

DURAGAL[®]

onesteel
distribution

DURAGAL FLOORING SYSTEM[®]

THE PERFECT SOLUTION FOR SLOPING SITES



THE DURAGAL FLOORING SYSTEM[®]

- ✓ FULLY ENGINEERED SYSTEM
- ✓ EASY TO INSTALL
- ✓ ADJUSTABLE PIERS
- ✓ TERMITE, FIRE & CORROSION RESISTANT
- ✓ ECONOMICAL
- ✓ VERSATILE IN DESIGN
- ✓ RESIDENTIAL
- ✓ DECKS & VERANDAHS
- ✓ COMMERCIAL





BUILD A BETTER FLOOR WITH THE DURAGAL FLOORING SYSTEM®

FULLY ENGINEERED SYSTEM

The DuraGal Flooring System® is a fully engineered steel flooring system* developed to provide a termite resistant, economical and easy-to-install alternative to conventional timber bearers & joists.

The DuraGal Flooring System® design criteria references the following Australian Standards:

AS 1170.0, AS 1170.1, AS 1163, AS 2870,
AS 3623, AS 3660.1, AS 4055, AS 4100,
AS/NZS 4792, AS/NZS 4600

Each floor plan is assessed against certified DuraGal Flooring System® span tables. These tables have been developed by OneSteel Market Mills and certified following a third party engineering review.

Obligation free quotations can be provided for a large range of single story residential applications. We can also assist with layouts for Decks & Verandahs, plus light industrial & commercial flooring systems applications up to a 5kPa live load.

For Industrial Mezzanine floor applications, we recommend you refer to the DuraGal® Mezzanine Flooring System brochure.

EASY TO INSTALL

The DuraGal Flooring System® uses high strength C450L0 grade galvanized DuraGal® Hollow Sections. The sections are strong and lightweight making them easy to handle on site.

DuraGal® is easy to cut and drill, and best of all the system has been designed so that it simply screws together on site using a screw gun fitted with a hex head bit.

The DuraGal Flooring System® features a range of specialty galvanized fittings designed to allow you to get on with the job easily and quickly. Fast and accurate levelling of the floor using the adjustable piers during and after construction is a great feature.

Sheet flooring can still be attached in the traditional way using building adhesive and nailing. Most reputable nail tool suppliers have nails to suit fixing sheet flooring to steel joists up to and including 2mm thick.

Check the diagrams on pages 5 to 10 to see how easy installing a DuraGal Flooring System® can be.

Refer to the DuraGal Flooring System® Technical Brochure on the OneSteel website www.onesteel.com for installation and engineering instructions.



* The DuraGal Flooring System® requires independent engineering certification to determine compliance of site specific conditions with statutory requirements.

TERMITE RESISTANT

A new home is a major investment and the risk of termite invasion is a major concern for new home buyers, and for good reason. Termites can cause serious structural damage, often un-noticed until it is too late.

Termites cannot eat steel.

While the DuraGal Flooring System® is great for sloping sites, the advantage of having a raised floor, even on level land, can be significant in helping to protect a new home from termite damage.

Regular inspections are a key factor in protecting a home against termite damage. The DuraGal Flooring System® provides visual inspection points because termites would have to build a tunnel around the exposed solid steel threaded rod of the DuraGal® pier adjustable top connection to access your home (assuming no other concealed entry points). This offers a similar visual inspection area to a traditional ant cap on a masonry pier and is deemed to comply with AS 3660.1. A raised steel sub-floor system helps protect a home by providing improved access to regularly inspect the under floor area.

FIRE RESISTANT

Steel does not burn and, as such, an excellent choice for new homes, extensions and alterations where councils are increasingly requiring designers to use non-combustible materials.

CORROSION RESISTANT

The DuraGal Flooring System® components are either In-Line Galvanized, Batch Hot Dip Galvanized, or standard GALVABOND® building supplies and coated fasteners.

The recommended standard DuraGal Flooring System® Hollow Sections are internally coated and the external surface in-line galvanized to comply with AS/NZS 4792, with a minimum average coating mass equivalent to AS 1397:2001 Class Z275 Galvanized steel sheet (140g/m² of zinc).

Precautions

While suitable for building applications in many environments found throughout Australia, the DuraGal Flooring System® will not be suitable for all environments. We do not recommend its use in applications where there is a very high rate of corrosion, such as in marine or heavy industrial environments.

