Installation Guide

HardiePanel™ Compressed Sheet*

EXTERIORS

*Not available in WA.

Australia July 2021

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JamesHardie™

CONTENTS

MADE IN AUSTRALIA

1 INTRODUCTION

HardiePanel™ compressed sheets are made of durable compressed fibre cement technology and are ideal for external decking applications.

James Hardie fibre cement building products are resistant to moisture, rotting, fire and termites when installed and maintained as directed.

Decks may be constructed from HardiePanel compressed sheets fixed over a timber or steel frame. The choice of a particular method will depend on the degree of waterproofing required and the deck finish. Methods detailed in this brochure are:

1. One system for a water resistant deck (see Section 4 Water resistant decks) and
2. Two options for "waterproof" decks:
   a) Flexible sheet membrane method (see Clause 5.2)
   b) Liquid membrane (see Clause 5.3)

Before considering any particular method, there are a number of fundamental principles that should be observed in all cases.

NOTE
Permissible design live load on HardiePanel compressed sheet decking is not to exceed 5kPa uniformly distributed or 2.1kN or 2.7kN point load at specified joist spacings for 15mm or 18mm thick sheeting respectively with a load area of as little as 350mm^2. These design loading can be sustained even if the sheets become fully saturated by accident.

The specifier or other responsible party for a project, must ensure the information in these specifications is appropriate for the intended application and that specific design and detailing is undertaken for areas which fall outside the scope of these specifications.

2 PREPARATION

2.1 FALL

Decks must have a fall to facilitate drainage.

Decks must have a fall of at least 1 in 100 to avoid ponding. The fall is achieved by installing joists to the appropriate slope away from the dwelling. (See Figure 1).

2.2 STEP DOWN

Allow a step down onto the deck.

There must be a step down (at least 50mm but preferably 150mm) from the door sill level to the finished surface of the deck to adequately weatherproof the entry door, particularly if it is subject to rain and wind. (See Figure 2).

2.3 DRAINAGE

Avoid situations where drainage of the deck surface is restricted.

Allow decks to drain over the full width of the deck and over the edge. (See Figure 3). Draining to a rain water outlet located in the body of the deck surface can cause water to build up to a depth above the perimeter flashings and must be avoided. (See Figure 3).

NOTE

Do not provide fall by packing sheets, trimming tops of joists or extensive cutting of stock sized sheets into smaller sizes.

Do not use HardiePanel compressed sheets if:

- the deck has to drain to a sump, or
- sheeting cannot be installed with the required fall to the outlet.

2.4 DRIP EDGE

Provide a drip edge.

Where possible, project the HardiePanel compressed sheet beyond any supporting walls or framing and provide a drip mould or equivalent to avoid staining of surfaces under the deck. (See Figure 4). Through a continuous bead of James Hardie Joint Sealant, fix a 12 x 12mm galvanised aluminium angle with 6mm long No.8 cadmium plated self-tapping screws into the underside of the HardiePanel Compressed sheet.

NOTE

Pilot holes must be provided for the self-tapping screws.

2.5 SHEET JOINTS

Do not apply finishes directly over sheet joints, (except where tiling over a reinforced mortar bed).

HardiePanel compressed sheets must be correctly jointed before finishes are applied. The joint system shown in this guide is designed to allow for differential movement in all the various materials used in the construction of the deck. Refer to individual methods for installation recommendations of finishes at movement joints.

2.6 TILING

Tiles do not waterproof decks.

Tiling a deck does not make it waterproof. Often the reverse occurs, with the tiling itself preventing moisture that has penetrated the grouting or cut edges of porous tiles from thoroughly drying out, and thus maintaining a damp interface with the supporting system.

2.7 BALUSTRADING

The balustrade upright supports must be fixed to the structural frame and not the HardiePanel Compressed sheets.

Special consideration must also be made to any water issues that could occur due to the penetration of the balustrade uprights including the waterproofing system, flashing and material durability.

3 CONSTRUCTION REQUIREMENTS

3.1 FRAMING

General

3.1.1 Timber

Joist and trimmer width must not be less than 45mm.

It is important to use adequately seasoned timber to minimise shrinkage and associated building movement which may damage the waterproofing system.

Where “green” or unseasoned hardwoods are used, appropriate construction procedures must be adopted to compensate for the expected high shrinkage.

Protect timber with flashing folded over framing as described in Clause 4.1 for water resistant decks.

Seek the advice of the supplier to establish if any additional measures may be required to protect timber in exposed conditions.

Hint: To protect against moisture ingress and rot, always prime the end grain of timber members, together with surfaces which are permanently concealed and may be in contact with other building materials.

3.1.2 Steel

Although timber frames are illustrated throughout this publication, HardiePanel compressed sheets are equally suitable for fixing to residential corrosion resistant steel frame systems to 2.5mm max BMT (base metal thickness).
Specific instructions for fixing to steel frames are included where appropriate.

Steel framing can also be used for decks. Ensure framing has the necessary corrosion resistance for intended application and climate.

Base metal thickness (BMT) must not exceed 2.5mm. Refer to manufacturers for installation instructions.

NOTE

Flashing is not required on steel framing or joists for waterproof decks.

3.2 JOIST SET-OUT

3.2.1 Direction

Joists must run in the direction of the fall. (See Figure 5).

To achieve the best appearance, the HardiePanel compressed sheets should be laid in the same direction, particularly where joints are to remain permanently visible. All sheet edges must be continuously supported by structural framing.

3.2.2 Sheet joints

Sheet joints must have a minimum width of 5mm, therefore joist and trimmer spacing must be arranged to suit. (See Figure 6).

3.2.3 Tiled decks

To limit the need to cut tiles for decks, pre-plan the joist spacing and HardiePanel compressed sheet length and width to coincide with the selected tile module.

TABLE 1

JOIST SPACING	
SHEET THICKNESS (mm)	**MAX JOIST CENTRE (mm)**
15	450
18/24mm	600

For load capacity of flooring system, refer to Note in Section 1.0.

3.3 SHEET LAYOUT

HardiePanel compressed sheets may be laid with the long edges across or parallel to the floor joists, and must be spaced with a 5mm gap between adjoining sheets. All sheet joints must be continuously supported on framing. (See Figure 7).
As joints will be visible in water resistant deck systems, use a set-out that gives the best appearance.

3.4 FIXING

3.4.1 Timber

For fixing to timber framing use:

- No. 10 x 50mm countersunk head, Type 17, zinc clear, or;
- 14 x 50mm internal hex drive, bugle rib head, Type 17, zinc alloy coated.

3.4.2 Steel

For fixing to steel framing use No. 10 x 30mm countersunk head Tek screws.

3.4.3 Preparation

Before drilling screw holes, place a length of masking tape in position along the sheet edge and drill through the tape. This will help to prevent the required sealant soiling the deck surface during the next step.

3.4.4 Treatment

Screw holes should be pre-drilled with a masonry bit and countersunk 3mm deep, allowing 1mm clearance over the diameter of the screw. Thoroughly clean screw hole then fill with James Hardie joint sealant. Sealant must also be applied to the screw to ensure no water gets through the fixing, and to the top of the screws on completion to ensure a completely waterproof fastening.

3.4.5 Set Out

Sheets lying parallel to joists must be screwed at 450mm centres around the edges and through the centres of each sheet.

Sheets lying across the joists must be fixed with 3 screws per joist for 900mm wide sheets and 4 screws per joist for 1200mm wide sheets, equally spaced.
Screws must not be closer than 12mm to a sheet edge or 50mm to corners. (See Figure 7).

3.5 JOINTING

3.5.1 General

All sheets must be laid, positioned and screw-fixed before sealing the joints. Joints must be clean, dry and free from dust to ensure satisfactory adhesion of sealant.
Masking tape as described in Clause 3.4.3 must be laid along both sides of the joint to assist with a neat clean finish.

3.5.2 Sealing

Joints are sealed as follows. (See Figure 8):

1. Press continuous lengths of 10mm dia. polyethylene backing rod into the gaps between adjoining sheets, to finish approximately 6mm below the upper surface of the sheets.
2. Apply James Hardie joint sealant into the space immediately above the backing rod. Follow the recommendations outlined on the sealant cartridge for correct application.
3. The level of the sealant must finish slightly below the level of the sheet surface to avoid abrasion and scuffing. As the sealant quickly forms a tack free surface, it is essential that the joints be smoothed within 10 minutes of application.
4. Remove masking tape immediately after applying sealant.

NOTE: Avoid excessive foot traffic on the deck for at least 24 hours to allow sealant to set and dry out. Adverse weather conditions may increase this period to 48-72 hours.

4 WATER RESISTANT DECKS

4.1 FRAMING

Even if you do not require a waterproof deck, it is recommended that the deck be made as water resistant as possible (ie that water penetration be minimised) as it can lead to damage such as dry rot where timber framing is used.

