



Flooring - External

Technical specification

HardiePanel™ compressed sheet



James Hardie
A smarter way to build

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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 350mm². 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.

Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or if you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

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 manual 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.

4 WATER RESISTANT DECKS

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.

4.1 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 stenciling, 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 50mm 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 which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'score and snap' knife, fibre cement shears or, where not feasible, use a HardieBlade™ Saw Blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL 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. Use a dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction.

DRILLING/OTHER MACHINING

When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

IMPORTANT NOTES

1. NEVER use a power saw indoors.
2. NEVER use a circular saw blade that does not carry the HardieBlade™ logo.
3. NEVER dry sweep - Use wet suppression or HEPA vacuum.
4. NEVER use grinders.
5. ALWAYS follow tool manufacturers' safety recommendations.

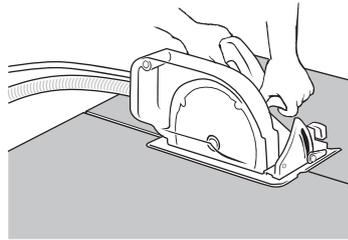
P1 or P2 respirators should be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.com.au to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure 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 and HEPA 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.



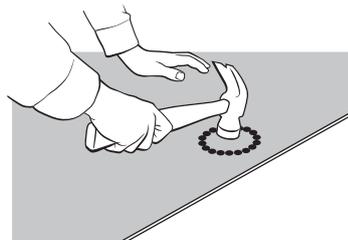
HOLE-FORMING

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

HardiePanel compressed sheets are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water.

HardiePanel compressed sheets are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets').

HardiePanel compressed sheets are classified Type A, Category 4 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.

For Material Safety Data Sheets (MSDS) visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

8.2 PRODUCT DENSITY

Based on equilibrium moisture content the approximate mass of HardiePanel compressed sheets is 1620kg/m³

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 C1.12 and part 3.7.1.2 of the Building Code of Australia.

James Hardie flooring products have been tested to AS/ISO 9239, and exceed the requirements stipulated in the Building Code of Australia - 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

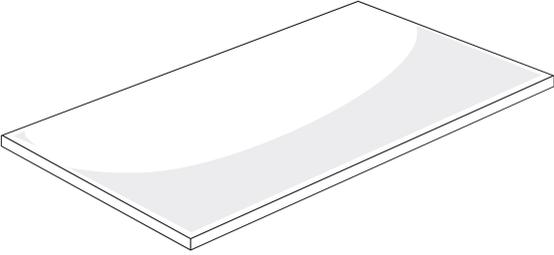
In regions subject to freeze/thaw conditions, James Hardie fibre cement products must be installed and finished in the warmer months of the year where the temperature does not create freeze and thaw conditions or paint issues. The products must be finished immediately after installation. In addition, 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)
	1500*	900 1200	15/18 15/18
	1800	900 1200	15/18 15/18
	2100	1200	15/18
	2400	900 1200	15/18 15/18/24
	2700	1200	15
	3000	900 1200	15/18 15/18
Selling unit: square metre (m ²)			

* Not available in WA

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

<p>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</p>	<p>Single pack liquid rubber material</p>
<p>Newflex Waterproofing Membrane with Chemind reinforcing material OR</p>	<p>Single pack liquid rubber material</p>
<p>Norcos Superflex Bathroom and Balcony Premix Matt free waterproofing membrane with synthetic rubber band impregnated onto a flexible nylon mesh. OR</p>	<p>Single pack acrylic based material</p>
<p>Norcos Superflex Bathroom and Balcony 2 Part Waterproofing membrane OR</p>	<p>2 part flexible acrylic - cement based material</p>
<p>WPM 300 Wet Area Waterproofing Membrane with polyester cloth reinforcing tape with polyester cloth reinforcing tape.</p>	<p>Single pack synthetic rubber based material 100mm wide x 10m rolls</p>
<p>Polyethylene slip sheet</p>	<p>Cromford 200 microns x 4000mm wide industrial black film</p>
<p>Reinforcing mesh For floating mortar bed</p>	<p>Smorgon ARC 75 x 75 x 2.0mm galvanised weld mesh</p>
<p>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</p> <p>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.</p>	<p>Nº 10 x 50mm Nº 14 x 50mm Nº 10 x 30mm</p>
<p>Sheet membrane eg. PVC sheet with plastic coated metal accessories</p> <p>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.</p>	<p>Minimum thickness: 1.2mm</p>
<p>Tesa / 3M general purpose masking tape</p>	<p>18mm width</p>

