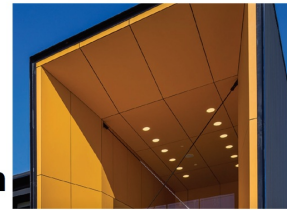




ExoTec Facade Panel Fixing System



JamesHardie ExoTec Facade Panel Fixing System Installation Guide

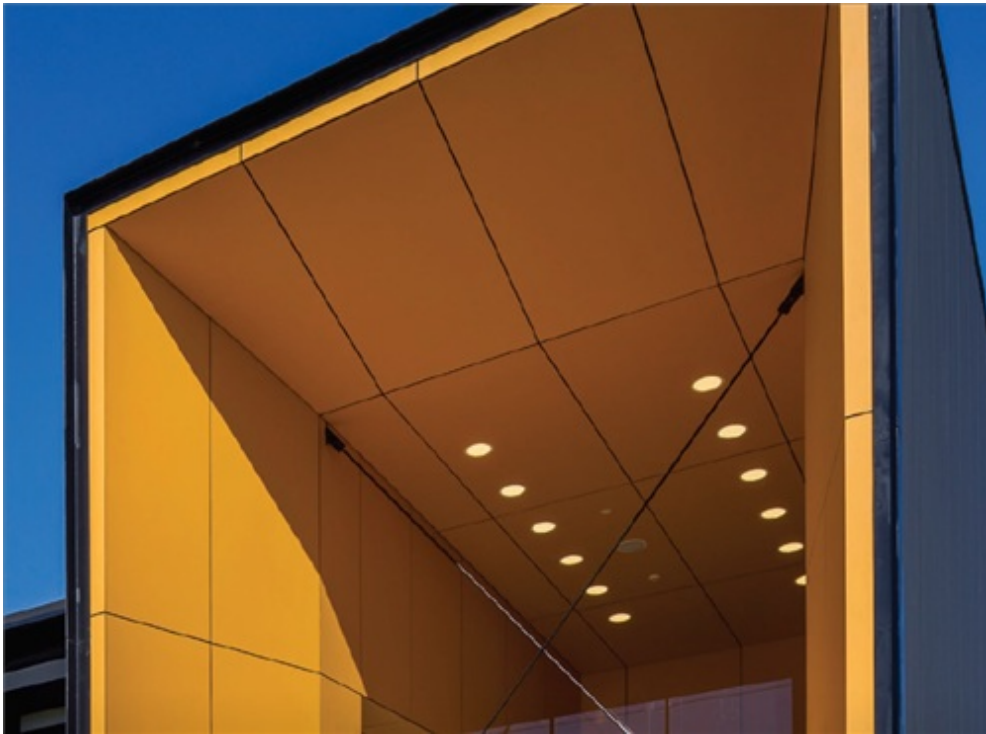
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JamesHardie ExoTec Facade Panel Fixing System



Specifications

- **Certificate:** CM40221
- **Panel Thickness:** 9mm
- **Country of Origin:** Australia

Product Information

The ExoTec™ Facade Panel provides a durable, expressed joint panel appearance for building facades and fascias. It offers versatility to architects and builders, allowing for various design styles such as curved walls, vertical or horizontal panel installation, and brick patterns.

Installation Guide

1. Introduction

The ExoTec™ Facade Panel is suitable for wall facades, fascias, and soffits. It can be used with a variety of decorative finishes, including acrylic textures factory-applied plain colors, and metallic finishes.

2. Safe Working Practices

- **Warning:** Do not breathe dust and cut only in a well-ventilated area.
- **Recommended Safe Working Practices:**
 - Position the cutting station outdoors to avoid dust inhalation.
 - Warn others to stay clear of the dust area.
 - Rotate personnel across cutting tasks to limit exposure.

3. Product Information

- **ExoTec™ Facade Panel Information:**
 - Provides expressed joint panel appearance
 - Suitable for building facades, fascias, and soffits
- **Accessories/Tools supplied by James Hardie:**

Refer to the official website for a list of supplied tools.

- **Accessories/Tools not supplied by James Hardie:**

Refer to the official website for a list of recommended tools not supplied by James Hardie.

4. **Design Considerations**

Ensure compliance with regulations regarding slab, footings, ground clearances, moisture management, top hat framing, sealant-filled joints, curved facades, and movement joints.

5. **Preparation**

Prioritize substructure, weather barrier, flashing, and thermal break installation for a successful project.

6. **Panel and Top Hat Layout**

Follow the provided layout guidelines for proper panel and top hat placement.

7. **Installation**

- Install the top hat first.
- Proceed with panel installation using the recommended fastening methods.
- Pay attention to joints, junctions, corners, windows, and parapet details during installation.

8. **Finishing**

General finishing guidelines for panels exposed to direct sunlight are provided in this section.

9. **Maintenance**

Information on maintaining the ExoTec™ Facade Panel is detailed in this section.

FAQs

Can the ExoTec™ Facade Panel be used for curved walls?

Yes, the ExoTec™ Facade Panel can be used to create curved walls along with various other design styles.

What type of finishes can be applied to the ExoTec™ Facade Panel?

A wide range of decorative finishes can be used, including site-applied acrylic textures factory-applied polyurethane plain colors, and metallic finishes.

What thickness is the ExoTec™ Facade Panel?

The ExoTec™ Facade Panel has a thickness of 9mm.

Make sure your information is up to date.

When specifying or installing Hardie™ products, ensure that you have the current technical information and guides. If in doubt, or you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03. Certificate CM40221

Introduction

- ExoTec™ Facade panel provides a durable, expressed joint panel appearance for building facades and fascias and, together with the ExoTec™ Fixing System, offers versatility to architects and builders. A variety of design styles can be created including curved walls, and panels installed upright vertically, horizontally, or in a brick pattern.
- A wide range of decorative finishes can be used for the ExoTec™ Facade Panel including site-applied acrylic textures and available factory-applied polyurethane plain colours and metallic finishes. Finishes for more information.
- This document is a guide only. It is intended for use by builders, cladding installers, and other contractors who may be involved with the installation of the ExoTec™ Facade Panel.
- The 9mm thick ExoTec™ Facade Panels may be used in wall facades, fascias, and soffits.
- **If you are an installer...**
Ensure that you follow the design, moisture management, and associated details and material selection provided by the designer.
- **If you are a specifier...**
or other responsible party for a project, ensure the information in these specifications is appropriate for the application you are planning and that you undertake specific design and detailing for areas that fall outside the scope of these specifications.

NOTE

- All dimensions shown are in millimeters unless noted otherwise.
- All Australian Standards referenced in this manual are current editions and must be complied with.

Safe Working Practices

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

Fibre cement products manufactured by James Hardie contain sand, a source of respirable crystalline silica. May cause cancer if dust from the product is inhaled. Causes damage to lungs and respiratory system through prolonged or repeated inhalation of dust from product. Intact fiber cement products are not expected to result in any adverse toxic effects. The hazard associated with fibre cement arises from the respirable crystalline silica present in dust generated by activities such as cutting, rebating, drilling, routing, sawing, crushing, or otherwise abrading fibre cement, and when cleaning up, disposing of, or moving dust. When doing any of these activities in a manner that generates dust, follow Hardie™ instructions and best practices to reduce or limit the release of dust, warn others in the area, and consider rotating personnel across the cutting task to further limit respirable silica exposure. If using a dust mask or respirator, use an AS/NZS1716 P1 filter and refer to Australian/New Zealand Standard 1715:2009 Selection, Use and Maintenance of Respiratory Protective Equipment for more extensive guidance and more options for selecting respirators for workplaces. For further information, refer to our installation instructions and Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

James Hardie Recommended Safe Working Practices

CUTTING OUTDOORS

1. Position the cutting station so the wind will blow dust away from the user or others in the working area.

2. Warn others in the area to avoid dust.
3. Consider rotating personnel across cutting tasks to further limit respirable silica exposures.
4. Use one of the following methods based on the required cutting rate:
 - **Best**
 - Villaboard™ knife
 - Hand guillotine
 - Fibreshear
 - **Better** Position the cutting station in a well-ventilated area. Use a dust-reducing circular saw equipped with Hardie™ Blade Saw Blade or comparable fiber cement blade and well well-maintained M-class vacuum or higher with an appropriate filter for capturing fine (respirable) dust. Wear a properly fitted, approved dust mask or respirator (minimum P1).

CUTTING INDOORS

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

DRILLING/OTHER MACHINING

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

IMPORTANT NOTES

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

DUST MASKS AND RESPIRATORS

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

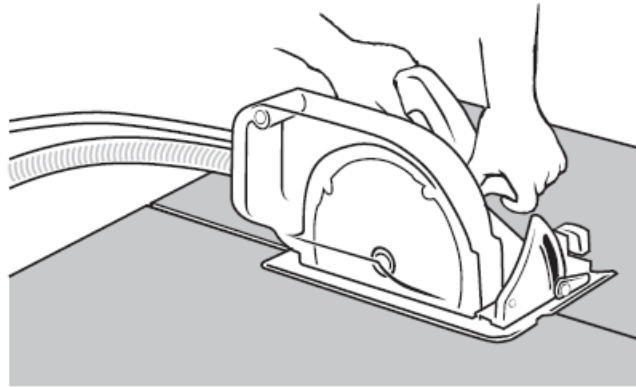
WORKING INSTRUCTIONS

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

Hardie™ Blade Saw Blade

The Hardie™ Blade Saw Blade used with a dust-reducing saw is ideal for fast, clean cutting of Hardie™ fiber

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 cutting.



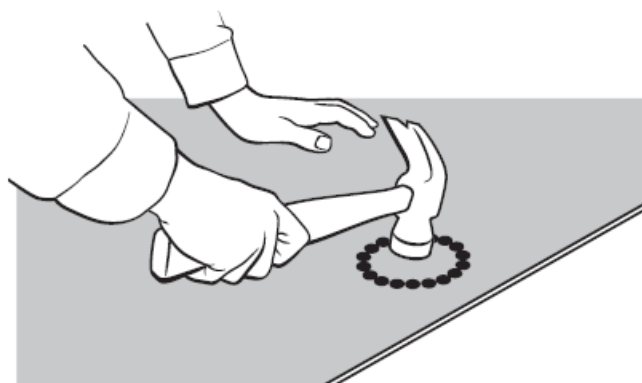
HOLE-FORMING

For smooth-cut circular holes:

- Mark the center 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 and 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

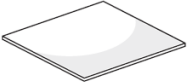
To avoid damage, all Hardie™ building products should be stored with edges and corners of the sheets protected from chipping. Hardie™ building products must be installed in a dry state and protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface 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

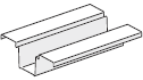
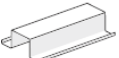

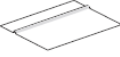




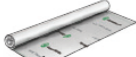


installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

Product Information

Exotec™ Facade Panel Information				
PRODUCT	DESCRIPTION	QUANTITY / SIZE (NOMINAL)		
	ExoTec™ Facade Panel Dense compressed panel. Square edge. Factory sealed on all six sides. Each panel has a distinctive white face, which accepts a wide range of paint finishes. The panel must be installed with the white side facing the exterior of the structure. Nom. density: 1550kg/m ³	Thickness	Width	Lengths
		9mm	1200mm	2400, 3000

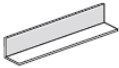






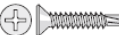

NOTE: Not all combinations of thicknesses, width, and length are available ex-stock, but are available to order. Check with James Hardie for the availability of panel sizes.

Accessories/Tools Supplied by James Hardie

ACCESSORIES	DESCRIPTION	QUANTITY/SIZE (APPROX)
	ExoTec™ Top Hat A rolled metal section, for use with ExoTec™ Facade Panel and fixing system, designed to span vertically across the building structure to support facade panels and isolate differential movement of the panels from those of the structure. 124mm wide x 35mm deep x 0.75mm gauge thick. (Approximately)	45 per pack 6,000mm (305948) 7,200mm (305947)
	Hardie™ Intermediate Top Hat A metal top hat installed vertically for use with ExoTec™ Facade Panel and fixing system, for intermediate sheet support. 50mm wide face x 35mm deep x 0.75mm gauge thick. (Approximately)	50 per pack 6,000mm (305950) 7,200mm (305949)
	ExoTec™ Gasket Snap Strip. 3,620mm long For use with the ExoTec™ Facade Panel and fixing system, this gasket snap strip is specially designed to clip into the ExoTec™ Top Hat at vertical facade panel joints to cover fixings to the structure and to provide an initial weather seal and drainage using a neoprene gasket.	10 per pack (305556)
	Hardie™ Backing Strip. 1,190mm, 2390mm, 2990mm A weather seal at horizontal panel joints for use with ExoTec™ Facade Panel and fixing system and Matrix™ Cladding.	10 per pack 1,190mm (305557) 2,390mm (305558) 2,990mm (305559)
	Hardie™ Facade Washers Facade washers used for exposed fastener fixing with ExoTec™ Facade Panel and fixing system and Matrix™ cladding.	1000 per bag (305565)
	Hardie™ Base Coat. 4kg tub, 15kg bag A water-resistant base coat compound used to finish over countersunk fasteners with epoxy.	4 per box - 4kg, 1 each - 15kg 4kg tub (305535) 15kg bag (305591)
	Hardie™ Joint Sealant, 300mL cartridge A general purpose, paintable, exterior grade polyurethane joint sealant.	20 per box (305534)
	RAB™ Board RAB is an all-in-one airtight, weatherproof, vapour permeable and non-combustible rigid 6mm fibre-cement sheathing for residential or commercial applications where the structural design require strong/stiffer shear walls.	40 per pack 1200mm x 2450mm (402980) 1200mm x 2750mm (405131) 1200mm x 3000mm (402981)
	Hardie™ Wrap Weather Barrier A non-perforated, highly breathable and reflective safe-glare weather barrier designed to be used behind ExoTec™ Facade Panel and fixing system to help protect the building. Unit size 2750mm x 30000mm.	1 each (305664)
	Hardie™ Edge Trim An architectural slab edge solution fabricated from high-quality powder coated aluminium. Base Trim Unit size: 3950mm. 4 per pack. See right for all Hardie™ Edge components:	Base Trim 4 per pack. (305911) Base Trim Jointer 12 per pack. (305912) Internal Corner 12 per pack. (305913) External Corner 12 per pack. (305914)
TOOLS	DESCRIPTION	QUANTITY/SIZE (APPROX)
	Hardie™ Blade Saw Blade. 185mm diameter A 185mm diameter poly-diamond blade for fast and clean cutting of Hardie™ fibre cement.	1 Each (300660)

Accessories/Tools Not Supplied by James Hardie

James Hardie recommends the following products for use in conjunction with ExoTec™ Facade System. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturer for information on their warranties and further information on their products.

ACCESSORIES	DESCRIPTION	ACCESSORIES	DESCRIPTION
	Miscellaneous light gauge pressed metal section Sections 1mm minimum to 1.2mm maximum corrosion resistant metal. Used in internal and external corner details.		Flashing tape A flexible self-adhesive tape used in preparation of a window. Refer to the window installation section in this Guide for more information.
	Bond breaker tape Used when filling vertical joints to prevent sealant from bonding to top hat.		Base coat applicator A recommended method of applying Hardie™ Base Coat over epoxy filled countersunk screw heads. This method minimises waste. Base coat is easily sanded by comparison to epoxy fillers.
	6mm masonry drill Provides a 6.2mm to 6.3mm diameter hole. Used to pre-drill clearance holes for fasteners.		Epoxy flush sealing (2 part) Countersunk head screws are flush sealed using Megapoxy P1. Ardex RA 88, Dunlop Builder's Bond between sheets (0.5mm-1mm gap)
	Countersunk head drill 6mm countersunk bit.		
FASTENERS	DESCRIPTION	FASTENERS	DESCRIPTION
	Countersunk fasteners No. 10x30 countersunk head self drilling screws - Class 3 minimum coating.		Exposed head fasteners No. 10x25mm pan, wafer or hex head self drilling screws Class 3 Minimum coating.

Design Considerations

COMPLIANCE

All design and construction must comply with the appropriate requirements of the current Building Code of Australia (BCA), regulations, and standards.

SLAB AND FOOTINGS

The slab and footings on which the building is situated must be designed and certified by a qualified structural engineer according to all relevant codes, regulations, and standards.

GROUND CLEARANCES

- Install Hardie™ external cladding with a minimum 150mm clearance to the earth on the exterior of the building or by local building codes if greater than 150mm is required. Also, maintain a minimum 50mm clearance between Hardie™ external cladding and roofs, decks, paths, steps, and driveways.
- The adjacent finished grade must slope away from the building by local building codes, typically with a minimum slope of 50mm minimum over the first meter.
- Do not install external cladding in areas where it may remain in contact with standing water or debris.

MOISTURE MANAGEMENT

The ExoTec™ Facade Panel and fixing system acts as a weather shield. To achieve a particular level of weather tightness, the designer must determine the appropriate moisture management detailing for the project. The designer should consider the following matters when making that determination:

- It is the responsibility of the builders and designers to identify moisture-related risks associated with any particular building design. It is the responsibility of the builder to ensure appropriate moisture management is provided during framed wall construction through the effective use of flashings, sealants, and vapor permeable membranes such as Hardie™ Wrap Weather Barrier, building wraps, vapor retarders, and damp proof course. Before installing panels, all wall openings, penetrations, intersections, connections, window sills, heads, and jambs must incorporate appropriate flashing and waterproofing. Materials, components, and the installation practices that are used to manage moisture in framed wall construction must, at a minimum, comply with the requirements of relevant standards, building codes, and the manufacturer's specifications.
- Sealant at sheet joints must be installed where detailed in this literature. For wind pressures up to 4.0kPa, see Figures 19, 20, 21, 22. For pressures including and above 4.0kPa, both vertical and horizontal joints must be sealant-filled, see Figure 24. Where sealant is exposed, refer to the sealant manufacturer for durability

information.

- For high walls, it may be necessary to provide flashing to drain the facade at one or more intermediate levels.
- The installation of smoke, vermin, and other barriers must not restrict moisture from reaching flashings.