To reduce the potential for dry rot in timber framework, one or more of the following methods is recommended:

a) Use treated timber framing
b) Flood the tops of the joist with a timber preservative available from most paint suppliers.
c) Take strips of flashing and fold over timber joists and trimmers as shown. (See Figures 7 and 8). These strips should be cut 50mm wider than the timber joists.
d) Use corrosion resistant steel framing. Unlike timber framing, galvanised steel framing requires no additional treatment or protection.

NOTE
If a water resistant deck is not intended to be tiled, it MUST have a durable coating applied. Refer to paint manufacturer for a suitable, durable coating and maintenance requirements. HardiePanel compressed sheets cannot be left RAW.

4.2 CONSTRUCTION DETAILS

4.2.1 General

For general construction detail refer to Section 10. These CAD details are available for download at ACCEL www.accel.com.au.

4.2.2 Wall Flashings

A continuous strip of James Hardie 45 x 45mm PVC cellular corner mould is used as the primary flashing at the deck and wall junction. (See Figures 9 and 10).

To allow for relative movements between the deck and wall, the angle is bonded to the deck only with two continuous beads of James Hardie joint sealant.

The angle must then be over-flashed with a suitable flashing from the wall.

The over-flashing must be tucked up behind the wall cladding or chased into the brickwork in the conventional manner. (See Figures 9 and 10).

4.2.3 Finishes - tiles, brick stencilling, etc.

The expressed joints between all adjacent sheets act as movement joints. If you are covering HardiePanel compressed sheets with tiles, stencil finishes, trafficable liquid membrane or similar, these movement joints must be carried up through the finish and expressed. (See Figure 11).

5 WATERPROOF DECKS

5.1 SYSTEM SELECTION

To achieve a fully waterproof deck, HardiePanel compressed sheet requires a compatible and correctly installed waterproofing system on top of the deck.

Waterproofing systems must be sufficiently flexible across sheet joints to accommodate differential thermal and moisture movement of all the covering materials.

Refer to waterproofing membrane manufacturer and applicator for system performance and warranty information.

In this brochure we consider two methods of waterproofing system construction for waterproof decks:

1. **The flexible sheet membrane method** (see Clause 5.2) which employs a flexible sheet membrane system, or
2. **The liquid membrane method** (see Clause 5.3) which employs a liquid waterproofing membrane.
   Use Table 2 as a guide for selecting a suitable system.

TABLE 2

WATERPROOFING SYSTEMS

WATERPROOFING SYSTEM	FINISH	ADDITIONAL INFORMATION
Sheet membrane	**Tiled** - on floating mortar bed	▪ Control jointing in mortar bed and tiling at maximum 4.5m centres, independent of jointing between sheets. For this reason, it is the preferred method where tile or slate is used.* ▪ Dead load may be excessive on supporting structure ▪ Thickness of floating system may compromise required minimum step down height from residence finished floor level onto deck surface. ▪ Suitable for any deck width.
Liquid applied membrane	**Option 1** **Tiled** - adhesive fixed to liquid applied membrane	▪ Control jointing in tiling must occur directly over jointing between sheets. ▪ Tile cutting may be required to maintain control jointing directly over jointing between sheets, possibly reducing the durability of the tile installation. ▪Suitable if ease, cost or speed of application are an issue and where deck width is not excessive. ▪ Suitable when weight of system is critical or where the additional required dimension for the mortar bed thickness is not available.
	Option 2 **Tiled** - on floating mortar bed	▪ Control jointing in tiling at maximum 4.5m centres, independent of jointing between sheets. For this reason, it is the preferred method where tile or slate is used. ▪ Dead load may be excessive on supporting structure. ▪ Thickness of floating system may compromise required minimum step down height from residence finished floor level onto deck surface.
	Option 3 **Membrane** - as walk-on surface	▪ Must be immediately repaired by a professional waterproofer following any damage to surface coating. ▪ Suitable when weight of system is critical or where the additional required dimension for the mortar bed thickness is not available. ▪ Assists with achieving minimum set down height where it's availability is limited.

* CSIRO recommendation - Refer notes on Science of Building NSB 124

5.2 METHOD 1: FLEXIBLE SHEET MEMBRANE

5.2.1 General

This method relies on a sheet membrane installed on top of the HardiePanel compressed sheets. The membrane should be a flexible plastic type such as 1.2mm thick PVC sheeting. Installation of the selected membrane system must be by a specialist contractor, able to offer a waterproofing guarantee. (See Figure 12).

NOTE
A liquid membrane system, as described in the next section, may be used in lieu of the sheet waterproofing membrane to receive a floating mortar bed for a tile surface treatment.

5.2.2 Construction details

For general construction details, refer to Section 10.

NOTE
As a waterproofing membrane protects the deck framing, omit the flashing strips over timber joists.

The sheet membrane system must be installed as follows.
(See Figures 12 to 17).

Step 1 Membrane
After completing the basic deck structure, Step 1 of the completion phase is the waterproofing.

Waterproofing is achieved by applying a waterproofing membrane over the HardiePanel compressed sheets.

Refer to membrane manufacturer and applicator for system performance and warranty information.
You must use a sheet type membrane not less than 1.2mm thick with elastic properties.

Suitable sheet materials include 1.2mm thick SikaPlan 12G manufactured by Sika, and distributed by Sika Australian Pty Ltd and Delifol 1.5mm PVC sheet as supplied by Wolfin Systems. Ask James Hardie™ for alternative sheet membranes.

Step 2 Slip sheet
The slip sheet is an essential component of the system. It not only protects the membrane during further construction, but also isolates the movement of the substructure from movement in the tiled surface. This allows an unbroken tile surface, up to 4.5 x 4.5m, to move independently without damaging the covered waterproofing membrane and the applied tiling system.

Systems vary according to particular sheet membrane used. A dual layer of Cromford industrial black 200 microns thickness film is adequate.

Step 3 Mortar bed
A 40mm min. thick mortar bed reinforced with 75x75x2.0mm (or similar) (see note below) galvanised mesh should be placed over the slip sheet, set out in areas not exceeding 4.5x4.5m. The mortar bed is not to exceed 150mm thick.

NOTE
Reinforcement recommended in Australian Standard AS 3958.1 'Guide to the Installation of Ceramic Tiles' is called up as 50 x 50 x 2.5mm, but difficulty may be experienced in obtaining this sized mesh.

If deck is over 4.5m in any direction, provide a movement joint. This does not have to occur at sheet joints. (See Figure 15).
The mortar mix should be based on the tiler's experience with local sand grades. A sand to cement ratio of 3 to 1 is common.

Step 4 Tiling
Allow the mortar bed to cure for a minimum of 7 days before applying tiles, using a thin or thick bed adhesive as recommended by the supplier.

Lay the selected tiles on top of the cured mortar bed, with 5mm min. flexible joints installed directly over the mortar bed panel joints.

The deck edge can be treated in a variety of ways. See Figures 16 and 17 for two options. A further option is to install an eaves gutter, connecting the guttering to the storm water drainage system.

5.3 METHOD 2: LIQUID MEMBRANE

5.3.1 General

This method relies on a liquid membrane applied to the top of the HardiePanel compressed sheets. The liquid applied membrane should be flexible and of acrylic, synthetic rubber or modified polyurethane base. It must be installed by a specialist contractor who will provide a waterproofing guarantee. The membrane must be reinforced over joints in the HardiePanel compressed sheets or be otherwise appropriately treated, at both joints and at the deck to wall junction to maintain the integrity of the waterproofing system. (See Figure 18).

5.3.2 Construction details

For general construction details, refer to Section 10.

NOTE
As a waterproofing membrane protects the deck framing, omit the flashing strips over timber joists.

This liquid membrane system must be installed as follows.
(See Figures 18 to 23).

Step 1 Membrane
After completing the basic deck structure, Step 1 of the completion phase is the waterproofing.

If tiles are to be adhesive fixed to the membrane, the location of the deck sheet joints must be identified for the accurate location of movement jointing in the tile installation. Before work begins mark on lengths of timber battening the sheet jointing locations, starting from the wall face and one deck side.

Waterproofing is achieved by applying a flexible liquid membrane over the HardiePanel compressed sheet.

A number of liquid membrane systems are suitable for applying to HardiePanel compressed sheeting, available in either single or two pack systems of acrylic, synthetic rubber or modified polyurethane base. Some systems incorporate overall reinforcing matting embedded into the base coat. A stand alone 'walk-on' exposed surface system is possible, but care must be exercised in this instance to undertake immediate repairs of any damage sustained to the membrane, otherwise water penetration will occur causing the waterproof deck to fail.

A reinforcement band or special treatment over joints between sheets may be required before the membrane is applied.

Refer to membrane manufacturer and applicator for system performance and warranty information. Consider using a licensed waterproofer familiar with installing waterproofing systems used in decking applications.

