

# Rainscreen Technical Specification

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To continue with the development of our products and systems, we value your input. Please send any suggestions, including your name, contact details, and relevant sketches to:

**Ask James Hardie™**  
literaturefeedback@jameshardie.co.nz

# 1 Application and scope

## 1.1 APPLICATION

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Titan™ & ExoTec™ Façade Panels are used to form negative expressed jointed façades fixed through cavity battens into the timber framing and act as a rainscreen.

Titan Façade Panel is a medium density, 9mm thick panel with both faces and edges sealed. Titan Façade Panel is suitable for light commercial and residential building applications.

ExoTec Façade Panel is a high density, 9mm thick compressed panel with both faces and edges sealed. ExoTec Façade Panel is suitable for commercial building applications.

Titan & ExoTec Rainscreen referred as 'TER' elsewhere in this specification is based on the pressure moderation rainscreen principle. In essence the bulk of the water is stopped at the rainscreen layer while the air barrier equalizes the pressure in the cavity with the pressure outside the rainscreen thus limiting water ingress.

Included in this specification are details concerning the:

- Rigid Air Barrier (RAB™ Board)
- Cavity Batten
- Rainscreen (Titan or ExoTec )

### If you are a specifier

Or other responsible party for a project ensure that the information in this document 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.

### If you are an installer

Ensure that you follow the design, moisture management and associated details and material selection provided by the designer.

All the details provided in this document must be read in conjunction with the specifier's specification.

### 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 you need more information, visit [www.jameshardie.co.nz](http://www.jameshardie.co.nz) or Ask James Hardie on 0800 808 868.

## 1.2 SCOPE

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TER can be used on category I to V residential or commercial buildings as defined in AS/NZS 1170 (Structural Design Actions) up to design wind pressures of 4.5kPa (ULS) .

This technical specification covers the use of TER on timber frame and timber infill framing in concrete or steel structures.

## 1.3 DETAILS

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Various Titan & ExoTec Façade Panel details are provided in the Details section of this document. This specification and figures in CAD file are also available to download from our website at [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

## 1.4 SPECIFIC DESIGN

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For use of Titan & ExoTec Façade Panels outside the scope of this document, the architect, designer or engineer must undertake specific design. For advice on designs outside the scope of this specification, Ask James Hardie™ on 0800 808 868.

# 2 Design

## 2.1 COMPLIANCE

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Titan and ExoTec Rainscreen has been appraised by BRANZ Ltd. The appraisal number is 467 (2005). The appraisal certificate can be viewed at BRANZ website or Ask James Hardie on 0800 808 868.

## 2.2 RESPONSIBILITY

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The specifier / designer for the project is responsible for ensuring that the information and details included in this specification are suitable for the intended application.

The specifier shall accommodate the appropriate provisions required by the New Zealand Building Code (NZBC). Careful detailing of all penetrations through the air barrier and rainscreen is required and they must be appropriately flashed and weatherproofed. The other materials and components that are used to manage moisture must be installed as per their manufacturers' instructions and comply with the requirements of relevant standards and the NZBC.

The designer / specifier must ensure that all the reference documents and standards referred to during the design and construction process are current and valid. The designer must identify the moisture related risks associated with the particular building design. The design and construction must effectively manage the external moisture.

The windows to be used with Titan and ExoTec Rainscreen must be specifically designed considering the design wind pressures and the deflections in the building structure. Refer to the window manufacturer / suppliers for information regarding their specifications and installation requirements.

For the latest information in relation to designing for weathertightness refer to [www.branz.co.nz](http://www.branz.co.nz) and [www.dbh.govt.nz](http://www.dbh.govt.nz) websites.

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

## 2.3 FOUNDATION

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Building foundations must be based on 'good ground' as defined in the Approved Document of NZBC B1 'Structure'. The ground should also satisfy the requirements of Geotechnical Engineers. The foundation design must satisfy the requirements of the NZBC Clause B1 'Structure'.

## 2.4 CLEARANCES

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The bottom edge of Titan and ExoTec Façade Panel must maintain a clearance of 100mm minimum from paved grounds and 175mm minimum from unpaved ground.

On the roofs and decks the minimum clearance must be 50mm. Do not install external cladding such that it may remain in contact with water or ground.

## 2.5 MOISTURE MANAGEMENT

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It is the responsibility of the specifier to identify moisture related risks associated with any particular building design. Wall construction design must effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration or that are artificially heated or cooled.

Walls shall include those provisions as required by the NZBC Acceptable Solution E2/AS1 'External Moisture'. In addition all

wall openings, penetrations, junctions, connections, window sills, heads and jambs must incorporate appropriate flashings for waterproofing. The other materials, components and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC. For further information on designing for weathertightness refer to BRANZ Ltd and the Ministry of Business, Innovation & Employment updates on the following websites respectively, [www.branz.co.nz](http://www.branz.co.nz) and [www.dbh.govt.nz](http://www.dbh.govt.nz).

## 2.6 STRUCTURE

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The supporting timber frame for TER must be provided in accordance with the structural design requirements of the project. Timber framing size must meet the minimum requirements of this specification. If sag in excess of 10mm is expected in concrete or timber flooring then specific design of the horizontal joints will need to be undertaken by the Engineer or designer.

## 2.7 WIND LOADING

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TER is suitable for use up to 4.5kPa maximum wind pressures as outlined in Table 1. The project specific wind pressures experienced on building facade must be calculated in accordance with

AS/NZS 1170. When comparing the Engineer's specification for stud centres with Table 1, the smaller spacing value must be used.

## 2.8 SEISMIC

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TER is suitable for use up to a maximum seismic displacement or deflection of 10mm under serviceability conditions.

## 2.9 STRUCTURAL BRACING

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TER using RAB Board can be used to achieve structural bracing for buildings that are constructed within the scope of NZS 3604

(Timber Framed Buildings). RAB Board fixed to the framing as per RAB Board bracing details will provide the required bracing. For further information on bracing, Ask James Hardie on 0800 808 868.

## 2.10 FIRE RESISTANCE RATED WALLS

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TER constructed as per this specification using all other system components in accordance with James Hardie Fire and Acoustic Design Manual will achieve fire resistance ratings up to 30 or 60 minutes. (Note: James Hardie Mineral Insulation will require nogs at 800 mm centres maximum).

# 3 Framing

## 3.1 GENERAL

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The Engineer/designer is responsible for the frame design. The design wind pressures are to be calculated in accordance with AS/NZS 1170 considering local factors.

## 3.2 TIMBER GRADE

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The minimum timber grade used must be No.1 framing grade in accordance with NZS 3631 (NZ Timber Grading Rules) or machine stress graded (MSG).

## 3.3 STUDS

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Nominal 100 x 50mm studs must be provided at a maximum of 600mm centres. The framing centres can be reduced to suit the calculated wind pressure requirements as per Engineer's design. A nominal 75mm wide minimum stud is required at all vertical panel joints. This could also be achieved with two nominal 50mm wide studs spiked together.

## 3.4 NOGS

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Nominal 100 x 50mm minimum size nogs must be provided at 800mm centres maximum in general. Check Engineer's design, Clause 2.6 and Clause 2.10 of this specification for other special requirements for nog centres. For horizontal aluminium socket joints a minimum 125mm wide framing member is required behind the joint. Refer to Figure 8 or 10.

# 5 Cavity Battens

## 3.5 FRAMING TREATMENT

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The timber wall framing must be treated to a minimum of H1.2 treatment level. Refer to the Approved Document for NZBC Clause B2 'Durability' and NZS 3602 (Timber and Wood-Based Products for use in Buildings) regarding treatment requirements and allowable moisture contents of timber for various components of the building. Refer to NZS 3640 (Treatment of Rough and Sawn Timber) for further information about timber treatment. Also refer to the framing manufacturer's literature for further guidance on the use of treated timber.

## 3.6 TOLERANCES

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In order to achieve an acceptable wall finish, it is imperative that framing is straight and true. Framing tolerances must comply with the requirements of project specification when specified.

# 4 Air Barrier

## 4.1 GENERAL

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As the pressure within the cavity is equal to that on the face of cladding, air barrier used must be strong enough to withstand these wind pressures. Fatigue due to positive and negative pumping actions of wind can damage the air barrier during the construction.

## 4.2 RIGID AIR BARRIER (RAB BOARD)

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The RAB Board is a fibre cement sheet which is sealed on the front face and edges and is used as a rigid air barrier. Refer to Rigid Air Barriers Installation Manual for information regarding its installation. A horizontal gap is required between the RAB Boards at floor levels to accommodate any shrinkage of timber or creep of concrete and must be designed by the project engineer or designer.

## 4.3 BUILDING UNDERLAY

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For buildings which are exposed to wind pressures up to 1.5kPa (ULS), a building underlay may be used (a non-rigid air barrier) in place of the RAB Board.

The designer must establish from the underlay manufacturer that the selected building underlay is suitable to withstand design wind pressures on the building. The warranties for such products must be sought independently from their manufacturers.

The underlays must be installed in accordance with their manufacturer's recommendations.

## 5.1 BATTEN SIZE

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The battens must be 45mm wide x 18mm deep minimum.

## 5.2 BATTEN LAYOUT

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Battens must be fixed over the air barrier to all studs. Double battens over double studs are required behind all vertical joints of the rainscreen. Where a building underlay (a non-rigid air barrier) is used, the battens must be provided at 300 mm centres when the studs are provided at 600 mm centres. When the studs are provided at 400mm centres, the battens are only required on studs. If the horizontal aluminium 'T' socket joint is used at floor levels or in between floor heights, then vertical packers are required on the nogs / dwangs. These vertical packers must be fixed at 300mm centres maximum to facilitate panel fixing. Refer to Figure 8. Cavity battens must not be run continuously from lower floors to upper floors. They must have a gap between them at the floor levels to allow for the structural movements. Refer Figures 10 - 12.

## 5.3 CAVITY BATTEN TREATMENT

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Battens must be treated to a minimum of H3.1 as defined in NZS 3602. The type of treatment chosen must be compatible with the durability requirements of other components used in the rainscreen system. Refer to Table 21 of E2/AS1 for further information regarding the compatibility of materials.

## 5.4 TOLERANCE

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Depth variation of the cavity batten is not to exceed more than +/- 0.5 mm over a 600mm length. Refer to the batten manufacturer for finished batten specification.

# 6 Rainscreen

## 6.1 GENERAL

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Titan and ExoTec Façade Panel installed on cavity battens as per this specification acts as a rainscreen. Any moisture ingress behind the rainscreen is managed on the face of RAB Board, where it either dries or drains out through the bottom of cavity.

## 6.2 RAINSCREEN VERTICAL JOINT

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Vertical expressed joints 10mm wide are formed with a Butyl Inseal<sup>®</sup> strip fixed under the vertical sheet edges, refer to Figure 7.

Fixings must only penetrate through the outer edge of butyl at 300mm maximum centres both sides.

A packer is required on the intermediate studs to achieve surface flatness of rainscreen panels.

# 7 Fixing

## 6.3 RAINSCREEN HORIZONTAL JOINT

Horizontal joints in the rainscreen can be formed in two ways, either using aluminium 'T' socket or a horizontal 'Z' flashing.