For information on membranes refer to clause 5.2 of this guide

TOP HAT FRAMING

ExoTec™ Facade Panels must be fixed to ExoTec™ Top Hat and Hardie™ Intermediate Top Hat sections which are installed vertically over steel, masonry, or timber structures, See Figure 1. ExoTec™ Top Hat and intermediate JH top hat sections must not be installed horizontally. Ensure a planar fixing surface for ExoTec™ Facade Panels. The structure can either be straightened or packed out between the substructure and top hats. Packing out of top hats must be limited to 20mm maximum.

- It is the responsibility of the project engineer to determine the appropriate wind pressures for the project and specify the fixing of the top hats to the structure. The engineer must limit the deflection of the supporting structure to span/250 for Serviceability Wind Load.
- The nominal spacing between top hats is 605mm for a 1200mm wide panel and 455mm for a 900mm wide panel, i.e. top hats are required at panel edges and at intermediate spacings within the panels. The ExoTec™ Top Hats at panel edges have the legs facing out from the structure and at intermediate locations the Hardie™ Intermediate Top Hat is used, with the legs fixed to the structure, see Figure 2.
- The maximum spans and nominal spacings of ExoTec™ Top Hats and Hardie™ Intermediate Top Hats for wall and soffit applications are provided in Tables 2 and 3 respectively, see page 6. For wall applications, the maximum cantilever distance of the top hats is one-quarter of the single span shown in Table 2.

SEALANT FILLED JOINTS

- For design wind pressures including and above 4.0kPa, all horizontal and vertical joints must be continuously sealed over bond breaker tape.
- Where joints are required to be sealant filled, Hardie™ Joint Sealant and Bostik Seal 'n' Flex are recommended. Where vertical joints are sealed, a bond breaker tape must be installed behind the sealant.

CURVED FACADES

The ExoTec™ Facade Panel and fixing system can be used to follow curved walls as described below:

For radii 10m or greater

ExoTec™ Facade Panels can be easily bent to the curve of the frame. ExoTec™ Facade Panels are to be fixed in a horizontal orientation only. Refer to Table 1 for maximum top hat spacing.

TABLE 1

Max. Top Hat Spacing for Various Radii	
RADII (m)	MAX. TOP HAT SPACING (mm)
	1200mm wide panels
10 to 15	400
>15	To suit windloading

NOTES

1. The closer the spacing of top hats, the less likely they will read through as facets in the panels, particularly at small radii.
2. 9mm thick panels may be able to be curved to a smaller radius, but this is likely to overstress panels.

NOTE

- When fixing curved sheets, commence fixing from the center and work outwards to avoid “crumminess”.
- Particular care should be taken when curving panels to ensure the supports are on a true curve. If not, apart from poor appearance, there is a risk of locally over-stressing the panels and causing cracking.
- Alternate materials and installation methods are available for radii less than specified above, glass glass-reinforced cement (GRC) installed according to the manufacturer’s specifications.
- For further information on curved facades contact James Hardie on 13 11 03.

TABLE 2 – WALLS

Walls – Maximum Exotec™ Top Hat and Hardie™ Intermediate Top Hat Spans (mm) for Ultimate Design Wind Pressures

SPAN TYPE	NOMINAL TOP HAT SPACING (mm)	ULTIMATE DESIGN WIND PRESSURE (kPa)												
		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Single Span	300	24 13	210 8	191 5	177 8	167 3	158 9	152 0	146 1	141 1	136 7	132 8	129 3	126 1
	450	21 07	184 1	167 3	155 3	146 1	138 8	132 8	127 7	123 3	119 4	116 0	111 5	107 5
	600	19 14	167 2	152 0	141 1	132 8	126 1	120 6	116 0	110 1	105 0	100 5	965	923
2 Span Conti nuous	300	32 34	282 5	240 8	210 6	188 5	171 1	157 4	145 9	136 4	128 1	121 0	114 7	109 1
	450	28 25	224 5	188 5	163 9	145 9	132 1	121 0	111 9	104 2	976	919	869	825
	600	24 08	188 5	157 4	136 4	121 0	109 1	997	919	854	787	721	666	619
3 Span Conti nuous	300	29 81	260 5	236 6	219 7	204 2	185 5	170 6	158 2	147 9	139 0	131 2	124 4	118 4
	450	26 05	227 5	204 2	177 7	158 2	143 2	131 2	121 3	113 0	105 9	998	944	897
	600	23 66	204 2	170 6	147 9	131 2	118 4	108 2	998	927	861	789	728	676

TABLE 3 – SOFFITS

Soffits – Maximum Exotec™ Top Hat and Hardie™ Intermediate Top Hat Spans (mm) for Ultimate Design Wind Pressures

SPAN TYPE	NOMINAL TOP HAT SPACING (mm)	ULTIMATE DESIGN WIND PRESSURE (kPa)												
		1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7
Single Span	300	23 11	204 7	187 3	174 6	164 8	156 9	150 3	144 7	139 8	135 6	131 8	128 4	125 3
	450	20 20	178 9	163 7	152 6	144 0	137 1	131 3	126 4	122 1	118 4	114 8	110 4	106 4
	600	18 35	162 5	148 7	138 6	130 8	124 5	119 3	114 3	108 6	103 7	994	956	906
2 Span Continuous	300	30 99	271 3	231 6	203 8	183 2	167 1	154 0	143 1	133 9	126 0	119 2	113 1	107 7
	450	26 49	213 0	180 8	158 5	141 8	128 8	118 3	109 6	102 3	960	905	857	809
	600	22 31	178 5	150 8	131 7	117 4	106 3	974	900	838	768	706	653	607
3 Span Continuous	300	28 56	253 0	231 5	215 8	198 6	181 1	167 0	155 2	145 3	136 7	129 3	122 7	116 8
	450	24 96	221 0	196 0	171 8	153 8	139 7	128 3	118 9	111 0	104 2	983	931	884
	600	22 68	193 4	163 6	142 8	127 4	115 4	105 7	977	910	840	772	714	664

MOVEMENT JOINTS

- Movement joints are required to limit or remove stresses from the panels. Movement joints are provided by the nominal 10mm expressed or sealant-filled joints at the perimeter of the panels.
- Vertical structural joints may be required in the cladding to coincide with structural joints in the structure to accommodate the anticipated movement.
- Horizontal structural joints are required at slab level where the framing supporting the top hats moves with the creep deflection in the slab.

NOTE

The project engineer is responsible for specifying the anticipated movement.

PREPARATION

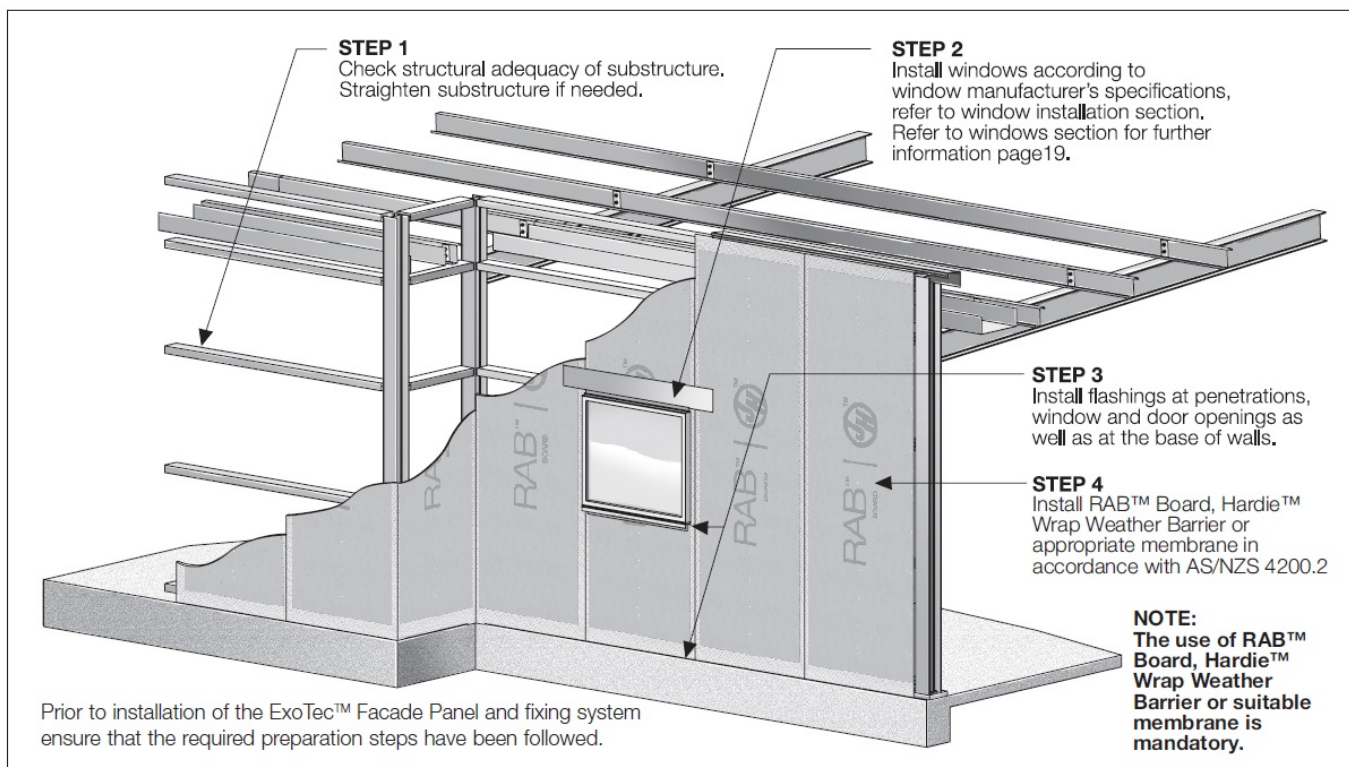


FIGURE 1 PREPARATION OF SUB-STRUCTURE

NOTES

1. For high walls, it may be necessary to provide flashing to drain the facade at one or more intermediate levels.
The installation of any barrier must not restrict moisture from reaching flashings and draining out.
2. The engineer must limit the deflection of the supporting structure to span/250 for serviceability Wind Load.

SUBSTRUCTURE

The ExoTec™ Top Hat and Hardie™ Intermediate Top Hat sections are installed vertically over steel girts, masonry, concrete walling, and in residential applications over timber or steel framing. In a residential application, noggings between studs can be used as an intermediate support for ExoTec™ Top Hat and Hardie™ Intermediate Top Hat sections.

A qualified structural engineer must design the substructure and the connection between the substructure and the top hats.

WEATHER BARRIER

A suitable water control membrane must be installed under Hardie™ cladding by the AS/NZS 4200.2 'Pliable building membranes and underlays – Installation' and NCC requirements or other relevant and appropriate standards. James Hardie has tested and certified the use of Hardie™ Wrap Weather Barrier or RAB™ Board for climate zones 2-8 within Australia. Hardie™ Wrap Weather Barrier is a Class 4 vapor-permeable membrane that delivers a triple shield of protection to help against external weather penetration, internal condensation management, and external heat penetration through its safe-glare reflective layer.

RAB™ Board is classified as a Vapour Permeable (Class 4) when assessed using the Vapour Permeable classification of AS/NZS 4200.1 based on testing in accordance with ASTM E96 and an appraisal from BRANZ. If using an alternate product instead of Hardie™ Wrap Weather Barrier or RAB™ Board or the project is located in a hot humid area (Climate Zone 1), the designer must ensure that the product is fit for purpose and it has the following classification by AS/NZS 4200.1:2017 'Pliable building membranes and underlays – Materials': Hardie™ Wrap Weather Barrier is suitable for use as a component of non-combustible walls and in bushfire prone areas as it has a "Low" Flammability Index by AS 1530.2 and is under 1mm in thickness.

TABLE 4

Weather Barrier Classification		
Climate Zones (NCC)	Water Barrier Class (AS/NZS 4200)	Vapour Permeance Class (AS/NZS 4200.1)
2-8	High Water Barrier	Vapour permeable (Class 3 or 4)
1		Vapour Barrier (Class 1 or 2)

Soft compressible insulation installed between the front of the wall studs and directly behind the external cladding can cause installation issues and is thus not recommended.

FLASHING

All wall openings, penetrations, intersections, connections, window sills, heads, and jambs must be flashed prior to top hat and sheet installation. Refer to Clause 5.2 for moisture management requirements.

THERMAL BREAK

- The NCC 2022 sections J3D6 and H6D2 volumes 1 and 2 respectively, state for both residential and commercial buildings a thermal break with an R 0.2m² K/W must be installed behind external cladding where the cladding and internal lining make direct contact with the same metal frame.
- The ExoTec™ Facade Panel installed with the ExoTec™ Fixing System in accordance with this installation guide does not require a thermal break as the panel is attached to the outside face of the 'Metal-Framed Single-Stud' wall and not directly connected to the metal framing member that supports the interior wall lining.
- Please refer to letter of opinion from Cameron Chick of Acronem Consulting to verify this solution meets the minimum NCC requirements.
- Please ensure the proposed application complies with the NCC, standards and thermal performance opinion.

Panel and Top Hat Layout

The ExoTec™ Facade Panels can be installed upright horizontally or vertically. The panel layout will determine the location of the ExoTec™ Top Hats and Hardie™ Intermediate Top Hats, see Figures 2 to 5. The vertical expressed joints may be aligned or offset in a brick pattern layout.

KEY

- **TH:** ExoTec™ Top Hat
- **INT:** Hardie™ Intermediate Top Hat

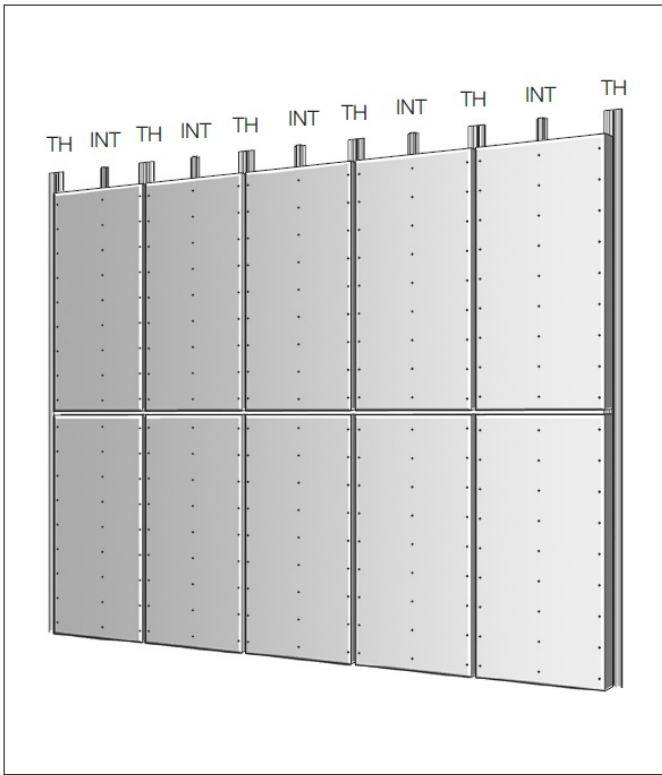


FIGURE 2 VERTICAL LAYOUT ALIGNED GRID PATTERN

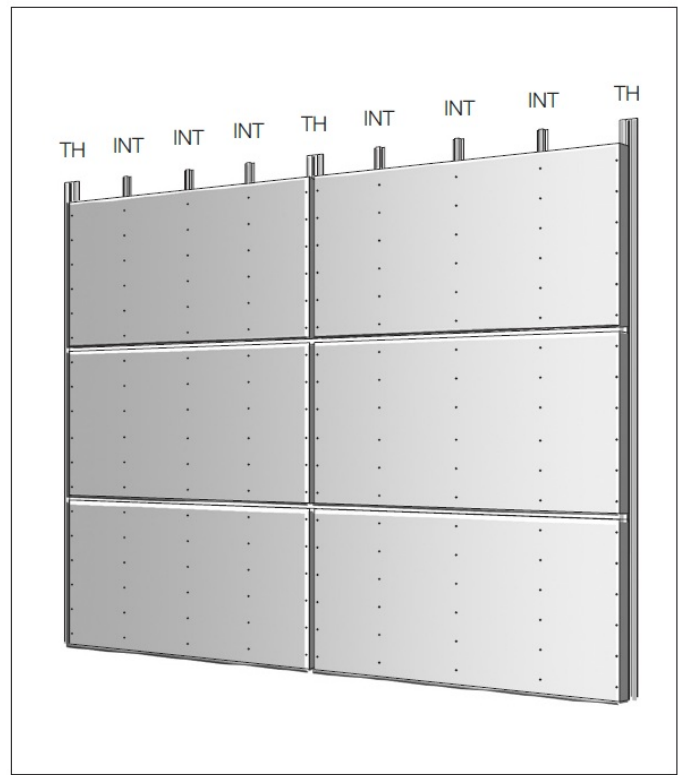


FIGURE 4 HORIZONTAL LAYOUT ALIGNED GRID PATTERN

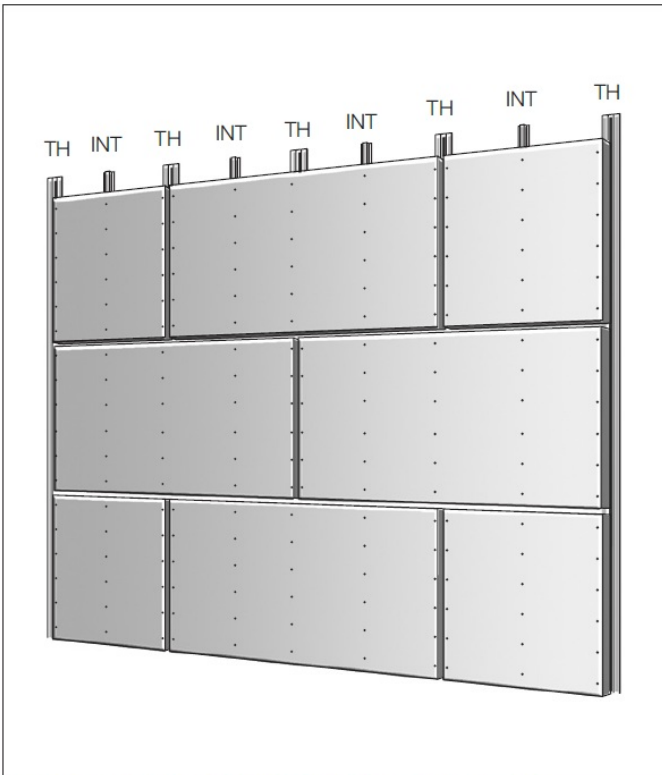


FIGURE 3 HORIZONTAL LAYOUT BRICK GRID PATTERN

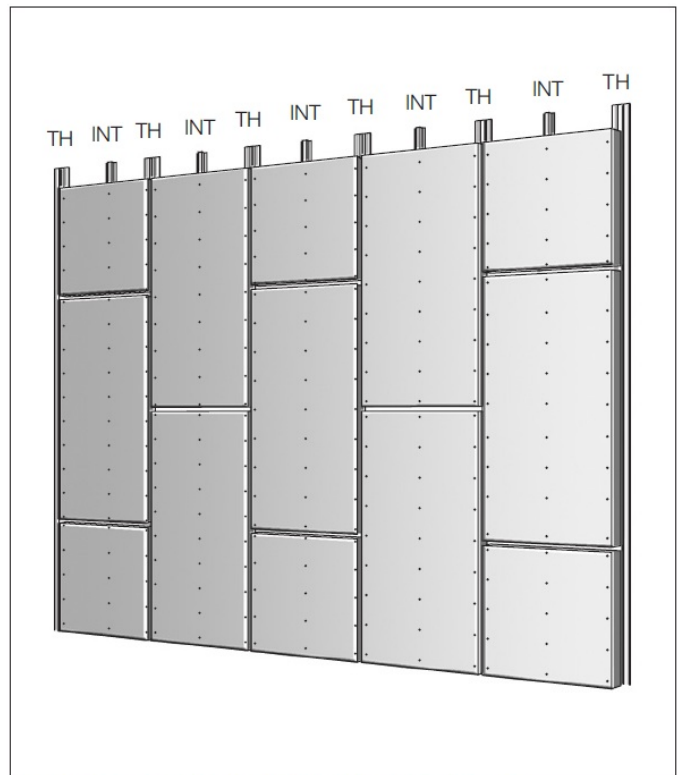


FIGURE 5 VERTICAL LAYOUT BRICK GRID PATTERN

Installation

TOP HAT INSTALLATION

ExoTec™ Facade Panels must be fixed to:

1. ExoTec™ Top Hat for vertical sheet joints.
2. Hardie™ Intermediate Top Hat for supporting the panels between vertical sheet joints.

