

7 Installation

7.1 General

The following information applies to all Strandfloor products.

- o Continuous support shall be provided at the building perimeter.
- o Lay ink marked face to joists – (side with label should face up).
- o Panels shall be close butted together without being placed under pressure by mechanical cramping.
- o Panels shall be staggered when used as a diaphragm and it is recommended that staggering is used for general use.
- o Each panel shall span at least two floor joist spacings (i.e. supported over three consecutive joists) except where part panels provide the necessary infill at the building edge.
- o A minimum of 8mm clearance shall be made between edges and any fixed object e.g. bottom plates, masonry walls, abutting concrete floors, structural columns etc. This is to accommodate linear expansion that may occur during the weather exposure period and eliminate moisture transfer from concrete to Strandfloor.
- o To stop permanent staining do not leave materials (scaffolding, nails, etc.) on panels during wet conditions and avoid spills of cement, paint, tea, etc.
- o If adhesive is being used apply a continuous 5mm bead to the top of the joists (and nogs if used) just prior to each sheet being positioned and fixed in place. Also apply a 5mm bead between sheet ends and edges (Square Edge panels) as installation proceeds.

7.2 Strandfloor Square Edge

The following information applies to Strandfloor Square Edge panels only.

- o Support shall be provided to all panel edges and ends by way of joists and nogs/dwangs.
- o All supporting timber shall be a minimum of ex 100 x 50.
- o For joist spacings of 400mm or 600mm, panels can be laid with, or across the joists. (refer figure 7.1 and 7.2)
- o For joist spacings of 450mm panels shall be laid across the joists. (refer figure 7.2)

When Square Edge panels are to be clear finished, ensure panel sizes, types and batches are not mixed.

Figure 7.1

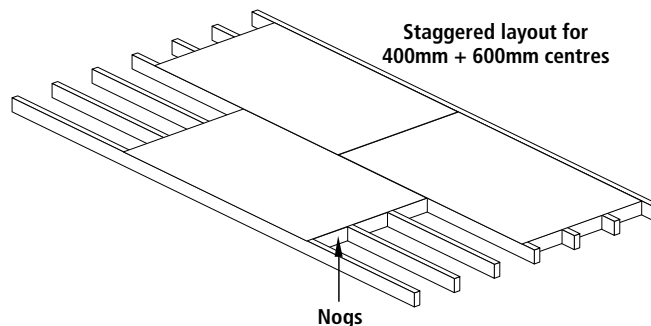
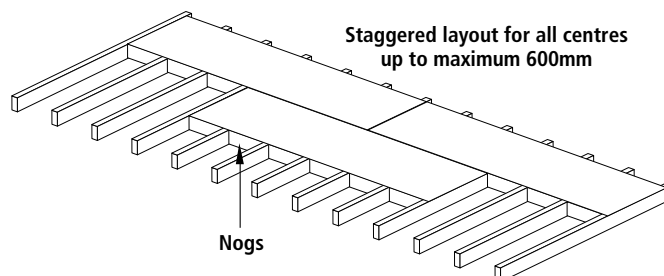


Figure 7.2



C7.1 Where a part panel is necessary, consideration should be given to the specific location and potential loads. If the area is likely to carry regular foot traffic or heavy concentrated loads, consideration should be given to installing nogs/dwangs at centres matching the joist spacings.

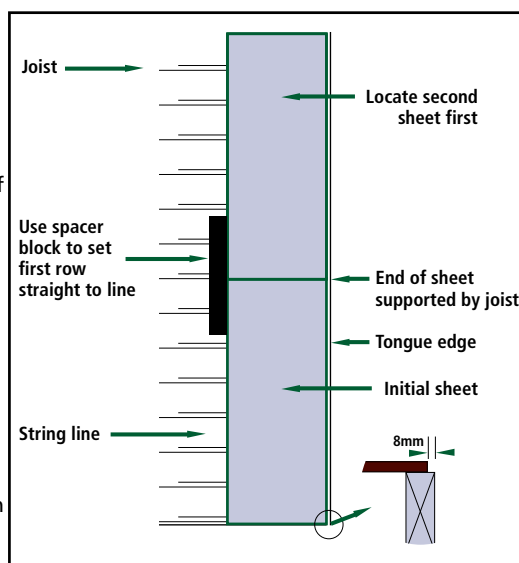
C7.2 This will ensure that shading between panels does not occur – five digit number on underside of panel is a batch number.

7.3 Strandfloor Tongue & Groove

The following information applies to all Strandfloor Tongue & Groove panels.

- o Panels shall always be laid across the joists. (Refer figure 7.2 for panel orientation).
- o Lay the first row with the brand name down and the tongue aligned to the perimeter of the floor. (refer figure 7.3)

Figure 7.3



- o Ends of sheets should be close butted and centred over joists.

- o Check the grooved edge, for straightness, with a string line.

- o Fix panels with only sufficient fastenings to avoid movement – this will stop any distortion of the grooved edge prior to further installation.

- o Allow for a stagger of at least one joist space and position the first sheet of the second row, with the tongue adjacent to the groove of the first row.

- o If adhesive is to be used, apply a thin bead along the top of each tongue, before insertion into the groove.