At the wall junction and at the set down at doorways it is important to turn the membrane up the vertical face for the full height of the step down onto the deck. The membrane manufacturer may require a special treatment at this change of direction (likewise at HardiePanel compressed sheet joints). (See Figures 19 and 20).

6 FINISHES

Step 2 Adhesive fixed tiling
The completion phase is the tiling.

The liquid applied membrane must be fully cured before the tiles are applied. Premature laying of the tiles may result in the softening or subsequent re-emulsification of the membrane.

Always check required curing times with the supplier prior to application. This is important to ensure you do not use a system with a slow cure time if you plan a quick follow-on tile installation.

Use a thin or thick bed tile adhesive recommended by the adhesive manufacturer as being suitable for the selected tile, as well as being compatible with the liquid applied membrane on the decking. A cross check with the membrane manufacturer is recommended.

A 5mm wide control joint is required in the thickness of the tiling over all HardiePanel compressed sheet joints. Use the marked battens described in Step 1 to locate the control joints over the membraned deck joints. Seal the tile control joint with a sealant recommended by the tile supplier, applied over a suitable bond breaker such as a tape or backing rod where the tile is very thick. (See Figure 21).

All other joints in the tiling can be filled with grouting recommended by the tile supplier for external decking and the selected tiles, preferably a flexible variety.

NOTES
If you want a tiled floating mortar bed over a liquid membrane, follow Method 1 substituting the flexible sheet membrane for the liquid membrane.

In this case the slip sheet and the floating mortar bed must not be installed over the liquid membrane until the membrane is fully cured, otherwise softening and subsequent failure of the membrane will occur.

6.1 FINISHES

6.1.1 General

The following brief notes do not cover all aspects of tiling. Further advice should be sought from specialists in that area. The following publications are also recommended:

- CSIRO Notes of Science of Building NSB124.
- Australian Standard AS 3958.1 'Part 1 Guide to the Installation of Ceramic Tiles'.
- ISO 13007.1 for Ceramic tiles and adhesives.

6.2 TILE SELECTION

Care should be taken to ensure tiles are suitable for outdoor use subject to foot traffic, preferably with anti-slip surfaces.

NOTE
Avoid porous tiles with high water absorption, particularly if tiles are to be cut to size at control joints or at perimeter of deck.

6.3 TILE ADHESIVES

Tiles should be applied with proprietary adhesives that conform to ISO 13007.1 for Ceramic tiles and adhesives. Use a tile adhesive recommended for exposed exterior applications. The selection of either a thin bed or thick bed type will depend on the tile size, thickness variation and whether tiles have lugs on the back. Care must be taken to ensure that the adhesive thickness will allow full bedding of the tile over the entire surface. Where a liquid membrane has been used, the adhesive must be compatible.

Sand-cement mortars without polymer modification must not be used. PVA based adhesion promoters must not be used as these materials tend to re-emulsify when wet.

6.4 TILING

Refer to individual methods for installation recommendations of finishes at movement joints.

A grout width of 2mm min. should be allowed for tiles up to 100mm x 100mm and proportionally wider for larger tiles. A wider grout width may also be desired to accommodate irregularities in tiles. Use a grout recommended for external deck applications.

6.5 'WALK-ON' SELF SURFACED LIQUID MEMBRANE ALTERNATIVE

Where a liquid membrane system incorporating an in-built surface coating has been selected as the required option, ensure that manufacturer's instructions are followed. Refer to a reputable trafficable waterproof membrane for product suitability, specification and warranty.

NOTE: Any damage to the surface coating must be repaired immediately to ensure that the system maintains its integrity.

7 SAFE WORKING PRACTICES

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain sand, a source of respirable crystalline silica. **May cause cancer if dust from product is inhaled. Causes damage to lungs and respiratory system through prolonged or repeated inhalation of dust from product.**

Intact fibre cement products are not expected to result in any adverse toxic effects. The hazard associated with fibre cement arises from the respirable crystalline silica present in dust generated by activities such as cutting, rebating, drilling, routing, sawing, crushing, or otherwise abrading fibre cement, and when cleaning up, disposing of or moving dust.

When doing any of these activities in a manner that generates dust, follow James Hardie instructions and best practices to reduce or limit the release of dust, warn others in the area and consider rotating personnel across the cutting task to further limit respirable silica exposure.

If using a dust mask or respirator, use an AS/NZS1716 P1 filter and refer to Australian/New Zealand Standard 1715:2009 Selection, Use and Maintenance of Respiratory Protective Equipment for more extensive guidance and more options for selecting respirators for workplaces. For further information, refer to our installation instructions and Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

CUTTING OUTDOORS

1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Warn others in the area to avoid dust.
3. Consider rotating personnel across cutting tasks to further limit respirable silica exposures.
4. Use one of the following methods based on the required cutting rate:

Best ▪ Villaboard™ knife ▪ Hand guillotine ▪ Fibreshear

Better ▪ Position the cutting station in a well-ventilated area. Use a dust reducing circular saw equipped with HardieBlade™ Saw Blade or comparable fibre cement blade and well maintained M-class vacuum or greater with appropriate filter for capturing fine (respirable) dust. Wear a properly-fitted, approved dust mask or respirator (minimum P1).

CUTTING INDOORS

- Cut only using Villaboard™ knife, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in a well-ventilated area.

DRILLING/OTHER MACHINING

When drilling or machining you should always wear a P1 dust mask and warn others in the immediate area.

IMPORTANT NOTES

1. For maximum protection (lowest respirable dust production) James Hardie recommends always using best practice cutting methods where feasible.
2. NEVER use a power saw indoors or in a poorly ventilated area.
3. ALWAYS use a dust reducing circular saw equipped with a sawblade specifically designed to minimise dust creation when cutting fibrecement - preferably a sawblade that carries the HardieBlade™ logo or one with at least equivalent performance - connected to a M class or higher vacuum.
4. NEVER dry sweep - Use wet suppression, or an M class vacuum or greater with appropriate filter.
5. NEVER use grinders.
6. ALWAYS follow tool manufacturers' safety recommendations.
7. ALWAYS wear a properly fitted, approved dusk mask, P1 or higher

DUST MASKS AND RESPIRATORS

As a minimum, an AS/NZS1716 P1 respirator must be used when doing any activity that may create dust. For more extensive guidance and options for selecting respirators for workplaces please refer to Australian/New Zealand Standard 1715:2009 "Selection, Use and Maintenance of Respiratory Protective Equipment". P1 respirators should be used in conjunction with the above cutting practices to minimise dust exposure. For further information, refer to Safety Data Sheet (SDS) available at www.jameshardie.com.au. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

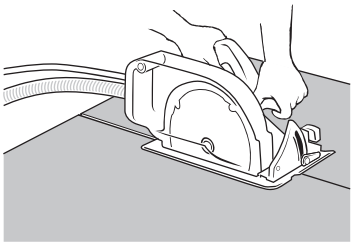
WORKING INSTRUCTIONS

Refer to recommended safe working practices before starting any cutting or machining of product.

HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw connected to a M class or higher vacuum extraction allows for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector which can be connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.

HOLE-FORMING



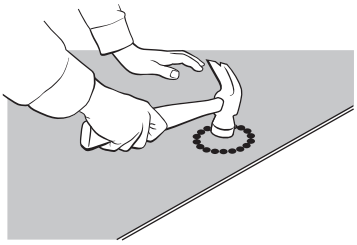
For smooth clean cut circular holes:

- Mark the centre of the hole on the sheet.
- Pre-drill a pilot hole.
- Using the pilot hole as a guide, cut the hole to the appropriate diameter with a hole saw fitted to a heavy duty electric drill.

For irregular holes:

- Small rectangular or circular holes can be cut by drilling a series of small holes around the perimeter of the hole then tapping out the waste piece from the sheet face.
- Tap carefully to avoid damage to sheets, ensuring the sheet edges are properly supported.

STORAGE AND HANDLING



To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

James Hardie building products must be installed in a dry state and protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

QUALITY

James Hardie conducts stringent quality checks to ensure any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

8 PRODUCT INFORMATION

8.1 GENERAL

The basic composition of James Hardie™ building products is Portland cement, ground sand, cellulose fibre, water and proprietary additives.

James Hardie™ building products are manufactured AS/NZS 2908.2 'Cellulose-Cement Products-Flat Sheet'. These are also compliant with equivalent standard ISO 8336 'Fibre-cement flat sheets - Product specification and test methods'. For product classification refer to the relevant Physical Properties Data Sheet.

8.2 PRODUCT DENSITY

Based on equilibrium moisture content the approximate mass of HardiePanel compressed sheets is 1620kg/m^3

8.3 DURABILITY

8.3.1 Resistance to moisture/rotting

HardiePanel compressed sheets have demonstrated resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS2908.2:

- Water permeability (Clause 8.2.2)
- Warm water (Clause 8.2.4)
- Heat rain (Clause 6.5)
- Soak dry (Clause 8.2.5)

8.3.2 Resistance to fire

HardiePanel compressed sheets are suitable where non-combustible materials are required in accordance with C1.9 and part 3.7.1.2 of the National Construction Code (NCC).

