



Eaves and Soffits

Technical specification

HardieFlex™ sheet
HardieGroove™ lining
Versilux® lining
Villaboard® lining



James Hardie
A smarter way to build

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1 INTRODUCTION

1.1 GENERAL

The range of sheets available for eaves and soffit lining, and the way these lining sheets can be jointed, gives designers and builders a wide choice of low maintenance combinations to suit virtually any requirement. Sheets are manufactured in various thicknesses. Tables are provided throughout this manual to help you select the most appropriate sheet thickness for a particular application.

1.2 HARDIEFLEX™ EAVES LINING AND SHEETS

HardieFlex eaves lining square edged sheets come in a thickness of 4.5mm and are factory trimmed to three widths, 450, 600 and 750mm, to suit the most common widths of eaves overhangs.

For other eaves overhang widths, 900 and 1200mm width square edged HardieFlex sheets, in 4.5 and 6mm thicknesses and a variety of lengths, can be trimmed to length on site.

HardieFlex eaves lining and sheets are jointed with a PVC mould. HardieFlex™ sheets in eave and soffit applications can also be jointed using the new black JH PVC Eave and Soffit Joiner 6mm or the white 4.5mm eaves and soffit joiner. It's a PVC extrusion used to join 6mm thick Versilux® or 4.5mm or 6mm HardieFlex™ sheets in eave and soffit applications, to give an expressed joint look. See section 5.2 for fixing instructions.

Hardieflex eaves lining and sheets are also suitable as panels in an exposed beam or rafter installation.

1.3 VERSILUX® LINING

With their smooth sanded finish, square edged Versilux lining, available in 4.5mm (QLD only) and 6mm thicknesses, gives a quality decorative finish to any eaves, soffit or exposed beam installation. Available in 900mm and 1200mm widths and in five stock lengths, Versilux lining can be trimmed to length and jointed with PVC straight joint moulding or butt jointed. Butt Vee joining is also possible in Queensland where bevel edged sheet is available. Versilux® sheets in eave and soffit applications can also be jointed using the new JH PVC Eave and Soffit Joiner 6mm. It's a black PVC extrusion used to join 6mm thick Versilux® or HardieFlex™ sheets in eave and soffit applications, to give an expressed joint look. See section 5.2 for fixing instructions.

1.4 VILLABOARD® LINING

For eaves and soffit lining, use 6mm or 9mm thick Villaboard lining. This product provides a similar surface to Versilux lining for a quality decorative finish, with the addition of a recessed long edge. This allows flush jointing and the omission of the PVC straight joint moulding.

1.5 HARDIEGROOVE™ LINING

HardieGroove lining is a v-grooved 7.5mm thick sheet which creates the traditional timber board look ideal for eaves and soffits.

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.

NOTES

1. Always ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying aesthetic surface variations following installation.
2. Failure to install, finish or maintain this product in accordance with applicable building codes, regulations, standards and James Hardie's written application instructions may lead to personal injury, affect system performance, violate local building codes, and void James Hardie's product warranty.

2 GENERAL REQUIREMENTS

2.1 FRAMING

2.1.1 General

Sheets can be fixed to either timber or lightgauge steel framing. They can also be used with proprietary suspended metal framing systems normally used in commercial applications.

Frames should be straight and true to provide a flush face to receive the sheeting. A maximum tolerance of between 3mm and 4mm in any 3000mm length of frame will give the best results. Lining sheets will not straighten excessively warped or distorted frames and this warping may still be visible after the decorative coating is applied.

2.1.2 Timber

Use only seasoned timber. Unseasoned timber is prone to shrinkage and must not be used. Minimum thickness of framing must be 38mm. If the JH PVC Eave and Soffit Joiner 6mm accessory is used the ceiling joint supporting and parallel to the accessory must be a minimum 45mm thick.

Do not fix sheets to the bottom chord of roof trusses. Instead, fix to battens or furring channels.

2.1.3 Steel

The base metal thickness of a steel frame must be between 0.55mm and 1.6mm.

Sheets must not be fixed directly to drawn steel or hot-rolled steel sections. These members should be battened out with 38mm minimum finished width timber battens or lightgauge metal furring channels of a similar minimum width. If the JH PVC Eave and Soffit Joiner 6mm accessory is used the ceiling joint supporting and parallel to the accessory must be a minimum 45mm thick.

2.2 FIXING

2.2.1 General

Select the fastener suitable for the required framing from the Components Section 8, depending on the type of framing (timber or metal).

TABLE 1

GUN NAILING RECOMMENDATIONS				
COIL NAILER		NAILS		
Manufacturer	Name	Manufacturer	Name	Size
Hitachi	VH650 coil nailer	Otter	Galv. coil nail	38mm x 2.5mm dia. 45mm x 2.2mm dia. 50mm x 2.2mm dia.
Paslode	Impulse compact nailer (B20544)	Paslode	Impulse DekFast® 50mm Value Pack (B20561V)	50mm x 2.87mm dia.
			Impulse DekFast® 50mm Handy Pack (B20557)	50mm x 2.87mm dia.
Stanley-Bostitch	N80C coil nailer	Stanley-Bostitch	AC45P250 gal coil nail	45mm x 2.5mm dia.
Senco	SCN-60 coil nailer (fitted with adjustable depth of drive)	Senco	BTN 45 ADB Weatherex gal and Sencoted	45mm x 2.5mm dia.

NOTES

- Fasteners with equivalent dimensions, (ie head size and shape, shank diameter and length to those above) are acceptable for use.
- All fasteners are to be galvanised or suitably coated for intended external application.
- Nailing guns must be fitted with flush drive attachments.
- Some nailing guns incorporate an adjustable head set to control nail depth (eg Duo-Fast coil nailer and Senco coil nailer.)
- When gun nailing, apply pressure to the face of the cladding by holding the cladding against the stud to reduce blow out at back of the sheet.

NOTE

Fasteners must not be overdriven as this can reduce the holding capacity of the sheet. If nailing depth cannot be controlled adequately when gun nailing, under-drive fasteners then tap flush with a hammer. Adhesives must not be used to attach sheets to the frame.

Class 3 external grade finish must be used for all external applications.

Self-embedding head screws must not be used in 4.5mm thick sheets.

The required fastener spacings for sheets are given in the Tables provided under each section. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.

2.2.2 Coastal areas

Fasteners must have the appropriate level of durability required for the intended project. This is of particular importance in coastal areas, areas subject to salt spray and other corrosive environments.

Fasteners must be fully compatible with all other material that they are in contact with to ensure the durability and integrity of the assembly.

Contact fastener manufacturers for more information.

2.2.3 Fastening to timber

Hand nailing

For fixing 4.5mm thick lining and 6mm thick lining, use 2.8 x 30mm fibre cement nails.

For fixing 9mm thick lining use 2.8 x 40mm fibre cement nails.

For more information about gun nailing, refer to Table 1.

3 EAVES LINING

2.2.4 Fastening to steel

- (i) For steel framing of thickness 0.55mm to 0.75mm BMT, the best fixing results are given with 30mm Buildex FibreTEKS
- (ii) For steel framing of thickness 0.80mm to 1.6mm, use 8g 32mm HardieDrive™ screws.

Fasteners should be driven as close as possible to the stud corners to avoid deflection of the stud flange.

2.2.5 Screw gun specification

Use variable speed screw guns with high torque, a maximum speed of 2500rpm, fitted with a depth control attachment.

2.3 CURVED LINING

Where a curved surface is required, 6mm Villaboard lining (or Versilux lining) can be bent along the length of the sheet to a preferred radius of 1800mm and, with care, a minimum radius of 1200mm.

9mm Villaboard lining may be curved to a preferred radius of 3000mm and, with care, to a minimum radius of 1800mm.

Villaboard lining and Versilux lining may be bent across the sheet width to the following minimum radii:-

- 6mm – 2400mm radius
- 9mm – 4000mm radius.

Framing is generally required at spacings as shown in Table 10 to maintain the smoothness of the curve.

For best results, form an open joint at the square ends of the sheets as shown in Figure 31. Joints along the recessed long edges can be taped and set in the standard manner, shown in Figure 25.

2.4 DURABILITY

All sheets should be dry before fixing to framing. This will improve jointing durability. Sheets should not be fixed into position before the roof covering is installed and made watertight.

When designing and planning, ensure no water can enter the eaves or ceiling or soffit cavity, either during or after construction.

Residual moisture or ponding on the back of eaves or soffit sheathing can cause damage to paint applied to the underside, including blistering, loss of adhesion, etc.

Metal framing should be protected against rusting.

3.1 GENERAL

Protection from the environment plays an important part in the thermal comfort and durability of houses, in both cool and hot climates. A simple method is to extend the roof well over the external walls of the typical house to form an eaves overhang or, if further extended, a verandah.

Since **control joints** may be necessary, see Clause 5.1.

3.2 BENEFITS

Incorporating eaves and overhangs provides a number of important benefits, into your structures such as:

- shading walls from excessive solar gain
- keeping direct sun off the window glazing
- allowing windows to be left open for comfort ventilation while still providing shelter from rain and
- protecting large areas of walling from rain, keeping wall surfaces relatively dry and free from staining and mould growth.

Unfortunately, the recent trend to reduce the width of traditional eaves and, in some instances to eliminate eaves altogether, usually to reduce costs, deprives the home owner of these benefits and increases running costs of comfort measures, such as air-conditioning. For further information see Sustainability and energy efficiency Design Manual.

3.3 TYPES OF EAVES

A number of techniques can be used to construct eaves on a dwelling:

- a) The traditional method of **boxed eaves** incorporates eaves/soffit bearers spanning between the fascia and the external wall of the building. The eaves lining sheets are fixed to, and supported by, the bearers and along the external wall and fascia. Sheet joints may occur on or off framing, however bearer spacing must be reduced for off frame jointing - See Clause 3.4.
- b) **Simple spanning eaves** are ideal for narrow eaves, because the lining sheets are supported by the fascia board groove and along the external wall, without the need for any intermediate support - See Clause 3.5.
- c) **Raked eaves** sheets are supported longitudinally by battens fixed to the underside of the roof truss top chords or roof rafters in the traditionally framed house - See Clause 3.6.

The use of prefinished metal fascia boarding with complementing metal eaves guttering is an increasingly common alternative to traditional grooved timber fascia boarding.

3.4 BOXED EAVES

3.4.1 Support and fixing

3.4.1.1 All sheet edges supported on framing

For 4.5mm thick HardieFlex eaves lining and sheets, Versilux lining, 6mm HardieFlex sheet and Versilux lining for eaves widths to 1200mm, Tables 2 and 3 provide the maximum bearer and fastener centres for non-cyclonic and cyclonic wind loading classifications, where all sheet edges are supported on framing.

For boxed eaves, the long edges of eaves lining sheets are continuously supported along the fascia and external wall. The short edges of sheets are jointed on and supported by the bearers, either by fitting into PVC straight joints - see Clause 5.2, or butt jointing - see Clause 5.3. Fasten sheets at edges and intermediate bearers at spacings shown in Tables 2 or 3.

3.4.1.2 Off frame jointing of sheet edges

Where the short sheet edges are jointed off frame, use a PVC straight joint.

Adjust the maximum bearer centres at each side of the joint to be the lesser of:

- 450mm for 4.5mm thick sheets, and
- 600mm for 6mm thick sheets, and
- the bearer spacings shown in Tables 2 and 3.

Fastener spacings remain as shown in Tables 2 and 3.

3.4.2 Construction details

Refer to Figure 1 and Figure 2 for details relevant to brick veneer construction. The arrangement of framing for boxed eaves in other common forms of residential construction ie framed and full brick (cavity brick), is similar to that for brick veneer construction, so is not included in this manual.

TABLE 2

BOXED EAVES: MAXIMUM BEARER AND FASTENER SPACING - 4.5mm SHEETS					
Sheet edges supported on framing 4.5mm HardieFlex eaves lining and sheets; Versilux lining*					
MAXIMUM EAVES WIDTH (MM)	AS 4055 WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
		Trimmer spacing (mm)	Fastener spacing (mm)	Trimmer spacing (mm)	Fastener spacing (mm)
To 600 maximum	N1	600	300	900	300
	N2	600	300	900	300
	N3/C1	450	250	600	300
	N4/C2	375	200	500	300
	N5/C3	300	175	450	225
	N6/C4	275	150	375	200
> 600 to 1200 maximum	N1	600	300	750	300
	N2	550	300	750	300
	N3/C1	450	250	600	300
	N4/C2	375	200	500	300
	N5/C3	300	175	400	250
	N6/C4	275	150	375	200

* Versilux lining 4.5mm QLD only

NOTES FOR TABLES 2 AND 3:

1. Fastener spacings based on using 2.0 x 30mm galvanised fibre cement nails or wafer head screws.
2. Self embedding head screws must not be used in 4.5mm thick sheets.
3. Self embedding head drill point or wafer head screws may be used in 6mm sheets.
4. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.