- o Lay a blocking piece (an off-cut of minimum ex 150 x 50 timber 1.4m long) across the joists, in the centre of the panel, on the grooved edge.

- o Stand on the blocking piece and strike with a heavy hammer to drive the panel tongue into the groove of the first row.

- o It will assist if a second person can stand on the joint between the two rows.

- o Fix, as before and continue the process to complete the second row – the first row can now be fully fixed.

- o Subsequent rows are similarly installed to complete the floor.

Table 7.1 gives an indication of the quantity of fixings required for Strandfloor panels. Extra fixings may be required for diaphragm floors. C/A equals construction adhesive cartridges (375ml). Refer 7.6 Diaphragm floors.

Table 7.1

Fixing quantities Tongue & Groove panels						
Panel size (mm)	3600 x 1200		3600 x 800		2400 x 1200	
Joist centres	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)
600mm	53	0.6	37	0.4	39	0.4
450mm	67	0.7	47	0.5	N/A	N/A
400mm	74	0.8	52	0.5	53	0.5

Fixing quantities Square Edge panels						
Panel size (mm)	3600 x 2400		3600 x 1200		2400 x 1200	
Joist centres	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)	Nails (number)	C/A (cartridge)
600mm	135	1.5	89	1	63	0.7
450mm	157	1.7	99	1.1	N/A	N/A
400mm	168	1.9	104	1.2	73	0.8

C7.3a At this stage the tongue in the first row is redundant and can be removed for use elsewhere, if required.

C7.3b Refer 7.6 Diaphragm floors.

7.4 Large floors

A large floor is one with a length or width exceeding 25m.

All large floors that are pre-laid (exposed to weather) shall provide for panel expansion.

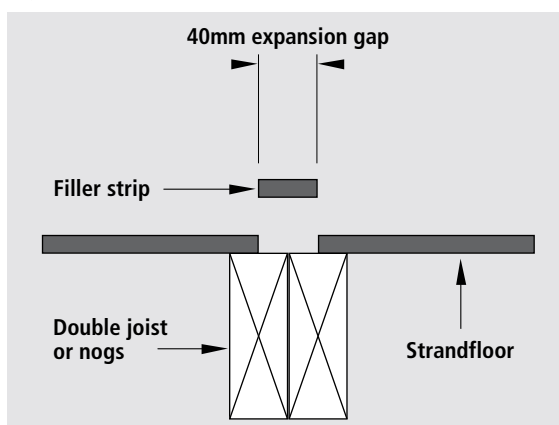
This can be achieved by:

- o Leaving out one row of flooring panels across the building width at centres not exceeding 25m until the structure is completely closed in.
- o Providing a 40mm wide expansion gap under partition lines or other hidden situations, at no greater than 25m intervals. (refer figure 7.4) Insert a filler strip on completion.

All large floors that are post-laid (not exposed to weather) do not require expansion provisions.

It is essential that no exposure of any type occur.

Figure 7.4



7.5 Fixing

The type and position of the fastening chosen is important for long-term performance. Incorrectly fixed panels and high moisture content in timber may lead to squeaking floors which can be difficult to remedy at a later date.

Table 7.2. gives details of acceptable fastener types. All others, including staples, are unacceptable.

Perimeter fixing shall be 10mm from the panel edges except where long edges have tongues. Increase to 15mm to avoid tongue damage.

7.5.1 Adhesive

Adhesive is recommended for use in conjunction with mechanical fastening.

Adhesive should be applied in a continuous 5mm bead to all floor joists & nogs if present, and between sheet ends and edges (square edge panels). A 2mm bead should be applied along the tongue of the tongue & groove panels as they are laid.

Table 7.2

Fastener types

Timber joists	Minimum size	Fixing centres mm	
		(Edges)	(Intermediate)
Annular grooved particle board flooring nails	60mm	150	200
Galvanised jolt head nails	60mm	150	200
Self drilling screws (corrosion resistant)	45mm x8 gauge	150	200
Steel joists			
Tek self drilling screw (corrosion resistant)	45mm x10 gauge	150	200
Adhesive options:			
HB Fuller - Sturdi Bond			
Bostik – Alpha Grip			
Holdfast - Gorilla Grip			
Sika – Nailbond Premium			

5mm continuous beads to the top of each joist and between sheets at ends and edges
2mm bead to the top of tongue

Note: When laying Strandfloor onto steel joists ensure the adhesive you choose is suitable for bonding wood to steel.

C7.4a Ensure that the 8mm clearance is maintained around the perimeter and between fixed objects. Where a double joist is not available, use rows of double nogs.

C7.4b If floor is to be clear finished ensure all product is from the same batch (check identification numbers on underside of panels).

C7.5.1a The use of a continuous bead of adhesive will result in the joist and panel 'acting as one' which will provide a stiffer platform floor.

C7.5.1b The application of adhesive between sheets as they are laid will restrict moisture uptake through the panel edges.

7.5.2 Nails

Hand-driven nails shall initially be driven flush with the surface. Punching of nails must take place after building is closed in – just prior to sanding. This allows for the moisture content of joists to dry during building construction.