TABLE 1 – DO NOT USE THE DURAGAL FLOORING SYSTEM WITHIN THE FOLLOWING DISTANCES FROM THE SOURCE OF CORROSION¹

SOURCE OF CORROSION	Minimum Distance for Enclosed Floors (km)	Minimum Distance for Open Floors/Decks (km)
Surf beach	2	4
Sheltered bay	0.5	1.5
Rocky Coastline /Headlands	3	4
Heavy Industrial Area ²	3	4

1. The distances recommended in this table are minimum distances and are estimates only. The appropriate distance from a source of corrosion will depend upon many factors such as prevailing winds, whether shielding exists (ie by trees & adjacent buildings), the topography of the surrounding area, and exposure to rain. In any building application, the specific micro climatic conditions must always be considered and taken into account. DuraGal® is not recommended for decks or verandahs adjacent to the splash zone of swimming pools. You should seek advice from OneSteel if you are unsure whether the DuraGal Flooring System® is suitable for your location.

2. "Heavy Industrial Areas" are locations where the environment may be acidic with a pH value less than 5, as per Section 2.3 of the Australian & New Zealand Standard AS/NZS 2312:2002.





ECONOMICAL

The DuraGal Flooring System® can help save money on site preparation costs by reducing the amount of site excavation, retaining walls and drainage.

Larger bearer and joist spans can significantly reduce the number of pier footings required.

The dimensional accuracy and stability of steel means it will not shrink or warp like timber, thereby avoiding those expensive callbacks, and the adjustable piers mean you can compensate for any settlement in the future.

The high strength lightweight DuraGal® sections provide excellent spans to open up underfloor areas for uses such as storage or a workshop. This can be a real selling feature now and in the future and could add value and appeal to your new home.

VERSATILE IN DESIGN

The wide range of standard DuraGal Flooring System® components can accommodate an almost infinite number of flat and sloping site design possibilities, giving you the freedom and flexibility to design the home around your needs.

The DuraGal Flooring System® has been successfully used in a large number and varied types of construction applications including Kit Homes, Brick Veneer, Free Standing, Decks, Extensions, Renovations, Walkways, Schools, Libraries, Public Halls and Storage Facilities.

Whether its just 10 square metres or 1000 square metres, the DuraGal Flooring System® has proven to have the solutions for today's designs.

The DuraGal Flooring System® is available nationally via an extensive distributor network.

OBTAIN A QUOTATION

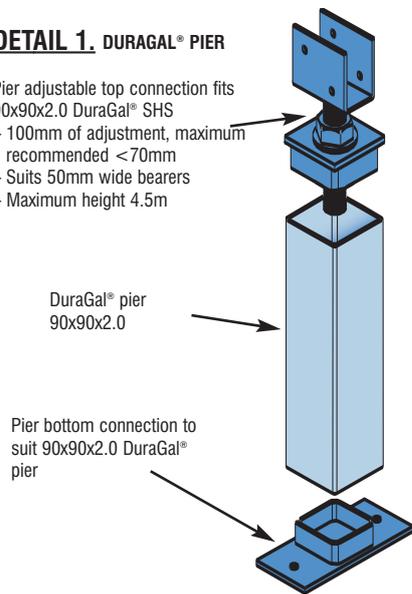
To obtain a quotation please follow the simple 5-point checklist below and simply email, fax or post a COPY of your plans to your nearest DuraGal Flooring System® distributor indicated on the back cover of this publication.

1. Mark on the floor plan or elevations the approximate heights from ground to floor level around the outer perimeter of the building, including details of any step-downs or significant site excavations.
2. Nominate if the building is Brick Veneer, Double Brick, Clad on Brick or Freestanding construction. If a deck is required nominate the decking materials to be used.
3. Nominate the roof construction (i.e. truss or pitched roof) and the materials used (i.e. steel sheet or tiles). If pitched roof, indicate internal load bearing walls.
4. Nominate whether the building is in a marine or heavy industrial environment. If in doubt check with your DuraGal Flooring System® distributor first.
5. Be sure to include the site address, your daytime contact details and the return address details where you would like us to send the quotation.