• STEP 1

Ensure a straight subframe for fixing of top hats and the ExoTec™ Facade Panels. Where required, provide suitable packing between the substructure and the top hats limited to 20mm. This must be approved by the site engineer.

• **STEP 2**

For top hat span and spacing refer to the project specific specification.

• **STEP 3**

- Fix the ExoTec™ Top Hats and
- Hardie™ Intermediate Top Hats vertically to the substructure according to structural engineer specifications.

• **STEP 4**

- Fix the ExoTec™ Gasket Strip into all ExoTec™ Top Hats by starting at one end and pushing into the ExoTec™ Top Hats along its length.
- The ends of the snap strip are butted together in the top hats without any need for sealant.

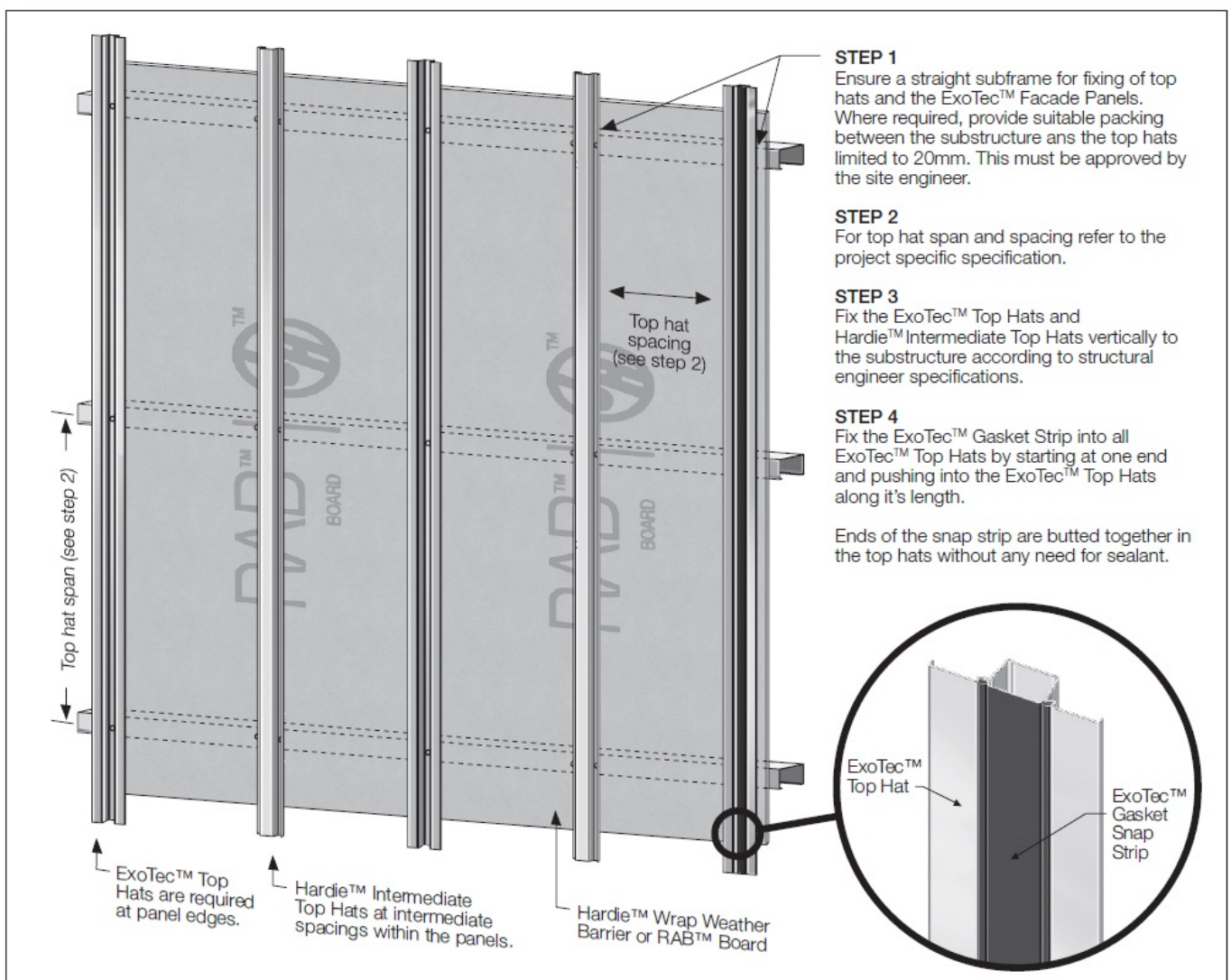


FIGURE 6 TOP HAT INSTALLATION

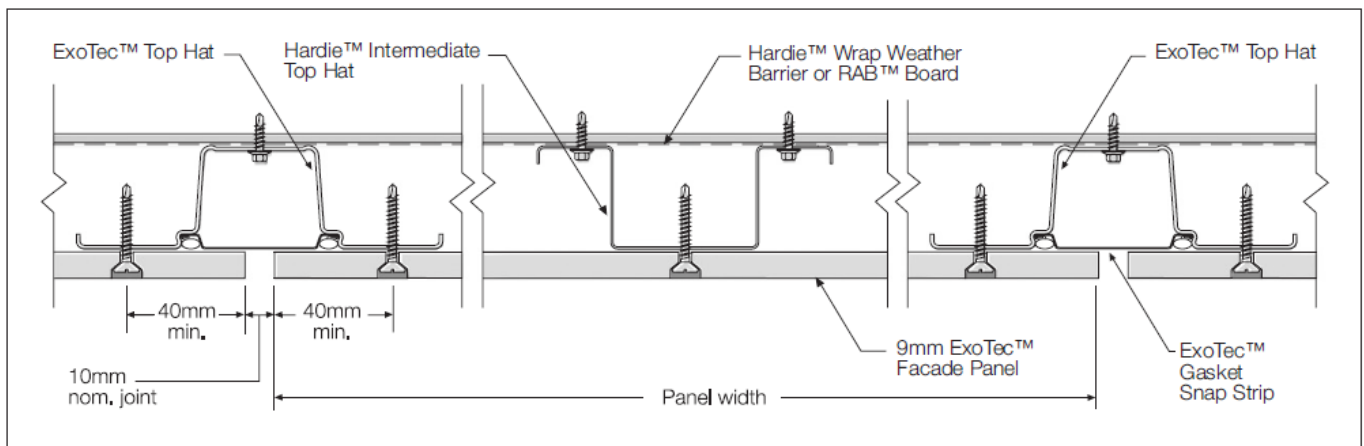


FIGURE 7 TOP HAT AND PANEL FIXING DETAIL FOR EXOTEC™ PANELS

PANEL INSTALLATION

Panels are installed with a 10mm nominal expressed joint between adjacent panels, vertically and horizontally. Vertical joints up to 20mm in width can be formed, with additional care required at installation to ensure the panel edges cover the ExoTec™ Gasket Snap Strip on both sides of the joint. A minimum vertical expressed joint of 6mm is allowed with care. Horizontal joints are a nominal 10mm.

NOTE

When applying sealant to the edge of the ExoTec™ Facade Panel, refer to page 4 for recommended sealants.

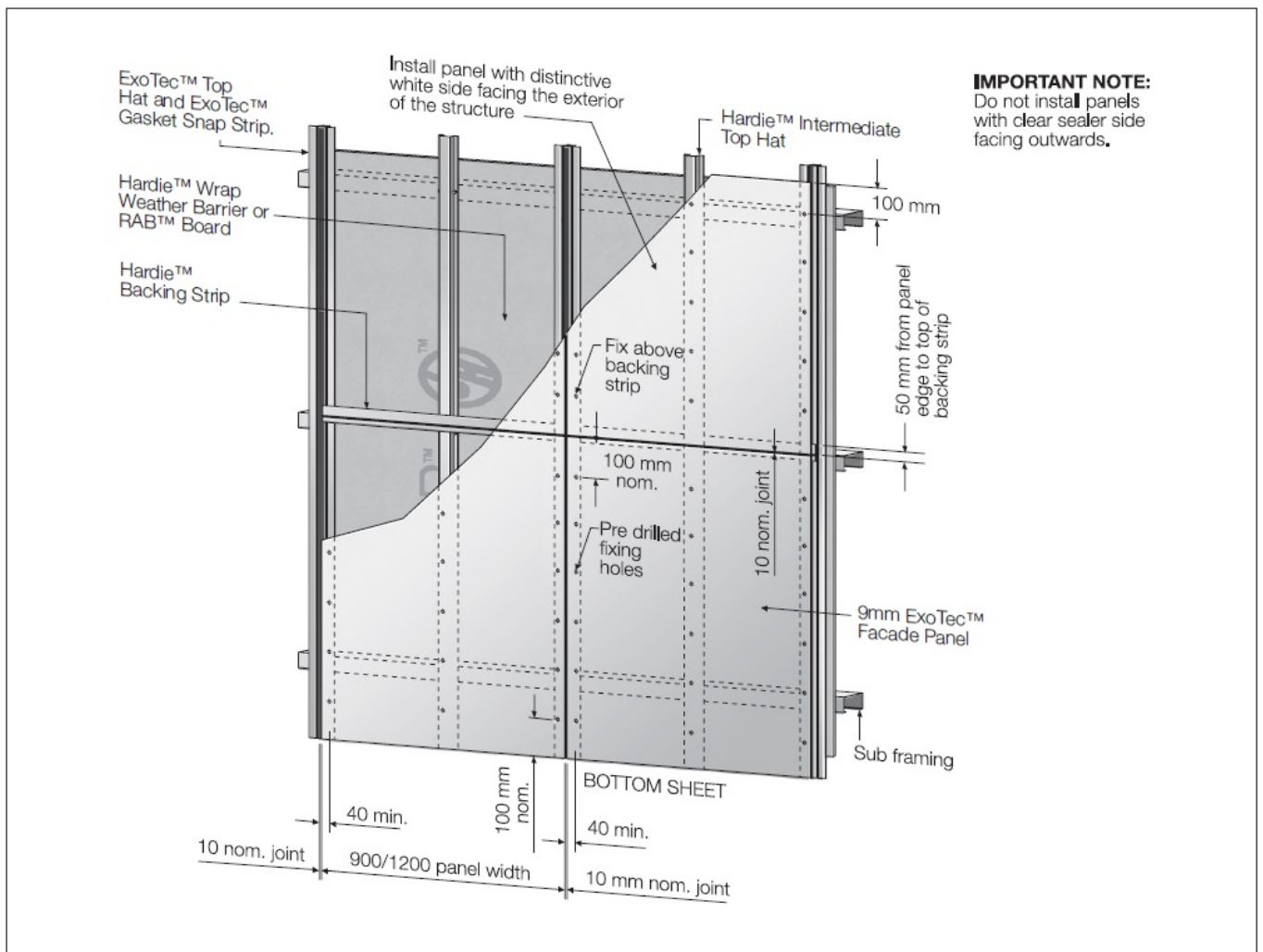


FIGURE 9 TYPICAL PANEL AND FRAMING LAYOUT

FASTENER SPACINGS

Table 5 indicates the maximum fastener spacings at sheet edges and intermediate JH top hats for wall and soffit

applications.

TABLE 5 – WALLS & SOFFIT

Fastener Spacings for Wall and Soffit Application			
Design Wind Pressure (k Pa)		WALLS	SOFFITS
	Top Hat Spacing (mm)	Max. Fastener Spacing (mm)	Max. Fastener Spacing (mm)
1.0	600	600	600
1.5	600	600	600
2.0	600	575	550
2.5	600	450	425
3.0	600	350	350
3.5	*600	350*	N/A
3.5	450	450	425
4.0	450	400	375
4.5	450	350	325
5.0	450	300	300
5.5	450	275	275
6.0	450	250	250
6.5	400	250	250
7.0	400	250	250

NOTES TO TABLES 2, 3 AND 5

1. Top hat deflection for serviceability limit state design to AS 1170.2 is limited to span/250, except where * is shown it is span/180.
2. Design wind pressures to be by AS 1170.2 for ultimate strength design.
3. For permissible design wind pressure, divide the ultimate strength design wind pressures by 1.5.
4. For higher design wind pressures (ultimate), contact James Hardie on 13 11 03.

FASTENING METHODS

Panels may be fixed to ExoTec™ Top Hats and Hardie™ Intermediate Top Hats by either:

1. **Countersunk fasteners:** flush finished over screw heads with a suitable epoxy, and then with Hardie™ Base Coat. Generally used with site-applied acrylic coatings.
NOTE: Countersunk fastening is not suitable for pre-finished facade panels.
2. **Exposed head screws:** Use pan, wafer, or hex head screws. Used where pre-finished panels are installed. Exposed head fasteners may be color-coated to match the panel finish.
 - Fasteners must have the appropriate level of durability required for the intended project. This is of

particular importance in coastal areas, subject to salt spray and other corrosive environments.

- Fasteners must be fully compatible with all other materials that the fasteners will come in contact with, to ensure the durability and integrity of assembly.
- Contact fastener manufacturers for more information.

Countersunk Fasteners

NOTE:

1. Mark fastener locations as specified.
2. Drill clearance holes into ExoTec™ Facade Panel, for No.10 gauge screws using a 6mm countersunk masonry drill, which provides a 6.2 to 6.3mm diameter hole, see Figure 10. Countersink hole to a depth of 2.5mm to 3mm. This is measured from the top of the screw to the top of the sheet, see Figure 15.

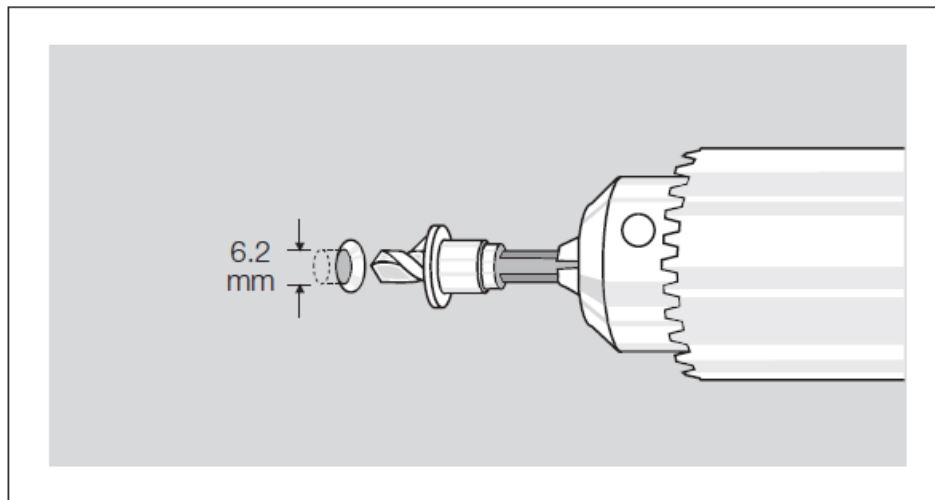


FIGURE 10 DRILL COUNTERSINK HOLE

NOTE:

Do not use hammer action.

3. Fasten the panel into a top hat with corrosion resistance (Class 3 min.) No. 10 gauge x 30mm countersunk head self drilling fasteners. For areas within a corrosive environment refer to the fastener manufacturer for suitability and compatibility of fasteners.
4. Clean dust out of holes to ensure adhesion of epoxy sealer.
5. Mix only sufficient epoxy for immediate use. James Hardie recommends the use of Megapoxy P1.
6. Cover countersink fastener with epoxy leveled flush with sheet.

To accommodate for second coat do not overfill the hole. Allow the epoxy to cure.

