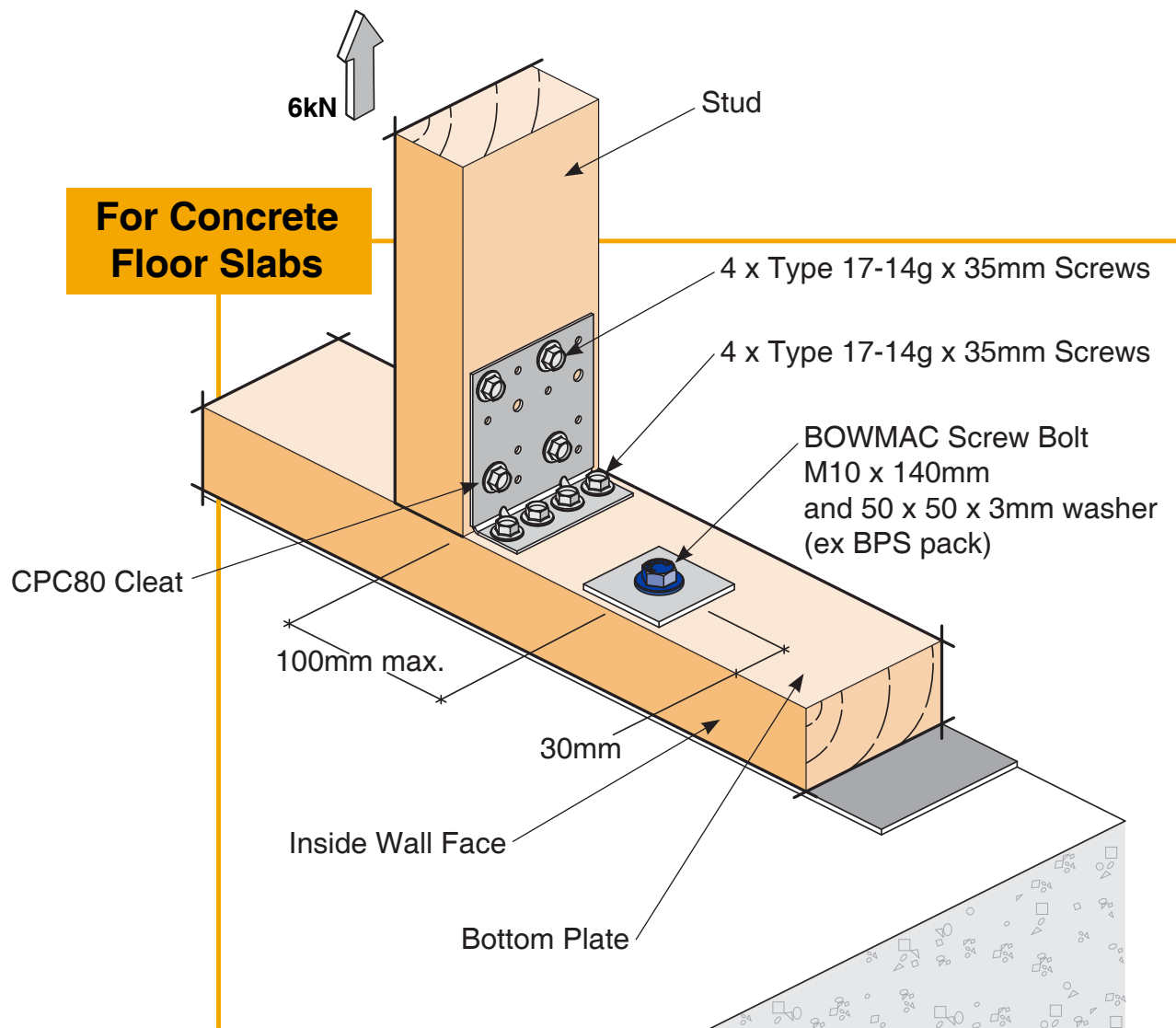


LUMBERLOK® Sheet Brace Strap 200mm on one face.

Fill 6 holes in both shaded areas of jack stud and lintel with LUMBERLOK® Product Nails 30mm x 3.15 dia.

6kN STUD TO BOTTOM PLATE FIXING

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

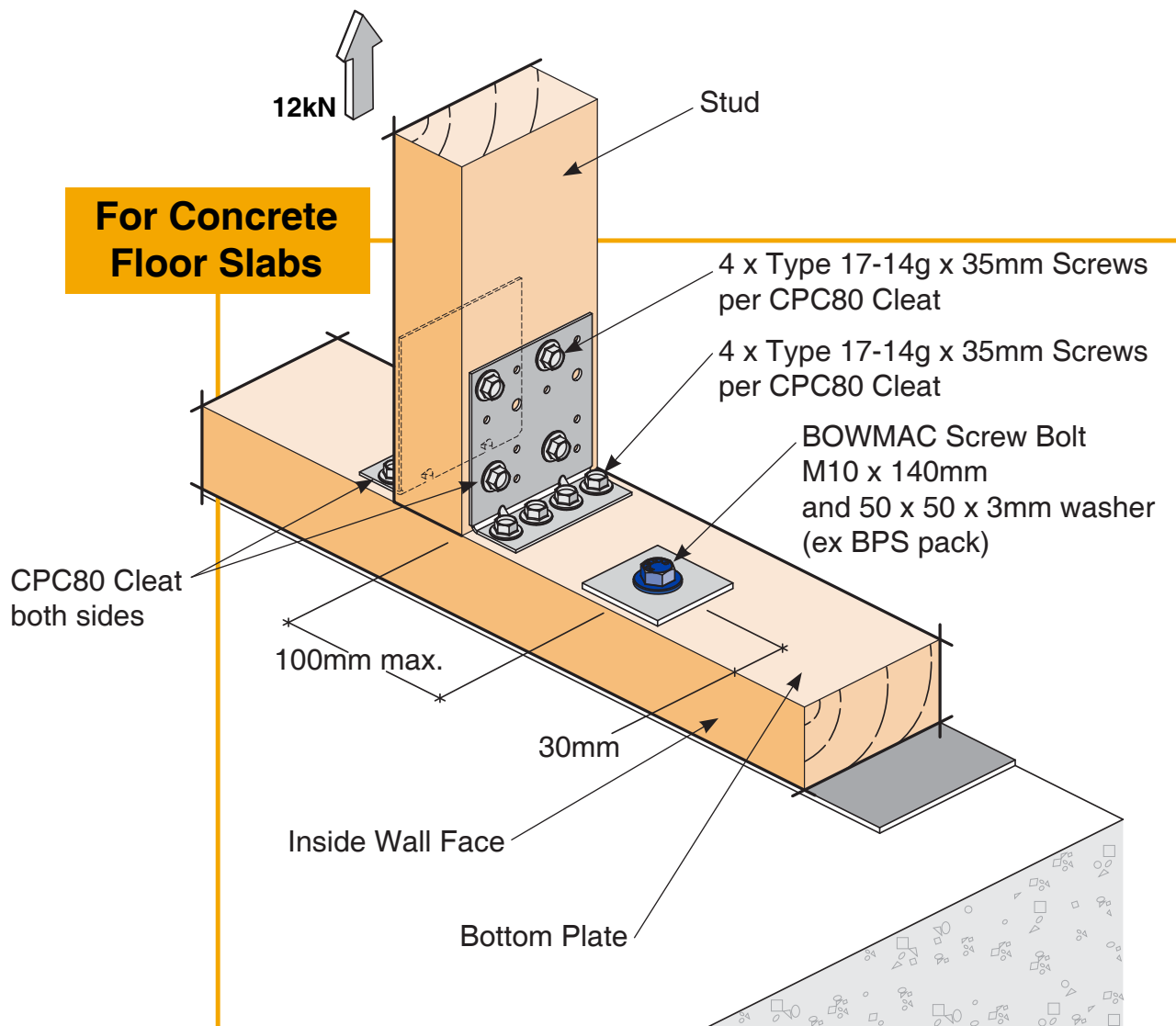


Code: SBP
Material: CPC80 1.55mm G300 Z275 Galvanised Steel
Packed: 2 x CPC80 Cleats
 16 x Type 17-14g x 35mm Hex Head Galvanised Screws

**Available from leading Builders Supply Merchants
 throughout New Zealand**

12kN STUD TO BOTTOM PLATE FIXING

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



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

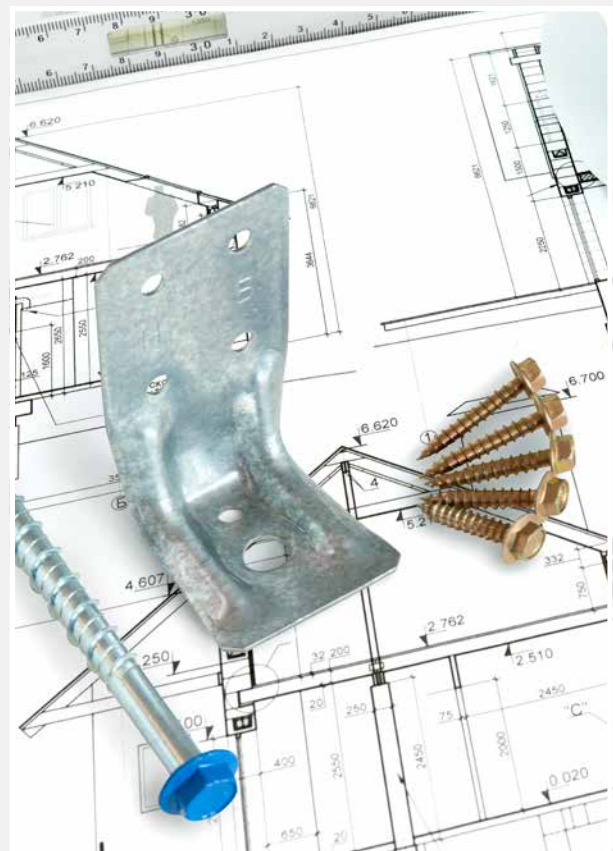
Developed in conjunction with MiTek™, the GIB HandiBrac® has been designed and tested by Winstone Wallboards for use in GIB EzyBrace® elements that require hold-downs. The GIB HandiBrac® is a substitute for bottom plate hold-down straps.

- 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



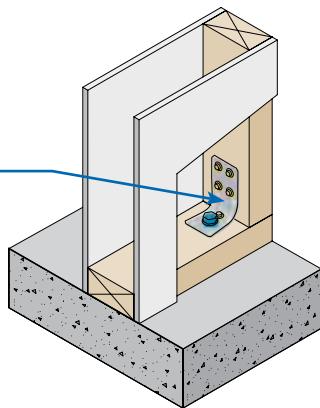
PANEL HOLD-DOWN DETAILS

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

15kN
characteristic
uplift load

GIB HandiBrac®
bracket

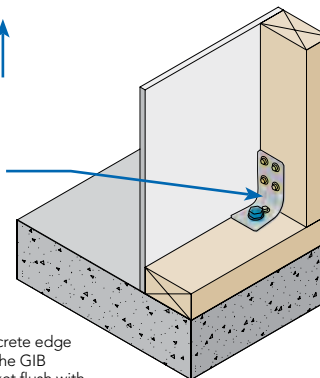


CONCRETE FLOOR – EXTERNAL WALL

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.

15kN
characteristic
uplift load

GIB HandiBrac®
bracket



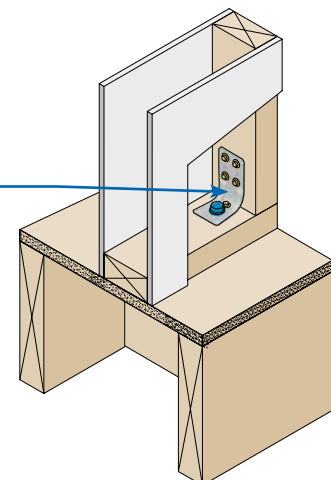
To maximise concrete edge
distance, locate the GIB
HandiBrac® bracket flush with
the inside face of the stud

TIMBER FLOOR – INTERNAL WALL

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

12kN
characteristic
uplift load

GIB HandiBrac®
bracket

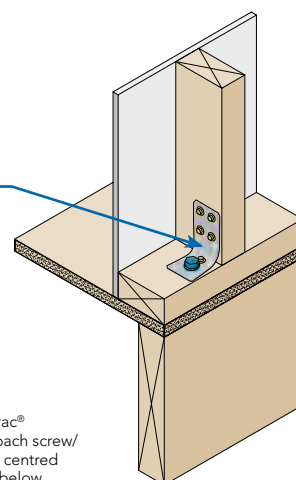


TIMBER FLOOR – EXTERNAL WALL

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

12kN
characteristic
uplift load

GIB HandiBrac®
bracket



Locate the GIB HandiBrac®
bracket such that the coach screw/
BOWMAC screw bolt is centred
over the joist or bearer below

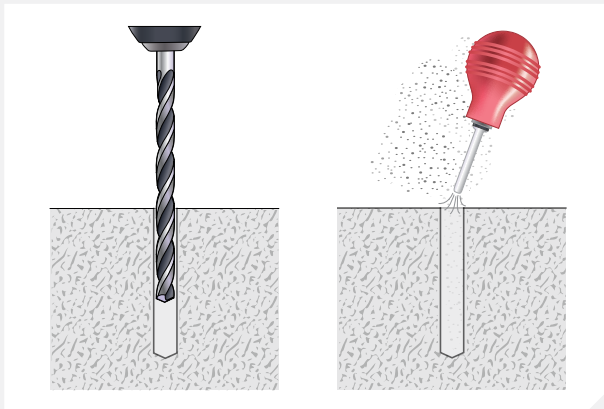


INSTALLATION OF GIB HANDIBRAC® BRACKET

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

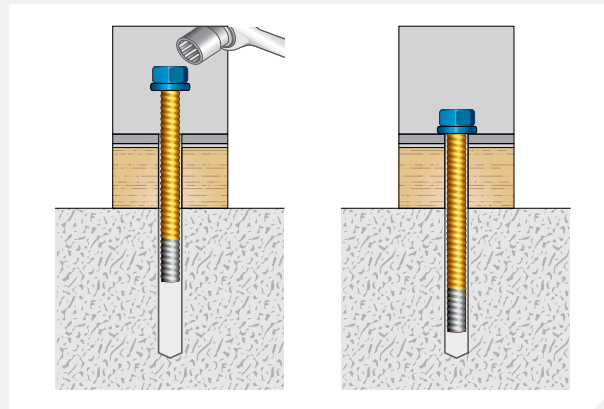
Installation Tips

- 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.

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NZ Registered Design Application #420161

MANUFACTURER

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

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www.mitek.nz.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

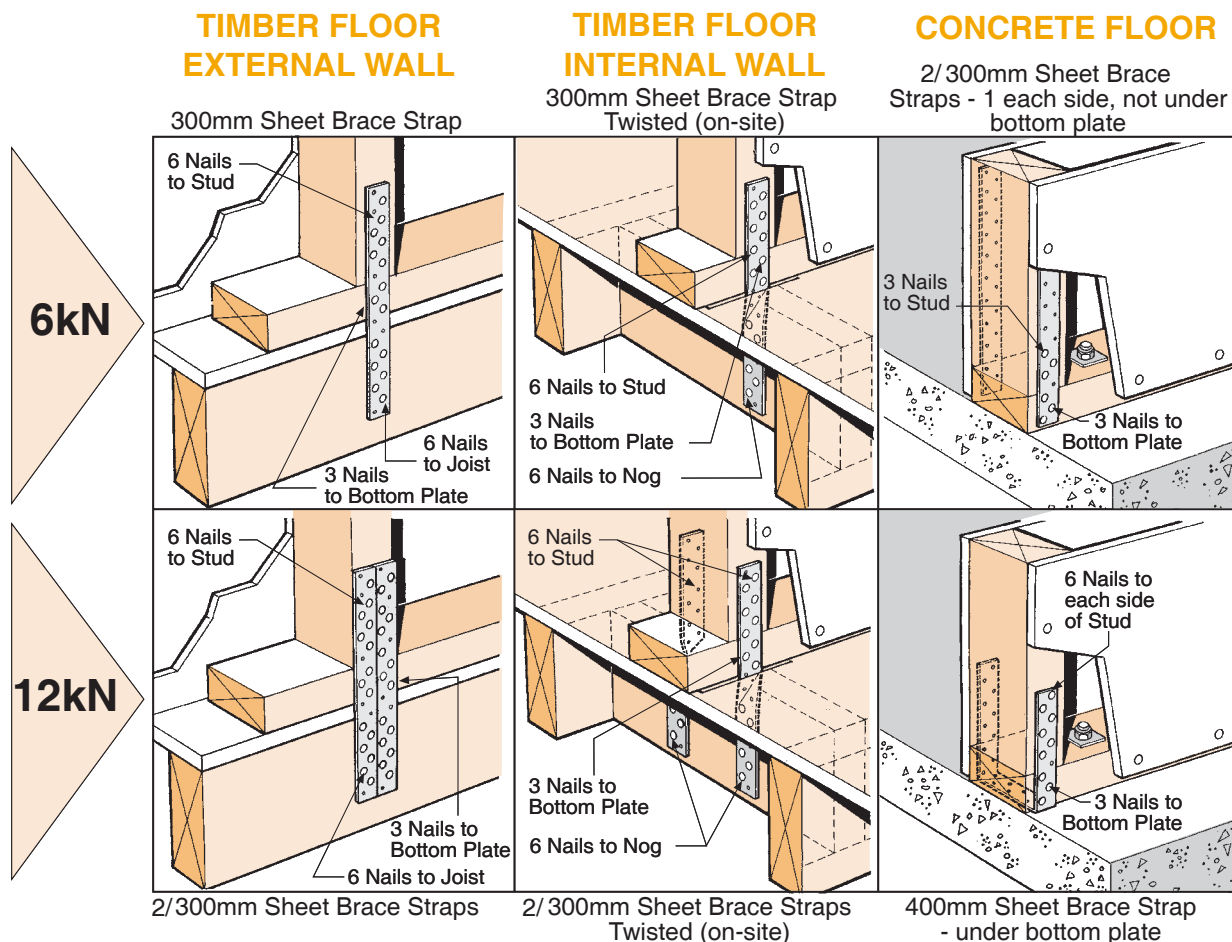
Fax: 64-9-633 0101, Free Fax: 0800 229 222
Email: info@gib.co.nz
Web: www.gib.co.nz



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

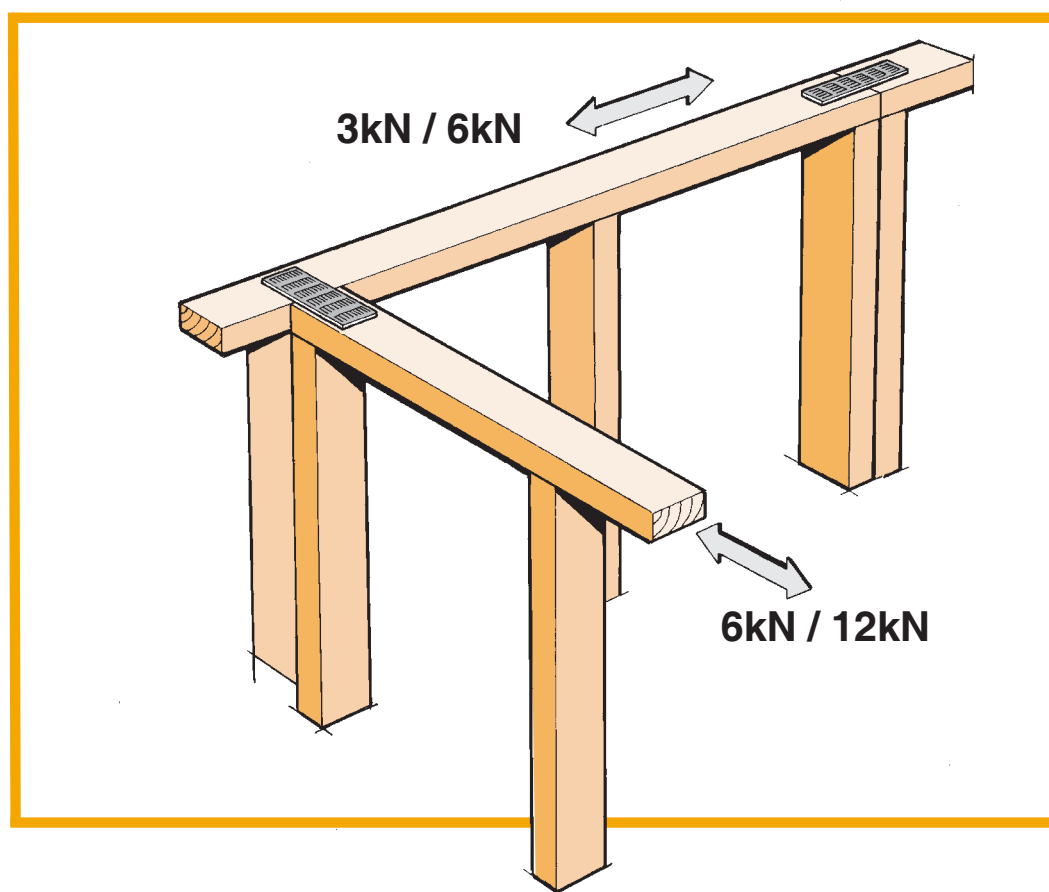
AS PER CLAUSE 8.7.3 NZS 3604:2011

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

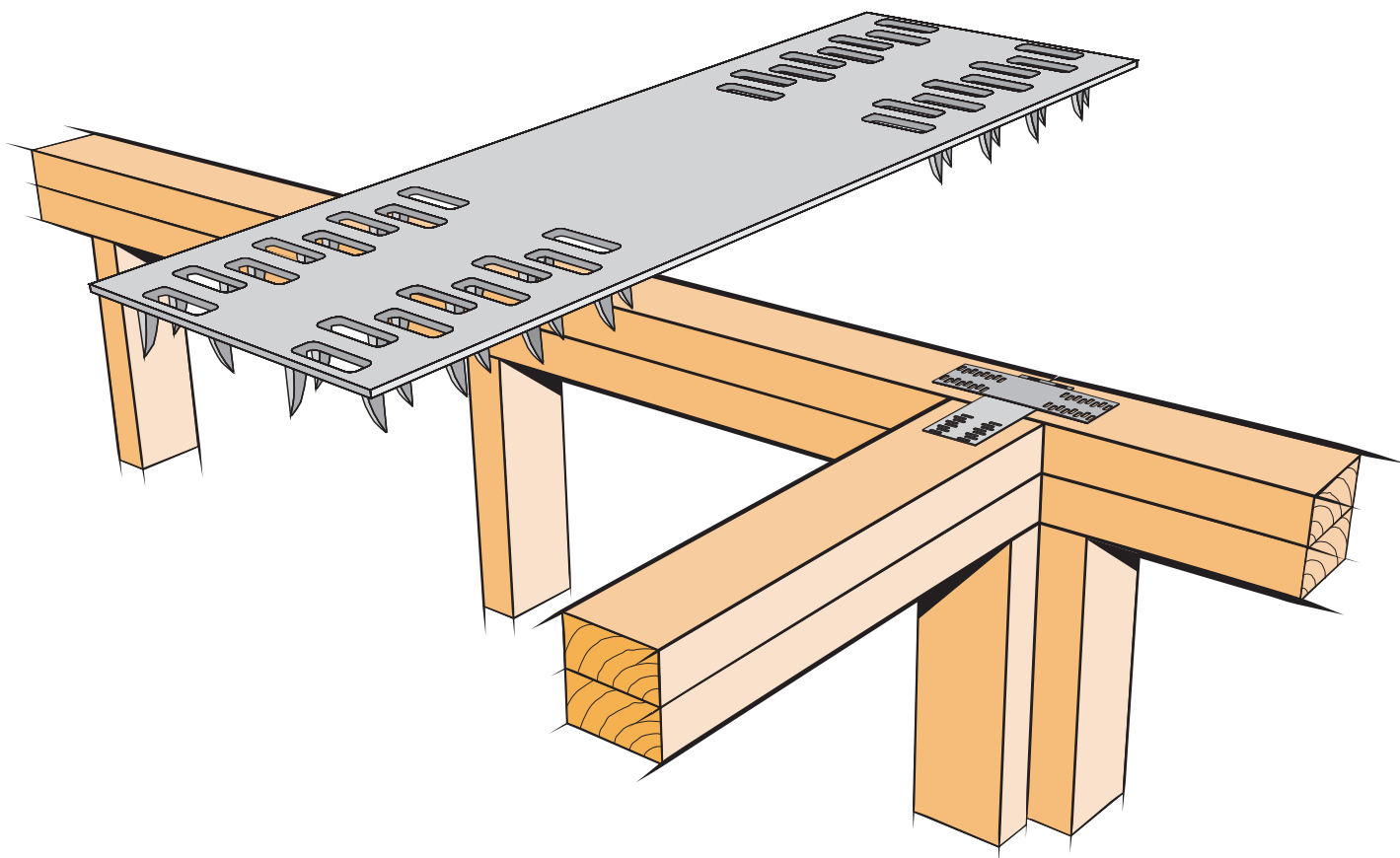
| Connection capacity | LUMBERLOK Connector |
|---------------------|-------------------------|
| 3kN | Tylok 6T5 OR Strap Nail |
| 6kN | Tylok 6T10 OR PLATE-LOK |



