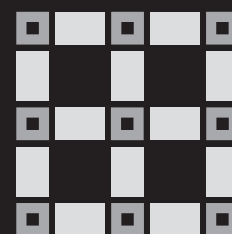


DuraGal Flooring System® Assembly Guide

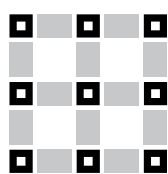
A guide for builders installing the DuraGal Flooring System® in residential applications



DuraGal
Flooring System



**Sloping Blocks | Bushfire Zones | Termite Areas | Flood Zones | Reactive Soils
Decks | Sub-Floors | Mezzanine Floors | Home Additions | Re-Piering Solution**



DuraGal

Flooring System

General Disclaimer

This publication contains general information about the use of the DuraGal Flooring System® in single storey residential buildings. This information is a guide only and not a substitute for expert advice on how to successfully design and construct a residential building or install a floor system. Successful design, construction and installation depends on many factors beyond the scope of this publication; including, for example, correct site preparation, proper care of product prior to installation, workmanship during installation and engineering judgments specific to each installation.

Product specification and other information in this publication may change at any time without further notice. InfraBuild does not accept any responsibility for other products named in, for any error in, or omission from, this publication or for any loss or damage or other consequence arising from the use of this publication by any person.

Table 1 – Members used in the DuraGal Flooring System™

Section	Product Specification	Coating Specification
90x90x2.0 SHS DuraGalPlus ZB 135/135 (Post)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
89x89x3.5 SHS DuraGalPlus ZB 135/135 (Post)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
75x50x2.0 RHS DuraGalPlus ZB 135/135 (Joist)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
100x50x1.6 RHS DuraGalPlus ZB 135/135 (Joist)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
100x50x2.0 RHS DuraGalPlus ZB 135/135 (Joist)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
150x50x2.0 RHS DuraGalPlus ZB 135/135 (Bearer)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135
150x50x3.0 RHS DuraGalPlus ZB 135/135 (Bearer)	AS/NZS 1163 C450L0	AS/NZS 4792 ZB 135/135

* Please refer to Austube Mills DuraGalPlus product literature for more information on product and coating specifications. Substitution of products that do not meet or exceed the above product and/or coating specifications may compromise the DuraGal Flooring System®.

Working With Steel

As the name indicates, DuraGal Flooring System® utilises strong and lightweight steel members to reduce on-site handling and lifting.

Always work within the regulated safe loads and take care when lifting posts, bearers, joists and connection components into place.

Although it is generally considered safe to work with, some precautions need to be taken when handling or interacting with steel. Make sure that you are wearing the appropriate and/or regulated Personal Protection Equipment (PPE). Suitable work gloves or appropriate hand protection is recommended.

Here are some simple tips to follow;

- Avoid lifting and carrying the steel members (Rectangular Hollow Section or Square Hollow Section) by inserting your hands into the open ends of the steel. The ends may have sharp burrs that could cause injury
- Always lift and carry the steel member with both hands firmly around the outside surface
- Steel can be slippery in wet conditions.

Contents



Starting

General Construction Overview	3
General Footing Guide	4
Tools and Equipment	5
Structural Member Weight Guide	5
Corrosion Protection	6

Top Tips

System Rules and Principles	7
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Post Bases

Post Base Preparation, Assembly and Connection	8
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Post Tops

Adjustable and Fixed Post Top Assembly and Connection	9
Post Sleeve Assembly and Connection	10
Typical Post Configurations	11

Bearers

Post Tops Bearer Assembly and Connection	12
Post Sleeves Bearer Assembly and Connection	14
Brick Veneer Bearer Assembly and Connection Floorplate	15
Bearer Tie-down Assembly and Connection	16

Joists

Standard Joist Assembly and Connection	17
Double Joist Assembly and Connection	18
Joist Joiner Assembly and Connection	19

Bracing

Cross Bracing Assembly and Connection	20
RHS Joist Brace Block Assembly and Connection	21
Brick Veneer Assembly and Connection	22

Step Downs

Joist Step Down Assembly and Connection	23
Angle Step Down Assembly and Connection	24

Interactions

Floor Sheeting Assembly and Connection	25
Wall Framing Assembly and Connection	26
Wall Framing and Roof Tie Down Assembly and Connection	27
Deck Board Assembly and Connection	29

Finishing

Sealing Connection	30
End Caps for Bearers and Joists	30

Starting



General Floor Construction

Getting Ready for the DuraGal Flooring System®

Assembling the DuraGal Flooring System® is made easier if the building site is prepared properly and ready for work. A clear area should be used to unbundle the steel members and on-site safe handling and storage should be considered.

Screw fasteners and connection components are a feature of the system, so it is important to check that you have everything you need before starting.

Generally, domestic building construction follows a 'ground up' approach, so this guide has a step by step structure to assist with finding assembly details at key stages during the building process.

This assembly guide covers recommendations for DuraGal Flooring System® elements and suggested arrangements where the floor interacts with other elements.

Assembly details and fastener specifications in this assembly guide are provided so that correct members, connection components and fasteners are used to comply with engineering certification. Building designers, engineers and certifiers should refer to the DuraGal Flooring System® design guide for these details.

Building plans and approvals

Building plans and council approvals must be in place before construction starts and all designs must also be certified by a registered structural engineer.

Floor layouts produced by InfraBuild Steel Centre are based on approved specifications but are not engineering certified and they require third party certification. A list of building certifiers with DuraGal Flooring System® experience is available. It is important that footings are properly designed and have appropriate certification.

Site preparation

Set out the floor area to fit building plans and footing specifications. Post placement and relative heights should be checked before assembly commences and adjustments should be made to the footings if there is any variation from the building plans.

DuraGal Flooring System® are produced to tight dimensional tolerances, so it is important to measure footings and any foundation structures such as brickwork for fit.

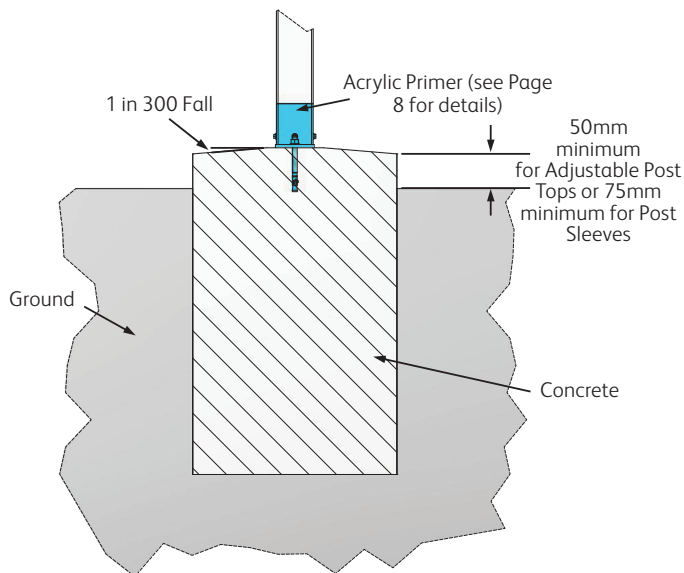
Construction

The structural performance and spans achieved by the DuraGal Flooring System® rely on fastener specifications and quantities provided in this assembly guide. Variation or substitution of members, components or fasteners is not permitted without written approval from a registered structural engineer.

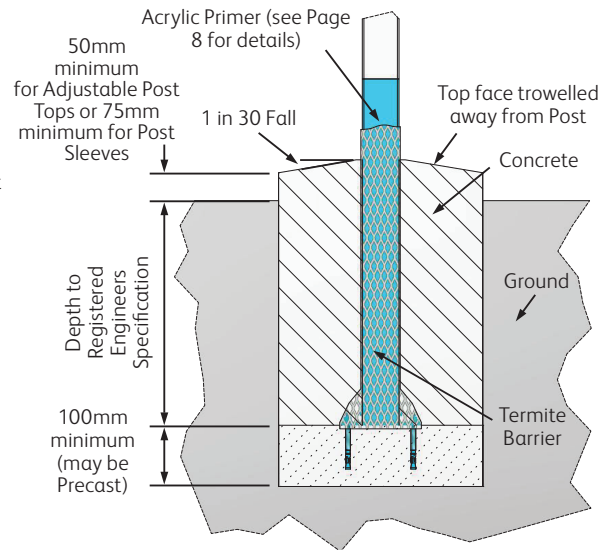
General Footing Guide

Free Standing Post and Cast-In Post Options

Free standing post - pad footing

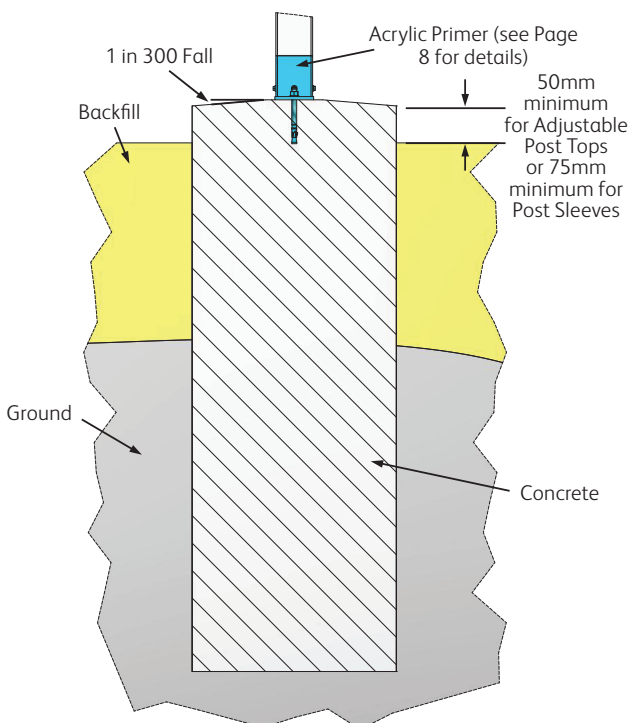


Cast-in post - Option 1

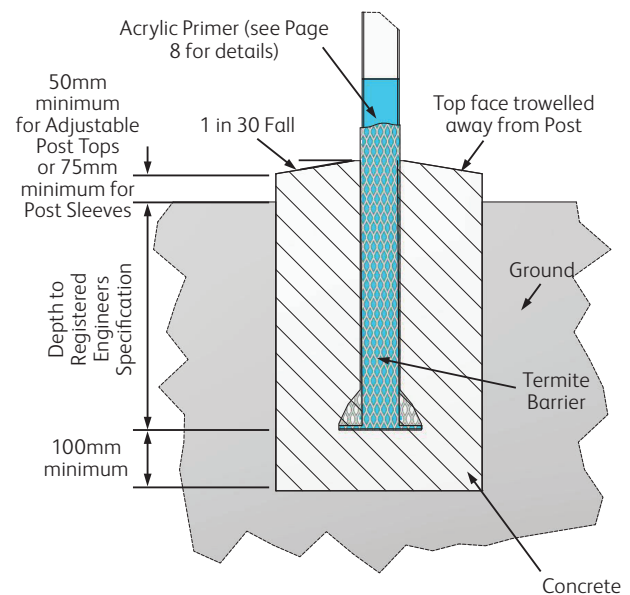


The termite barrier shown for the Cast-in Post Options is only required for through columns with Fixed Post Top components. Refer to AS 3660.1 for details.

Free standing post - pad footing with backfill



Cast-in post - Option 2



Concrete Blend and Width or Diameter to Registered Engineers Specification for all footings.

Tools and Equipment

General Guide on What Tools and Settings are Required to Make the Job Easier



Preferred tools to make the job easier

Selecting the right tools and the right blades, bits and drives can make cutting, drilling and screwing much easier and quicker.

Cutting steel members

Cutting steel members on site has been made easier with availability of portable cold cut saws. The cold cut produces a burr-free (safer) cut without zinc burn. A recommended saw blade is the Makita® 185mm cermet TCT B – 04628 36 tooth.

For further information on the Makita® 4131 saw and saw blade contact your local Makita® dealer.

Drilling steel members

Regular steel drill bits are generally suitable for holes up to 6mm diameter through tubular steel hollow sections. It is also possible to cut larger holes into the DuraGalPlus ZB 135/135 RHS for services. Drill circular holes with a carbide tipped hole saw (hole cutter) which is suitable for steel up to 4.0mm thick. Alternatively, a step drill bit may be used for this purpose.

Adjustment spanner for post tops

Use a good quality 600mm shifting spanner when making adjustments to the post top connection. A fully loaded floor may require jacking and propping before adjustments can be made.

Screw gun settings

The DuraGal Flooring System® utilises two types of screws. Hex head self drilling screws are used as the primary fastener for general assembly of the floor structure and philips head countersunk screws are used to connect floor sheets. It is important to use the correct screw gun and settings, so that the cutting tip and thread can perform at their optimum range.

For hex head self drilling screws, the preferred speed is 2500 rpm. Clutch settings and depth should be adjusted to allow for full engagement of the thread. Firm, consist pressure and speed is required.

DuraGal Flooring System® generally include the specified hex head self drilling screws.

Floor screws are installed using auto-feed screw guns with the capacity for a collated belt.

Suitable floor screws can be ordered directly from the InfraBuild Steel Centre.

Nail gun settings

Floor sheets can be fastened to DuraGalPlus ZB 135/135 RHS. Joists using hardened 'twist' nails and a pneumatic nail gun. Settings may vary with floor material. Test nail and gun specifications for size and penetration prior to construction. Check maximum air pressure is up to 120 psi and minimum is 100 psi. Refer to specifications recommended by the manufacturer.