TABLE 3

BOXED EAVES: MAXIMUM BEARER AND FASTENER SPACING - 6mm SHEETS (INCLUDING 7.5mm HARDIEGROOVE LINING)					
Sheet edges supported on framing 6.0mm HardieFlex eaves lining and sheets; Versilux lining and 7.5mm HardieGroove lining.					
MAXIMUM EAVES WIDTH (MM)	AS 4055 WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
		Trimmer spacing (mm)	Fastener spacing (mm)	Trimmer spacing (mm)	Fastener spacing (mm)
To 600 maximum	N1	1050	300	1200	300
	N2	950	300	1200	300
	N3/C1	600	250	1200	300
	N4/C2	500	200	750	300
	N5/C3	450	150	600	225
	N6/C4	400	125	500	200
> 600 to 1200mm maximum	N1	850	300	1100	300
	N2	750	300	1100	300
	N3/C1	650	225	900	300
	N4/C2	550	175	750	250
	N5/C3	450	150	600	225
	N6/C4	400	125	550	175

3.5 SIMPLE SPANNING EAVES

3.5.1 Support and fixing

For eaves up to 600mm wide, 6mm HardieFlex sheet and Versilux lining can span between fascia and external wall, without the need for soffit bearers, for wind loading classifications to N4/C2/W50N/W50C.

The allowable clear sheet spans and fastener spacings for design wind load classifications for 6mm HardieFlex sheet and Versilux lining from the fascia to the external wall are shown in Table 4.

For simple spanning eaves, the long edges of eaves lining sheets must be continuously supported along the fascia and external wall, ie captive in fascia recess and/or fixed to continuous framing.

The short edges of sheets are jointed using PVC straight joints. See Clause 5.2.

3.5.2 Construction details

Refer to Figure 3 and Figure 4 for details relevant to brick veneer construction. The framing arrangement for simple spanning eaves in the other common forms of residential construction is similar to that of brick veneer construction, is not included.

The example shown indicates a metal fascia system. Where a grooved deep timber fascia board is used without trimmers, a longitudinal nailing strip may need to be added to support the eaves sheeting if the fascia board curls. Alternatively, secure the sheet to a timber mould fixed to the fascia.

TABLE 4

SIMPLE SPANNING EAVES - 6mm SHEET		
Maximum eaves width and fastener spacings 6mm HardieFlex sheet and Versilux lining		
WIND CLASSIFICATION	WITHIN 1200mm OF THE EXTERNAL BUILDING CORNERS	
To AS 4055 spacing (mm)	Max. batten spacing (mm)	Max. fastener
N1	600*	200
N2	450	200
N3/C1	400	200
N4/C2	350	200

NOTES

1. Fastener spacings based on using 2.0 x 30mm galvanised fibre cement nails.
2. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.
3. *600mm wide simple-spanning eaves in N1 wind classifications under Serviceability Limit State wind loads, may result in deflections up to 11mm (span/55). In addition the edges of the fibre cement sheet should have adequate bearing in the recess groove of the fascia.

3.6 RAKED EAVES

3.6.1 Support and fixing

For raked eaves, the long edges of eaves lining sheets must be continuously supported along the fascia or first batten and external wall. Where the fascia recess is used to support the external sheet edge, the maximum spacing to the first batten is 300mm and 100mm if not supported in the fascia recess. Subsequent maximum batten spacings are as per Tables 5 and 6 for 4.5mm thick and 6mm thick sheets respectively.

The short edges of sheets are jointed using PVC straight joints. See Clause 5.2.

3.6.2 Construction details

Refer to Figure 5 and Figure 6 for details relevant to brick veneer construction. The framing arrangement for raked eaves in other common forms of residential construction is similar to that of brick veneer construction so is not included.

Figure 5 shows the eaves lining fixed to battens on the underside of the overhanging rafters. Alternatively, the lining can be fixed to battens located on top of the rafters. In this instance, ensure the roof space is protected against bird entry.

TABLE 5

RAKED EAVES - 4.5mm SHEETS				
Maximum batten and fastener spacings 4.5mm HardieFlex eaves lining and 4.5mm HardieFlex sheet, Versilux lining*				
WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
To AS 4055	Max. batten spacing (mm)	Max. fastener spacing (mm)	Max. batten spacing (mm)	Max. fastener spacing (mm)
N1	450	300	450	300
N2	350	300	450	300
N3/C1	300	300	400	300
N4/C2	250	250	350	300
N5/C3	200	200	300	275
N6/C4	175	175	250	250

* Versilux lining 4.5mm QLD only

NOTES

1. Fastener spacings based on using 2.0 x 30mm galvanised fibre cement nails or wafer head screws.
2. Use Buildex FibreTEKS bugle head
3. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.

TABLE 6

RAKED EAVES - 6mm SHEETS (INCLUDING 7.5mm HARDIEGROOVE LINING)				
Maximum batten and fastener spacings 6mm HardieFlex sheet, Versilux lining and 7.5mm HardieGroove lining				
WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
To AS 4055	Max. batten spacing (mm)	Max. fastener spacing (mm)	Max. batten spacing (mm)	Max. fastener spacing (mm)
N1	500	300	600	300
N2	500	300	600	300
N3/C1	450	300	600	300
N4/C2	400	150	450	300
N5/C3	300	200	450	200
N6/C4	300	100	375	200

NOTES

1. Fastener spacings based on using 2.8 x 30mm galvanised fibre cement nails.
2. Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.

4 SOFFITS

4.1 GENERAL

This section covers soffits for both residential and commercial applications. See Clause 1.1 to select the most suitable lining material for your particular applications.

Residential: Includes verandahs, carports and larger covered areas associated with the sprawling style of residences popular today.

Commercial: Buildings of a commercial nature frequently incorporate elements such as awnings, balconies, covered ways and arcades that require soffit lining. These coverings might include three dimensional effects such as bulkheads, light wells, changes in level or curved surfaces, to add interest and flexibility.

4.2 LAYOUT

4.2.1 General installation

- Since control joints may be necessary, see Clause 5.1.
- Fix sheets from the centre, working towards the outside to prevent drumminess.
- Ensure that the sheet is held hard against the framing during nailing or screwing to minimise breakout from the back of the sheet.

4.2.2 HardieFlex eaves lining and sheets; Versilux lining

4.2.2.1 Using JH PVC straight jointers

Sheets may be installed across or parallel to the framing members. The sheet edges spanning across the framing are jointed using PVC straight joints and the sheet edges parallel to framing must coincide with, and be supported on, the centre line of framing to form a butt joint - see Figure 7 and Clause 5.2.

Where JH PVC straight jointers are required on all edges, fixing legs on the jointer should be trimmed at all junctures to ensure an acceptable aesthetic appearance.

4.2.2.2 Using butt joints

Where butt jointing is used, all sheet edges must coincide with, and be supported on, the framing (ie trimmers must be provided between joists at sheet joints). Locate butt joints on the centre line of framing so that edges are adequately supported. See Figure 8 and Clause 5.3.

4.2.2.3 Under metal roofing

Where Versilux lining is used under metal roofing, insulation should be installed directly under the roof sheeting to reduce temperature build-up in the false ceiling space.

(a) Typical

Where the sheeting is fixed to independent framing located an average of 600mm below the roof framing, sheets can be jointed using any of the non-set type joints, see Clauses 5.2 and 5.3.

(b) Directly under roof

Where sheeting is fixed to furring channels or timber battens fastened directly to the roof framing, sheet lengths must not exceed 2.4m. For control joints spacing see Clause 5.1.1 (b) (iii).

Ventilation slots or openings should be introduced to the lining along perimeter of the soffit to allow heated air to escape.

NOTE

Edge clearance to sheets must be increased to 20mm.

4.2.3 Villaboard lining

Install Villaboard lining sheets across the framing (ie the long edges of the sheet are at right angles to the framing members.)

Sheets must be laid in a staggered pattern so that adjacent butt joints are not located on the same framing member - see Figure 9.

Locate butt joints on the centre line of framing so that edges are adequately supported. Set flush joints in accordance with Clause 7.4.

Where large openings (eg light wells) occur in soffits, end joints must not coincide with the corners of these openings - see Figure 10.

Limitation:

- Because Villaboard lining requires the use of setting plaster for the joints, it is not recommended where soffits are directly under metal awnings or uninsulated metal roofing since the plaster set joints are likely to crack. In these cases, use Versilux lining for the lining system and refer to Clause 4.2.2.3.

4.2.4 Suspended system

4.2.4.1 General

Suspended framing systems are used to carry ceilings located close to, or some distance below, primary structural framing systems supporting a roof or suspended floor.

This kind of false ceiling provides an ideal space for installing essential building services such as air conditioning ductwork, sprinkler pipes and electrical wiring.

4.2.4.2 Description of system

The layout and framing requirements described in Clauses 4.2 Layout and 4.3 Support and fixing can be achieved by using proprietary systems, such as that supplied by Rondo Building Services Pty Ltd. The framing supplier will normally provide all necessary design information required to construct the suspended soffit system to resist wind loading, and any additional framing protection required for installations situated in coastal and heavy industrial areas.

These systems usually employ suspended cross rails to which furring channels are fixed. Figure 11 shows typical detailing of the frame at a control joint. See also Clause 5.1 Control joints.

NOTES

1. Where furring channels run in the same direction as the control joint, one channel must occur on each side of the joint.
2. Where furring channels run at right angles to the control joint, each channel must break at the control joint.

A special jointing clip which provides a slip joint is used as shown, in lieu of providing an additional cross-rail.

4.3 SUPPORT AND FIXING

Refer to Section 2 for general requirements then to Table 7 for 4.5mm HardieFlex eaves lining and sheets and Versilux lining, Table 8 for 6.0mm HardieFlex sheet, Villaboard lining and Versilux lining or Table 9 for 9mm Villaboard to find the sheet and thickness to be used for required maximum framing and fastener spacings.

Where framing is to be suspended, a proprietary metal framing system may provide a suitable alternative to timber framing. See also Clause 4.2.4 Suspended system.

TABLE 7

SOFFIT LINING - 4.5mm SHEETS				
Maximum framing and fastener spacings 4.5mm HardieFlex eaves lining and sheets and Versilux lining (See note 6)				
WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
To AS 4055-1992	Max. batten spacing (mm)	Max. fastener spacing (mm)	Max. batten spacing (mm)	Max. fastener spacing (mm)
N1	450	300	450	300
N2	350	300	450	300
N3/C1	300	300	400	300
N4/C2	250	250	350	300

TABLE 8

SOFFIT LINING - 6.0mm SHEETS (INCLUDING 7.5mm HARDIEGROOVE LINING)				
Maximum framing and fastener spacings 6mm HardieFlex sheets, Villaboard lining, Versilux lining and 7.5mm HardieGroove lining				
WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
To AS 4055-1992	Max. batten spacing (mm)	Max. fastener spacing (mm)	Max. batten spacing (mm)	Max. fastener spacing (mm)
N1	500	300	600	300
N2	500	300	600	300
N3/C1	450	300	600	300
N4/C2	400	150	450	300
N5/C3	300	200	450	200
N6/C4	300	100	375	200

TABLE 9

SOFFIT LINING - 9.0mm SHEETS				
Maximum framing and fastener spacings 9.0mm Villaboard lining/Versilux lining				
WIND CLASSIFICATION	WITHIN 1200MM OF THE EXTERNAL BUILDING CORNERS		ELSEWHERE IN BUILDING	
To AS 4055-1992	Max. batten spacing (mm)	Max. fastener spacing (mm)	Max. batten spacing (mm)	Max. fastener spacing (mm)
N1	600	300	600	300
N2	600	300	600	300
N3/C1	600	250	600	300
N4/C2	450	200	600	250
N5/C3	450	150	600	200
N6/C4	400	125	450	200

NOTES FOR TABLES 7, 8 AND 9:

- Fastener spacings for 4.5mm and 6mm based on using 2.8 x 30mm galvanised fibre cement nails or wafer head screws.
- Fastener spacings for 9mm based on using 2.8mm x 40mm galvanised fibre cement nails.
- Self-embedding head screws must not be used in 4.5mm thick sheets.
- Self-embedding head drill point or wafer head screws may be used in 6mm or 9mm sheets.
- Locate fasteners not less than 12mm from sheet edges and 50mm from sheet corners.
- Versilux lining 4.5mm QLD only.

5 JOINTS

5.1 CONTROL JOINTS

5.1.1 General

A control joint must be used where a joint or gap is necessary to absorb movement and thus prevent cracking of the sheeting.

It is important to carefully plan the sheet set out and framing arrangement in conjunction with the required control joints to arrive at an acceptable functional and aesthetic solution.

Control joints would typically be used in the following situations:

a) Eaves:

- (i) For long narrow eaves with butt jointed sheeting located at approximately 10m spacings.
- (ii) For eaves located opposite vertical movement joints in HardieTex base sheet clad construction.
- (iii) Villaboard - refer (iii) soffits.

b) Soffits:

- (i) Non-set soffits. A 0.5mm gap between sheets is recommended.
- (ii) Set soffits. For set soffits, a 2mm to 6mm control joint located at 4.2m maximum spacing is recommended.

Where control jointing in a Villaboard lining installation is not acceptable at 4.2m spacings, a bay configuration as shown in Figure 12 can be considered, with provision for movement at the bay perimeter.

Framing members to which the Villaboard lining is fixed must not continue across this control joint at the bay perimeter.

- (iii) Soffits directly under roofing (Less than 600mm). For soffits directly under roofing, Versilux sheets is recommended.

Where Villaboard lining is used:

For insulated roofs (min R2.0 insulation) the maximum spacing for a control joint is 3.6m. For uninsulated roofs the maximum spacing for a control joint is 2.4m as shown in Figure 13.

- (iv) Existing structures. Where a new installation intersects with an existing structure or where a control joint is required by the design of the structure.