10 DETAILS

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

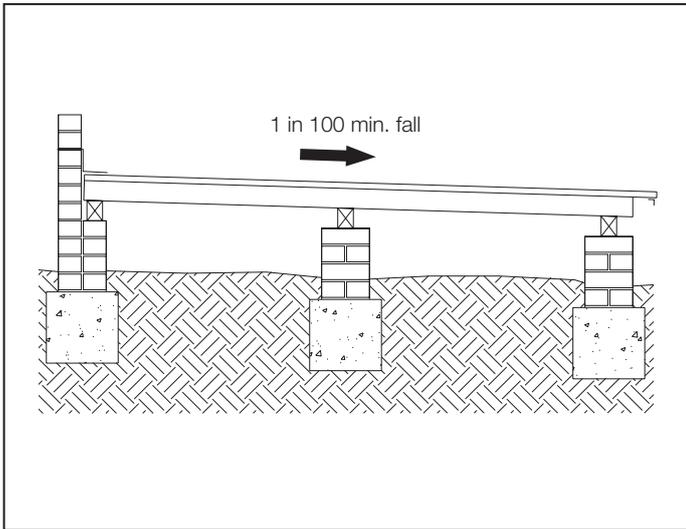


FIGURE 1 FALL FOR DRAINAGE

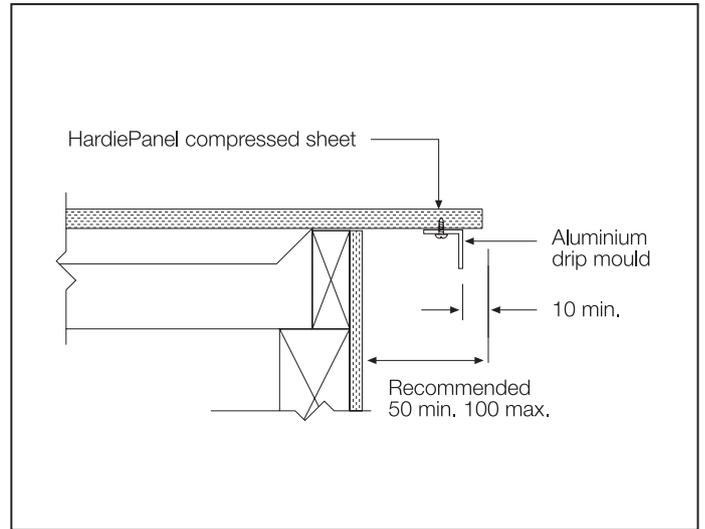


FIGURE 4 DECK EDGE

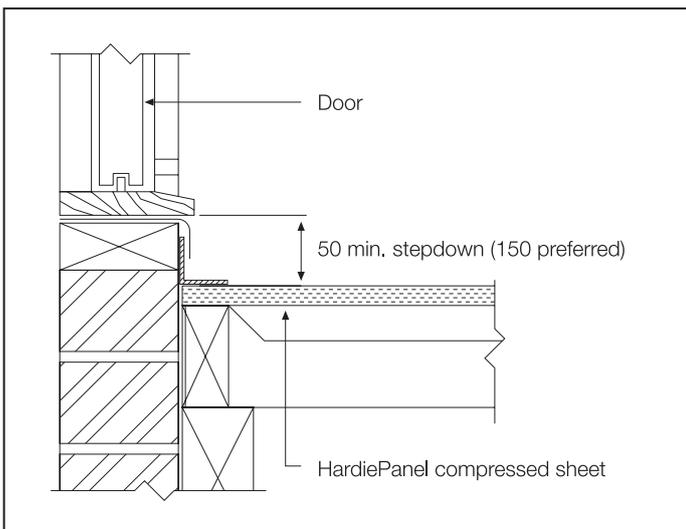


FIGURE 2 DECK STEP DOWN

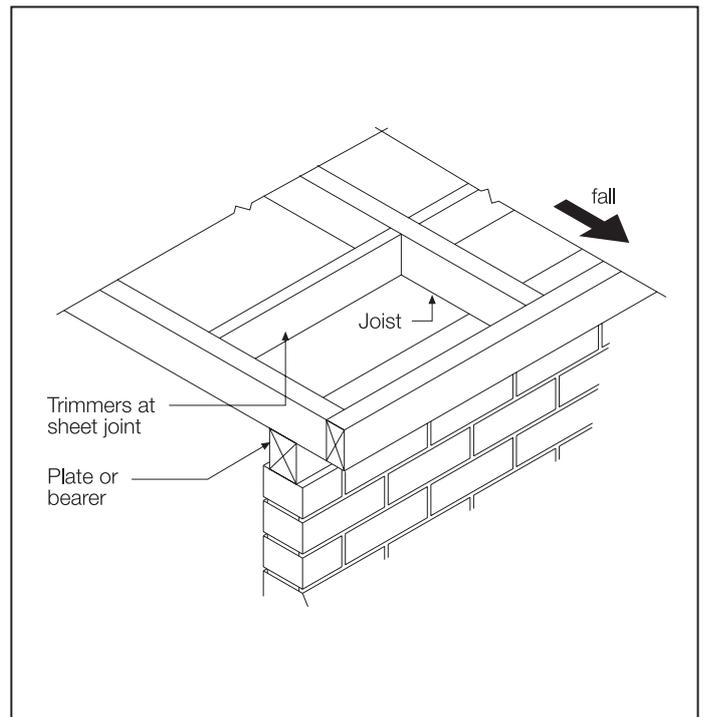


FIGURE 5 JOIST SET OUT AND DECK FALL

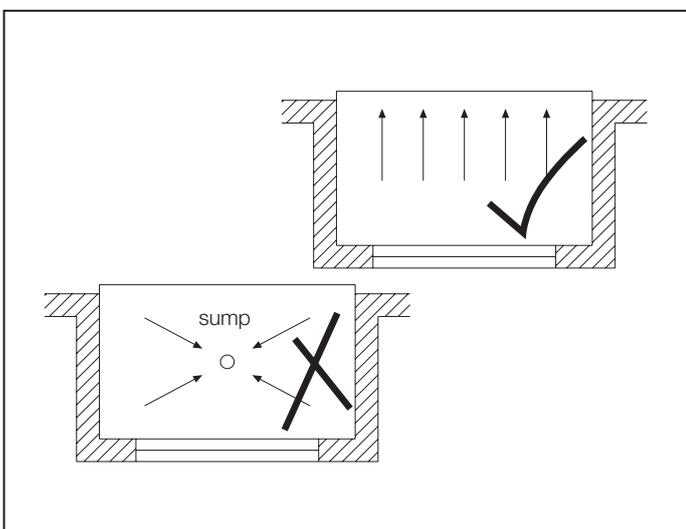


FIGURE 3 DRAINAGE - PLAN VIEWS

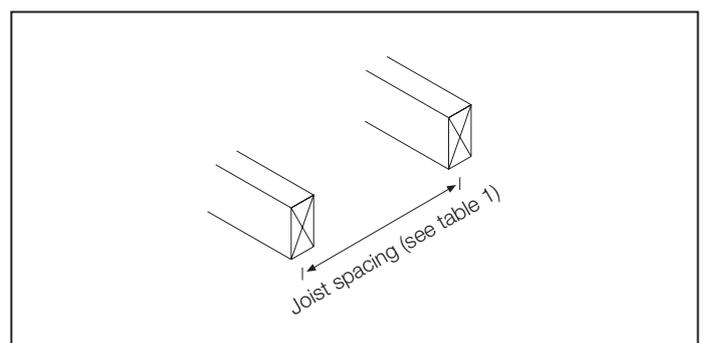


FIGURE 6 JOIST SPACING

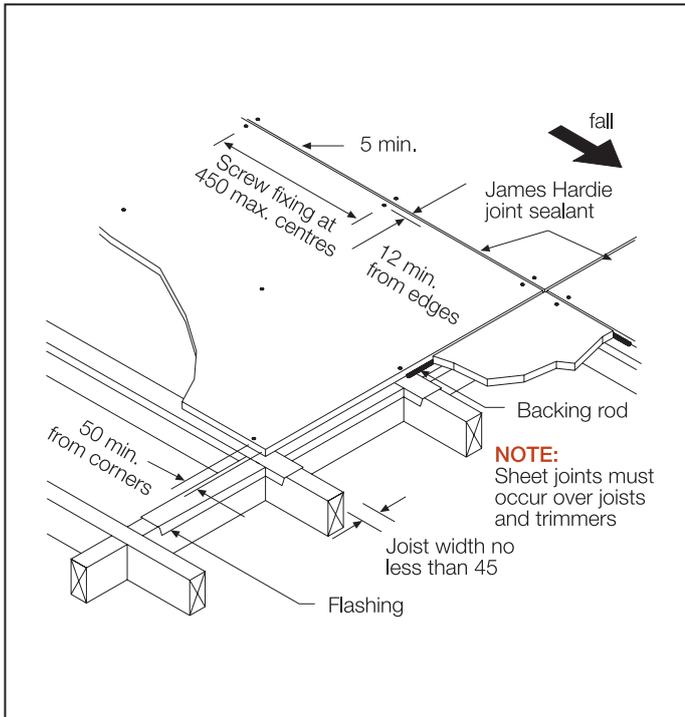


FIGURE 7 DECK FIXING

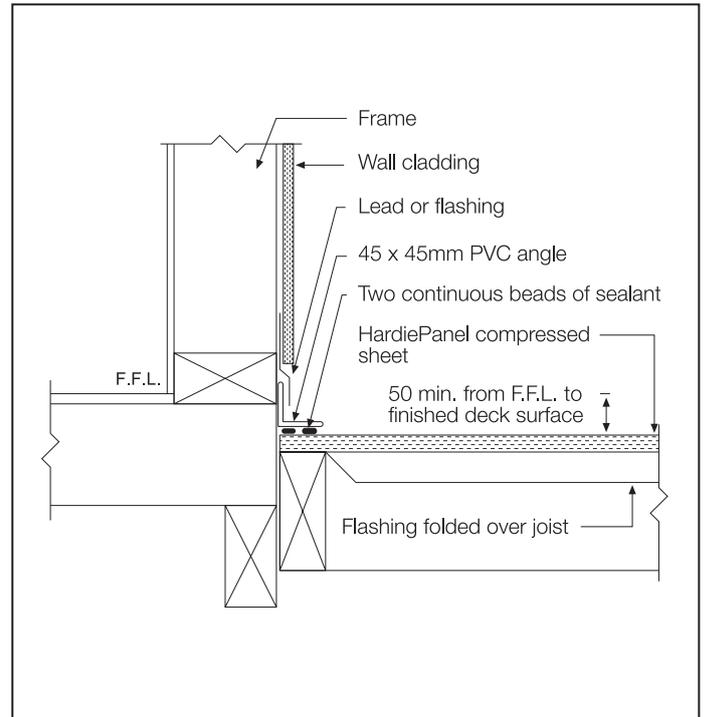


FIGURE 9 WATER RESISTANT DECK - WALL FLASHING, LIGHTWEIGHT CLADDING DETAIL

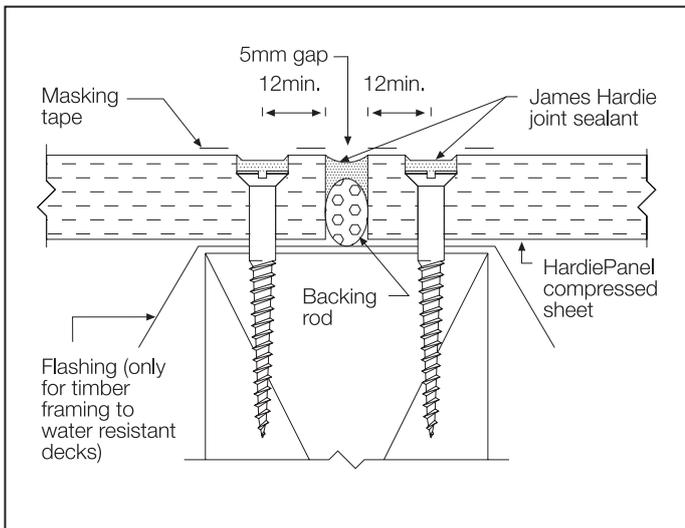


FIGURE 8 DECK JOINTING

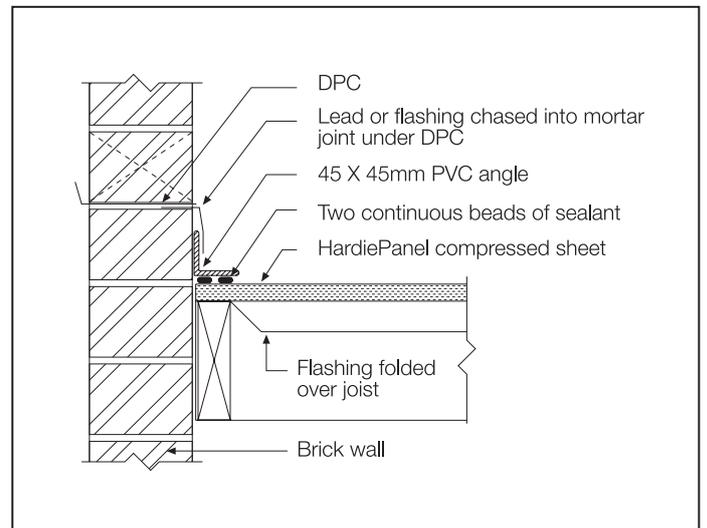


FIGURE 10 WATER RESISTANT DECK - WALL FLASHING MASONRY DETAIL

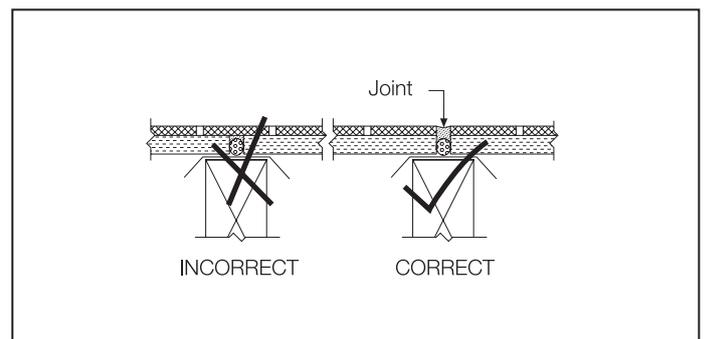


FIGURE 11 WATER RESISTANT DECK - MOVEMENT JOINTS DETAIL

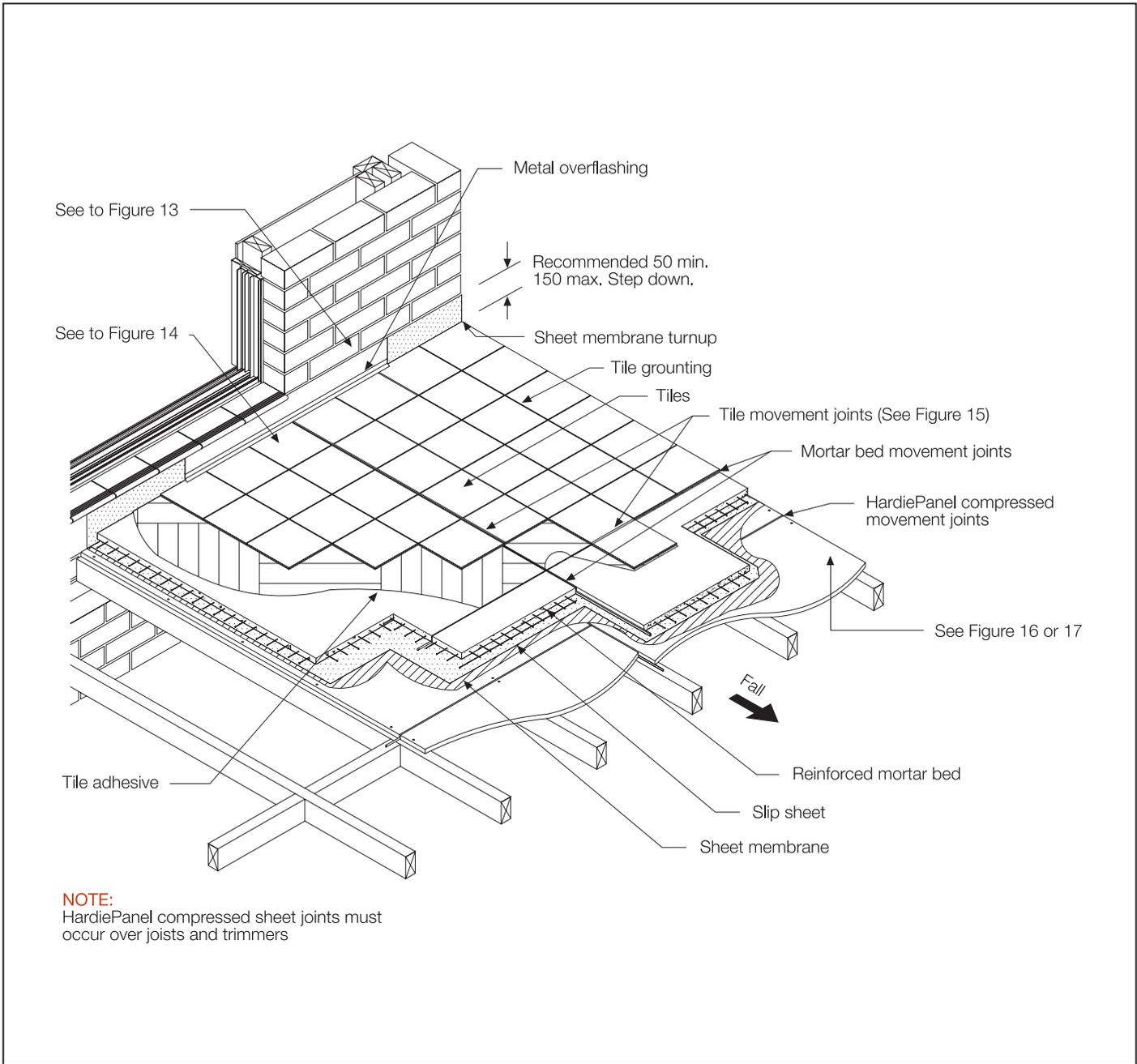


FIGURE 12 METHOD 1 - SYSTEM INSTALLATION

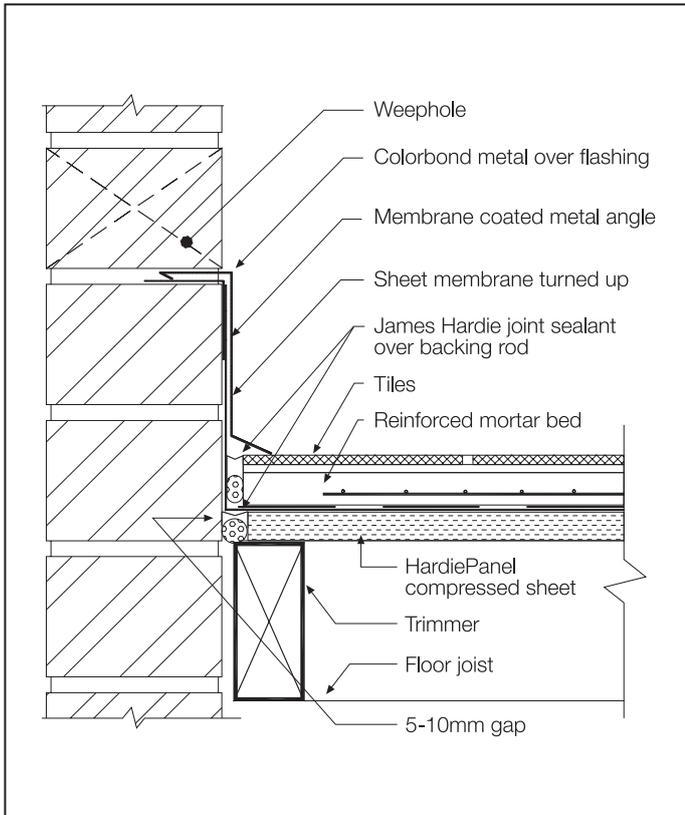