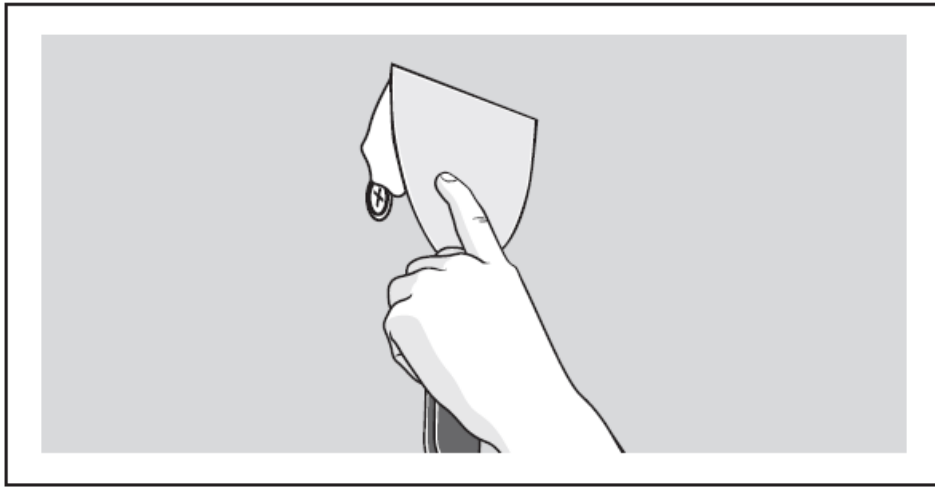


FIGURE 11 COVER COUNTERSINK FASTENER WITH EPOXY

7. Apply Hardie™ Base Coat over epoxy using the base coat applicator. See Figures 12, 13, and 14.

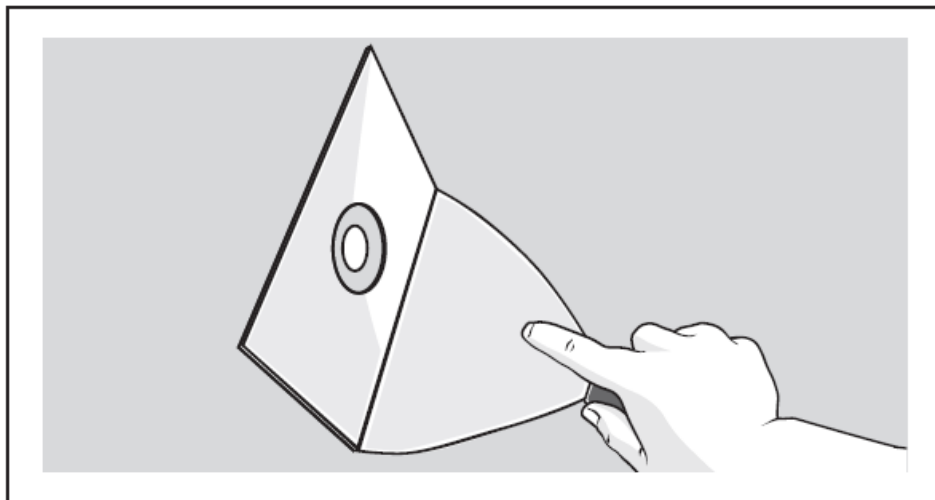


FIGURE 12 FIX BASE COAT APPLICATOR OVER EPOXY FILLED SCREW HEAD

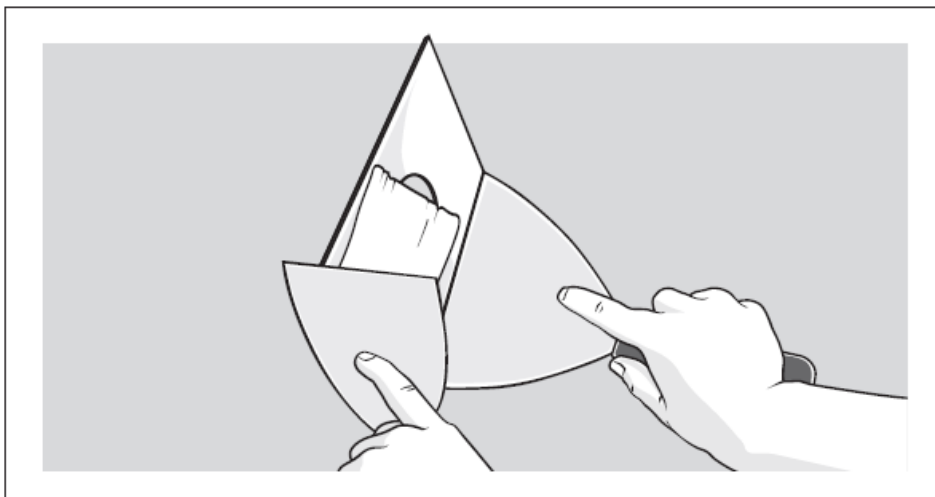


FIGURE 13 APPLY HARDIE™ BASE COAT OVER EPOXY FILLED SCREW HEAD

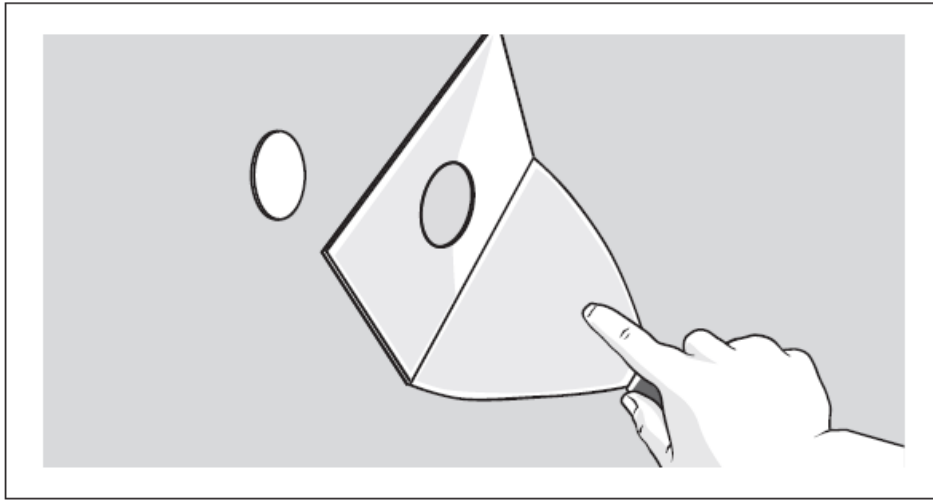


FIGURE 14 SCREW HEAD COVERED BY EPOXY AND JH BASE COAT

8. Sand Hardie™ Base Coat smooth when cured with 100-120 grit sandpaper.

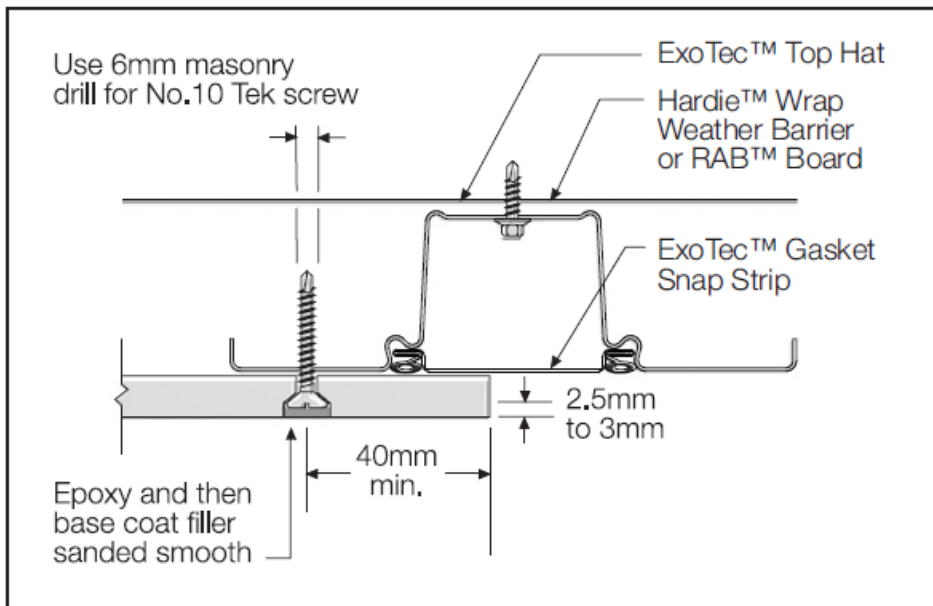


FIGURE 15 COUNTERSUNK FASTENER DETAIL

- Do not use hammer action.

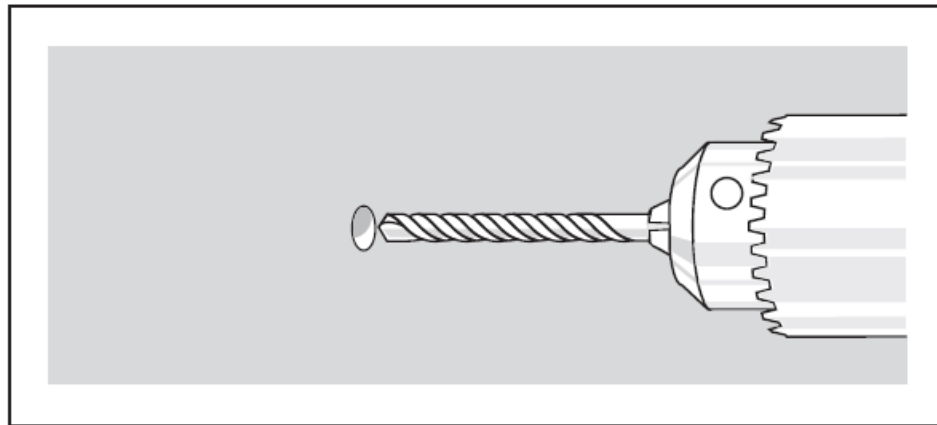


FIGURE 16 DRILL CLEARANCE HOLE

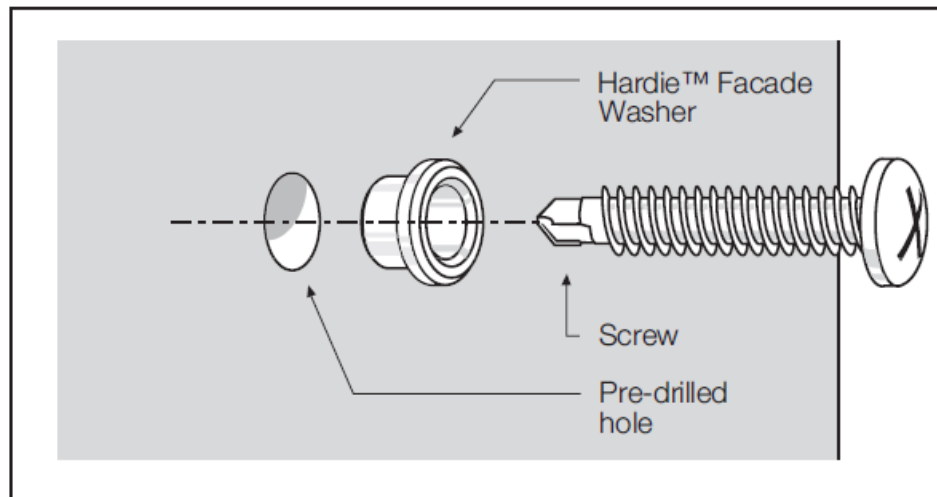


FIGURE 17 WASHER AND SCREW INSTALLATION

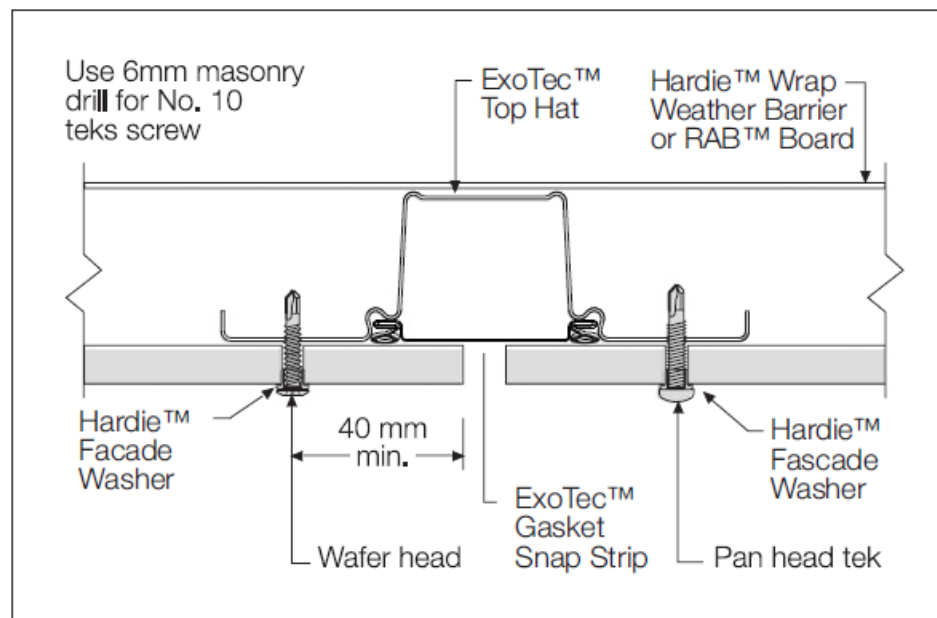


FIGURE 18 EXPOSED HEAD FASTENER DETAIL

BACKING STRIP INSTALLATION

At horizontal panel joints, ExoTec™ Backing Strips are adhered along the back top edge of the ExoTec™ Facade Panel prior to panel installation.