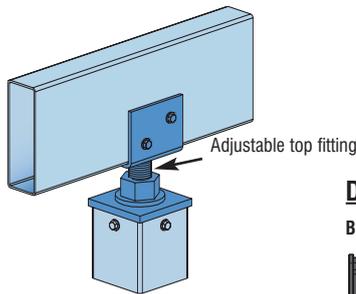
BRICK VENEER

DETAIL 1. DURAGAL® PIER

Pier adjustable top connection fits 90x90x2.0 DuraGal® SHS
 - 100mm of adjustment, maximum recommended <70mm
 - Suits 50mm wide bearers
 - Maximum height 4.5m



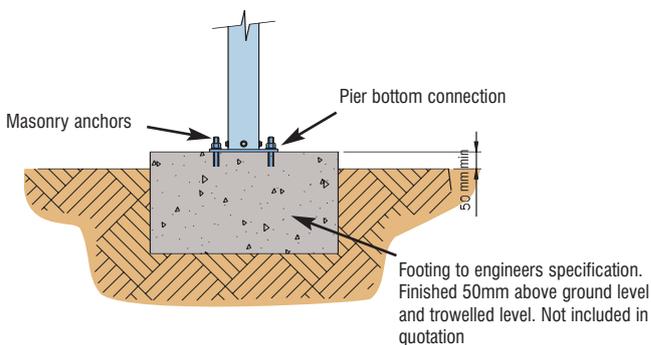
DETAIL 2. PIER TO BEARER CONNECTION



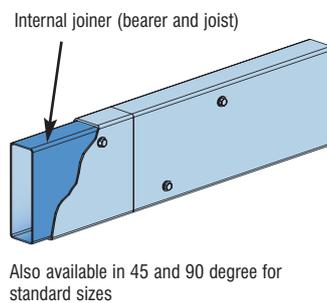
DETAIL 4. END CAP TO DURAGAL® BEARER OR JOIST



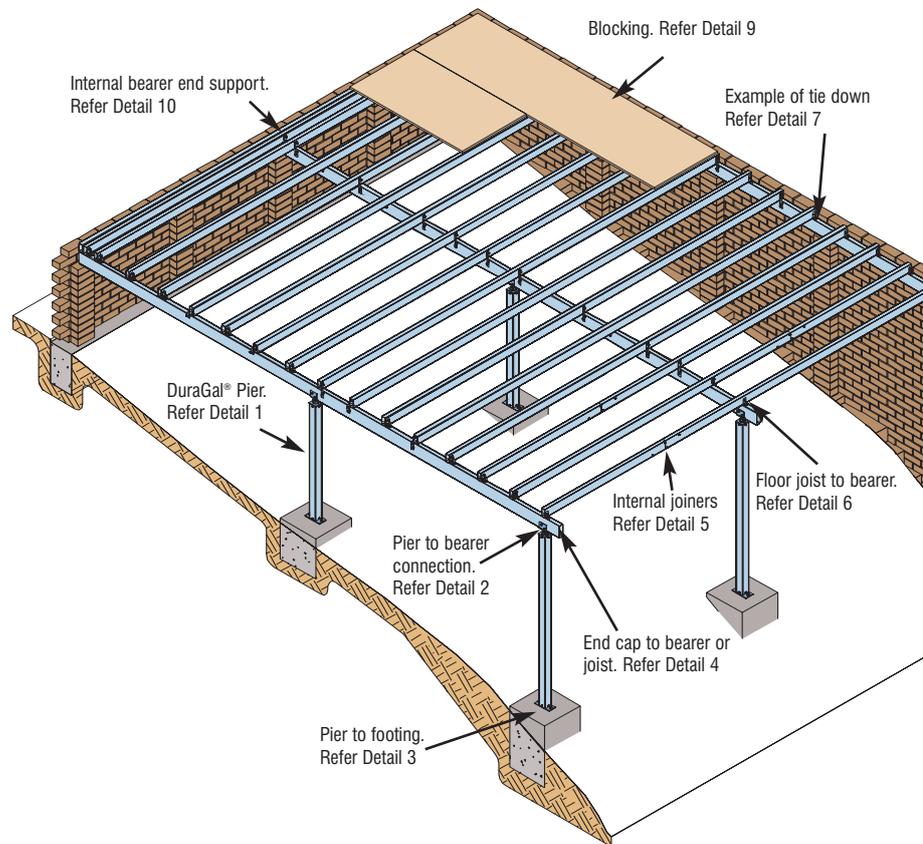
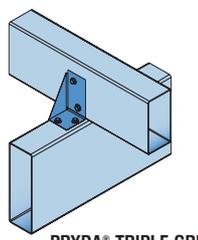
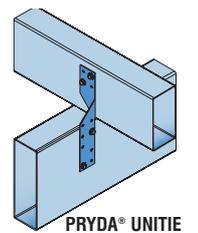
DETAIL 3. PIER TO FOOTING DETAIL



DETAIL 5. INTERNAL JOINERS



DETAIL 6. FLOOR JOIST TO BEARER



NOTES

1.0 Spans

Joists are typically 100x50x1.6 with continuous spans of 2800 mm and bearers are typically 150x50x2.0 with continuous spans of 3000 mm. Other sizes may be specified with differing spans subject to the floor layout and site conditions. Your DuraGal Flooring System® distributor will be able to nominate the most economical sizes and layout upon receipt of the house plans.