Tool consumables

Self drilling screws supplied as part of the DuraGal Flooring System® kit use a 3/8" hex head drive for 14 gauge or a 5/16" hex head drive for 10 gauge.

Floor sheet fasteners for standard materials use a Philips dead power bit – number 2.

Structural Member Weight Guide

Structural Member Weight Details for Working out Safe Lifting and Handling

InfraBuild Steel Centre SHS and RHS.

DuraGal Flooring System® uses Rectangular Hollow Section (RHS) bearer and joist members, along with Square Hollow Section (SHS) posts in DuraGalPlus ZB 135/135 galvanised finish.

InfraBuild Steel Centre also offers a much larger range of SHS and RHS products beyond these sizes. Refer to the InfraBuild Steel Centre Know Your Steel Product Catalogue for full details.

Table 2 – Structural Member Weights

Structural Member	Mass kg/m
90x90x2.0 SHS DuraGalPlus ZB 135/135 (Post)	5.45
89x89x3.5 SHS DuraGalPlus ZB 135/135 (Post)	9.07
75x50x2.0 RHS DuraGalPlus ZB 135/135 (Joist)	3.72
100x50x1.6 RHS DuraGalPlus ZB 135/135 (Joist)	3.64
100x50x2.0 RHS DuraGalPlus ZB 135/135 (Joist)	4.50
150x50x2.0 RHS DuraGalPlus ZB 135/135 (Bearer)	6.07
150x50x3.0 RHS DuraGalPlus ZB 135/135 (Bearer)	8.96

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

Corrosion Protection

Precautions to Reduce the Risk of Corrosion



Care must be taken to preserve the zinc and coatings on DuraGal Flooring System® components and minimise the risk of corrosion to the underlying steel. The following precautions should be taken to reduce the risk of corrosion.

Storage of floor components

Most galvanised products are susceptible to “White Rust” or “Zinc Storage Stain”. The following storage precautions should be observed to minimise the risk of this occurring: All steel members, components and fasteners should be stored on site in a dry and well-ventilated position wherever possible. If packs of steel members are to be left exposed to the weather for more than a few days, the individual sections should be separated by nonstaining timbers such as dressed radiata pine (not treated pine) and arranged so that all surfaces are well ventilated and any water will readily run off and not pool either on the surface, or inside the section. If these precautions are not followed, then white rust may form very quickly. Your DuraGal Flooring System® supplier cannot be held responsible for deterioration as a result of poor storage practices on site.

Partially erected floors

It is recommended that the ends and open tops of sections exposed to the weather be covered to prevent the filling of posts and the ponding of water in the joists and bearers.

Fasteners

Do not use any other fasteners other than those recommended in this guide. The use of the wrong type of fastener may lead to corrosion at the contact area between the fastener and the DuraGal Flooring System® members.

Swarf

Swarf (steel filings) is often an initiation point for corrosion. It is recommended that saws be regularly cleaned and that any swarf be brushed or blown from the DuraGal Flooring System® components.

Ponding of water

The ponding of water within DuraGal Flooring System® sections must be avoided. Ponding may occur where the ends of sections have been incorrectly sealed, through adjustable post top connections or by water ingress through fastener holes. Decks and areas of open floor directly exposed to outdoor weather conditions are most susceptible to ponding. InfraBuild Steel Centre has developed a number of techniques to reduce these risks.

Soil contact

Contact between DuraGal Flooring System® components and soil should be avoided by proper design of the footings as soil contact markedly increases the corrosion rate of zinc. Please refer to page 4 for footing details.

Concrete

A quick drying high build paint system, as outlined on Page 8, should be applied at least 200mm above and below the concrete junction where floor components are embedded in concrete. Please refer to Page 4 for footing details.

Timber contact (exposed deck and verandahs)

Do not use treated pine in direct contact with the DuraGalPlus ZB 135/135 sections as this will increase the corrosion rate of Zinc. Contact with some hardwood species will stain galvanised members and components. Although this staining is unsightly, it will not generally be detrimental to the performance of the product. Tape systems, as detailed on page 29, are available and should be used as a barrier between all exposed to the weather timber and steel members.

Avoid contact between dissimilar metals

Contact between dissimilar metal may increase the corrosion rate of one of them. In particular, the use of copper pipes on galvanised surfaces will be detrimental to the galvanising. Water run off from one metal to another may also lead to corrosion of the galvanised metal.

Painting components

Use the paint systems recommended by reputable paint suppliers for advice on specific paint systems to suit the climatic conditions of your site and application. Further advice is given in the DuraGal® Easy Painting and Corrosion Protection Guide.

Chemicals

Zinc corrosion is increased by acidic or alkaline conditions, and may occur where certain chemicals are present. A common example is the acid run off which occurs from brick washing. Contact between these sorts of chemicals and the DuraGal Flooring System® components must be avoided. If accidental contact occurs, immediately hose down the contaminated area with water. If the galvanising is affected, repair of the coating will be required to restore the level of protection. Contact InfraBuild Steel Centre for advice.

Top Tips



System Rules and Principles

Things to Remember

1. Post Bases

- For free standing floors, before marking out post positions decide on location of external posts relative to external wall
- Measure post heights to underside of bearer and deduct 85mm for adjustable post tops
- Post base plates and post tops, where possible, should be installed while the post is horizontal before standing vertical to fastening the footings. This makes it easier to install the fasteners
- Check that you have the right size post base for each post
- Apply the recommended primer paint to all posts and post bases before assembling (see page 8 for details)

2. Posts

- Screw count for post base and adjustable post top always match (see page 9 for details)

3. Post Tops

- Set adjustable post top height to 65mm before assembly (see page 9 for details)
- Assemble post sleeve before adjustable post top on split floor arrangements (see page 16 for details)

4. Bearers

- Hip verandah bearers are fastened to uni-top adjustable post tops using 45mm eaves angle brackets

5. Joists

- Unitie brackets are used on the outer DuraGalPlus ZB 135/135 RHS joist for double joists

6. Bracing

- Post to post bracing set is only used with post sleeve connections
- Joist bracing should be fastened in place before installation of outer end joist (see Page 17 for details)

7. Step Downs

- There are various methods for step downs when using the DuraGal Flooring System®

8. Interactions

- Floor sheeting sizes and laying direction needs to be considered and position joists under joins
- Some additional off-cut joist members may be required to support floor sheeting

9. Finishing

- All joins and cut ends must be sealed to protect them from corrosion
- Quick drying high build acrylic primer and joist sealing tape is available from InfraBuild Steel Centre

Post Bases

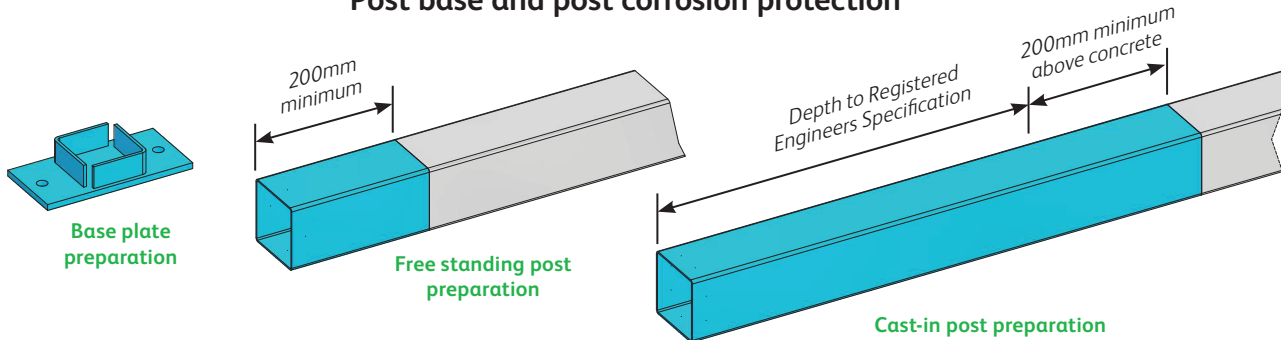
Preparation, Assembly and Connection

Post base, post corrosion protection and post fasteners

1

Apply a coat of quick drying high build acrylic primer (supplied as part of each floor kit) to all base plates and posts, ensuring that the entire surface area of the base plate and cut end and inside surface of the post is sufficiently protected.

Post base and post corrosion protection

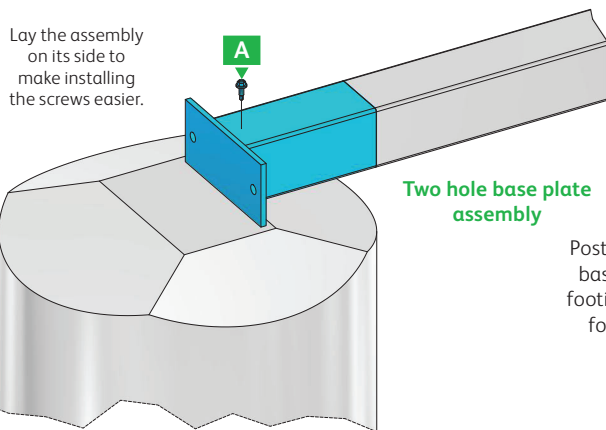


Where posts are embedded into the pads (cast-in), apply a barrier coating to a minimum of 200mm above expected final concrete height. Suggested coating: 2 coats of quick drying high build acrylic primer. Preparation and application to paint manufacturer's specification.

2

Connect the post and base plate using the specification and quantity of fasteners detailed in the fastener specification table.

Two hole base plate and post connection

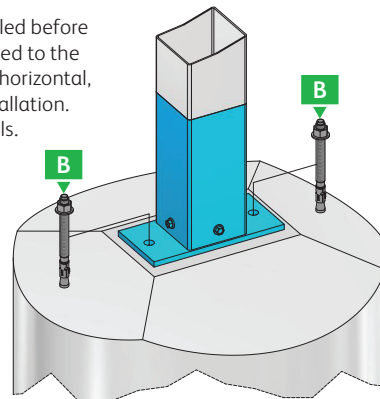


3

Connect the base plate to the footing using the specification and quantity of fasteners detailed in the fastener specification table.

Base plate to footing connection

Post tops can be assembled before base plates are connected to the footing, while the post is horizontal, for easier fastener installation. See page 9 details.



Apply the second coat of quick drying high build acrylic primer as part of the finishing stage to protect the fasteners and joins.

Fastener specification

A	4 (1 per side) No.14 - 20 x 22 mm self drilling screws
B	M10 HDG Trubolt in each hole

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Post Tops

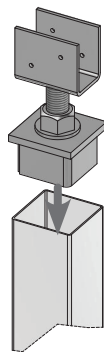
Assembly and Connection

Arrangements and Fastener Selection – Adjustable and Fixed Post Tops

1

Position the adjustable post top onto the SHS post, making sure that it is seated squarely.

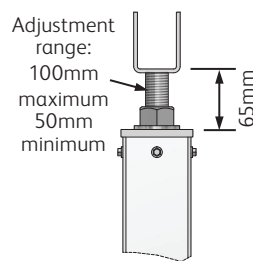
Adjustable post top assembly



Post tops can be assembled before base plates are connected to the footing, while the post is horizontal, for easier fastener installation.

Adjustable post top with Square Hollow Section (SHS) post

Use this assembly detail and fastener specification for the uni-top adjustable post top

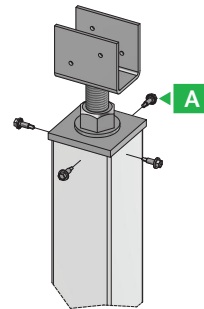


Adjustable post top adjustment range and setting

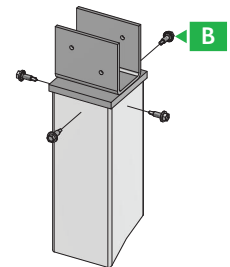
2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

Post connection showing post top options



Adjustable post top fasteners



Fixed post top fasteners

Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.

Fastener specification

A	4 (1 per side) No.14 - 20 x 22 mm self drilling screws
B	4 (1 per side) No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

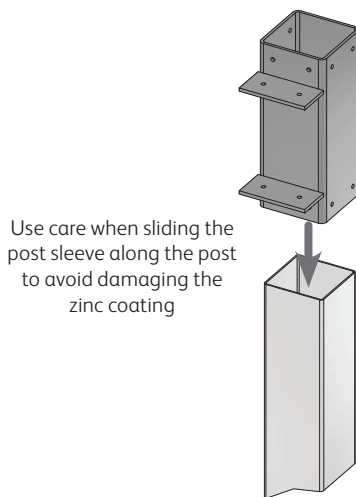
Assembly and Connection

Arrangements and Fastener Selection – Post Sleeves

1

Position the post sleeve onto the post, sliding it carefully along the post before checking the height position.
Temporarily secure with a clamp.

Post sleeve assembly

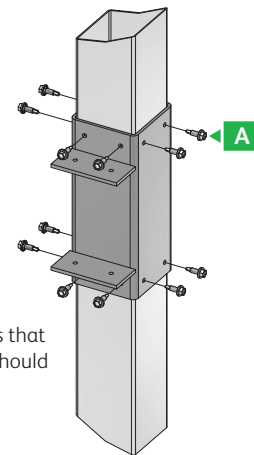


Post sleeves universally fit post member sizes:
90x90x2.0mm SHS and 89x89x3.5mm SHS

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

Post sleeve to post connection on a 'through column'



Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately.
See page 30 for details.