Available from leading Builders Supply Merchants
throughout New Zealand

PLATE-LOK

6kN CAPACITY CONNECTOR



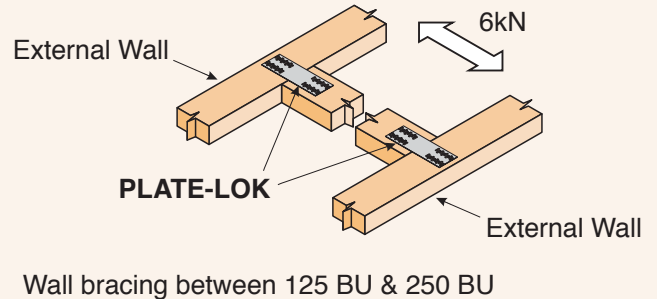
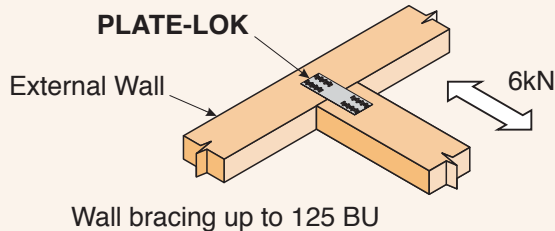
- ★ The LUMBERLOK PLATE-LOK is ideally suited for right angle wall connections with a unique clear centre section to allow easy overlapping
- ★ Suitable for use in SG8 Radiata pine/Douglas fir & LVL8 top plates
- ★ This brochure also provides simple guidelines for the interpretation of Clause 8.7.3 NZS 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

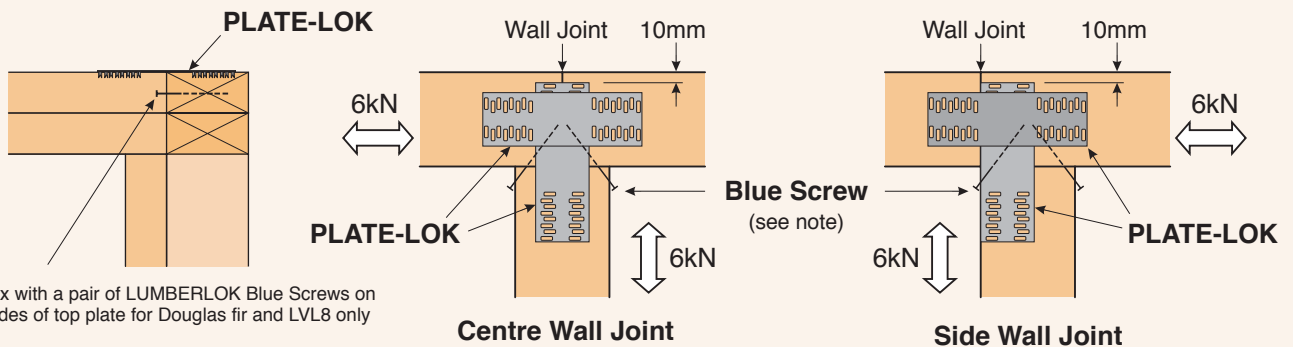
TOP PLATE CONNECTIONS AS REQUIRED BY CLAUSE 8.7.3 NZS 3604:2011

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

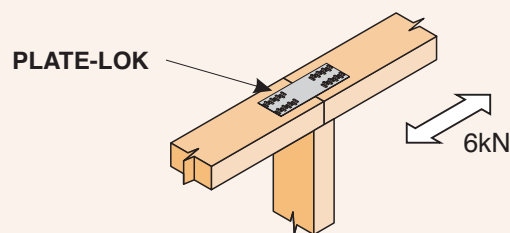
- (a) Walls with bracing elements not exceeding 125 bracing units (BU) require a 6kN capacity connection to one external wall.
- (b) Walls with bracing elements not exceeding 250 BU require a 6kN capacity connection to two external walls.



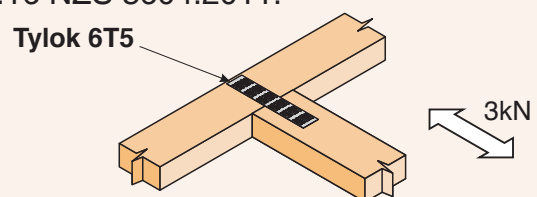
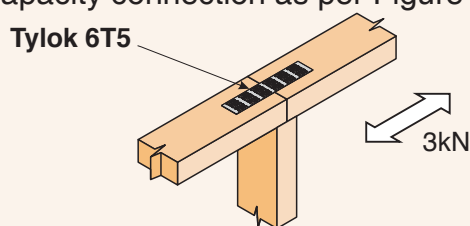
② Details of top plate joints using LUMBERLOK PLATE-LOK at “T” junction walls are shown below:



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.

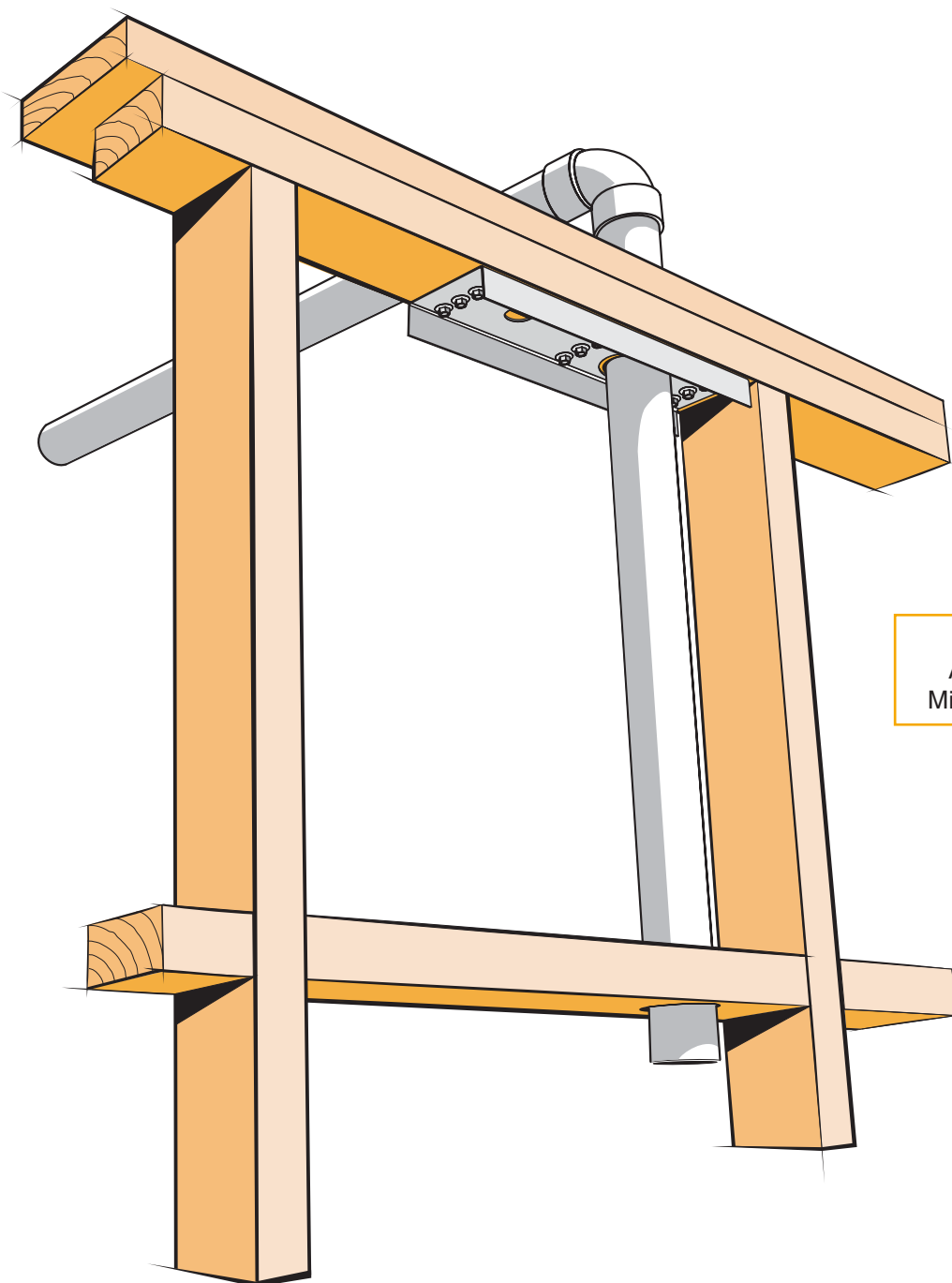


④ Top plate joints for walls at right angles and in line that have either no bracing elements or are on a single storey building only with wall bracing demands not exceeding 100 BU require a 3kN capacity connection as per Figure 8.15 & 8.16 NZS 3604:2011.



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

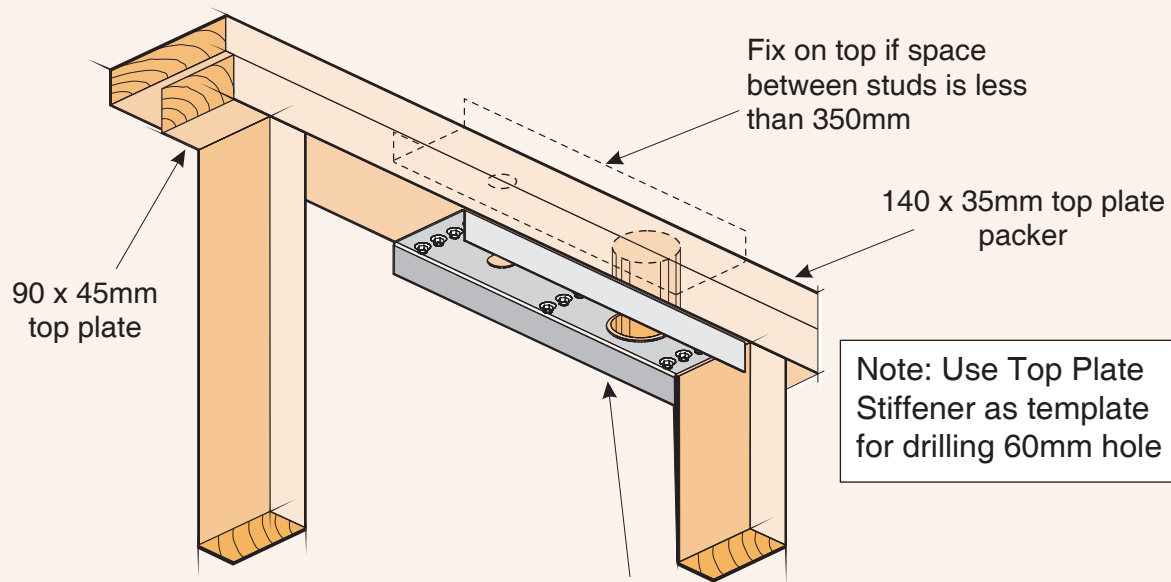


NZ Reg. Design
App. 408133 © 2006
MiTek New Zealand Ltd.



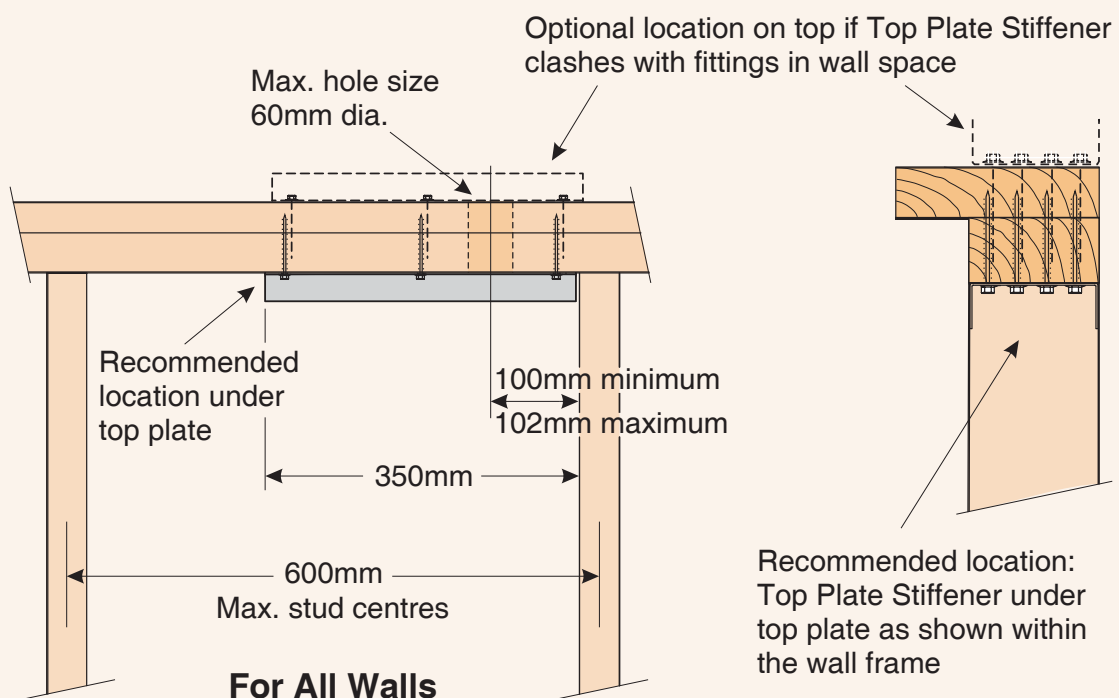
SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117353342>



Note: For single top plate fix with Type 17-14g x 35mm Hex Head Screws (not supplied)

Fix up into top plate and into packer with 3 rows of 4 x Type 17-14g x 75mm Hex Head Screws (supplied). It may be advisable to drill pilot hole for each screw to assist installation



Code: TPS

Material: 1.55mm G300 Z275 Galvanised Steel

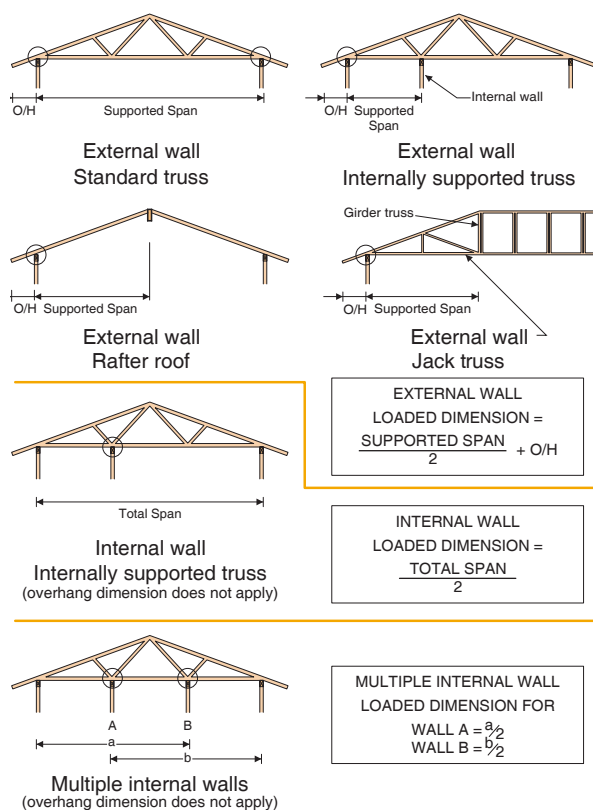
Packed: 8 x Top Plate Stiffeners per Carton
100 x Type 17-14g x 75mm Hex Head Galvanised Screws

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



FIXING SELECTION CHART

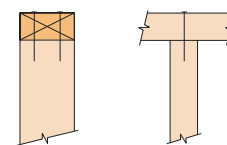
(Suitable for walls supporting roof members at 600, 900 or 1200mm crs.)
Wind Zones L, M, H, VH, EH, as per NZS 3604:2011

| 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

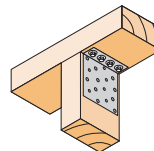
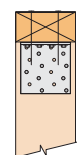
2 x 90mm x 3.15 dia. plain steel
wire nails driven vertically into stud.



FIXING TYPE B 4.7kN

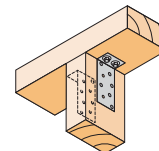
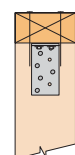
CHOOSE ANY OF THE 3 OPTIONS BELOW

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



Plus
LUMBERLOK
6kN Stud Anchor
(CPC80)

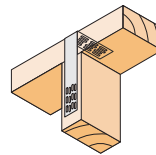
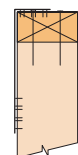
2 x 90mm x 3.15 dia. plain steel
wire nails driven vertically into stud.



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.



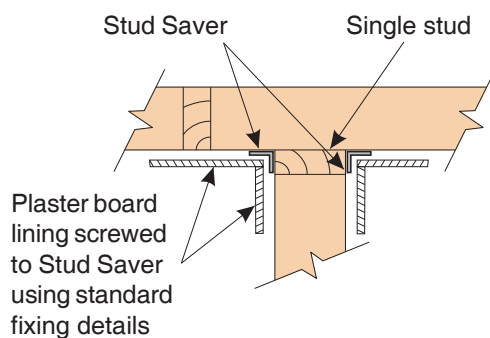
SCAN FOR
SPECIFICATION
VIDEO

<https://vimeo.com/117353604>

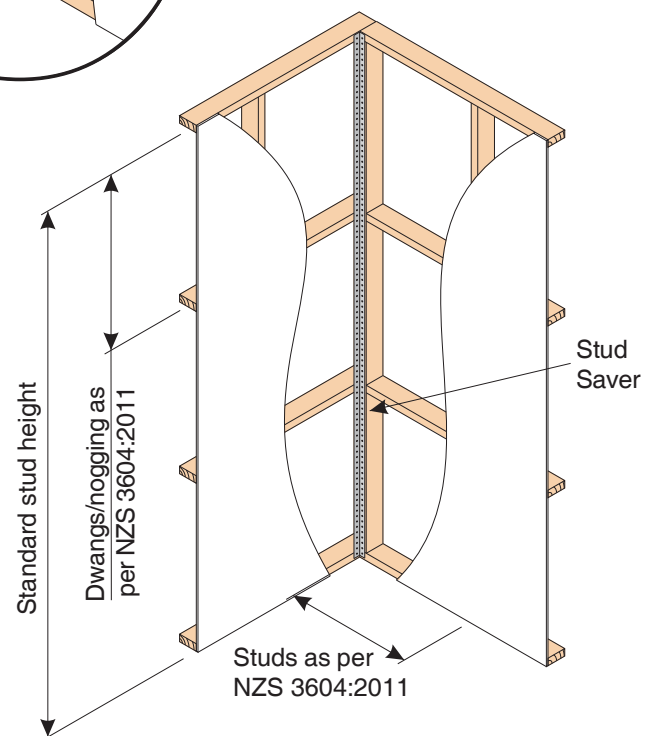
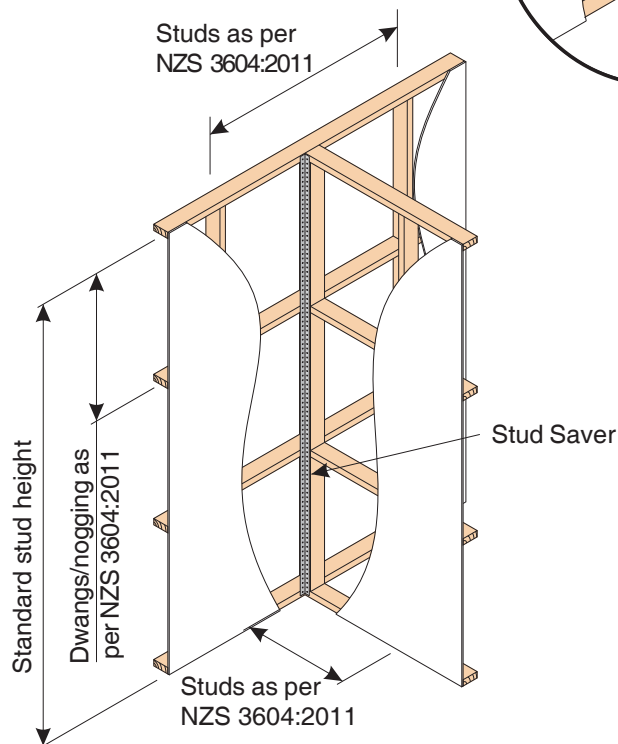
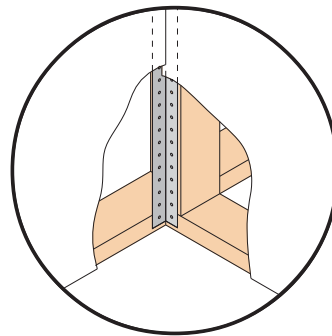
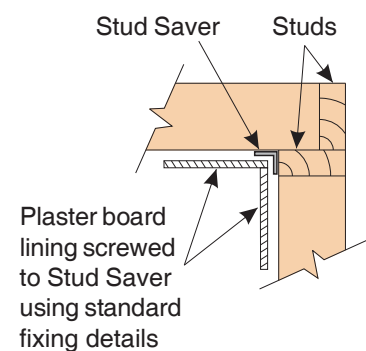
STUD SAVER FOR WALLS

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.