2.0 Gluing and nailing of sheet flooring

Sheet flooring can be successfully glued and nailed to both 1.6 and 2.0mm DuraGal® joists. Most nailing tools including Duo-Fast® and Max® or equivalent, have been successfully tested using the manufacturers recommended hardened steel twist nail.

Most reputable building adhesives work on steel joists and should be applied as per manufacturers recommendations to clean and dry joists.

Sheet flooring can also be glued and screwed to steel joists using Buildex® WingTek™ screws (or equivalent) and is the

recommended method for joists with wall thickness greater than 2.0 mm.

3.0 Nailing timber tongue & groove floor boards

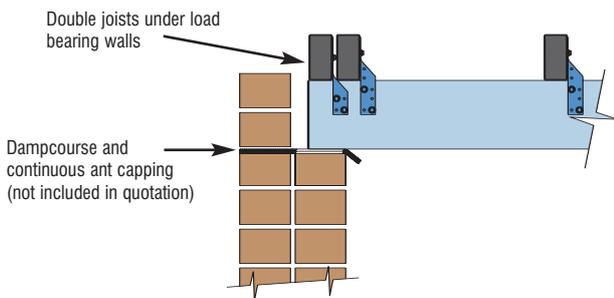
A 50 x 38 mm timber batten should be first glued and screwed to the top of the DuraGal® joists. Timber boards can then be nailed to the battens in the conventional way. Alternatively, sheet flooring can be laid as in 2.0 above and timber boards 12.7 or 19.0 mm laid on this platform.

4.0 Cutting DuraGal®

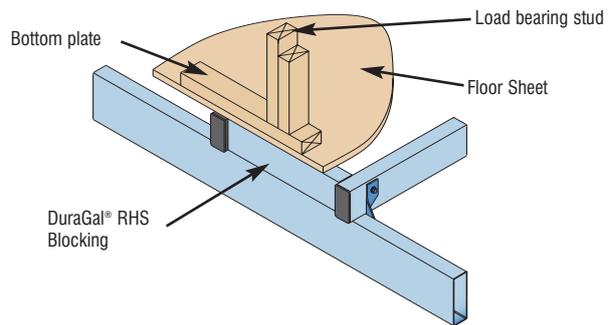
The cutting of steel on site has been made easier with the introduction of portable cold cut docking saws (Makita® 4131 or LC1230 or equivalent). These saws are lighter, and the cold cut generally produces a burr-free cut (therefore safer), without zinc burn.

Other recommended methods include drop saws, circular hand saws and angle grinders fitted with the appropriate steel cutting disc.

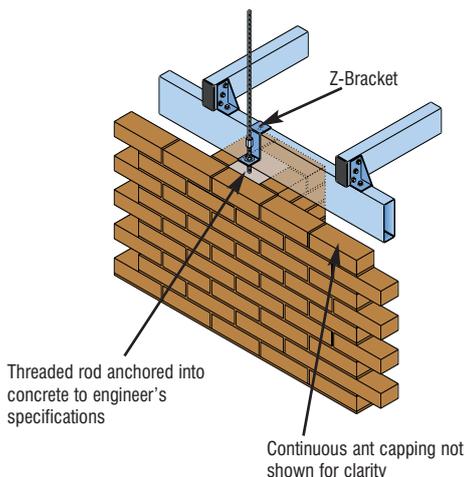
DETAIL 10. INTERNAL BEARER END SUPPORT



DETAIL 9. BLOCKING

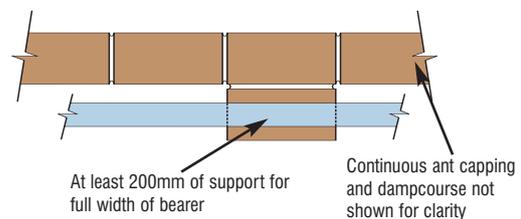


DETAIL 7. EXAMPLE OF TIE DOWN (CYCLONIC)



DETAIL 8. PERIMETER BEARERS PARALLEL TO WALL

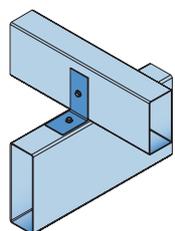
The maximum brick pier spacing is 2m for continuous span and a maximum 1.8m for single span.