Standard post sleeve with self drilling screw fasteners

Fastener specification

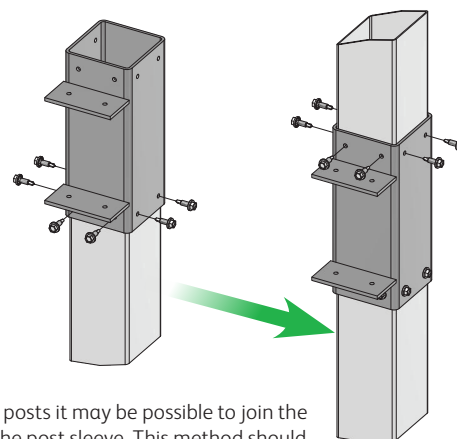
A

16 (4 per side) No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Post sleeve to post connection on a two part post

Join the post mid way
(+/- 20mm of centre) through the post sleeve



For long posts it may be possible to join the post in the post sleeve. This method should be used in accordance with a registered structural engineer's specifications

Typical Post Configurations

Post Arrangements – Post to Bearer and Through Column

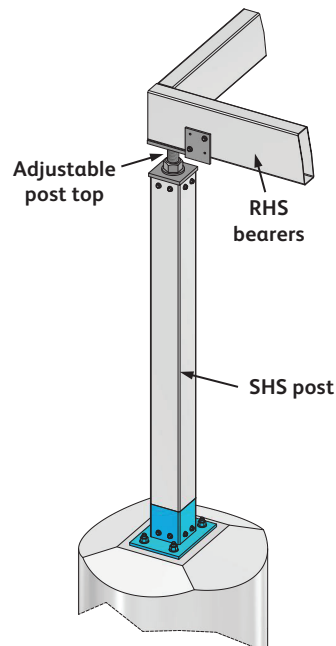
Freestanding SHS posts and RHS bearer configurations.

In most instances, the sub-floor will sit on top of Square Hollow Section (SHS) posts with adjustable post top connections to the Rectangular Hollow Section (RHS) bearer.

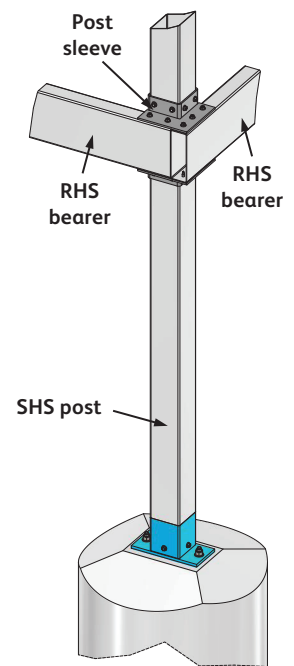
Fixed post tops are offered where site conditions don't require adjustment during construction or footings and soil conditions are stable.

Post sleeve connection components allow posts to pass through the sub-floor at the bearer and joist and connect directly with roof beams. They can also be used in conjunction with the adjustable post top for split-level arrangements.

Corner posts

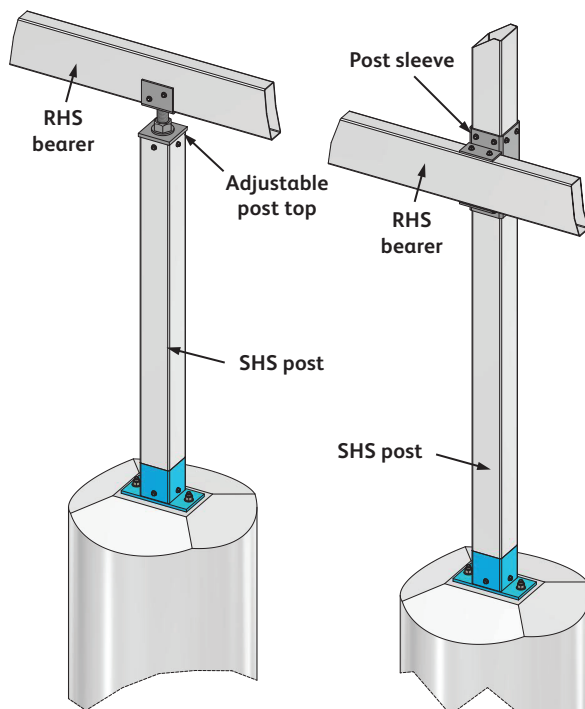


Post to bearer with adjustable post top

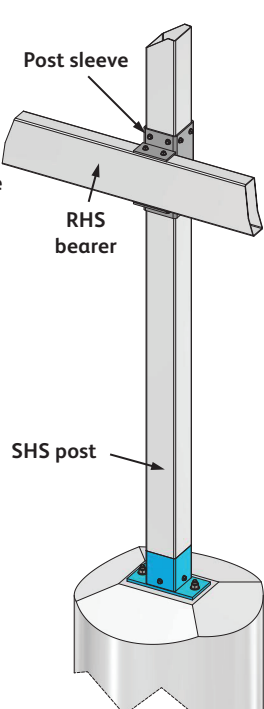


Post through column with post sleeve

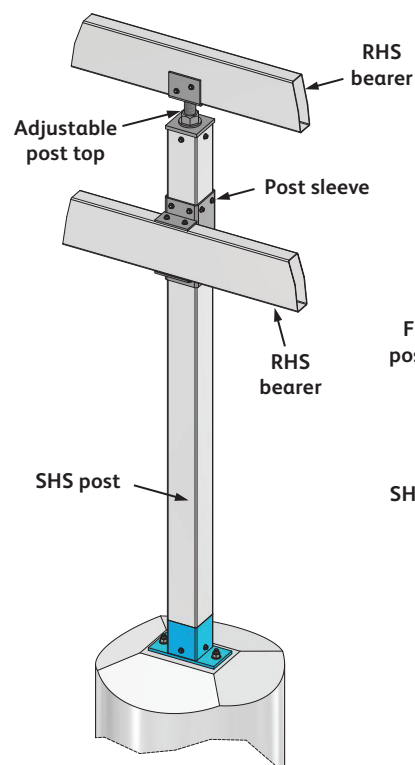
Mid-span (interior bearing) posts



Post to bearer with adjustable post top

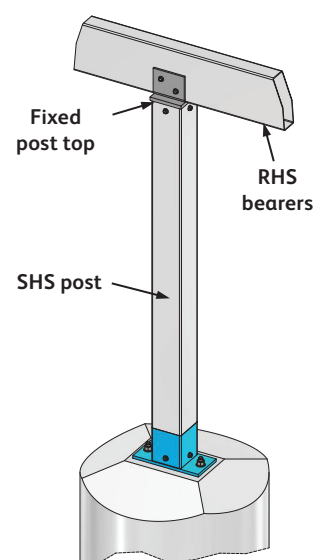


Post through column with post sleeve



Post through column with post sleeve and adjustable post top for split-level floors

Fixed post top



Post to bearer with fixed post top

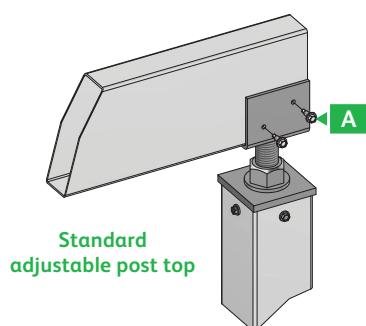
Assembly and Connection

Bearer Arrangements and Fastener Selection – Post Tops

1

Position the RHS bearers into place on the post top.
(Bearer assembly sequence to suit floor layout)

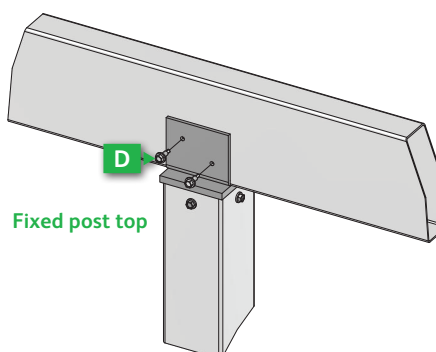
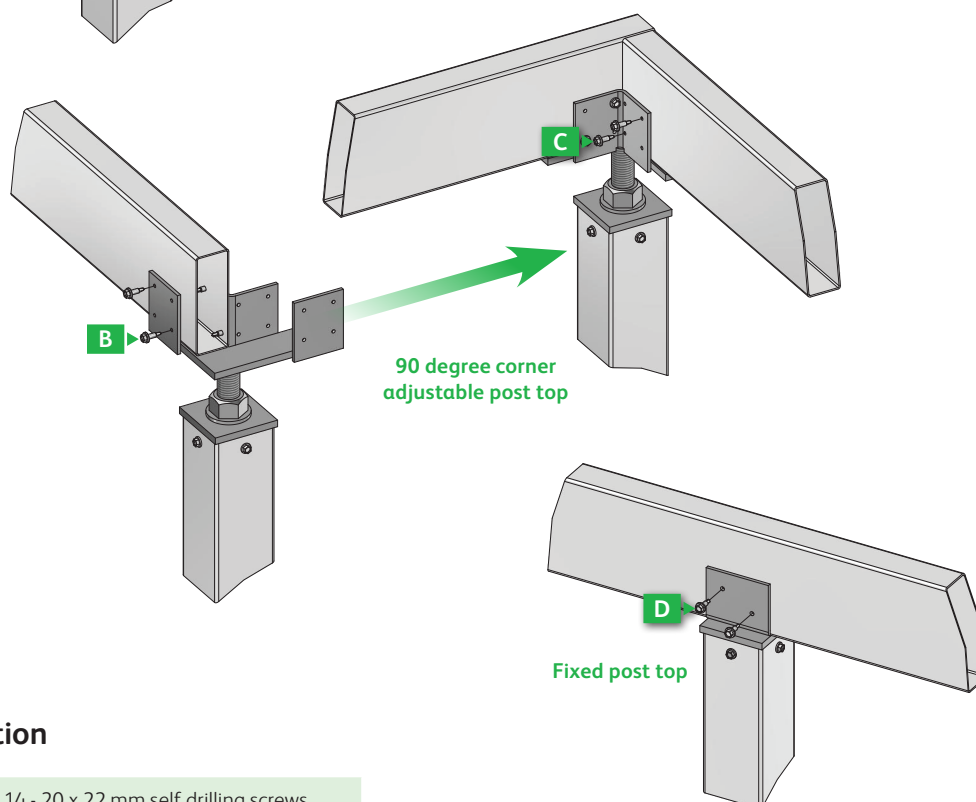
Bearer to adjustable post top and fixed post top connections



2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.



Fastener specification

A	4 (2 per side) No.14 - 20 x 22 mm self drilling screws
B	4 (2 per side) No.14 - 20 x 22 mm self drilling screws
C	4 (2 per side) No.14 - 20 x 22 mm self drilling screws
D	4 (2 per side) No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Assembly and Connection

Bearer Arrangements and Fastener Selection – Post Tops

1

Position the RHS bearers into place on the adjustable post top.
(Bearer assembly sequence to suit floor layout)

Bearer to adjustable post top connections

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

45mm eaves
angle bracket

45mm eaves angle
bracket each side
of bearer

Uni-top adjustable post tops assembly sequence may require the eaves angle bracket to be fastened in place before the bearer is installed.

**Uni-top (off-centre)
adjustable post top for
external verandah corners**

45mm eaves
angle bracket

45mm eaves angle
bracket location detail
for each side of bearer

Uni-top (centre)
adjustable post top for
internal verandah corner

Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.

45mm eaves angle
bracket location detail

45mm eaves
angle bracket

Uni-top (centre)
adjustable post top
mid span T intersection

Fastener specification

A	2 No.14 - 20 x 22 mm self drilling screws
B	2 x 500 Series 12 - 24 x 32 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

Assembly and Connection

Bearer Arrangements and Fastener Selection - Post Tops

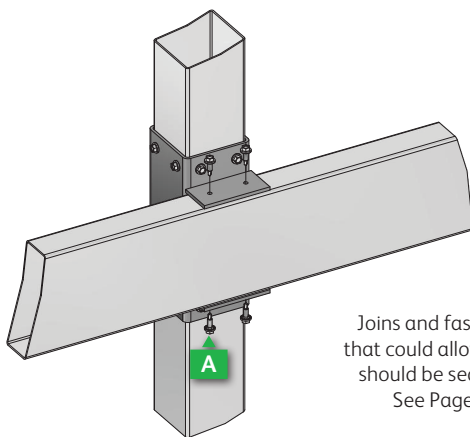
1

Position the RHS bearers into place on the post sleeve.
(Bearer assembly sequence to suit floor layout)

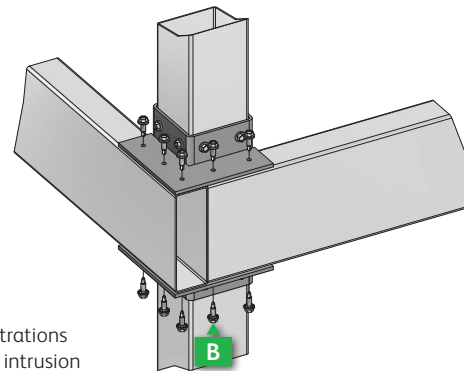
Bearer to post sleeve connections

2

Connect using the specification and quantity of fasteners
detailed in the fastener specification table.



**Standard
post sleeve**



**90 Degree Corner
Post Sleeve**

Joins and fastener penetrations
that could allow moisture intrusion
should be sealed appropriately.
See Page 30 for details.