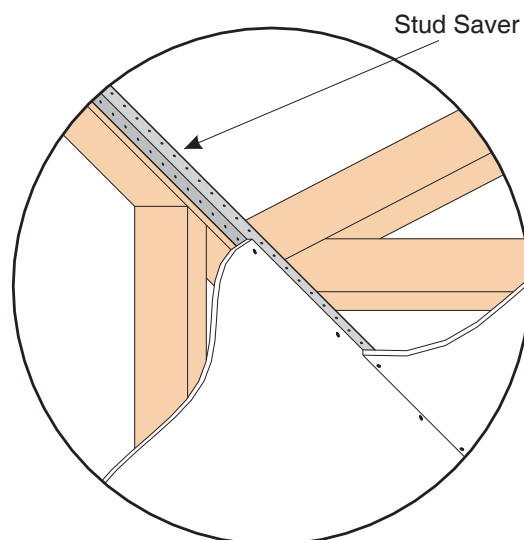
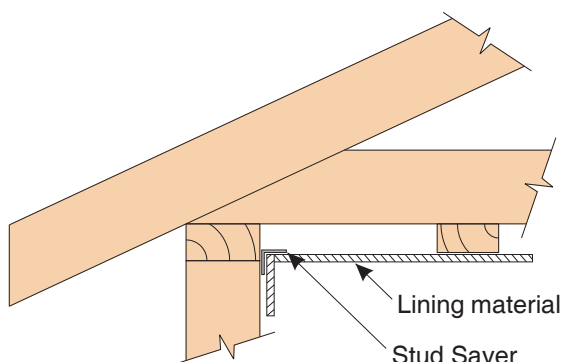
NOTE:
Fix the Stud Saver to the adjacent stud with 30mm x 2.5 dia. clouts at 300mm crs. and 1/ 30mm x 2.5 dia. clout to each dwang/nog and plate.



STUD SAVER FOR CEILINGS

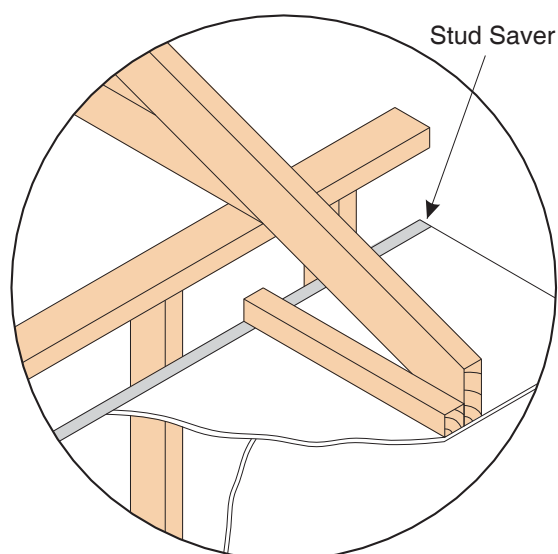
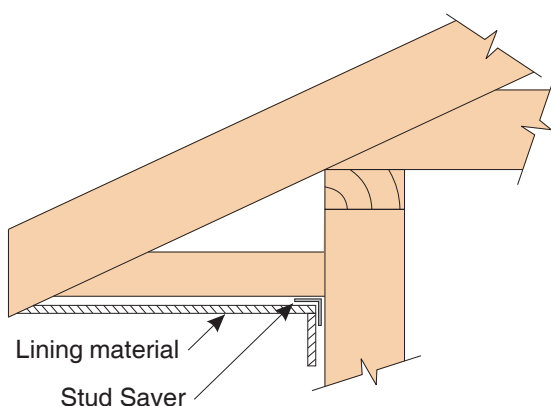
Patent No. 314494

- ★ 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

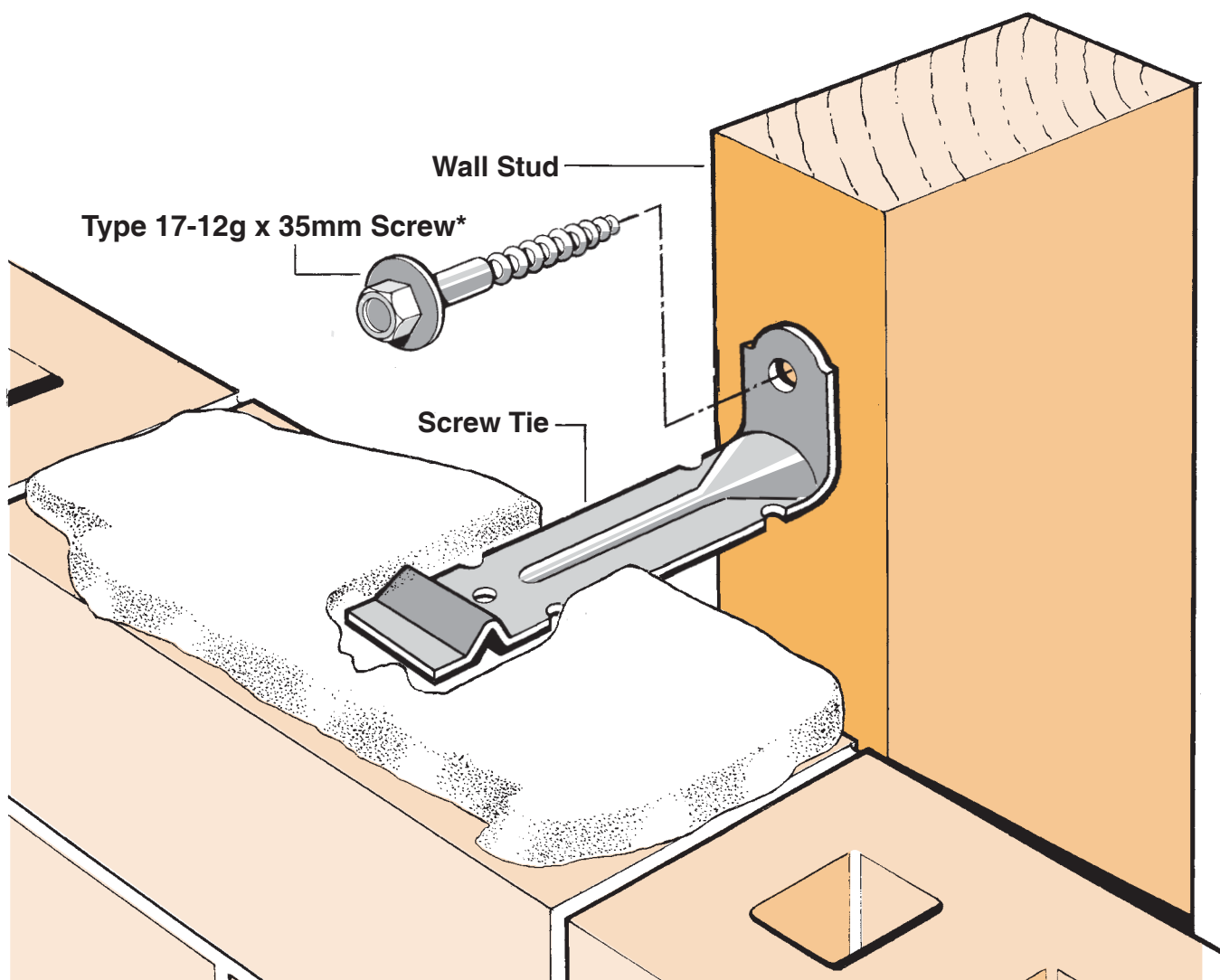
- ★ Eliminates dwang/nog for wall lining support.
- ★ Eliminates ribbon plate for soffit sprockets and lining support.



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

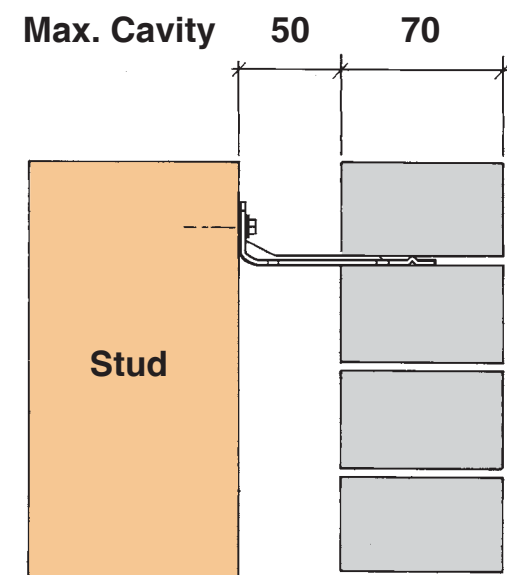


***NOTE:**

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

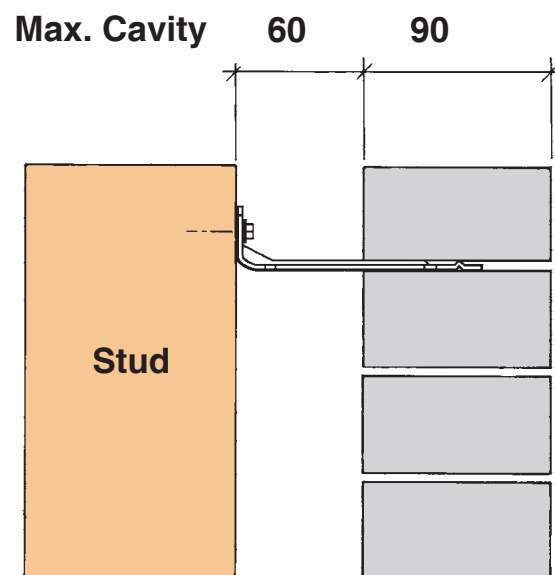
**Available from leading Builders Supply Merchants
throughout New Zealand**

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.

Correspondence from: **AUCKLAND**

40 Neales Road, East Tamaki 2013

PO Box 58-014, Botany 2163

Phone: 09-274 7109

Fax: 09-274 7100

www.mitek.nz.co.nz

CHRISTCHURCH

14 Pilkington Way, Wigram 8042

PO Box 8387, Riccarton 8440

Phone: 03-348 8691

Fax: 03-348 0314

MITEK® LUMBERLOK® BOWMAC®

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, 2018
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:

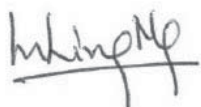
1. The verification of the design assumptions within this guide
2. All proprietary products meeting their performance specification requirements including B2 – Durability;

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

Date: January 2018



In Ling Ng
Technical Services Manager
BE (Hons), CPEng, IntPE
MIPENZ (ID: 146585)

BUILDING WITH BOWMAC®

DESIGN INFORMATION

TIMBER & DURABILITY

- All structural timber grades to conform to NZS 3603:1993 Amendment 4.
- Timber can be green. Our recommendation is moisture content to be 20% or less at time of fabrication.
- Treatment to NZS 3602:2003.

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.

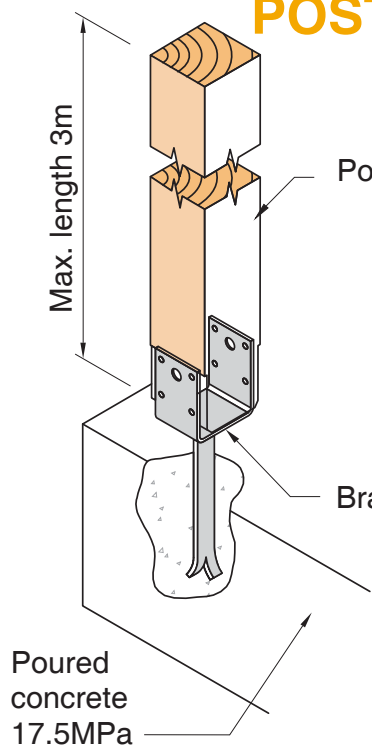
PRODUCT SPECIFICATION

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.

COPYRIGHT

These drawings are the property of **MiTek New Zealand Limited** and must not be copied or reproduced without permission.

POST & BEARER BRACKETS



Post, maximum specification:

- B132 - 100x50mm.
- All other brackets in bracket range - 100x100mm.
- 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)

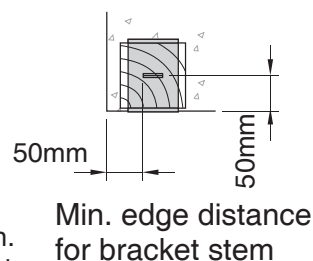
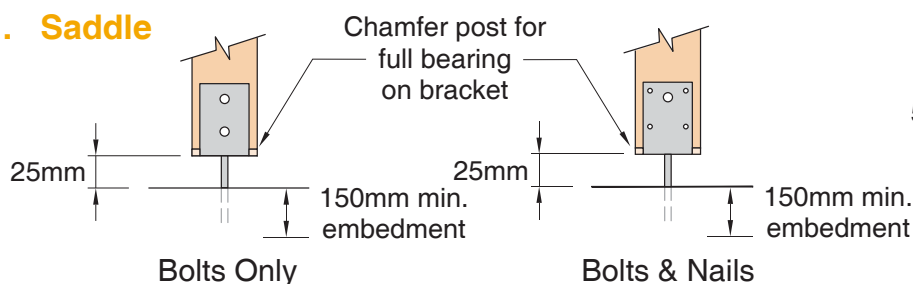
Bracket (Saddle, Rag Strap or Pipe Insert)

FIXING NOTE

- All bolt holes accommodate M12 Bolt unless noted.
- Nail holes to accommodate 40mm x 3.15 dia. flat head square twisted shank nails. Hot dip galvanised.

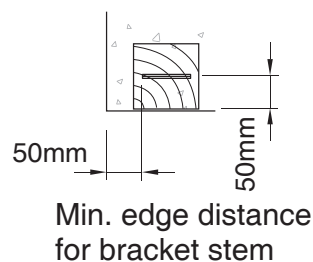
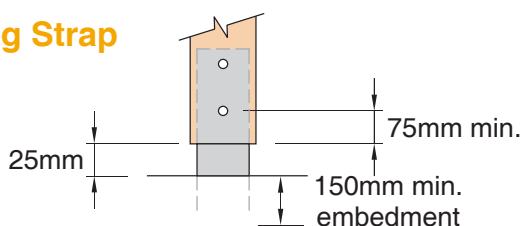
TYPICAL USE

1. Saddle



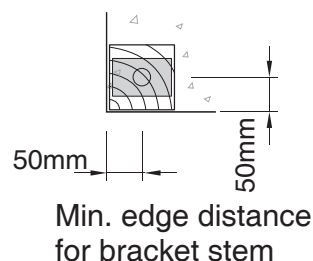
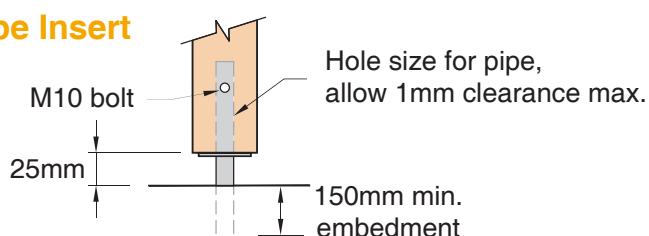
Min. edge distance for bracket stem

2. Rag Strap



Min. edge distance for bracket stem

3. Pipe Insert



Min. edge distance for bracket stem

ON-SITE FITTED DIMENSIONS

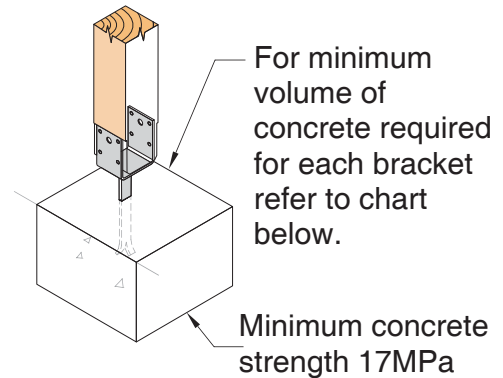
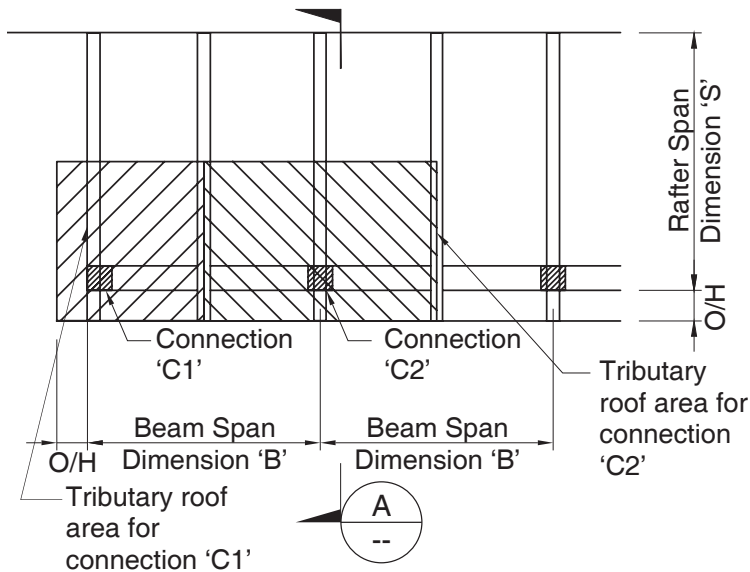
MiTek New Zealand Limited
 AUCKLAND
 PO Box 58-014, Botany 2163
 Phone: 09-274 7109
 Fax: 09-274 7100
 www.mitek.co.nz
 CHRISTCHURCH
 PO Box 8387, Riccarton 8440
 Phone: 03-348 8691
 Fax: 03-348 0314
 MITEK® LUMBERLOK® BOWMAC®

BOWMAC® STRUCTURAL BRACKETS
DESIGN DETAILS

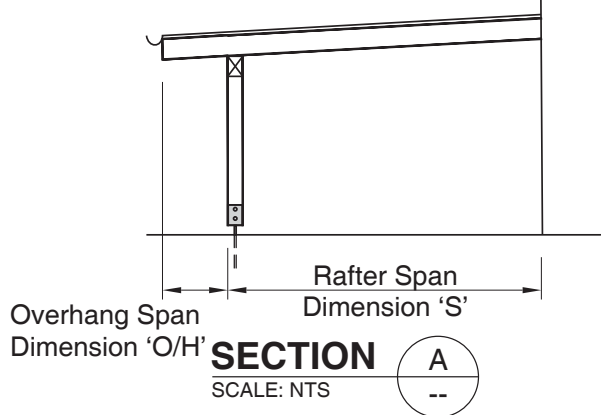
Job No: CH1000
 Date: 09/2011
 Sheet No: Sheet 1

BUILDING WITH BOWMAC®

POST & BEARER BRACKETS



FOUNDATION DETAILS



EXAMPLE AREAS

- Tributary roof area on connection 'C1' = $(S/2 + O/H) \times (B/2 + O/H)$
- Tributary roof area on connection 'C2' = $(S/2 + O/H) \times B$

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

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

Concrete volumes for roof area beyond 12m² can be increased on a pro-rata basis.