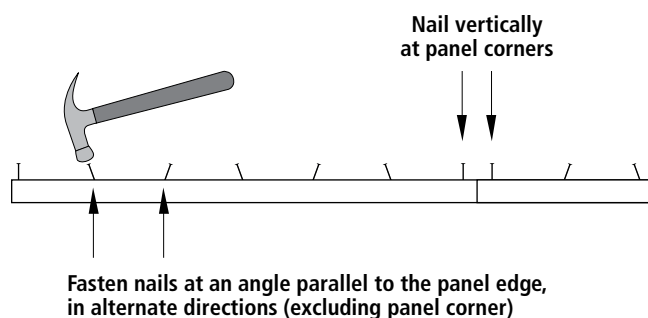
Hand-driven nail fastening usually provides a better finish for clear coatings than power-driven nails.

To improve lateral holding, nails shall be slightly angled and be driven parallel to the sheet edge. (refer figure 7.5)

When using power-driven nails, set the depth adjuster attachment on the power tool to drive nails flush with the surface of the panel. This will allow hand punching to take place just prior to sanding.

The use of the pre-punching mechanism increases the risk of squeaky floors, as any timber shrinkage that occurs as the supports dry out is not taken up later as is the case when the punching process is carried out at sanding and floor finishing stage.

Figure 7.5



7.5.3 Screws

For best results when screw fixing Strandfloor products ensure the panel is in contact with the joist when installing the screw. Drive the head of the screw not more than 2mm below the surface.

C7.5.2 Hand nailing will generally give the best result as more control can be exercised. The best possible result will be achieved with the proper use of annular grooved hand driven nails used in conjunction with adhesive.

C7.5.3 Care should be taken when retightening screws, as heads are liable to shear, particularly if rusting has occurred.

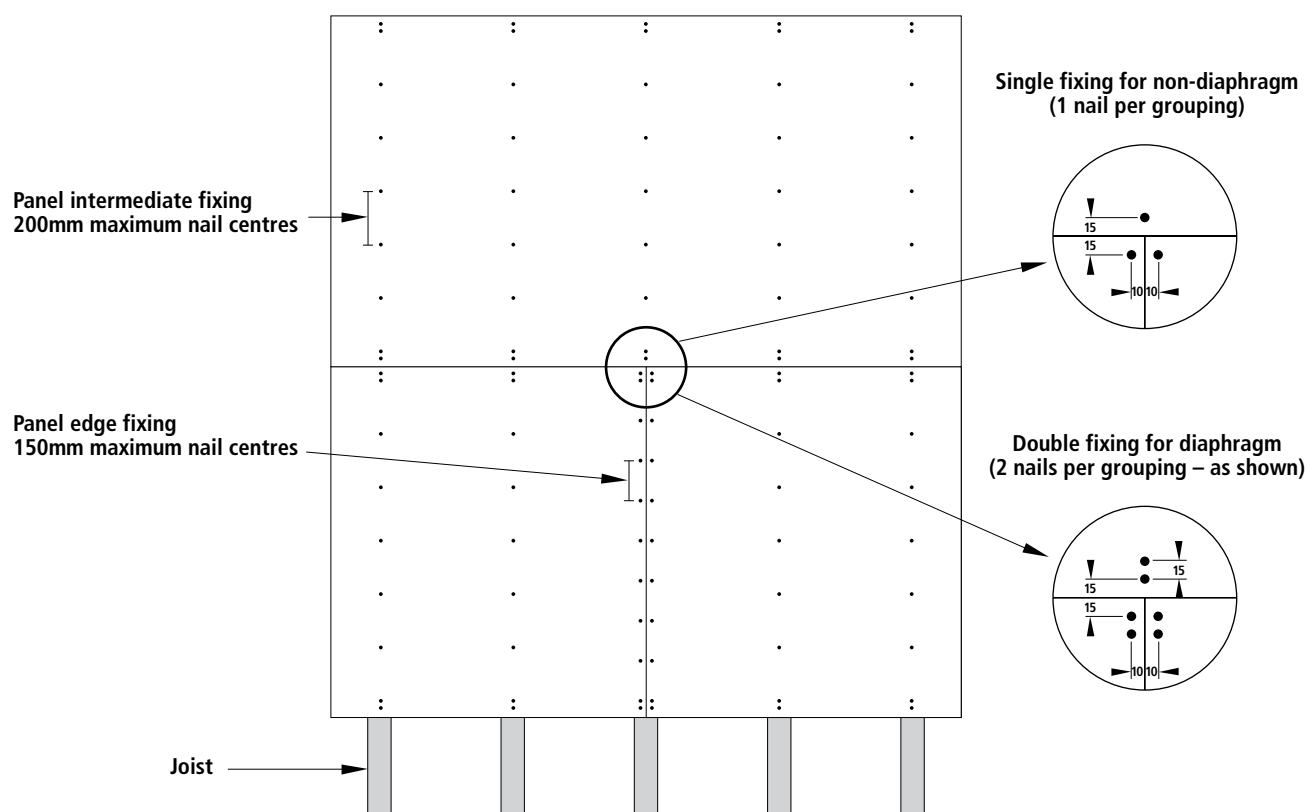
7.6 Diaphragm floors

Screw fixing is not acceptable when forming diaphragm floors. NZS3604 prescribes the use of nails for fixing diaphragm floors. (Screws have low ductility and will shear under lower loads than nails, which have greater ductility).

