



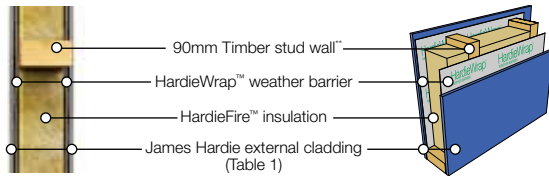
SCOPE: This design guide contains product information, technical specification, construction details and design considerations for HardieSmart™ Blade wall system when used in multi-residential applications.

IMPORTANT NOTES

1. This design guide must be read in conjunction with the relevant and current James Hardie product install guides and relevant building code and regulations
2. The specifier or other responsible party for a project must ensure the information in this guide is appropriate for the application you are planning and that you undertake specific design and detailing for areas which fall outside the scope of these specifications.
3. Failure to install, finish or maintain these products 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.
4. HardieFire™ Insulation must be used as the frame cavity infill and must be compressed 5mm at a minimum in both vertical and horizontal directions (i.e. Batt size must be at a minimum 5mm wider and longer than frame stud bay). **Avoid gaps in the installation; please refer to design considerations section.**
5. Make sure your information is up to date. When specifying or installing James Hardie® products, ensure you have the current manual or guide. If in doubt, or you need more information, visit www.jameshardie.com.au or Ask James Hardie® on 13 11 03.

SYSTEM INFORMATION

HARDIESMART™ BLADE WALL SYSTEM



Designed for buildings where external separating walls require a Fire Resistance Level (FRL) of up to 1 hour. This system may be used in conjunction with other HardieSmart™ Systems and other fire-rated wall systems. This integrated solution will not only satisfy fire requirements but will also provide you with excellent bracing performance.

Please see the design considerations section for suitable James Hardie external cladding products.

FRL (minutes)	External Cladding Type	Timber Stud Size (mm)		Maximum stud spacing* (mm)	Min. Wall thickness (mm)	Max. Stud height† (mm)	Bracing Performance (kN/m)‡
		Depth	Width				
60/60/60 -/60/60	Flat Sheet	90	35	450-	102	3,000	4.0 - 10
		90	45	600		3,300	
	Weatherboards	90	35	450-	120	3,000	
		90	45	600		3,300	
	Planks	90	35	450-	108	3,000	
		90	45	600		3,300	

TABLE NOTES:

- * For increased heights, stud size may need to be increased. Where the height of an external wall exceeds 3.3m, the stud size may need to be increased to meet framing structural requirements.
- # Stud spacing is based on a load bearing capacity of 5 kN/stud. The stud spacing may be reduced in accordance to wind pressure installation requirements for the selected external cladding product, please refer to the relevant and respective literature for more information. The loadbearing capacities of the timber-framed walls must be determined in accordance with AS1684 'Residential timber-framed construction' and AS1720.1 'Timber structures'.
- ^ Additional fastener and design considerations may be required. Refer to James Hardie Structural Bracing Application guide for more information.
- ~ Stud spacing may be increased to 600mm centres with a reduced loadbearing capacity of 3.4 kN/stud. Please note that if specifying 600mm centres, cutting of HardieFire™ Insulation will be required as sizes have been optimised for 45mm studs at 600mm and 35mm studs at 450mm centres. It is recommended to install 560mm batts horizontally to minimise cutting. Ensure a 5mm compression throughout and no gaps.
- ** Dual 90mm timber framing may be required in certain applications. Please refer to Blade Wall Configurations Section.

ACCESSORIES

Please refer to the respective cladding products for required accessories. In addition, the following components may be required.

PROVIDED BY JAMES HARDIE®

HardieFire™ Insulation Mineral wool insulation specifically designed for use in fire applications with HardieSmart™ systems.	Batt Sizes:	1160 x 560 x 85 mm (for 600mm spaced timber studs, 45mm wide) 1160 x 420 x 85mm (for 450mm spaced timber studs, 35 or 45mm wide)
	No. of pieces:	5 per pack
	Pack weight:	22.1 Kg approx. (for 560 x 1160 x 85mm) 16.6 Kg approx. (for 420 x 1160 x 85mm)
	Product Code:	305790 (for 560 x 1160 x 85mm) 305791 (for 420 x 1160 x 85mm)
	Density:	80 Kg/m³
	R Value:	2.5 m².K/W
	Coverage per pack:	3.6 m² (for 560 x 1160 x 85mm) 2.7 m² (for 420 x 1160 x 85mm)

All dimensions and masses provided are approximate only and subject to manufacturing tolerances. Masses are based on equilibrium moisture content of product.

NOT PROVIDED BY JAMES HARDIE®

James Hardie recommends the following products for use in conjunction with HardieSmart™ Systems. James Hardie does not supply these products. Please contact the component manufacturer for information on their warranties and further information on their products.

	Fire and Acoustically rated sealant: Suitable and tested sealant for fire- and acoustically-rated construction and HardieSmart™ Systems. Used to fill control joints, penetrations and any wall gaps to maintain acoustic and fire integrity. The sealant may need to be water resistant if required in a wet area. E.g. Bostik FireBan One
	Reciprocating Saw or Hand Saw: Used to cut HardieFire™ Insulation when required. Refer to safety and handling section.
	Fire Resisting Mineral Wool: Used to maintain FRL of the selected wall system at junctions where relevant. Please see construction details for applications. It must be installed in accordance with manufacturer recommendations.

SYSTEM PERFORMANCE

1. FIRE RESISTANCE LEVEL (FRL): The fire resistance level (FRL) test reports and Letters of Opinion in this guide have been certified by the CSIRO Division of Building Construction and Engineering and the Building Research Association of New Zealand (BRANZ). Fire resistance testing to determine the FRL of a wall (in the form of a specimen) has been conducted to the Australian Standard AS 1530 Part 4:

'Fire Resistance Tests of Elements of Building Construction'. The standard follows the basic principles and provisions contained in ISO-834 'Fire Resistance Tests – Elements of Building Construction'. For more information on fire performance in buildings, please refer to James Hardie Fire and Acoustically rated walls Application Guide.