An aluminium 'T' socket is used to form an expressed / negative horizontal joint. The aluminium 'T' socket is glued to the top rear edge of lower panel. Fixings through the lower edge of upper sheet must not penetrate through the aluminium 'T' socket. Refer to Figure 8 or 10.

Normally a 2mm packer is required under the aluminium 'T' socket. Use of two layers of DPC is recommended for this purpose. Refer Figure 8 or 10 for more information.

'Z' flashings are normally used to drain off the moisture accumulated within a cavity and must be provided after every 7m height maximum. Refer to Figure 9.

Refer to Table 20 of E2/AS1 to select a suitable flashing material considering the durability requirements.

## 6.4 JUNCTIONS

Where TER meets other types of claddings or at wall intersections, a specific weathertightness design is required for this junction to withstand the moisture ingress considering design wind pressures as well as the structural movements. The specifier / designer is responsible for providing details for such junctions. James Hardie New Zealand Limited has published standard junction details and are available on our website at [www.jameshardie.co.nz](http://www.jameshardie.co.nz). Refer to it for further information and guidance.

## 6.5 CAVITY VENTILATION

Punchings in the James Hardie uPVC vent strip permit a ventilation/drainage opening area of 1000mm<sup>2</sup> per lineal metre of cavity.

## 7.1 GENERAL

The moisture content of the timber frame and cavity batten must comply with the limitations of NZS 3602 prior to fixing the RAB Board and rainscreen panels. Framing must be kept as dry as possible at all times during the construction phase to keep moisture contents within the limits as set out in this standard.

## 7.2 RIGID AIR BARRIER (RAB) BOARD

Fix the RAB Board to studs and nogs with 40mm x 2.8mm HardieFlex nails at 300mm c/c. The minimum distance of fixings from RAB Board edges must be 12mm.

Refer to Table 2 for durability requirements of fixings. Check Clause 2.6 of this specification for bracing requirements. Refer to RAB Board installation manual for further information on installation.

## 7.3 CAVITY BATTEN

Fix battens to all studs using 40 x 2.8mm HardieFlex nails at 800mm c/c. Fix small cavity packers 150mm long at bottom plate and nogs to facilitate panel fixing. Refer to Table 2 for durability requirements of fixings.

## 7.4 RAINSCREEN

Titan and ExoTec Façade Panels shall be fixed in accordance with Table 1. Note: ExoTec façade panels must only be screw fixed. All panel edges must be supported.

The screws fixings must have a wood thread and a minimum 9 mm head diameter. The screws must be driven perfectly tight against the panels so that there is no movement between the panels and framing. The minimum edge distance of 18mm must be maintained when fixing screws or nails through the rainscreen panels. When countersunk screws are used the screw head must be set between 2.0mm minimum to 2.5mm maximum below the panel surface. Use James Hardie countersinking drill bit to drill holes in the panel. The drill speed must be set between 400 and 560rpm. Speeds greater than this will break the drill bit.

Table 1

Rainscreen fixing					
Type of Fixing	Design Wind Pressures (uls)	Stud spacing c/c maximum*	Fastener spacing c/c maximum at panel edge studs	Fastener spacing c/c maximum at top / bottom plate	Fastener spacing c/c maximum at intermediate stud
65 x10g Screw	Up to 1.5kPa	600mm	200mm	300mm	300mm
	Up to 4.5kPa	400mm	200mm	200mm	200mm
60 x 3.15mm HardieFlex Nail	Up to 1.5kPa	600mm	200mm	300mm	200mm
	Up to 4.5kPa	400mm	150mm	200mm	150mm

Note: Screws and nails chosen must meet the durability requirements as outlined in Table 2.

\*Stud spacing must be in accordance with the project engineer's design requirements.

## 7.5 FIXING DURABILITY

The type of nail or screw to be used for fixing the RAB Board, battens and rainscreen must be selected on the basis of exposure zone and nature of use. Refer to the information provided in Table 2 regarding the requirements for different zones. Also refer to NZS 3604 for further information.

Table 2

Fixing Durability			
Framing treatment	Packer treatment	Sea spray Zone *	Zone 1 outside sea spray zone*, Zones 2 – 4 and G eothermal hot spots
H1.2 LOSP	H3.1	Nails & screws grade 316 Stainless	Hot-dip galv nails or grade 316 stainless screws
H1.2 Boric	H3.1	Nails & screws grade 316 Stainless	Nails & screws grade 316 Stainless
H3-H6	H3.1	Nails & screws grade 316 Stainless	Hot-dip galv nails or grade 316 stainless screws
Bracing with RAB only		Nails & screws grade 316 Stainless	Nails only grade 316 Stainless

\* Zone 1 areas where local knowledge dictates that increased durability is required, are to be classified as sea spray zones. Check with the local Territorial Authority if unsure. Refer to fixing manufacturer for warranty and fixing installation guidance.

# 8 Finishing

## 8.1 GENERAL

All sealants must meet the relevant requirements of the NZBC. Titan and ExoTec Façade Panels must be kept dry and under cover whilst in storage prior to fixing and before coating commences. Panels must be coated within 90 days of installation. Any penetrations as well as site cut sheet edges must be sealed with an appropriate sealer that is compatible with the finishing coat.

## 8.2 SEALANTS

Application and use of sealants must comply with manufacturer's instructions and be compatible with texture coating. Check with sealant manufacturer prior to coating over sealants. Some sealant manufacturers do not recommend coating over their product.

## 8.3 SCREW FILLER

All countersunk screw holes must be filled with an epoxy filler. The countersunk holes must be clean and dry before they are filled. Also ensure that the screws are perfectly tight and there is no movement between the panel and framing before the holes are filled. Nuplex Faring Cream or a similar product is recommended for this purpose. Always refer to the epoxy manufacturer recommendation before use.

## 8.4 PAINTING

For painting/coating of Titan or ExoTec Façade Panels, follow the recommended specifications of a recognised coating manufacturer. The general recommendation is one coat of acrylic primer and two coats of high build acrylic paint (total DFT not less than 150 microns). Prior to coating, the surface should be examined to ensure it is clean, sound, dry and free of any dust and contaminants. Ensure all epoxy filled screw holes are sanded to finish flush with the surface of sheet to achieve a smooth finish. Paints with a low LRV (light reflectance value) will absorb more solar heat and could cause the components used in the wall to expand and contract. This combined with glossy paint and wet timber used at the construction stage could lead to increased chances of fastener read through, as is common with any other building material.

# 9 Maintenance

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

- Washing down exterior surfaces every 6-12 months\*
- Re-coating exterior protective finishes\*\*
- Regular inspection and repair if necessary of the façade panels, sealants, Butyl Inseal strips etc.
- Cleaning out gutters, down pipes and overflow pipes as required
- Pruning back vegetation which is close to or touching the building as well as ensuring the NZBC ground clearance requirements are maintained especially where gardens are concerned.
- Refilling the countersunk holes where the cracks start appearing in the paint film around epoxy fillers or where fastener read through becomes significant.

\* Do not use a water blaster to wash down the cladding

\*\* Refer to the paint manufacturer for washing down and recoating requirements related to ongoing paint performance.

# 10 Storage and handling

Titan and ExoTec Façade Panels and RAB Board must be laid flat on a smooth level surface. Edges and corners must be protected from chipping. To ensure optimum performance, store panels under cover and keep dry prior to fixing. If the sheets become wet, allow them to dry thoroughly before fixing. Do not carry sheets on the flat, carry in the vertical position to avoid excessive bending.

# 11 Product information

## 11.1 MANUFACTURING AND CLASSIFICATION

Titan and ExoTec Façade Panels and RAB Board are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, sand, cellulose fibre and water. The sheets are easily identified by the name Titan and ExoTec Façade Panels and RAB Board printed at regular intervals on the back face of sheet. Titan and ExoTec Façade Panels and RAB Board are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets') standards in New Zealand. James Hardie New Zealand Limited is an ISO 9001 'Telarc' certified manufacturer. Titan and ExoTec Façade Panels and RAB Board are classified Type A, Category 3 in accordance with AS/NZS 2908.2 'Cellulose-Cement Products'.

For Safety Data Sheets (SDS) visit [www.jameshardie.co.nz](http://www.jameshardie.co.nz) or Ask James Hardie on 0800 808 868.

## 11.2 TITAN FAÇADE PANEL

Titan Façade Panel is manufactured in sizes and properties as outlined in Table 3.

The panels are clear sealed on both faces, all edges and primed on front face.

Table 3

Titan Façade Panel Properties	
Properties	Equilibrium Condition
Thickness	9mm
Approx. Mass	13kg/m <sup>2</sup>
Length	2400mm, 2700mm or 3000mm
Width	1190mm

## 11.3 EXOTEC FAÇADE PANEL

ExoTec Façade Panel is manufactured in sizes and properties as outlined in Table 4.

The panels are clear sealed on both faces, all edges and primed on front face.

Table 4

ExoTec Façade Panel Properties	
Properties	Equilibrium Condition
Thickness	9mm
Approx. Mass	14.5kg/m <sup>2</sup>
Length	2400mm or 3000mm
Width	1190mm

## 11.4 RAB BOARD

RAB Board is manufactured in sizes as below.

Table 5

RAB Board Properties	
Properties	Dimension Nominal in (mm)
Thickness	9mm
Approx. Mass	8.5kg/m <sup>2</sup>
Length	2450mm or 3000mm
Width	1200mm

## 11.5 DURABILITY

Titan and ExoTec Façade Panels and RAB Board, when installed and maintained as per the technical specification, will meet the durability requirements for claddings as required in the NZBC Approved Document B2 'Durability'.

### 11.5.1 resistance to moisture/rotting

Titan and ExoTec Façade Panels and RAB Board demonstrate 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)

### 11.5.2 resistance to fire

Titan and ExoTec Façade Panels and RAB Board have the following Early Fire Hazard Indices (tested to AS 1530 Part 3).

Table 6

Early Fire Hazard Indices	
Flammability (FI)	0
Spread of Flame Index (SFI)	0
Heat evolved index	0
Smoke developed index (SDI)	0 – 1

### 11.5.3 Alpine regions

In regions subject to freeze/thaw conditions, Titan and ExoTec Façade Panels must not be in direct contact with snow or ice build up for extended periods, e.g. external walls in alpine regions must be protected where snow drifts over winter is expected.

The Titan and ExoTec Façade Panels have been tested in accordance with AS/NZS 2908.2 Clause 8.2.3.



# 12 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 Safety Data Sheets available at [www.jameshardie.co.nz](http://www.jameshardie.co.nz).

## **FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.**

James Hardie recommended safe working practices

### **CUTTING OUTDOORS**

1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Use one of the following methods based on the required cutting rate:

#### **BEST**

- Score and snap
- Hand guillotine
- Fibreshear

#### **BETTER**

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

#### **GOOD**

- Dust reducing circular saw with HardieBlade™ Saw Blade.

### **CUTTING INDOORS**

- Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in a well-ventilated area.

### **SANDING/REBATING/DRILLING/OTHER MACHINING**

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

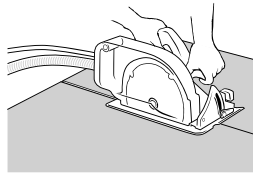
### **IMPORTANT NOTES**

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.co.nz](http://www.jameshardie.co.nz) to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

### Working instructions

Refer to recommended Safe Working Practices before starting any cutting or machining of product.