Perimeter bearers parallel to wall. Detail 8

CONNECTIONS

NOTE: Which type used will depend on the tie down requirements



PRYDA® PERGOLA ANGLES

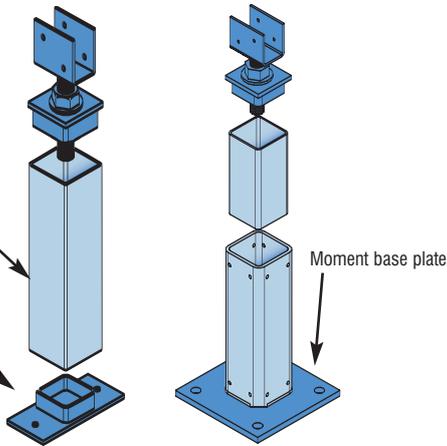
FREE STANDING

DETAIL 1. DURAGAL® PIER

Pier adjustable top connection fits 90x90x2.0 DuraGal® SHS
 - 100mm on adjustment, maximum recommended <70mm
 - Suits 50mm wide bearers
 - Maximum height 4.5m

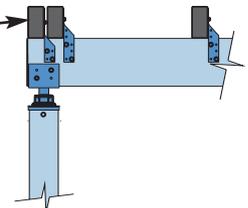
DuraGal® pier 90x90x2.0

Pier bottom connection to suit 90x90x2.0 DuraGal® pier

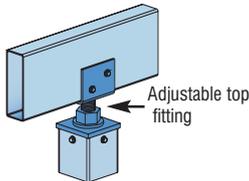


DETAIL 10. BEARER END SUPPORT

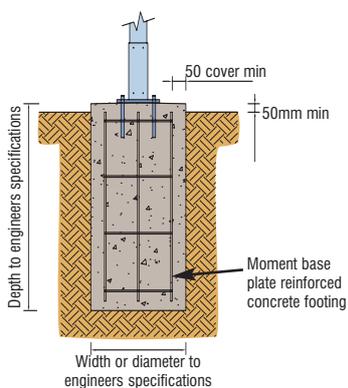
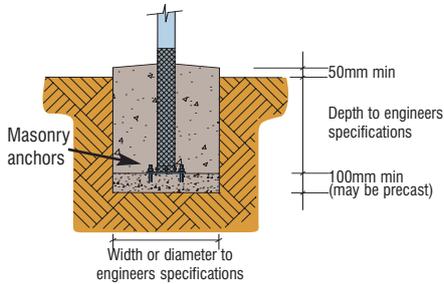
Double joists under load bearing walls



DETAIL 2. PIER TO BEARER CONNECTION



DETAIL 3. PIER TO FOOTING DETAIL



DuraGal® Pier. Refer Detail 1

Pier to bearer connection. Refer Detail 2

Pier to footing. Refer Detail 3

End cap to bearer or joist. Refer Detail 4

Bottom bracing. Refer Detail 5B

Top bracing. Refer Detail 5A

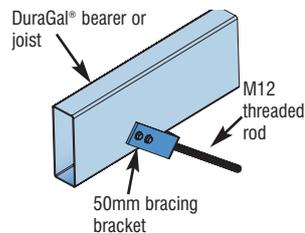
Internal Detail 6

DETAIL 4. END CAP TO DURAGAL®

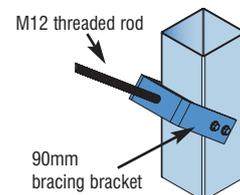
BEARER OR JOIST



DETAIL 5A. TOP BRACING ASSEMBLY

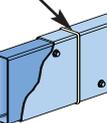


DETAIL 5B. BOTTOM BRACING ASSEMBLY



DETAIL 6. Internal

joinder



NOTES

1.0 Spans

Refer to note 1.0 on page 6.

2.0 Gluing and nailing of sheet flooring

Refer to note 2.0 on page 6.

3.0 Nailing timber tongue & groove floor boards

Refer to note 3.0 on page 6.