Fastener specification

A	4 No.14 - 20 x 22 mm self drilling screws
B	8 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

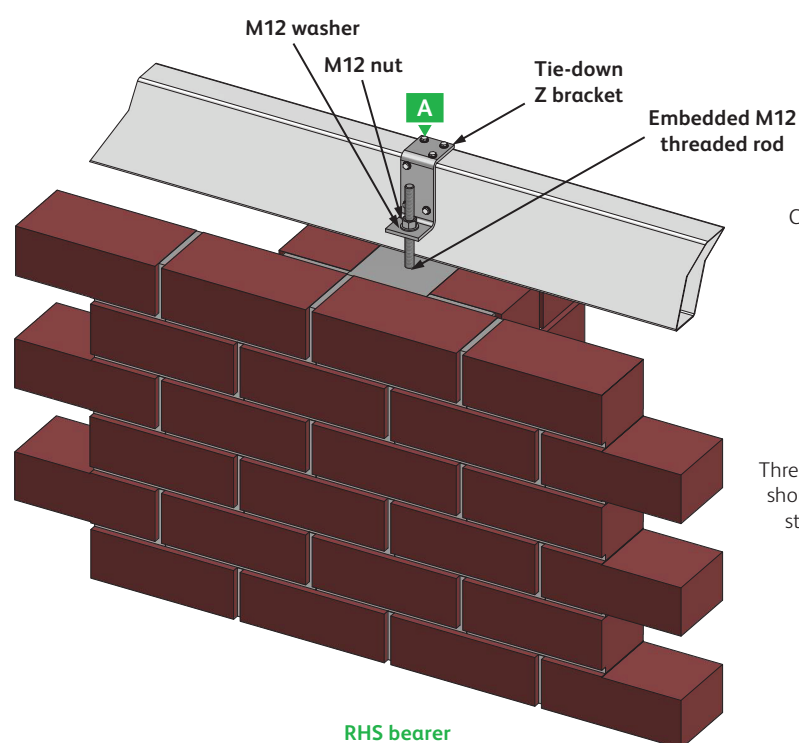
Assembly and Connection

Bearer Arrangements and Fastener Selection – Brick Veneer

1

Position the RHS Bearers into place on the brickwork.
(Damp course layer between brickwork and bearer)

Bearer to brickwork connection



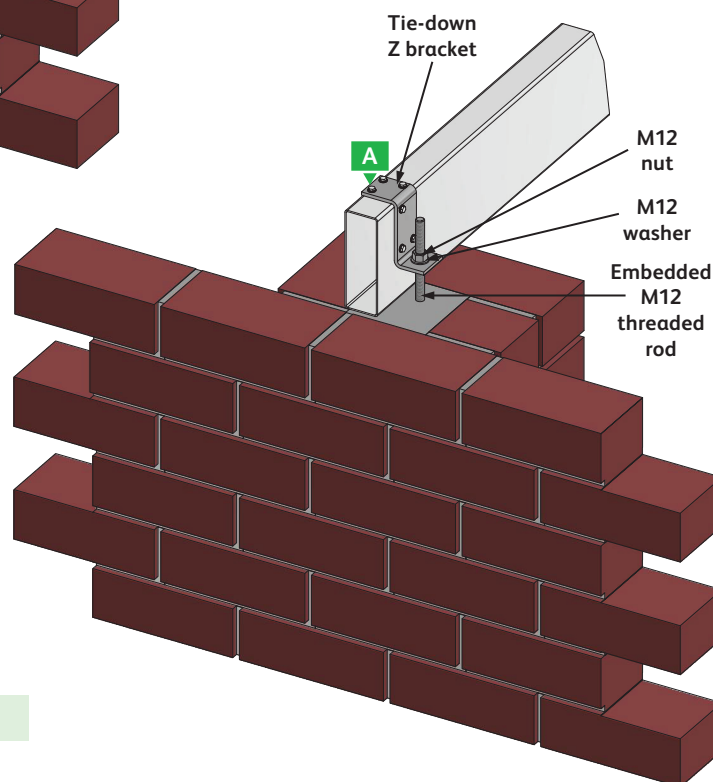
**RHS bearer
with local engaged pier**

Damp course and ant capping
will be required between the
Bearer and masonry, according
to Australian Standards and
local certification.

2

Connect using the specification and quantity of fasteners
detailed in the fastener specification table.

Threaded rod embedment
should be to a registered
structural engineer's
specification



Fastener specification

A

6 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

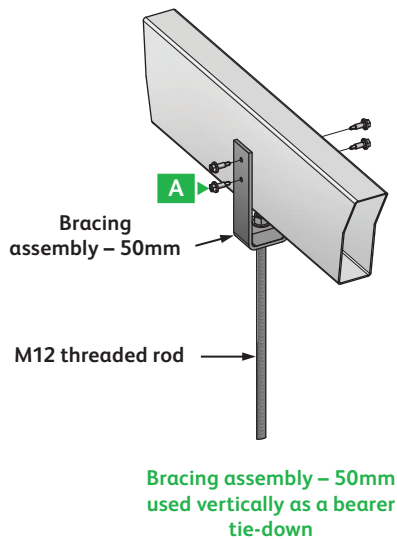
Assembly and Connection

Bearer Tie-Down Arrangement and Fastener Selection

1

Position and connect bracing assembly using the specification and quantity of fasteners detailed in the fastener specification table.

Bearer tie-down connection



Fastener specification

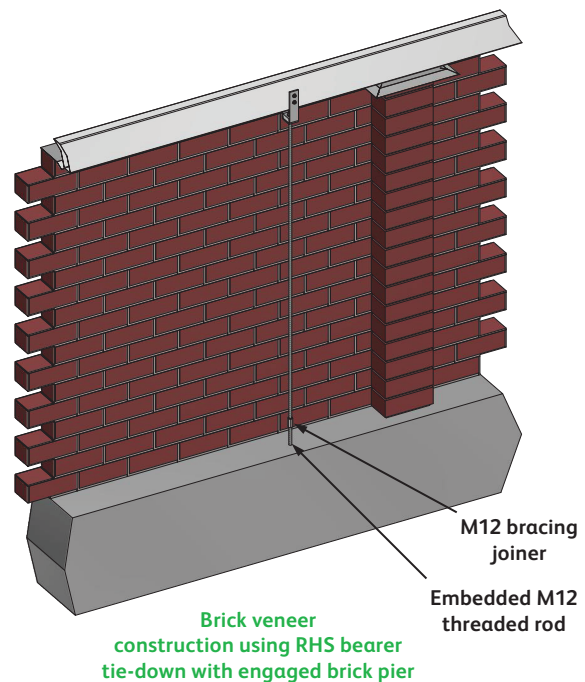
A

4 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

2

Connect the M12 bracing threaded rod to embedded M12 threaded rod using a M12 bracing joiner.



Damp course and ant capping will be required between the bearer and masonry, according to Australian Standards and local certification.

Joists

Assembly and Connection

Joist Arrangements and Fastener Selection – Standard Joists

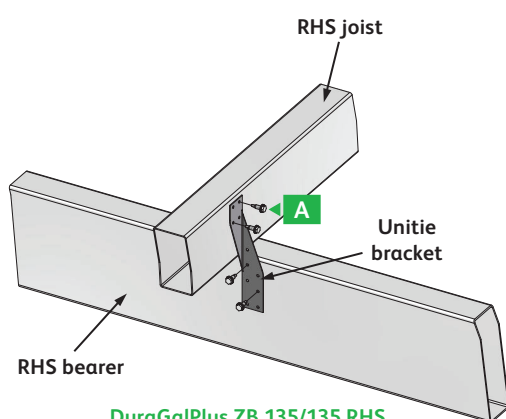
1

Position the RHS joists into place with the correct bracket.

Joist to bearer connections

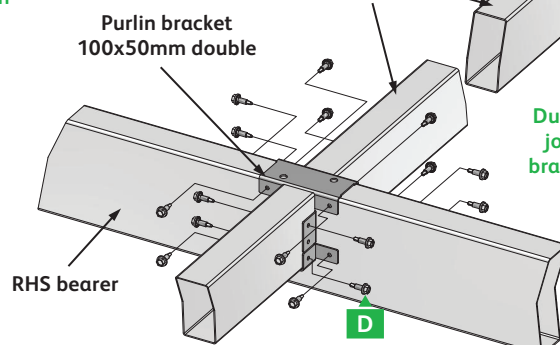
2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

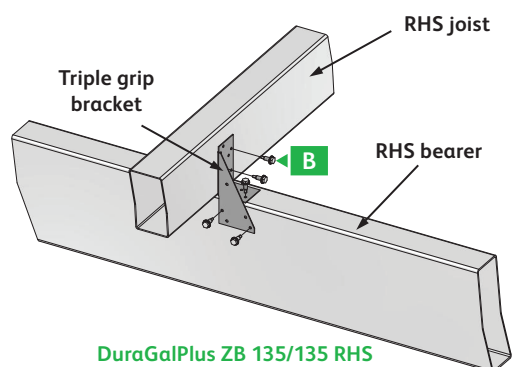


DuraGalPlus ZB 135/135 RHS joist connected with unitie bracket for joist over bearer configuration

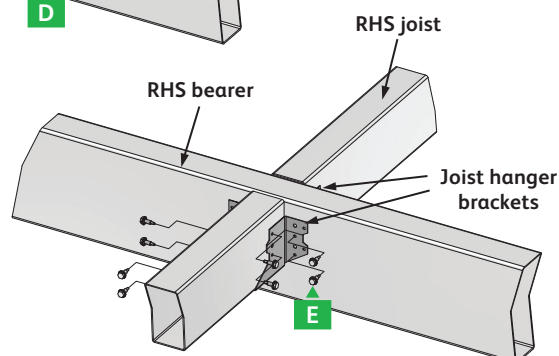
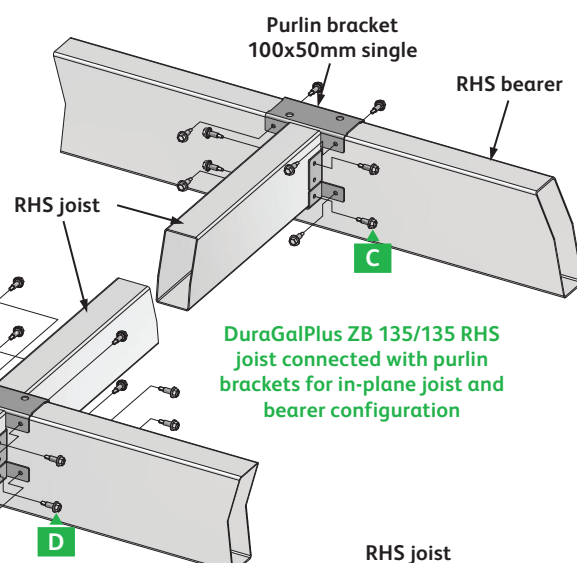
Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.



DuraGalPlus ZB 135/135 RHS joist connected with triple grip bracket for joist over bearer configuration



DuraGalPlus ZB 135/135 RHS joist connected with purlin brackets for in-plane joist and bearer configuration



DuraGalPlus ZB 135/135 RHS joist connected with joist hanger brackets for in-plane joist and bearer configuration

Fastener specification

A	4 No.10 - 16 x 16 mm self drilling screws
B	5 No.10 - 16 x 16 mm self drilling screws
C	10 No.10 - 16 x 16 mm self drilling screws
D	16 No.10 - 16 x 16 mm self drilling screws
E	8 No.10 - 16 x 16 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

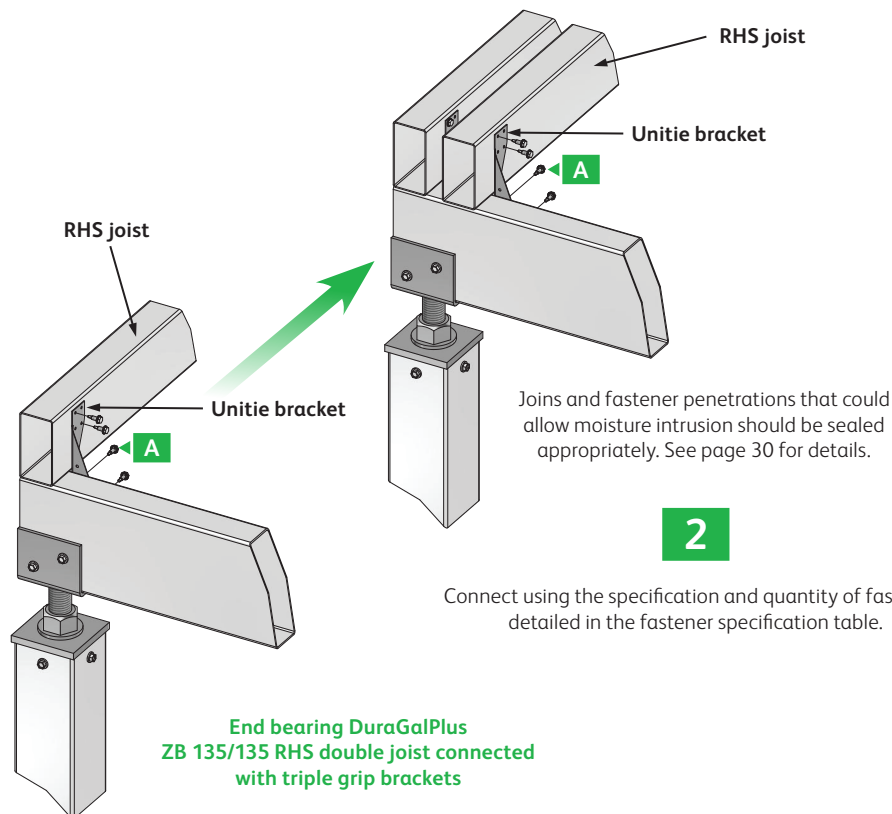
Assembly and Connection

Joist Arrangements and Fastener Selection – Double Joists

1

Position the RHS joists into place with the correct bracket.