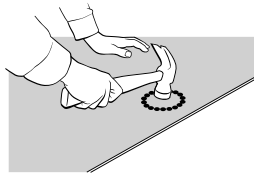
### HardieBlade™ Saw Blade

The HardieBlade™ Saw Blade used with a dust-reducing saw connected to a HEPA vacuum 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.







# 13 Accessories

Table 7

Accessories supplied by James Hardie for Titan & Exotec Facade Panel Rainscreen				
	Accessory	Size (mm)	Material / Appearance	Code
	<b>Butyl Inseal® Sealing Strip</b> 50mm 80mm	50mm wide x 12m 80mm wide x 12m	Black	<b>300534</b> <b>300535</b>
	<b>Aluminium 'T' Socket</b> 3000 2400	82mm x 1.2mm x 9mm	Aluminium	<b>304105</b> <b>304103</b>
	Compressed Drill Bit	9mm long drill point	Tungsten Carbide	<b>300567</b>
	HardieFlex™ nail - 5kg	60 x 3.15 ø x 6.8mm ø head size	316 Stainless Steel	<b>302782</b>
	HardieFlex™ nail - 5kg	60 x 3.15 ø x 6.8mm ø head size	Hot Dip Galvanised	<b>302784</b>
	Vent Strip	3m length	PVC	<b>302490</b>
	<b>Inseal® 3259 x 1.5mm thick</b> 50mm 80mm	50mm x 50m Roll 80mm x 50m Roll	Black Compressible Foam	<b>300767</b> <b>300769</b>

## Accessories/tools not supplied by James Hardie

Accessories referred to in this specification which are not supplied by James Hardie are subject to the component Manufacturer's warranties. Contact the relevant Manufacturer for specific information on their component warranties and installation information. James Hardie recommends the use of BRANZ Appraised Products.

Product	Description
	Countersunk Wood Screw Available from MSL Auckland Phone: (09) 828 2777 Stainless Steel 65 x 10g 30 x 10g (only required when battens fixed over concrete)
	HardieFlex™ nail 40 x 2.8mm ø 316 Stainless Steel
	HardieFlex™ nail 40 x 2.8mm ø Hot Dip Galvanised
	Sika Sikaflex 11FC or Bostik Seal n Flex 1 Tube
	Flashing as per Table 20 of E2/AS1 As selected to meet durability requirements
	Epoxy Flush Sealing (2 Part) Countersunk head screws are flush sealed using Nuplex Fairing cream or similar epoxy.
	Paints, Primers etc.

# 14 Details

Various details outlined in the following table are available on Pages 11 to 26

Table 9

Details		
Description	Figure	Page
Framing Layout	Figure 1	13
Rigid Air Barrier Layout	Figure 2	14
Batten Layout	Figure 3	15
Rainscreen Panel Layout	Figure 4	16
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Vertical Joint Detail	Figure 7	19
Mid Floor Socket Joint Detail	Figure 8	20
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Aluminium 'T' Socket Joint	Figure 10	22
Fixing Detail	Figure 11	23
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External Corner Detail	Figure 14	26
Internal Corner Detail	Figure 15	27
External Corner Detail	Figure 16	28
Internal Corner Detail	Figure 17	29