2. BRACING PERFORMANCE: To achieve the necessary bracing requirements, this guide must be read in conjunction with James Hardie Structural Bracing Application Guide. It has been designed in accordance with AS 1684 'Residential Timber Framed Construction' ('the code'), and gives fixing details and bracing capacity for James Hardie products. All design capacities quoted are Ultimate Limit State (ULS) figures and have been certified by consulting engineers, Cardno (NSW) Pty Ltd.

DESIGN CONSIDERATIONS

1. EXTERNAL CLADDING: Any James Hardie® external cladding products that are 6mm or thicker (see Table 1) may be used in HardieSmart™ Blade wall systems. Installation of the selected product must be in strict accordance with the respective, current installation manual. Please refer to www.jameshardie.com.au for more information.

Table 1

External Cladding Type	James Hardie Product name
Flat sheets or panels	EasyLap™ panels HardieFlex™ sheets (6mm) Panelclad™ sheets HardieTex™ base sheets Scyon™ Axon™ cladding
Weatherboards	Scyon™ Linea™ weatherboards Hardieplank™ weatherboards Primeline™ weatherboards (Newport and Summit)
Planks	Scyon™ Stria™ Cladding Primeline™ weatherboards (Heritage and Chamfer)
Façade and Cavity Systems	Exotec® façade panel Scyon™ Matrix™ cladding ComTex® façade panel

2. CANTILEVERED BALCONIES: HardieSmart™ Blade wall may be constructed over cantilevering balconies to provide vertical separation between dwellings; however, specific soffit lining requirements apply. Please refer to 'Cantilevering Balconies Configurations Section in this guide.

3. HARDIEFIRE™ INSULATION: It must be used as the frame cavity infill and must be compressed 5mm at a minimum in both vertical and horizontal directions (i.e. Batt size must be at a minimum 5mm wider and longer than frame stud bay). Ensure there are no gaps in the installation. Please refer to figure 1 for more information on installation. If cutting is required, it is recommended to cut outdoors. If indoors, please ensure that workspace is properly ventilated or M class or higher vacuum/dust extractors are used.

- a. Position cutting station so wind will blow dust away from the user or others in working area.
- b. Use one of the following methods based on the required cutting rate:
 - i. Reciprocating Saw
 - ii. Mechanical Hand Saw

4. HARDIEWRAP™ WEATHER BARRIER: Behind the selected cladding product, HardieWrap™ weather barrier must be installed in accordance with the current data sheet and respective cladding product manual. In hot humid areas of Australia, HardieWrap™ weather barrier may not be suitable, refer to the building designer for a suitable membrane, HardieWrap™ weather barrier datasheet or Ask James Hardie® on 13 11 03 for more information.

5. GROUND CLEARANCES: Install James Hardie external cladding with a minimum 150mm clearance to the earth on the exterior of the building or in accordance with local building codes if greater than 150mm is required. Maintain a minimum 50mm clearance between James Hardie external cladding and roofs, steps and driveways. Maintain a minimum 30mm clearance from waterproof decks, balconies and patios. Do not install external cladding such that it may remain in contact with standing water.

6. FRAMING:

- **Material type:** Dry seasoned timber only. Timber used for house construction must have the level of durability appropriate for the relevant climate and expected service life. Reference AS1684.2 'Residential Timber Framed Construction'. Steel frames are not suitable.
- **Minimum stud width:** Studs that are 35mm in width may be used in accordance to system information section; however, depending on the James Hardie external cladding product selected, where sheet jointing is required; the minimum stud width may be 38mm so as to properly accommodate the joint.
- **Stud spacing:** 600mm maximum. Check whether the selected external cladding require closer stud spacing for your site wind pressures and tile weight (only for tiled walls). It must be noted that HardieFire™ Insulation sizes have been optimised for 45mm studs at 600mm and 35mm studs at 450mm centres, cutting may be required otherwise.
- **Nogging:** 1350mm maximum centres.

7. SLAB AND FOOTINGS: The slab and footings on which the building is situated must comply with AS 2870 'Residential slabs and footings – Construction' and the requirements of the National Construction Code (NCC).

8. TERMITE PROTECTION: The NCC specifies the requirements for termite barriers; please refer to third party companies for suitable termite barrier mechanisms. Where the exposed slab edge is used as part of the termite barrier system, a minimum of 75mm of the exposed slab edge must be visible to permit ready detection of termite entry. Adjacent finished grade must slope away from the building in accordance with local building codes, typically a minimum slope of 50mm minimum over the first metre.

Do not install external cladding such that it may remain in contact with standing water

9. FIRE AND ACOUSTICALLY RATED SEALANT: Fire sealant in junctions and gaps as indicated in construction details to maintain fire and acoustic integrity of the system. E.g. Bostik FireBan One.

10. FASTENER TYPE: Brad nail and/or adhesive fixing are not recommended in fire and acoustically rated systems. Please refer to the respective product for alternative fixing methods.

11. PENETRATIONS: All penetrations require careful and comprehensive treatment to maintain Fire Resistance Level (FRL) of the system; therefore, they should be avoided. Generally, dealing with penetrations in fire and acoustically rated systems can be avoided by placing them in external non-fire rated systems, or by building false walls or box/bulkheads, creating pockets in the fire rated element. For more information contact James Hardie Engineering Solutions Team on 13 11 03.

12. PAINT/TEXTURE: Refer to the respective James Hardie internal lining and external cladding installation manual for coating requirements. Please refer to coating manufacturer for suitability and specific requirements.

SAFETY AND HANDLING

For information refer to the respective products installation guide or data sheet and MSDS at www.jameshardie.com.au or www.accel.com.au; and the safe workplace government authority in your state.

DESIGN TOOLS

James Hardie® has developed online tools for easy specification. Please refer to www.accel.com.au for more information on estimation tools, CAD details, system selector, site specific recommendations and more.