5.1.2 Non-set joints

a) Typical

For this typical joint, a framing member is required each side to support the sheet edges - see Figure 14.

In bushfire prone areas, a pressed metal expansion strip should be included behind the sheets to prevent sparks and ignited material from entering the space below the roofing.

b) On top hats

For this joint, two abutting top hats fixed to roof purlins are required, one supporting each side of the sheet edges, but with only one edge fixed, with the other top hat taking the fixing of the previously noted unfixed sheet. See Figure 15. The maximum cantilever distance from fixing to sheet edge is 100mm.

c) With socket

For this joint, a 50mm wide strip of HardieFlex sheet or Versilux lining is bonded to the top of one soffit lining sheet with James Hardie joint sealant. The socket must be free to move over the face of the opposite sheet. See Figure 16. The socket should be stopped 5mm short of the face of the interrupting top hats.

5.1.3 Set joints

For this joint a framing member is required each side to support the sheet edges - See Figure 17.

This joint uses a proprietary system, Rondo P35 control joint bead, manufactured by Rondo Building Services Pty Ltd. Where a recessed edge of a Villaboard lining forms the joint, the perforated leg of the accessory shown in Figure 17 is positioned in the recess instead of on the face of the non-recessed edge.

See Figure 18 for typical location and spacing of control joints in a bulkhead installation.

5.2 PVC STRAIGHT JOINT

5.2.1 General

The JH PVC straight jointer mould and the new JH PVC Eave and Soffit Joiner 6mm and 4.5mm are suitable for jointing HardieFlex eaves lining and sheets and Versilux lining (Except 4.5mm Joiner). The moulding is installed progressively with the sheets. It can be used on, or transverse to, the framing members.

5.2.2 On-frame jointing

Fit the JH PVC straight jointer and the 4.5mm JH Eaves and Soffit Joiner over the edge of the just-installed sheet and fasten the jointer to the framing at 200mm max. spacings. See Figure 19 for timber and figure 20 and 20C for steel

The JH PVC Eave and Soffit Joiner 6mm is inserted under the just-installed sheet and the jointer is fastened to the framing at 200mm max. spacings. See Figure 19b for timber and figure 20B for steel frames

5.2.3 Transverse to the frame jointing

JH PVC straight jointers or the JH PVC Eave and Soffit Joiner 6mm and 4.5mm are installed progressively with the sheets. See Figure 21.

5.3 BUTT JOINT

5.3.1 General

Use butt jointing where an exposed joint appearance is acceptable. Butt the sheets together over the framing member leaving a 0.5mm gap [see Clause 5.1.1(b)] and fix sheets at spacings given in applicable table. See Figure 22.

5.3.2 Vee joint

The use of a bevel edged sheet will exaggerate the simple butt joint, giving a butt vee joint. See Figure 23.

5.3.3 Expressed jointing

Where you want the soffit to have directional emphasis, joints can be either:

1. Using the JH PVC Eave and Soffit Joiner 6mm, see section 5.2 and figure 7.
2. Leaving a gap between square cut sheet edges. Sheets to be supported by framing. The gap is backed with durable corrosion resistant metal flashing to cover frame beneath joint, see figure 24.

5.4 FLUSH JOINTING

5.4.1 General

Flush jointing is used with Villaboard lining to set both the long side recessed edges and short side square edges of the sheet.

Flush jointing of Villaboard lining, with its recessed edges on the two long sides, requires the use of perforated paper reinforcing tape, embedded in James Hardie base coat. Self adhesive fibreglass tapes or woven linen tapes should not be used.

In situations where there is a risk of water or moisture (condensation) impinging on sheet surfaces, ie in typical soffit applications James Hardie base and top coat jointing system is recommended.

5.4.2 Sanding

Ensure that when the finishing coat is dry, joints and fasteners are sanded over with a 120 grit sand paper fitted to a flat sanding tool. Sand in the same direction as joints and avoid heavy pressure which may scuff the set surfaces. Clean sanded areas thoroughly with a damp cloth to remove all loose dust.

5.4.3 Recessed sheet edge

See Figure 25 for completed joint.

A. First coat

1. Apply James Hardie™ Base Coat using a 150mm wide broad knife.
2. Evenly fill the joint recess formed by adjacent sheet edges to the face of the sheets.
3. Firmly embed the perforated paper tape centrally into the joint using the broad knife. Ensure that there are no voids under the tape and remove excess compound.
4. Immediately cover tape with a thin layer of James Hardie Base Coat applied with the broad knife.
5. Cover all fastener heads with bedding compound. Allow to dry before applying a second coat.

B. Second Coat

6. When the first coat is dry, use a 200mm wide 'second coat trowel' to apply the second coat.
7. Apply this coat approximately 180mm wide, laid down over the recess and feather the edges. Allow to dry.
8. Apply a second coat over fastener heads, overlapping the first by 25mm. Allow to dry before applying finishing coat.

C. Finishing Coat

9. Using a straight trowel, apply a coat of James Hardie Top Coat 280mm wide centrally over the joint and feather out the edges.
10. Apply a finishing coat to fastener heads, feathering out the edges. Allow to dry before sanding, usually 24 hours.

5.4.4 Square sheet edge

See Figure 26 for completed joint.

Butt joints formed by placing together the square sheet edges should be taped and set as previously described for flush joints. However, to provide a flatter, less obvious finish, due to the jointing material layers, each coat is widened, to finish with a joint approximately 500mm wide.

5.4.5 Bulkhead internal corners

1. Apply James Hardie Base Coat to both sides of the corner using a 70mm broad knife.
2. Fold paper tape to form an angle and embed into the corner using a 100mm corner tool, cover with a skim coat.
3. Allow tape coat to dry, then apply a thin finishing coat by laying additional compound over the angle and smoothing with the corner tool.

5.4.6 Bulkhead external corners

1. Fit a James Hardie external corner or PVC cellular corner mould over the corner angle and ensure it is straight before fixing with clouts at 300mm centres or pop rivets to steel framing.
2. Apply bedding compound to both sides of the corner angle to a width of 150mm using a broad knife. Allow to dry before applying a second coat.
3. Using a straight trowel, build up the edges to 250mm from the corner. Allow to dry.
4. When dry, use the straight trowel to apply a thin finishing coat, 300mm wide, to both sides of the corner angle, feathering out the edges. See Figure 27 for completed joint.

6 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 one of the following methods based on the required cutting rate:

Best

- Score and snap
- Hand guillotine
- Fibreshear

Good

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and HEPA vacuum extraction.

CUTTING INDOORS

- Cut only using score and snap, 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 or P2 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" - level cutting methods where feasible.
2. NEVER use a power saw indoors.
3. NEVER use a circular saw blade that does not carry the HardieBlade® logo.
4. NEVER dry sweep - Use wet suppression or HEPA vacuum.
5. NEVER use grinders.
6. 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.

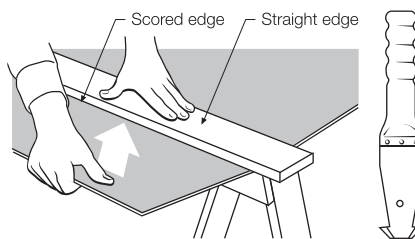
WORKING INSTRUCTIONS

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

Score and snap

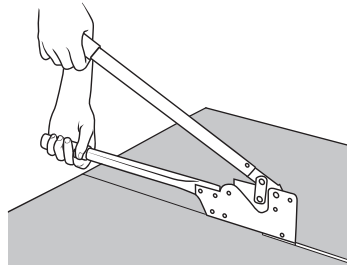
Score and snap is a fast and efficient method of cutting James Hardie building products using James Hardie's special tungsten tipped score and snap knife.

Preferably score on the face side of the product. Score against a straight edge and repeat the action to obtain adequate depth for clean break – normally one third of sheet thickness. Snap upwards to achieve break. Smooth any rough edges with a rasp.



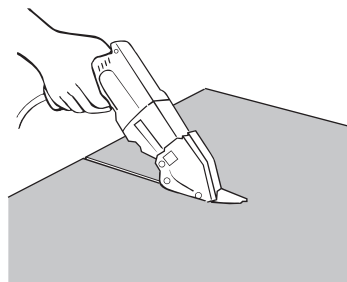
Hand guillotine

Make guillotine cut on the off-cut side of line to allow for the thickness of the blade.



Fibreshear

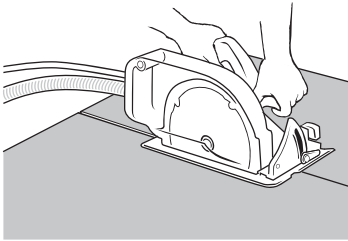
An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make fibreshear cut on the 'off-cut' side of the line to allow for the thickness of the shear.



7 PRODUCT INFORMATION

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.



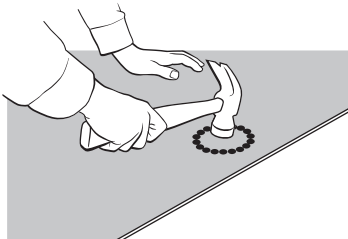
HOLE-FORMING

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.

7.1 GENERAL

HardieFlex eaves lining, HardieFlex sheet, Villaboard lining and Versilux lining and HardieGroove lining (eaves and soffits) are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water.

Eaves and soffits are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets').

Eaves and soffits are classified Type A, Category 2 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.

7.2 DURABILITY

7.2.1 Resistance to moisture/rotting

Eaves and soffits have demonstrated resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS 2908.2:

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

7.2.2 Resistance to fire

The Eaves and soffits is suitable where non-combustible materials are required in accordance with C1.12 of the Building Code of Australia.

James Hardie building products have been tested by CSIRO in accordance with AS/NZS 3837 and are classified as conforming to Group 1 material (highest and best result possible), with an average specific extinction area far lower than the permissible 250m²/kg, as referenced in Specification C1.10a of the BCA.

7.2.3 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.

7.3 ALPINE REGIONS

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

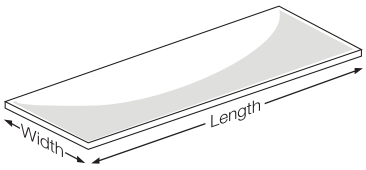
Furthermore, a reputable paint manufacturer must be consulted in regards to a suitable product, specifications and warranty. The paint application must not be carried out if the air temperature or the substrate temperature is outside the paint manufacturer's recommendation including the specified drying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

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

8 COMPONENTS

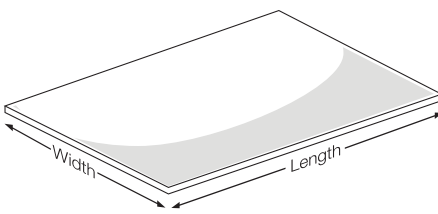
The checklist on the following four pages describes the components required to install the Eaves lining and soffit systems outlined in this manual, and includes acceptable options.

HARDIEFLEX EAVES LINING

	Surface: flat, smooth surface, square sheet edge		
	Mass: (for 4.5mm thick) 6kg/m²		
	Length (mm):	Width (mm):	Thickness (mm):
	2400 2400	450/600/750+ 600	4.5 6.0

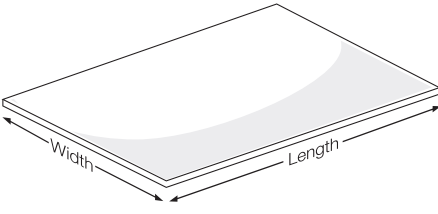
+Available in SA via interstate delivery. Lead time 5 days.

HARDIEFLEX SHEET

	Surface: flat, smooth surface, square sheet edge (bevel edge available in Queensland only)		
	Mass: (for 4.5mm thick) 6kg/m² (for 6.0mm thick) 8.1kg/m²		
	Length (mm):	Width (mm):	Thickness (mm):
	1800	900 1200	4.5 4.5/6.0
	2100	1200	4.5
	2400	900 1200	4.5/6.0 4.5/6.0
	2700	900 1200	4.5 4.5/6.0
3000	900 1200	4.5/6.0 4.5/6.0	

Selling unit: square metre (m²)
Mass includes timber packing

VERSILUX LINING

	Surface: smooth surface, square sheet edge (bevel edge available in Queensland only)		
	Mass: (for 4.5mm thick) 6.2kg/m² (for 6.0mm thick) 8.3kg/m²		
	Length (mm):	Width (mm):	Thickness (mm):
	2400	900† 1200	4.5* 4.5*/6.0
	2700	1200	6.0/9.0**
	3000	900 1200	6.0*† 4.5*/6.0
	3600	1200	4.5*/6.0

Selling unit: square metre (m²)

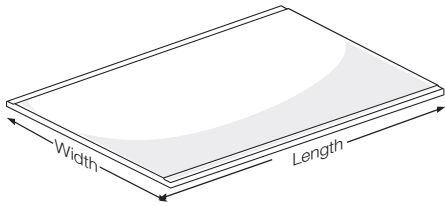
* Available in QLD only

** Available in QLD and WA only

† Not available in WA

Mass includes timber packing

VILLABOARD LINING



Surface: flat, smooth sanded recessed edge sheet

NOTE:

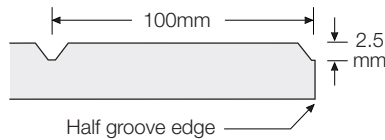
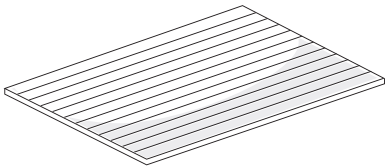
6mm sheet preferred for soffits and eaves; 9mm thick sheet not normally required; 12mm thickness unsuitable for soffit applications unless used with surface mounted fixings with washers.