Square Edge panels - there are no restrictions or additional fixing requirements when using Strandfloor Square Edge panels to form a diaphragm.

Tongue & Groove panels - When using Strandfloor Tongue & Groove panels to form a diaphragm, joist spacings must not exceed 450mm centres. In addition to the standard nailing, extra nails, as shown in figure 7.6, are required along the long edge placed 30mm back.

Figure 7.6



7.7 Double layer installation

The bottom layer of Strandfloor shall be laid as for single layer flooring panels.

The top layer shall be laid in a similar pattern with edges of panels offset in each direction from the bottom layer edges.

All panel ends shall be located centrally over joists or blocking to ensure positive fixing and nail length increased to 75mm.

When installing a double layer flooring system, allow for the installation of the second layer after closing in and when all sub-trade work is completed. This will provide a clean unweathered surface for clear finishing.

Moisture content of the first layer must be at 15% or below before the second layer is installed.

7.8 Avoiding “squeaking and creaking”

Since the 1960s when reconstituted wood flooring was introduced, the panels have been laid on “green” floor joists.

The drying out of this timber is a major cause of panel movement that can lead to a noisy floor.

Strandfloor itself does not create noise, but common causes of creaking or squeaking floors are:

- o Poor alignment of the joists bearing surfaces, creating gaps resulting in uneven stress on fixings.
- o Shrinkage as the joists dry out – timber shrinks across the grain, leaving a gap between the underside of the sheet and the top of the joist.
- o Using long span joists which allow the floor to deflect more and creak at the solid blocking fixings.
- o Insufficient and loose strutting or blocking of the joists.
- o Swelling of the Strandfloor panels exposed to the weather. Swollen edges of the panel may not bear tightly on the joists when they dry. Sanding may level the thickened edge, but this does not rectify the underside. Nails shall therefore be punched and/or screws re-tightened just prior to sanding.
- o Insufficient fixings holding the panels to the support system.
- o Panels not being fully fixed down when laid.
- o Foot traffic in the house working the panels down the shank of the nails onto the top of the joists often leading to squeaking as the nail shafts work in the Strandfloor panels.
- o Power fastenings being over-driven into the panel core.
- o Hand fixed nailing being punched off at the initial fastening stage with no allowances made for any subsequent movement as drying of materials occurs.
- o Fastenings being positioned too close to the panel edges.

The following good practice will help to avoid a noisy floor:

- o When possible, use dry joists.
- o For new buildings, reduce the joist span or increase joist depth to reduce deflection (prop green long span joists at mid span until they are dry).
- o Consider the use of an engineered floor system.
- o Level the joist tops before laying the flooring panels.
- o Ensure dry solid blocking or herringbone strutting is fitted tightly to stiffen floor in accordance with NZS 3604.
- o If using solid blocking fit as late as possible so that joists are drier and shrinkage will be less.
- o Herringbone strutting is preferred as it can be tightened from the underside after timber is dry and before ceilings are fixed to upper floor joists.
- o Lay flooring panels with staggered joints.
- o Don't cramp flooring panels tightly together.
- o Drive fastenings flush with the top surface of the board at time of laying.
- o Leave punching of nails and/or re-tightening of screws as long as possible.
- o Use adhesive/nail fixing system where possible and completely nail off at time of laying.

8 Flooring overlays

8.1 General

Laminex New Zealand manufactures or distributes a range of panel products suitable for overlaying existing concrete and wooden floors for commercial and domestic requirements.

There is a panel suitable for most flooring overlay applications, including:

- o All Strandfloor products
- o Lakepine® MDF
- o Strandboard®
- o Trade Essentials® Hardboard

This section is specific to Strandfloor, for others refer to individual publications.

All other sections of this manual apply equally to this section.

Overlays are only intended for interior use and should not be exposed to weathering. The fixing of overlays should not be carried out until the structure is closed and the substrate is waterproof and dry.

8.2 Uses

Overlays can be used for:

- o Refurbishing uneven and damaged tongue and groove wooden floors.
- o Re-leveling damaged and uneven concrete floors in commercial premises prior to laying carpet, vinyl, parquet or floor tiles.
- o Upgrading of school and community halls, gymnasium floors and stages, to meet the requirements for dancing, indoor bowling and other sporting activities.
- o Structural upgrades of wooden flooring in existing commercial buildings.
- o As a substrate for solid timber tongue and groove overlays.