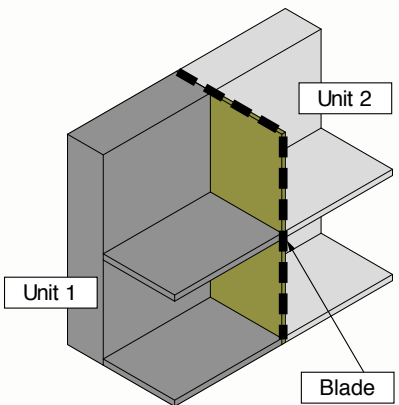
BLADE WALL CONFIGURATIONS

In this section, five scenarios have been depicted to reflect typical blade wall configurations in Class 1a buildings. Please select the scenario that best fits your case. Ensure to consult with your certifier for suitability of the product and specification in the project.

1. SOFFIT LINING: Typically, where the balcony and the storeys above and below belong in to the same tenancy, it is required to use a non-combustible James Hardie soffit lining on the balcony underside.

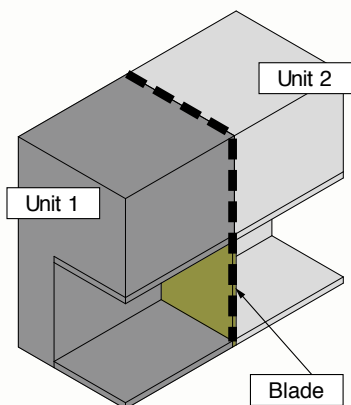
In certain cases, such as where the floor separating a Class 1a dwelling and a Class 10a carport of a different dwelling (Scenario 5), the code will require a James Hardie soffit lining installed over 1 layer of 13mm fire and water resistant plasterboard to meet code requirements (NCC 3.7.1.11 Separating floors). Refer to Figure 8.

1. Continuous Blade Wall



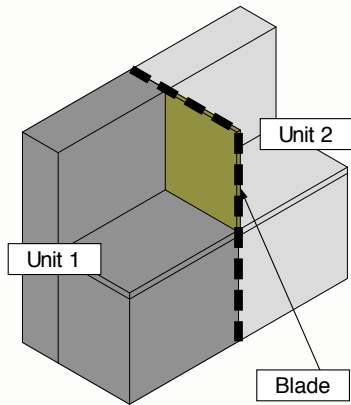
Separating Wall Types	Blade wall continuous from ground floor to roof or parapet.
Floor Junction	Blade wall to blade wall. See Figure 4.
Soffit Lining	Any 4.5mm or thicker James Hardie® soffit lining or external cladding.

2. Blade wall below internal space



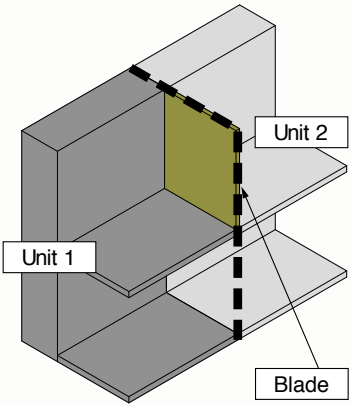
Separating Wall Types	Blade wall extending from ground floor to internal space above.
Floor Junction	HardieSmart™ Blade wall to intertenancy wall. See Figure 5.
Soffit Lining	Any 4.5mm or thicker James Hardie® soffit lining or external cladding.

3. Blade wall above internal space



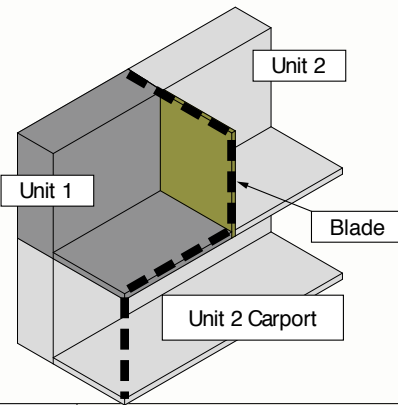
Separating Wall Types	Internal space below with waterproof balcony above.
Floor Junction	Intertenancy wall to HardieSmart™ Blade Wall. See Figure 6.

4. Cantilevered blade wall over outdoor area



Separating Wall Types	Blade wall over non-separated outdoor area.
Floor Junction	Cantilevered blade wall. See Figure 7A.
Soffit/Floor Treatment	Any 4.5mm or thicker James Hardie® soffit lining or external cladding installed over 13mm fire and water resistant plasterboard or other suitable 30/30/30 FRL system extending min 1.8m on each side. See Figure 9.

5. Cantilevered blade wall over appurtenant carport



Separating Wall Types	Blade wall over appurtenant Class 10 building.
Floor Junction	Cantilevered blade wall. See Figure 8A.
Soffit/Floor Treatment	Any 4.5mm or thicker James Hardie® soffit lining or external cladding installed over 13mm fire and water resistant plasterboard or other suitable 30/30/30 FRL system extending min 1.8m on each side. See Figure 9.