Mass: (for 6mm thick) **8.3kg/m²** (for 9mm thick) **12.4kg/m²** (for 12mm thick) **16.6kg/m²**

Length (mm):	Width (mm):	Thickness (mm):
1800	1200	6.0
2400	900	6.0
	1200	6.0/9.0
	1350	6.0
2700	1200	6.0/9.0
3000	900	6.0
	1200	6.0/9.0/12.0
	1350	6.0
3600	1200	6.0/9.0
	1350	6.0
4200	1200	6.0
	1350	6.0

Selling unit: square metre (m²)
Mass includes timber packing

HARDIEGROOVE LINING

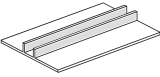
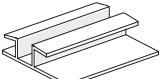
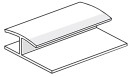
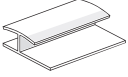
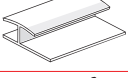








HardieGroove lining is a v-grooved internal lining board with the look of timber and with the durability of fibre cement.

Individual batten widths are 100mm

Sheet size: 2700mm x 1200mm x 7.5mm

HARDIEFLEX EAVES LINING, HARDIEFLEX SHEETS, VILLABOARD AND VERSILUX LINING COMPONENTS

	<p>James Hardie™ PVC Eave and Soffit Jointer for use with 6mm thick sheets. 3,000mm long A black PVC extrusion used to join 6mm thick Versilux® or HardieFlex™ sheets in eave and soffit applications, to give an expressed joint look. Not suitable for external wall cladding applications.</p> <p>NOTE: Must be glued to sheet continuously along unsupported edges with Selley's liquid nails-High strength or Fuller Max Bond adhesive.</p>	<p>Selling units: 25 per pack Part No: 305432</p>
	<p>James Hardie™ PVC Eave and Soffit Jointer for use with 4.5mm thick sheets. 3,000mm long A white PVC Extrusion used to join 4.5mm thick Versilux or HardieFlex sheets in eave and soffit applications, to give an expressed joint look. Not suitable for external wall cladding.</p>	<p>Selling units: 25 per pack Part No: 305506</p>
	<p>James Hardie™ PVC Straight Jointer for 4.5mm thick sheets, 2,400mm long A 2,400mm long PVC extrusion used to join 4.5mm thick sheets.</p>	<p>Selling unit: 25 per pack Part No: 305538</p>
	<p>James Hardie™ PVC Straight Jointer for 4.5mm thick sheets, 3,000mm long A 3,000mm long PVC Extrusion used to join 4.5mm thick sheets.</p>	<p>Selling unit: 25 per pack Part No: 305541</p>
	<p>James Hardie™ PVC Straight Jointer for 6mm thick sheets, 3,000mm long A PVC extrusion used to join 6mm thick sheets.</p>	<p>Selling unit: 25 per pack Part No: 305546</p>
	<p>James Hardie™ PVC Cap Mould for 4.5mm thick sheets, 3,000mm long A PVC extrusion used to finish 4.5mm thick sheet edges.</p>	<p>Selling unit: 25 per pack Part No: 305542</p>
	<p>James Hardie™ PVC Cap Mould for 6mm thick sheets, 3,000mm long A PVC extrusion used to finish 6mm thick sheet edges.</p>	<p>Selling unit: 25 per pack Part No: 305543</p>
	<p>James Hardie™ Base Coat 4kg tub A water-resistant base coat compound used in conjunction with James Hardie™ Top Coat to create a seamless flush joint for Villaboard® lining.</p>	<p>Selling unit: 4 per pack Part No: 305535</p>
	<p>James Hardie™ Base Coat 15kg tub A water-resistant base coat compound used in conjunction with James Hardie™ Top Coat to create a seamless flush joint for Villaboard® lining.</p>	<p>Selling unit: 1 each Part No: 304491</p>
	<p>James Hardie™ Top Coat 15kg tub A water-resistant top coat compound used in conjunction with James Hardie™ Base Coat to create a seamless flush joint for Villaboard® lining.</p>	<p>Selling unit: 1 each Part No: 304493</p>
	<p>James Hardie™ Top Coat 3kg tub A water-resistant top coat compound used in conjunction with James Hardie™ Base Coat to create a seamless flush joint for Villaboard® lining.</p>	<p>Selling unit: 4 per box Part No: 305536</p>
<p>HardieDrive™ Screw 32mm long A class 3 finish 8 gauge self-tapping wing-tipped screw for fastening to 0.8mm to 1.6mm BMT steel frames. NOTE: In coastal and other areas subject to salt, spray, contact your fastener manufacturer for fasteners with suitable corrosion resistance.</p>		<p>For detailed information, see sections 2.1 Framing and 2.2 Fixing</p>
<p>COMPONENTS NOT SUPPLIED BY JAMES HARDIE</p>		
<p>Fibre cement nails Galvanised nails for timber</p>		<p>2.8mm x 30mm for 4.5mm and 6.0 thick lining</p>
<p>Buildex FibreTEKS® 30mm for light gauge steel frames 0.55mm to 0.75mm BMT ® denotes a registered mark of Buildex</p>		
<p>Perforated paper tape For flush jointing recessed edge and finishing internal corners</p>		
<p>Rondo P35 control joint bead</p>		<p>For bedding onto Villaboard lining where a control joint is required.</p>
<p>PVC self adhesive tape - 18mm black</p>		<p>For backing open joints</p>
<p>Pressed metal expansion strip (with suitable corrosion resistance)</p>		<p>For expressed joints in bushfire prone areas</p>

9 DETAILS

9.1 GENERAL

This section contains general details relating to the use of James Hardie products in eaves and soffit applications. These details are referenced throughout this general specification.

9.2 EXTERNAL CORNERS

External corners may occur at bulkheads, light wells, etc.

A James Hardie stainless steel external corner angle should be fixed over the sheet edges, nailed or screwed at 250mm centres on each side. Proceed to set the angle following steps 2, 3 and 4 of Clause 5.4.6 and complete sanding the plaster as per Clause 5.4.2, alternatively use James Hardie Hardiestop™ system - see Figure 27.

9.3 INTERNAL ANGLES

See Clause 5.4.5.

9.4 COLUMNS AND WALLS ABUTMENTS

9.4.1 General

Soffit sheeting must be free to move independently to other building elements it abuts. This is critical with any soffit lining, particularly for flush jointed sheeting, otherwise cracking may occur.

9.4.2 Column abutment

See Figure 28 for typical detailing to allow freedom of movement at abutment of soffit sheeting and an Artista™ column.

9.4.3 Wall abutment

See Figure 29 for typically detailing at a wall face to allow freedom of movement.

9.5 CEILING CORNICE

Where required with an external soffit, a conventional set plaster cornice may be used with Villaboard lining, provided the cornice is well protected from moisture. See Figure 30.

NOTE

Plaster cornice is to be attached to the ceiling only, using cornice setting compound.

TABLE 10

CURVED LINING	
BATTEN SPACING (mm)	RANGE OF RADII (mm)
150	1200
200	Above 1200 to 1800
300	Above 1800 to 3000
400	Above 3000 to 20000
450*	
600*	Above 20000

* NOTE: Or at one third of the sheet width, whichever is the lesser.