Joist to bearer connections under end walls


2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

**End bearing DuraGalPlus
ZB 135/135 RHS double joist connected
with triple grip brackets**

Fastener specification

A	4 No.10 - 16 x 16 mm self drilling screws
B	4 No.10 - 16 x 16 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

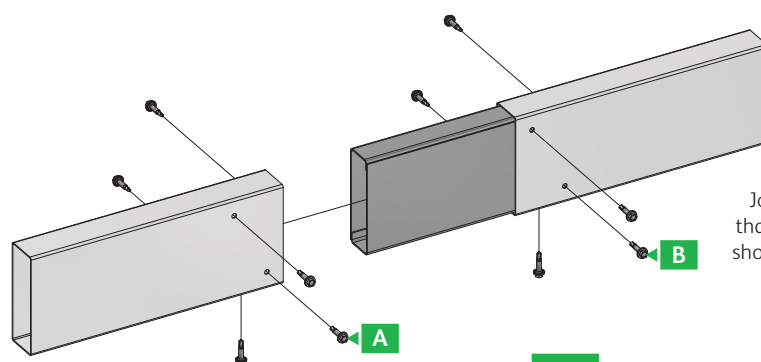
Assembly and Connection

Joist Arrangements and Fastener Selection – Joist Joiners

1

Position the joist joiner half way into the end of the RHS joists you want to connect.

Joist joiner connection



Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

Fastener specification

A	5 No.14 - 20 x 22 mm self drilling screws
B	5 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Bracing

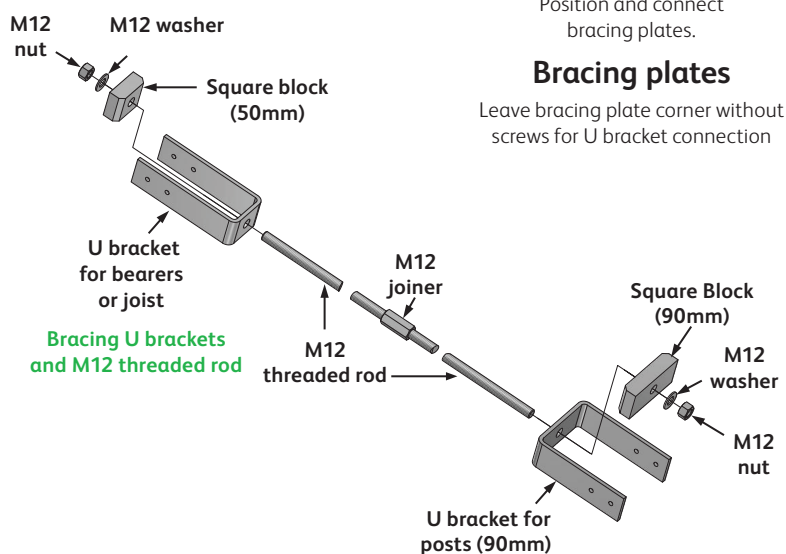
Assembly and Connection

Cross Bracing Set Assembly, Arrangement and Fastener Selection

1

Assemble fastener and bracing components onto the ends of M16 bracing threaded rods to make cross bracing sets.

Cross bracing sets



2

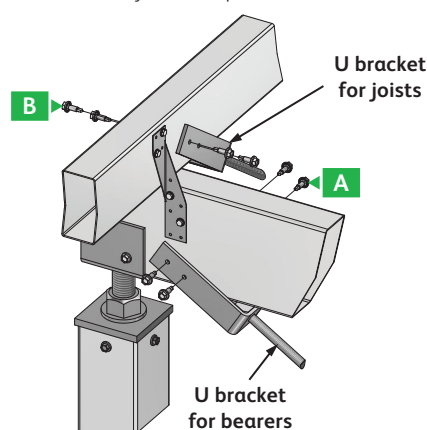
Position and connect bracing plates.

Bracing plates

Leave bracing plate corner without screws for U bracket connection

3

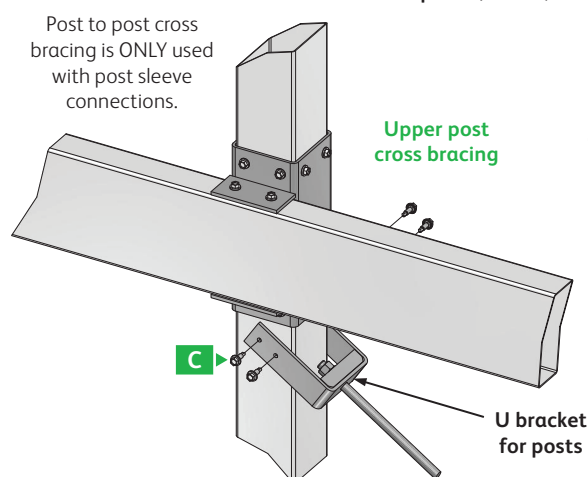
Position assembled cross bracing sets onto bearers, joists and posts.



4

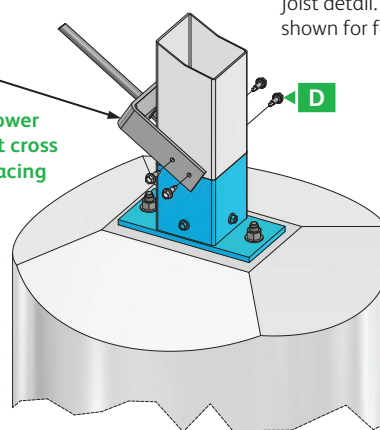
Connect using the specification and quantity of fasteners detailed in the fastener specification table.

DuraGalPlus ZB 135/135 RHS bearer and joist cross bracing



U bracket for posts

Lower post cross bracing



Bracing is shown connected to the inside Joist on a double joist detail. Outer joist not shown for fastener clarity.

Fastener specification

A	4 No.14 - 20 x 22 mm self drilling screws
B	4 No.14 - 20 x 22 mm self drilling screws
C	4 No.14 - 20 x 22 mm self drilling screws
D	4 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.

Assembly and Connection

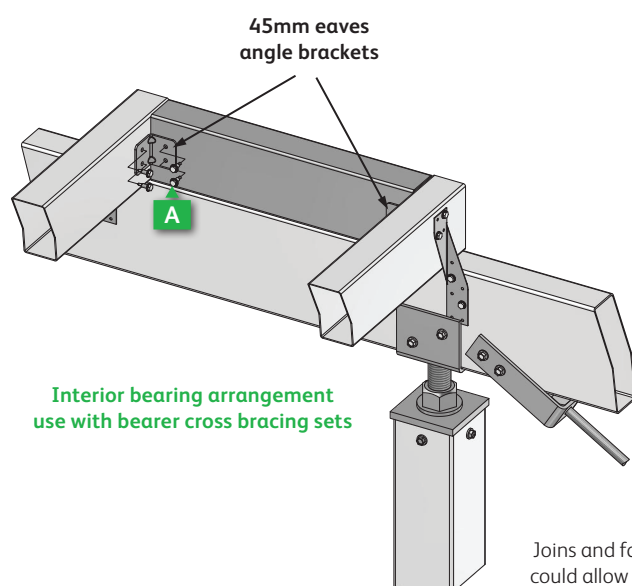
RHS Joist Brace Block Arrangements and Fastener Selection

1

Position the RHS joist brace blocks between the RHS joists with the correct bracket.

RHS joist brace blocks

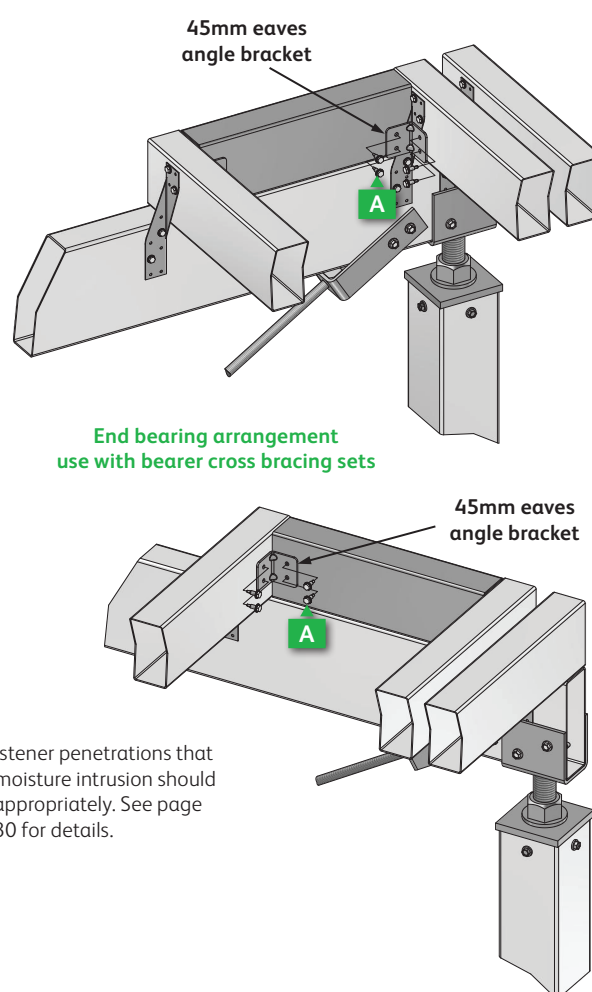
RHS joist brace blocks are specified where higher bracing capacities are required



Joins and fastener penetrations that could allow moisture intrusion should be sealed appropriately. See page 30 for details.

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.



Fastener specification

A

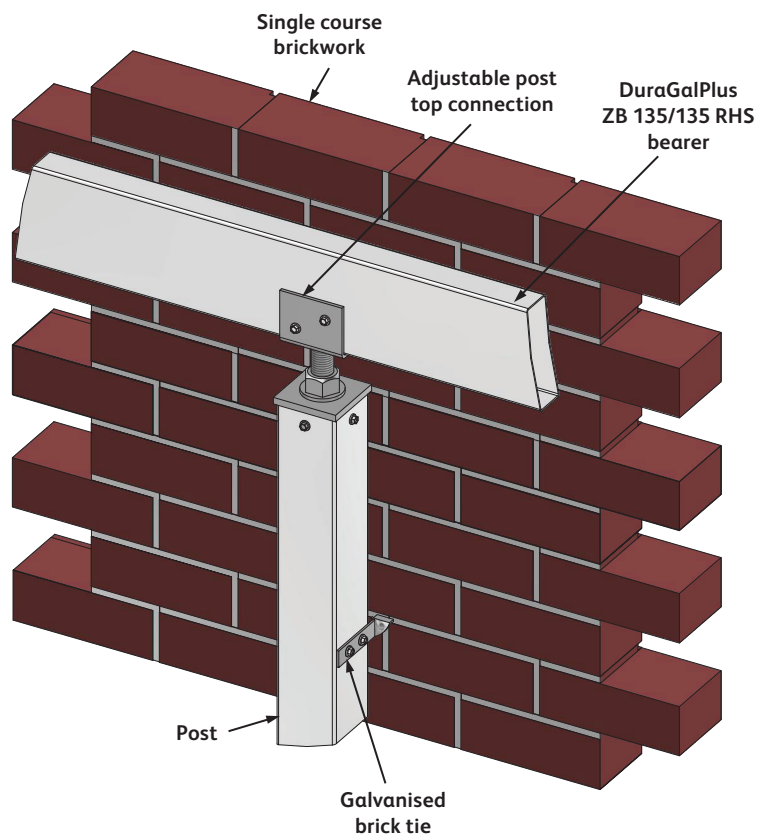
4 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Assembly and Connection

Free Standing Floor With Brick Veneer

Suggested floor bracing with brick tie to brick wall



Brick veneer with freestanding post

Frequency to registered structural engineer's specification.

Suggested methods are provided to show that the DuraGal Flooring System® sub-floor can interact successfully with other building elements. Because of the variable nature and independent supply of these building materials, you should seek professional advice and contact the relevant manufacturer for full details.