CONSTRUCTION DETAILS

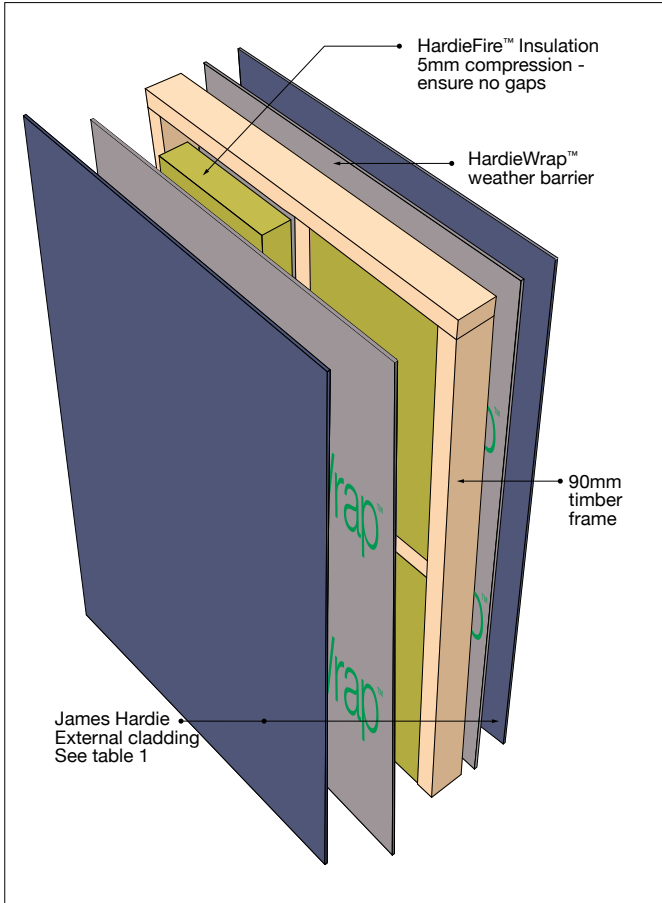


FIGURE 1 HARDIESMART™ BLADE WALL SYSTEM

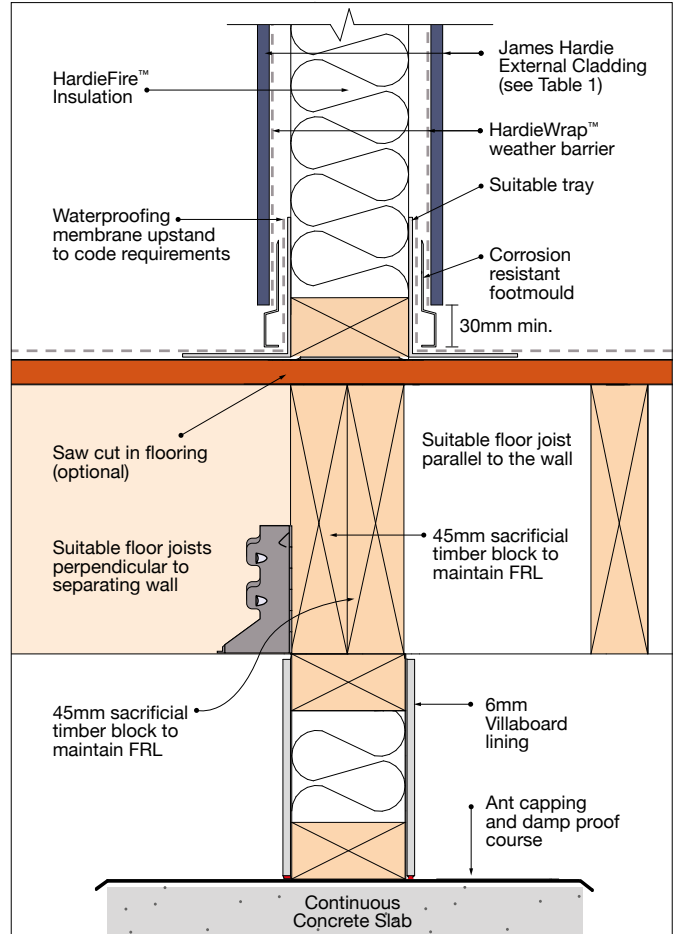


FIGURE 3 HARDIESMART™ BLADE WALL TO SUSPENDED GROUND FLOOR DECK

BASE JUNCTIONS

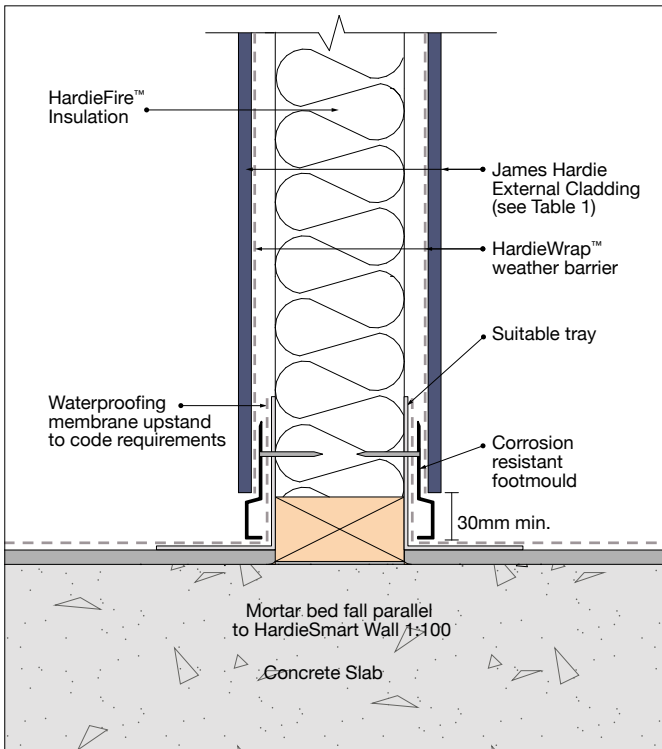


FIGURE 2 HARDIESMART™ BLADE WALL TO CONCRETE BASE

FLOOR AND BALCONY JUNCTIONS

SCENARIO 1: CONTINUOUS BLADE WALL (See diagram on page 3)