FIGURE 13 METHOD 1 - WALL DETAIL

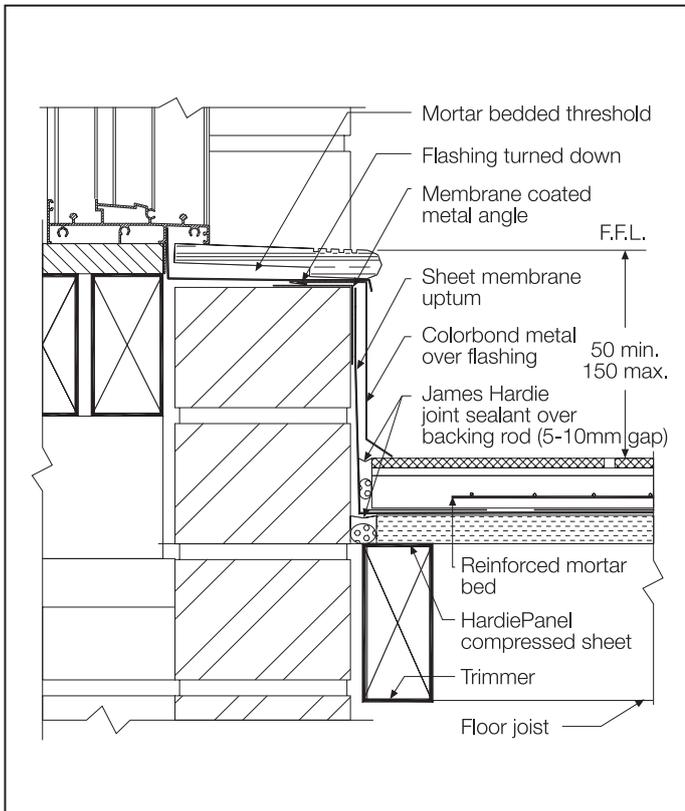


FIGURE 14 METHOD - STEP DOWN DETAIL

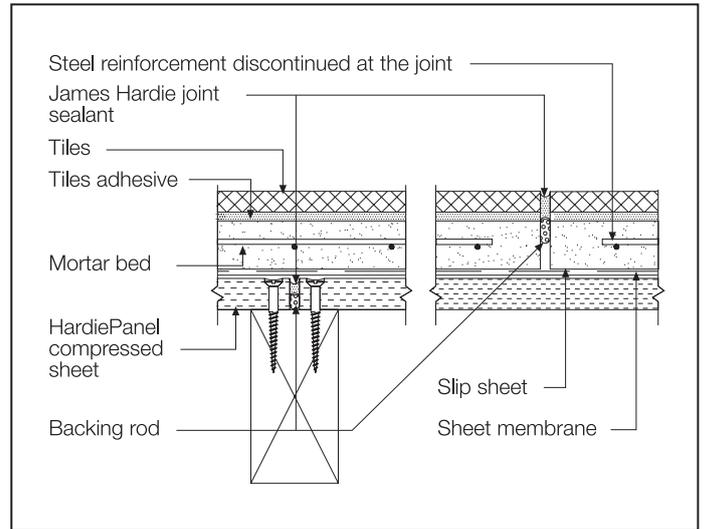


FIGURE 15 METHOD 1 - MOVEMENT JOINT DETAILS

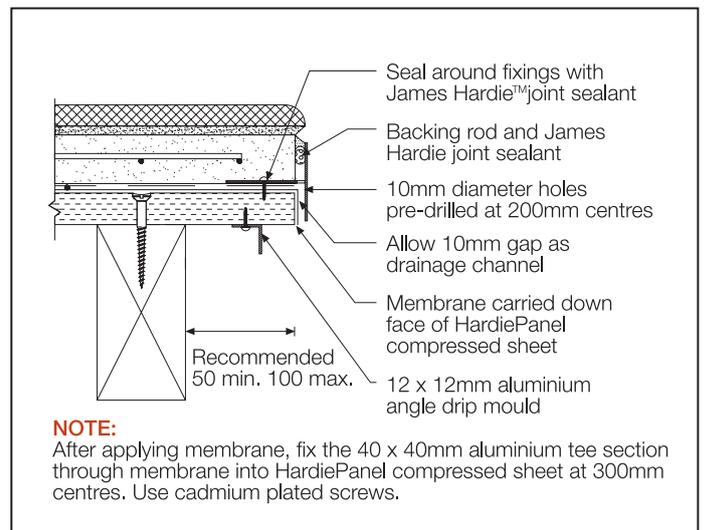


FIGURE 16 METHOD 1 - DECK EDGE DETAIL USING ALUMINIUM TEE SECTION

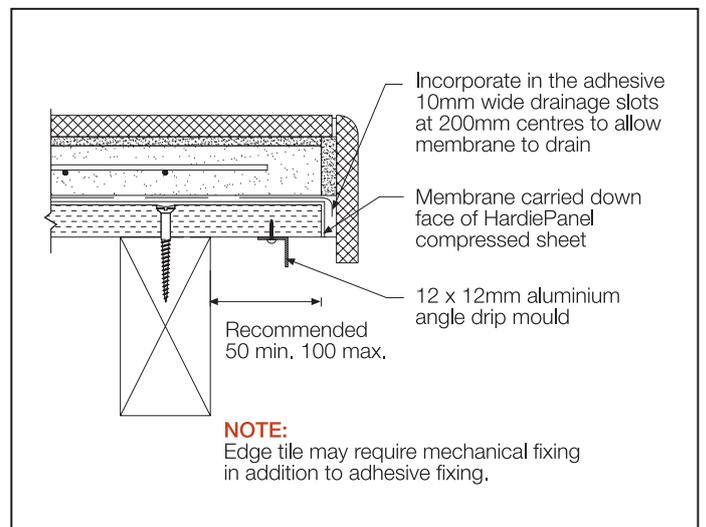


FIGURE 17 METHOD 1 - DECK EDGE DETAIL USING TILE

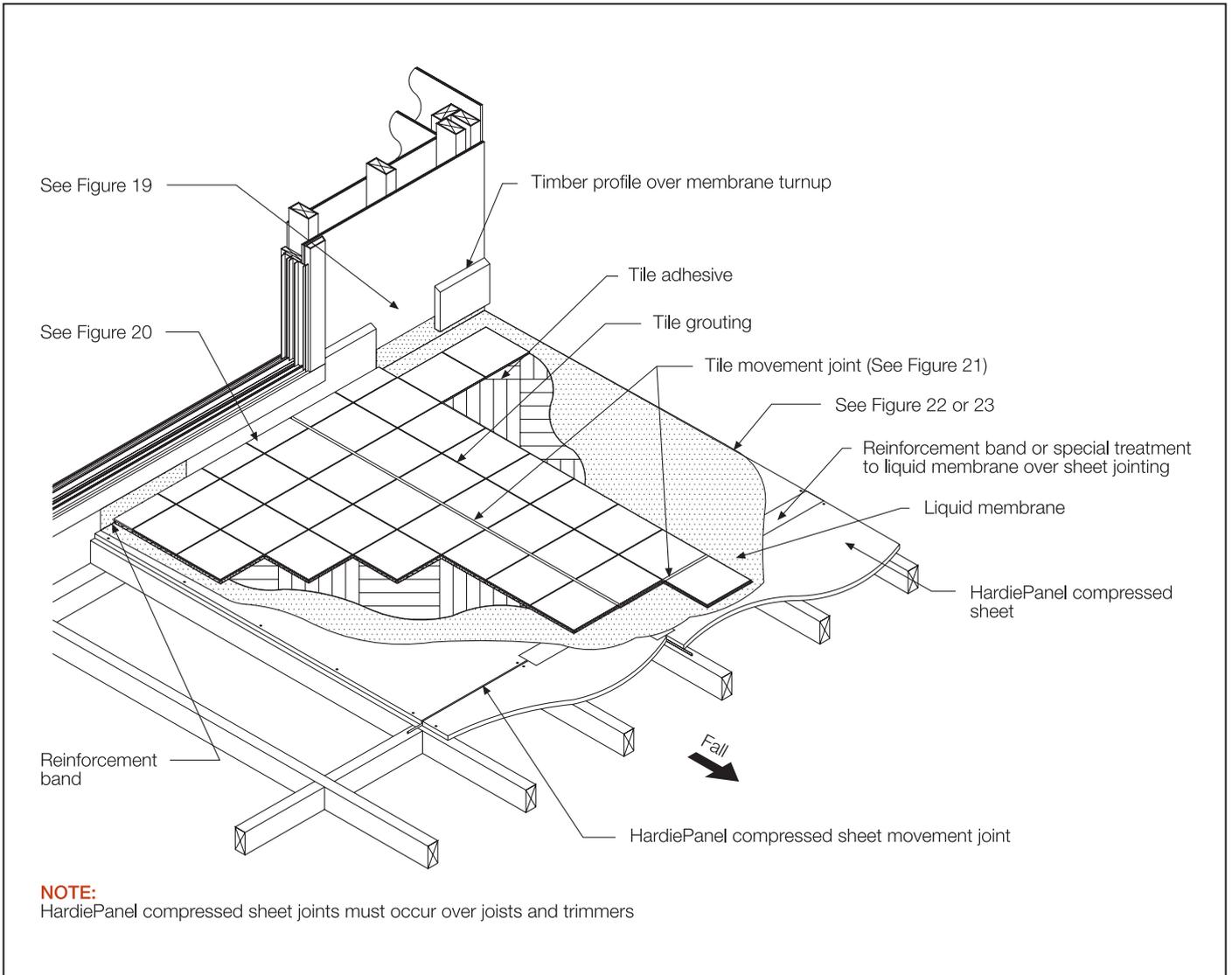


FIGURE 18 METHOD 2 - SYSTEM INSTALLATION

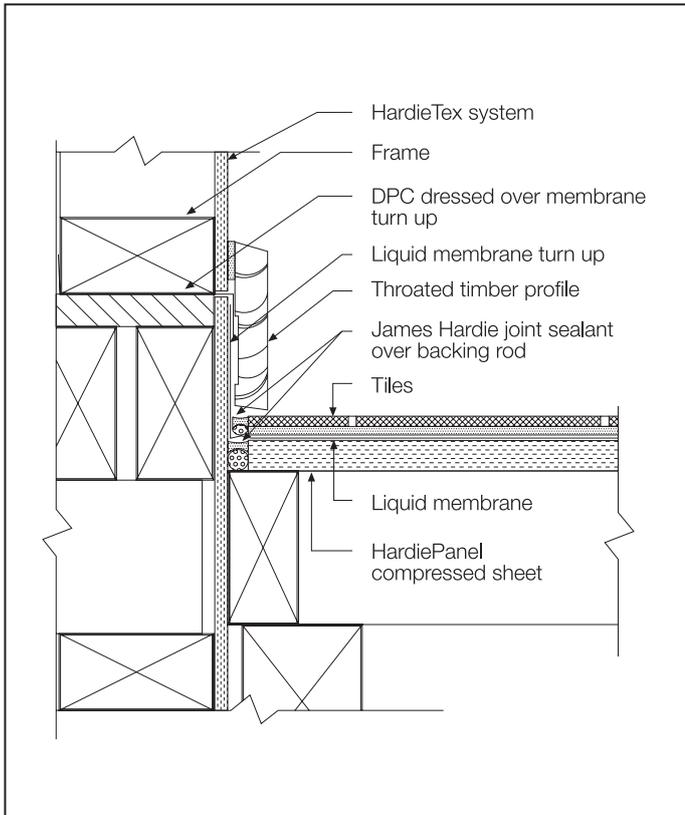


FIGURE 19 METHOD 2 - WALL DETAIL

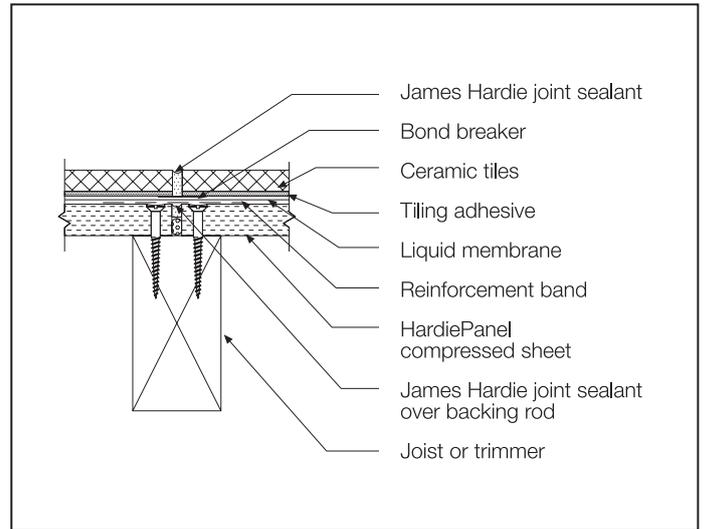


FIGURE 21 METHOD 2 - JOINT DETAIL

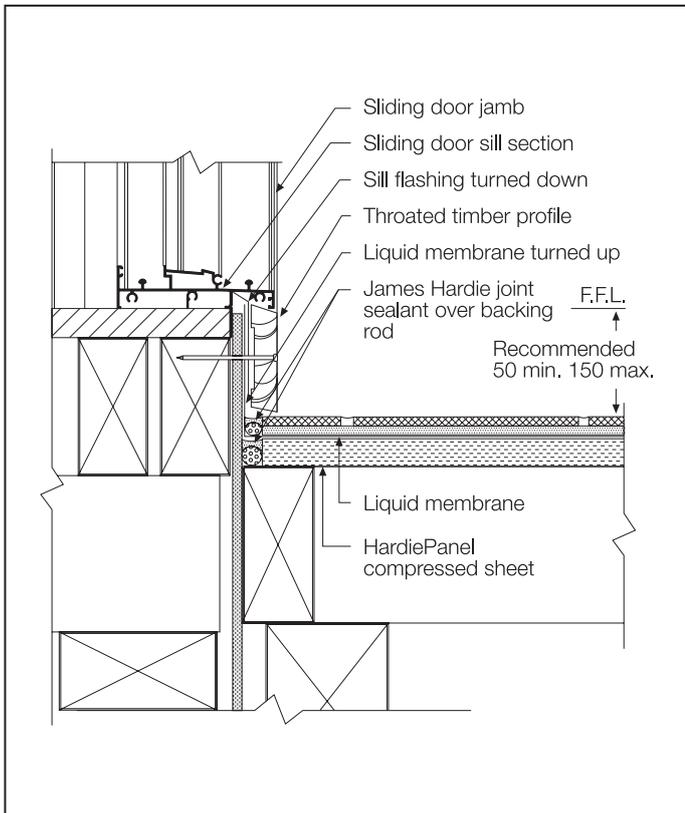


FIGURE 20 METHOD 2 - STEP DOWN AT DOORWAY DETAIL

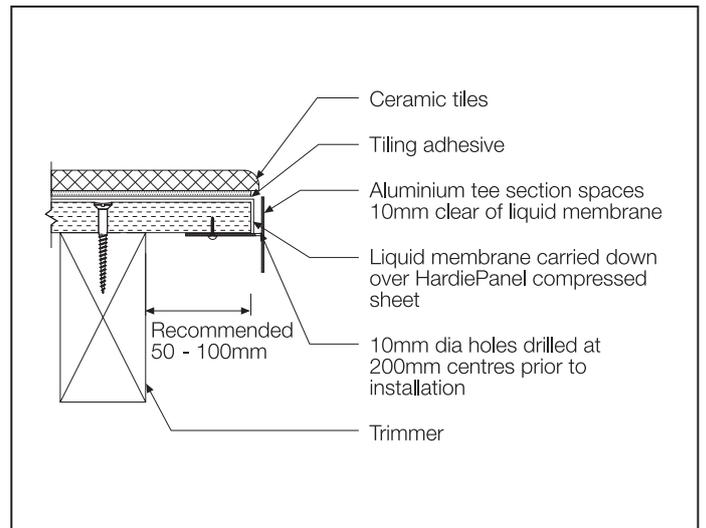


FIGURE 22 METHOD 2 - DECK EDGE DETAIL USING ALUMINIUM TEE SECTION

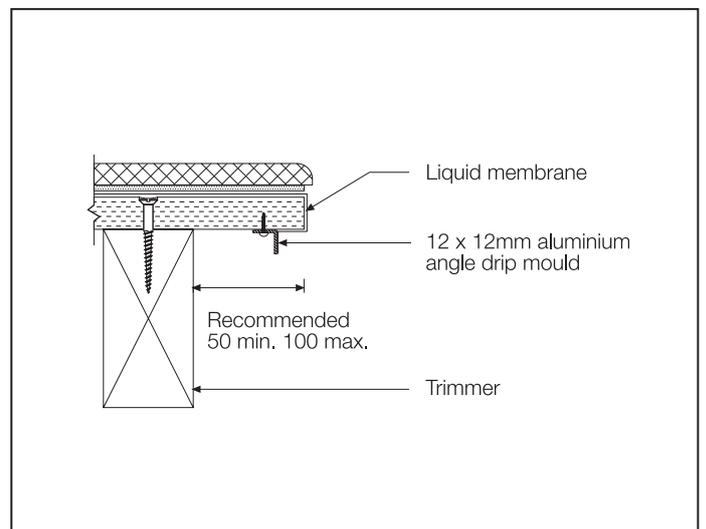


FIGURE 23 METHOD 2 - DECK EDGE DETAIL USING DRIP ANGLE

NOTES

11 WARRANTY

HardiePanel™ compressed sheets

10 Year Warranty

January 2012