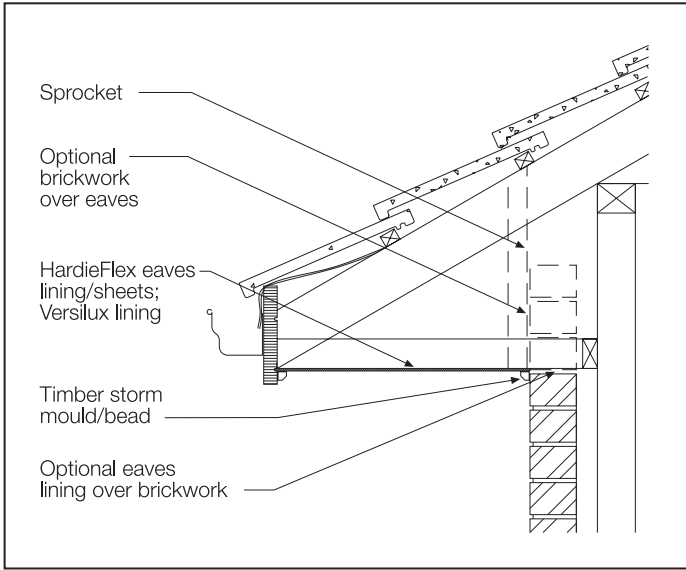


FIGURE 1 BOXED EAVES - BRICK VENEER WALL

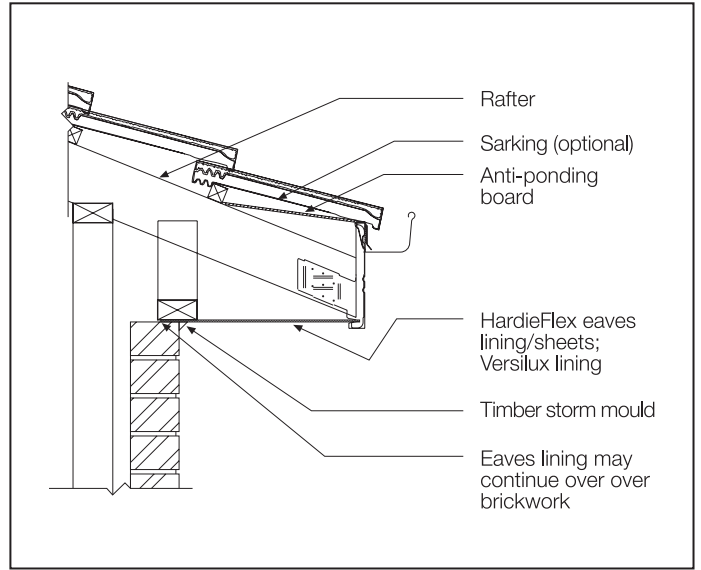


FIGURE 3 SIMPLE SPANNING EAVES - BRICK VENEER WALL

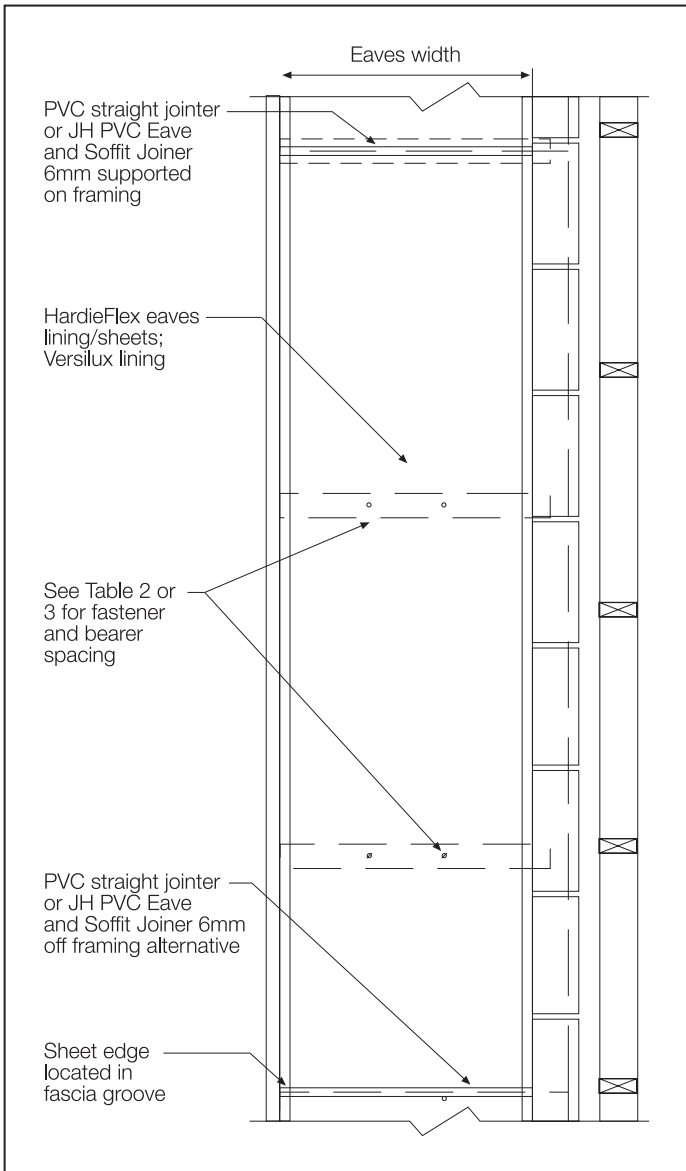


FIGURE 2 BOXED EAVES - PLAN

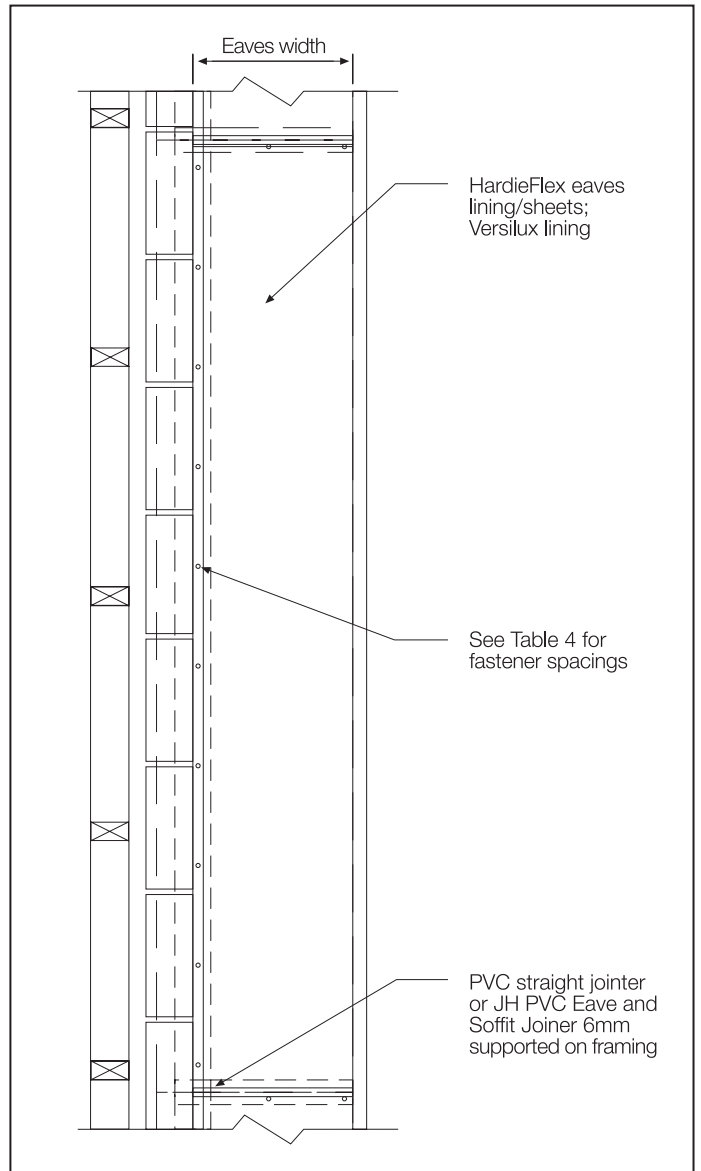


FIGURE 4 SIMPLE SPANNING EAVES - PLAN

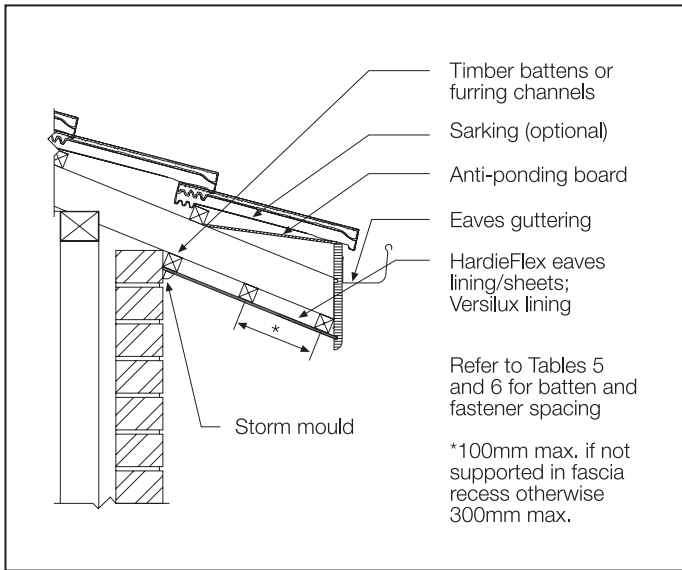


FIGURE 5 RAKED EAVES - BRICK VENEER WALL

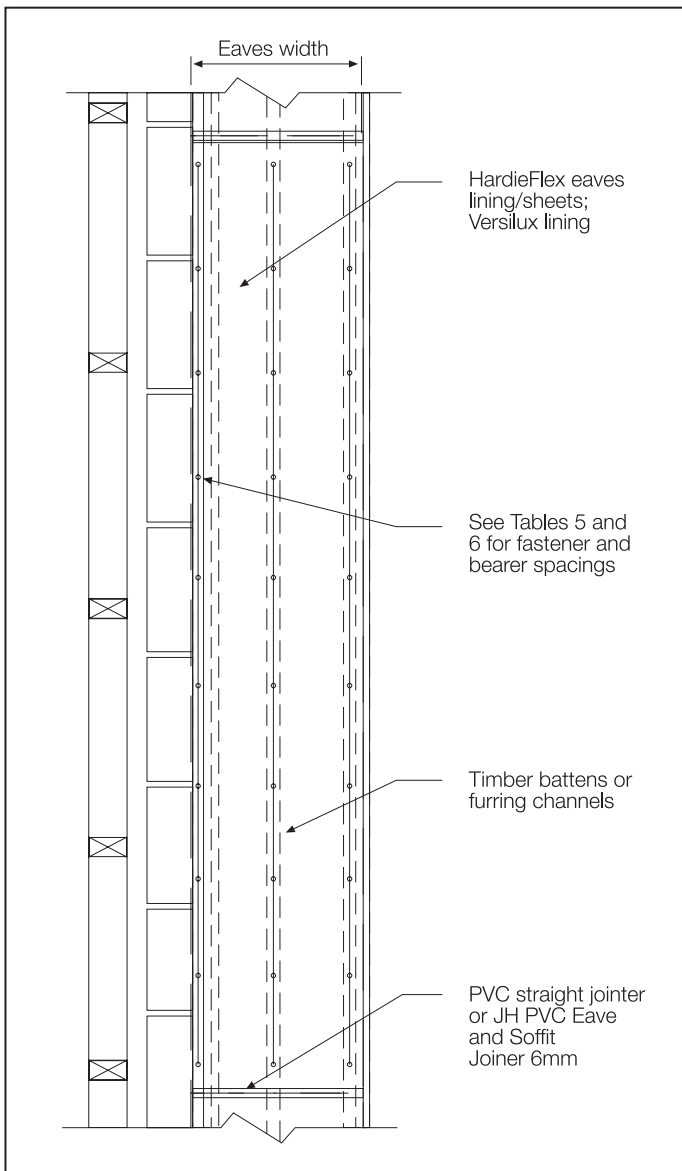


FIGURE 6 RAKED EAVES - PLAN

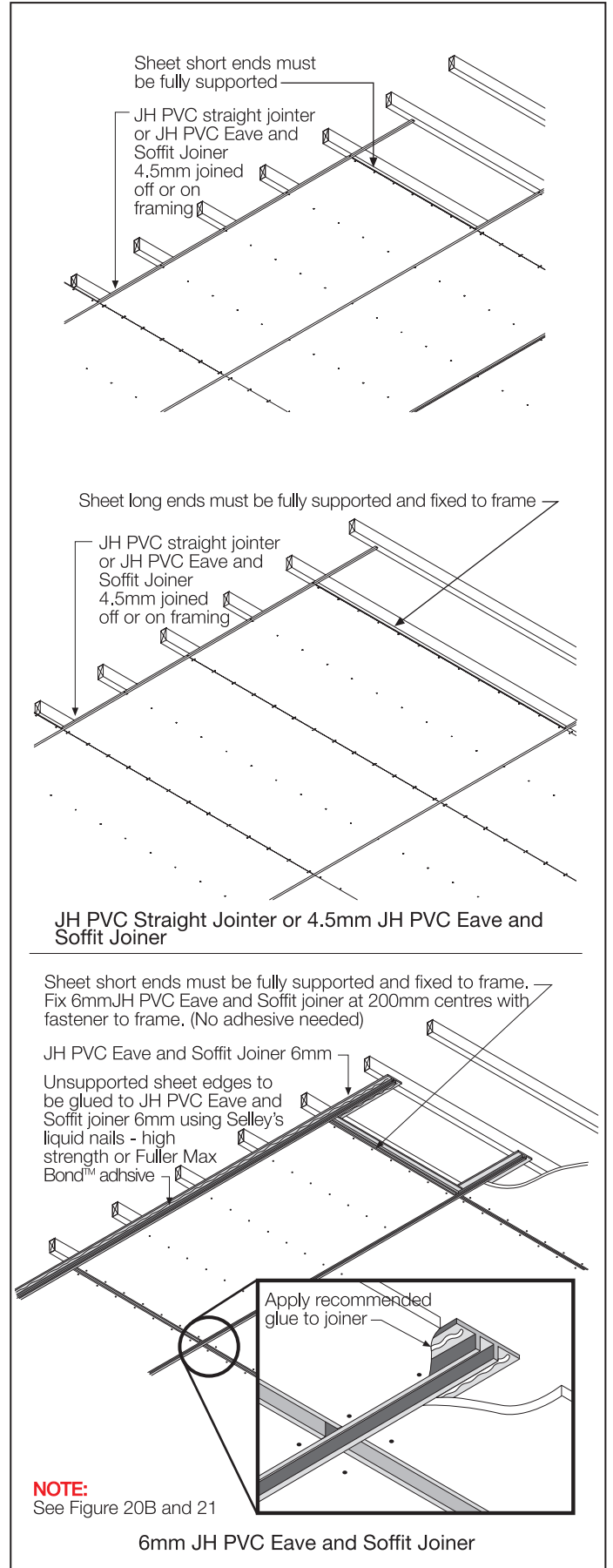


FIGURE 7 SHEET LAYOUT WITH PVC STRAIGHT JOINTS

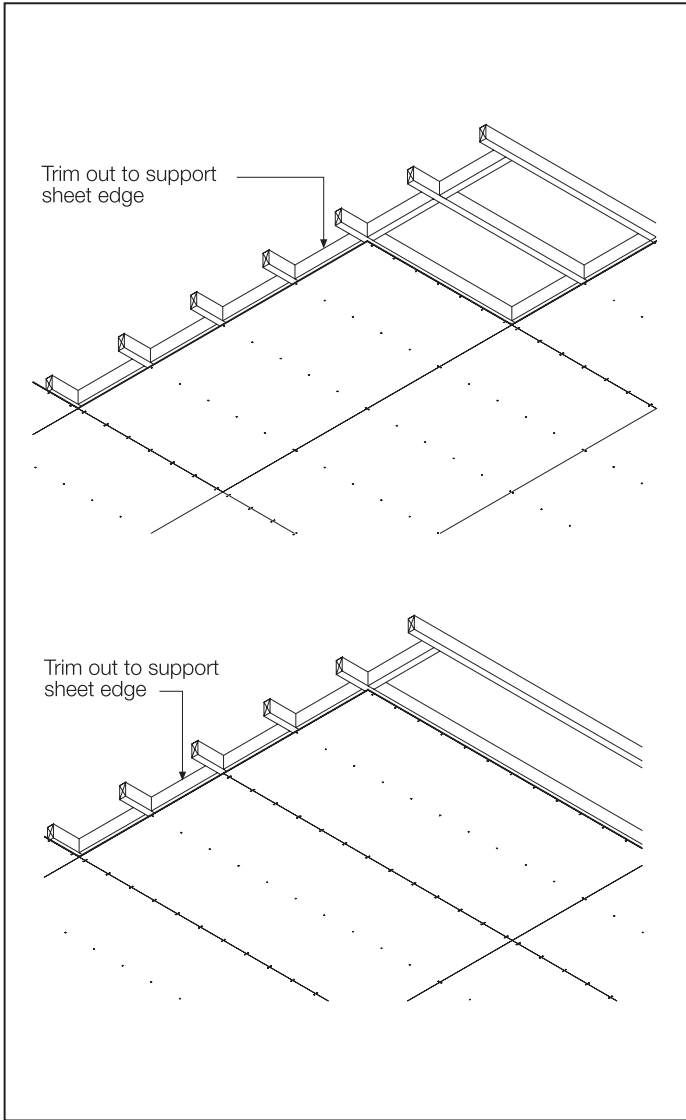


FIGURE 8 SHEET LAYOUT FOR BUTT JOINTS

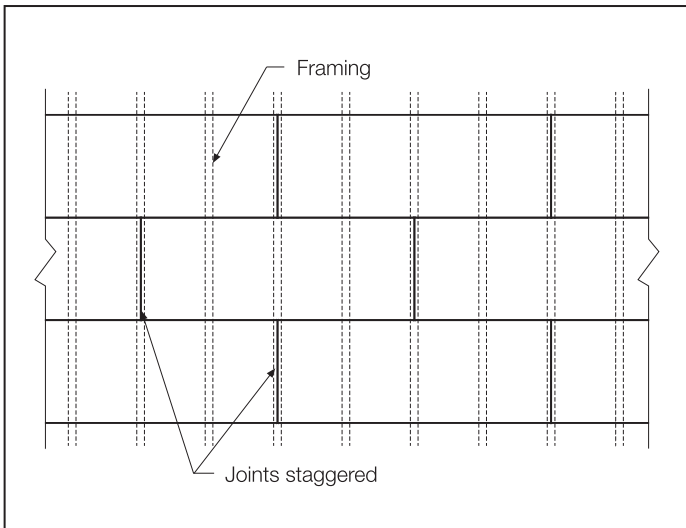


FIGURE 9 SHEET LAYOUT

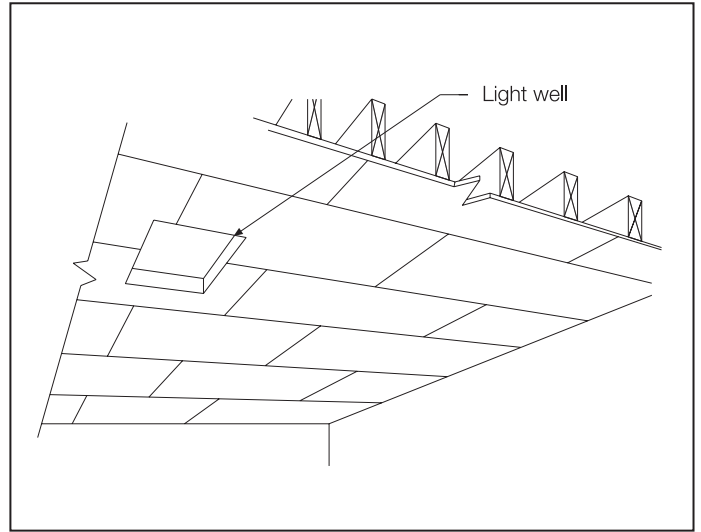


FIGURE 10 ARRANGEMENT AT LARGE OPENING

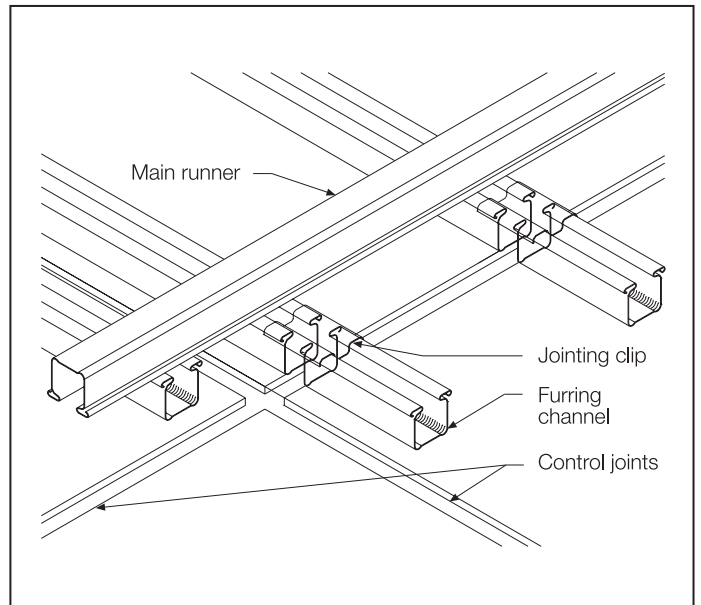