James Hardie flooring products have been tested to AS/ISO 9239, and exceed the requirements stipulated in the National Construction Code (NCC) - Specification C1.10a Fire Hazard Properties – Floors, Walls & Ceilings. All James Hardie flooring products have a critical radiant flux values not less than 4.5 kW/m2 (highest value in accordance with Table 1), and a smoke development rate well below the maximum allowable smoke development rate of 750 percentage-minutes.

8.3.3 Resistance to termite attack

Based on testing completed by CSIRO Division of Forest Products and Ensis Australia James Hardie building products have demonstrated resistance to termite attack.

8.4 ALPINE REGIONS

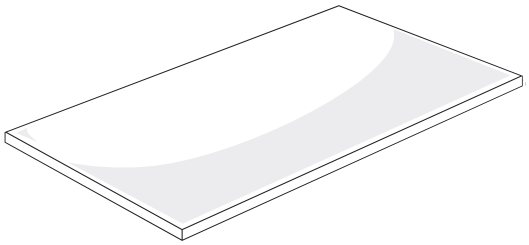
In regions subject to freeze/thaw conditions, James Hardie fibre cement products must be installed and finished in the warmer months of the year where the temperature does not create freeze and thaw conditions or paint issues. The products must be finished immediately after installation. In addition, fibre cement products must not be in direct contact with snow and/or ice build up for extended periods, e.g. external walls and floors in alpine regions subject to snow drifts over winter.

Furthermore, a reputable waterproofing manufacturer must be consulted in regards to a suitable product, specifications and warranty. The waterproofing application must not be carried out if the air temperature or the substrate temperature is outside the waterproofing manufacturer's recommendation including the specified drying temperature range

James Hardie external cladding products are tested for resistance to frost in accordance with AS/NZS 2908.2 Clause 8.2.3.

9 COMPONENTS

HARDIEPANEL COMPRESSED SHEETS



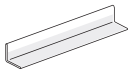
HardiePanel™ compressed sheets for decks
Description: dense, compressed fibre cement sheet, square edges.

Sheet sizes: Length (mm)	Width (mm)	Thickness (mm)
2400	1200	15/18/24
3000	1200	15/18

Selling unit: square metre (m^2)

HARDIEPANEL COMPRESSED DECK SYSTEM COMPONENTS

COMPONENTS SUPPLIED BY JAMES HARDIE

	**James Hardie™ Joint Sealant. 300ml cartridge** A general purpose, paintable, exterior grade polyurethane joint sealant.	20 Per Box Part No: 305534
	**James Hardie™ 45x45mm PVC Corner Angle Mould. 3,000mm long** Forms primary flashing between water-resistant deck and wall.	25 Per Pack Part No: 305554

COMPONENTS NOT SUPPLIED BY JAMES HARDIE

James Hardie recommends the following products for use in conjunction with its HardiePanel compressed sheets. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturer for information on their warranties and further information on their products.

Aluminium drip angle Fix with self tapping screws, cadmium plated.	12 x 12 x 1.6mm N°8 x 12mm
Aluminium tee section	40 x 40 x 3mm x 6000mm length
Aquaguard Wet area waterproofing membrane with Chemind reinforcing material. Single pack polymeric liquid compound **NOTE** Other sheet and liquid membrane systems may be suitable for waterproofing fibre cement decks. Ask James Hardie™ on 13 11 03.	Single pack polymeric liquid compound
Backing rod Forms a backing for sealants in flexible joints.	10mm dia 25m roll
Colorbond zincalume Metal overflashing	0.53mm t.c. thickness, purpose made to suit required height.
Flashing	
Slip sheet	Cramford industrial black 200 microns thickness film
Liquid membrane eg. Davco Dampfast Waterproofing membrane OR	2 part flexible acrylic - cement based material
Davco Dampflex Waterproofing membrane with fibreglass matting OR	Single pack acrylic based material various sizes

HARDIEPANEL COMPRESSED DECK SYSTEM COMPONENTS - CONTINUED

	Newflex R100 Matt free waterproofing membrane with Chemind reinforcing strip. Can be used as a trafficable deck surface with the addition of Flexicote Tuffcote. OR	Single pack liquid rubber material
	Newflex Waterproofing Membrane with Chemind reinforcing material OR	Single pack liquid rubber material
	Norcos Superflex Bathroom and Balcony Premix Matt free waterproofing membrane with synthetic rubber band impregnated onto a flexible nylon mesh. OR	Single pack acrylic based material
	Norcos Superflex Bathroom and Balcony 2 Part Waterproofing membrane OR	2 part flexible acrylic - cement based material
	WPM 300 Wet Area Waterproofing Membrane with polyester cloth reinforcing tape with polyester cloth reinforcing tape.	Single pack synthetic rubber based material 100mm wide x 10m rolls
	Polyethylene slip sheet	Cromford 200 microns x 4000mm wide industrial black film
	Reinforcing mesh For floating mortar bed	Smorgon ARC 75 x 75 x 2.0mm galvanised weld mesh
	Screws To timber framing: Countersunk self embedding head, type 17 or Internal hex drive, bugle head, type 17 To steel framing: Countersunk head, Tek screws **NOTES** 1. In coastal and other areas subject to salt spray and heavy industrial pollution, contact your fastener manufacturer for fasteners with suitable corrosion resistance. 2. For fixing to treated timber use screws that have a corrosive coating which meets AS 3566 Class 3.	 Nº 10 x 50mm Nº 14 x 50mm Nº 10 x 30mm
	Sheet membrane eg. PVC sheet with plastic coated metal accessories **NOTES** Sheet membrane must be flexible enough to allow for changes in direction at the wall face and over all joints in the substrate sheeting, including cyclic movement.	Minimum thickness: 1.2mm
	Tesa / 3M general purpose masking tape	18mm width

10 DETAILS

All dimensions are in millimetres, unless shown otherwise. All CAD's are available for download of ACCEL www.accel.com.au.