8.3 Pre-conditioning

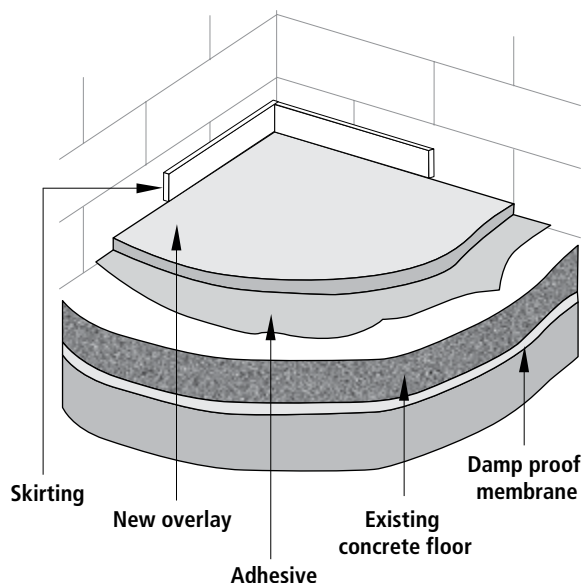
To ensure equilibrium of product, panels should be conditioned (left separated and standing vertically) in the installation location for at least 48 hours, prior to commencing fixing.

8.4 Direct floor overlay

All Strandfloor products may be attached directly to existing concrete or timber floors. (refer figure 8.1)

The use of Strandfloor Tongue & Groove panels will control long edge differential movement, and improve panel hold down when direct overlaying.

Figure 8.1



8.4.1 Timber substrates

For best results when direct overlaying, use a combined nail/full spread adhesive method. This eliminates any tendency for “drumming” in the new floor. A construction adhesive is recommended and should be applied as a full spread, to the manufacturer’s instructions.

Existing tongue and groove wooden floors shall be refixed and repunched as applicable, and then coarse sanded to provide a flat substrate. Ensure that there are no protruding nails prior to machine sanding.

When overlaying a tongue and groove timber floor, or existing particleboard floor, ensure that the joints in the new panels do not occur directly above parallel joints in the base floor.

All clearances, fastening and finishing detail applies equally where described elsewhere in this manual.

8.4.2 Concrete substrates

For best results when direct overlaying onto concrete, use a full spread adhesive method. This reduces panel movement and “drumming”.

Mechanical fixing of direct overlays on concrete floors should be avoided.

A construction adhesive is recommended and should be applied as a full spread, to the manufacturer’s instructions.

C8.4.1 Refer section 7 – Installation, for fixing specifications.

C8.4.2a Concrete waterproofing additives do not guarantee a dry substrate. A membrane is the only safe solution.

C8.4.2b BRANZ Bulletin No. 585 “Site Measurement of Moisture in Timber and Concrete”, describes the whole process and how measurements shall be taken.

Localised defects in the existing floor (i.e. exceeding 5mm undulations per 3m in any direction) shall be matrix filled to a leveled surface as applicable, and high spots ground flat.

The prepared floor surface shall be clean, sound and dust free.

New and old concrete floor slabs shall be dry before laying. As a guide for new concrete, allow one-month drying time per 25mm of floor slab thickness.

There are a number of "rule of thumb" methods to determine if concrete is sufficiently dry to install overlays. The only true method is to measure the relative humidity of the concrete surface, using a flooring hygrometer. (refer figure 8.2)

The reading shall be below 70% before the laying of Strandfloor can be considered.

Substrates shall be free from wax, oil, moisture, grease, dirt and dust or loose material.

Construction joints shall be formed in the overlay to coincide with those in the concrete substrate. Bridging construction joints is not recommended.

Before applying adhesive the floor shall be vacuumed clean and wiped over with a damp mop.

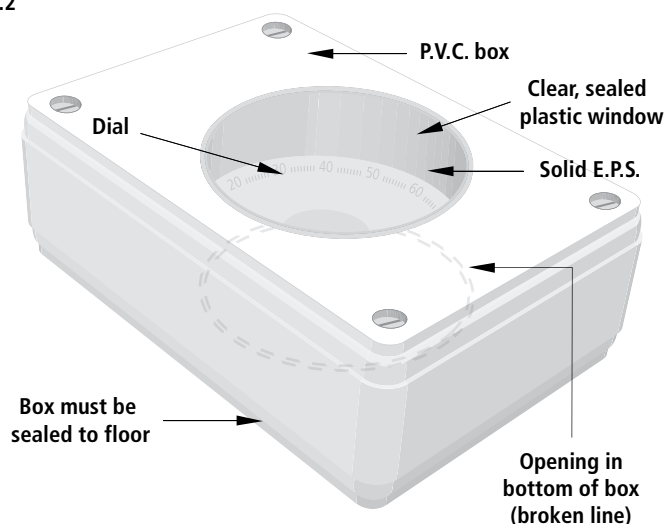
Apply full spread adhesive to the manufacturer's specifications.

All clearances, fastening and finishing details apply equally where described elsewhere in this manual.

Temporary even pressure (e.g. sandbags) should be laid over the floor area until the adhesive has cured. Pay particular attention to square-edged panel intersections, where it is necessary to eliminate surface differentials.

Prohibit traffic over the new floor until the new adhesive is fully cured as recommended by the adhesive manufacturer.

Figure 8.2



C8.4.2c The adhesive shall be full spread. Spot or bead application may lead to "drumming".

8.5 Indirect floor overlay

All Strandfloor products can be used for indirect overlays, up to spans of 600mm.