Figure 1: Framing layout

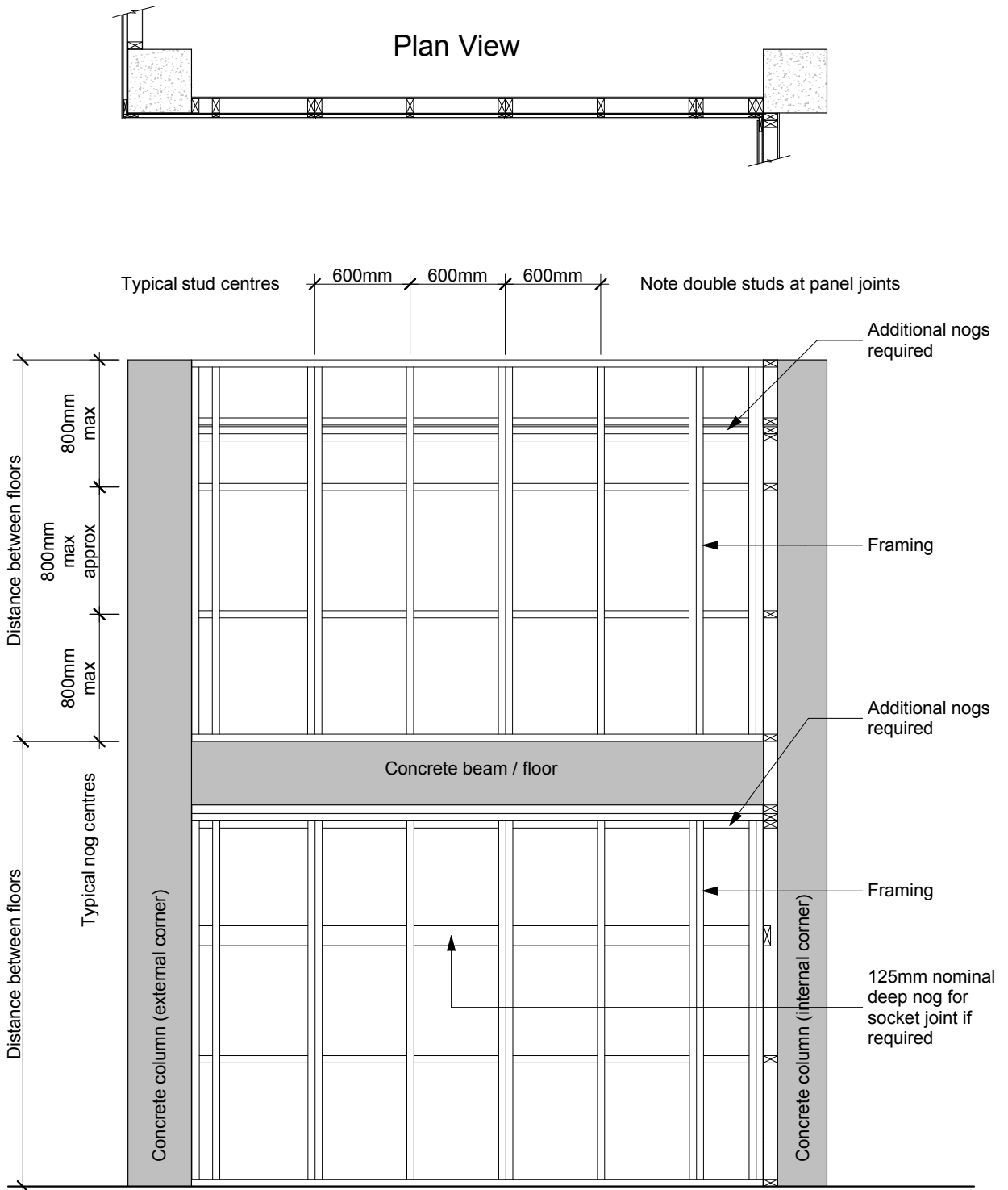


Figure 2: Rigid air barrier layout

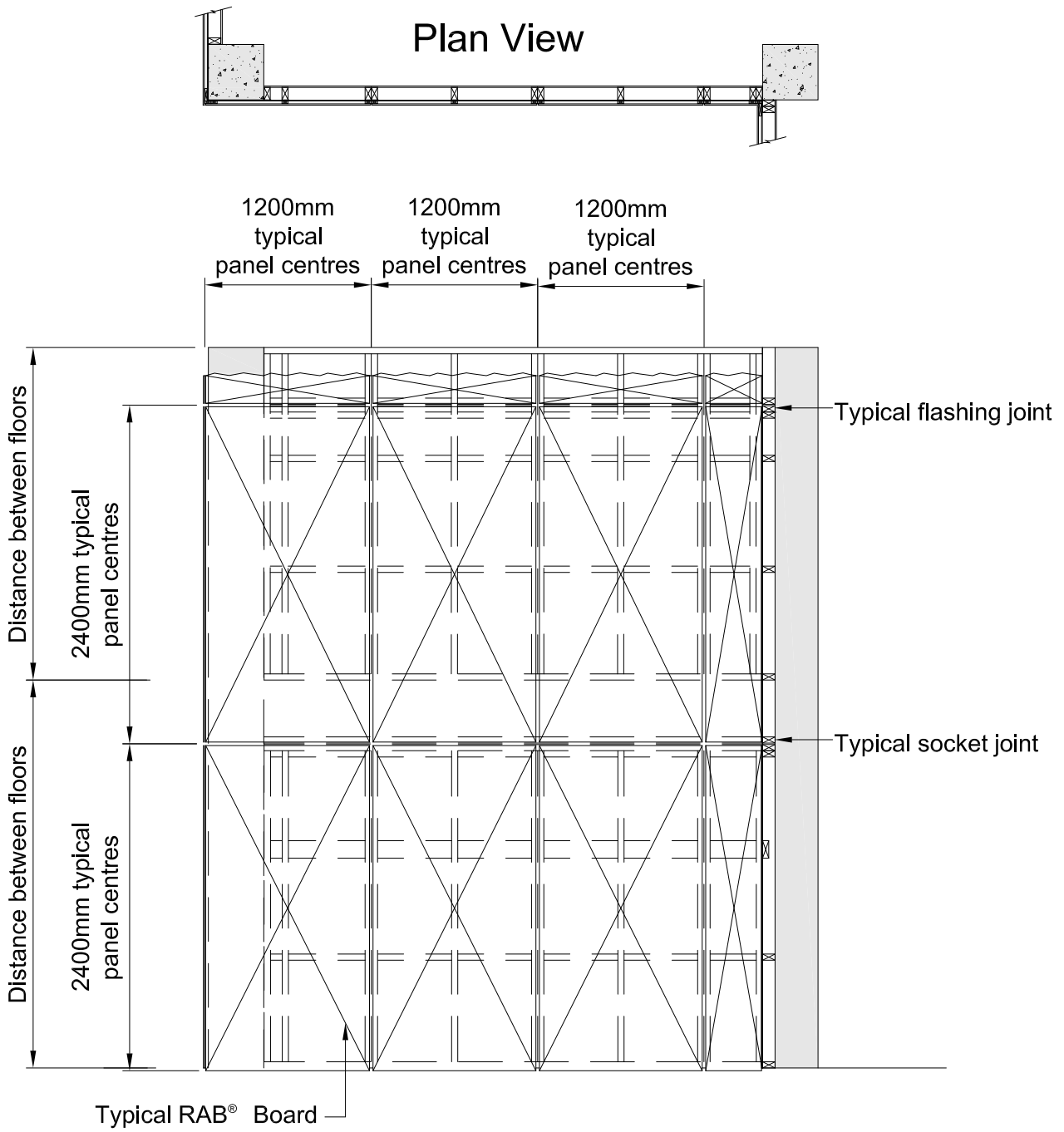


Figure 3: Batten layout

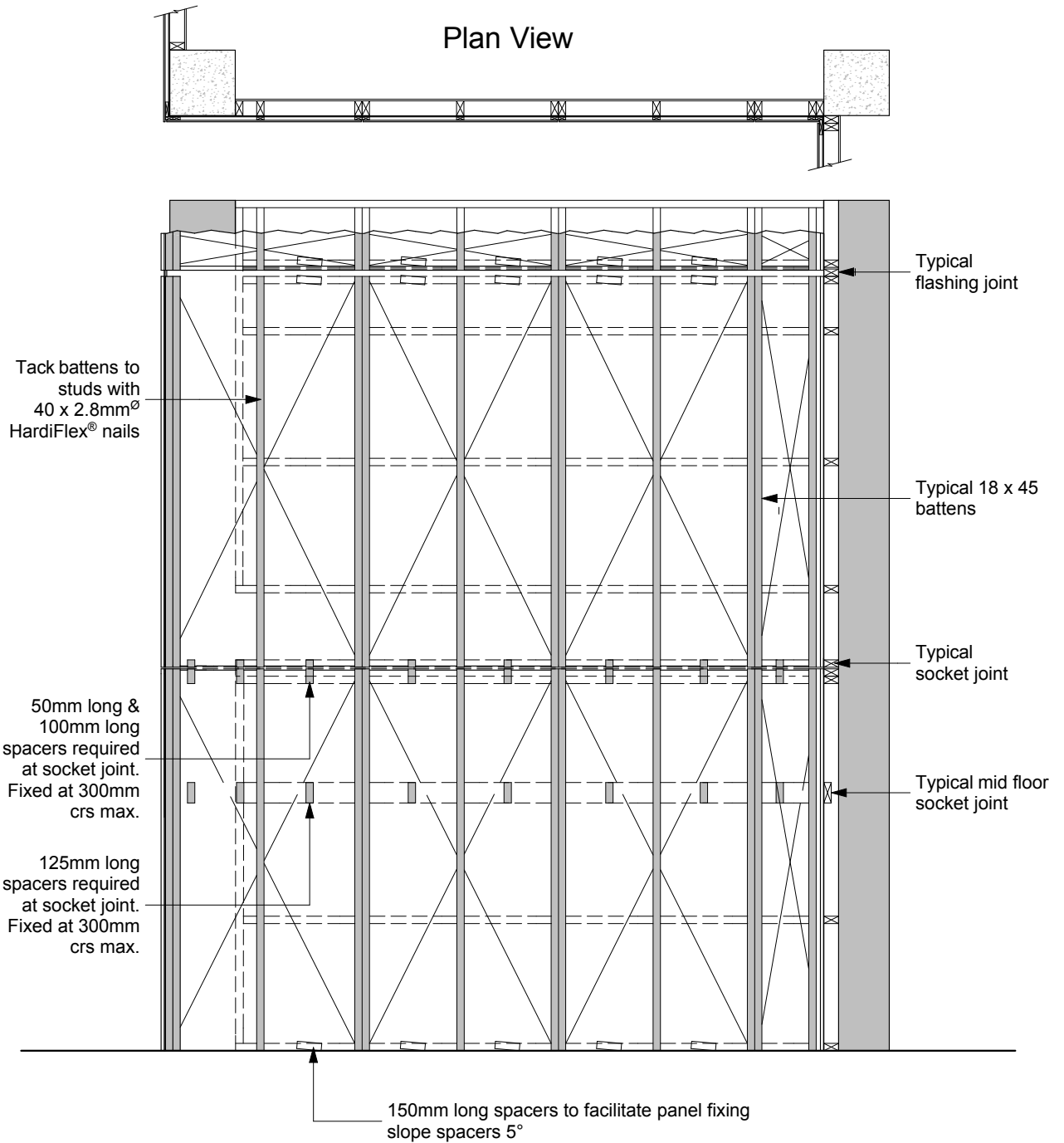


Figure 4: Rainscreen panel layout

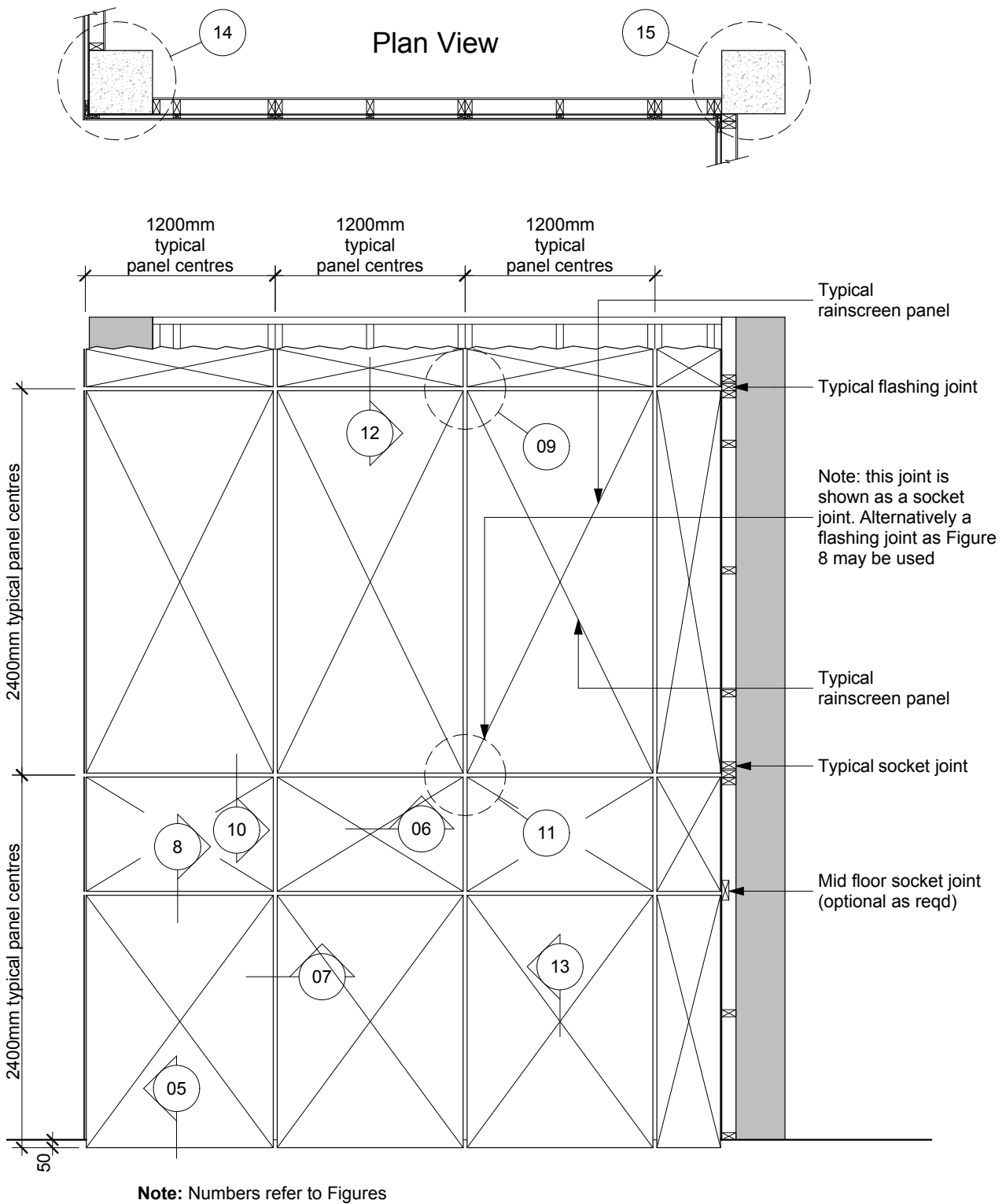
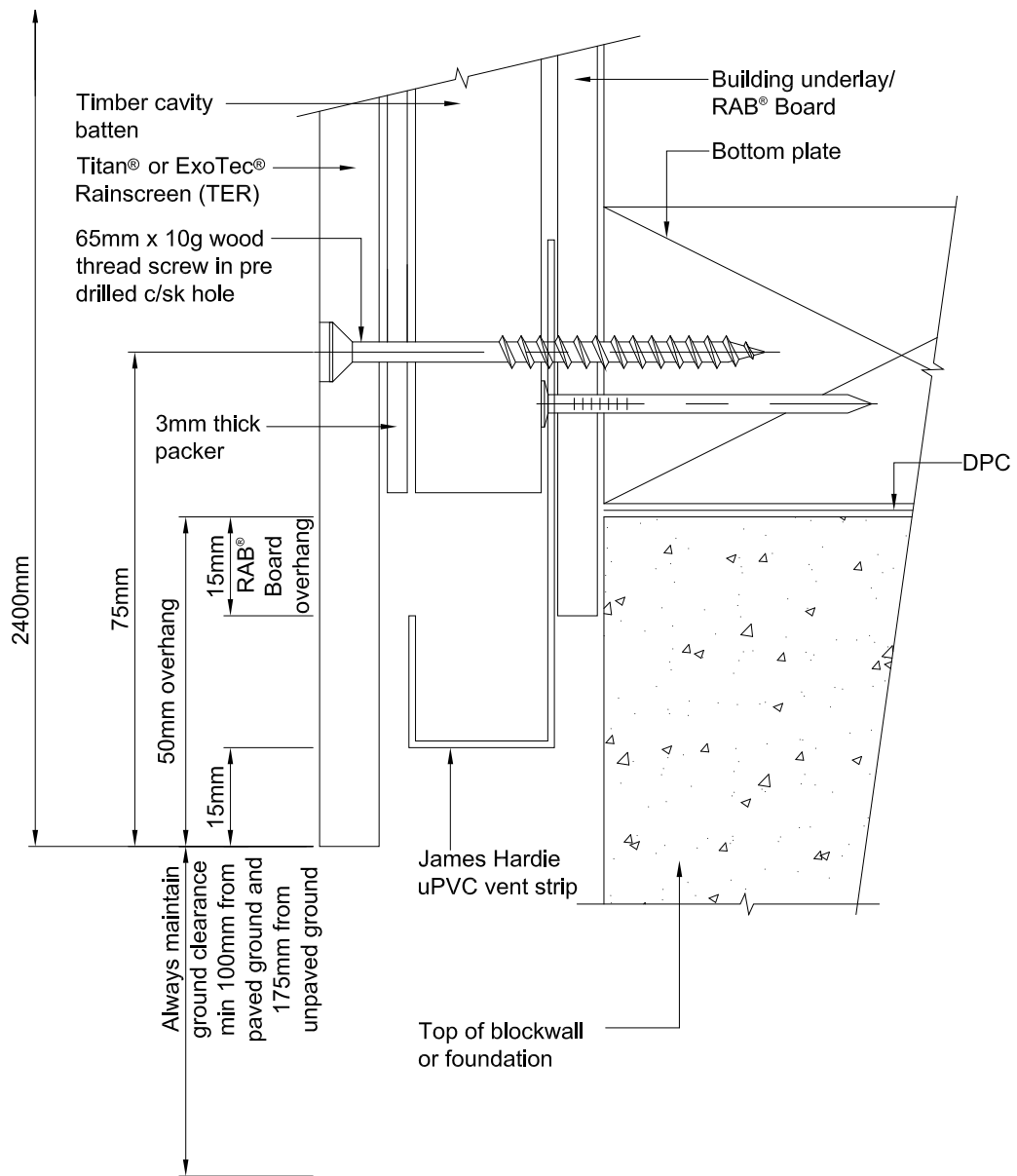