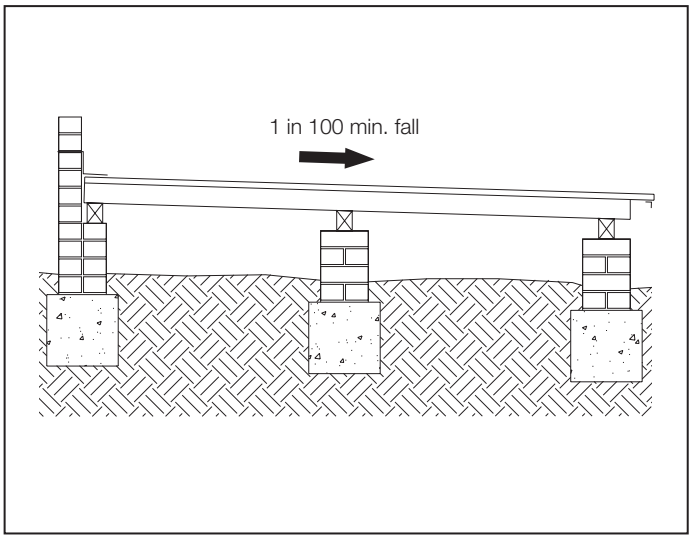


FIGURE 1 FALL FOR DRAINAGE

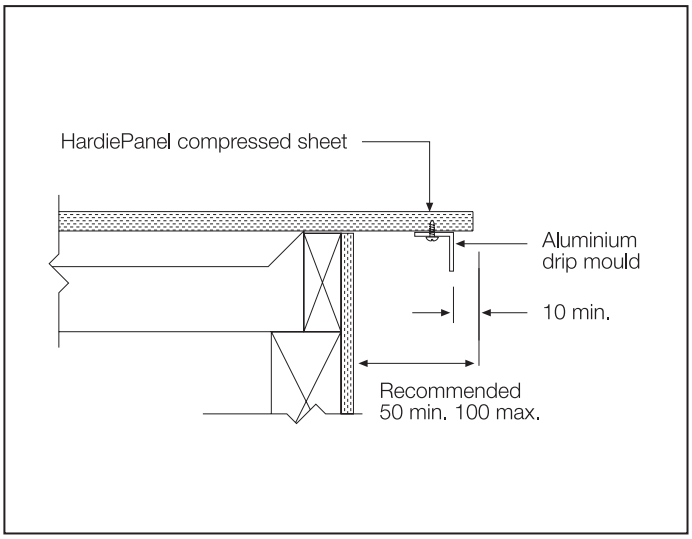


FIGURE 4 DECK EDGE

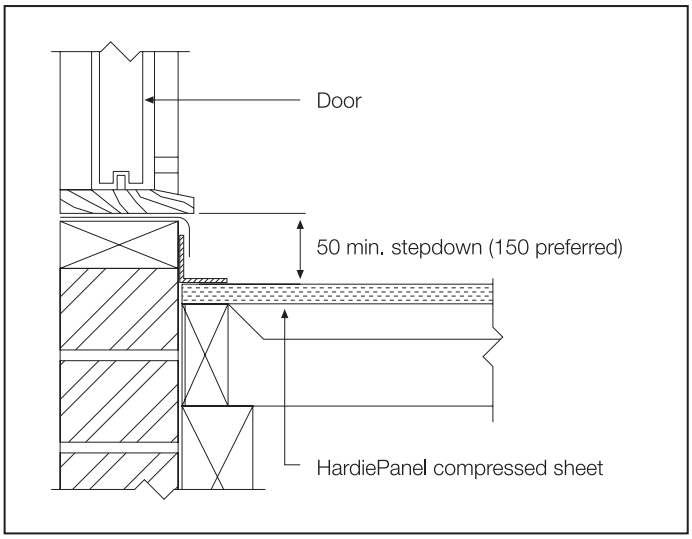


FIGURE 2 DECK STEP DOWN

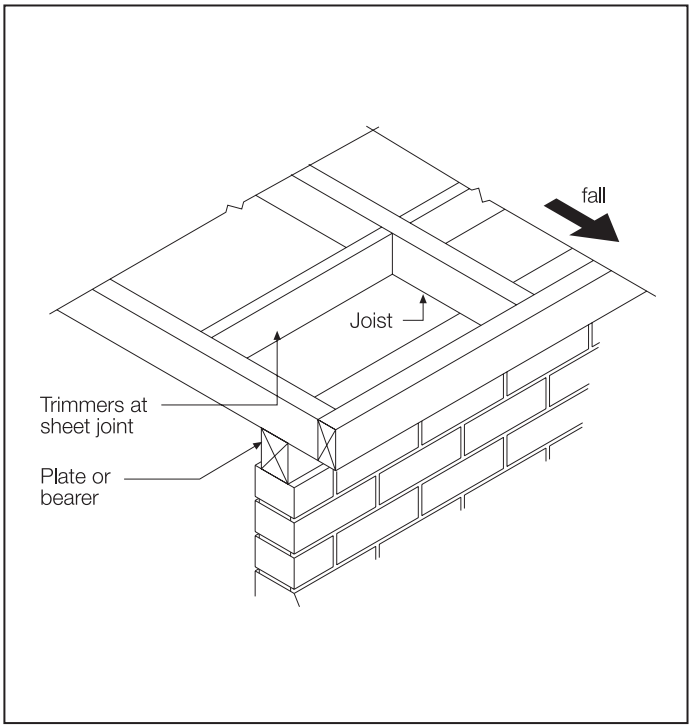


FIGURE 5 JOIST SET OUT AND DECK FALL

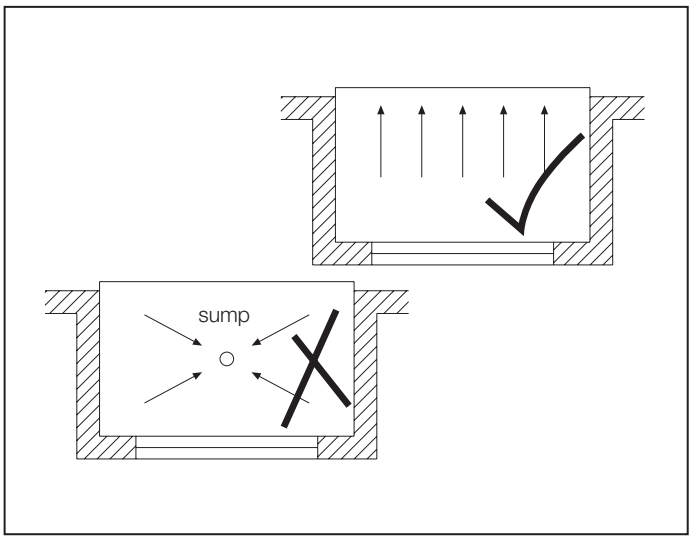


FIGURE 3 DRAINAGE - PLAN VIEWS

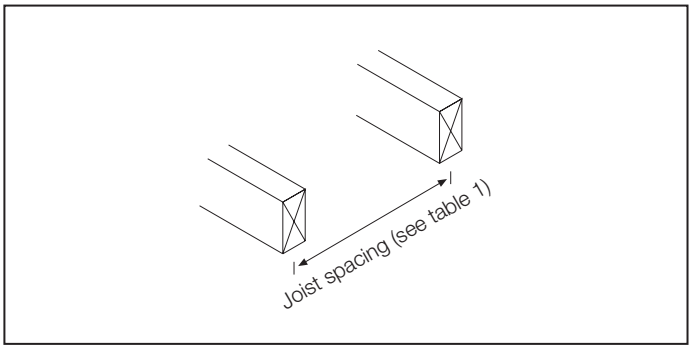


FIGURE 6 JOIST SPACING

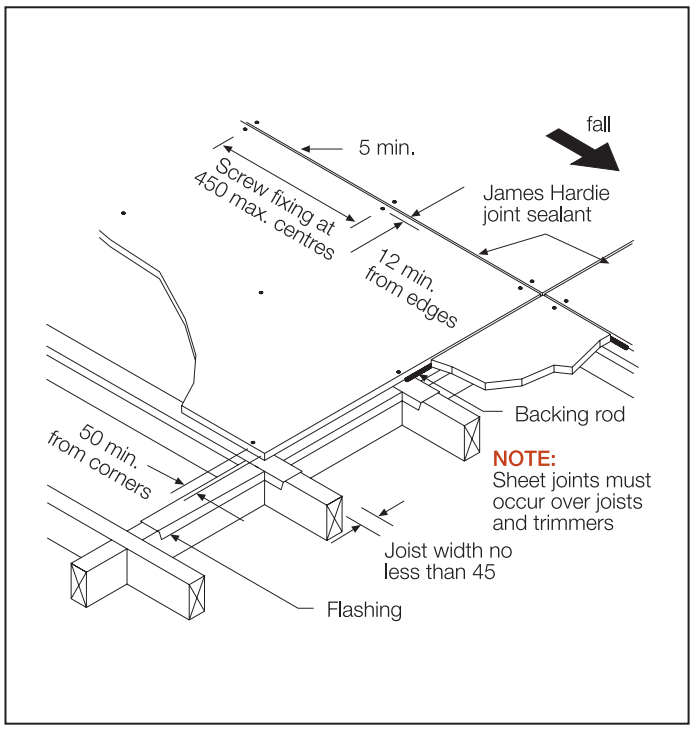


FIGURE 7 DECK FIXING