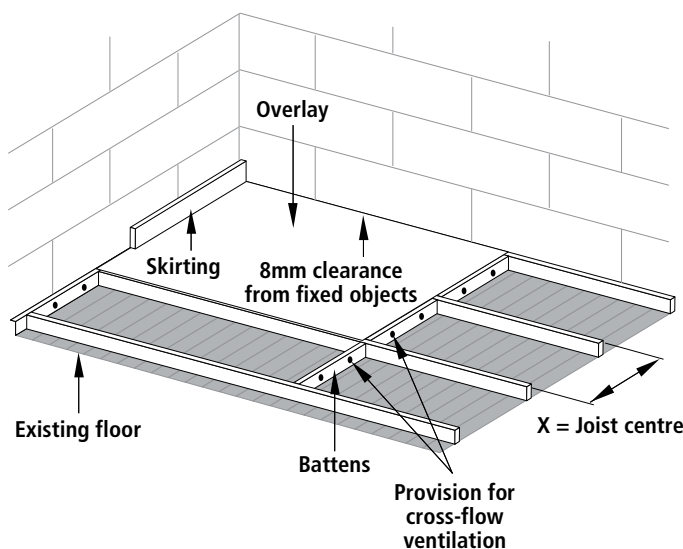
Flooring panels are fastened to timber battens fixed to the existing concrete or timber surface, dependent on end application (Square Edge or Tongue & Groove). (refer figures 8.3 and 8.4)

Indirect overlaying of concrete, with tongue and groove product, allows for services to be installed within the cavity and specialist sprung floors can be accommodated. (refer figure 8.4)

Increased floor stiffness will be achieved when closer support centres are used.

The use of Strandfloor Tongue & Groove panels will accommodate better cross-flow ventilation.

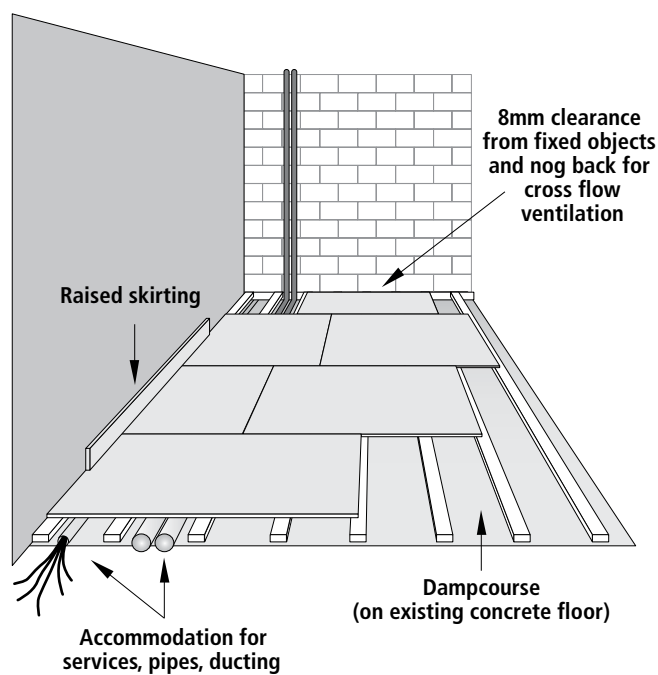
Figure 8.3



C8.5a Refer section 5 - Floor design, for all joist spacings.

C8.5b BRANZ Bulletin No. 585 "Site Measurement of Moisture in Timber and Concrete", describes the whole process and how measurements shall be taken.

Figure 8.4



Provision shall be made for cross flow air change within the new floor cavity especially when overlaying concrete substrates. (refer figure 8.3)

Where large floor areas are to be installed, effective cross flow ventilation between battens is essential and a surface moisture barrier may be required.

New and old concrete floor slabs shall be dry before laying and the use of a hygrometer is essential.

The reading shall be below 70% before the laying of Strandfloor can be considered.

Ensure battening accommodates any excessive sub-floor undulations and ensure “hold downs” are secure.

Sub-floor framing moisture content shall not exceed 18%.

9 Finishing

9.1 General preparation

Strandfloor flooring panels provide an ideal substrate for most types of floor finishes. All floors will require sanding prior to covering or coating.

No Strandfloor material shall remain in a permanently raw unfinished condition. After the building is completed and before occupation panels shall be finished with floor coverings such as carpet, sheet vinyl, ceramic tiles etc, or a coating system.

Table 9.1

Floor sanding			
Surface finish	Cut	Sander type	Paper grit
Clear coating	First	Drum	60 – 80
	Second	Disc	100
	Third	Disc	120 – 150
Other finishes	Single		60 – 100
(carpet, vinyl, wet area membranes etc.)			

Prior to applying floor finishes nails shall be punched or screws retightened. All panels should be sanded in line with table 9.1

Excessive sanding of Strandfloor or using too coarse a paper will reduce the thickness of the panel thereby affecting the structural strength of the panel.

9.2 Dry areas

The following applies to areas that are not supplied with water from a water supply system:

9.2.1 Sheet vinyl

- o The moisture content of panels shall be checked prior to laying of vinyl. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Covering of Strandfloor with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.
- o Carefully sand the entire floor area as required in table 9.1.
- o Prior to the application of sheet vinyl either a flexible floor leveling underlayment for wooden floors, or sheet underlayment as per vinyl suppliers technical data, shall be applied to the surface of the panels. Always refer to the vinyl manufacturers technical data for installation of underlayment.