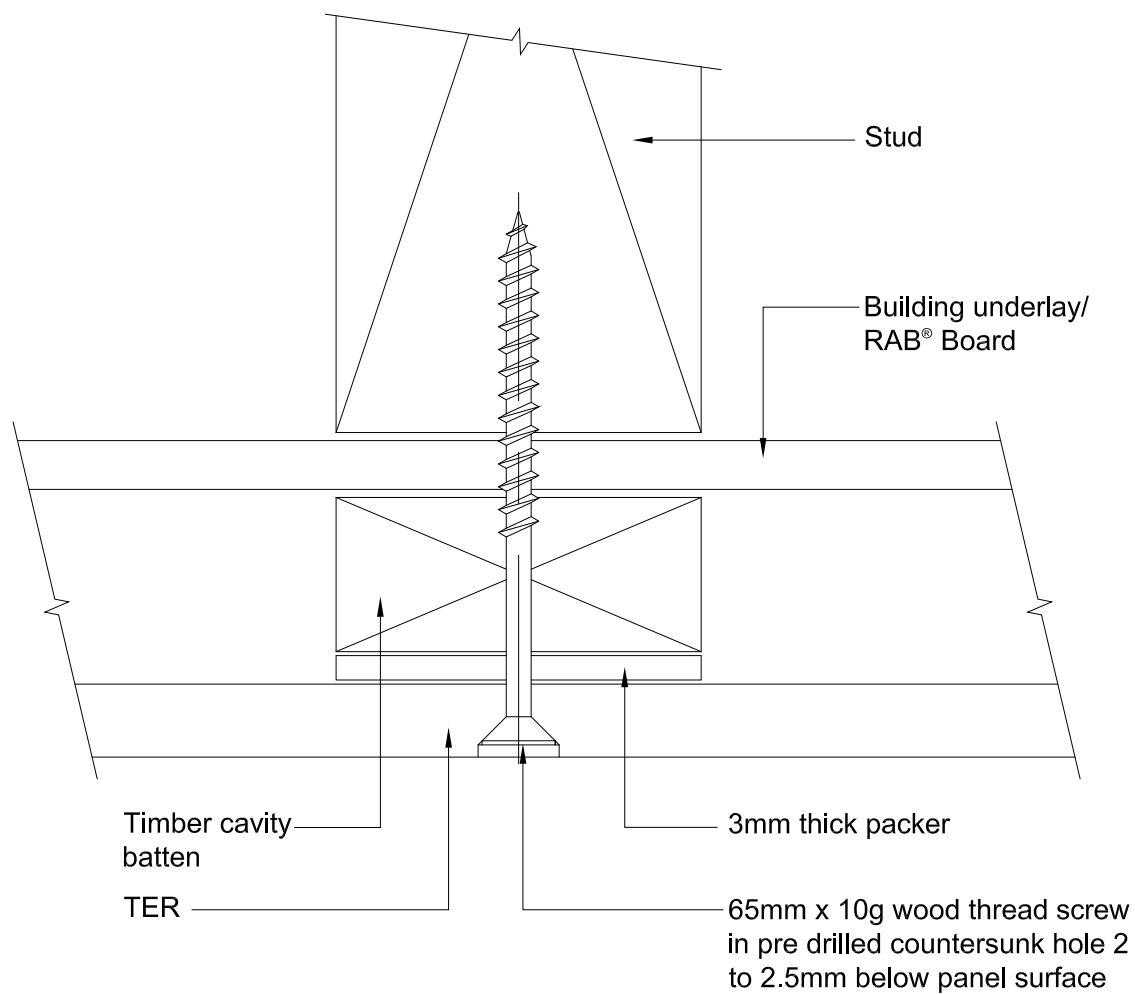
Figure 5: Foundation detail



**Notes:**

1. Check Rainscreen sheets extend past bottom plate by amount specified in Architects Specification (50mm nom)
2. Fix vent strip so it remains level and secure during construction.
3. Check vent strip is free from site debris.
4. Titan® Facade Panel may also be fixed with 60 x 3.15mm<sup>Ø</sup> HardieFlex™ nail finished flush with surface.

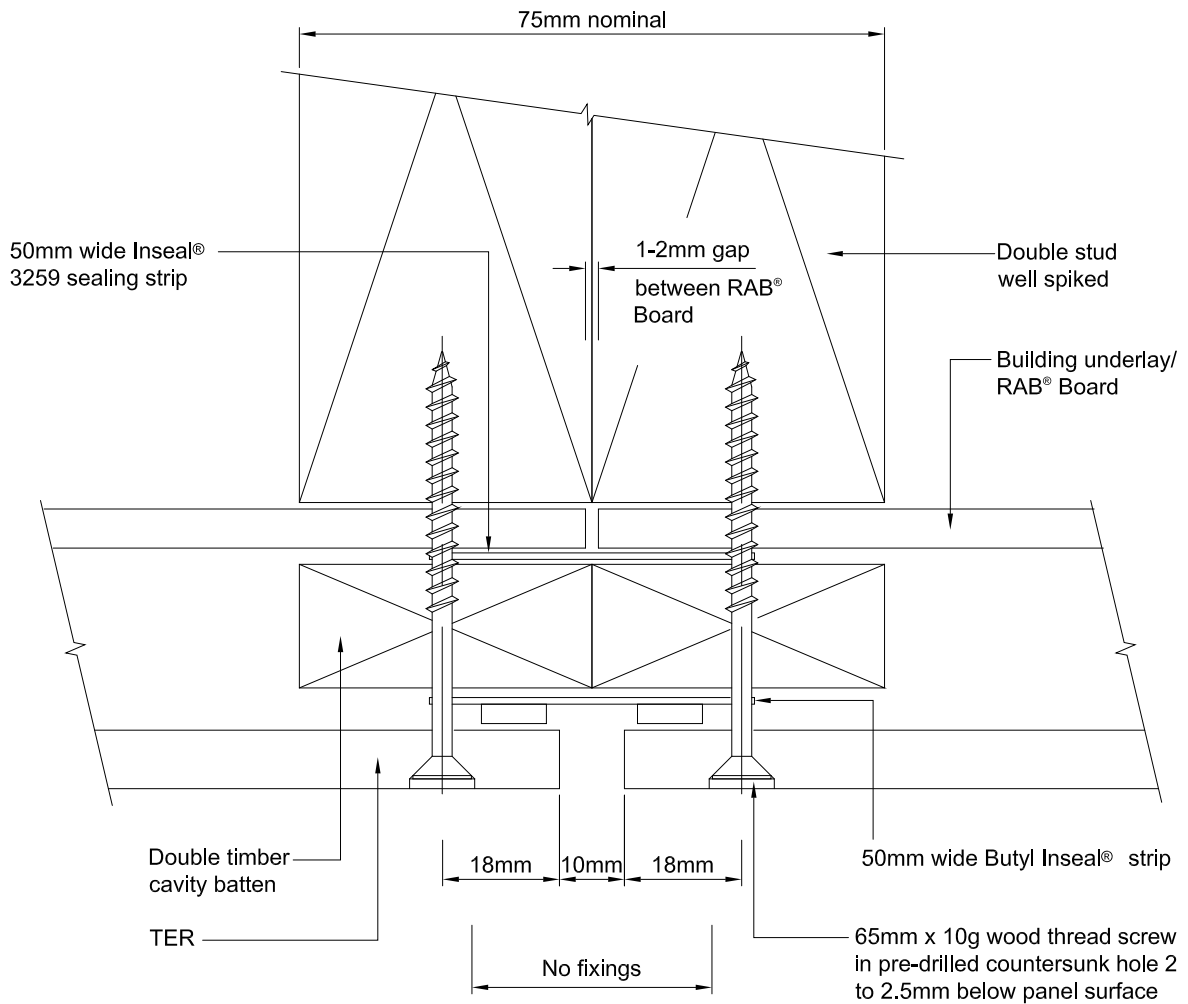
Figure 6: Detail at intermediate stud



**Notes:**

1. Fix sheet from the middle of the board outwards.
2. Titan® Facade Panel may also be fixed with 60 x 3.15mm<sup>Ø</sup> HardieFlex™ nails finished flush with surface.
3. 3mm thick packer must finish below and above aluminium 'T' at horizontal joint.

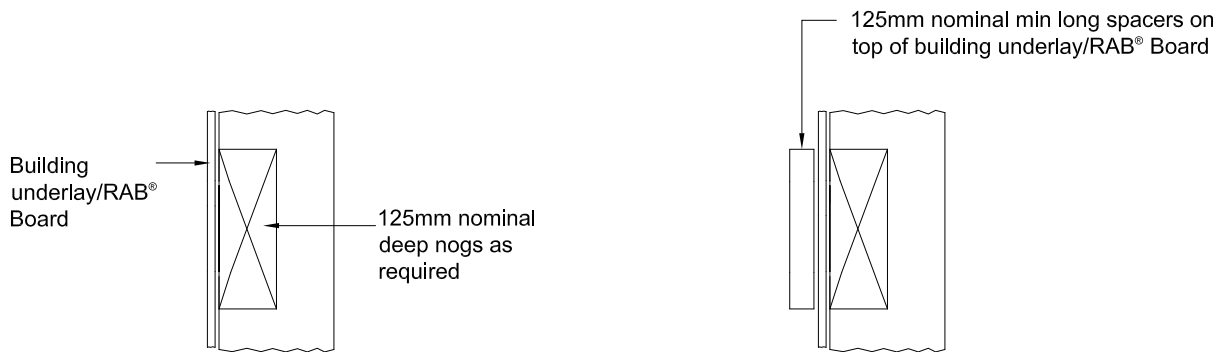
Figure 7: Vertical joint detail



**Notes:**

1. Make sure the Rainscreen sheet extends over the Inseal® so that full compression occurs
2. Make sure fixings are on the outside of Butyl Inseal® strips
3. Seal cut edges with a primer compatible with final coatings
4. Edge distance for fixings must be 18mm minimum
5. Titan® Facade Panel may also be fixed with 60 x 3.15mm<sup>Ø</sup> HardieFlex™ nail finished flush with surface.

Figure 8: Mid floor socket joint detail



### Step 1

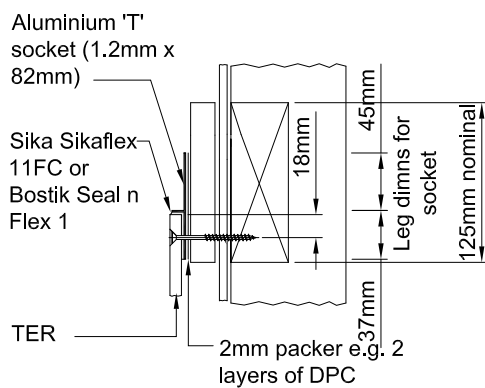
**Notes:**

- Check Architect's specification for tolerance limits for frame

### Step 2

**Notes:**

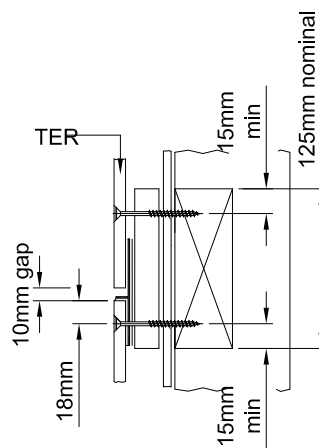
- Fix 125mm long spacers at 300mm max crs to allow for drainage and ventilation
- The hit and miss spacers are detailed to provide support for the Aluminium socket while the adhesive dries.