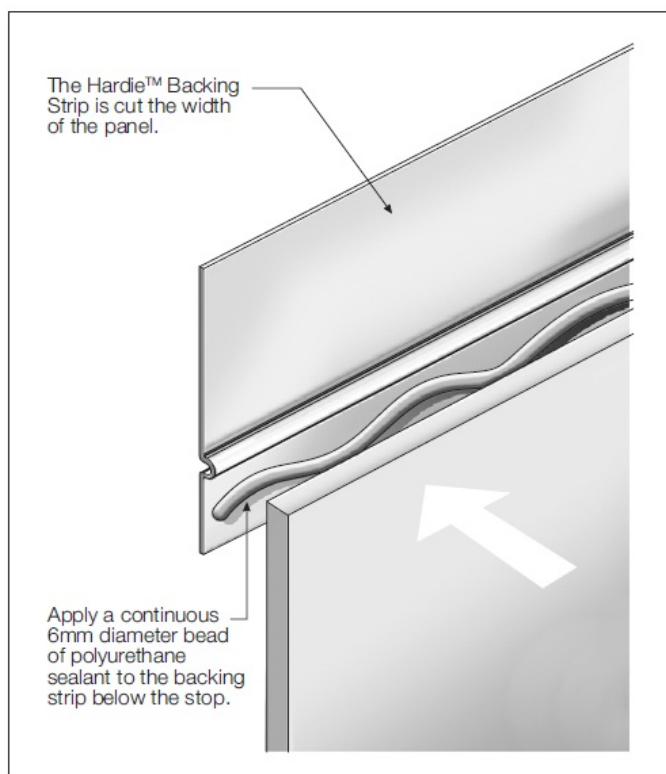


FIGURE 19 APPLYING SEALANT TO EXOTEC™ BACKING STRIP

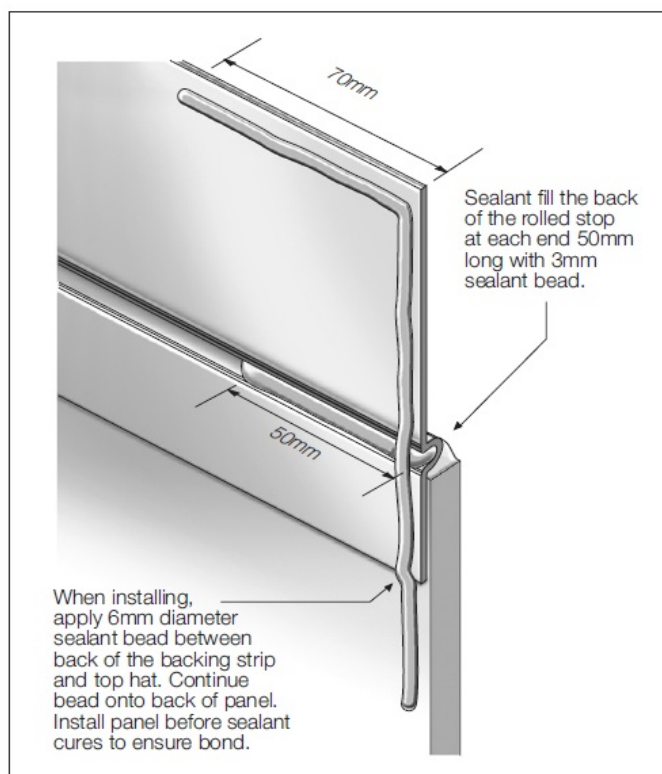


FIGURE 21 SEALING EXOTEC™ BACKING STRIP END DETAIL

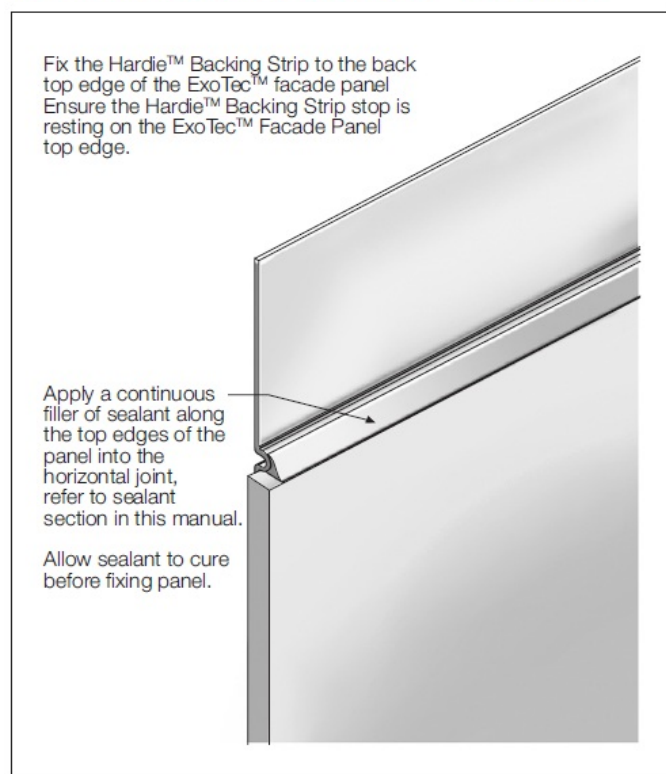


FIGURE 20 APPLYING SEALANT TO HORIZONTAL JOINT

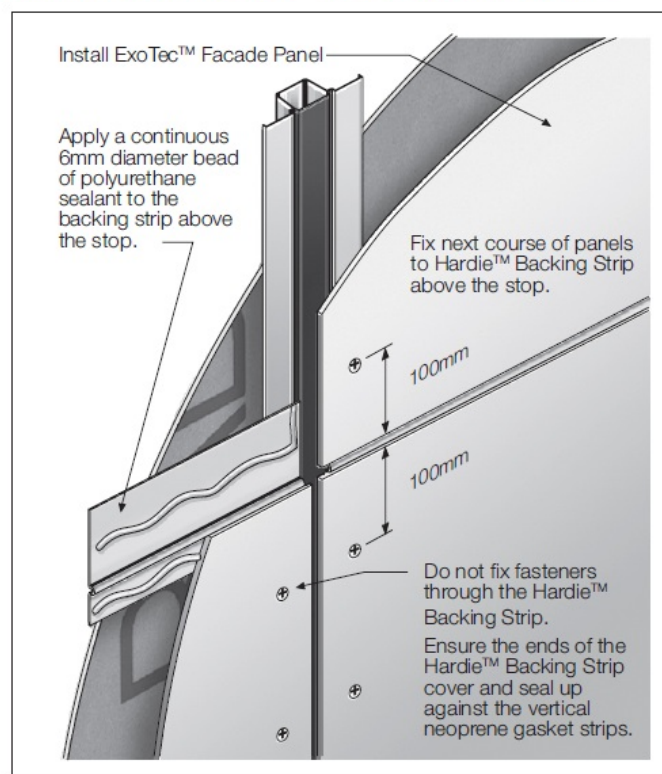


FIGURE 22 INSTALLING NEXT COURSE OF PANELS DETAILS

JOINTS AND JUNCTIONS

Joints

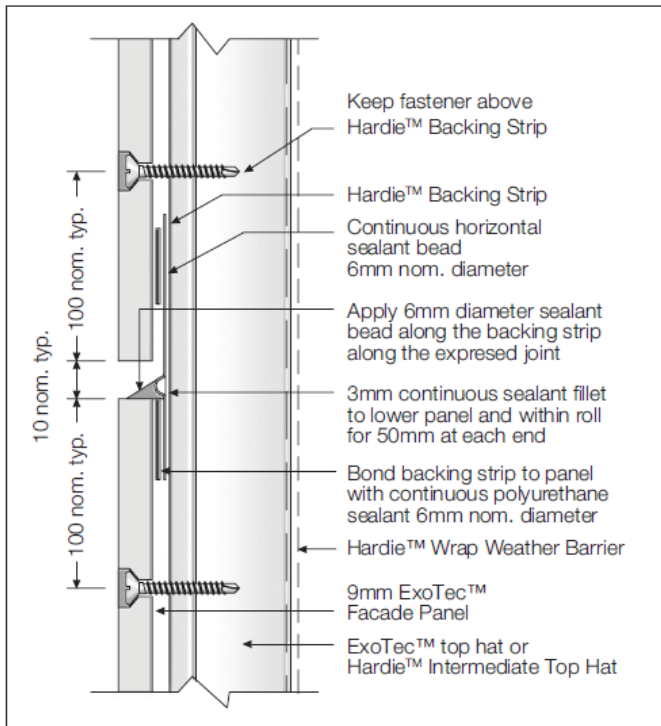


FIGURE 23 HORIZONTAL PANEL JOINT DETAIL

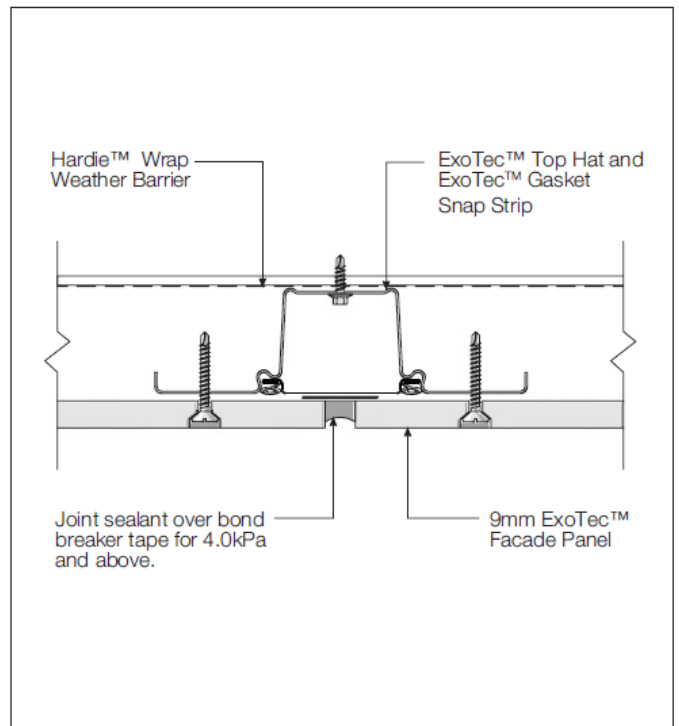


FIGURE 24 PANEL JOINTS IN HIGH WIND LOAD AREAS DETAIL

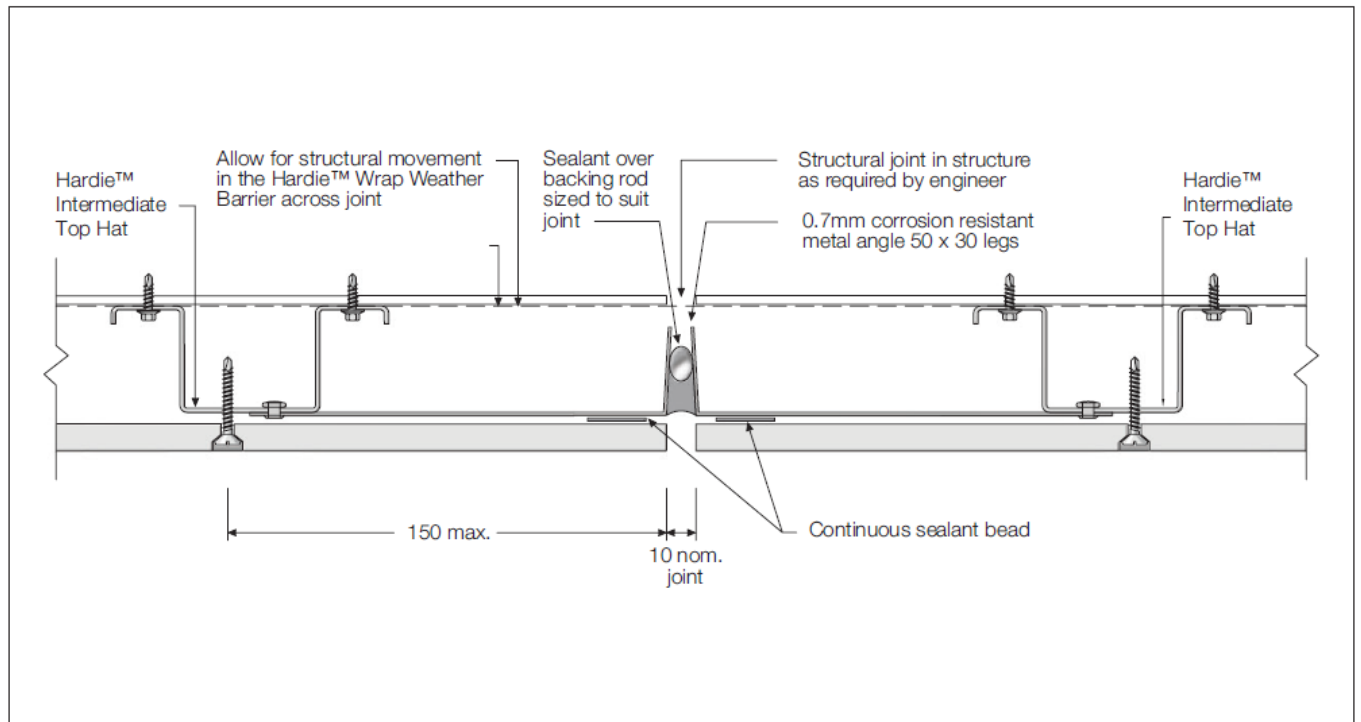


FIGURE 25 VERTICAL STRUCTURAL JOINT DETAIL

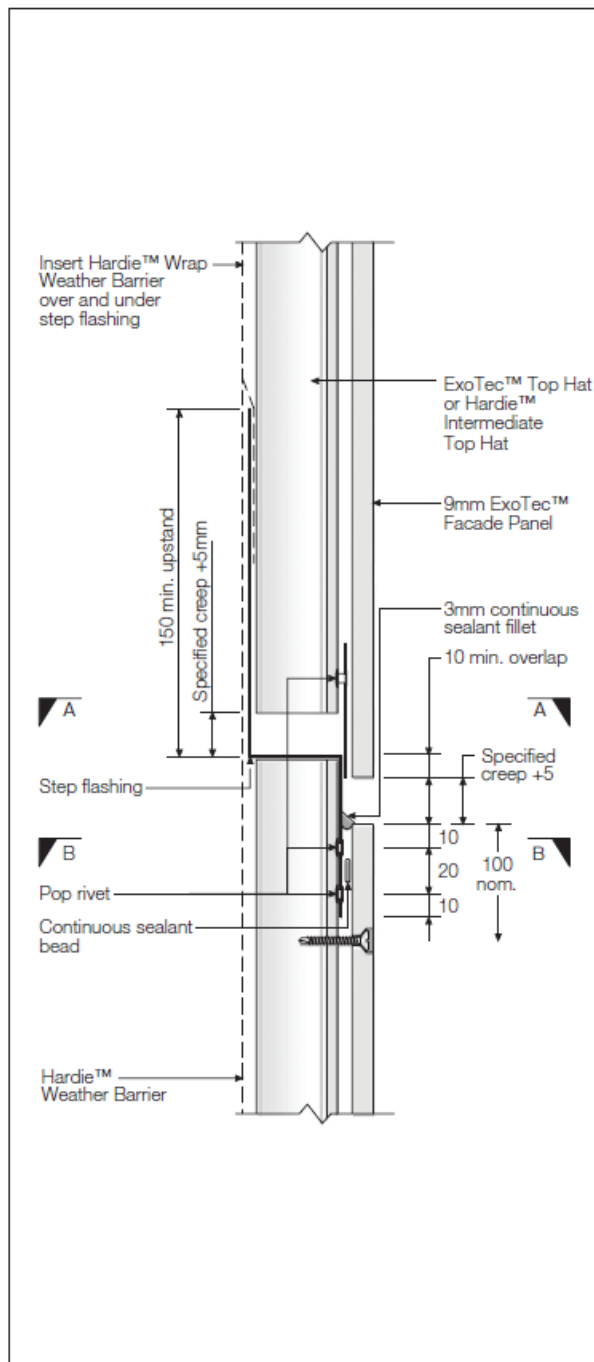


FIGURE 26 HORIZONTAL STRUCTURAL JOINT DETAIL

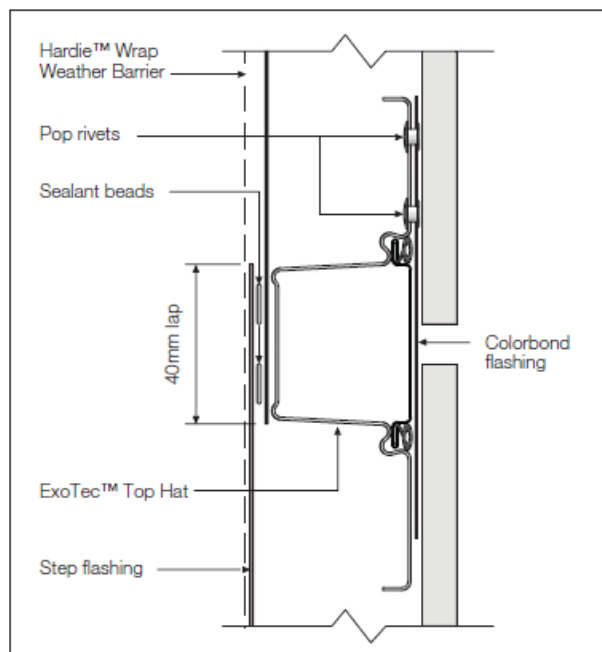


FIGURE 27 SECTION AA

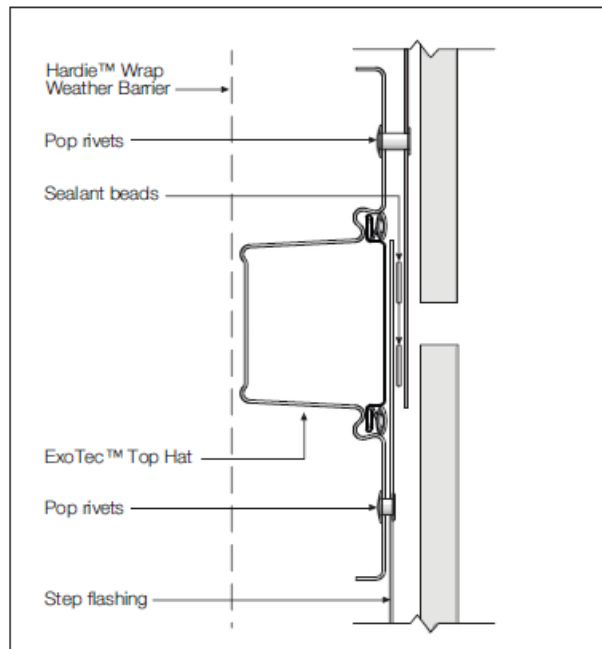


FIGURE 28 SECTION BB

Junctions

Base Slab Junction

This junction can be treated in several ways, two of which are illustrated in Figures 29 and 31.