LAYOUT & LOAD DIMENSIONS

| Roof type | Wind zone | Area of roof supported | | | | | | |
|-----------|------------|------------------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| | | 1m ² | 2m ² | 4m ² | 6m ² | 8m ² | 10m ² | 12m ² |
| 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 |
| Heavy* | Low | Type 1 | Type 1 | Type 1 | Type 1 | Type 1 | Type 1 | Type 2 |
| | 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 |

LOAD TABLE

| Roof type | Wind zone | Volume of footing concrete (m ³) for area of roof supported | | | | | | |
|-----------|------------|---|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| | | 1m ² | 2m ² | 4m ² | 6m ² | 8m ² | 10m ² | 12m ² |
| 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 |
| Heavy* | Low | 0.02 | 0.03 | 0.07 | 0.10 | 0.15 | 0.15 | 0.20 |
| | 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 | | | | | | |

MAX. CONCRETE FOOTING VOLUME TABLE

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 Phone: 03-348 8891
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BOWMAC® STRUCTURAL BRACKETS DESIGN DETAILS

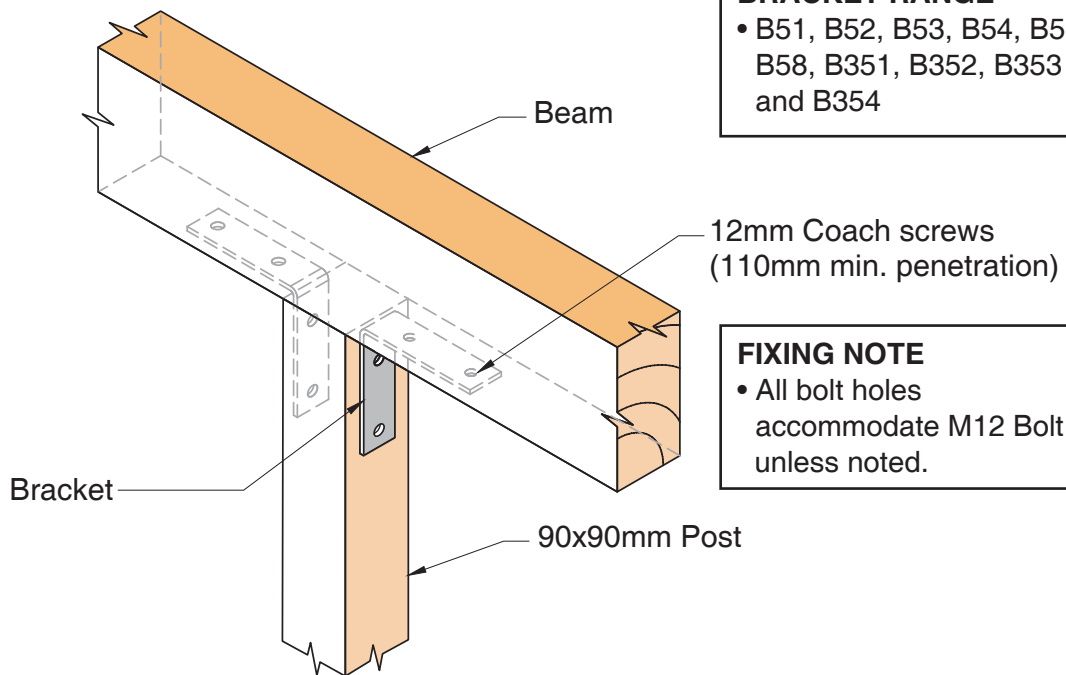
Job No: CH1000

Date: 09/2011

Sheet No: Sheet 2

BUILDING WITH BOWMAC®

ANGLE BRACKETS WITHOUT GUSSET



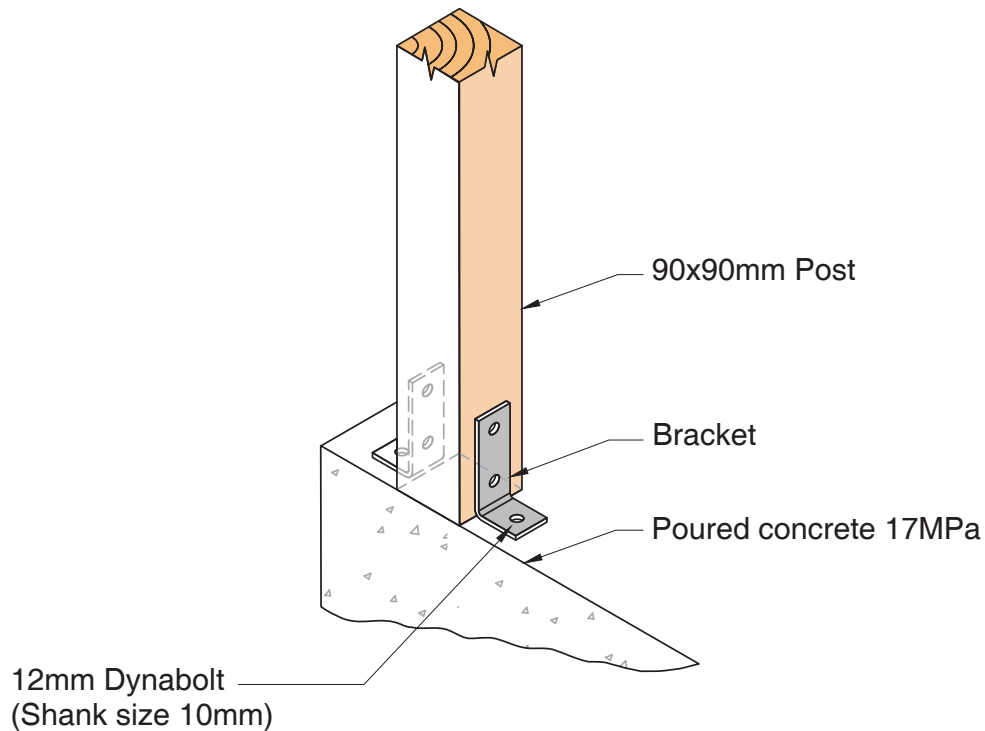
BRACKET RANGE

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

FIXING NOTE

- All bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE



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BOWMAC® STRUCTURAL BRACKETS DESIGN DETAILS

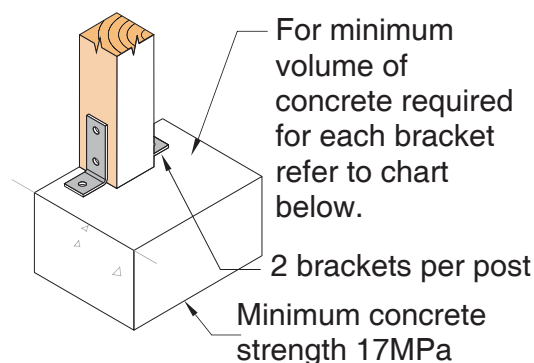
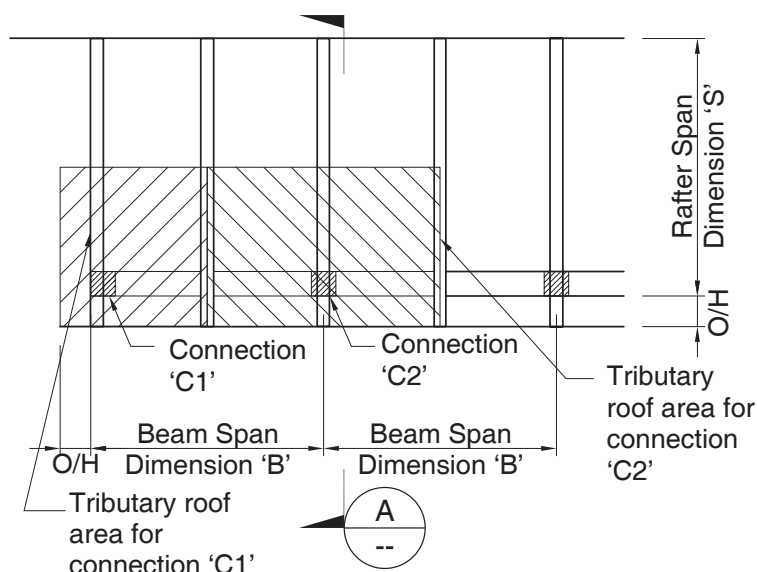
Job No: CH1000

Date: 09/2011

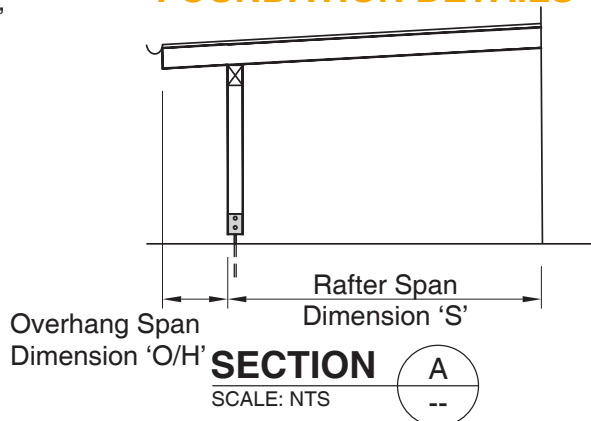
Sheet No: Sheet 3

BUILDING WITH BOWMAC®

ANGLE BRACKETS WITHOUT GUSSET



FOUNDATION DETAILS



EXAMPLE AREAS

- Tributary roof area on connection 'C1' = $(S/2 + O/H) \times (B/2 + O/H)$
- Tributary roof area on connection 'C2' = $(S/2 + O/H) \times B$

BRACKET

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

LAYOUT & LOAD DIMENSIONS

| Roof type | Wind zone | Max. Roof Area (m ²) |
|-----------|------------|----------------------------------|
| 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 |

LOAD TABLE

| Roof type | Wind zone | Volume of footing concrete (m ³) for area of roof supported | | | | | | |
|-----------|------------|---|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| | | 1m ² | 2m ² | 4m ² | 6m ² | 8m ² | 10m ² | 12m ² |
| 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.

Concrete volumes for roof area beyond 12m² can be increased on a pro-rata basis.

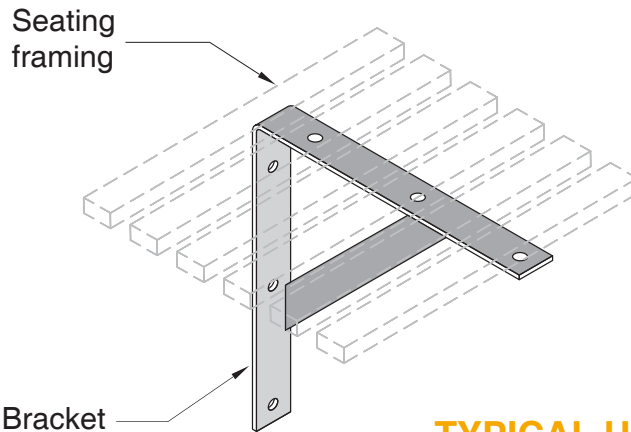
MAX. CONCRETE FOOTING VOLUME TABLE

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BOWMAC® STRUCTURAL BRACKETS
 DESIGN DETAILS

Job No: CH1000
 Date: 09/2011
 Sheet No: Sheet 4

ANGLE BRACKETS WITH GUSSET



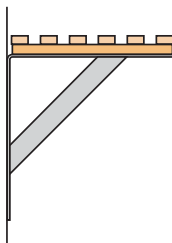
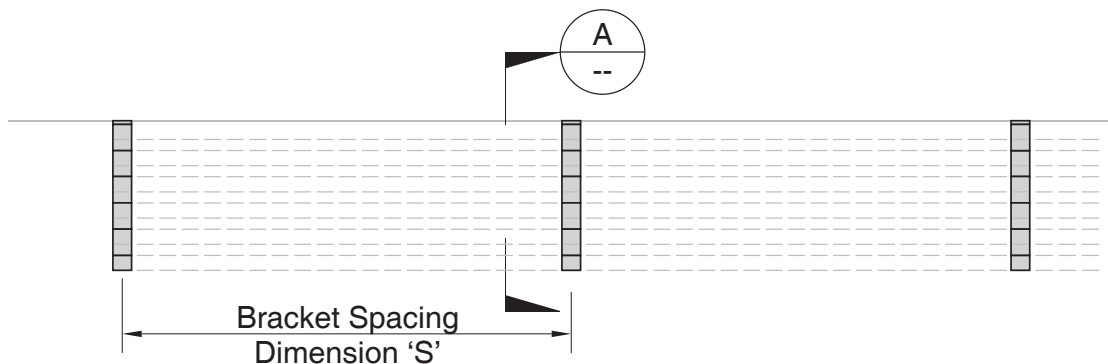
BRACKET RANGE

- B163 and B165

FIXING NOTE

- All bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE



SECTION

SCALE: NTS



SEATING LOAD

- Bracket designed to carry live load of 3.0kPa.

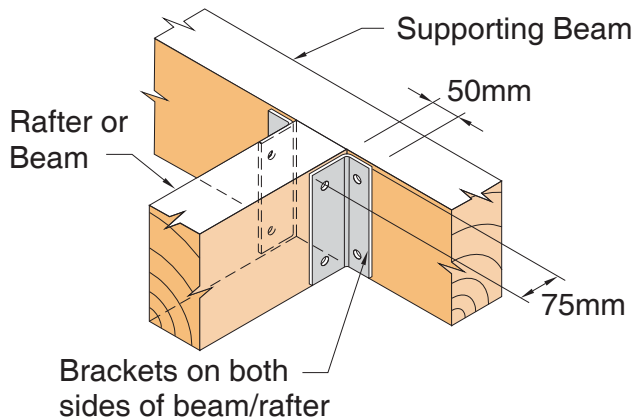
BRACKET SPACING TABLE

| 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.

HEAVY DUTY SHORT ANGLE BRACKETS



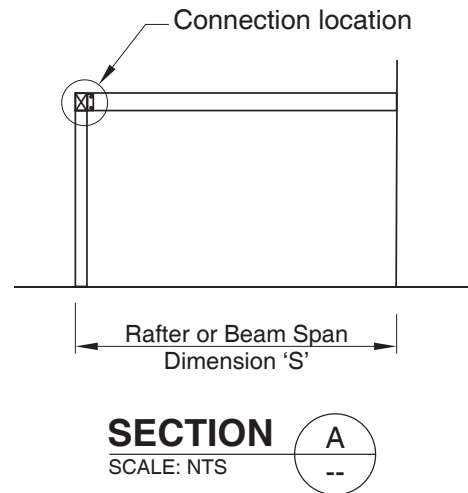
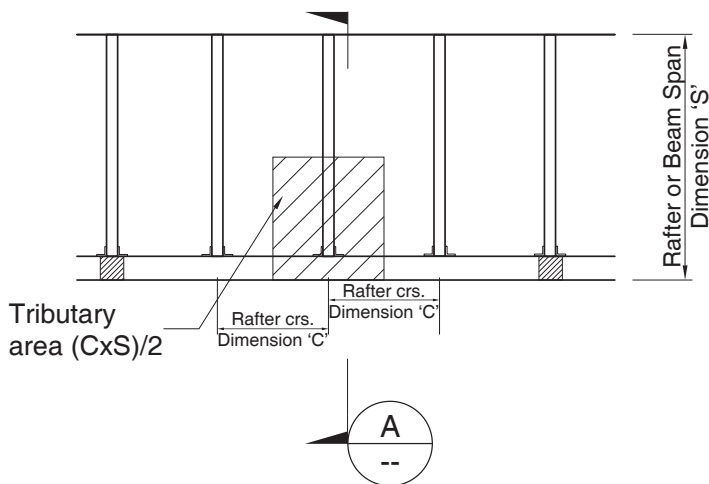
BRACKET RANGE

- B175, B176, B177 and B178*
- (*holes for M16 Bolt)

FIXING NOTE

- All bolt holes accommodate M12 Bolt unless noted.

TYPICAL USE



LAYOUT & LOAD DIMENSIONS

| Roof type | Wind zone | Max. Roof Area (m ²) | |
|-----------|------------|----------------------------------|---------|
| | | 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

LOAD TABLE

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BOWMAC® STRUCTURAL BRACKETS DESIGN DETAILS

Job No: CH1000

Date: 09/2011

Sheet No: Sheet 6

BUILDING WITH BOWMAC®

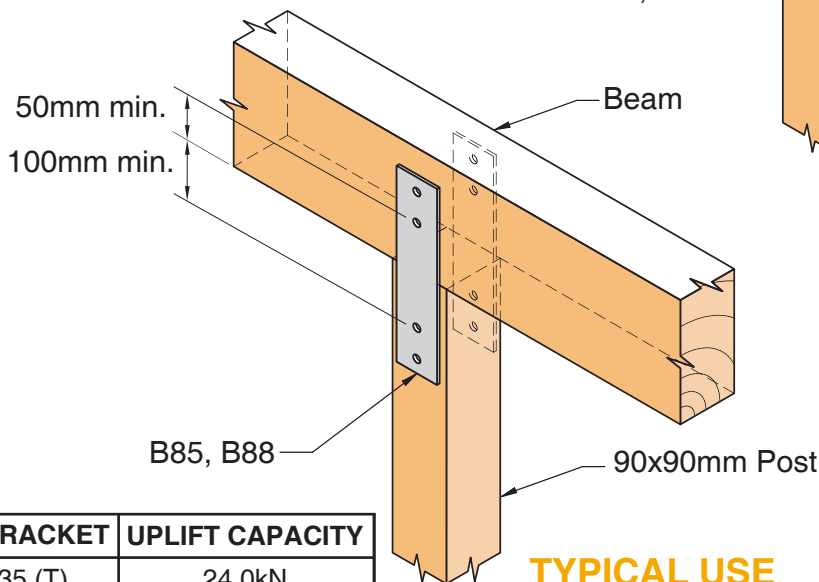
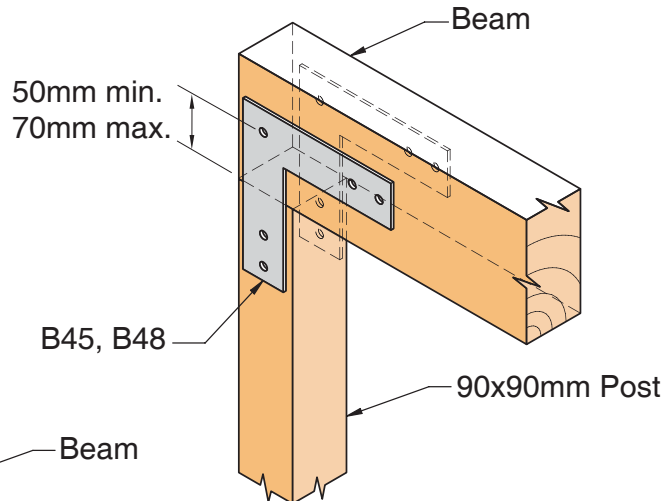
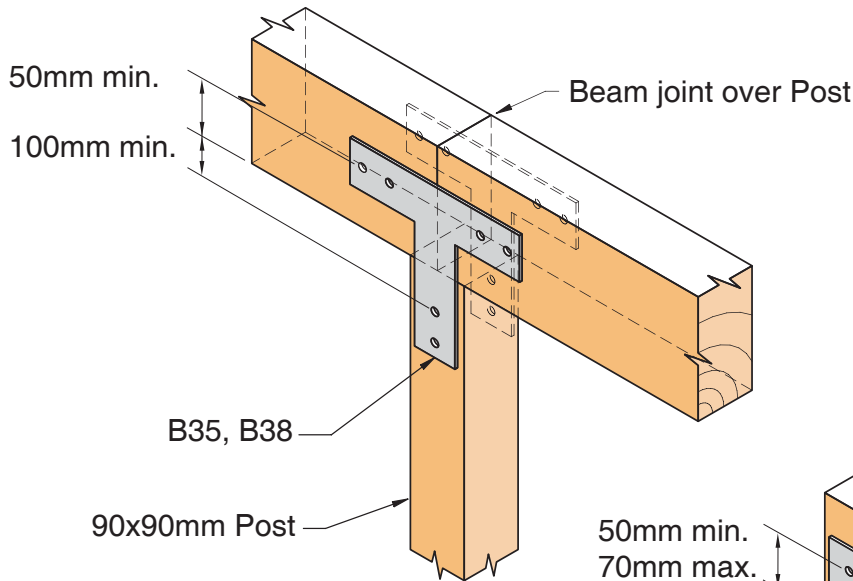
STRAP, T & L BRACKETS

BRACKET RANGE

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

FIXING NOTE

- All bolt holes accommodate M12 Bolt unless noted.



NOTE:

- All T's, L's & Straps have two width selections of 50mm and 75mm. Loads for each width are the same, thus the choice of width is aesthetic only, i.e. 75mm width looks best on 150mm wide timber.

| BRACKET | UPLIFT CAPACITY |
|----------|-----------------|
| B35 (T) | 24.0kN |
| B38 (T) | 30.3kN |
| B45 (L) | 14.5kN |
| B48 (L) | 25.0kN |
| B85, B88 | 16.3kN |

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BOWMAC® STRUCTURAL BRACKETS DESIGN DETAILS

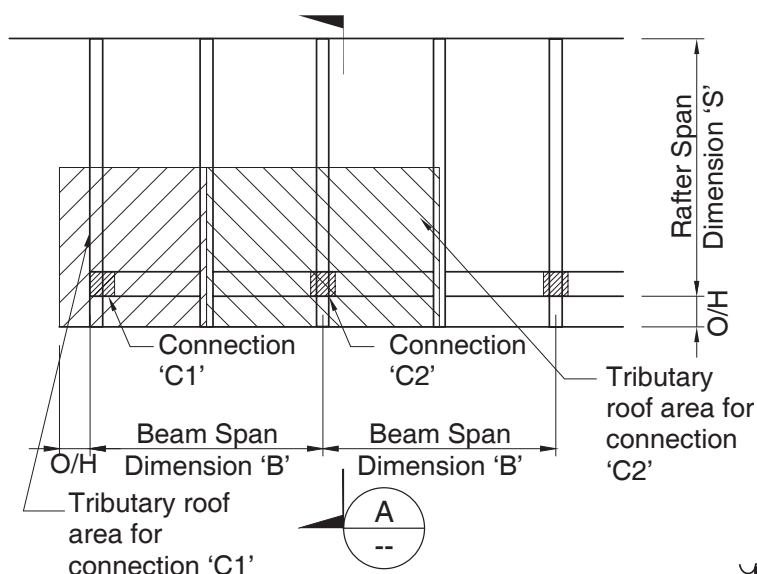
Job No: CH1000

Date: 09/2011

Sheet No: Sheet 7

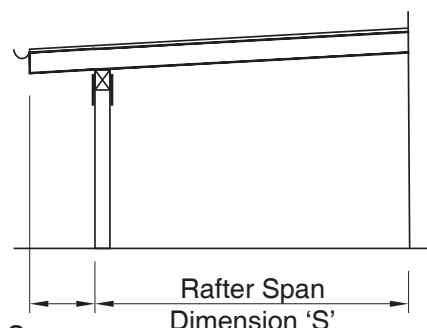
BUILDING WITH BOWMAC®

STRAP, T & L BRACKETS



EXAMPLE AREAS

- Tributary roof area on connection 'C1' = $(S/2 + O/H) \times (B/2 + O/H)$
- Tributary roof area on connection 'C2' = $(S/2 + O/H) \times B$



Overhang Span Dimension 'O/H' **SECTION**
SCALE: NTS

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.