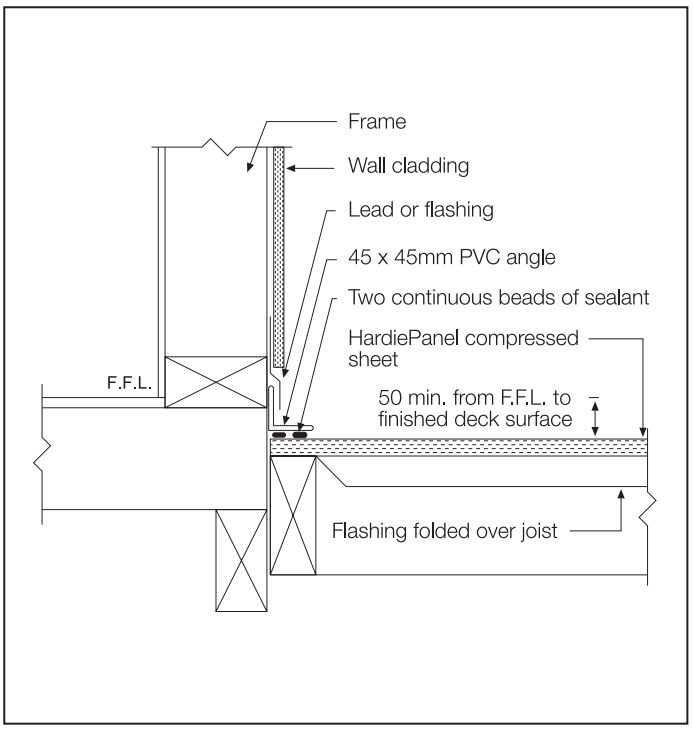


FIGURE 9 WATER RESISTANT DECK - WALL FLASHING, LIGHTWEIGHT CLADDING DETAIL

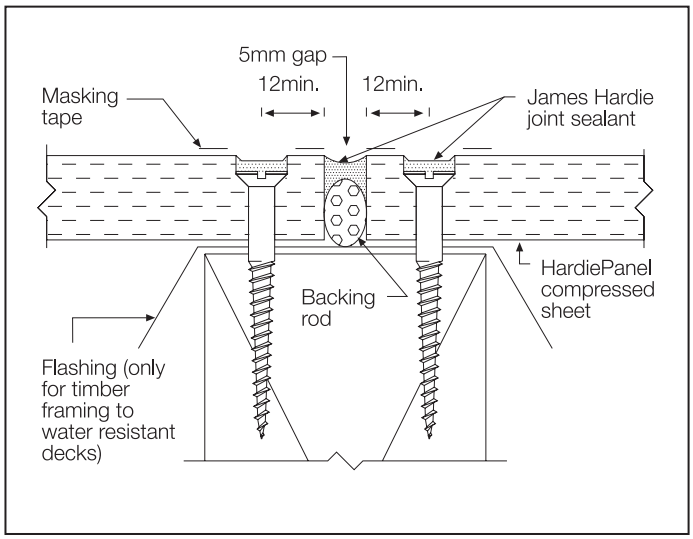


FIGURE 8 DECK JOINTING

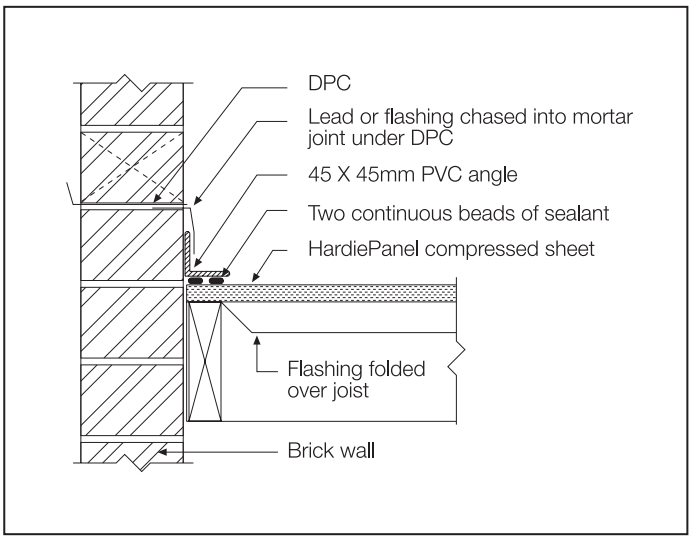


FIGURE 10 WATER RESISTANT DECK - WALL FLASHING MASONRY DETAIL

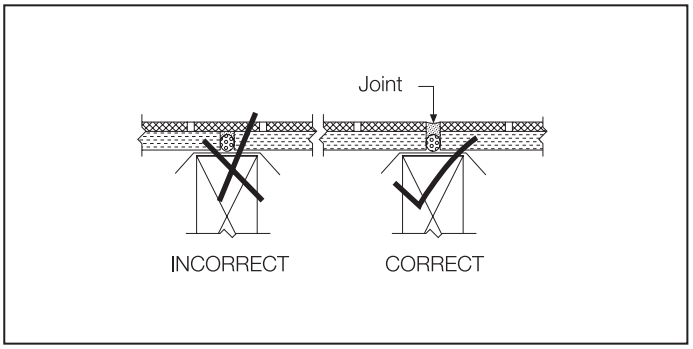


FIGURE 11 WATER RESISTANT DECK - MOVEMENT JOINTS DETAIL

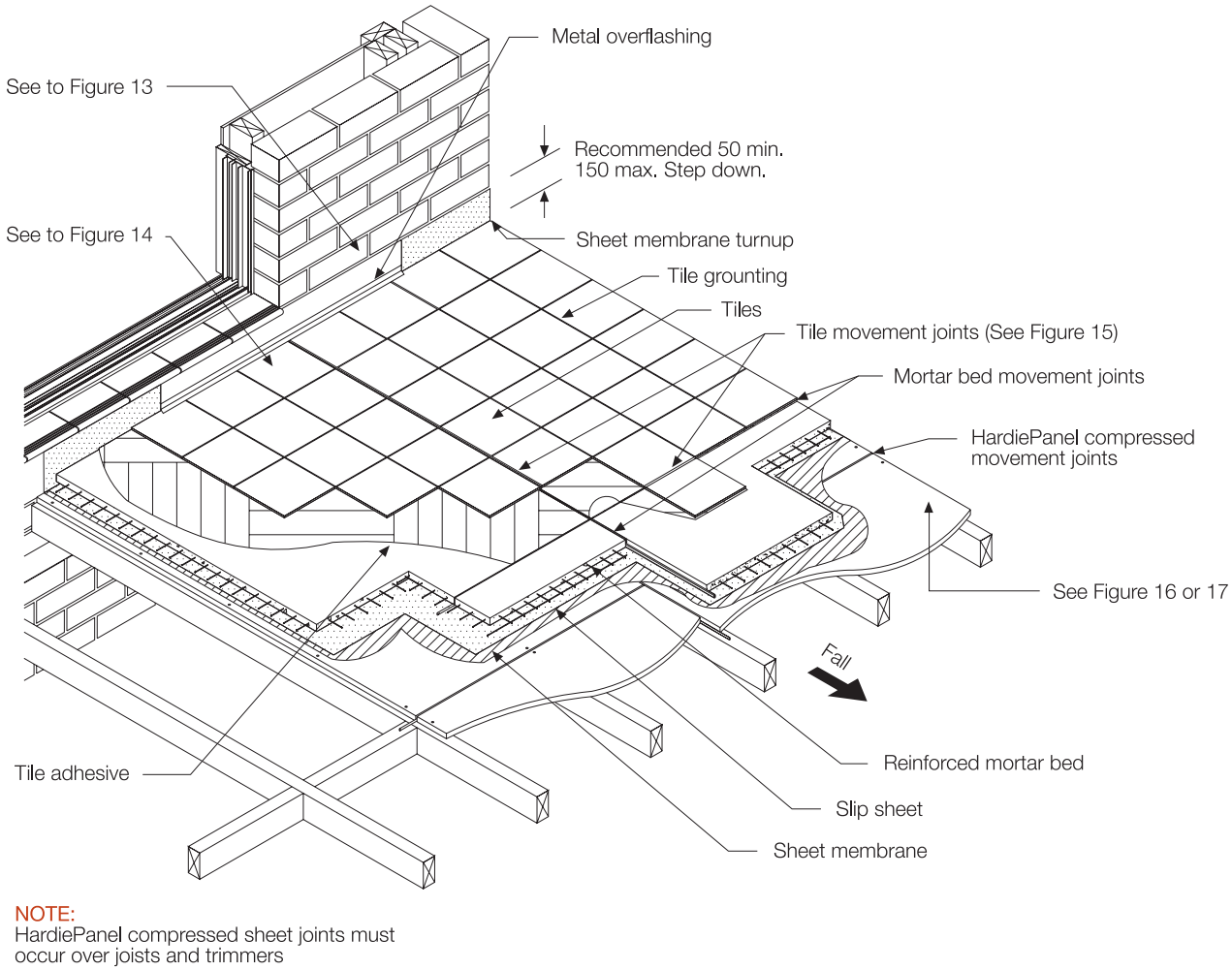


FIGURE 12 METHOD 1 - SYSTEM INSTALLATION

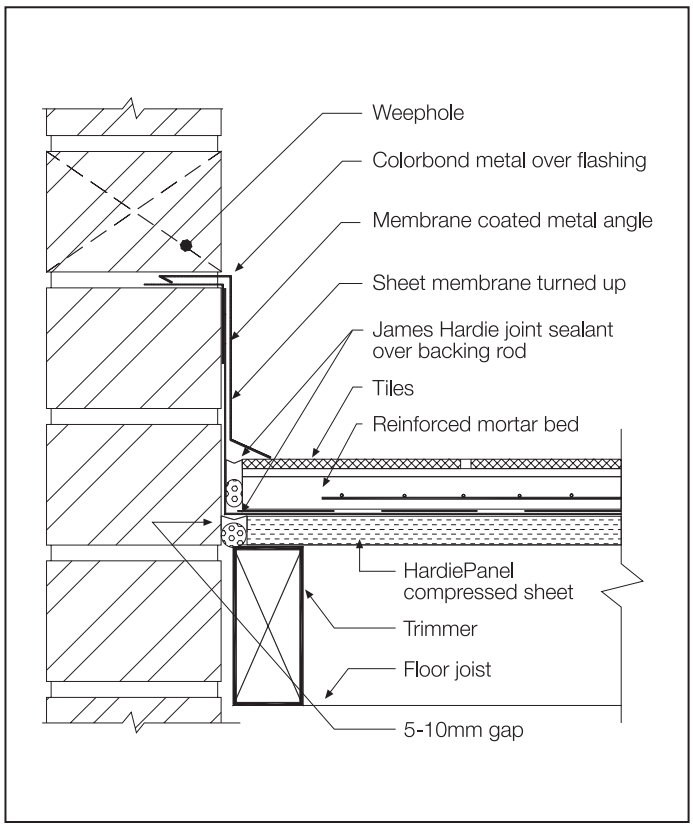