Step Downs

Assembly and Connection

Joist Step Down Arrangement And Fastener Selection

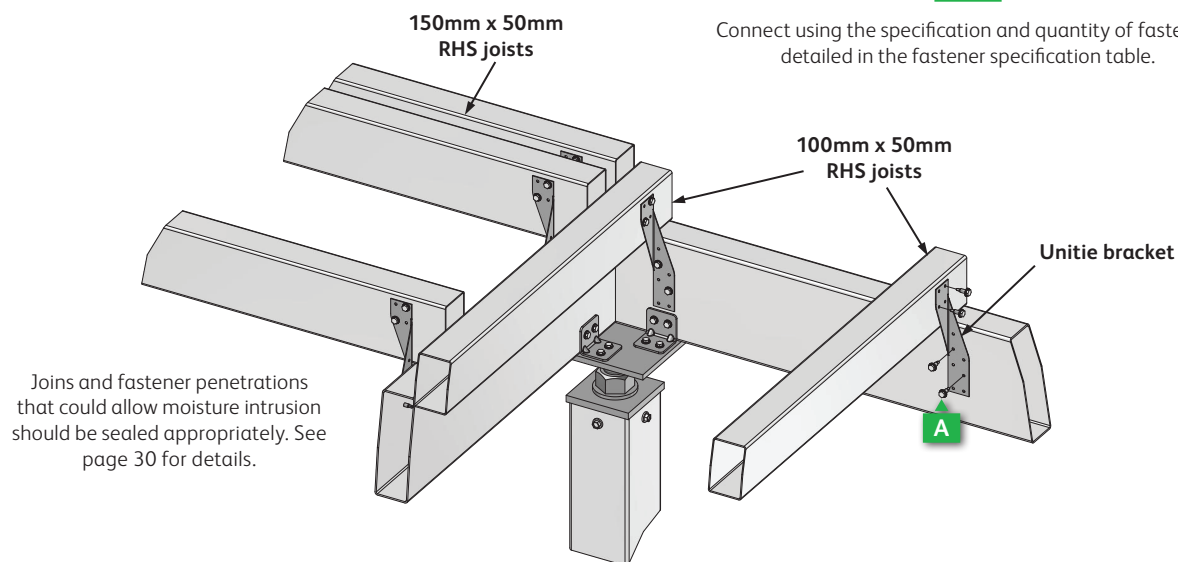
1

Step down areas on the adjustable post top before the RHS bearers are positioned into place.

100mm x 50mm RHS joists provide a 50mm height variation between bearers on a single post

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.



A combination of standard 150mm x 50mm joists with 100mm x 50mm joists for step downs

Fastener specification

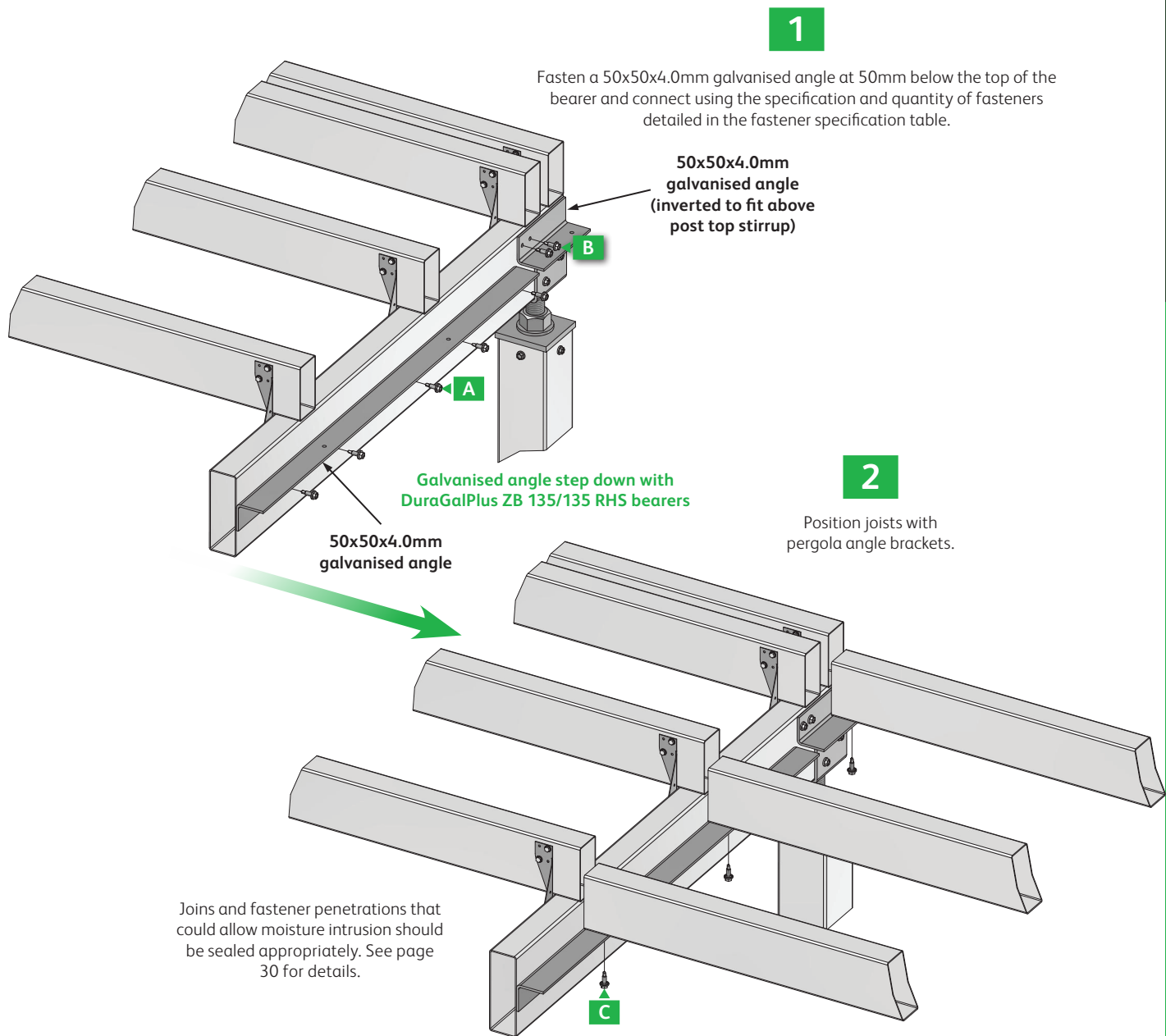
A

4 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Assembly and Connection

Angle Step Down Arrangement and Fastener Selection



Fastener specification

A	1 No.14 - 20 x 22 mm self drilling screw positioned at 225mm centres along angle
B	2 No.14 - 20 x 22 mm Self drilling screws
C	4 No.14 - 20 x 22 mm self drilling screws

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Connect using the specification and quantity of fasteners detailed in the fastener specification table.

Interactions



Assembly and Connection

Floor Sheeting Arrangements and Fastener Selection

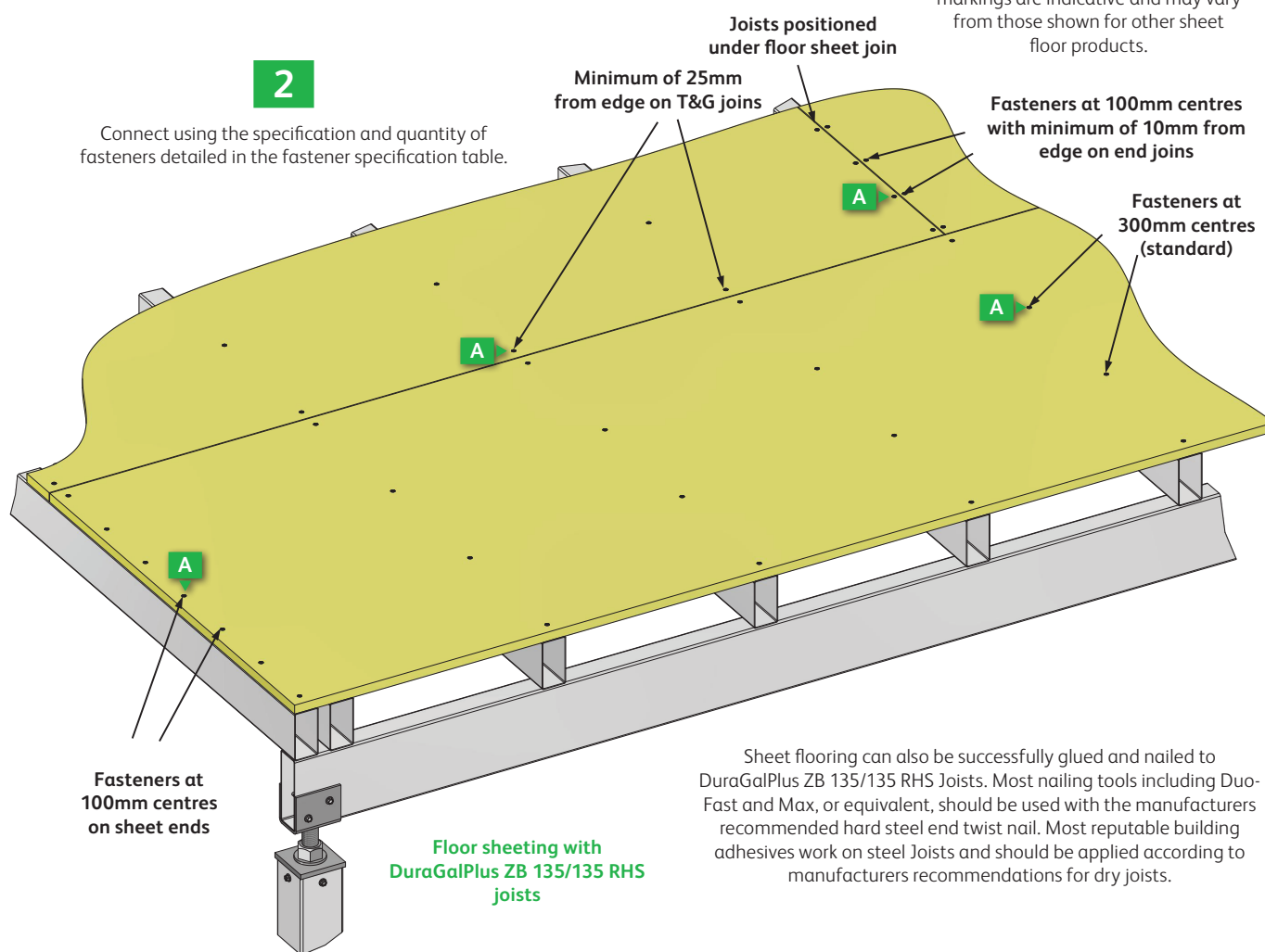
1

Alignment of joists and floor sheeting is essential to successful fastening. Consider sheet sizes so that joints are over the centre of the joist.

Suggested floor sheet arrangement and fastening

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.



Floor sheet nail fastener location markings are indicative and may vary from those shown for other sheet floor products.

Sheet flooring can also be successfully glued and nailed to DuraGalPlus ZB 135/135 RHS Joists. Most nailing tools including Duo-Fast and Max, or equivalent, should be used with the manufacturers recommended hard steel end twist nail. Most reputable building adhesives work on steel Joists and should be applied according to manufacturers recommendations for dry joists.

Fastener specification

A

Duo-Fast C25 /32 SH Dac Con hard steel twist nail

Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

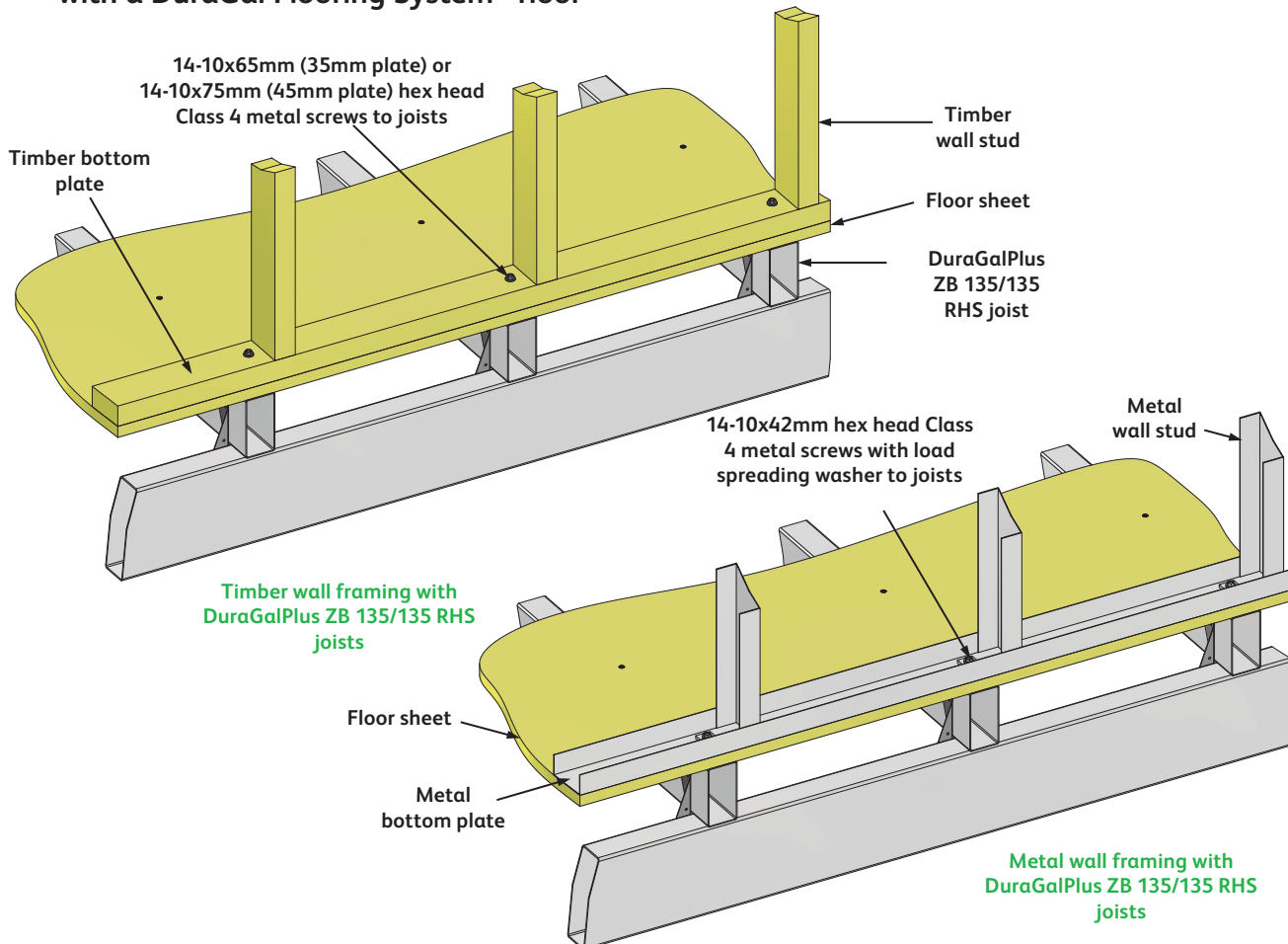
Suggested methods are provided to show that the DuraGal Flooring System® sub-floor can interact successfully with other building elements. Because of the variable nature and independent supply of these building materials, you should seek professional advice and contact the relevant manufacturer for full details.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