LAYOUT & LOAD DIMENSIONS

| 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 |

LOAD TABLE

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BOWMAC® STRUCTURAL BRACKETS DESIGN DETAILS

Job No: CH1000

Date: 09/2011

Sheet No: Sheet 8

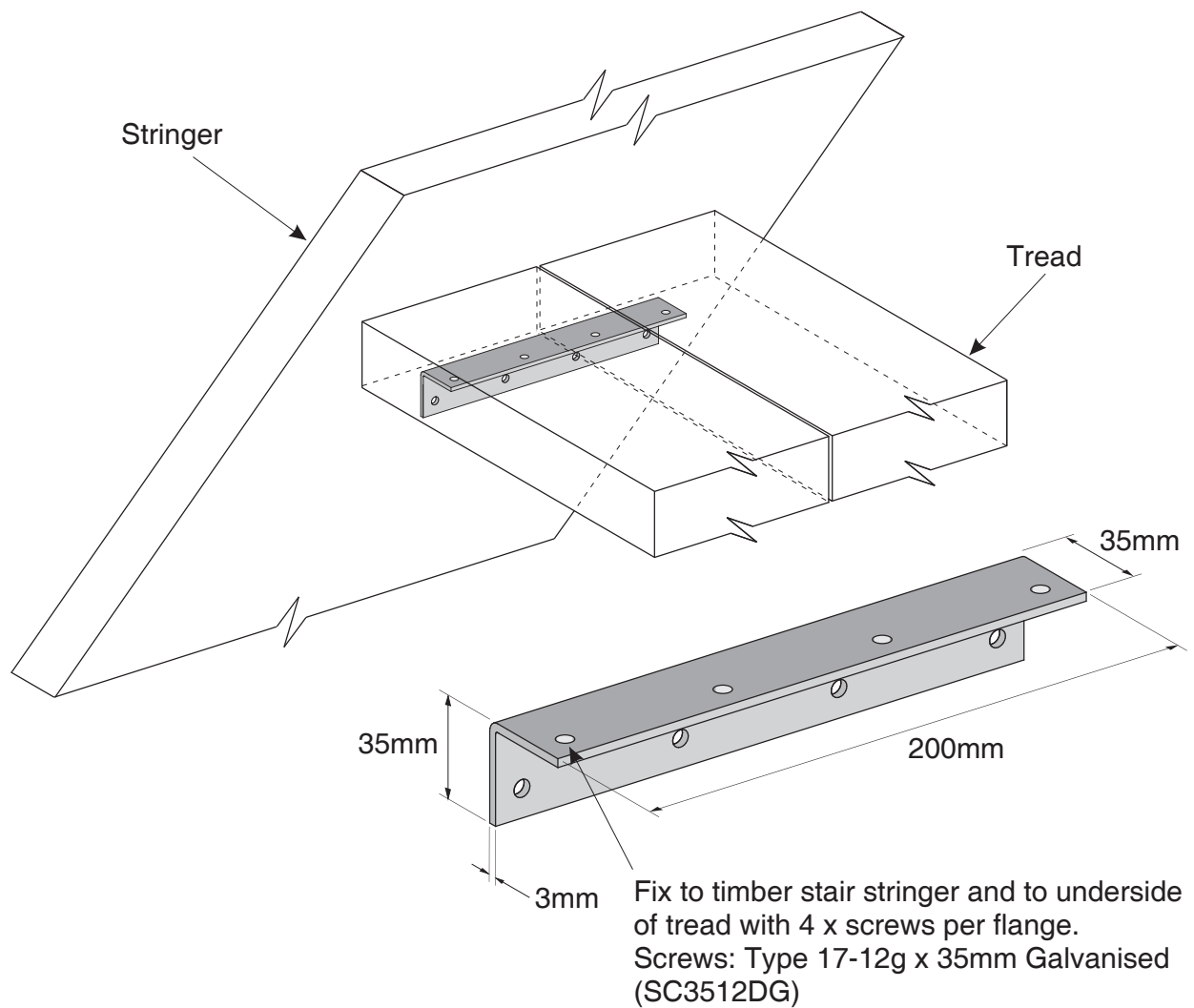


BOWMAC®

09/2011

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



BOWMAC®

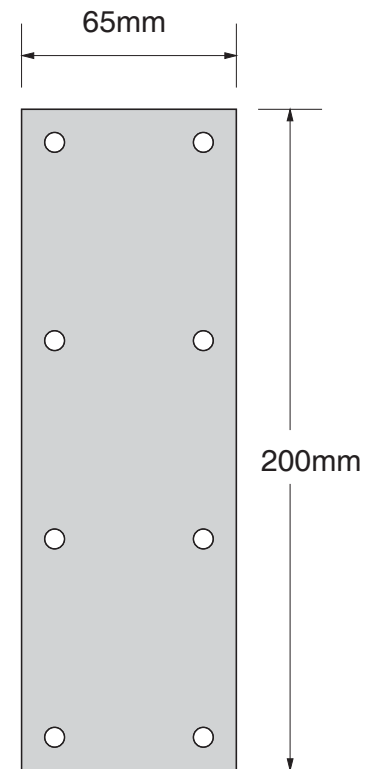
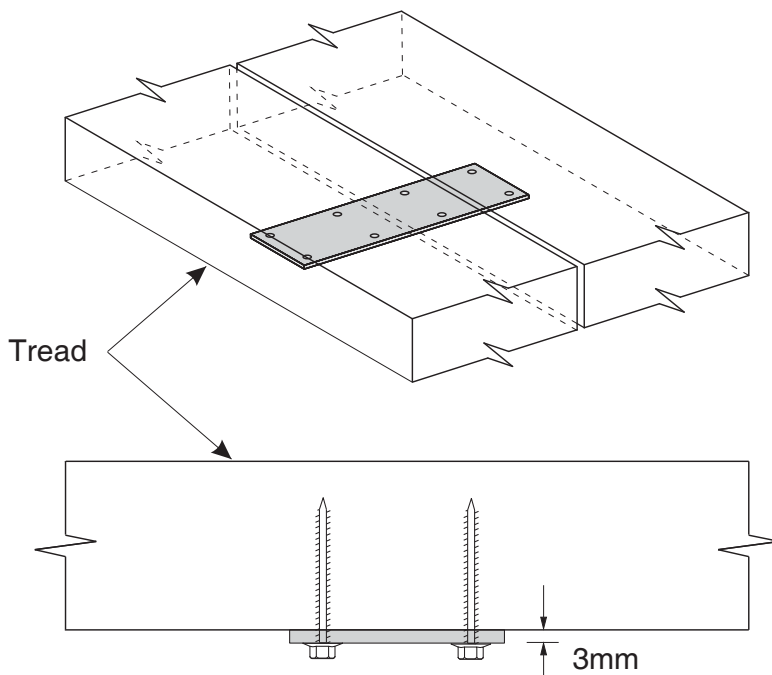


STAIR TREAD JOINER

- ★ 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

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® 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 timber 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.

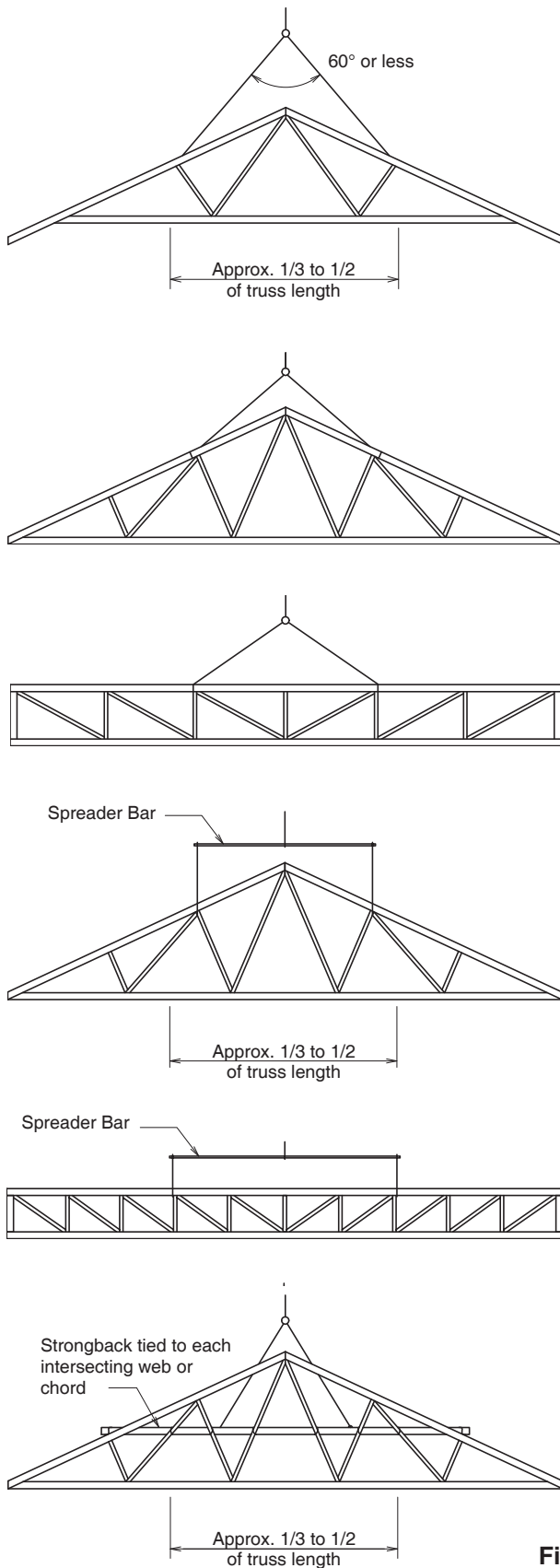


Figure 1

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.

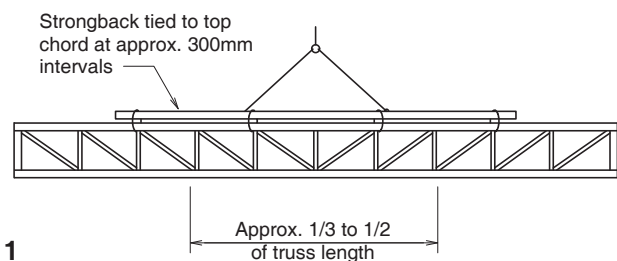
The trusses may also be placed on the top plates by pulling them up skids, spread at 3000mm, taking the same precaution as described above. Ensure that the trusses are not distorted or allowed to sag between supports.

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.

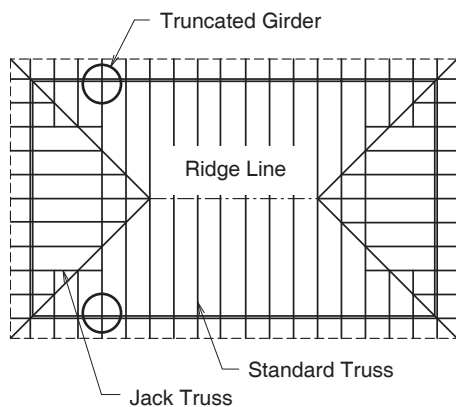
The angle between the sling legs should be 60° or less and where truss spans are greater than 9000mm it is recommended that a spreader bar or strongback be used. Some typical examples are shown in (Fig 1).



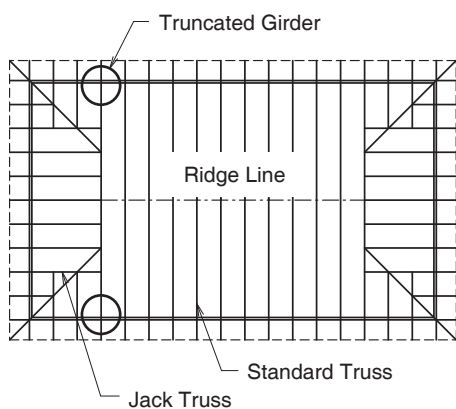
Roof Layout

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

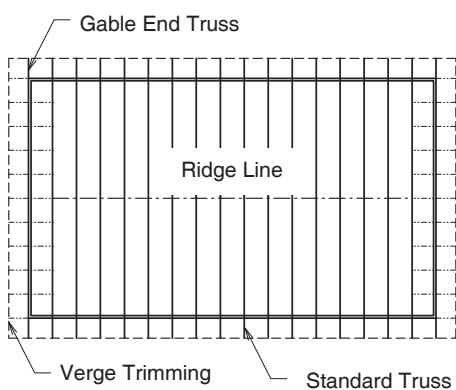
Hip End



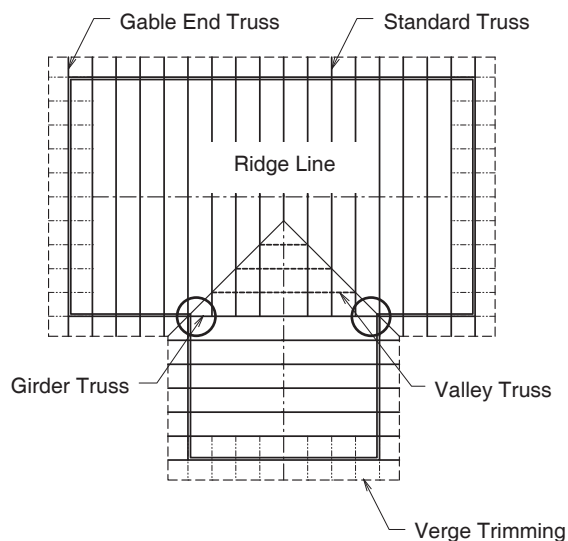
Semi Gable



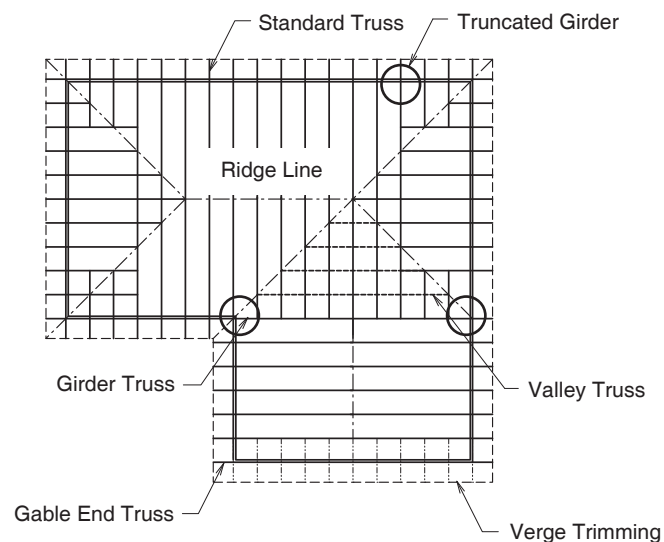
Gable



T Shaped



L Shape



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

Figure 2

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

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).

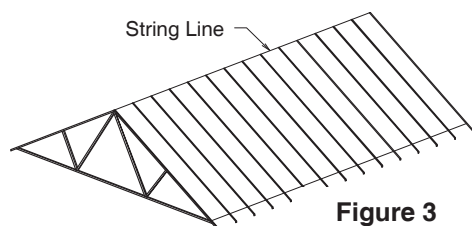


Figure 3

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.

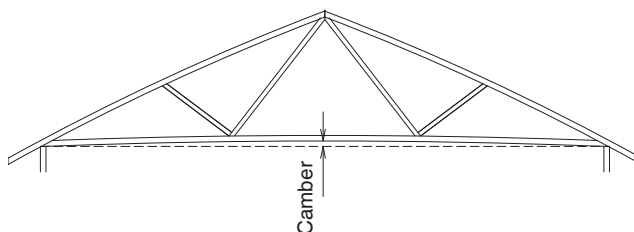


Figure 4

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).

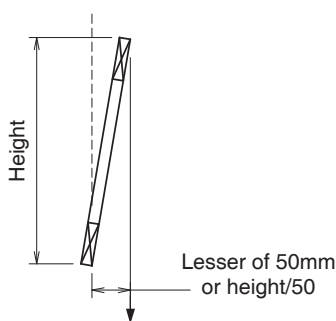
Erection Bracing

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

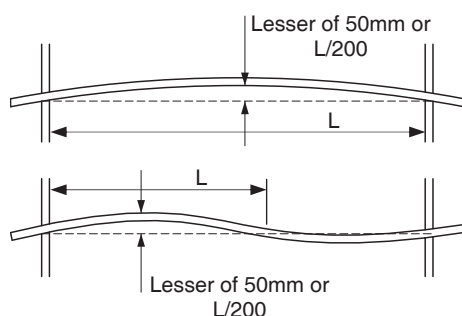


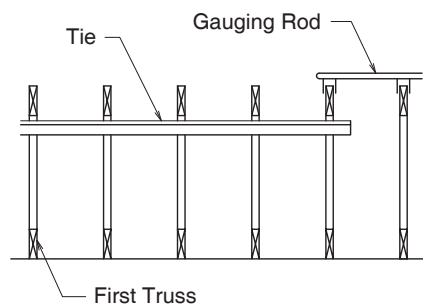
Figure 5

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 3.75 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 permanent 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

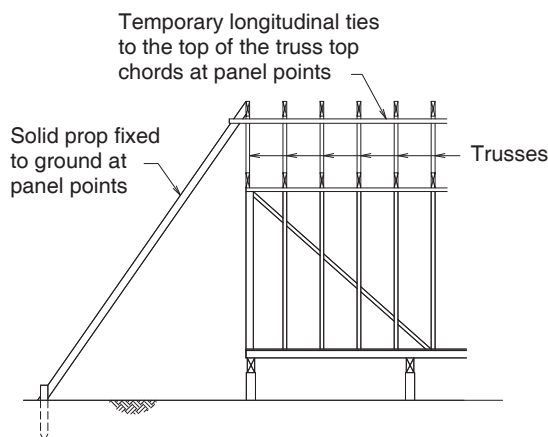
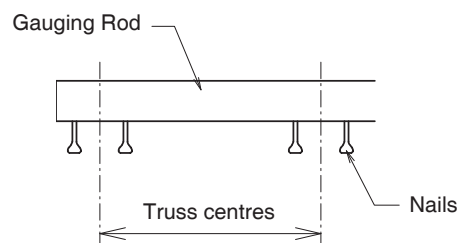


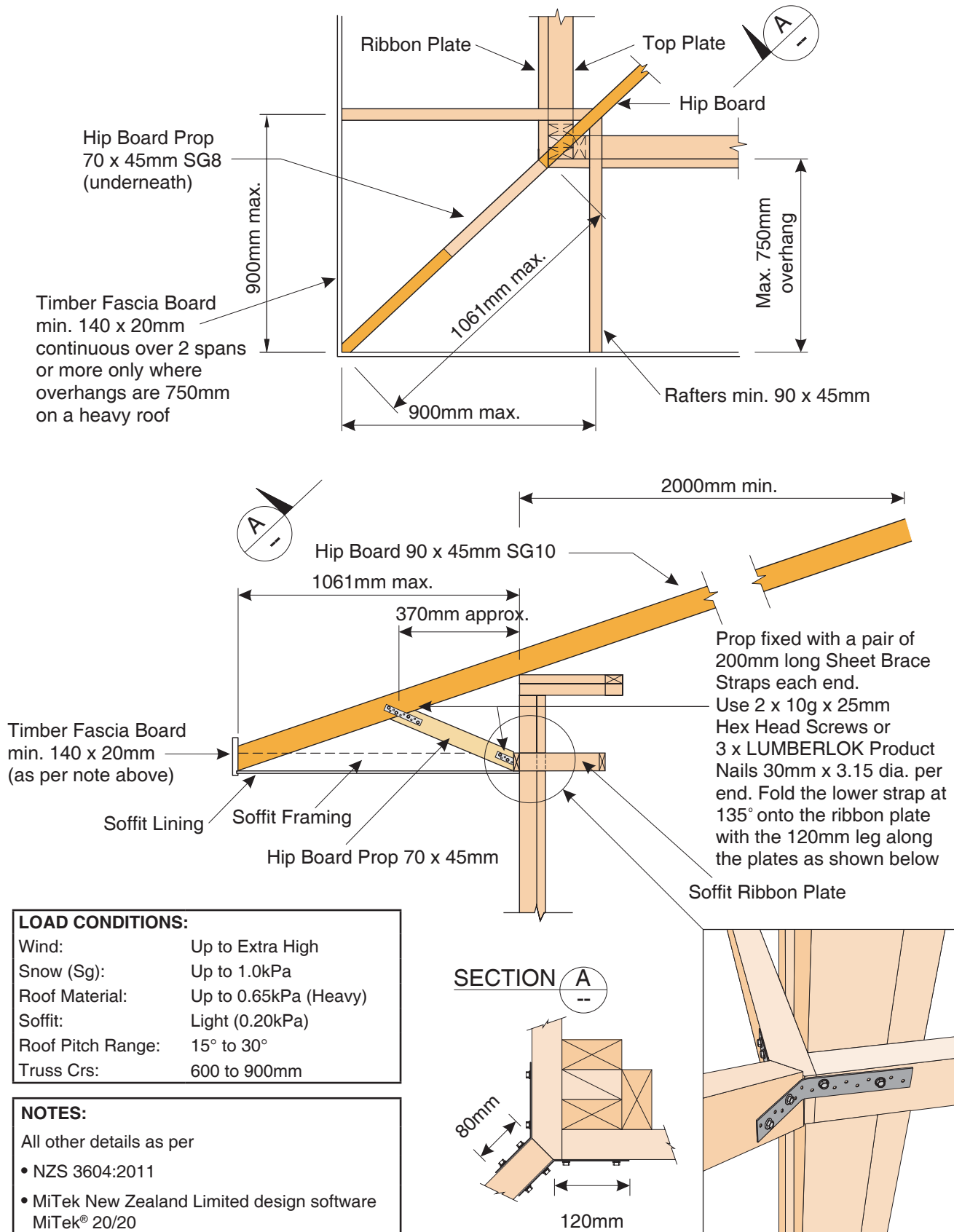
Figure 6

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.