FIGURE 11 PROPRIETARY SUSPENSION SYSTEM

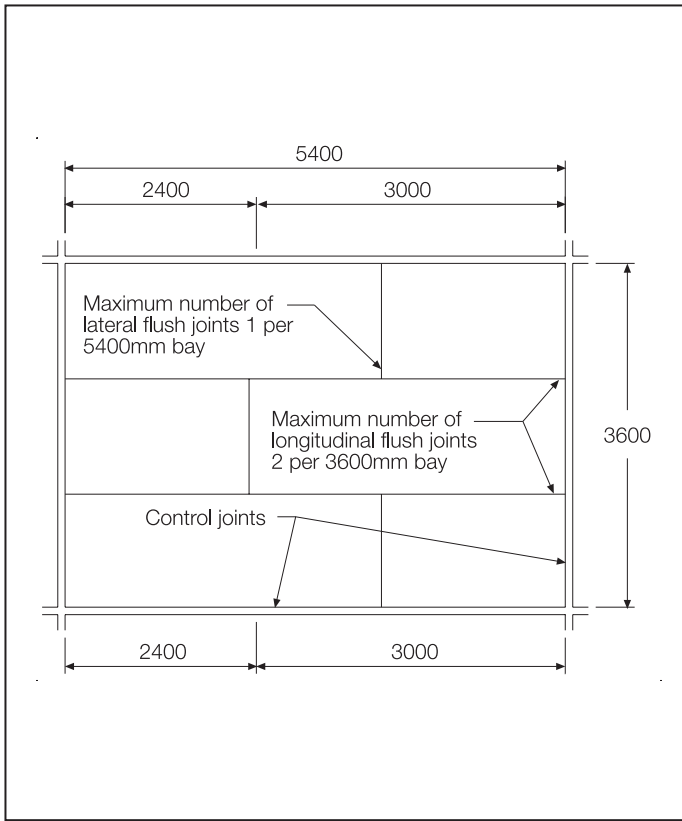


FIGURE 12 VILLABOARD LINING CEILING LAYOUT BAY CONFIGURATION

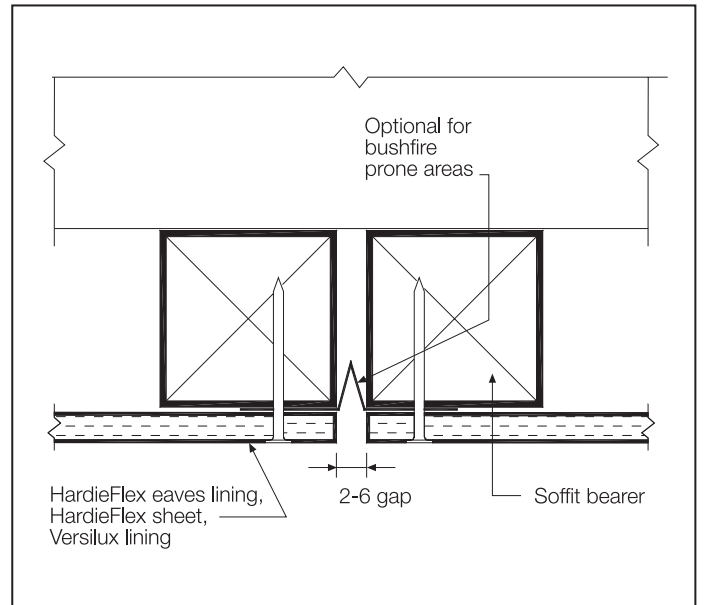


FIGURE 14 NON - SET JOINT

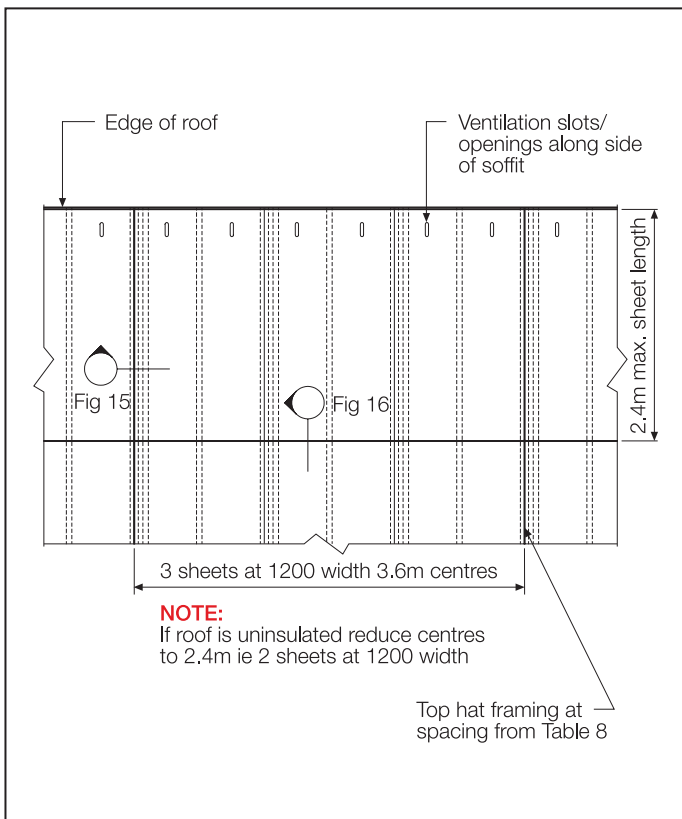


FIGURE 13 VILLABOARD LINING LAYOUT FOR CEILINGS DIRECTLY UNDER METAL ROOFING

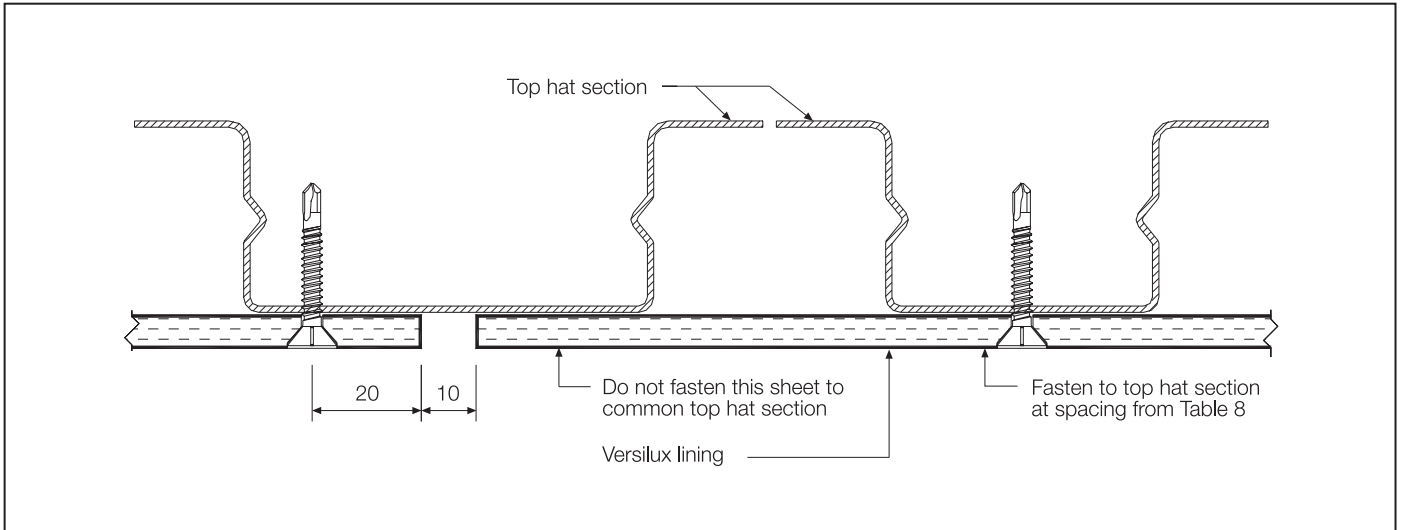


FIGURE 15 NON-SET JOINT ON TOP HAT SYSTEM

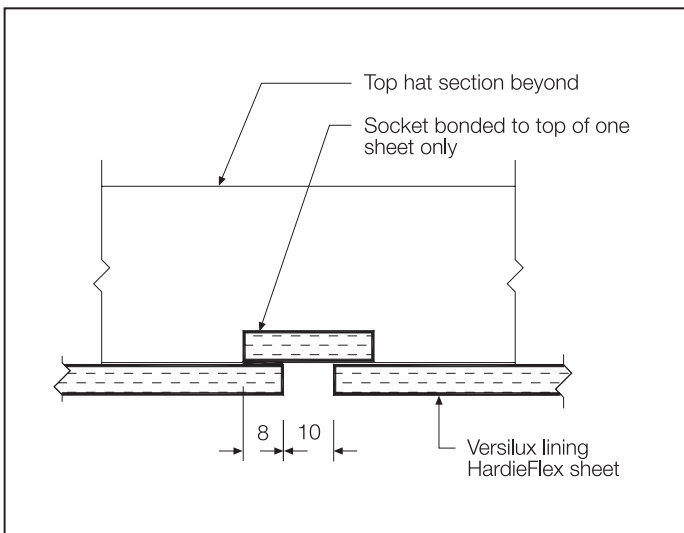


FIGURE 16 NON-SET JOINTED SOCKET - TOP HAT SYSTEM JOINT

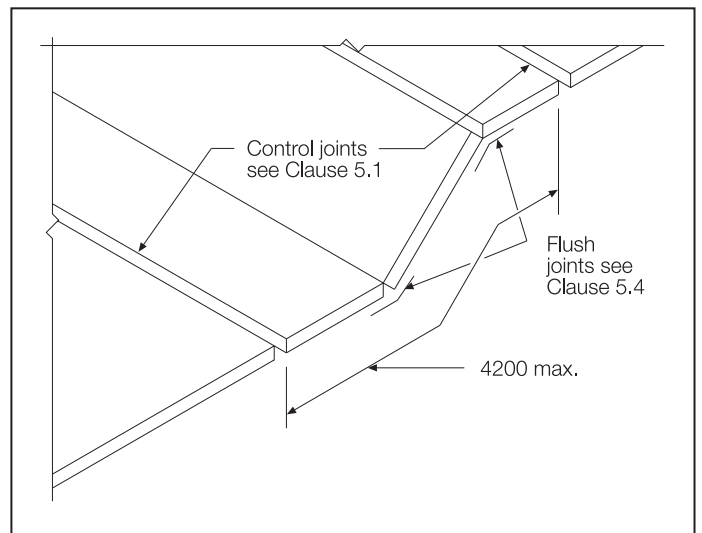


FIGURE 18 BULKHEAD WITH RAKING TRANSITION

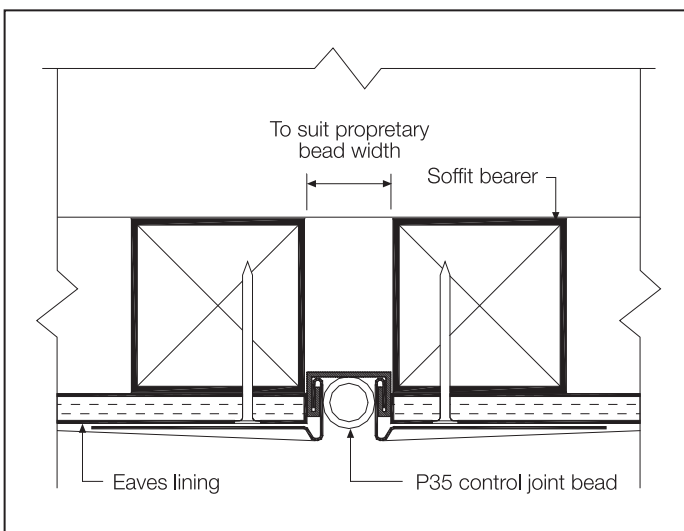


FIGURE 17 SET JOINTED SOFFIT OR EAVES

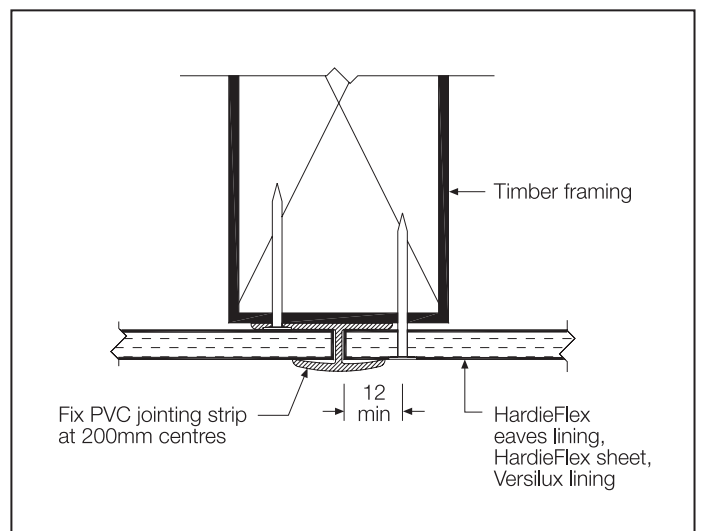


FIGURE 19 PVC STRAIGHT JOINT FIXED TO TIMBER FRAMING

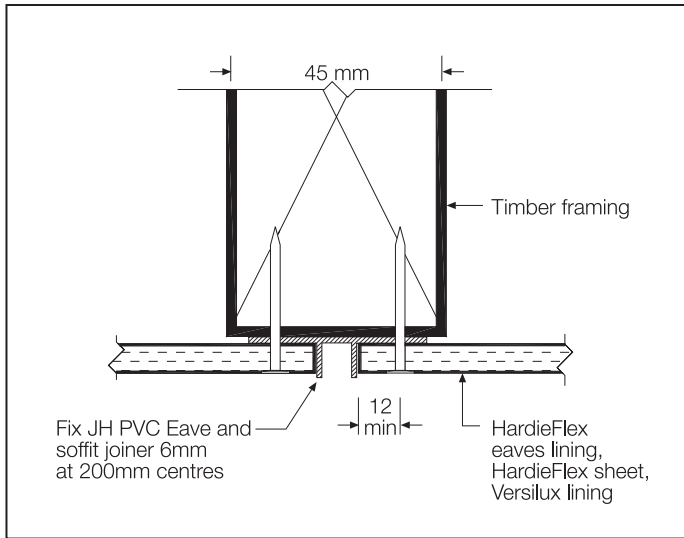


FIGURE 19B JH PVC EAVES & SOFFITS JOINER FIXED TO TIMBER FRAMING