James Hardie Australia Pty Limited ("James Hardie") warrants to the first purchaser of HardiePanel™ compressed sheets (**Product**) from James Hardie and the last purchaser of the Product prior to installation that, subject to compliance with the Conditions of Warranty below:

- for a period of 10 years from the date of purchase, the Product will be free from defects due to defective factory workmanship or materials; and
- for a period of 10 years from the date of purchase, the Product will be resistant to damage from cracking, moisture, rotting, fire and termites to the extent set out in James Hardie's relevant published literature current at the time of installation; and
- for a period of 12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

For the purposes of this warranty, a "defect" in respect of the Product means a non-compliance with AS/NZS 2908.2:2000 Cellulose-cement products - Flat sheet.

CONDITIONS OF WARRANTY

This warranty is strictly subject to the following conditions:

- (a) James Hardie will not be liable for breach of this warranty unless the claimant provides proof of purchase of the Product and makes a written claim to James Hardie at the address set out below, either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation.
- (b) the Product is subject to natural variation in finish as part of the manufacturing process. The builder/installer must ensure the Product meets aesthetic requirements before installation. Subject to the terms of this warranty, after installation of the Product, James Hardie is not liable for claims arising from aesthetic surface variations if such variations were, or would upon reasonable inspection have been, apparent prior to installation;
- (c) this warranty cannot be relied upon by any other person and is not transferable;
- (d) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. To obtain copies of such literature go to or contact Ask James Hardie™ on 13 11 03. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- (e) the project must be designed and constructed in strict compliance with all relevant provisions of the current Building Code of Australia, regulations and standards;