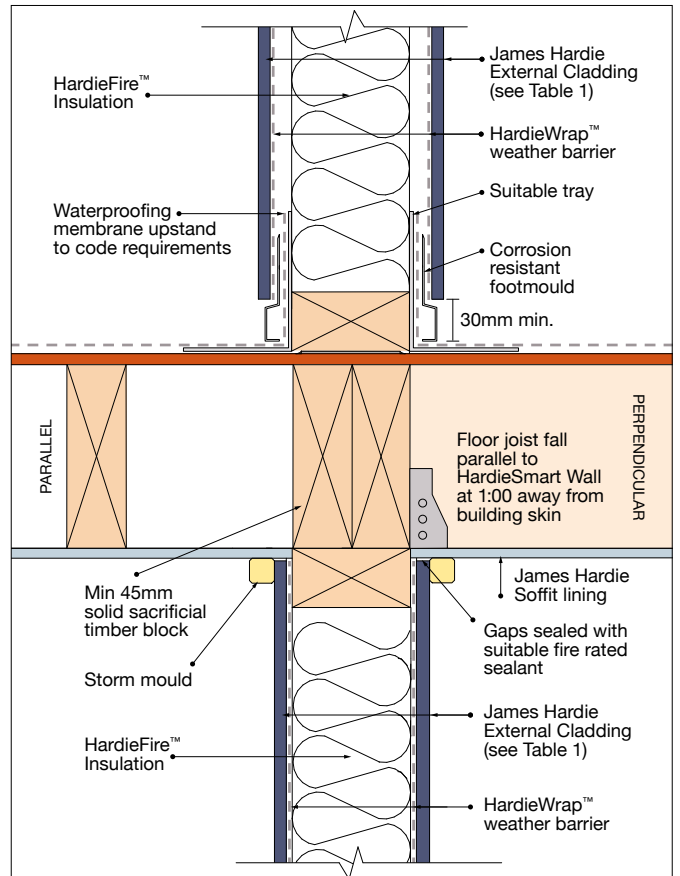


FIGURE 4 HARDIESMART™ BLADE WALL BALCONY FLOOR JUNCTION

SCENARIO 2: BLADE WALL BELOW INTERNAL SPACE
(See diagram on page 3)

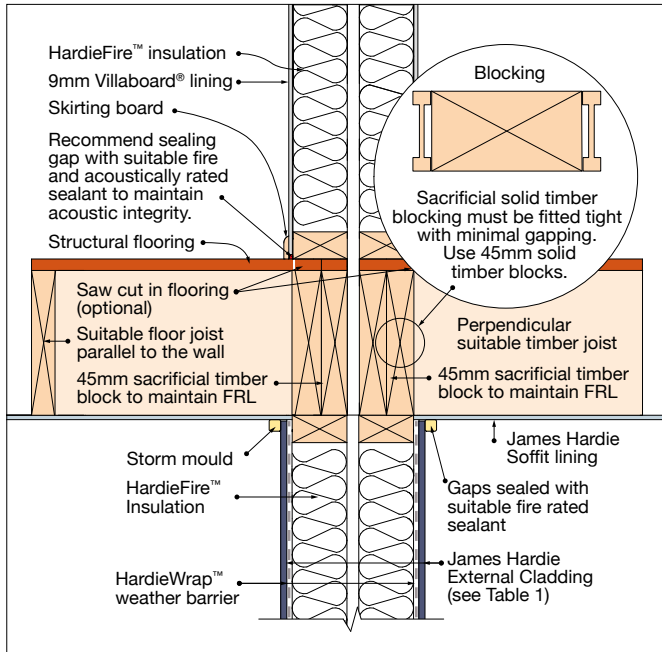


FIGURE 5 HARDIESMART™ BLADE WALL FLOOR JUNCTION WITH HARDIESMART™ INTERTENANCY WALL ABOVE

SCENARIO 3: BLADE WALL ABOVE INTERNAL SPACE
(See diagram on page 3)

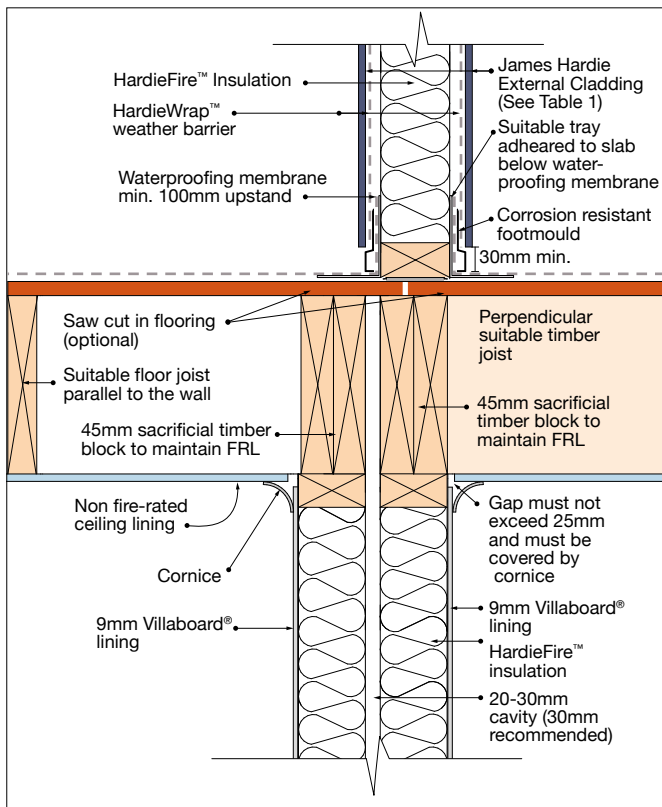


FIGURE 6 HARDIESMART™ BLADE WALL FLOOR JUNCTION WITH HARDIESMART™ INTERTENANCY WALL BELOW

SCENARIO 4: CANTILEVERED BLADE WALL OVER OUTDOOR AREA
(See diagram on page 3)