FIGURE 13 METHOD 1 - WALL DETAIL

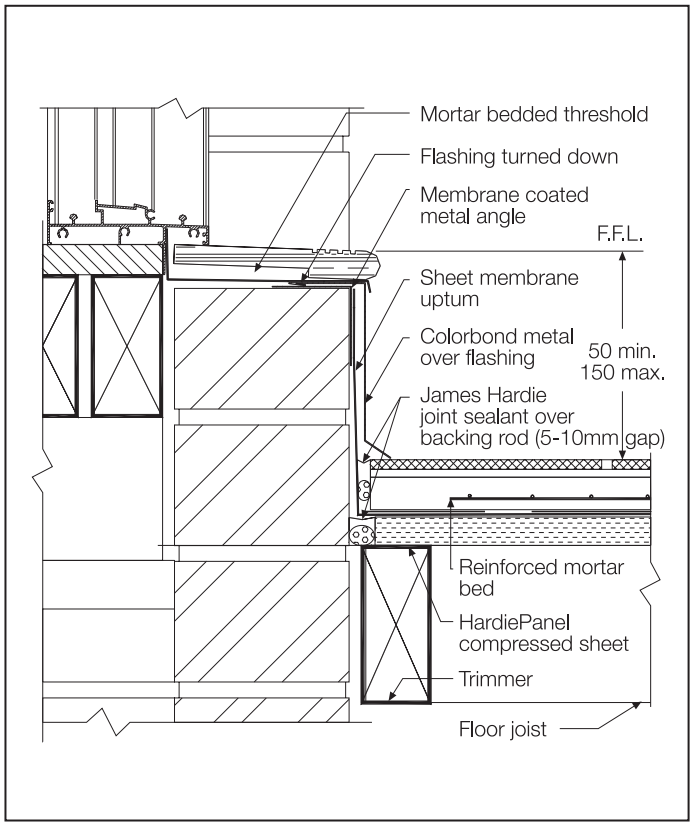


FIGURE 14 METHOD - STEP DOWN DETAIL

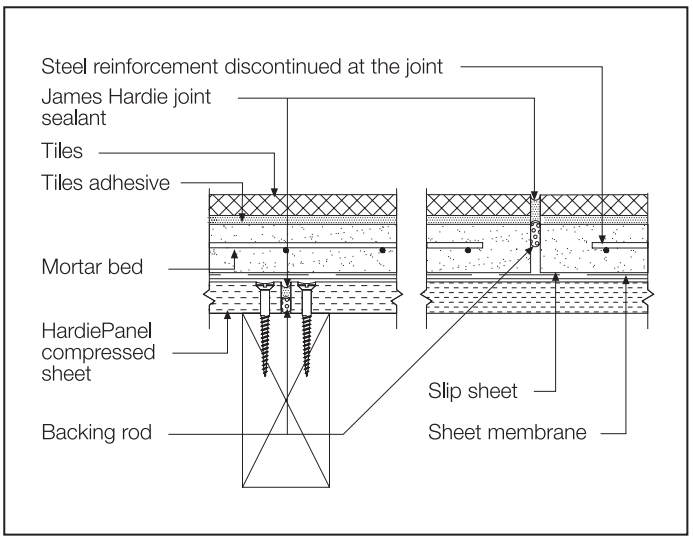


FIGURE 15 METHOD 1 - MOVEMENT JOINT DETAILS

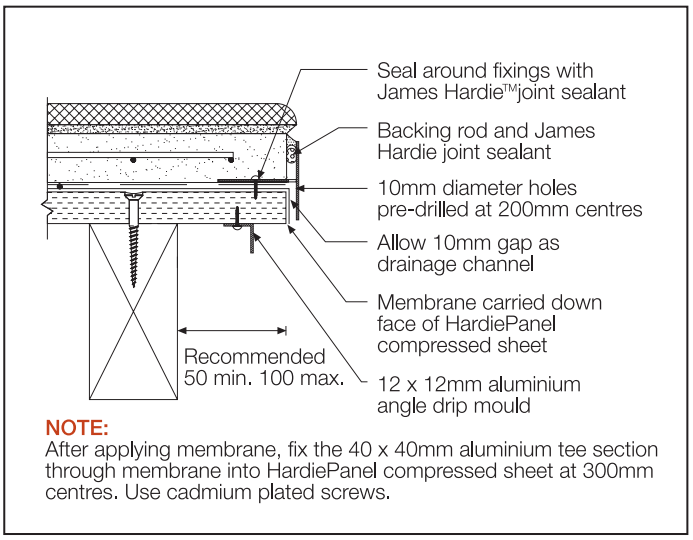


FIGURE 16 METHOD 1 - DECK EDGE DETAIL USING ALUMINIUM TEE SECTION

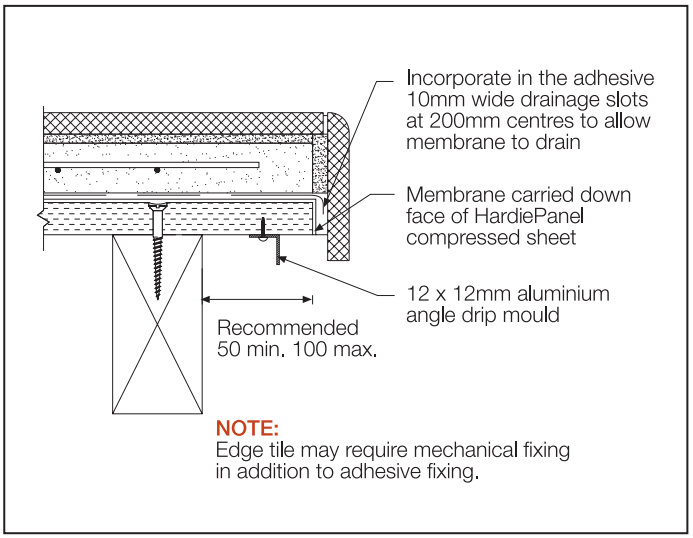


FIGURE 17 METHOD 1 - DECK EDGE DETAIL USING TILE

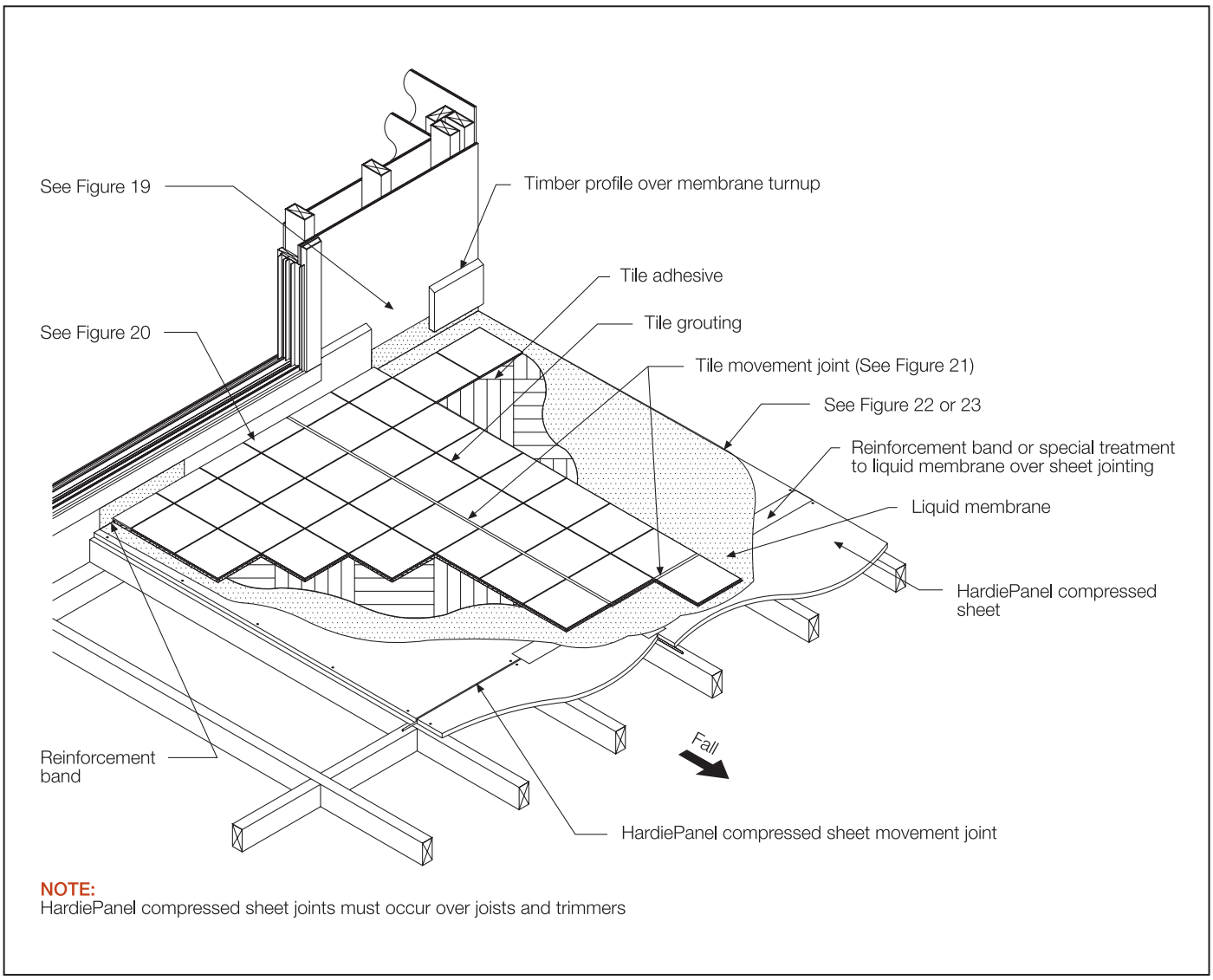


FIGURE 18 METHOD 2 - SYSTEM INSTALLATION

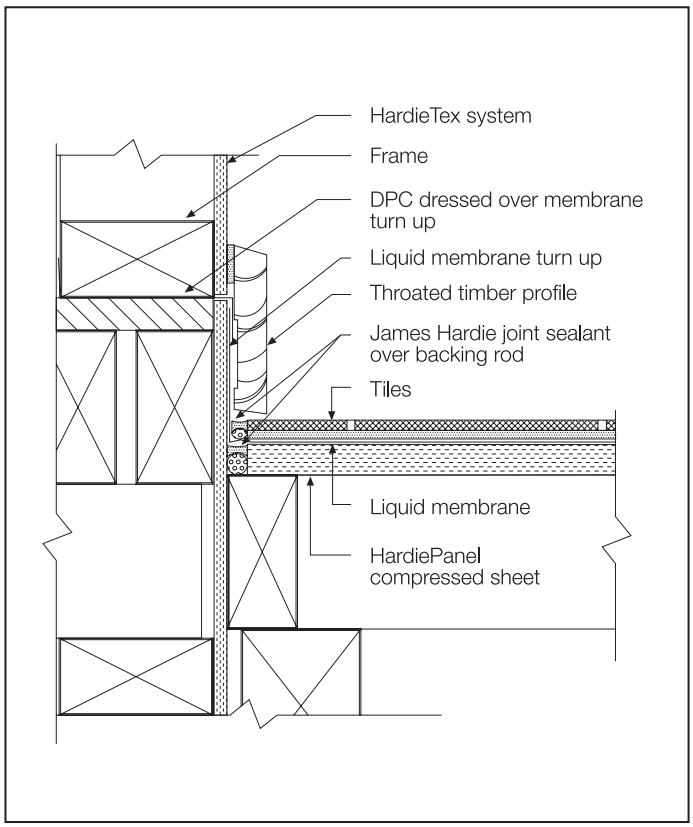