### Step 3

**Notes:**

- Ensure fixings are through timber battens
- The Aluminium 'T' socket can be glued onto the back of the sheet on the ground. Take care to ensure solid and continuous lines of adhesive sealant are formed. Note the sealant must continue under socket flange at sheet edge.
- Apply two thick lines of adhesive sealant on the bottom portion of the socket.
- The Aluminium socket cannot come in contact with CCA treated timber.
- Use 2mm packer under the aluminium socket e.g. 2 layers of DPC to achieve a flatness on panel face.

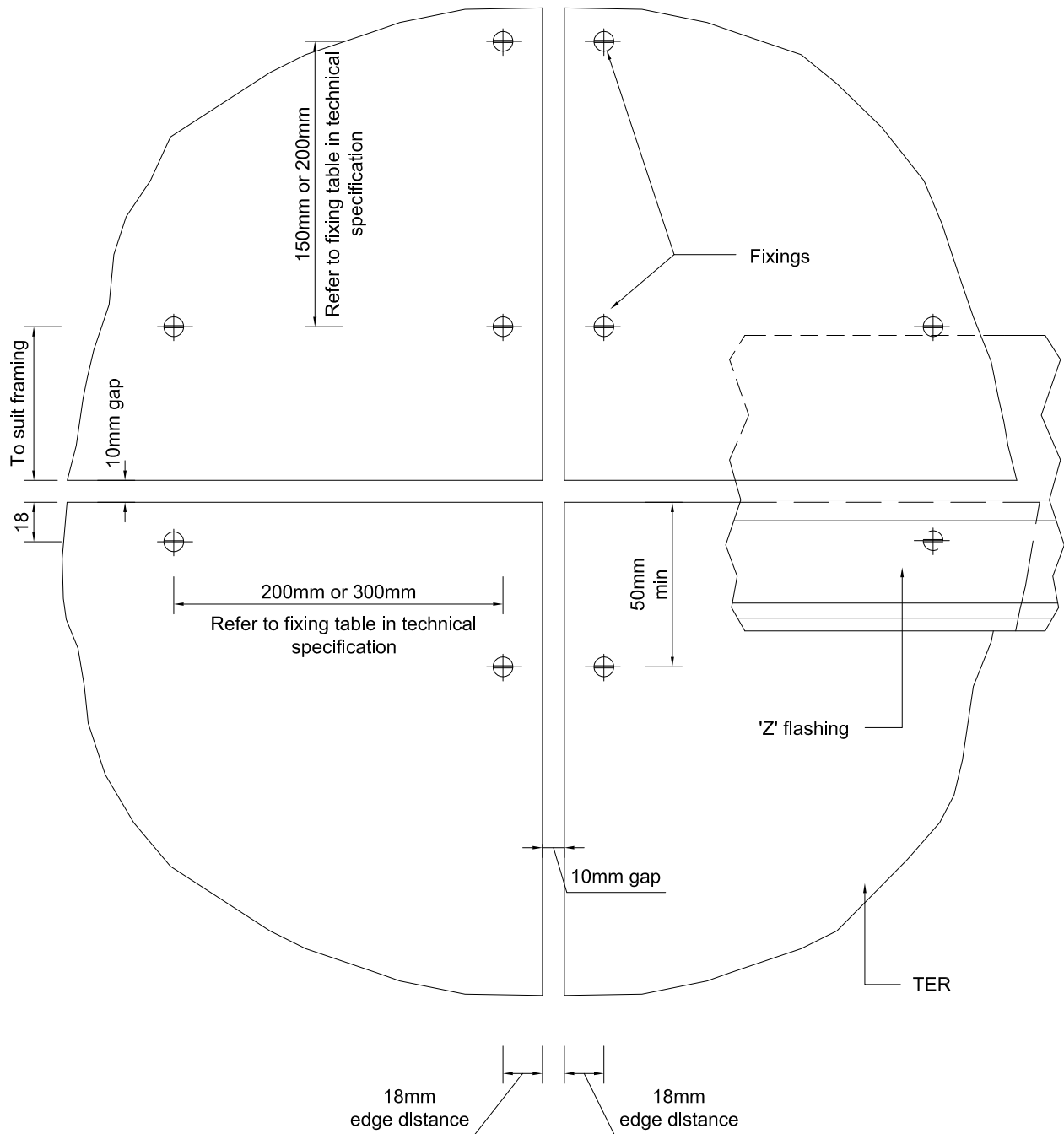


### Step 4

**Notes:**

- When this joint is used at floor levels a gap is required in the RAB Board.
- The fibre cement packer used on the intermediate stud must finish below and above Aluminium 'T' socket.

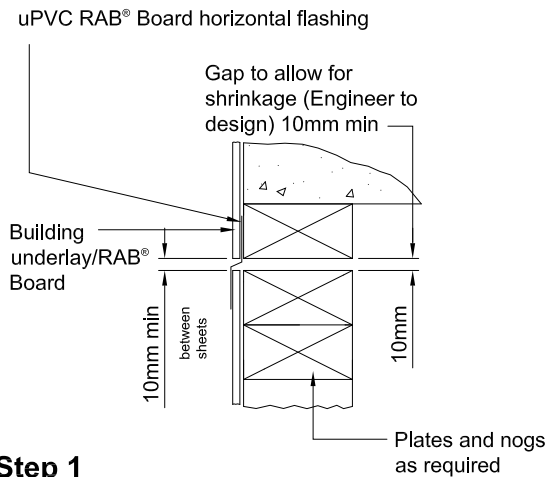
Figure 9: Sheet fixing at corner



Notes:

1. Make sure the Rainscreen sheet extends over the Butyl Inseal® so that full compression occurs
2. Make sure fixings are on the outside of Butyl Inseal® strips
3. Seal cut edges with a primer compatible with final coatings
4. Edge distance for fixings must be 18mm minimum
5. Titan® Facade Panel may also be fixed with 60mm x 3.15mm<sup>Ø</sup> HardieFlex™ nail finished flush with surface.

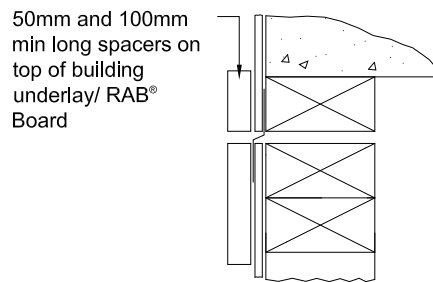
Figure 10: Aluminium 'T' socket joint



### Step 1

**Notes:**

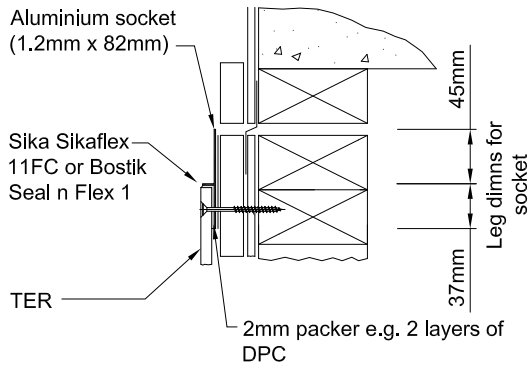
- Check Architect's specification or tolerance limits for frame
- Install horizontal flashing to RAB® Board



### Step 2

**Notes:**

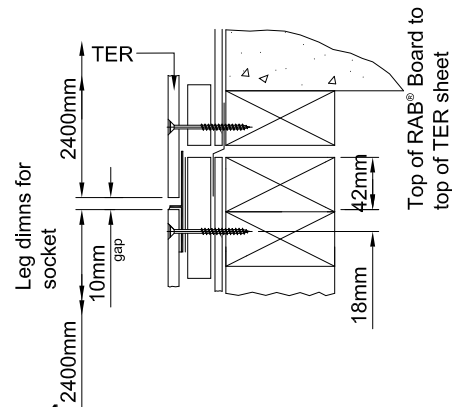
- Fix 50mm and 100mm long spacers at 300mm max crs to allow for drainage and ventilation
- The hit and miss spacers are detailed to provide support for the Aluminium socket while the adhesive dries.



### Step 3

**Notes:**

- Ensure fixings are through timber battens
- The Aluminium 'T' socket can be glued onto the back of the sheet on the ground. Take care to ensure solid and continuous lines of adhesive sealant are formed. Note the sealant must continue under socket flange at sheet edge.
- Apply two thick lines of adhesive sealant on the bottom portion of the socket .
- The Aluminium socket cannot come in contact with CCA treated timber.
- Use 2mm packer under the aluminium socket e.g. 2 layers of DPC to achieve a flatness on panel face.

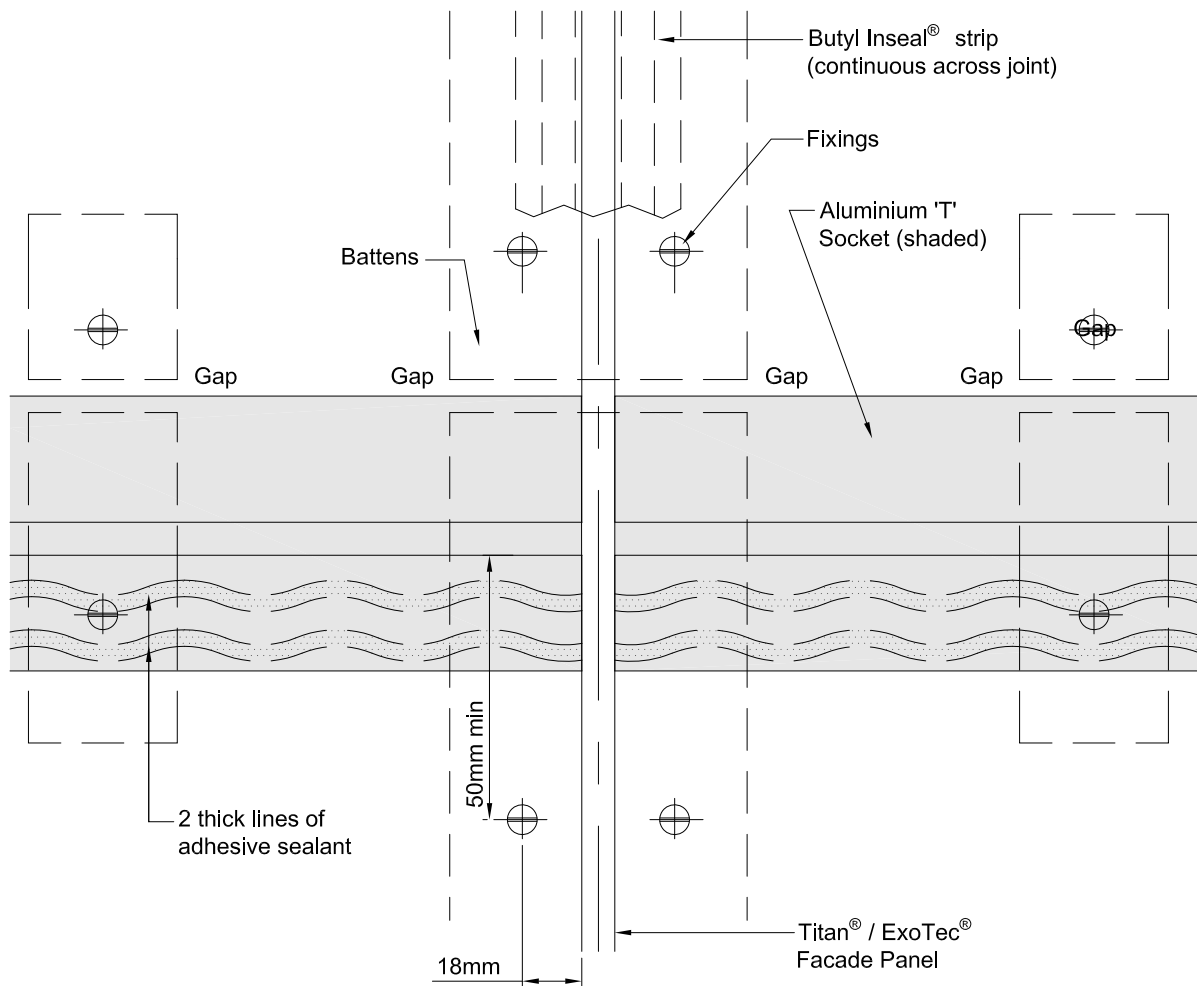


### Step 4

**Notes:**

- When this joint is used between floor levels no gap is required in the RAB® Board refer Figure 8.
- The fibre cement packer used on the intermediate stud must finish below and above the Aluminium 'T' socket