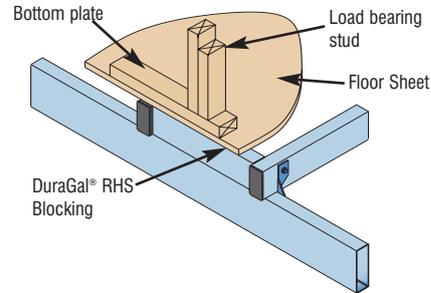
4.0 Cutting DuraGal®

Refer to note 4.0 on page 6.

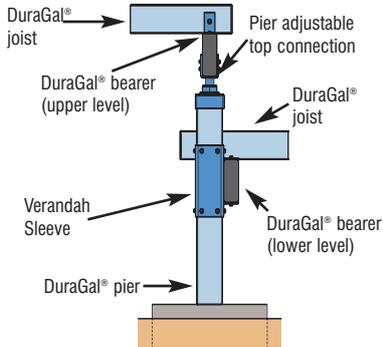
5.0 Sealing of fittings

It is recommended that the exposed fittings on the outer perimeter of a free-standing floor frame be sealed. Details for the common fittings are shown below.

DETAIL 9. BLOCKING

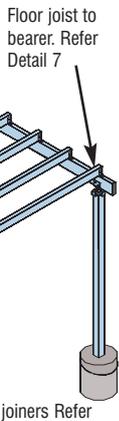
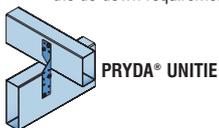


DETAIL 8. SPLIT LEVEL ARRANGEMENT (Not shown on main drawing)

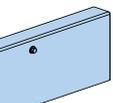


DETAIL 7. FLOOR JOIST TO BEARER CONNECTION

NOTE: Which type used will depend on the tie down requirements



INTERNAL JOINERS



Also available in 45 and 90 degree for standard sizes

FIGURE 1. TOP FITTING SEALING

Seal all-round with a bead of a neutral, flexible, paintable sealant.

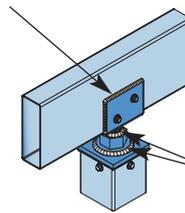


FIGURE 2. INTERNAL JOINER SEALING

Seal all-round with a bead of a neutral, flexible, paintable sealant.

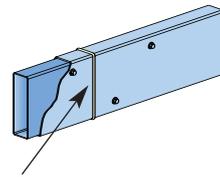


FIGURE 3. BOTTOM BRACING ASSEMBLY

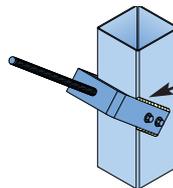


FIGURE 4. TOP BRACING ASSEMBLY

Seal all-round with a bead of a neutral, flexible, paintable sealant.

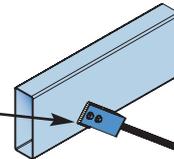
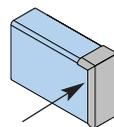


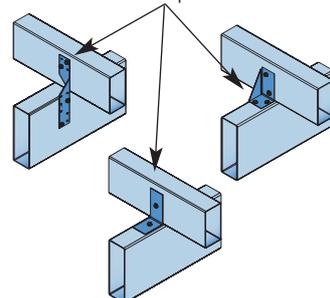
FIGURE 5. END CAP SEALING



Norton Flashtac® 72mm wide tape or equivalent.
20mm of tape folded over top of cap, the excess tape is folded over sides and tape finished flush with the bottom of cap. ie. not sealed at the bottom

FIGURE 6. PRYDA FITTINGS TO DURAGAL® SEALING

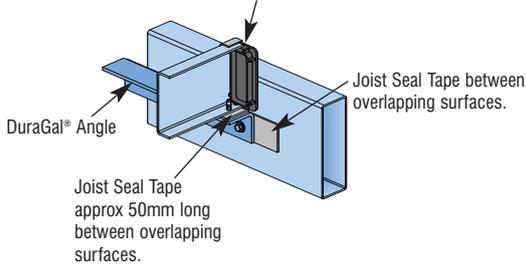
Joist Seal Tape between overlapping surfaces that have screw penetration



VERANDAH AND DECKS

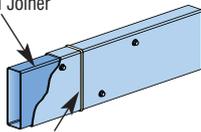
DETAIL 1. ANGLE SUPPORT TO BEARER SEALING

(Applies to Verandah Hip & Perimeter Bearers)
Joist & bearer ends.
refer Detail 3



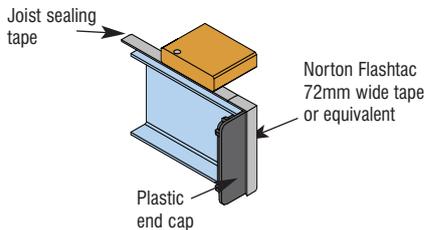
DETAIL 2. INTERNAL JOINER SEALING

Internal Joiner



DETAIL 3. TIMBER DECKING TO JOIST SEALING AND END CAP SEALING

Joist Seal Tape Also Acts as a Barrier Between DuraGal® Joist & Treated Timber .