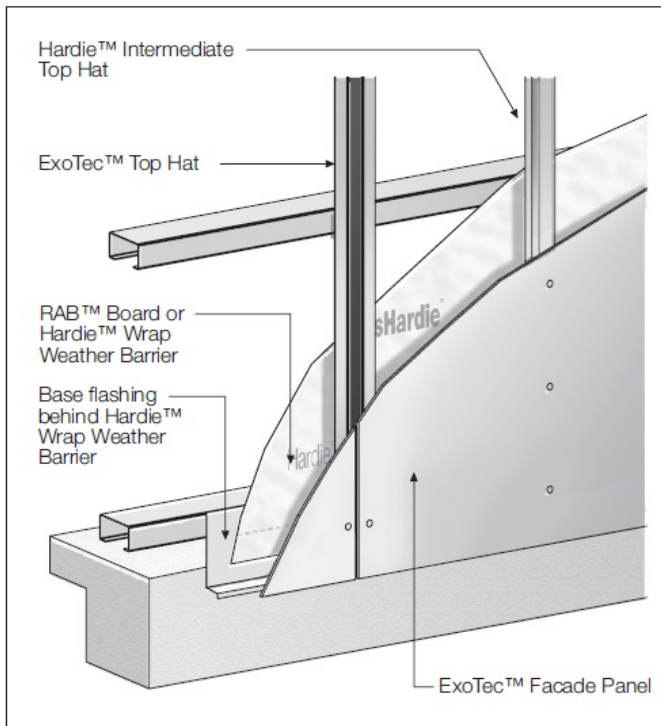


FIGURE 29 WALL BASE TYPICAL CUTAWAY DETAIL 1

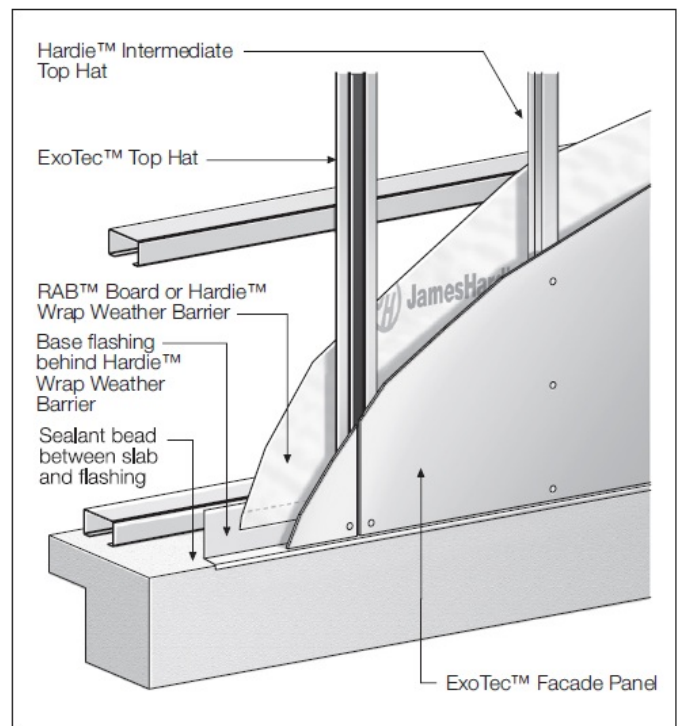


FIGURE 31 WALL BASE CUTAWAY TYPICAL DETAIL 2

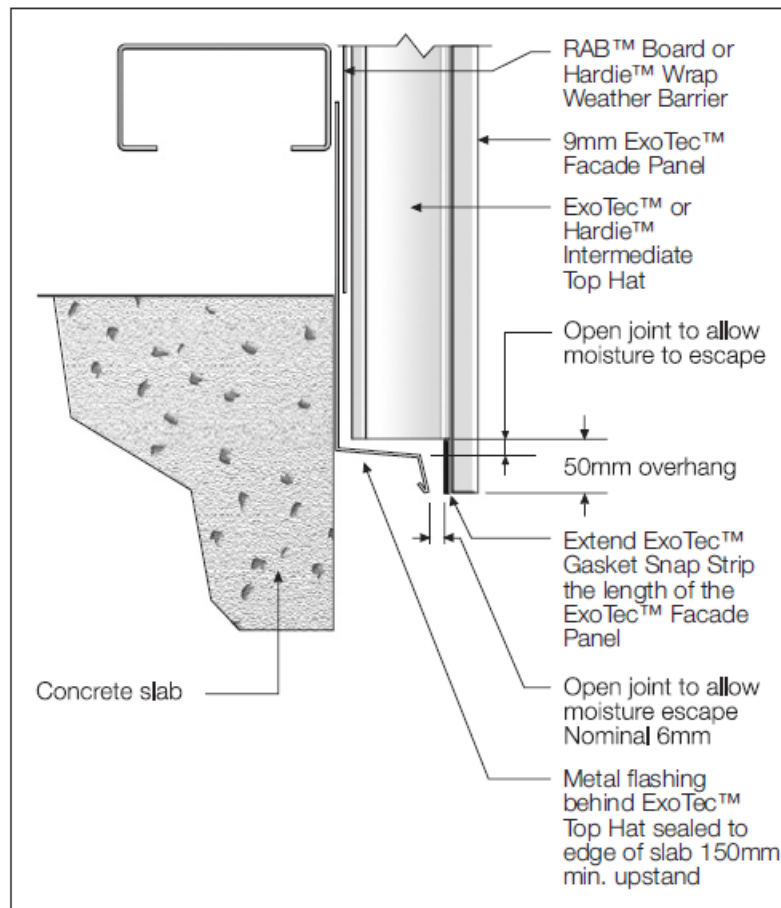


FIGURE 30 WALL BASE TYPICAL DETAIL 1

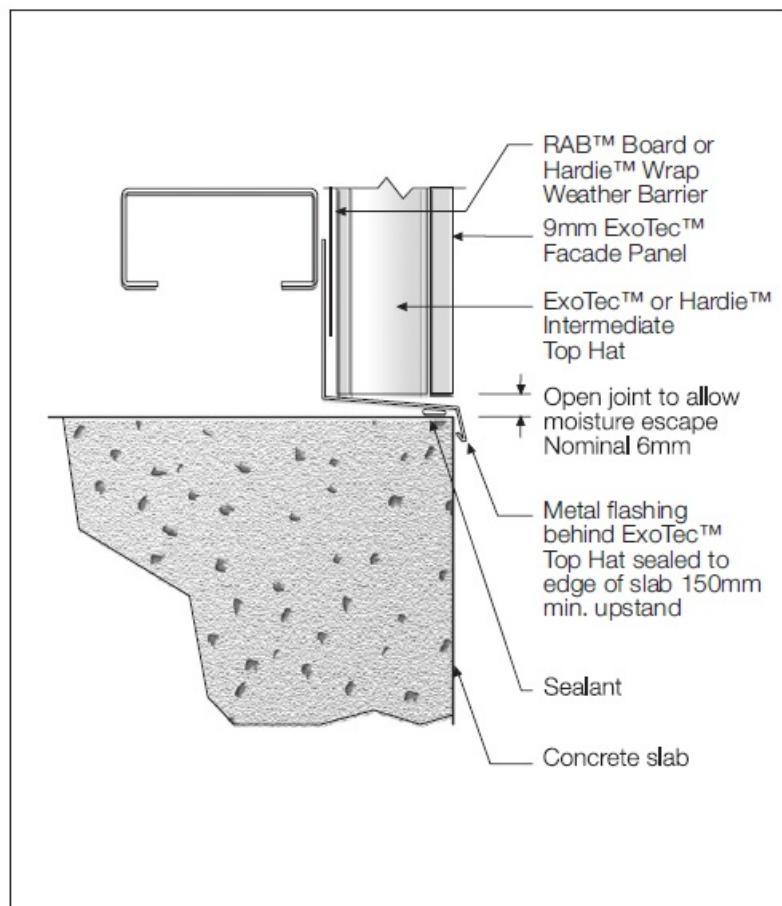


FIGURE 32A WALL BASE TYPICAL DETAIL 2

Alternative Detail:

For more information on Hardie™ Edge Trim please refer to the Hardie™ Edge installation guide available at www.jameshardie.com.au.

Alternative Detail:

For more information on Hardie™ Edge Trim please refer to the Hardie™ Edge installation guide available at www.jameshardie.com.au

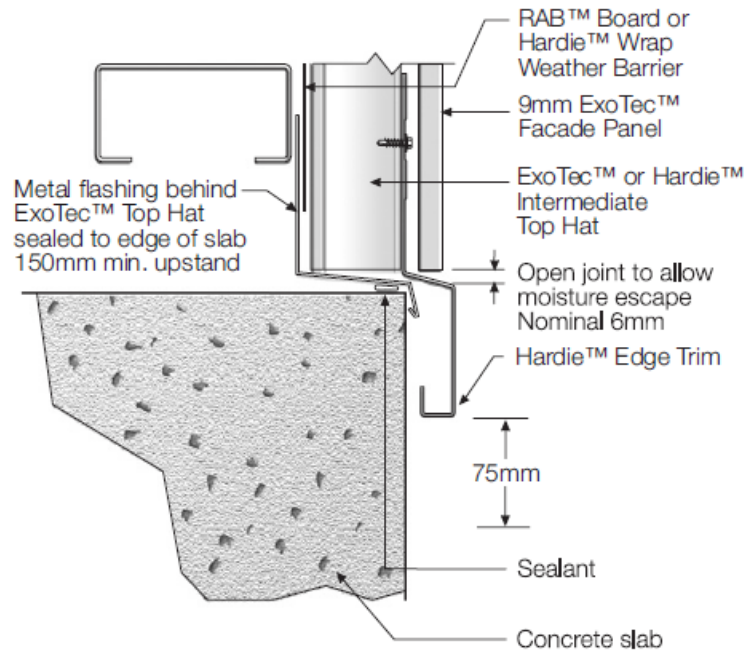


FIGURE 32B WALL BASE TYPICAL DETAIL 2 WITH HARDIE™ EDGE TRIM

Head Slab Junction

Where the cladding forms a junction with an exposed slab, the detail must accommodate for slab deflection. Refer to the structural engineer for appropriate recommendations. A typical deflection head detail is shown in Figure 33.

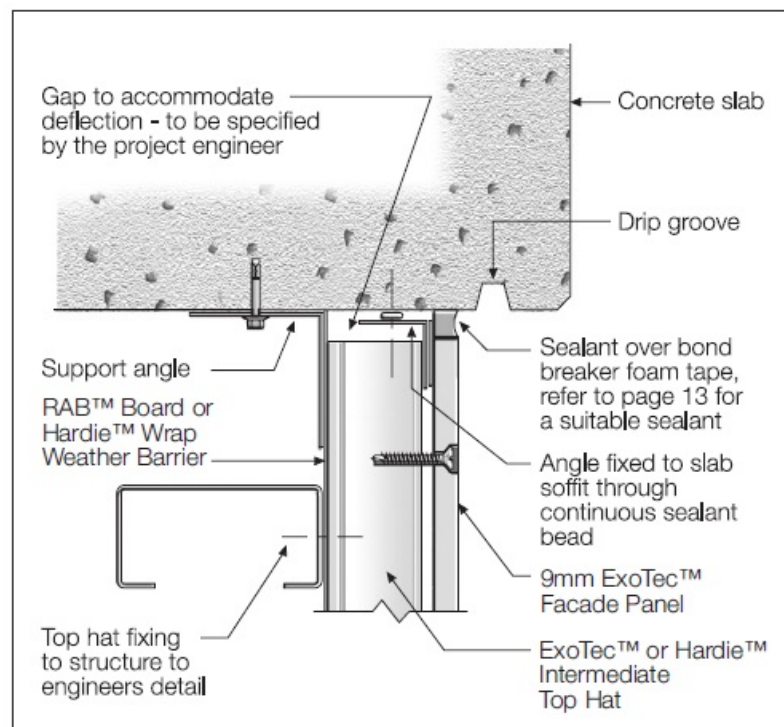


FIGURE 33 WALL DEFLECTION HEAD USED UNDER SLAB

Soffit Junction

There are many ways of detailing the soffit junction and it is important to ensure that a drip edge is provided. A typical approach to installing the soffit fascia junction is shown in Figure 34. Ensure the ExoTec™ Gasket Snap Strip is installed to the bottom of the fascia panel.

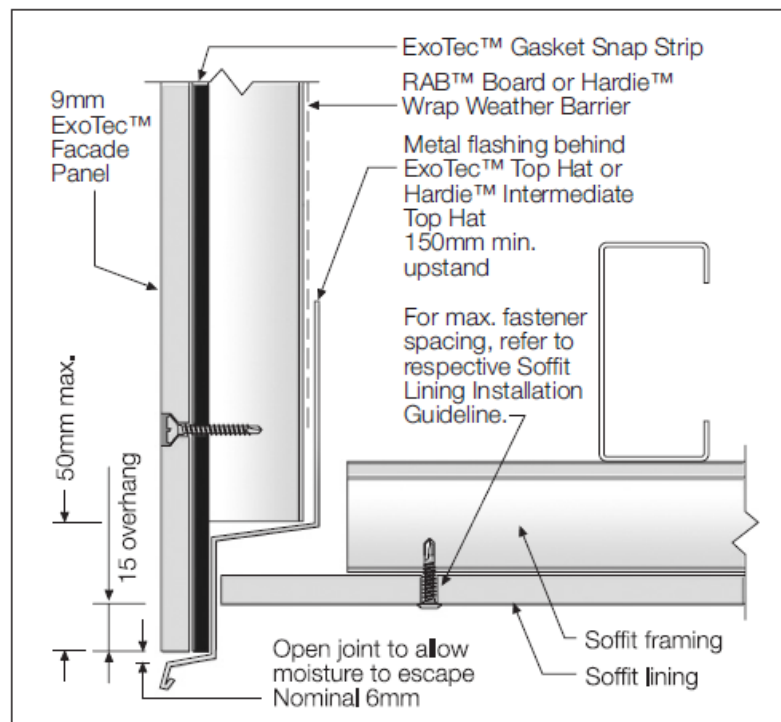


FIGURE 34 TYPICAL SOFFIT DETAIL

NOTE

It is essential that continuous flashing is provided behind the top hats at the base of the fascia to allow moisture to escape.

Wall Junction

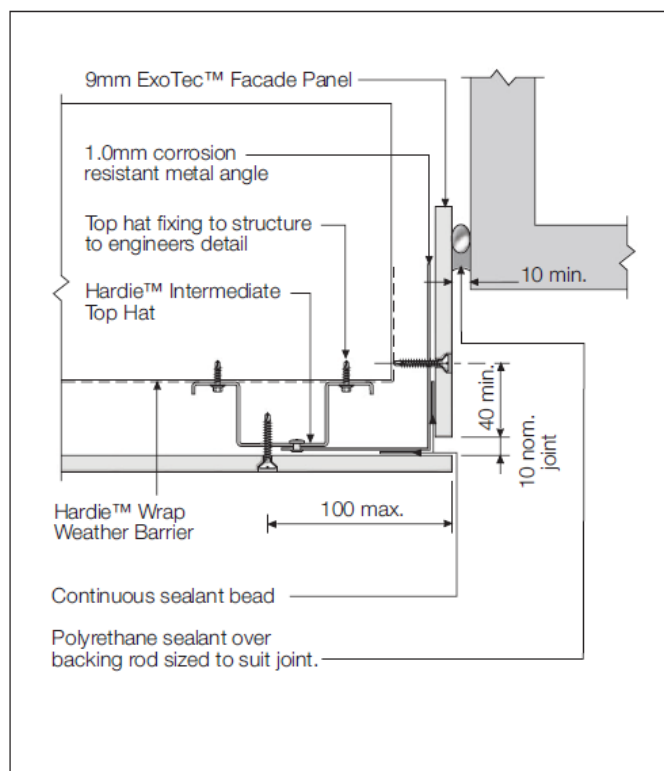


FIGURE 35 PLAN VIEW: STEP FLASHING TO MASONRY WALL

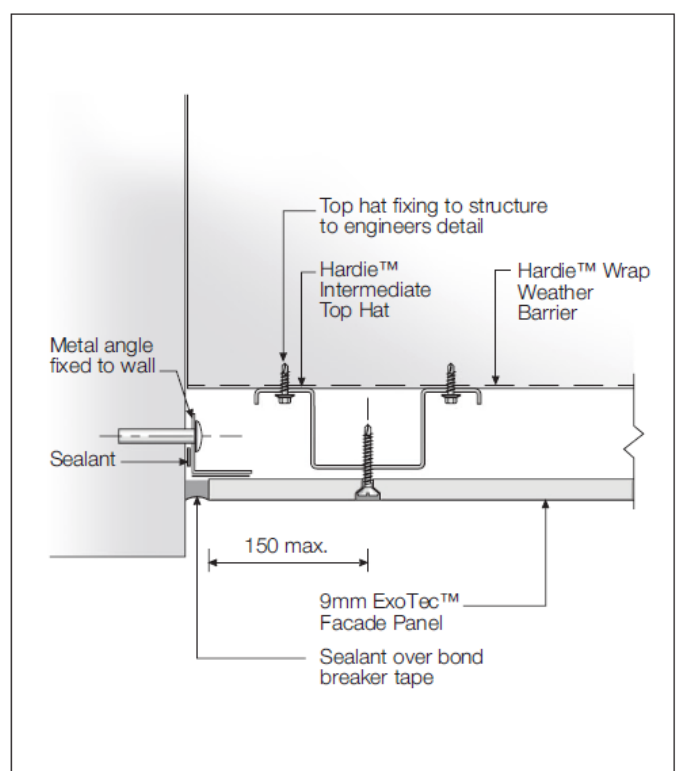


FIGURE 36 PLAN VIEW: ABUTTING TO MASONRY WALL

EXTERNAL CORNERS

This section contains various methods of finishing external corners using the ExoTec™ Facade Panel and fixing system