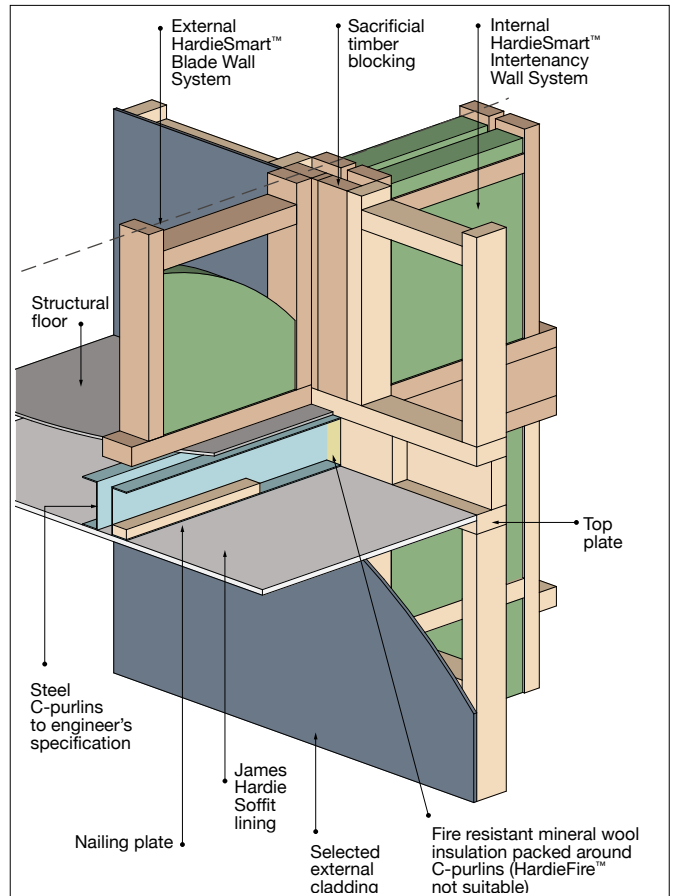


FIGURE 7 HARDIESMART™ BLADE WALL SEPARATING CANTILEVERED BALCONY, SAME TENANCY BELOW

SCENARIO 5: CANTILEVERED BLADE WALL OVER APPURTENANT CARPORT
(See diagram on page 3)

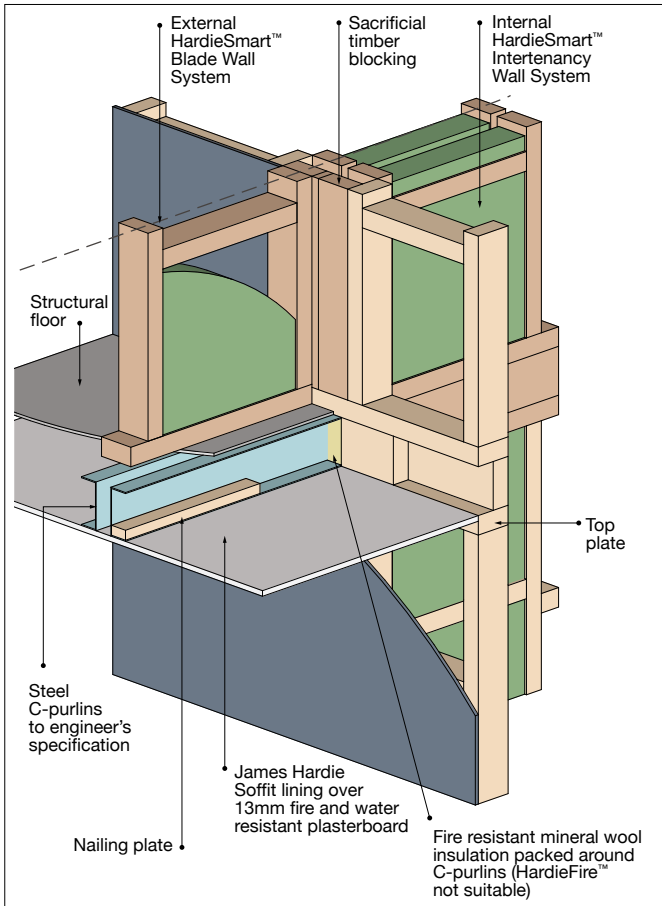


FIGURE 8 HARDIESMART™ BLADE WALL SEPARATING CANTILEVERED BALCONY, OVER APPURTENANT CLASS 10A CARPORT BELOW

WALL JUNCTIONS

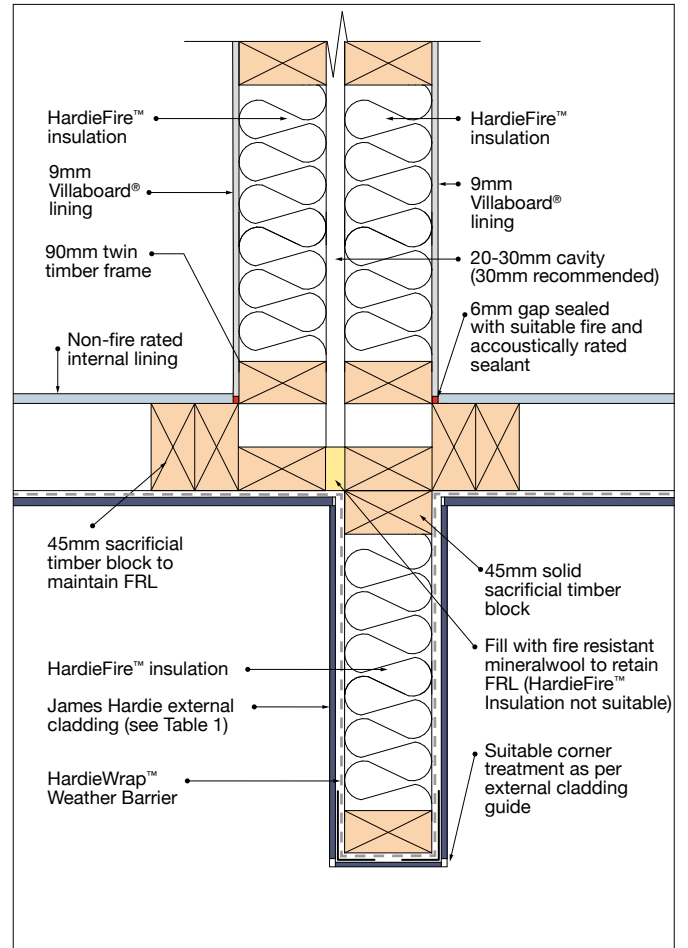


FIGURE 9 JUNCTION WITH HARDIESMART™ INTERTENCY WALL (OFFSET RECOMMENDED)