HIP BOARD PROP SUPPORTING EXCESSIVE OVERHANGS

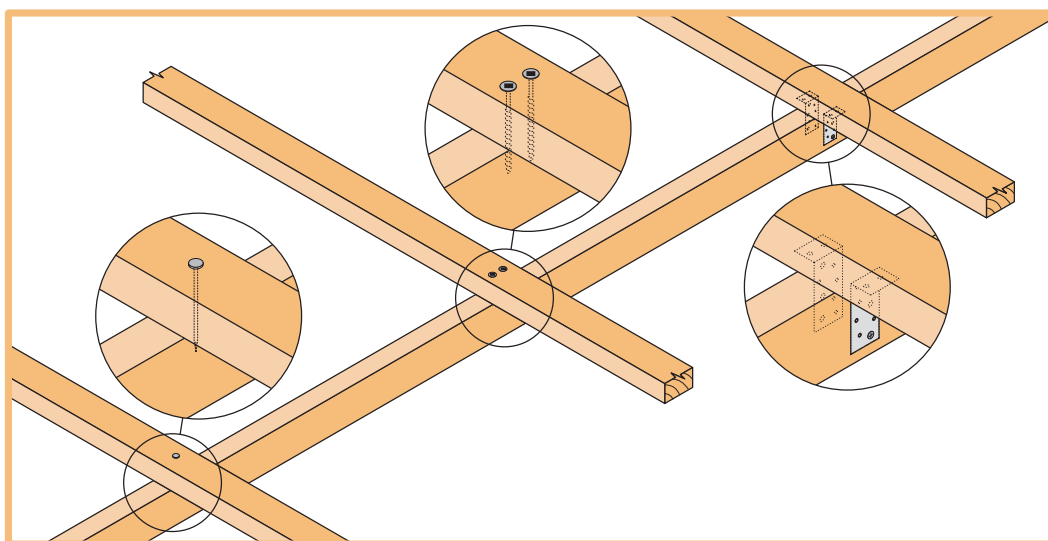




PURLIN & BATTEN FIXING CHART ALTERNATIVE SOLUTION TO NZS 3604:2011 TABLES 10.10 & 10.12

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 | A | A |
| 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



SCAN FOR
INSTALLATION
VIDEO

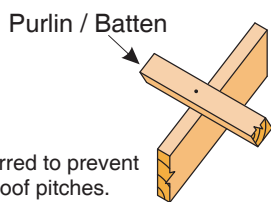
<https://vimeo.com/117353340>

STANDARD FIXING OPTIONS

FIXING TYPE A 0.55kN

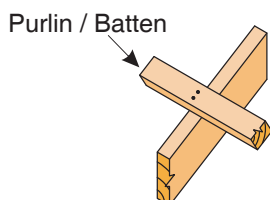
1 NAIL

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



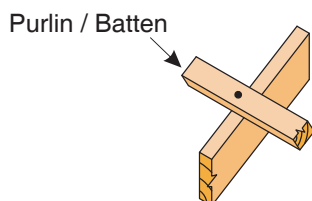
FIXING TYPE B 0.8kN

2 NAILS



FIXING TYPE C 2.4kN

1 BLUE SCREW

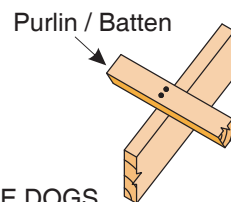


FIXING TYPE D 3.45kN

2 BLUE SCREWS

OR

2 SKEW NAILS plus 2 WIRE DOGS
(for purlin on edge)

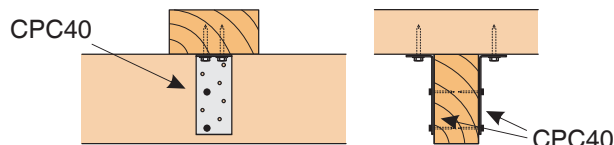


FIXING TYPE E 5.5kN

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

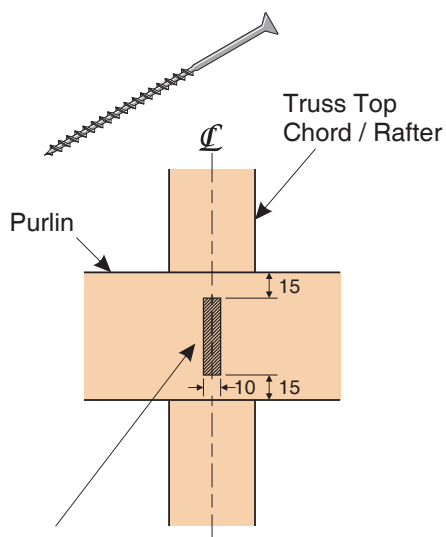
WIRE DOG = LUMBERLOK WIRE DOG either LH or RH

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



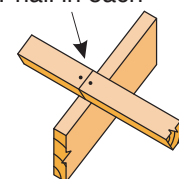
NOTE:

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

1 nail in each



NOTE:

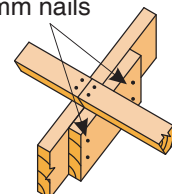
Skew nail when fixing to 35mm rafter or truss

FIXING TYPE C, D or E OVER PURLIN SPLICE

90 x 35mm block fixed to chord or rafter with 4 x 75mm nails

• TYPE C
1 SCREW
to each purlin

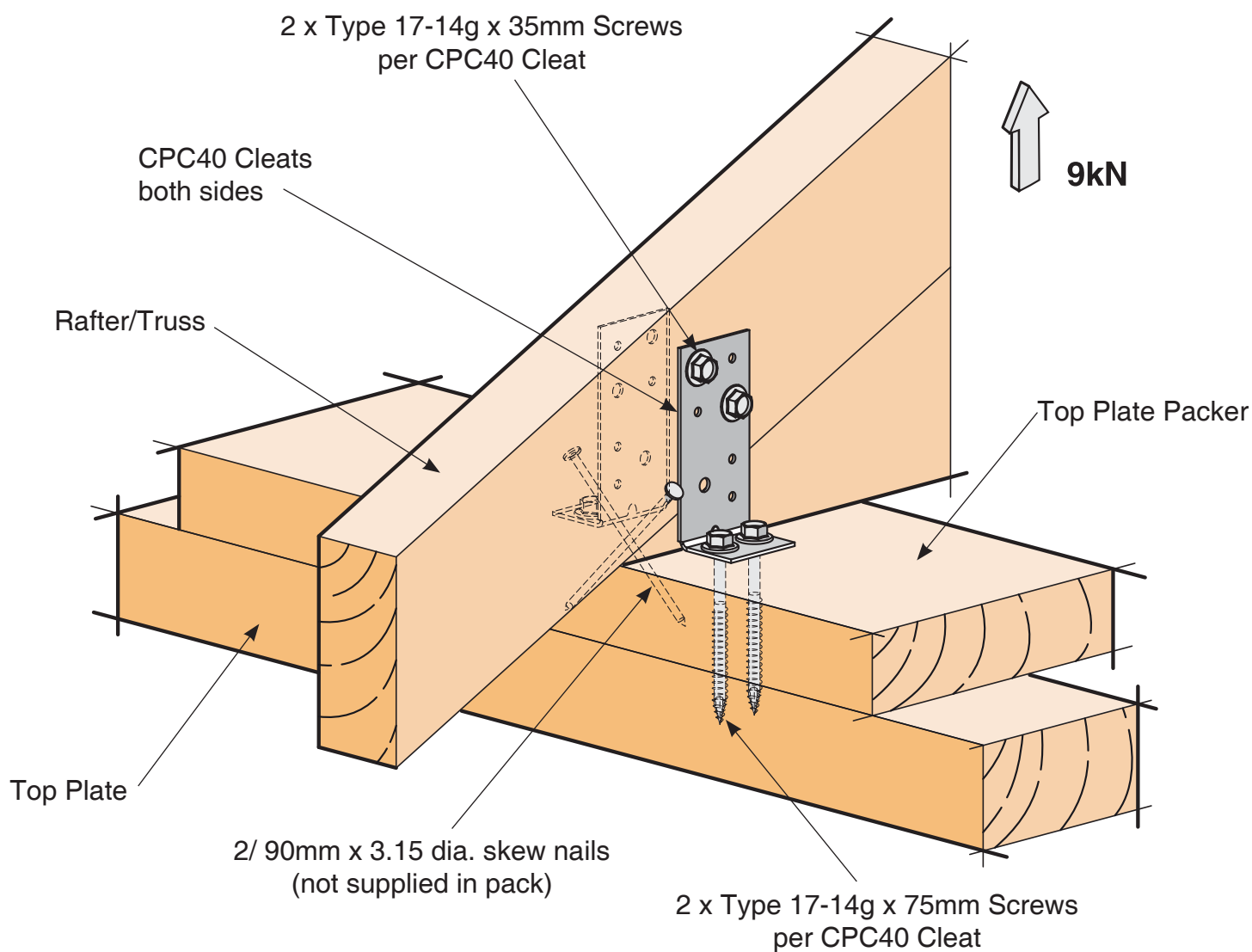
• TYPE D & E
1 NAIL plus 1 SCREW to each purlin





9kN TRUSS TO TOP PLATE FIXING

- ★ Complies with Table 10.15 NZS 3604:2011
- ★ Top mounted fixing allows additional face fixing if required



Code: 9KNTTP

Material: CPC40 1.55mm G300 Z275 Galvanised Steel

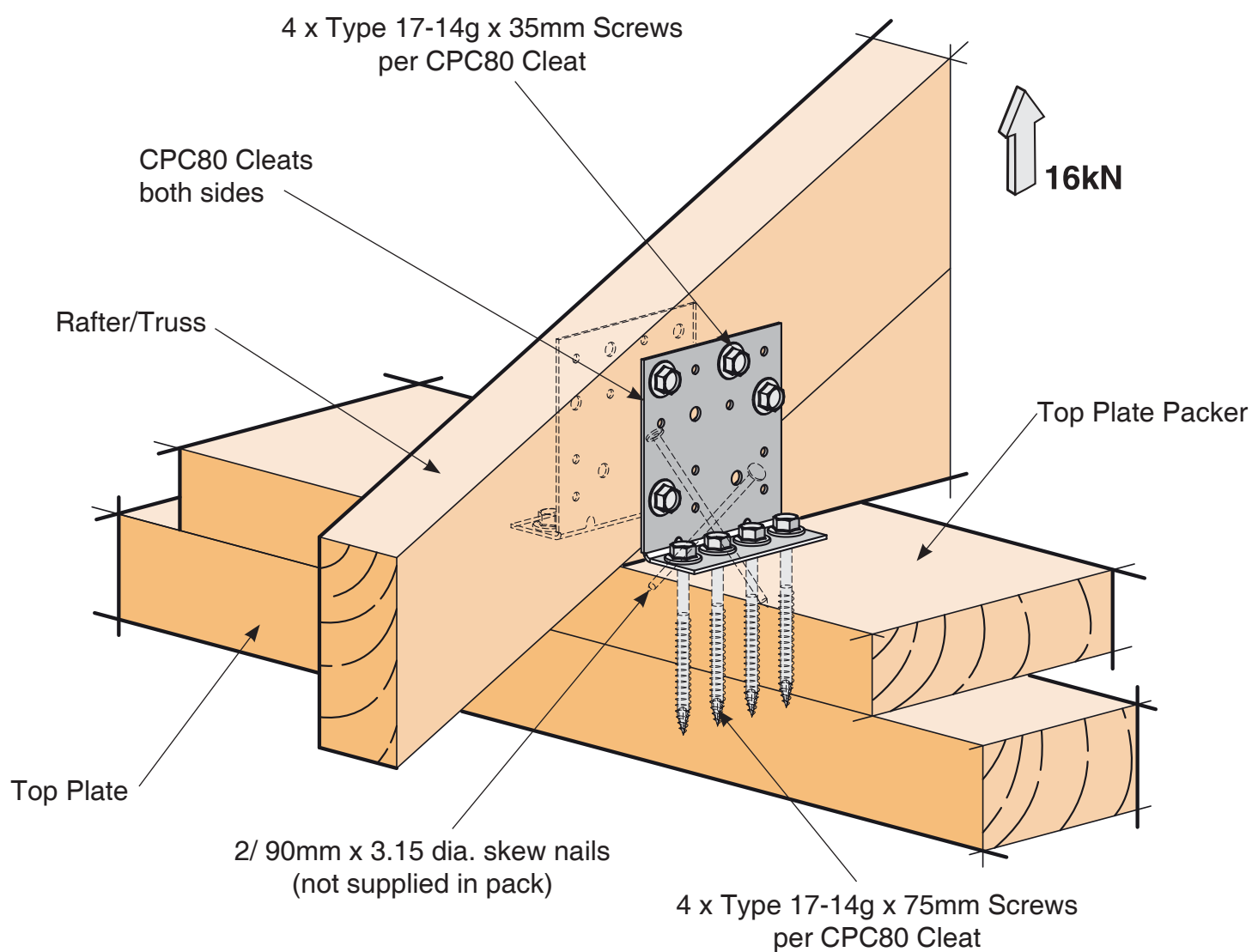
Packed: 2 x CPC40 Cleats

4 x Type 17-14g x 35mm Hex Head Galvanised Screws

4 x Type 17-14g x 75mm Hex Head Galvanised Screws

16kN TRUSS TO TOP PLATE FIXING

- ★ Complies with Table 10.15 NZS 3604:2011
- ★ Top mounted fixing allows additional face fixing if required



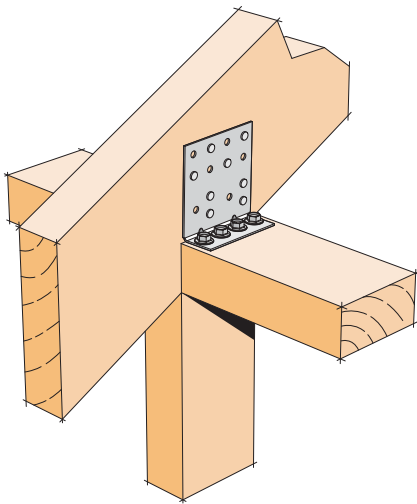
Code: 16KNTTP
Material: CPC80 1.55mm G300 Z275 Galvanised Steel
Packed: 2 x CPC80 Cleats
 8 x Type 17-14g x 35mm Hex Head Galvanised Screws
 8 x Type 17-14g x 75mm Hex Head Galvanised Screws



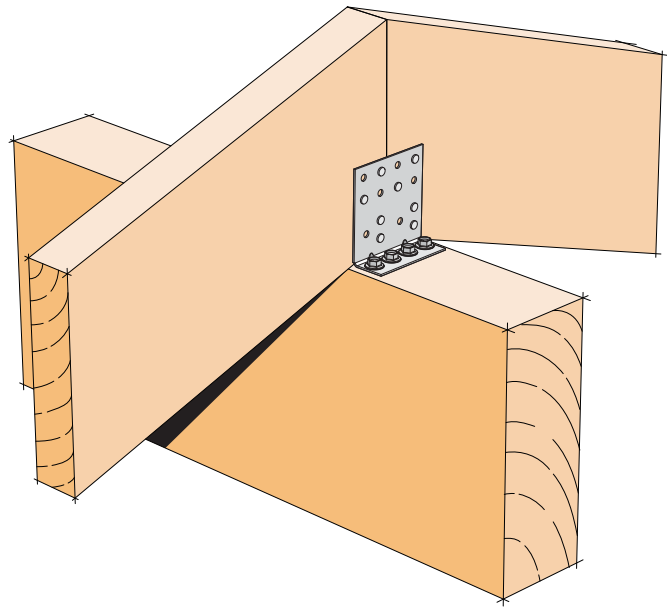
CONCEALED PURLIN CLEATS

- ★ Quick and Easy to Apply
- ★ Resists High Wind Uplift

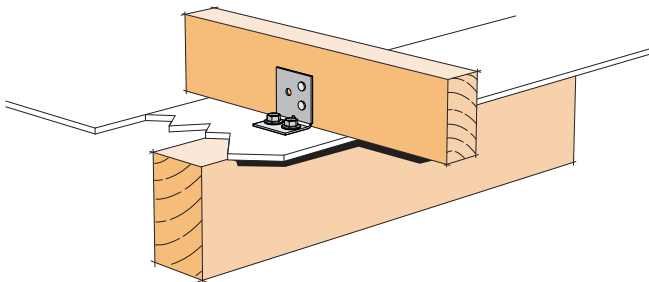
USE STAINLESS STEEL
OPTION IN EXTERIOR
SITUATIONS



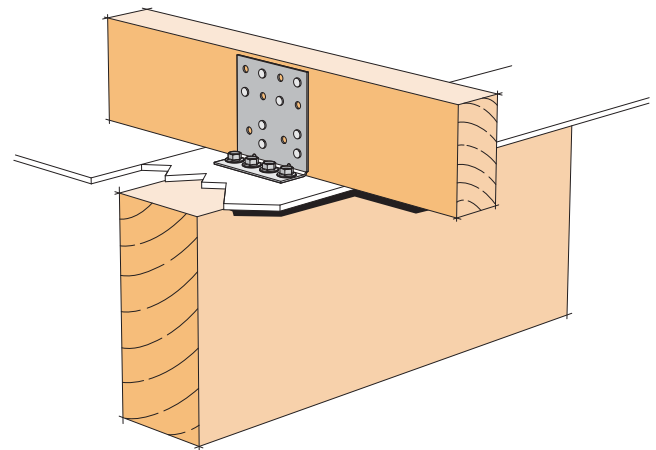
Exposed Rafter to Wall Fixing



Exposed Rafter to Ridge Beam Fixing



**Purlin to Exposed Rafter Fixing
CPC40S Shown**

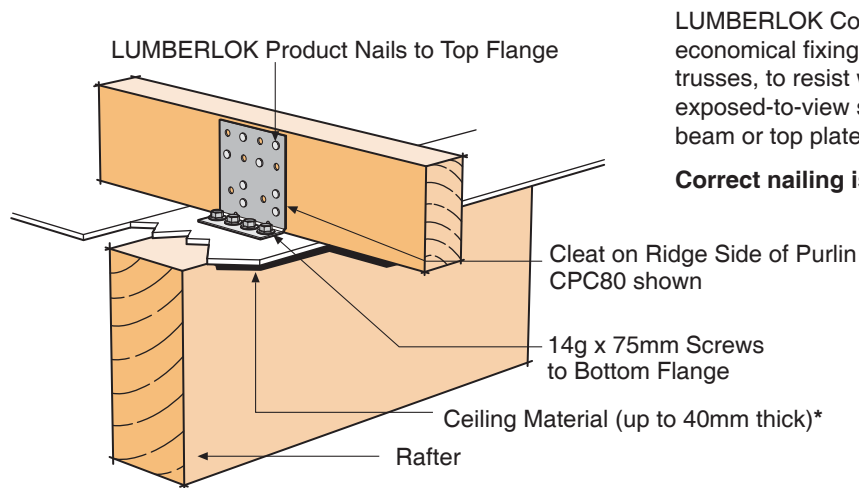


**Purlin to Exposed Rafter Fixing
CPC80 Shown**



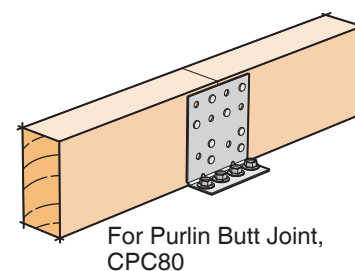
SCAN FOR
INSTALLATION
VIDEO

<https://vimeo.com/117350346>



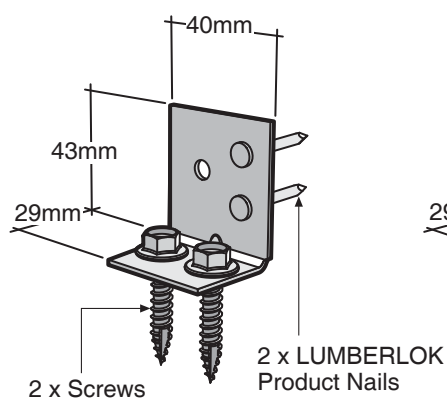
LUMBERLOK Concealed Purlin Cleats provide an economical fixing for purlins to exposed rafters or trusses, to resist wind uplift. They can also be used in exposed-to-view situations, such as a rafter to ridge beam or top plate situation.

Correct nailing is most important. See below.



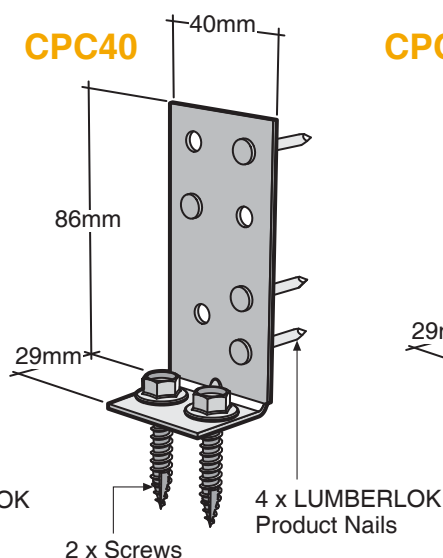
DIMENSIONS AND NAILING

CPC40S (short)



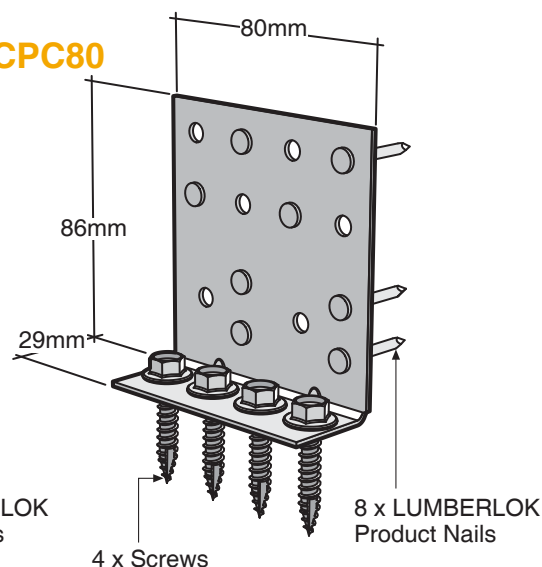
Rafter Width (nominal) 50mm

CPC40

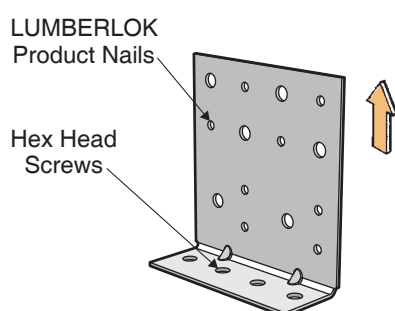


50mm

CPC80



100mm



| Uplift Direction | CPC40S | CPC40 | CPC80 |
|---|--------|----------|-----------|
| Characteristic Load | - | 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:

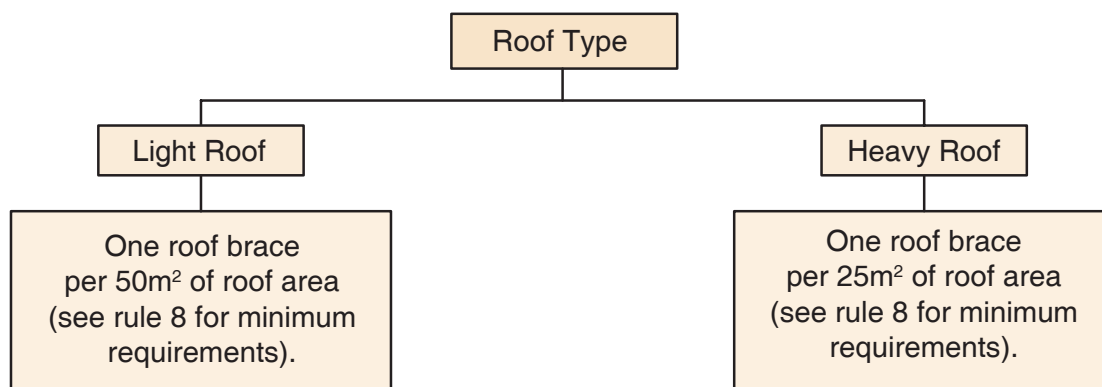
1.55mm G300 Z275 Galvanised Steel or 0.9mm Stainless Steel 304-2B (SSCPC40S)
1.5mm Stainless Steel 304-2B (SSCPC40 and SSCP80)

**SCREWS AND NAILS
NOT INCLUDED WITH PRODUCT**

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.