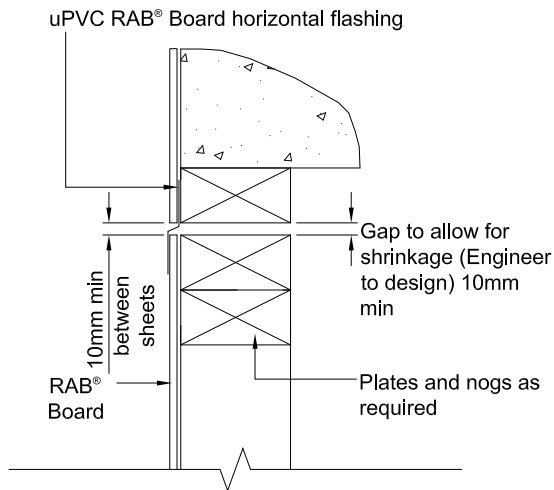
Figure 11: Fixing detail



**Notes:**

- The aluminium 'T' socket is stopped at the sheet edge and must sit on the Butyl Inseal®
- The Butyl Inseal® strip is continuous behind the Aluminium socket

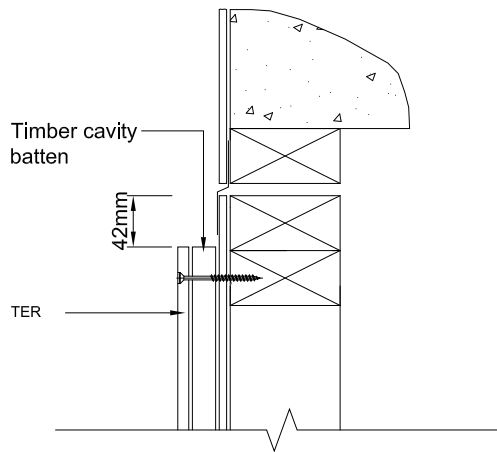
Figure 12: Drained flashing joint detail



### Step 1

**Notes:**

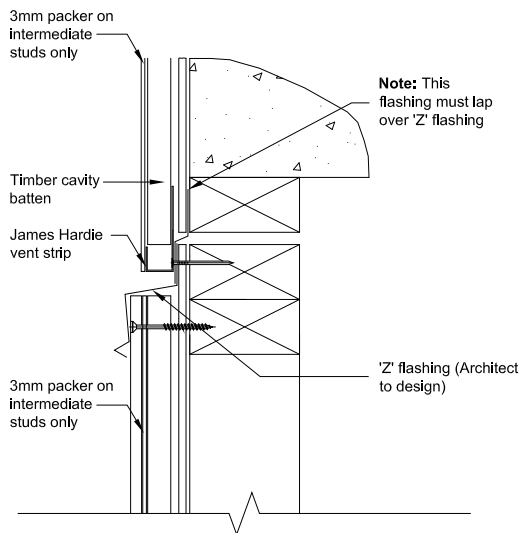
- Check Architect's specification for tolerance limits for frame
- Install horizontal flashing to RAB® Board



### Step 2

**Notes:**

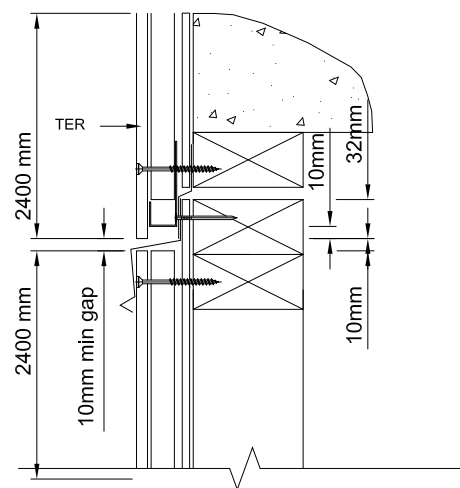
- Check fixing centres and edge distances
- If top fixings are to be hidden by the Z flashing they will need to be fixed and sealed before the Z flashing is installed
- Cut edges need to be primed with primer



### Step 3

**General Note:**

- Check Architect's plans for type of flashing to be used. To comply with 50 year durability refer to Table 20 of E2/AS1



### Step 4

**Notes:**

- The bottom fixing of the top Rainscreen sheet is not to be fixed into the timber frame that the bottom sheet is fixed to.
- The joints in the RAB® Board and the TER may coincide in which case the 'Z' flashing must be fitted with flashing tape.



Figure 13: Screw fixing detail

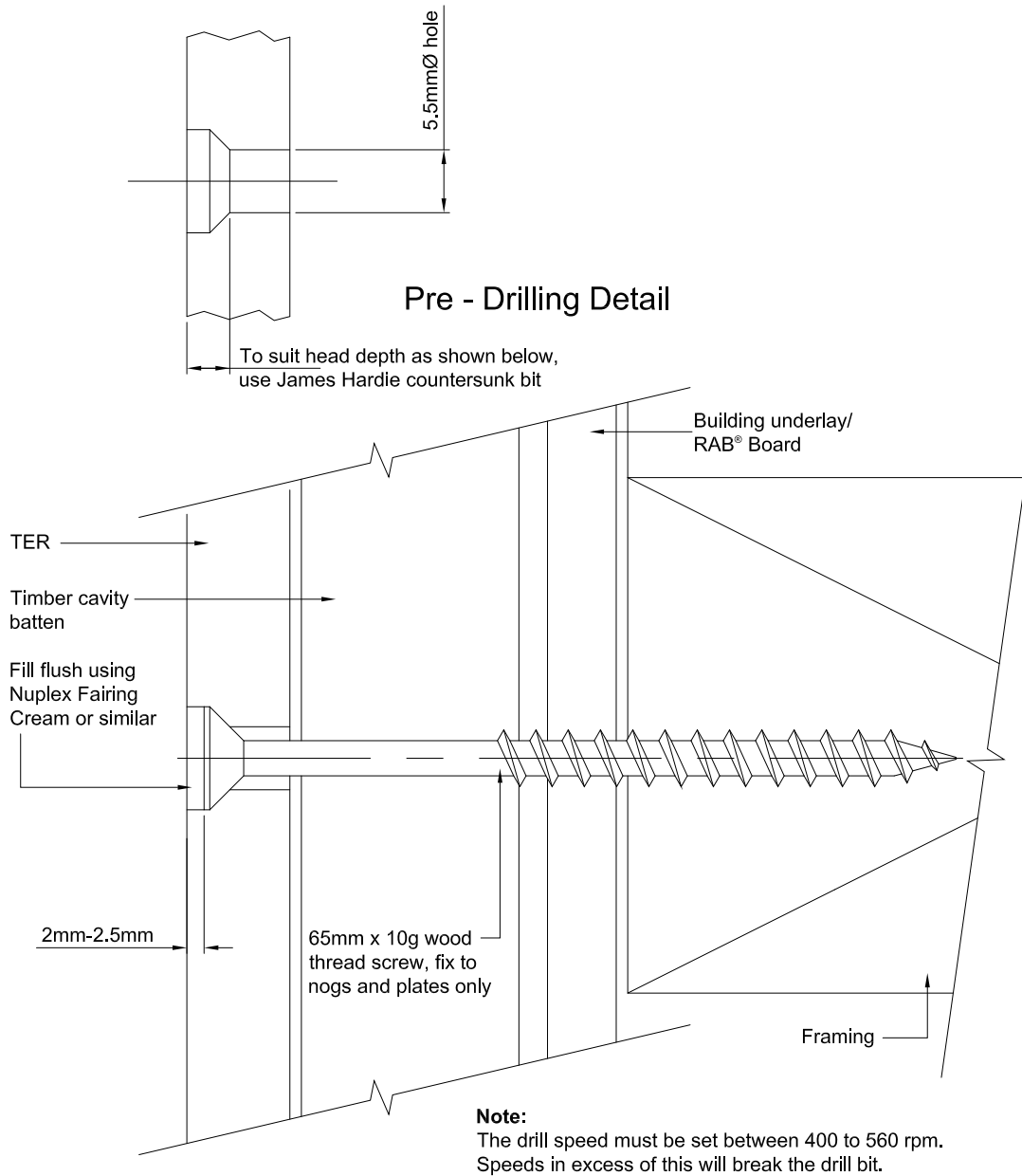
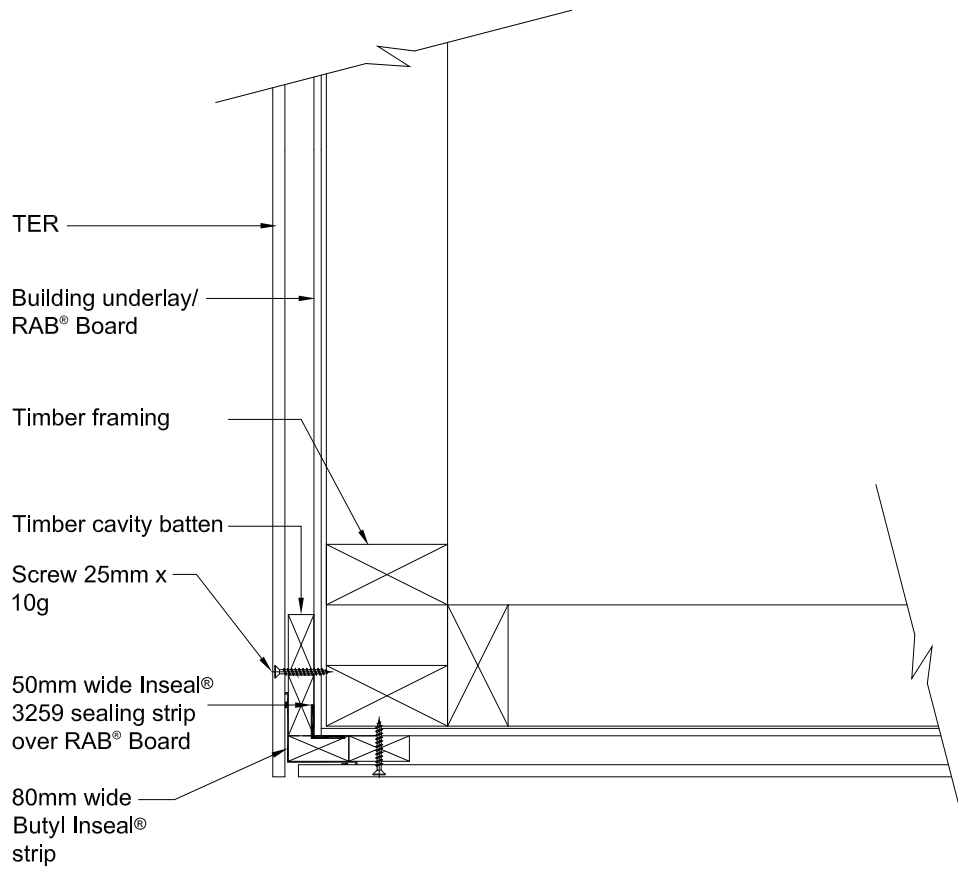