FIGURE 19 METHOD 2 - WALL DETAIL

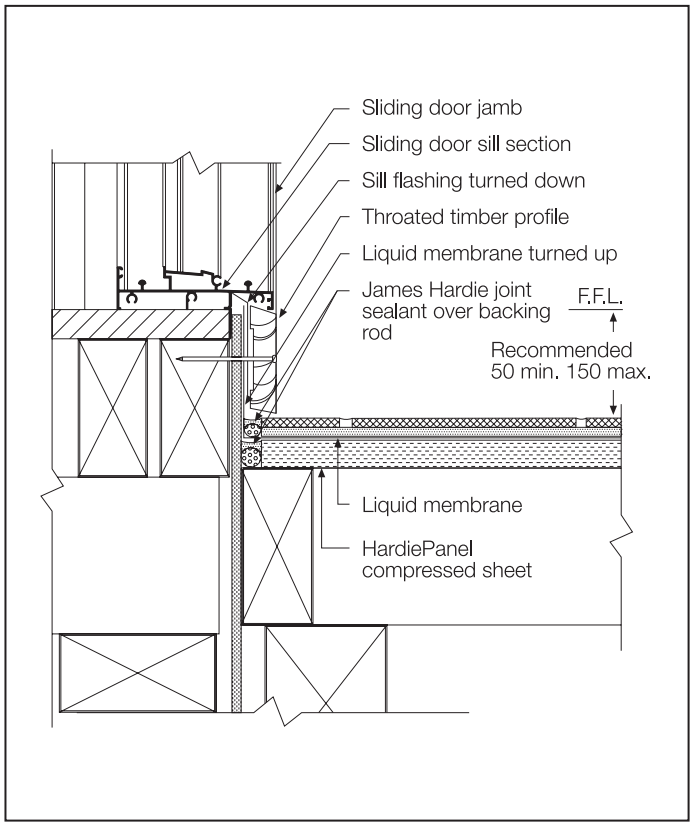


FIGURE 20 METHOD 2 - STEP DOWN AT DOORWAY DETAIL

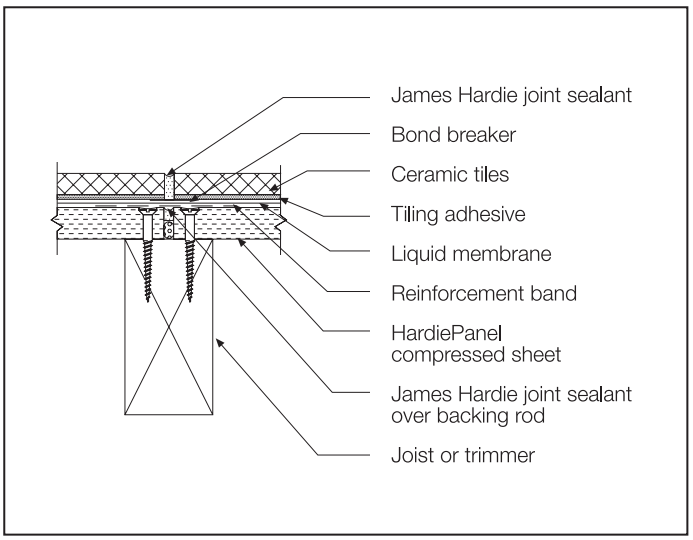


FIGURE 21 METHOD 2 - JOINT DETAIL

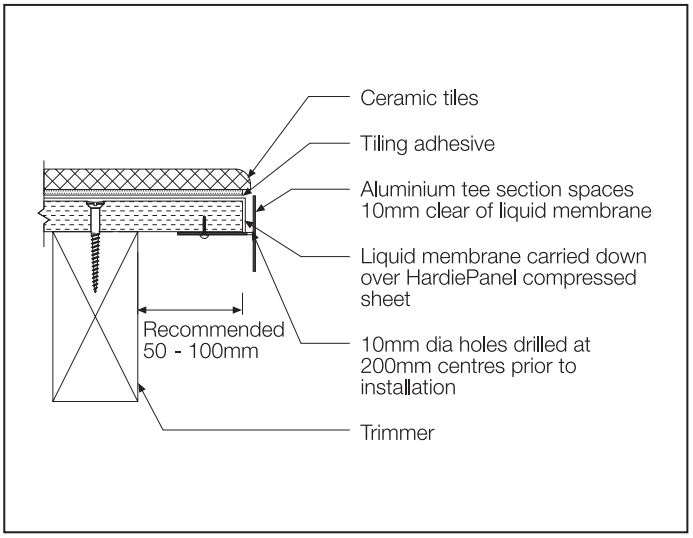


FIGURE 22 METHOD 2 - DECK EDGE DETAIL USING ALUMINIUM TEE SECTION

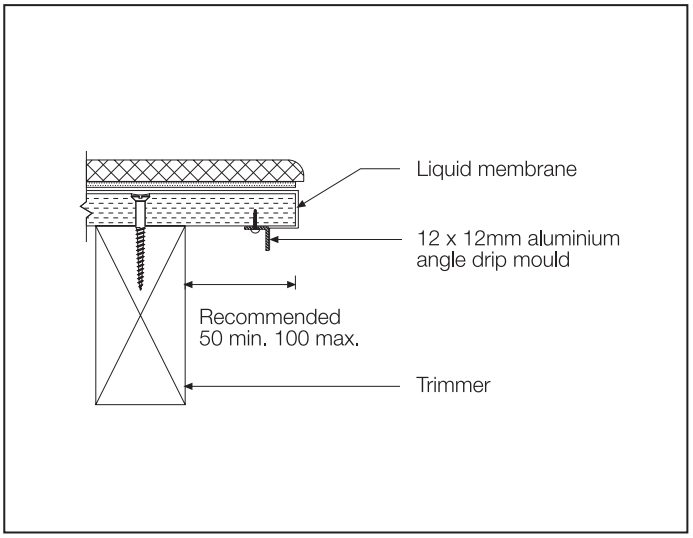


FIGURE 23 METHOD 2 - DECK EDGE DETAIL USING DRIP ANGLE

NOTES

For information and advice call 13 11 03 | jameshardie.com.au

Australia July 2021