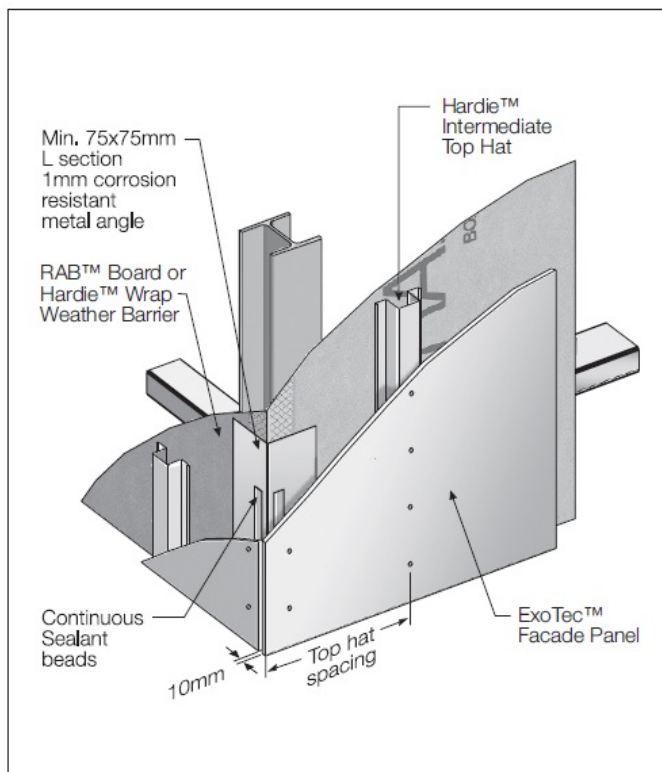


FIGURE 37 EXTERNAL CORNER CUTAWAY DETAIL

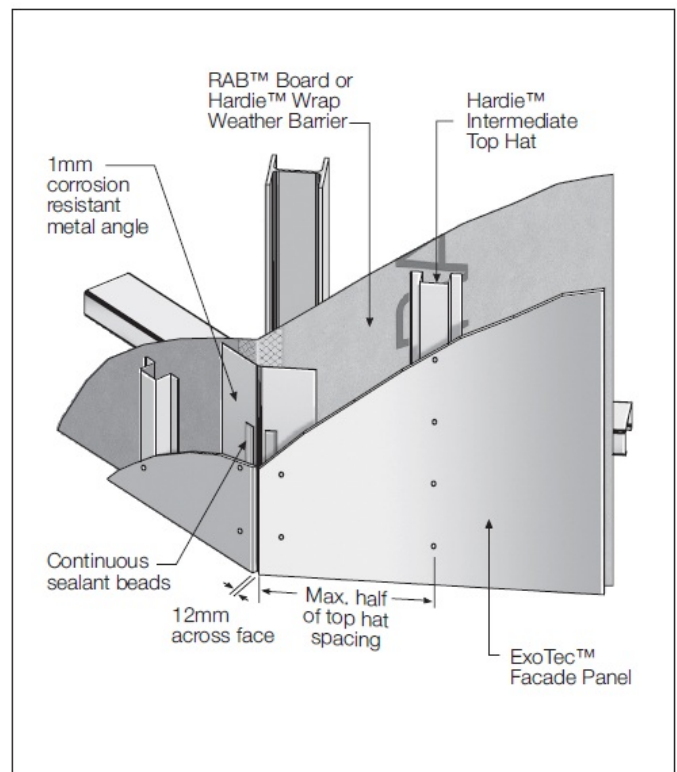


FIGURE 39 NON SQUARE EXTERNAL CUTAWAY CORNER

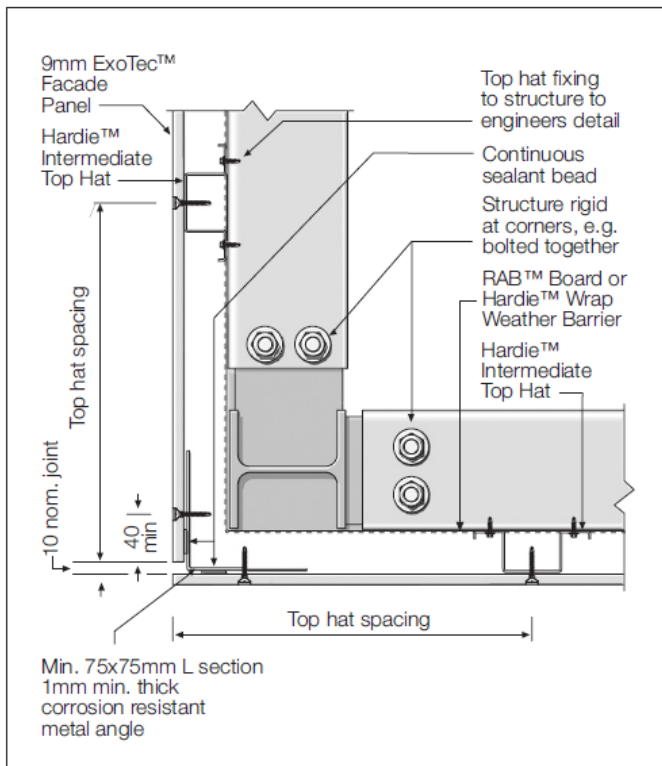


FIGURE 38 EXTERNAL CORNER DETAIL

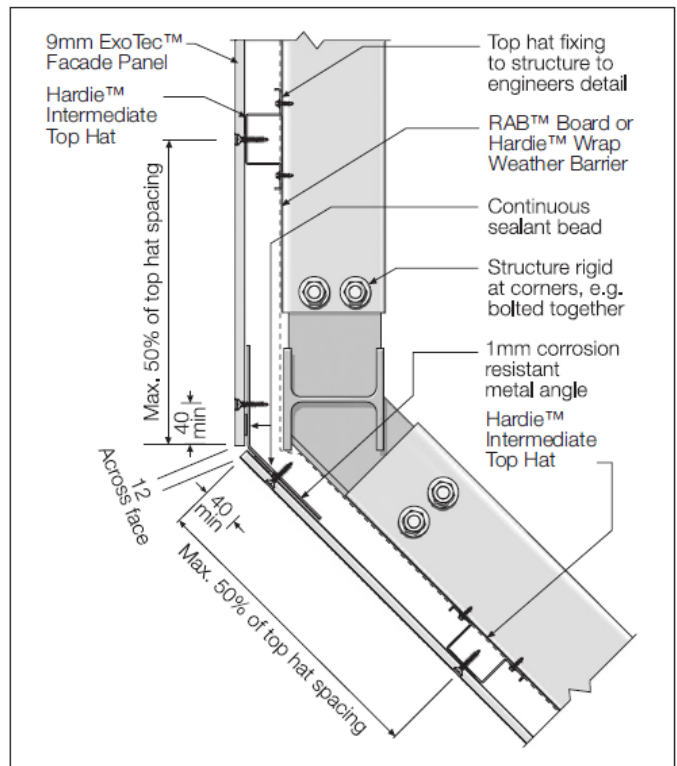


FIGURE 40 NON SQUARE EXTERNAL CORNER

INTERNAL CORNERS

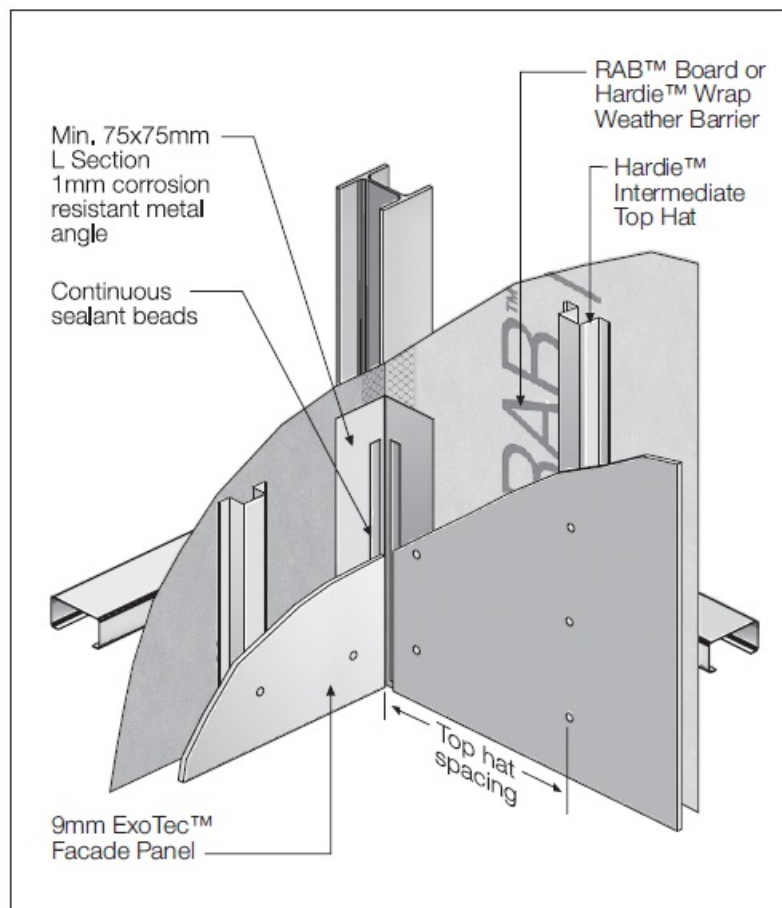


FIGURE 41 INTERNAL CORNER CUTAWAY DETAIL

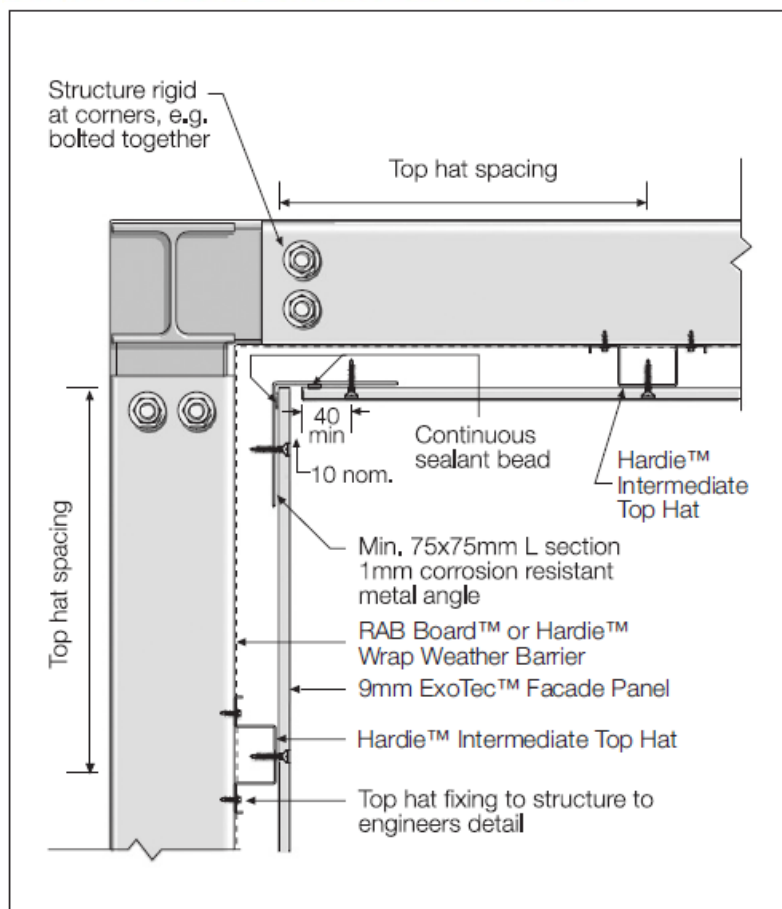


FIGURE 42 INTERNAL CORNER DETAIL

- The ExoTec™ Facade Panel and fixing system provides an opportunity to consider a range of alternative window treatments. The building designer, in conjunction with the window manufacturer, must consider the adequate weatherproofing of the window application.
- Windows may be flush with the facade using figures 43– 53. This is a guide only. All windows are different and sufficient provision for moisture management must be made.