9.2.2 Carpet

- o Carefully sand the entire floor area as required in table 9.1.

C9.1a Refer section 11 – Health and safety.

C9.2.1a Consider effects of moisture in the structure. Refer to section 5.7 - Supporting timber.

9.2.3 Clear finish

- o Where a premium finish is required post laying of the Strandfloor should be considered
- o When clear coating use only Strandfloor Square Edge product.
- o Hand-driven nailing will usually give a better finish than power-driven nails.
- o Panel sizes and batch numbers should not be mixed if an overall uniform appearance is desired.
- o Flooring intended for clear finishing shall be kept clean and free from staining, soiling and abrasion.
- o When clear finishing large floor areas, e.g. halls and gymnasiums, etc. post laying of the floor is recommended.
- o **Clear finishing is not suitable in wet areas.**
- o The moisture content of panels shall be checked prior to coating. The maximum moisture content shall not exceed 15% especially at panel edges before any finishing takes place. Coating of Strandfloor with higher moisture content can result in an unsatisfactory visual appearance owing to panel shrinkage as it dries out over a period of time.
- o Clear coatings should provide protection in normal domestic building applications for a limited period. The clear coating manufacturer's application instructions shall be strictly followed and their requirements for periodic recoating shall be adhered to.

The following sequence is required for clear coating.

- o Ensure floor panels are dry, at or below 15% moisture content.
- o Punch nails just prior to sanding.
- o Fill nail holes with a compatible filler colour matched to the Strandfloor.
- o Carefully sand the entire floor area as required in table 9.1.
- o Remove dust from the entire floor surface and skirtings by broom and vacuum cleaner.
- o Apply the first coat of polyurethane in accordance with the manufacturer's instructions.
- o Sand and apply further coats as required by coating manufacturer.
- o At all times strictly follow the coating manufacturer's instructions.

9.2.4 Sports court markings

It is recommended that painted court markings be carried out prior to clear finishing and follow the requirements of the final coating manufacturer.

C9.2.3a This is to ensure that timber nogs are used to support edges – if Tongue & Groove product is used cracking of surface coatings may eventuate due to slight differential movement.

C9.2.3b This will ensure that shading between panels does not occur – identification numbers printed on one face of the panels are batch numbers.

C9.2.3c Refer definition 9.3 – Wet areas

C9.2.3d Best results are achieved when specialist applicators carry out the work. Should any imperfections appear in panel surfaces during coating, cease work and contact the panel supplier or the coating manufacturer.

9.3 Wet areas

The long term performance of Strandfloor will be affected if exposed to moisture for prolonged periods. StrandfloorH3.1 provides additional protection where accidental wetting may occur and therefore is recommended to form the wet area platforms. It is not intended that Strandfloor products in general get wet once the structure is closed in and water tight. It is therefore essential that protection is provided to the surface in all wet areas.

9.3.1 Definition

A wet area is any area within a building supplied with water from a water supply system, e.g. kitchens, bathrooms, toilets, shower rooms, laundries, changing rooms, en-suites etc.

9.3.2 Impervious surface finish

In wet areas, Strandfloor panels shall be covered with a floor covering or finish that is impervious (i.e. does not allow the passage of moisture).

While Acceptable Solution E3/AS1 provides a list of impervious surface finishes that meet the requirements of the NZBC, Laminex New Zealand believe that the laying of an appropriate (1) wet area membrane in accordance with the Code of Practice for Internal Wet Area Membranes prior to the installation of any decorative surface, is best practice to ensure the Strandfloor will remain dry for the life of the structure.

The installation of an appropriate wet area membrane shall be in accordance with the manufacturers' recommendations. As with the vinyl covering, the membrane shall be returned up the wall at least 75mm. Where appropriate, the membrane shall be returned up the vertical front face of any fixture. If not appropriate, the membrane shall continue under the fixture and return up the wall at the room perimeter.

It is strongly recommended that floor drains be installed wherever possible to control the affect of any accidental flood. Critical areas for the inclusion of a floor drain include: under dish washers, in laundries and where spa baths are installed.

Care must be taken to ensure all pipes and penetrations through the vinyl or wet area membrane are fully sealed to eliminate any seepage through to the Strandfloor.

The inclusion of an appropriate wet area membrane will allow for most decorative floor finishes to be considered as the finished surface of Strandfloor. This includes but not limited to ceramic and stone tiles, strip timber, planked vinyl, vinyl tiles, carpet, cork tiles, laminate flooring and sheet vinyl that is not coved or finished with heat welded joins.

Where alternative coverings are laid over an appropriate wet area membrane, compatibility between the two products must be checked. At no time must the decorative surface material compromise (puncture) the wet area membrane.

Maintenance recommendations as prescribed by the vinyl or wet area membrane manufacturers must be adhered to.

The particular clause – 9.2.1. Sheet vinyl – applies equally to “wet areas”.

Please note: As with other floor coverings the moisture content of the Strandfloor must not exceed 15%, especially at sheet edges, at the time the vinyl or wet area membrane is installed.