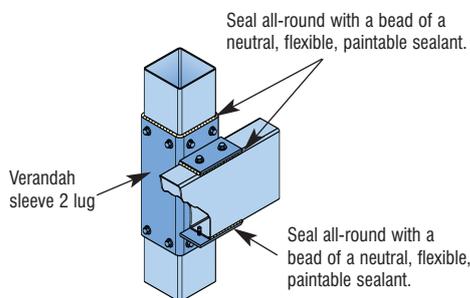


Part isometric view of joist sealing tape and end cap sealing

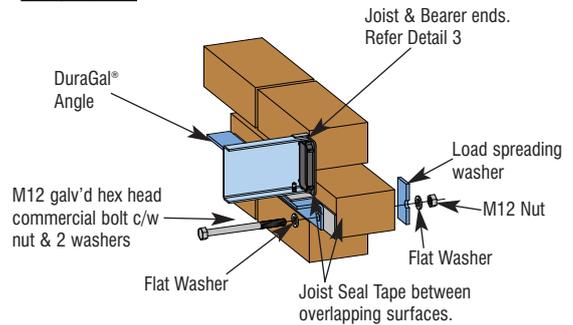
Caution

Do not use solvent borne decking oils or paints because these solvents may be detrimental to the barrier tapes

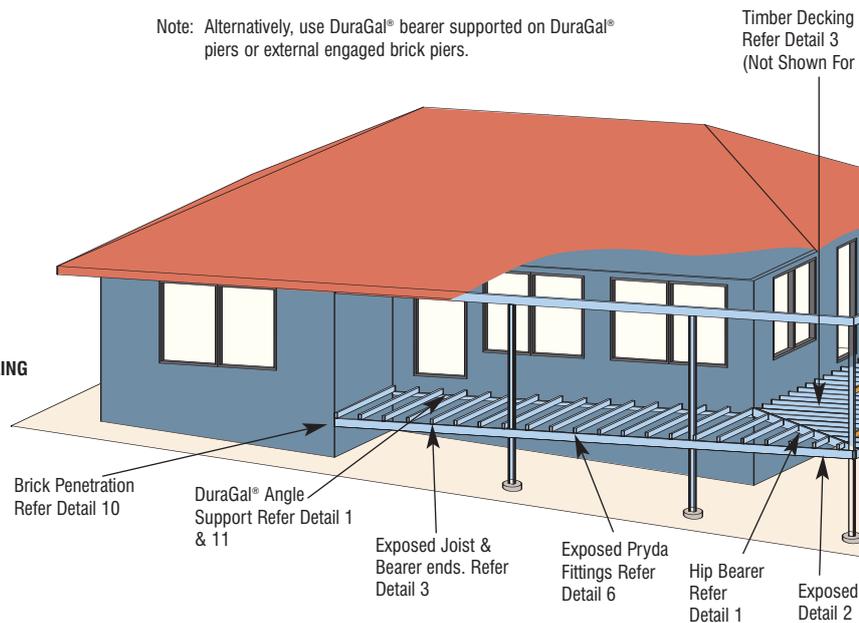
DETAIL 4. VERANDAH SLEEVE



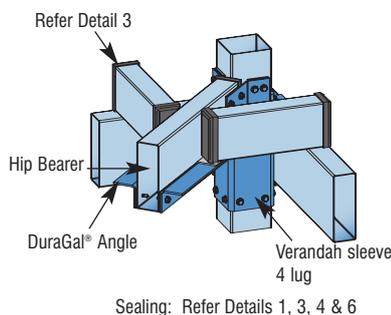
DETAIL 11. DURAGAL® ANGLE TO BRICKWORK SEALING



Note: Alternatively, use DuraGal® bearer supported on DuraGal® piers or external engaged brick piers.