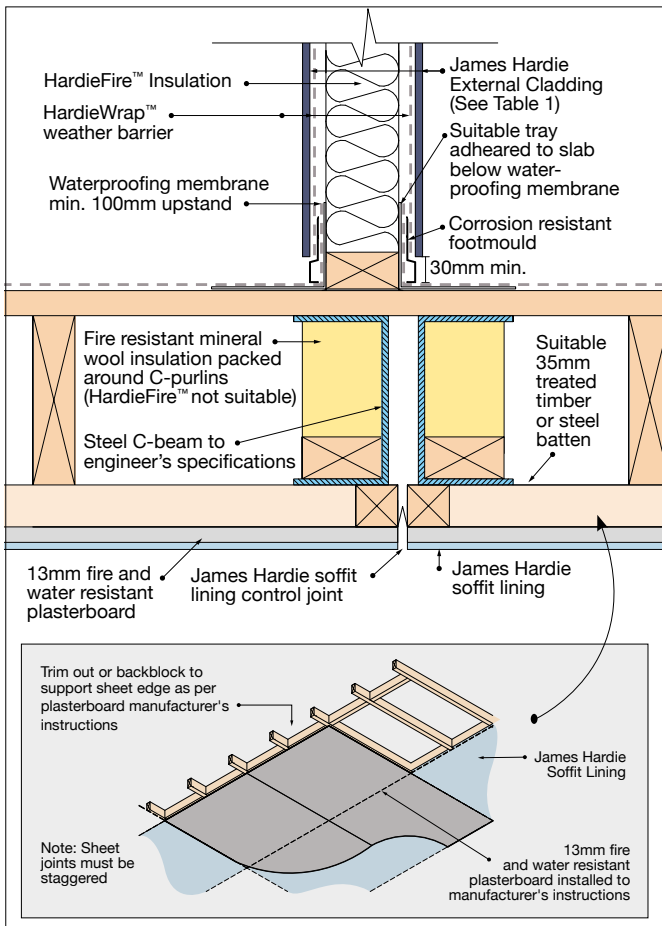


FIGURE 9 HARDIESMART™ BLADE WALL SEPARATING CANTILEVERED BALCONY, OVER APPURTENANT CLASS 10A CARPORT BELOW

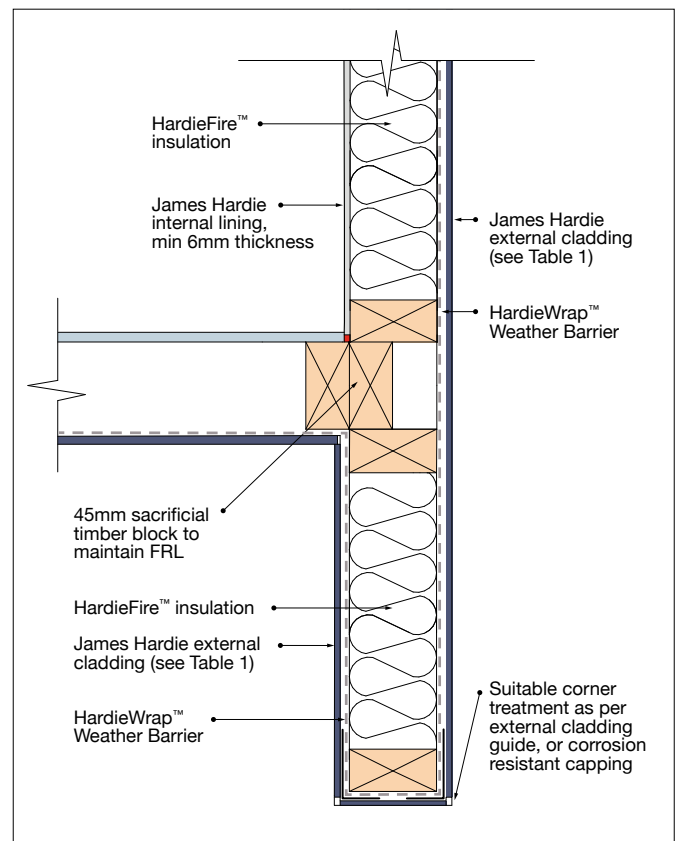


FIGURE 10 HARDIESMART™ BLADE WALL JUNCTION WITH HARDIESMART™ BOUNDARY WALL SYSTEM

HEAD AND ROOF CAVITY DETAILS

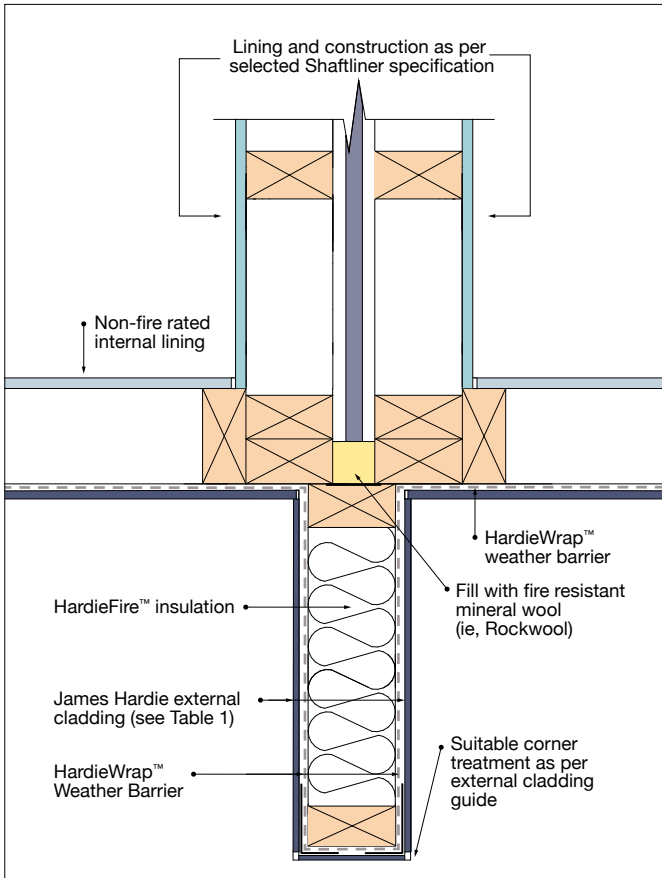


FIGURE 11 HARDIESMART™ WALL JUNCTION WITH TYPICAL SHAFTLINER SYSTEM

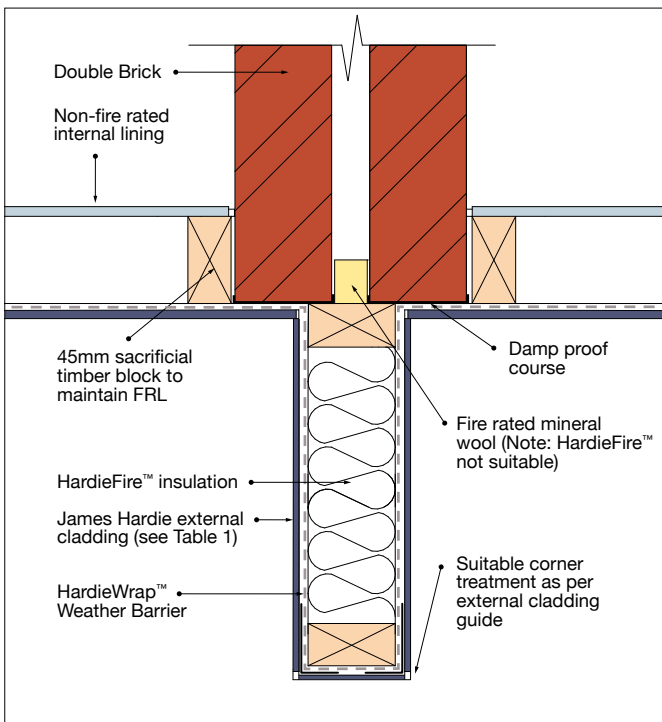