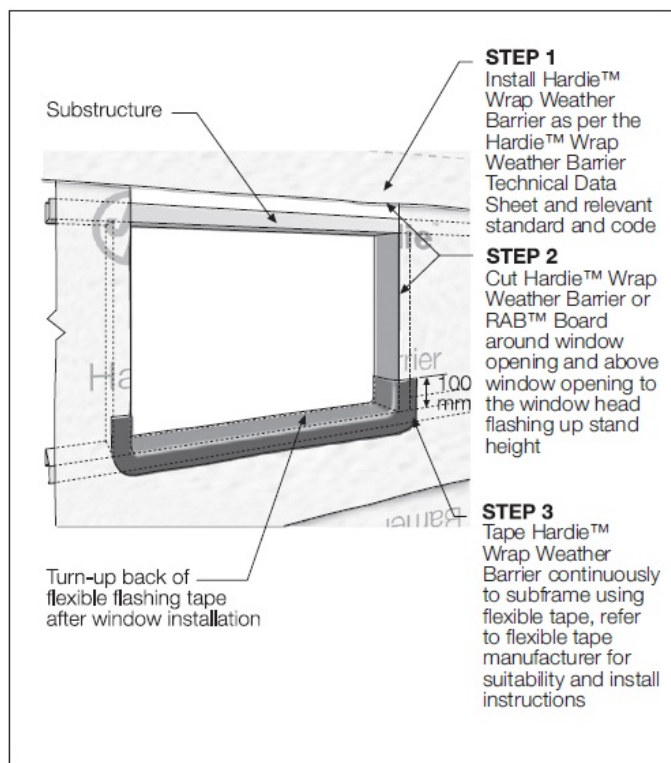


FIGURE 43 INSTALLATION OF HARDIE™ WRAP WEATHER BARRIER

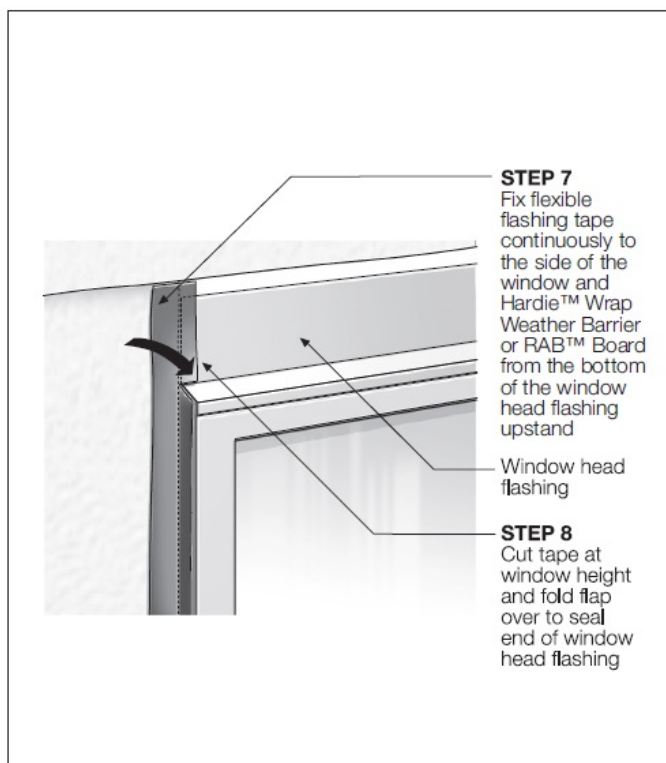


FIGURE 45 HEAD INSTALLATION OF WINDOW

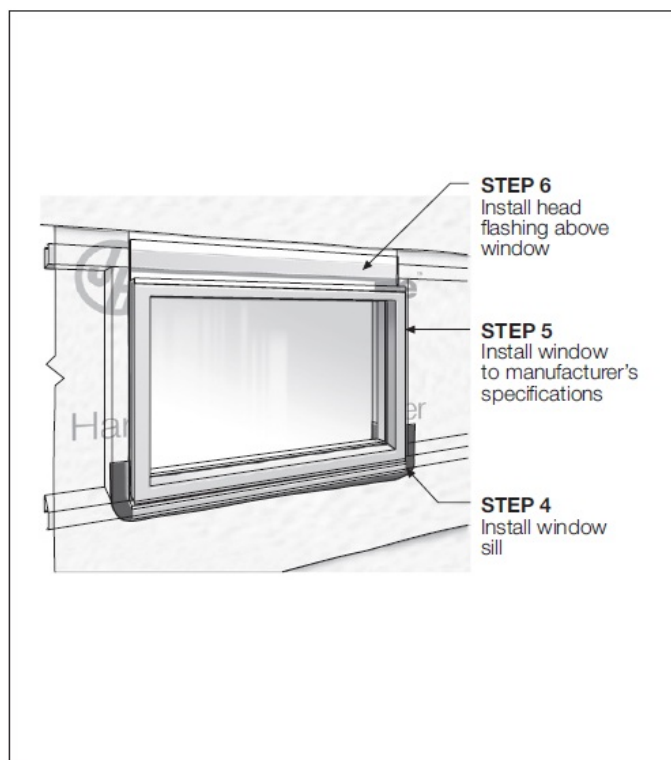


FIGURE 44 INSTALLATION OF WINDOW



FIGURE 46 INSTALLATION OF WINDOW

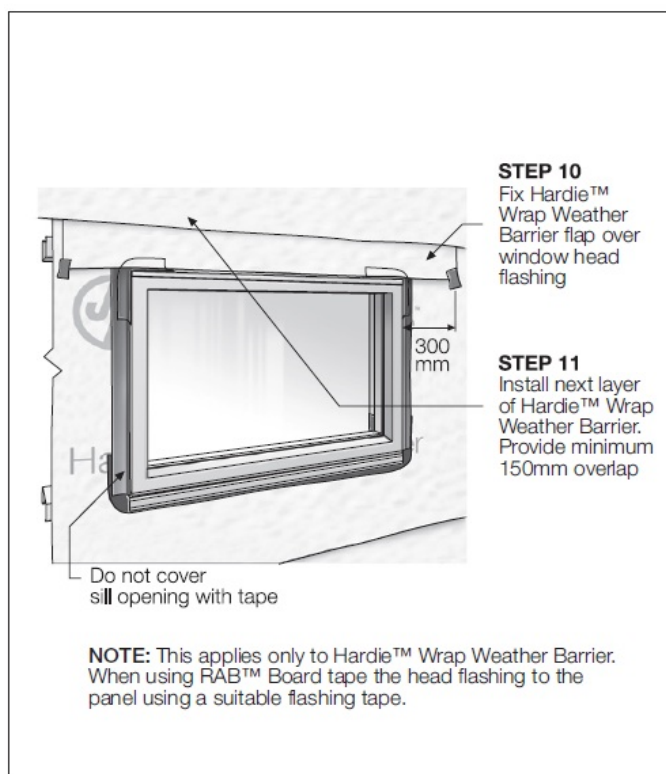


FIGURE 47 PREPARATION AROUND WINDOW

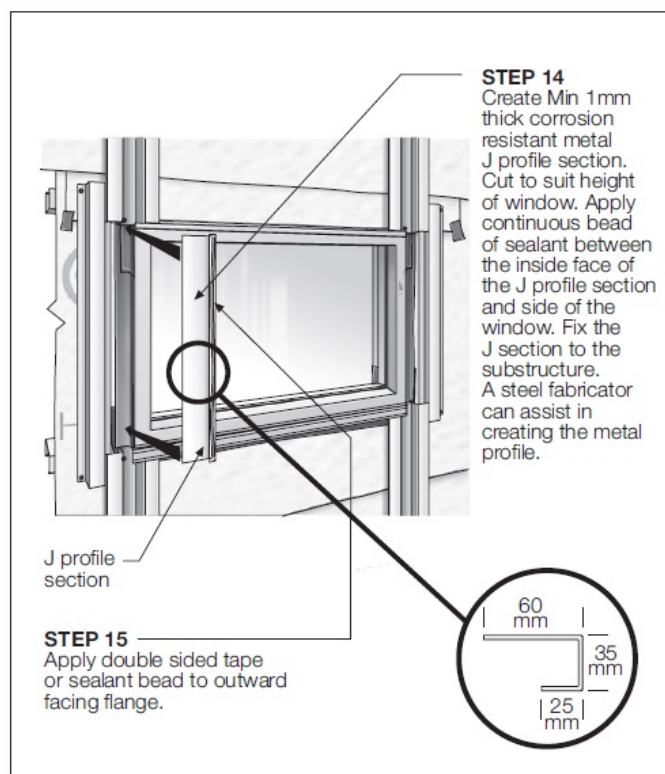


FIGURE 49 INSTALLATION OF J SECTION

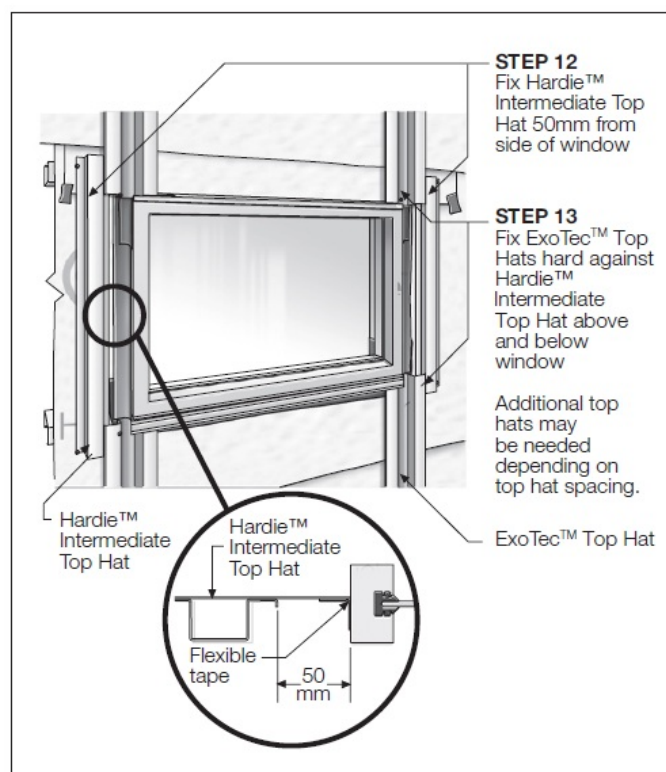


FIGURE 48 INSTALLATION OF TOP HATS AROUND WINDOW

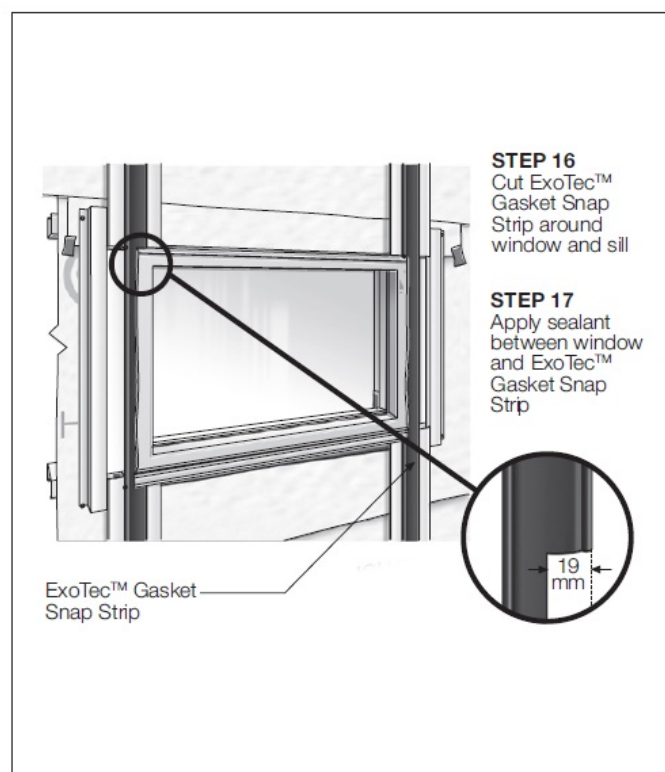


FIGURE 50 INSTALLATION OF SNAP ON STRIP

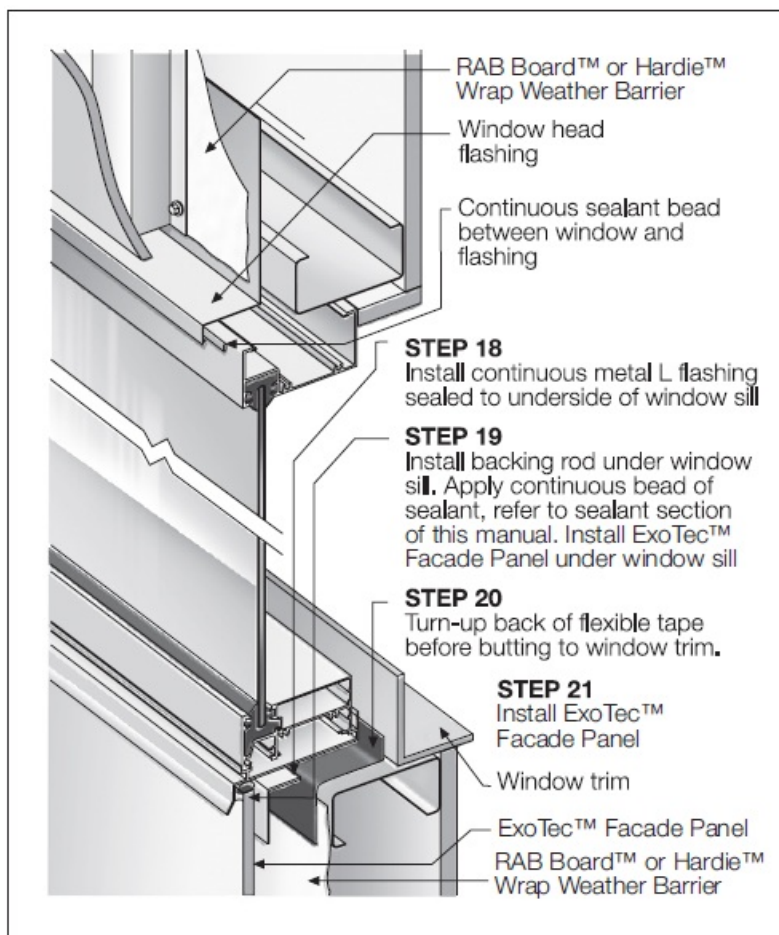


FIGURE 51 OVERVIEW CUTAWAY SECTION OF WINDOW

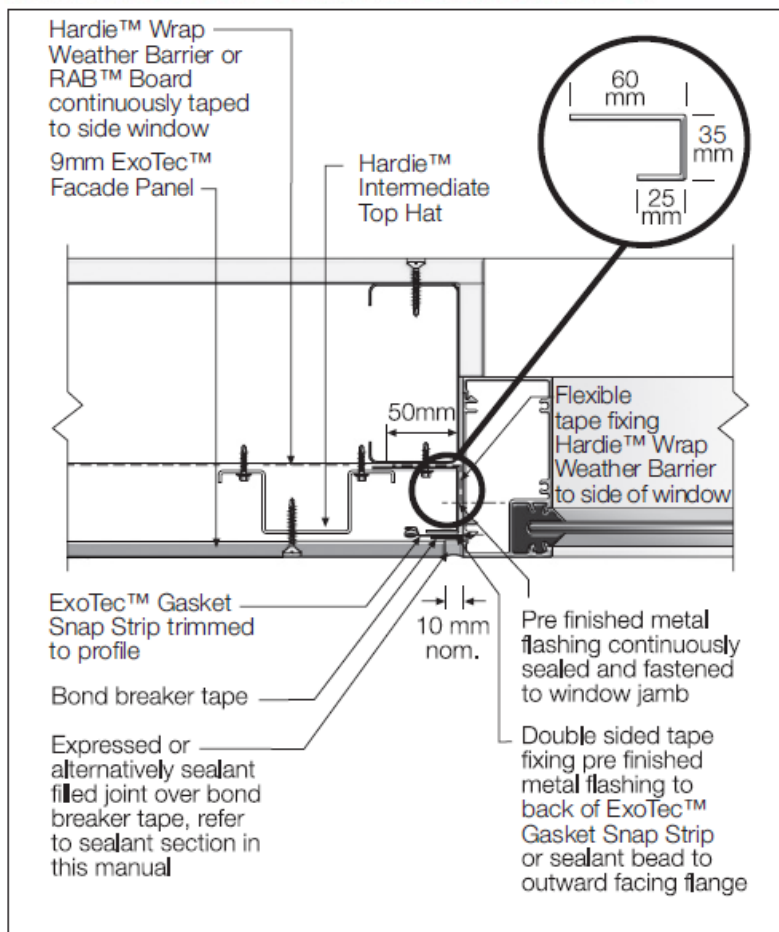


FIGURE 52 WINDOW JAMB DETAIL

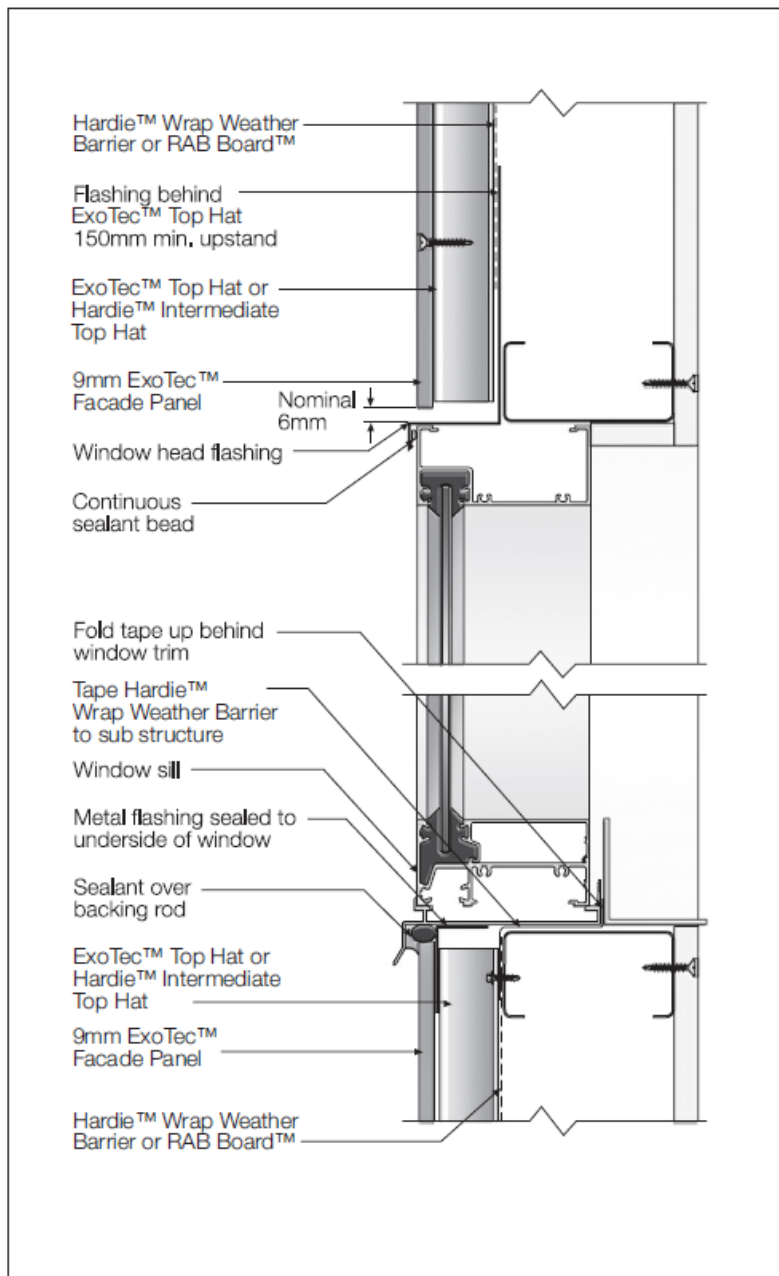


FIGURE 53 CROSS SECTION OF WINDOW

PARAPET DETAILS

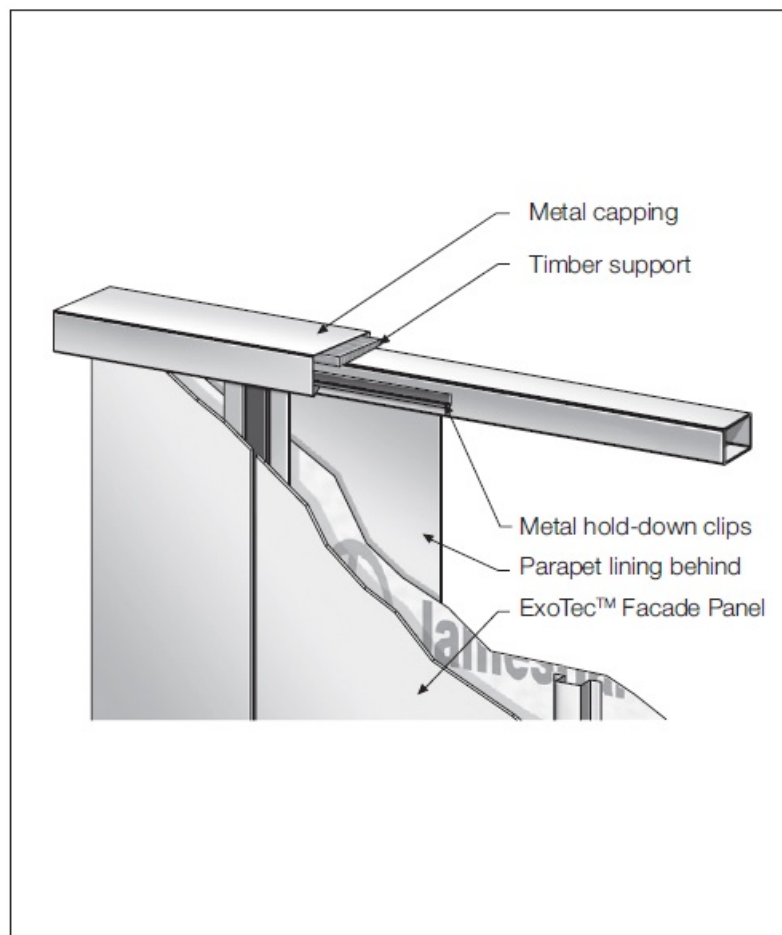


FIGURE 54 PARAPET CAPPING CUTAWAY DETAIL 1

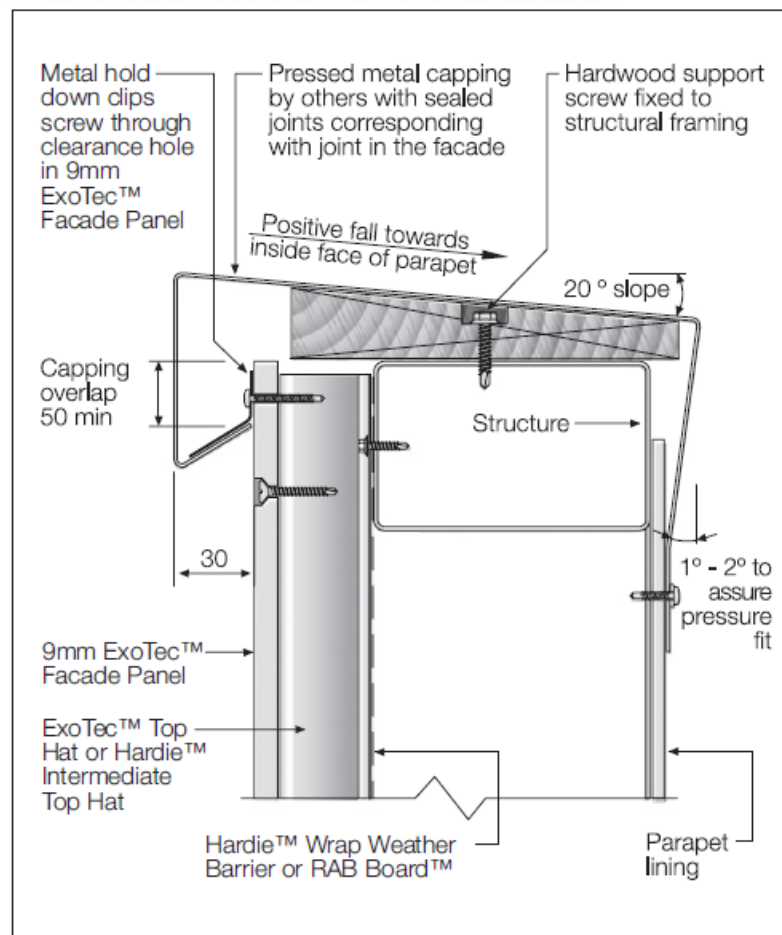


FIGURE 55 PARAPET CAPPING DETAIL 1

GENERAL

Painted ExoTec™ Facade Panels

- ExoTec™ Facade Panels will readily accept a wide variety of applied finishes, including site-applied textures and factory finishes.
- For site-applied finishes (acrylic coatings), follow the paint manufacturer's recommended advice to adequately cover the sanded smooth Hardie™ Base Coat filler applied over the epoxy-filled concealed fixings (refer to fixing section).
- In order to seal cut edges or sanded patches two coats of an appropriate primer should be applied at the time of cutting or sanding e.g. Dulux AcraPrime 501/1 (water-based).
- The face and edges of the panels must be coated according to the paint manufacturer's recommendations.
- For further information contact the relevant paint manufacturer.

Pre-finished (3rd Party) ExoTec™ Facade Panels

- Polyurethane paints are not suitable as a site-applied finish but can be factory-coated before installation. It is the responsibility of the applicator to ensure that the paint is compatible with the existing factory-applied sealer and primer on the Exotec surface and that the panel surface will achieve the desired finish. This may require additional processing such as sanding. James Hardie does not warrant the finish or performance of the coating.
- Pre-finished panels are generally installed using color-matched exposed head fasteners.
- Some environments require special coatings. Painting selection and specifications are dependent on the paint chosen. Refer to the paint manufacturer.
- Fixing tiles onto ExoTec™ Facade Panels is not recommended.

PANELS EXPOSED TO DIRECT SUNLIGHT

- The Exotec™ panels must not be left unfinished while exposed to direct sunlight for any period greater than three months. The face must be over-coated as recommended by the paint companies mentioned above. However, if the rear clear sealer is exposed to direct sunlight by its application, e.g. fascias, plantrooms, etc., then the clear sealer must be coated with a minimum of two coats of an exterior grade acrylic, pigmented white, with a minimum of 10 years warranty, by one of the paint companies previously mentioned.
- It is the responsibility of the specifier to identify other weather-related risks with any particular building design.

NOTE

Refer to the previously mentioned paint companies for suitable rear face surface preparation on the ExoTec™ Facade Panels.

COASTAL AND ALPINE AREAS

In coastal areas located within 1km* of the shoreline or large expanses of salt water (e.g. Port Phillip Bay, Sydney Harbour east of the Spit and Harbour Bridges, Swan River west of the Narrows Bridge), one of the following is required:

- All horizontal and vertical expressed joints must be filled with a suitable sealant, refer to the sealant-filled joints section within this specification.
- Where both the horizontal and vertical expressed joints are not filled, the joints and panels must be washed

down twice a year. On unprotected walls, rain will perform this washdown, but where walls are protected by soffits above, the washdown twice per year is a maintenance requirement.

- All ExoTec panels must be coated within 90 days or 7 days if located within 1km of a coastal area or corrosive environment.

Maintenance

It is the responsibility of the specifier to determine normal maintenance requirements. The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- In coastal areas, a six-monthly washdown of expressed joints must be done as per Clause 8.3. of this installation guide.
- Annual checks and maintenance for the exposed sealant (3mm fillet at horizontal joints, filled vertical and horizontal joints) referenced in Clauses 7.5 and 7.6, must be done as required by the sealant manufacturer. If using an alternative sealant, it must be a quality polyurethane sealant compatible with fiber cement and the specified paint system if coated. Please refer to the manufacturer's instructions for further information.
- Maintenance to painted surfaces must be carried out under the paint manufacturer's specification.
- As required, clear debris build up against ExoTec™ Facade Panels.
- Maintain sealant as per manufacturer recommendations, to ensure weather seal.
- Clean out gutters, blocked pipes, and overflows as required.

More frequent resealing may be required for panels installed in harsher environments, for example, coastal areas, and exposure to chemicals or pollutants.


For information and advice

call 13 11 03 | jameshardie.com.au.

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Documents / Resources

	<p>JamesHardie ExoTec Facade Panel Fixing System [pdf] Installation Guide ExoTec Facade Panel Fixing System, ExoTec, Facade Panel Fixing System, Panel Fixing System, Fixing System, System</p>
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References

- [User Manual](#)

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