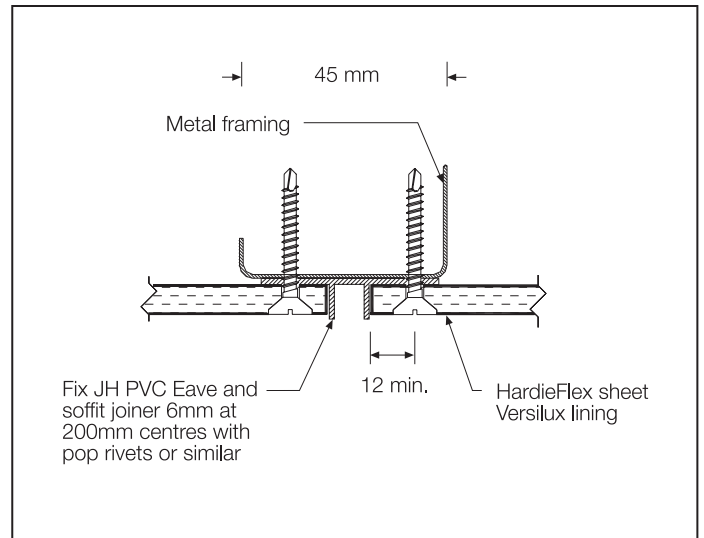


FIGURE 20B JH PVC EAVES & SOFFITS JOINER FIXED TO METAL FRAMING

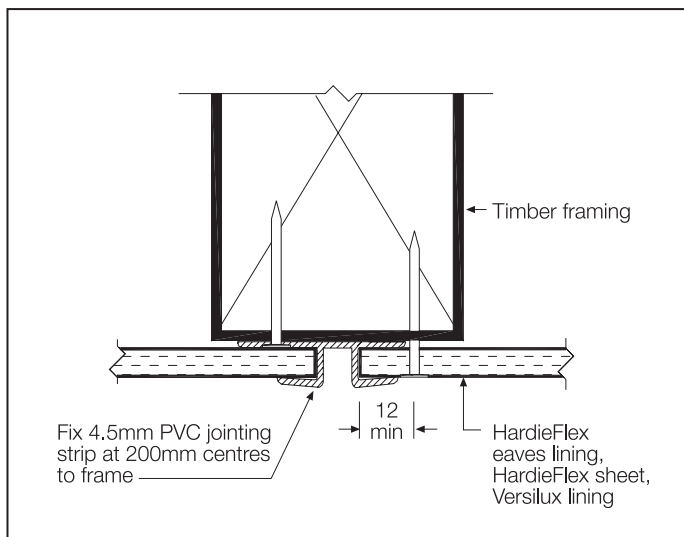


FIGURE 19C 4.5MM EAVES AND SOFFIT JOINER

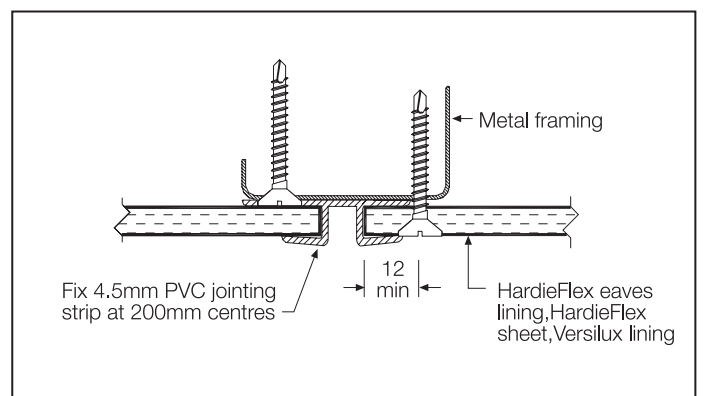


FIGURE 20C 4.5MM EAVES & SOFFITS JOINER FIXED TO METAL FRAMING

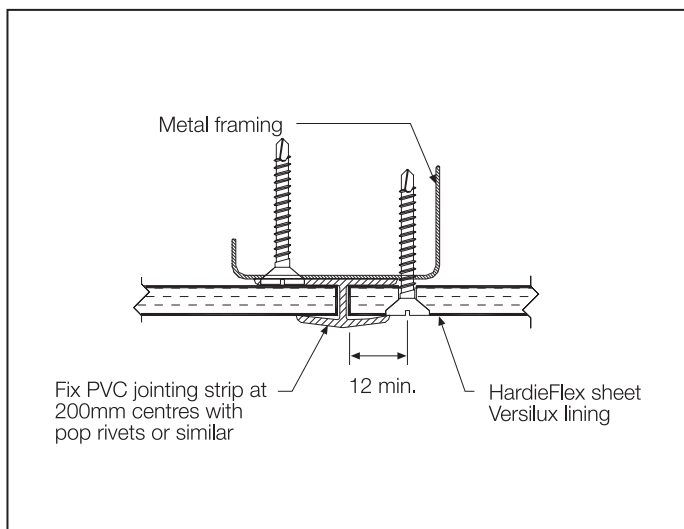


FIGURE 20 PVC STRAIGHT JOINT FIXED TO METAL FRAMING

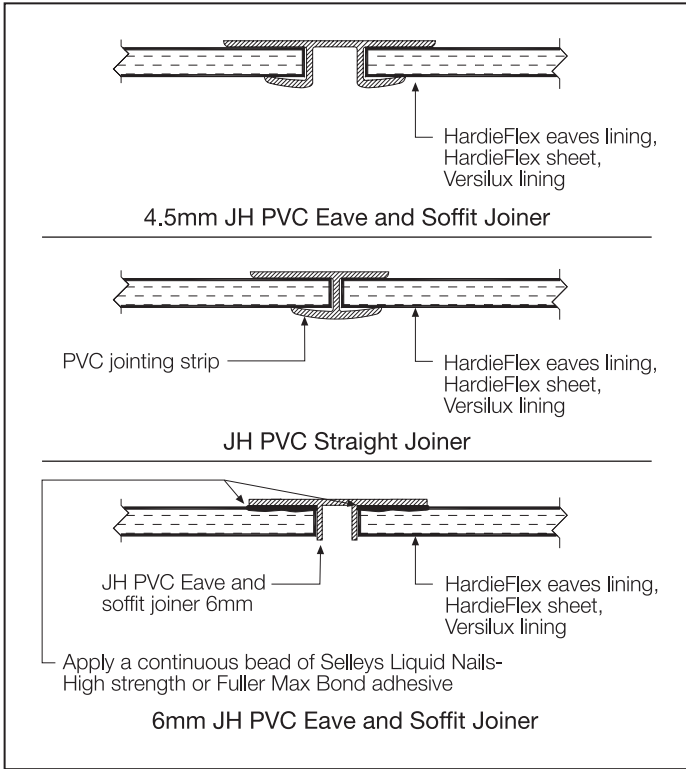


FIGURE 21 PVC STRAIGHT JOINT LOCATED OFF FRAMING

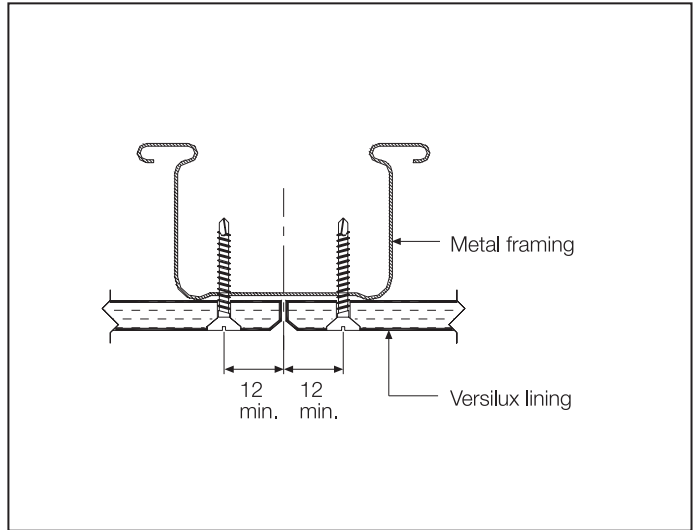


FIGURE 23 BUTT VEE JOINT

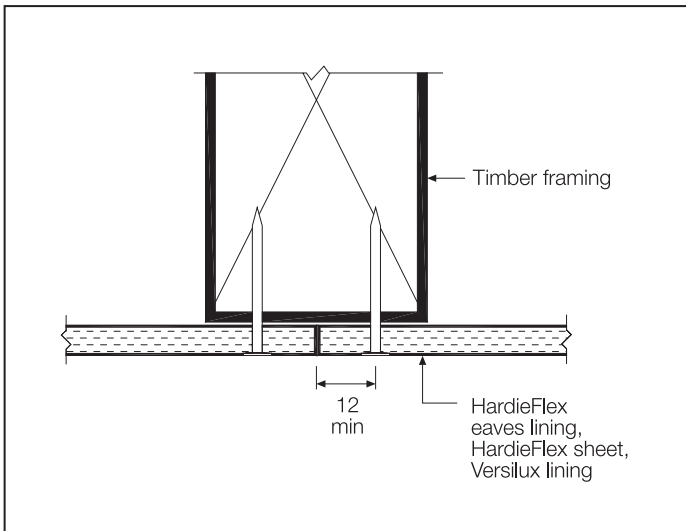


FIGURE 22 BUTT JOINT

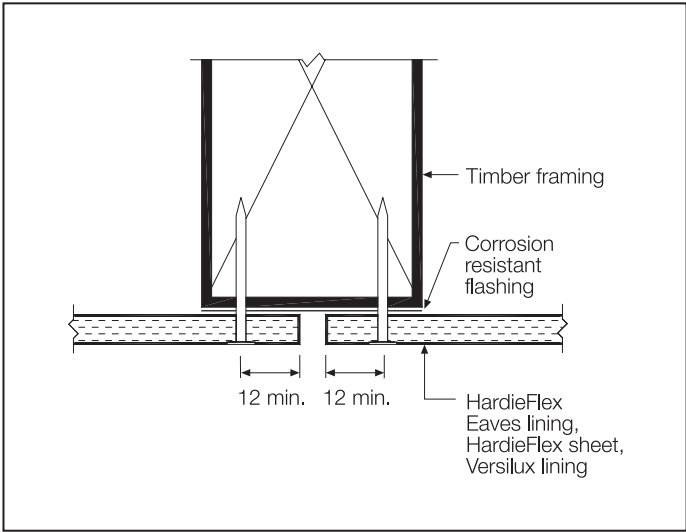


FIGURE 24 EXPRESSED JOINT ON TIMBER FRAMING

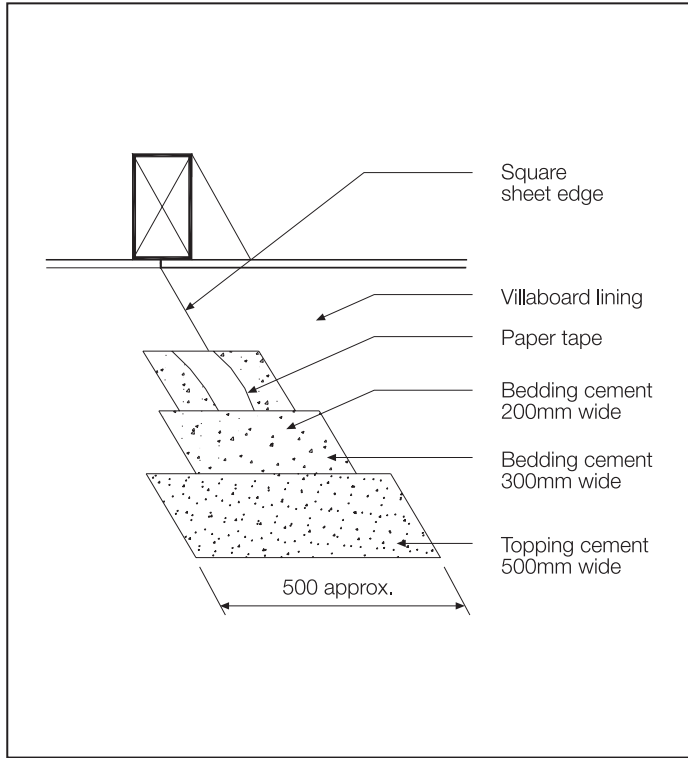


FIGURE 26 BUTT JOINT TREATMENT

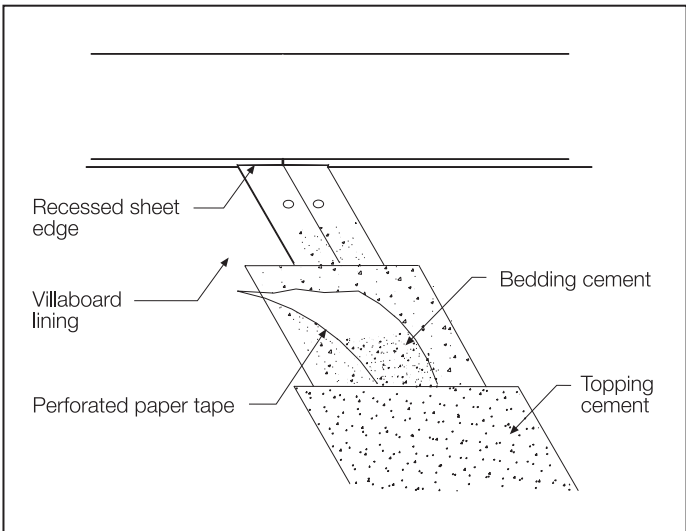


FIGURE 25 FLUSH JOINT TREATMENT