- (f) if the claimant chooses to rely upon this warranty then the claimant's sole remedy under this warranty for breach of this warranty is (at James Hardie's option) that James Hardie will either supply replacement Product, rectify the affected Product or pay for the cost of the replacement or rectification of the affected Product;
- (g) In the circumstances where the Australian Consumer Law does not apply in respect of the purchase of the Product, James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing, James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure,

acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);

- (h) In the circumstances where the Australian Consumer Law does not apply in respect of the purchase of the Product, all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- (i) If meeting a claim under this warranty involves re-coating of Product, there may be slight colour differences between the original and replacement Product due to the effects of weathering and variations in materials over time and James Hardie is not liable for any such colour differences;
- (j) In the circumstances where the Australian Consumer Law does not apply in respect of the purchase of the Product and therefore to this warranty, all expenses incurred as a result of claiming under this warranty are to be borne by the claimant.
- (k) In the circumstances where the Australian Consumer Law does apply in respect of the purchase of the Product and therefore to this warranty, if James Hardie accepts or it is determined by James Hardie that the claimant has a valid claim under this warranty, James Hardie will bear the claimant's reasonable costs of claiming under this warranty. The claimant is responsible for all other costs of claiming under this warranty. All claims for such costs are to be notified to James Hardie at the address outlined below within 21 days from when the claimant first makes a claim under this warranty.

DISCLAIMER

The recommendations in James Hardie's literature are based on good building practice but are not an exhaustive statement of all relevant information and are subject to conditions (d), (e), (g) and (h) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (e.g. quality of workmanship and design), James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code of Australia, regulations and standards.

IMPORTANT NOTE

If you acquire goods manufactured by James Hardie as a consumer according to the Australian Consumer Law, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Any rights a consumer may have under this warranty are in addition to other rights and remedies of a consumer under a law in relation to the goods to which this warranty relates. Nothing in this document shall exclude or modify any legal rights a customer may have under the Australian Consumer Law or otherwise which cannot be excluded or modified at law.

Contact details if you wish to make a claim under this warranty: For more information or to make a claim under this warranty please Ask James Hardie™ on 13 11 03, visit www.jameshardie.com.au or www.accel.com.au, email James Hardie via our website or write to James Hardie at:

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