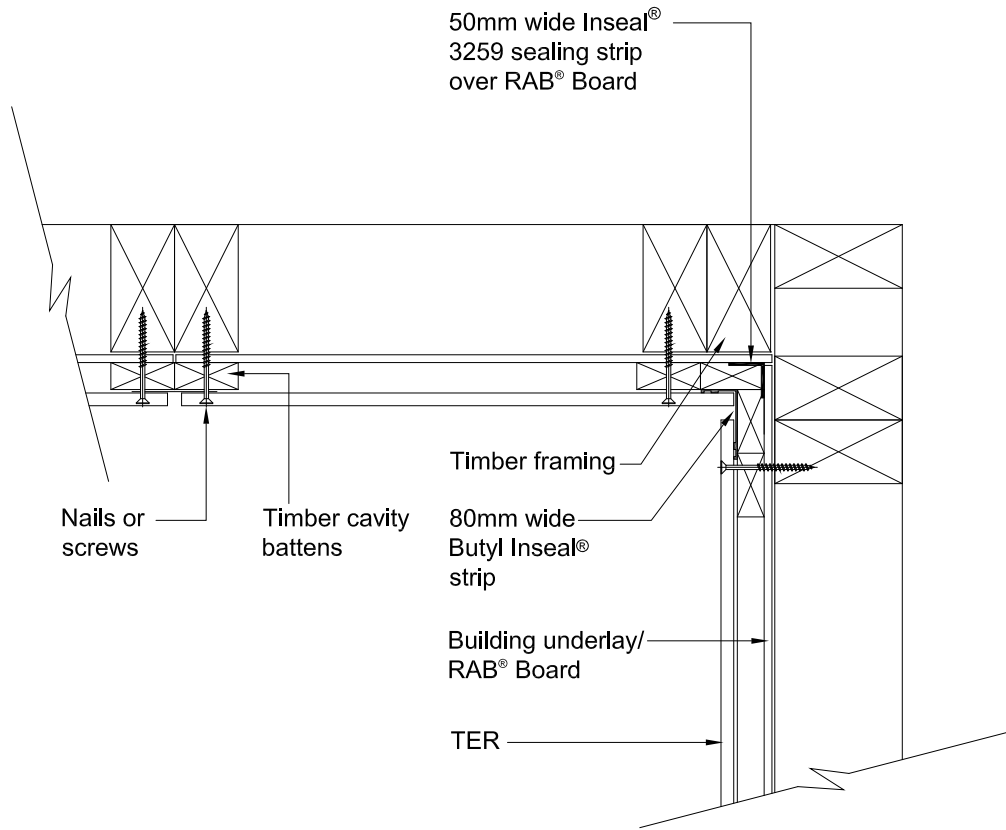
Figure 14: External corner detail



**Notes:**

- At external joints the 80mm wide Butyl Inseal® strip is required as is an extra width batten to accommodate fixings.

Figure 15: Internal corner detail



**Notes:**

- Note 80mm wide Butyl Inseal® sealing strip is required at the internal joint.

Figure 16: External corner detail

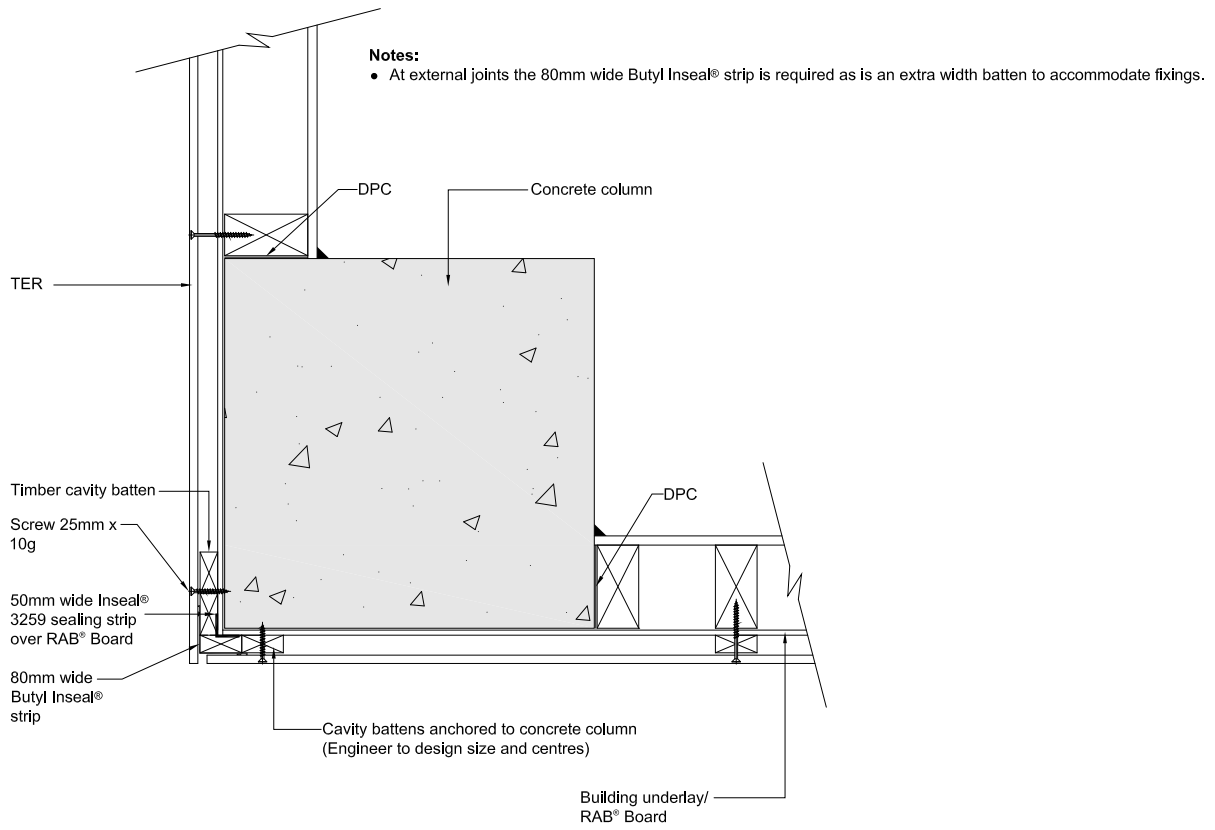
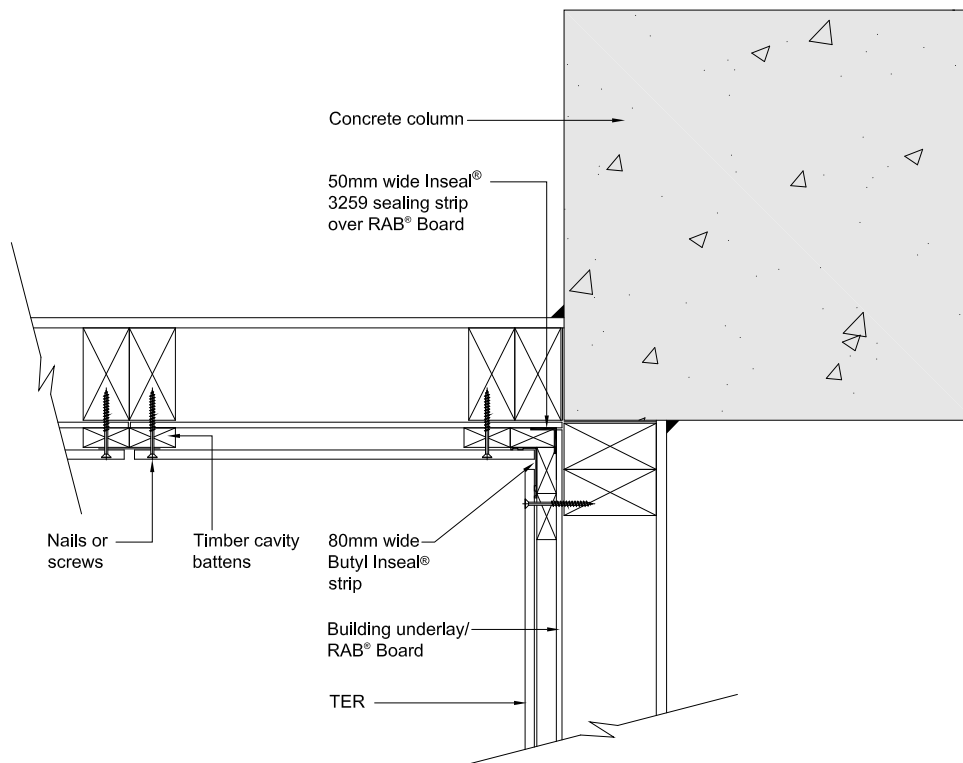


Figure 17: Internal corner detail



**Notes:**

- Note 80mm wide Butyl Inseal® sealing strip is required at the internal joint.

# Notes

A series of horizontal dotted lines for taking notes.

# Product Warranty



James Hardie New Zealand Limited ("James Hardie") warrants for a period of 15 years from the date of purchase that the Titan™ and ExoTec™ Façade Panel (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 15 years from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Consumer Guarantees Act or otherwise which cannot be excluded or modified at law.

## CONDITIONS OF WARRANTY:

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim 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) This warranty is not transferable.
- c) 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. 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.
- d) The project must be designed and constructed in strict compliance with all relevant provisions of the current New Zealand Building Code ("NZBC"), regulations and standards.
- e) The claimant's sole remedy for breach of 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.
- f) 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).
- g) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law.
- h) If meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

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 (c), (d), (f) and (g) above. James Hardie has tested the performance of the Titan™ Façade Panel and ExoTec™ Façade Panel when installed in accordance with the Titan™ and ExoTec™ Façade Panel technical specification, in accordance with the standards and verification methods required by the NZBC and those test results demonstrate the product complies with the performance criteria established by the NZBC. However, 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 made in its literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the NZBC, regulations and standards as it is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant James Hardie installation manual are suitable for the intended project and that specific design is conducted where appropriate.

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