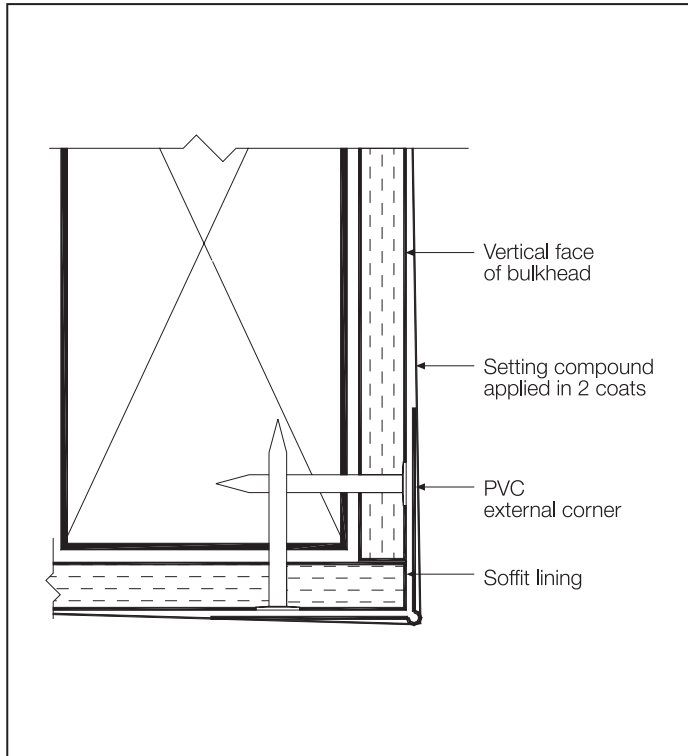


FIGURE 27 EXTERNAL CORNER

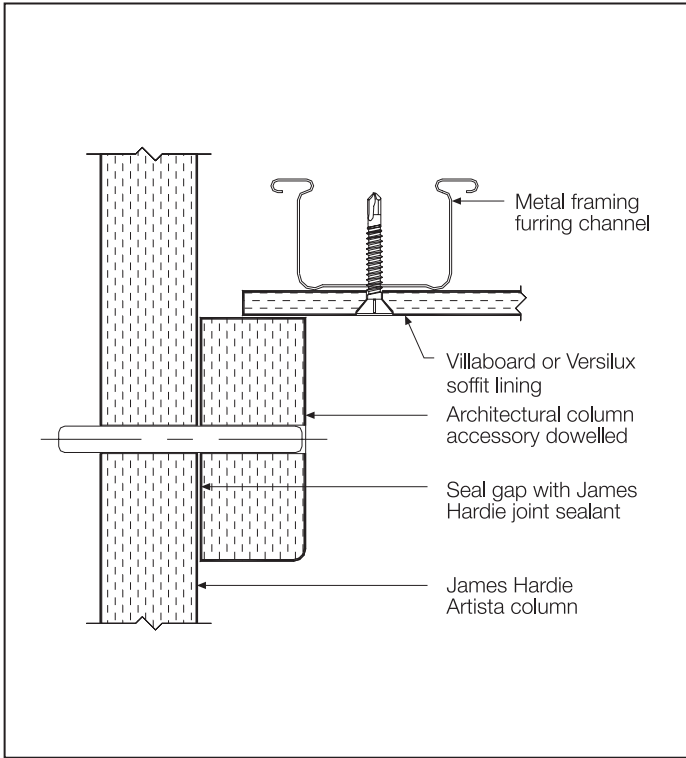


FIGURE 28 JUNCTION WITH COLUMN

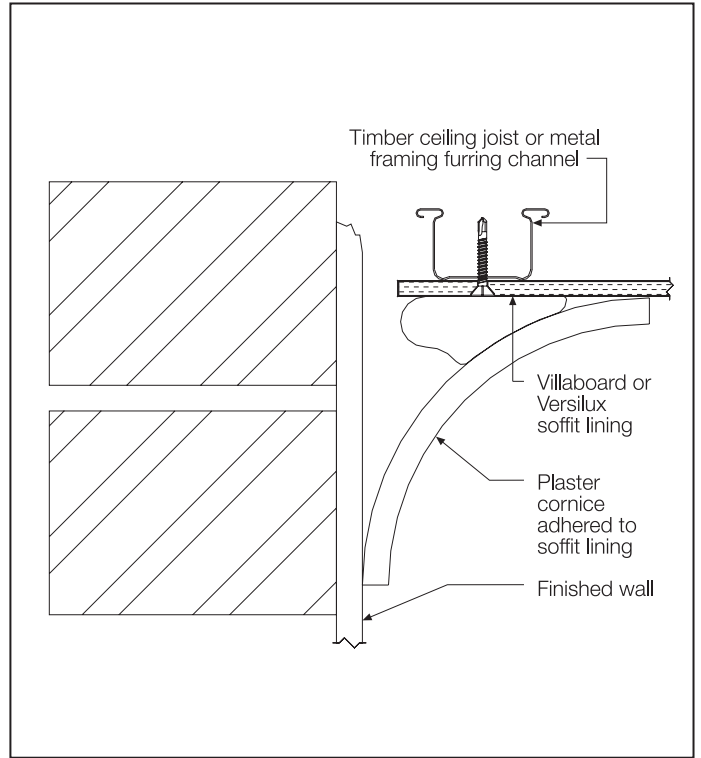


FIGURE 30 CEILING CORNICE

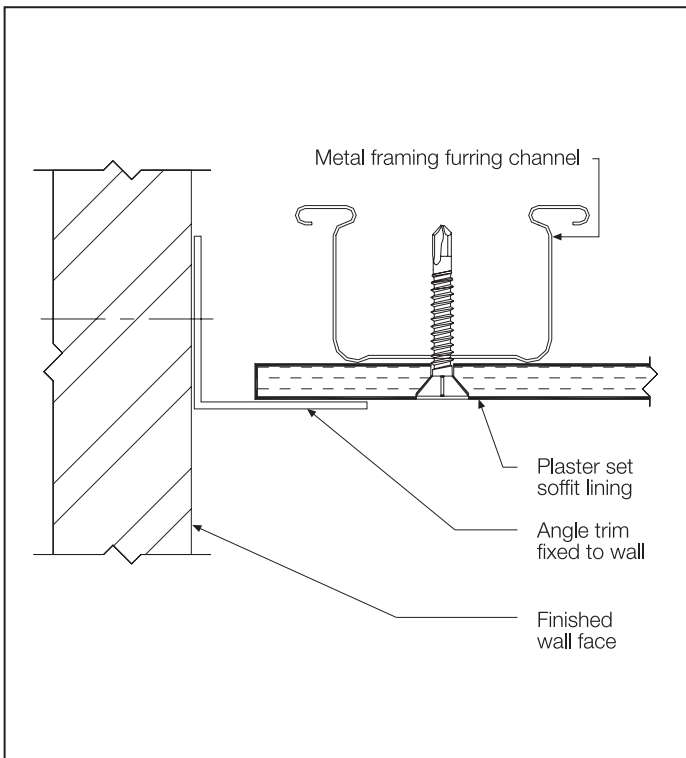


FIGURE 29 JUNCTION WITH WALL

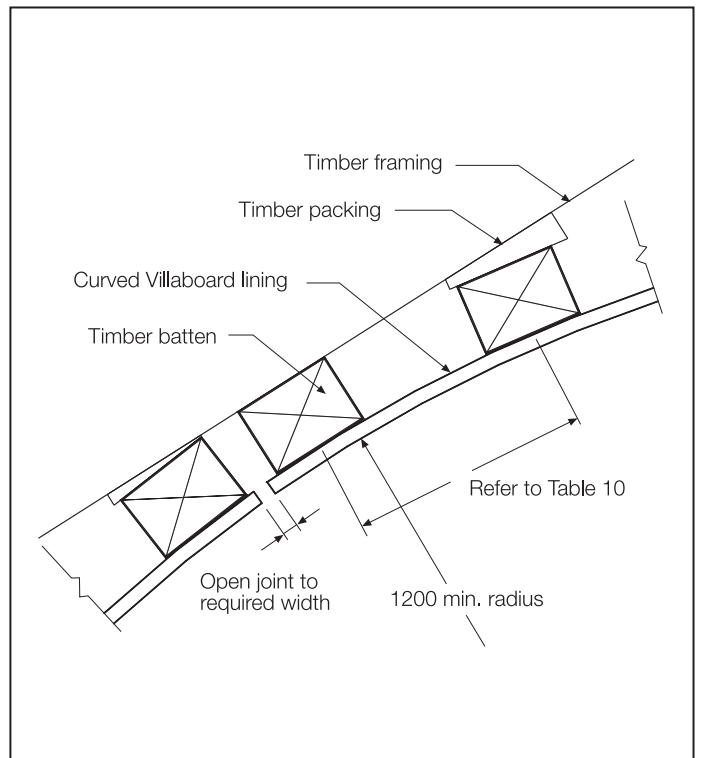


FIGURE 31 CURVED SOFFIT

10 WARRANTY

HardieFlex™ eaves lining, HardieFlex™ sheet, Villaboard® lining, Versilux® lining and HardieGroove™ lining (eaves and soffits),

10 YEAR WARRANTY

January 2012

James Hardie Australia Pty Limited ("James Hardie") warrants to the first purchaser of HardieFlex™ eaves lining, HardieFlex™ sheet, Villaboard® lining, Versilux® lining and HardieGroove™ lining (eaves and soffits), (**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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