SCAN FOR
SPECIFICATION
VIDEO

<https://vimeo.com/117353345>

Roof Bracing Options

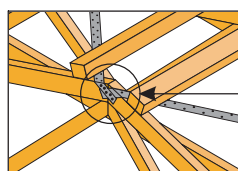
i) ROOF PLANE BRACE

Each roof plane brace can be:

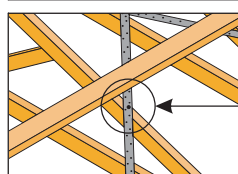
- A hip or valley rafter running continuously from ridge to the top plate in accordance with Clauses 10.2.1.3.2 or 10.2.1.3.3 NZS 3604:2011.

OR

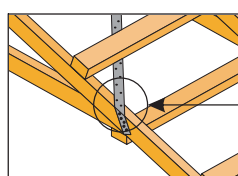
- A pair of tensioned and crossed LUMBERLOK Strip Brace running continuously from ridge to top plate installed as detailed below.



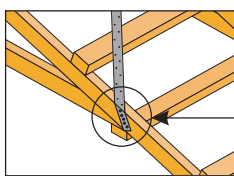
5 x 30mm x 3.15 dia.
nails each end



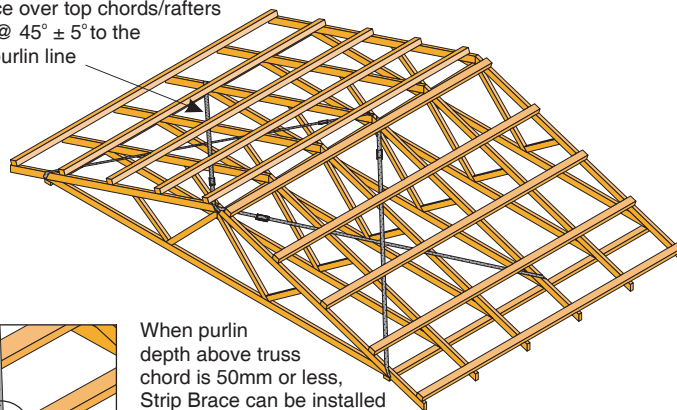
1 x 30mm x 3.15 dia.
nail at crossing
(after tensioning)



5 x 30mm x 3.15 dia.
nails each end



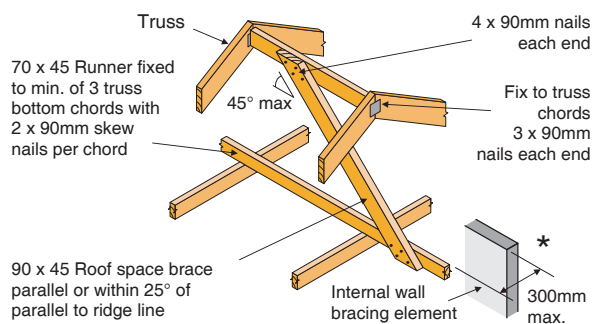
A pair of tensioned and crossed LUMBERLOK Strip Brace over top chords/rafters installed @ $45^\circ \pm 5^\circ$ to the rafter or purlin line



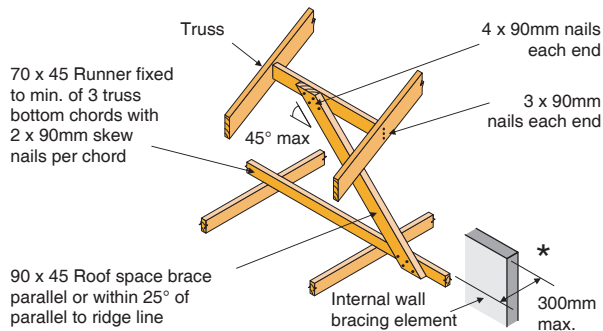
When purlin depth above truss chord is 50mm or less, Strip Brace can be installed over top of purlins. Fix with 1 x 30mm x 3.15 dia. nail at the purlin closest to the rafter/truss crossing

ii) ROOF SPACE BRACE

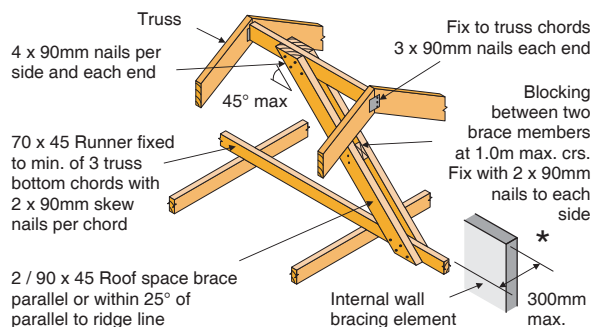
(A) Less than 2m long



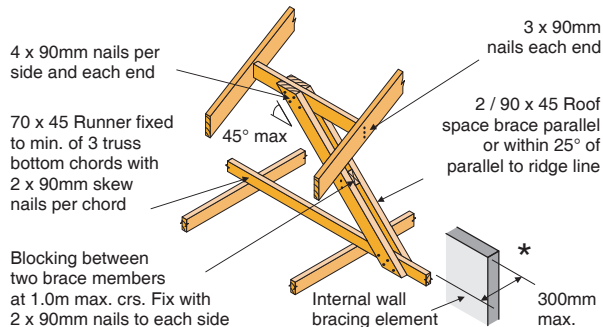
(C) Not directly under the ridge - less than 2m long



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



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

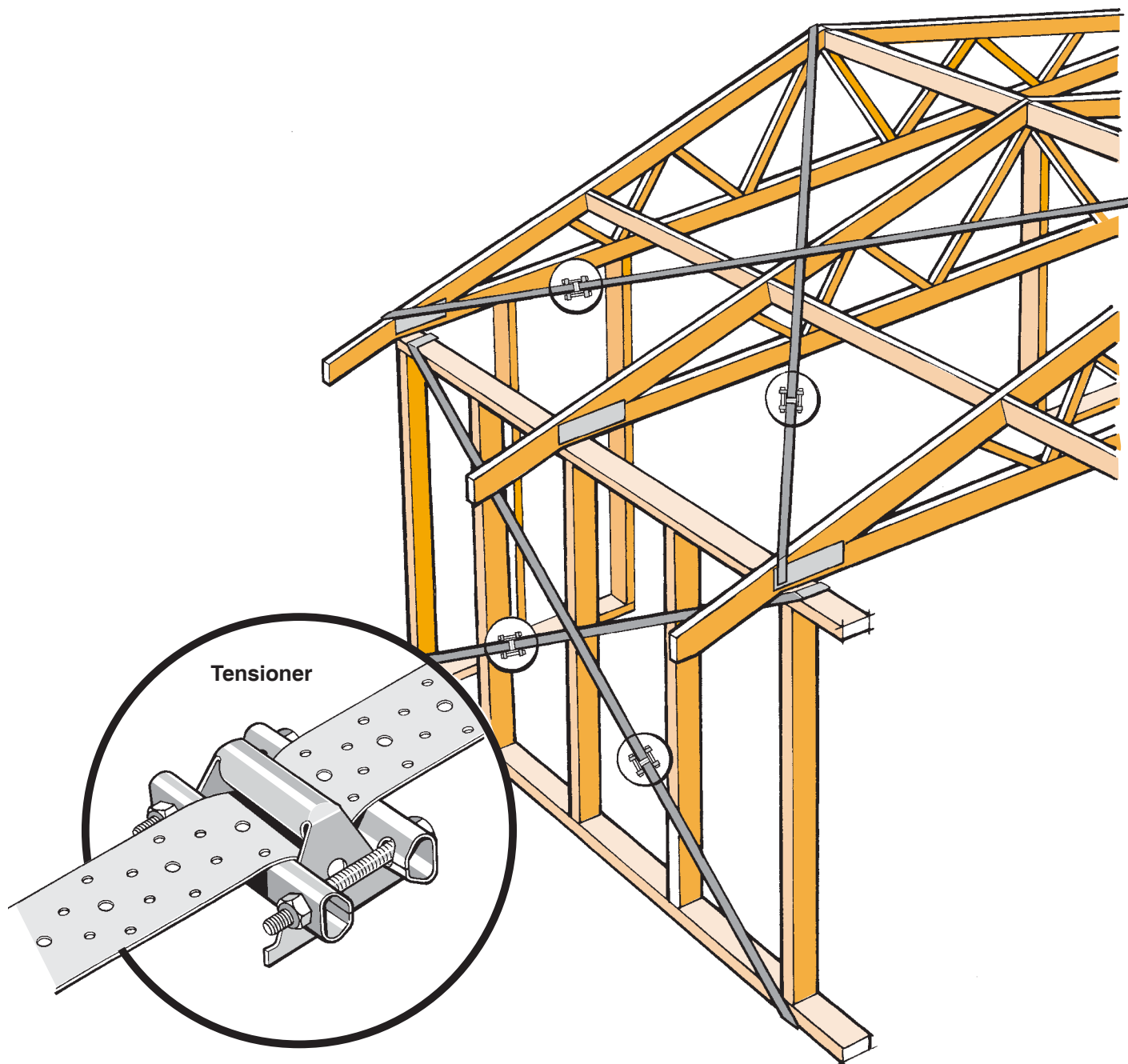


*Not required when a ceiling diaphragm complying with Clause 13.5 NZS 3604:2011 is used.

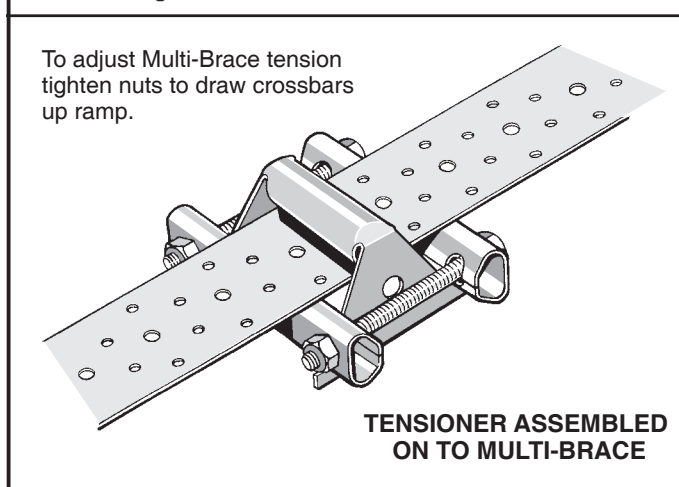
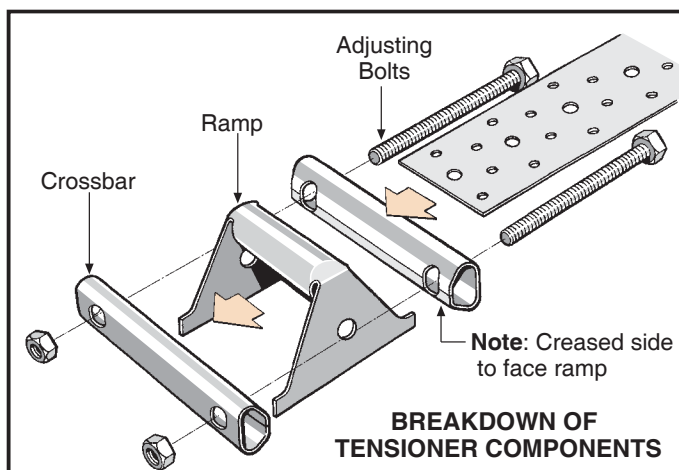
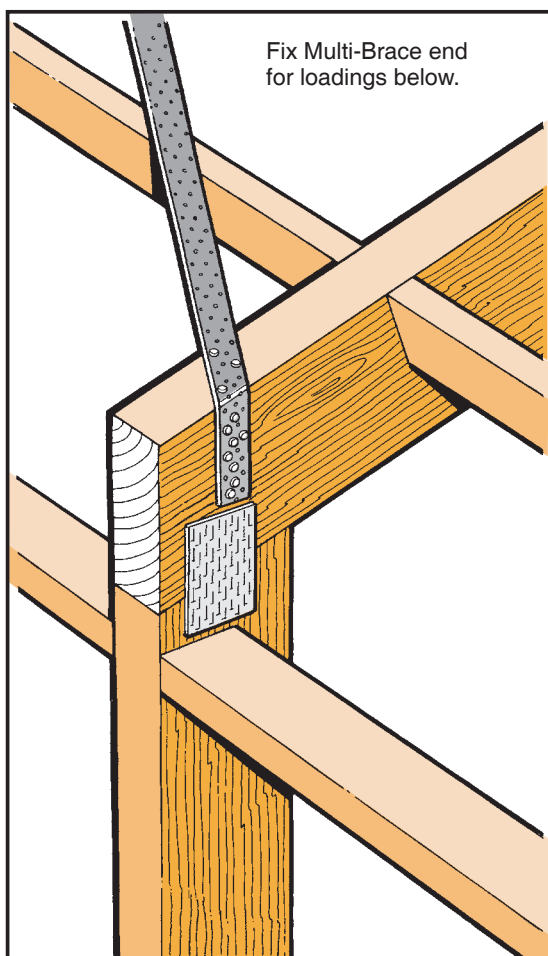
MULTI-BRACE

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

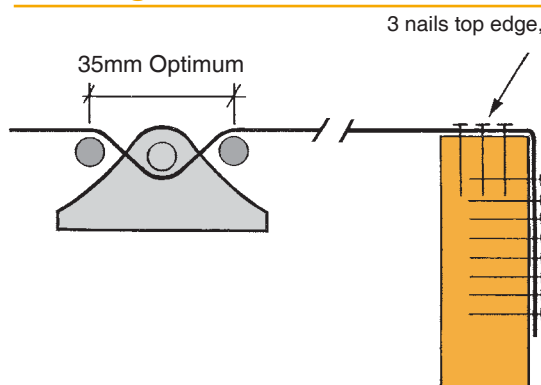
USE STAINLESS STEEL
OPTION IN EXTERIOR
SITUATIONS



Available from leading Builders Supply Merchants
throughout New Zealand



Loadings



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 lines.
- ★ 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 - STRONGBACK LOCATION FOR WEBS @ 600MM CRS.

| WIND ZONE | MAXIMUM STRONGBACK HEIGHT (h) | | | | | | | | | | | |
|------------|-------------------------------|------|-----------|------|---------------------------------|-------|----------|-------|---------------|------|---------------|-------|
| | 70x45 Web | | 90x45 Web | | Double Component Gable End Webs | | | | 45x70 on flat | | 45x90 on flat | |
| | SG6 | SG8 | SG6 | SG8 | 2/ 70x45 | | 2/ 90x45 | | 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 - STRONGBACK LOCATION FOR WEBS @ 400MM CRS.

| WIND ZONE | MAXIMUM STRONGBACK HEIGHT (h) | | | | | | | | | | | |
|------------|-------------------------------|------|-----------|------|---------------------------------|-------|----------|-------|---------------|------|---------------|-------|
| | 70x45 Web | | 90x45 Web | | Double Component Gable End Webs | | | | 45x70 on flat | | 45x90 on flat | |
| | SG6 | SG8 | SG6 | SG8 | 2/ 70x45 | | 2/ 90x45 | | 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.

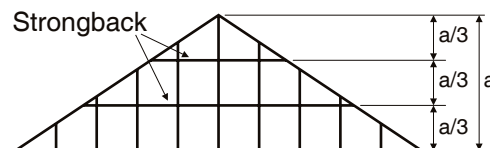
SELECTION PROCESS



- Where (a) is less than or equal to (h) - no strongback required.

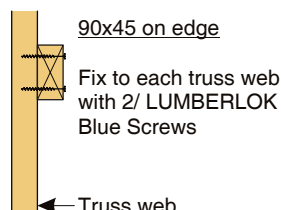


- Where (a) is greater than (h) but less than 2(h) - lower strongback is required.
- Locate the strongback at height of (a/2).

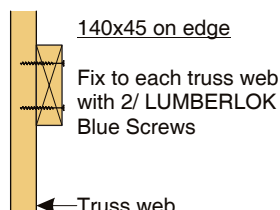


- Where (a) is greater than 2(h) but less than 3(h) - lower and upper strongbacks are required.
- Locate strongbacks at height increments of (a/3).

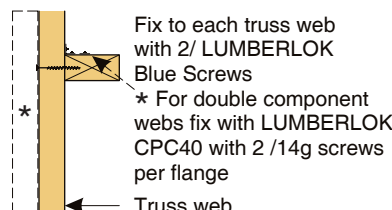
STRONGBACK OPTIONS



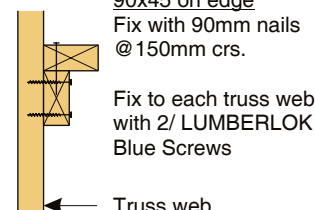
OPTION 1



OPTION 2



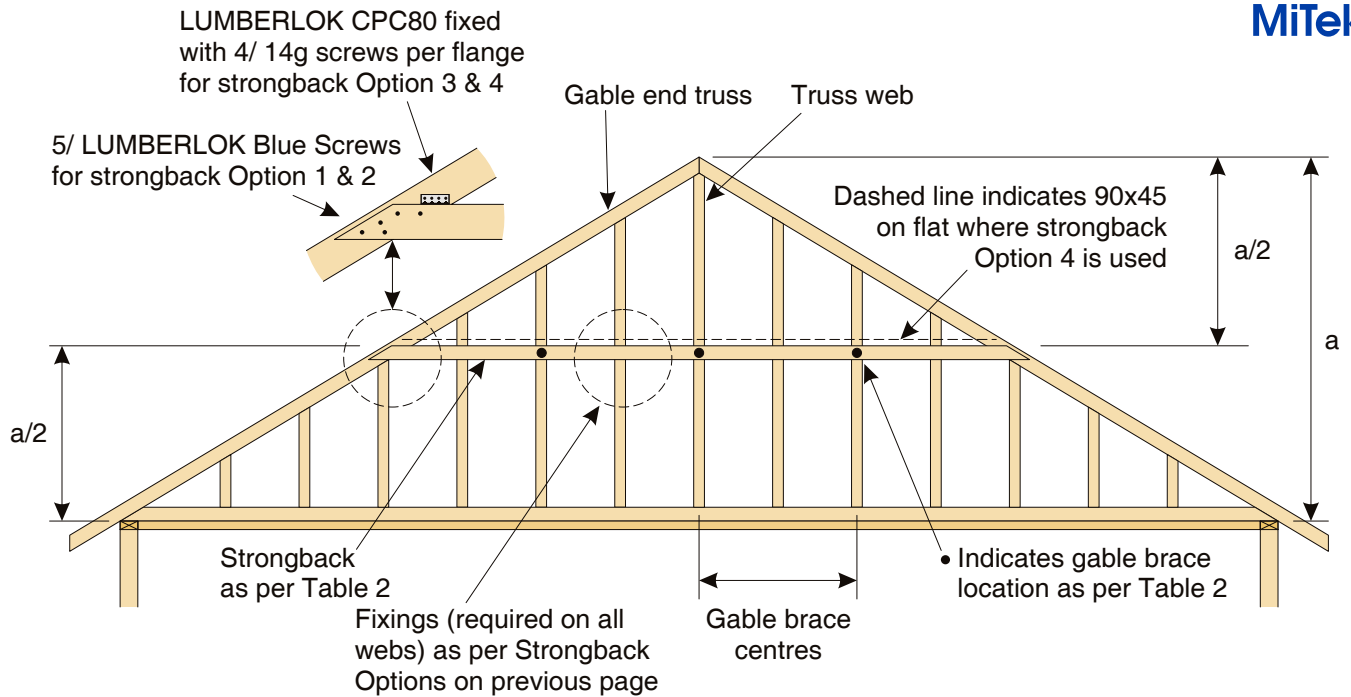
OPTION 3



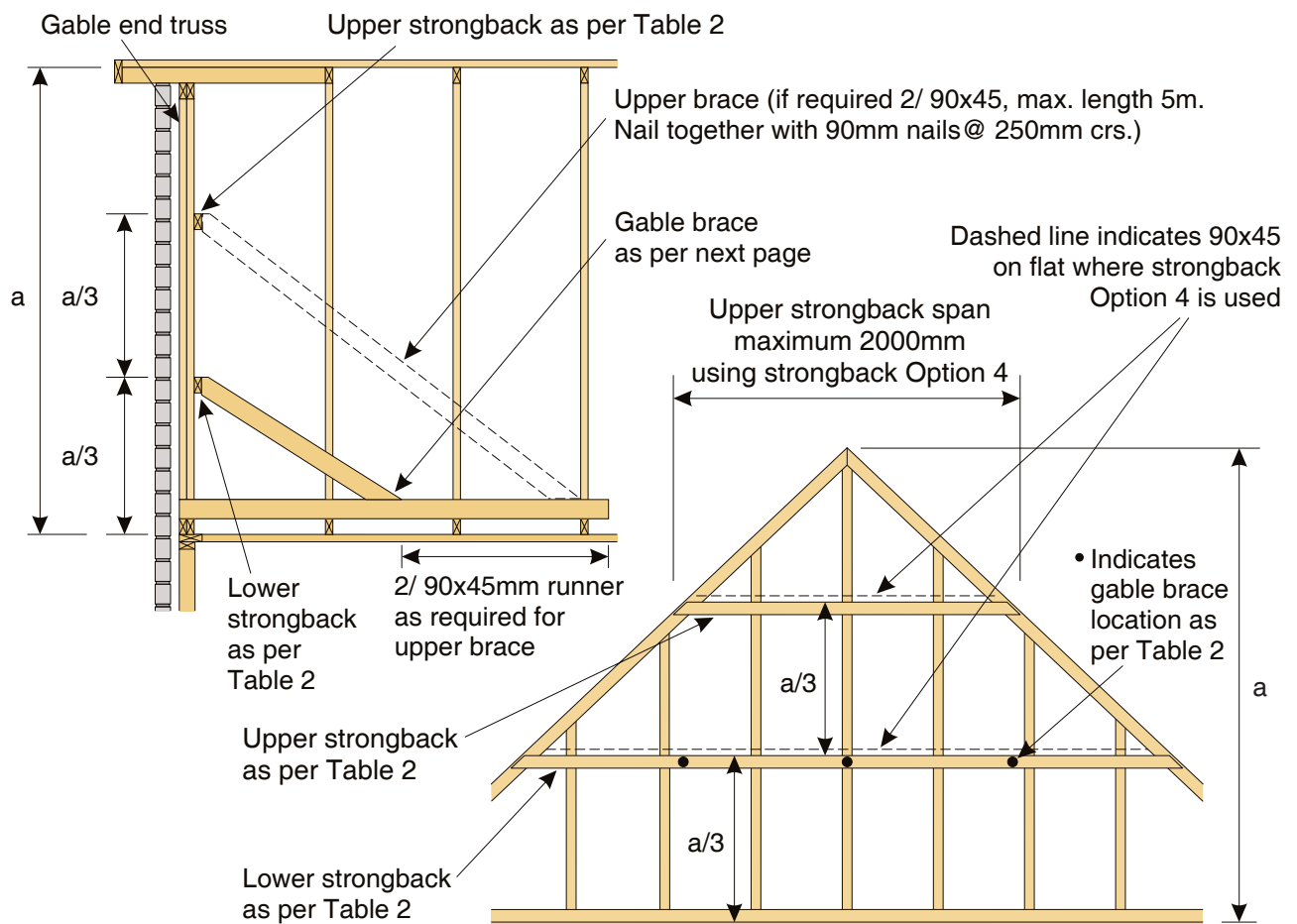
OPTION 4

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 location 1200mm | Max. span and/or gable brace location 1400mm | Max. span and/or gable brace location 1600mm | Max. span and/or gable brace location 2000mm |