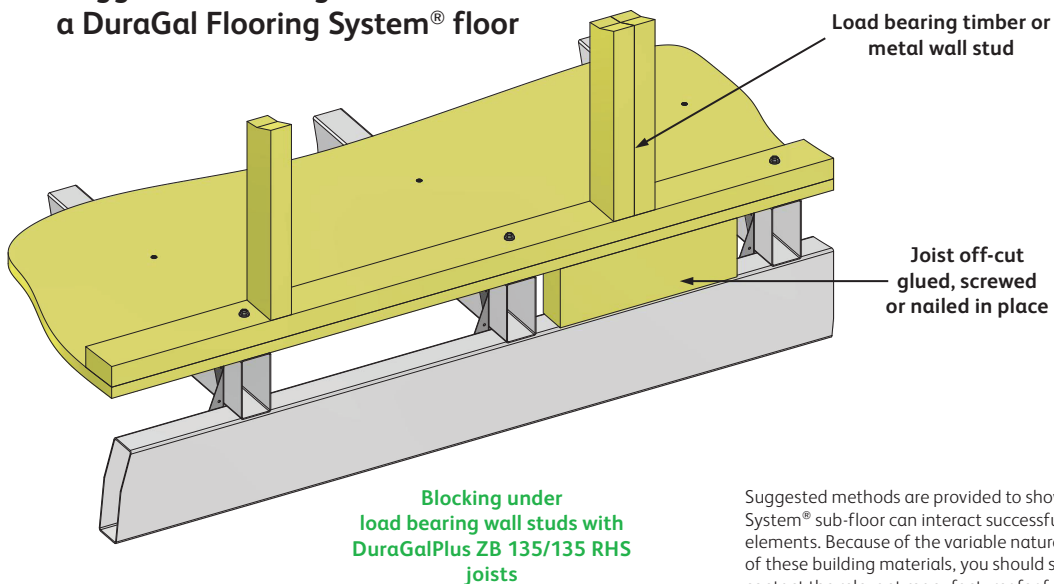
Assembly and Connection

Wall Framing Arrangements and Fastener Selection

Suggested bottom plate arrangement with a DuraGal Flooring System® floor



Suggested blocking method with a DuraGal Flooring System® floor



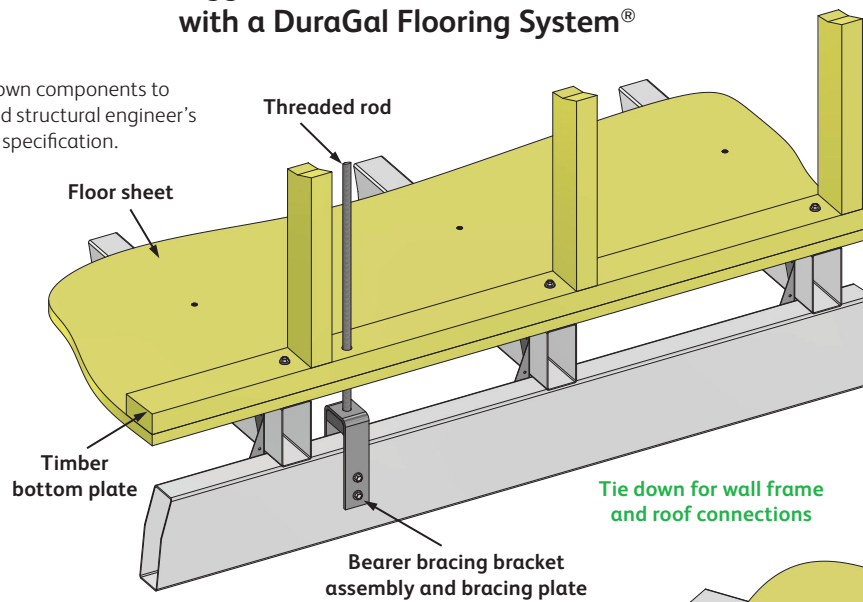
Suggested methods are provided to show that the DuraGal Flooring System® sub-floor can interact successfully with other building elements. Because of the variable nature and independent supply of these building materials, you should seek professional advice and contact the relevant manufacturer for full details.

Assembly and Connection

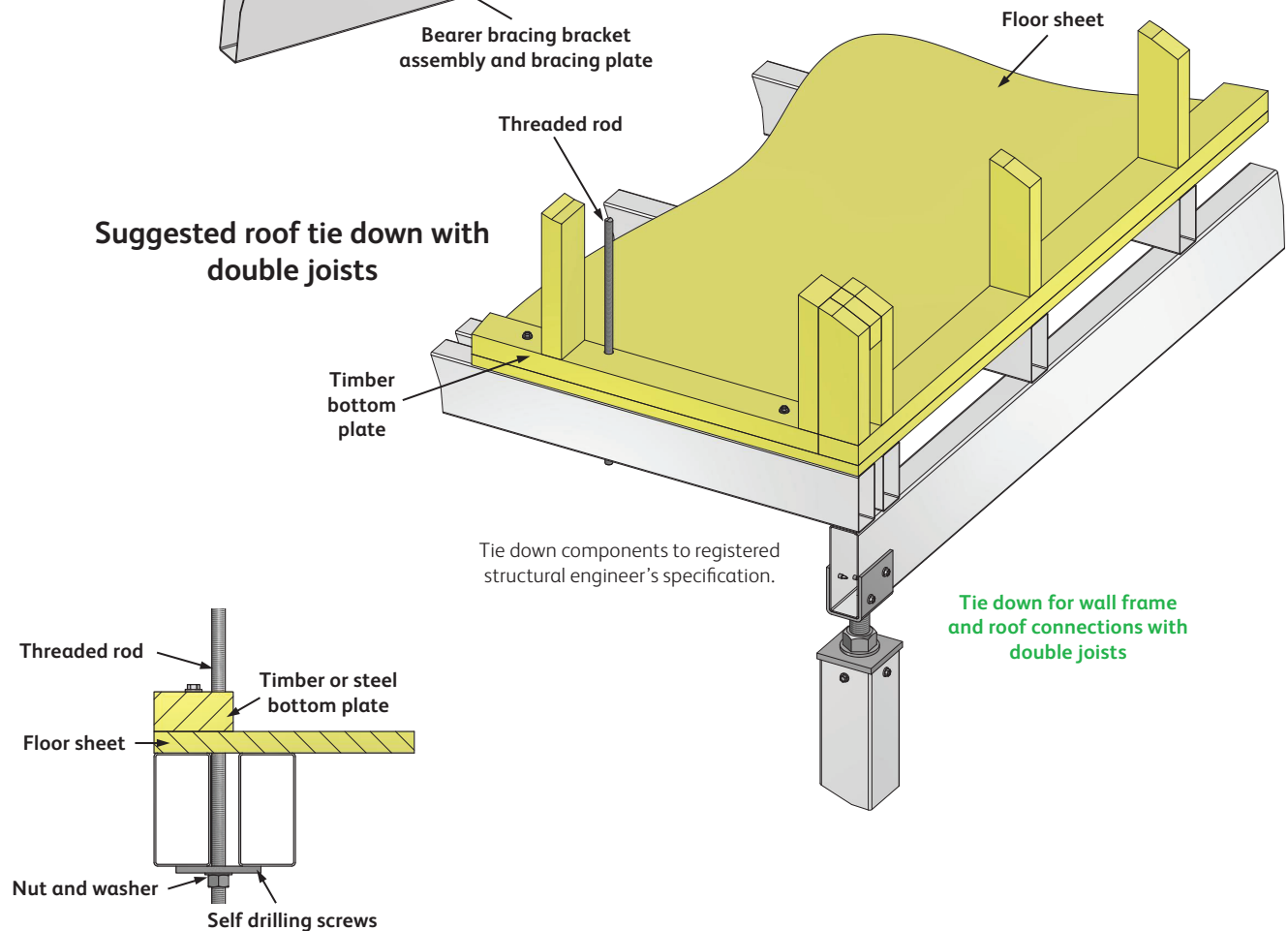
Wall Frame and Roof Tie Down Arrangements and Fastener Selection

Suggested roof tie down to bearer with a DuraGal Flooring System®

Tie down components to registered structural engineer's specification.



Suggested roof tie down with double joists



Roof tie down detail for double joist arrangement

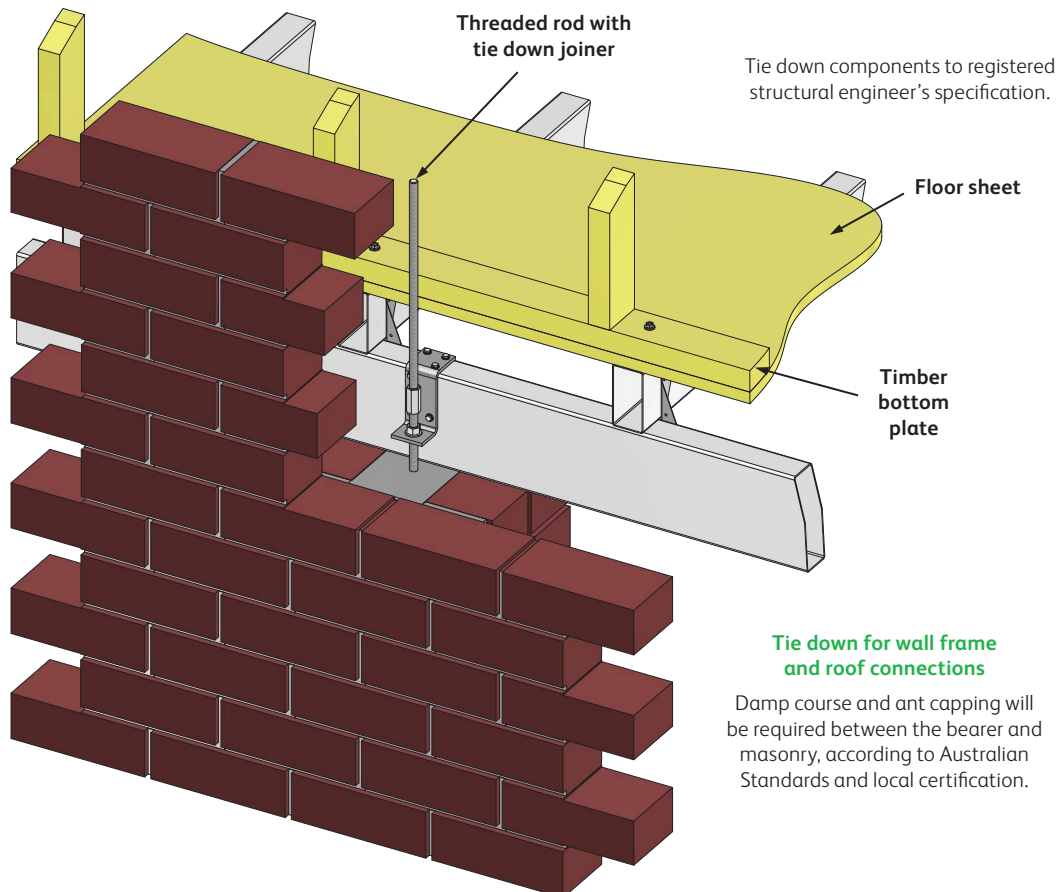
Suggested methods are provided to show that the DuraGal Flooring System® sub-floor can interact successfully with other building elements. Because of the variable nature and independent supply of these building materials, you should seek professional advice and contact the relevant manufacturer for full details.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

Assembly and Connection

Wall Frame and Roof Tie Down Arrangements and Fastener Selection

Suggested roof tie down in brick veneer construction



Assembly and Connection

Deck Board Arrangements and Fastener Selection

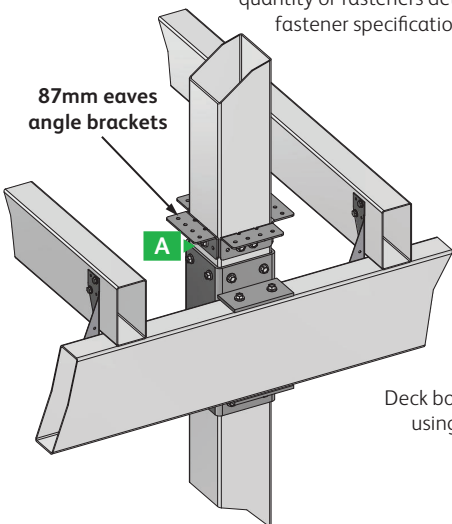
1

Deck boards are placed on top of DuraGalPlus ZB 135/135 RHS Joists.
Decking tape should be used between the joist member and deck boards.