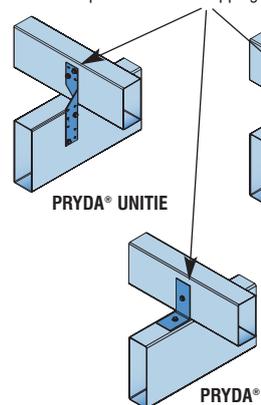
DETAIL 5. CORNER DETAIL



Sealing: Refer Details 1, 3, 4 & 6

DETAIL 6. PRYDA FITTINGS TO

Joist Seal Tape between overlapping



NOTE: Which type used will depend on

NOTES

1.0 Spans

Decks and verandahs are subject to higher live load design criteria. Spans will vary on design requirements.

2.0 Nailing of timber decking to DuraGal® Joists

External timber decking can be nailed to both 1.6 & 2.0 mm DuraGal® joists. The best results to date have been obtained using a 2.5x38 mm long 304 stainless steel hardened twist nail, available for the Max® Nailer.

To reduce the risk of corrosion, joist sealing tape should be used on top of the joists for all external decks and verandah's as shown in Detail 3.

3.0 Screwing of timber decking to DuraGal® Joists

The use of screws to attach timber decking to joists on decks and verandah's is not recommended.

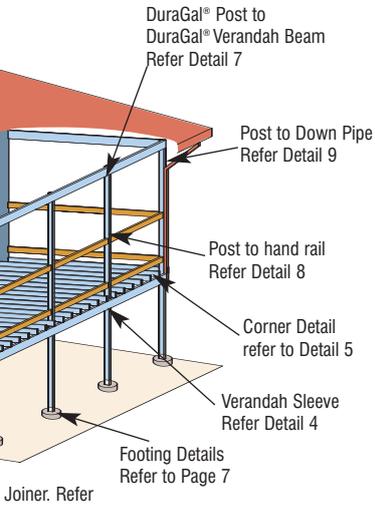
4.0 Cutting DuraGal®

Refer to note 4.0 on page 6.

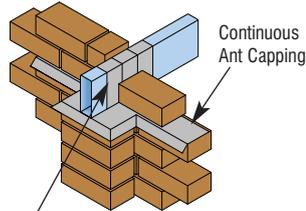
5.0 Sealing of fittings

To ensure the maximum life of a DuraGal® Deck or Verandah it is recommended that the exposed fittings on Decks & Verandah's be sealed. The main diagram deals with decks attached to a building with or without a covering roof. The sub-floor is assumed to be open and the decking material is either hardwood or treated timber slats. Refer to each of the detailed drawings that show methods recommended for sealing.

Clarity)

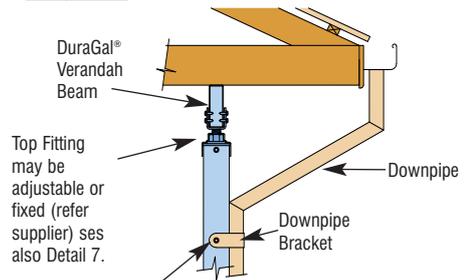


DETAIL 10. BRICK PENETRATION SEALING



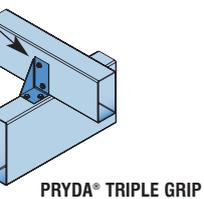
Wrap joist seal tape around bearer where in contact with brickwork or use Norton Flashtac® or equiv. DuraGal® surface should be clean of oil, grease and any residue.

DETAIL 9. DURAGAL® POST TO DOWNPIPE SEALING

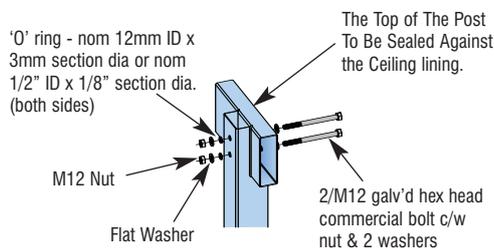


DURAGAL® SEALING

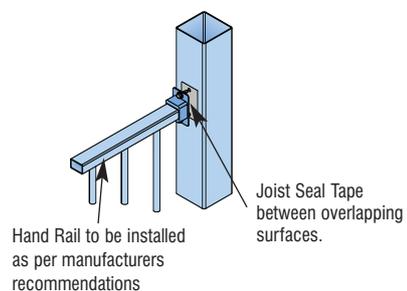
surfaces that have screw penetration



DETAIL 7. DURAGAL® POST TO VERANDAH BEAM SEALING



DETAIL 8. DURAGAL® POST TO HAND RAIL SEALING



PERGOLA ANGLE BRACKET

the tie down requirements



onesteel
distribution

For more information visit our
website www.onesteel.com
or email us at dfs@onesteel.com
or contact the local distributor
details as below

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