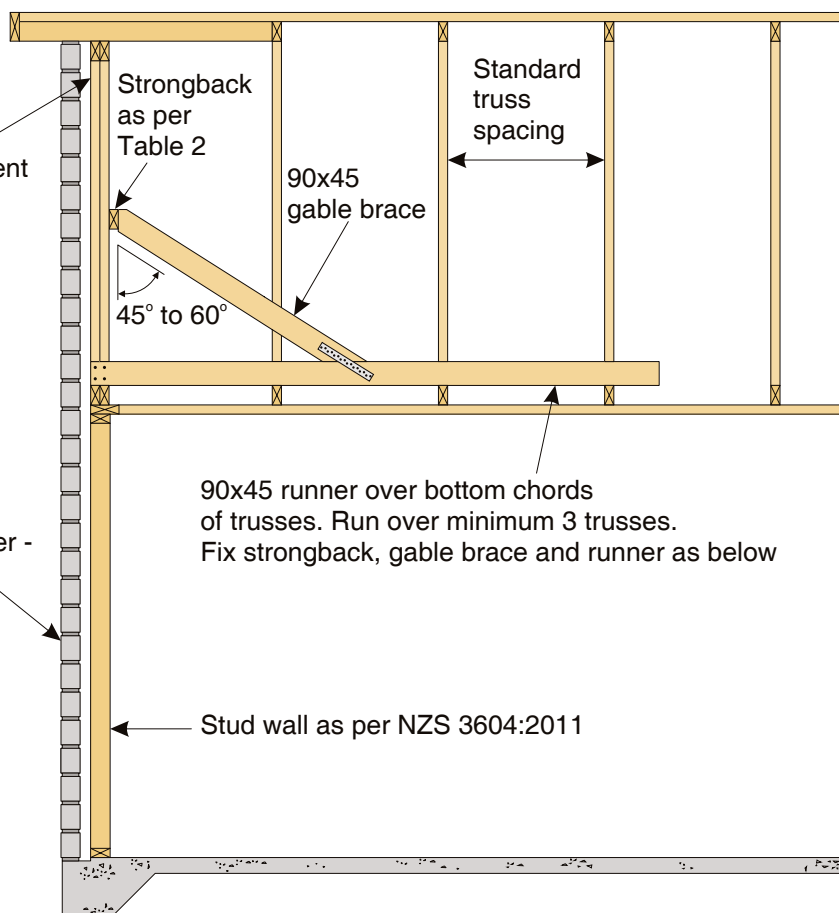
SINGLE STRONGBACK DETAILS



DOUBLE STRONGBACK DETAILS FOR ALL GABLE END OPTIONS (full height brick veneer option shown)

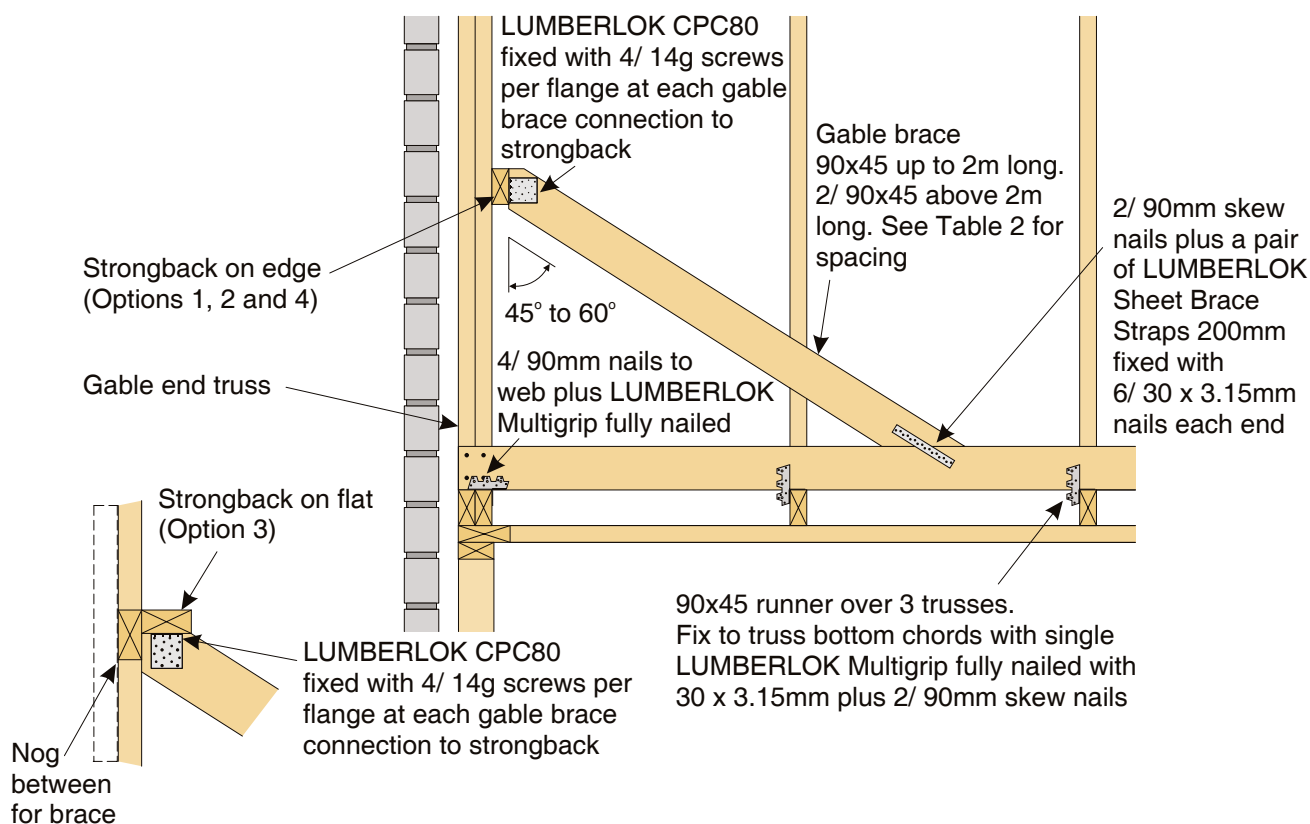
Note: Double component gable end truss or 45x90 webs on flat required for full height brick veneer gable

Full height brick veneer - Max. height 5.5m on gable end wall, Clause 1.1.2(o) NZS 3604:2011



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 S_g 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

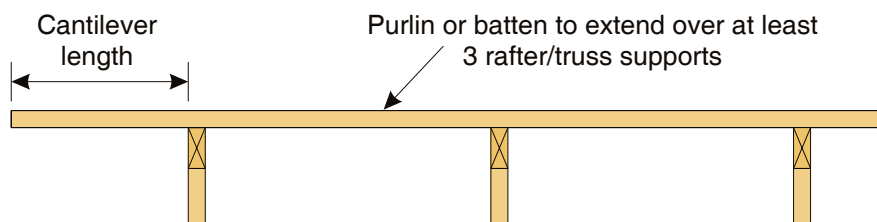





TABLE 1




| 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)

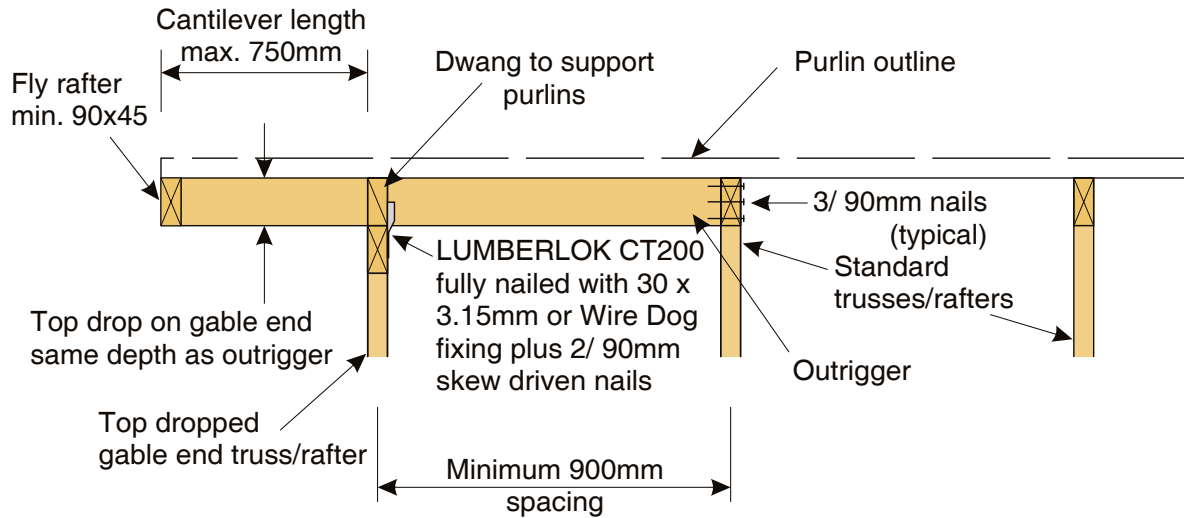
(See details on next pages)

TABLE 3

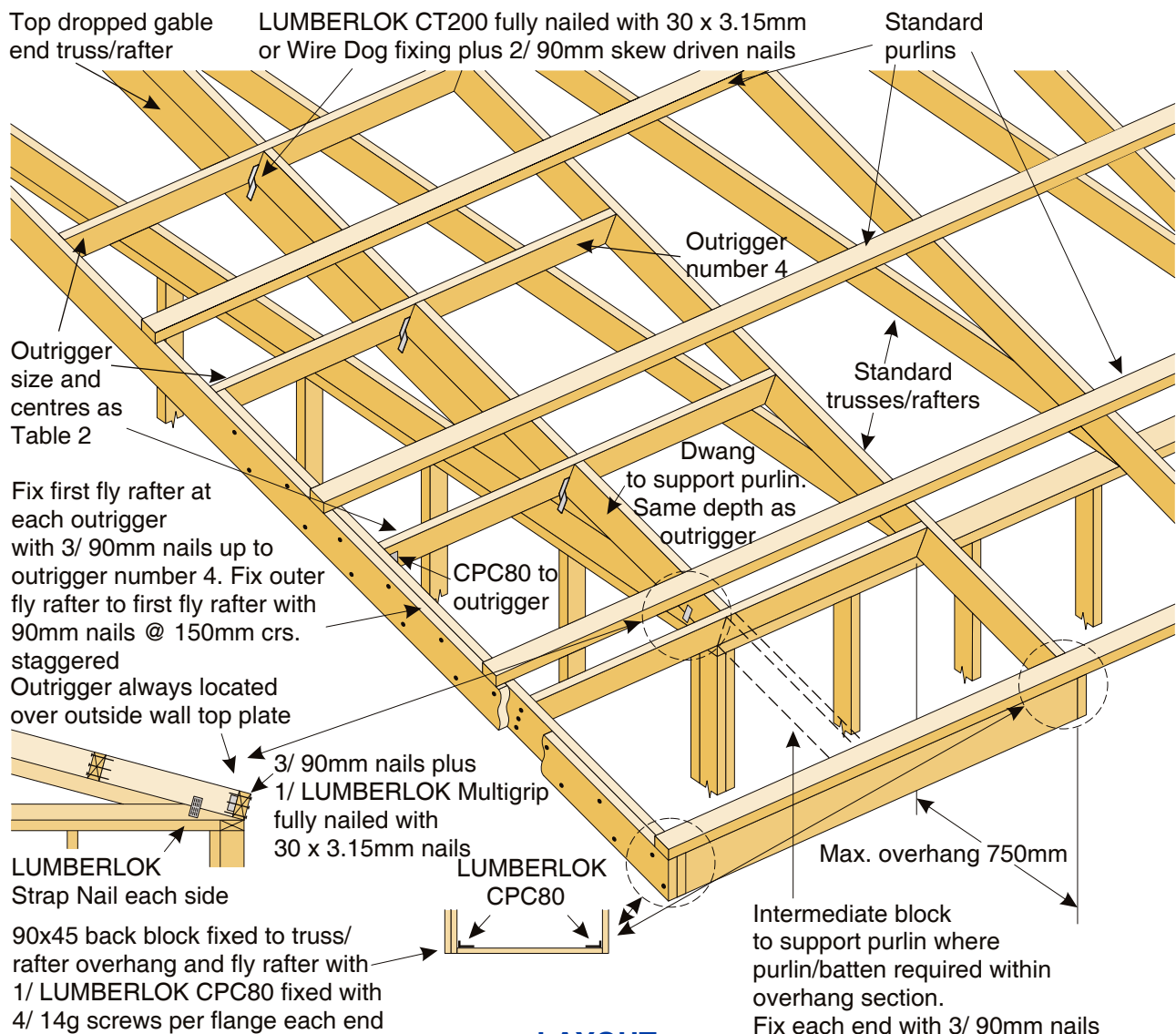
| MAX. CANTILEVER LENGTH 1200mm | OUTRIGGER SIZE & ORIENTATION | MAX. CANTILEVER LENGTH (mm) | OUTRIGGER CENTRES (mm) |
|-------------------------------|---|-----------------------------|------------------------|
| | 45x45 Purlin 90x45 Outrigger  | 1200 | 450 |
| | 70x45 Purlin 90x45 Outrigger  | 1200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

CONSTRUCTION DETAILS FOR CANTILEVER OUTRIGGER OPTION

(SPANS & CENTRES AS PER TABLE 2)



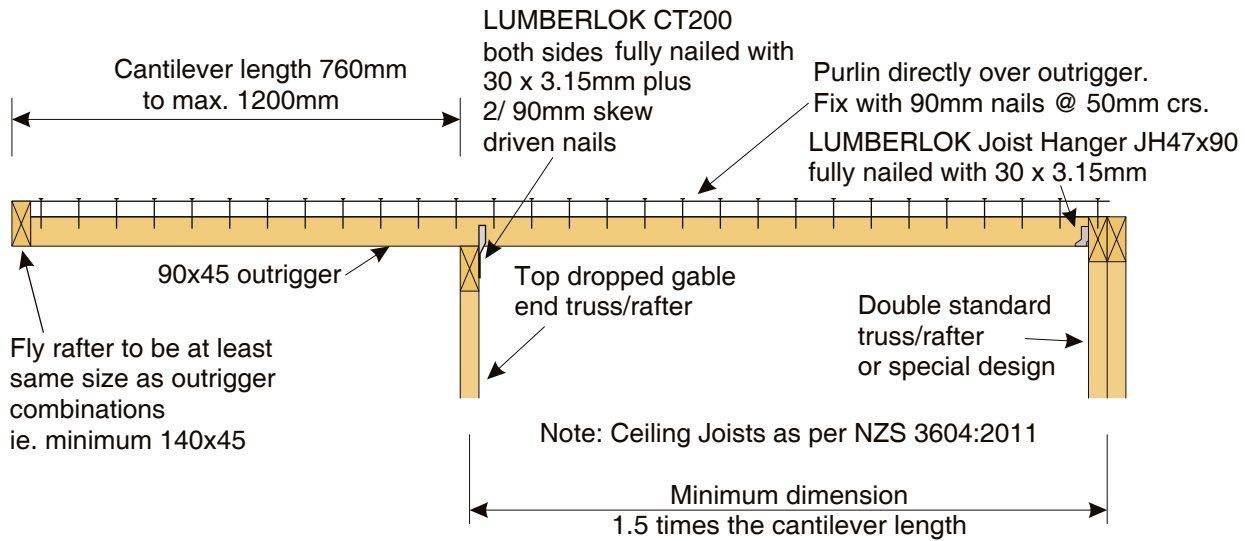
CROSS SECTION



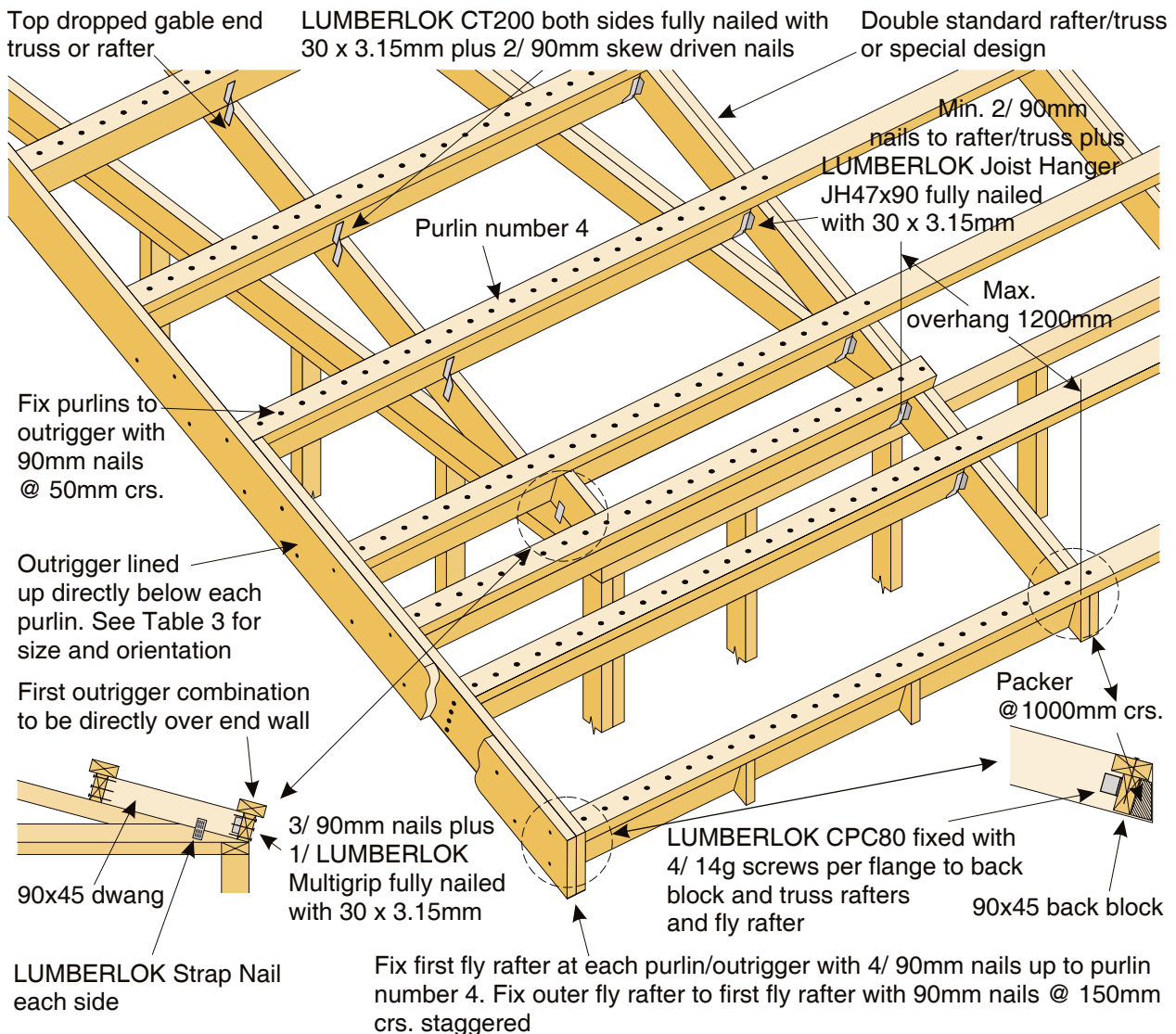
LAYOUT

CONSTRUCTION DETAILS FOR OUTRIGGER/PURLIN COMBINATION

(SPANS & CENTRES AS PER TABLE 3)



CROSS SECTION



LAYOUT



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