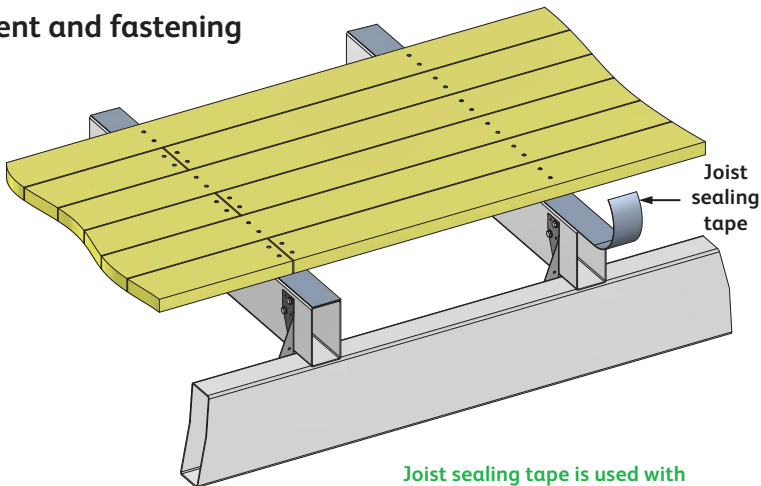
Suggested deck board arrangement and fastening

2

Connect using the specification and quantity of fasteners detailed in the fastener specification table.



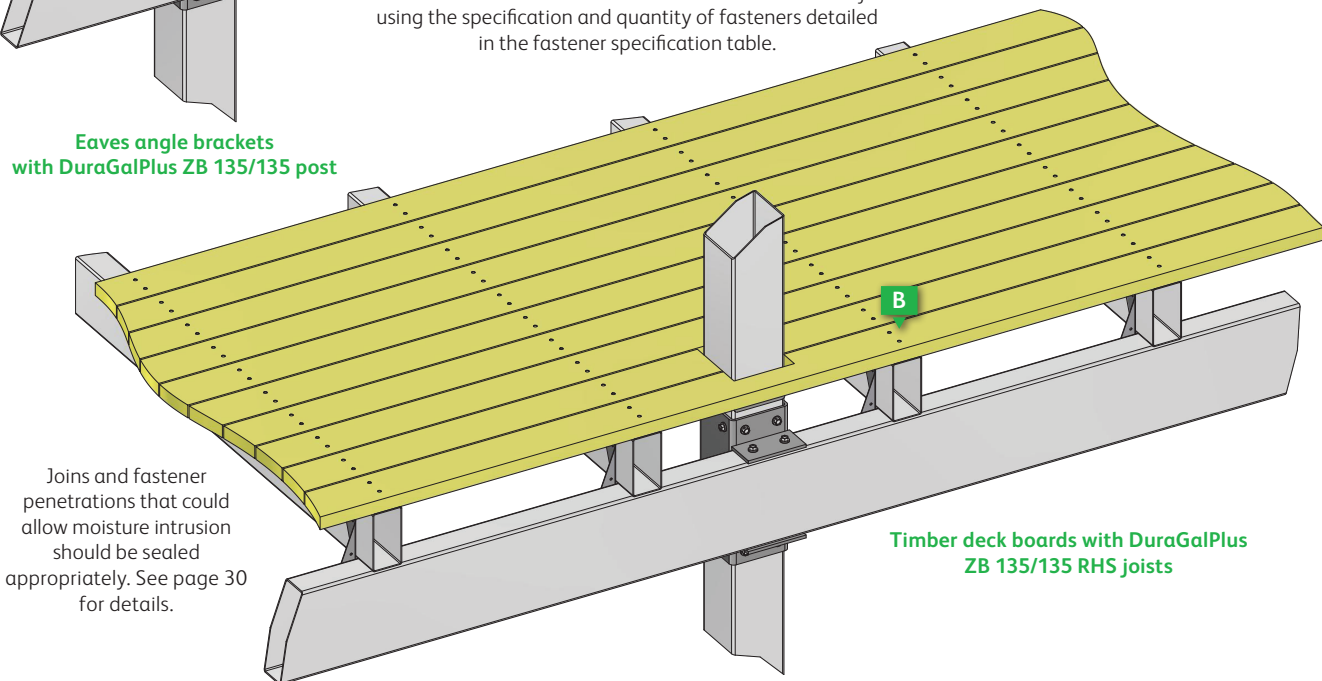
Eaves angle brackets with DuraGalPlus ZB 135/135 post



Joist sealing tape is used with DuraGalPlus ZB 135/135 RHS joists

3

Deck boards are fastened to DuraGalPlus ZB 135/135 RHS joists using the specification and quantity of fasteners detailed in the fastener specification table.



Timber deck boards with DuraGalPlus ZB 135/135 RHS joists

Suggested methods are provided to show that the DuraGal Flooring System® sub-floor can interact successfully with other building elements. Because of the variable nature and independent supply of these building materials, you should seek professional advice and contact the relevant manufacturer for full details.

Fastener specification

A	2 No.14 - 20 x 22 mm self drilling screws in each bracket
B	Max 2.5 x 38mm stainless steel hardened twist nail
C	Duo-Fast® C25 /32 SH Dac Con hard steel twist nail

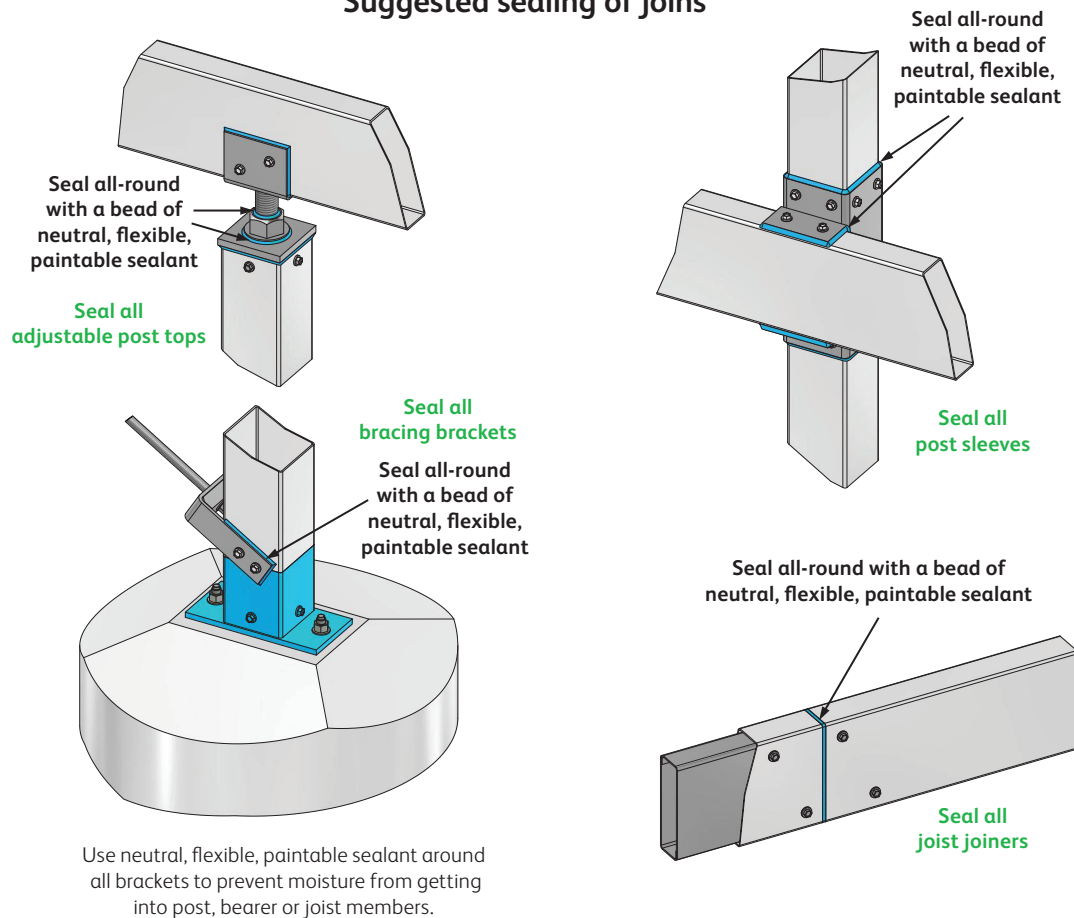
Note: For correct screw gun settings for this fastener refer to page 5 in the starting section of this guide.

Note: InfraBuild Steel Centre reserve the right to change specifications without notice.

Sealing Members, Components and Fasteners

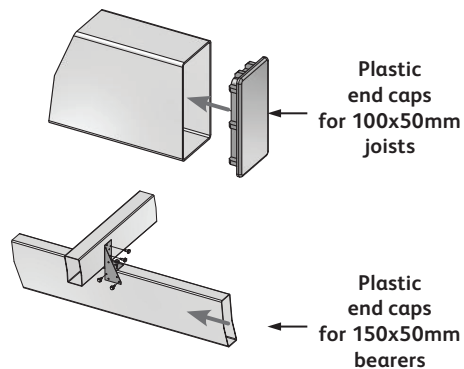
Sealing Connections

Suggested sealing of joins



Sealing End Caps for Bearers and Joists

End caps



Use neutral, flexible, paintable sealant around end caps to prevent moisture from getting into bearer or joist members.

DuraGalPlus ZB 135/135 RHS joist with plastic end cap

No other system makes as much sense

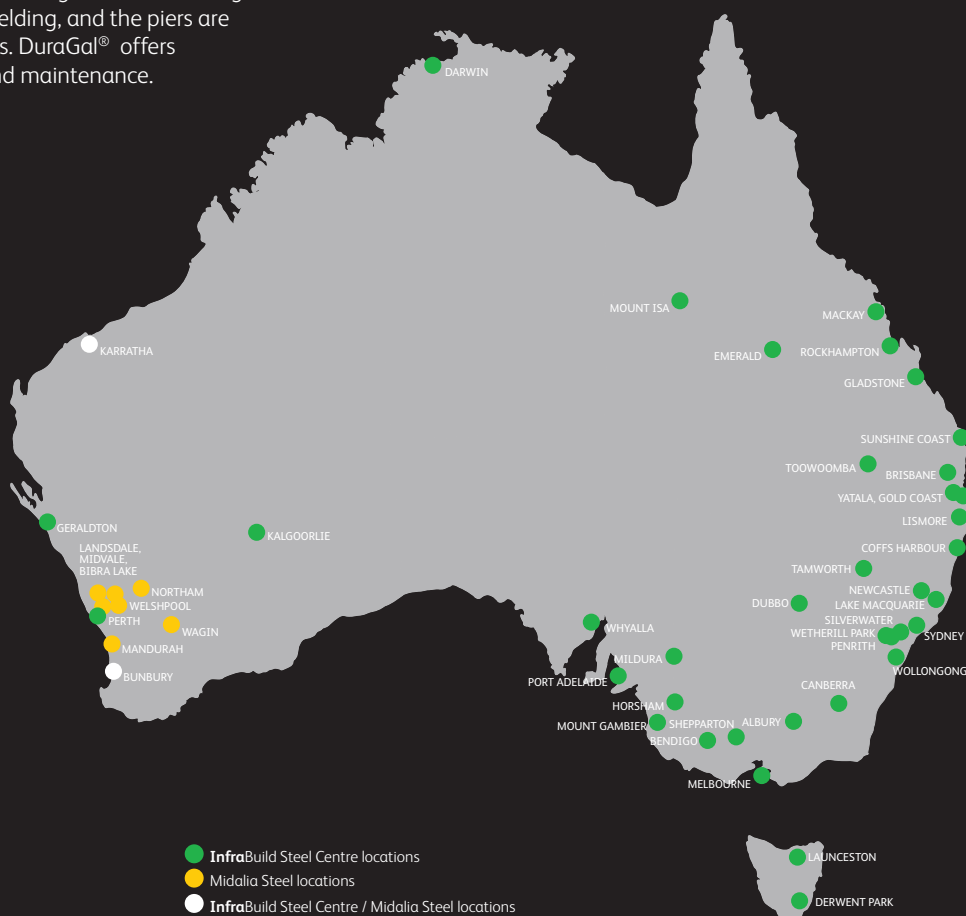
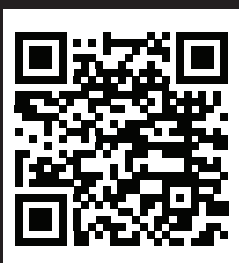
Concrete slabs provide a very solid base upon which to build, but ground movement can cause the slab to crack over time. Future changes or additions to underfloor services will also prove difficult with a concrete slab. Additionally, slabs can act as a highway for termites to attack wooden building frames.

Timber sub-flooring can provide access beneath the house and assist the house to breathe. However, timber sub-floors can attract termites and other pests. Timber can also rot, warp, twist, swell and contract in variable conditions.

DuraGal Flooring System® doesn't warp, twist, crack or shrink. It cannot be affected by termites or pests. It allows access to all services: pipes, hot and cold water, gas supplies and central heating. DuraGal Flooring System® can be assembled on site without welding, and the piers are height adjustable if and when the land settles. DuraGal® offers significant savings in site preparation costs and maintenance.

DuraGal Flooring System® is perfect for both new builds as well as additions such as verandahs and decks which can add value to your home.

Find your closest branch here:



Contact your nearest InfraBuild Steel Centre branch for take-offs, estimation, technical support, scheduling and delivery of your next DuraGal Flooring System® project.

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