FIGURE 12 HARDIESMART™ BLADE WALL JUNCTION WITH BRICK/MASONRY COMMON WALL SYSTEM

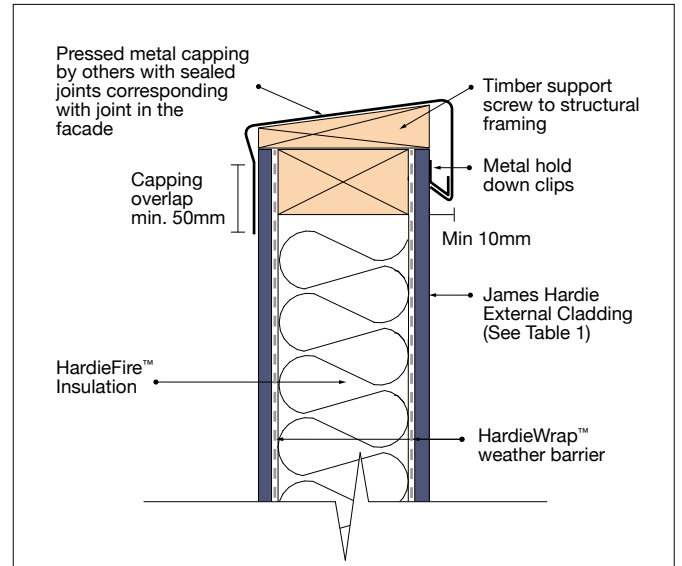


FIGURE 13 HARDIESMART™ BLADE WALL PARAPET

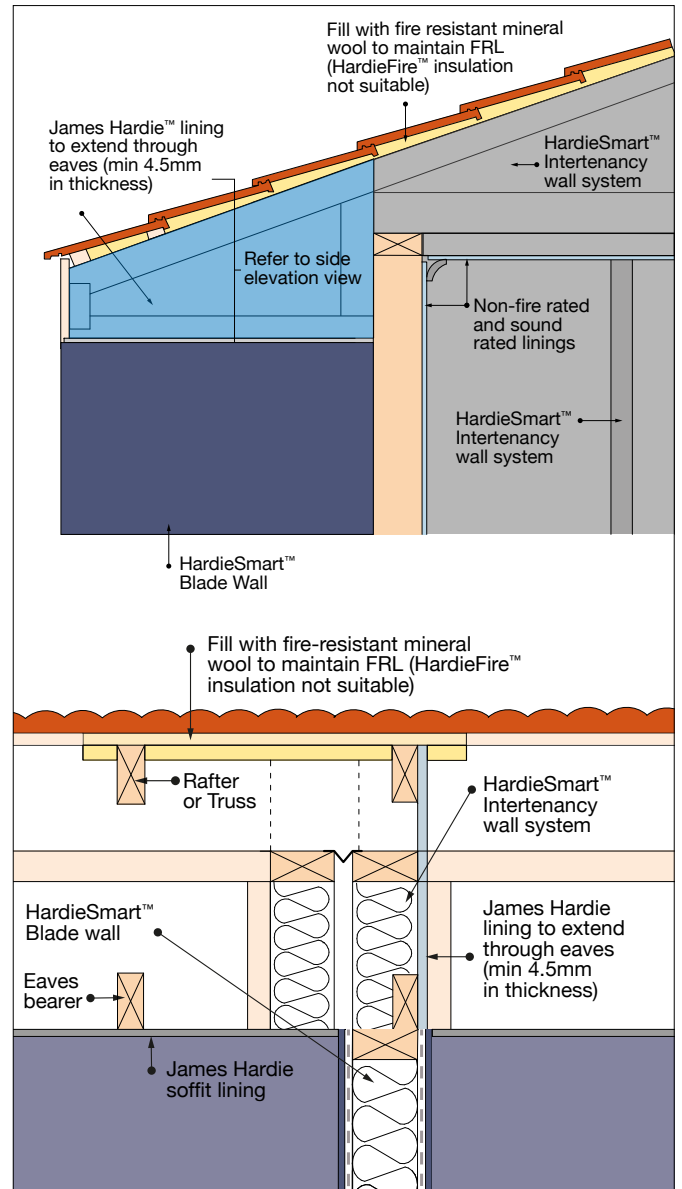


FIGURE 14 HARDIESMART™ BLADE WALL EAVES SEPARATION

WARRANTY

HardieSmart™ Blade wall system has a James Hardie product warranty. The period varies for the selected system components. For terms and conditions of product warranty, refer to www.jameshardie.com.au or www.accel.com.au