Impervious coatings (polyurethane/paint)

While historically polyurethane coatings have been an acceptable finish for reconstituted wood flooring panels, Laminex New Zealand believe these finishes do not provide the necessary medium or long term protection to ensure all requirements of the NZBC are met. Therefore they are not acceptable finishes on Strandfloor or any other material which is fixed directly to the Strandfloor substrate in wet areas.

(1) An appropriate wet area membrane is one that complies with AS/NZS 4858 or which carries a current BRANZ Appraisal (see BRANZ web site www.branz.co.nz for the current list of appraised wet area membranes).

10 Maintenance

10.1 Ongoing maintenance

The occupier or owner, throughout the life of the building, shall maintain the following specific areas.

10.1.1 Floor coverings

- o Floor coverings in wet areas, shall be maintained to ensure water cannot penetrate through to the Strandfloor. To ensure long-term performance of the flooring, the surface protection system shall be repaired at any sign of damage.
- o Other floor coverings and coatings shall be maintained to ensure the Strandfloor surface is protected.
- o Floor wastes shall remain unobstructed and drain to the outside of the building.

10.1.2 Sub-floor space

- o The sub-floor space shall continue to receive ventilation throughout the life of the building.
- o Air vents in the foundation enclosure perimeter of the building shall not be obstructed by shrubs and gardens, etc. or any building extensions including decks. Building extensions shall allow for the continued compliance with sub-floor ventilation requirements.
- o Vapour barriers required to provide adequate moisture control in the sub-floor areas shall be maintained in an effective condition.
- o Clothes drier vents or steam vents shall not be allowed to exit into the sub-floor space. All relief valves or overflow pipes shall discharge outside of the building.

10.2 General precautions

- o Strandfloor shall not be re-exposed to weather during renovations or extensions.
- o Where heavy floor loads are intended such as iron-framed pianos or billiard tables, etc. professional engineering advice should be sought to avoid undesired deflection or surface failure.

10.3 Accidental flooding

- o In any area where accidental flooding may occur, such as where water holding whiteware appliances are installed, a floor waste is recommended.
- o If for any reason flooding should occur, care shall be taken to ensure that the panels can dry out quickly. Removal of carpets or other loose laid floor coverings may be necessary and the slitting of the under floor foil, to ensure water is not trapped in the drape, may also be required.
- o It is essential that air be allowed to circulate around the panels and the replacement of floor coverings etc. shall not be considered until the Strandfloor is below 16% moisture content.

If required, Laminex New Zealand will test samples to verify continued fitness for use.

11 Health and safety

11.1 Working conditions

Health and safety precautions shall be taken when working with wood panel products.

- o Exposure to wood dust and/or formaldehyde may cause irritation to the eyes, respiratory system and skin, and may cause sensitisation resulting in asthma, and by skin contact resulting in dermatitis.
- o Wood dust is classified as a known carcinogen. Repeated inhalation of wood dust over many years may cause nasal cancer. Formaldehyde is classified as a known carcinogen.
- o Storage areas containing large quantities of Strandfloor shall be adequately ventilated.
- o Work areas shall be well ventilated and kept clean.
- o Sawing, sanding and machining equipment shall be fitted with dust extractors to ensure that dust levels are kept within standards laid down by Occupational Health and Safety New Zealand, Worksafe Australia or the specific country of use. If not, a dust mask conforming with AS/NZS 1715 and AS/NZS 1716 and eye protection conforming with AS/NZS 1337 shall be worn.
- o Offcuts, shavings and dust shall be disposed of in a manner that avoids the generation of dust and in accordance with the requirements of local waste authorities.
- o In end use applications all product surfaces exposed to occupied space shall be sealed.

11.2 Formaldehyde

11.2.1 Control

When installed, emission levels can be controlled by room ventilation and covering of the surface. The surface shall be sealed or covered with a coating system or alternatively, with a floor covering such as foam-backed carpet, carpet with rubber underlay, sheet vinyl or ceramic tiles.

Sealing or covering of the surface shall be carried out before the building is occupied.

When it is anticipated that the building may be closed for long periods of time, “trickle” ventilators shall be provided.

11.2.2 Formaldehyde facts

Formaldehyde is a clear, naturally occurring gas, which is given off by plants, animals and human beings as part of the normal life process.

Formaldehyde is used in a wide range of consumer products and scientific and industrial processes. Formaldehyde is biodegradable, being destroyed by exposure to the atmosphere and by biological processes in soil and water, plants, animals and human beings.

Because some people can react to low levels of formaldehyde exposure, all possible sources of emissions in homes should be checked.

Among the factors which can lead to a build-up of formaldehyde levels in some homes are:

- o Unsealed or uncovered reconstituted wood flooring.
- o Unpainted or unsealed reconstituted wood products such as door jambs, scotias and skirting boards, doors and plywood.
- o Unpainted or unsealed furniture made out of reconstituted wood products like cupboards, chests of drawers and kitchen and laundry units.
- o Thermal backed curtaining and upholstery.
- o LPG-Fuelled heaters and cookers (unflued).
- o Cooking with hot oil.
- o Cigarette smoke.

11.2.3 Risks

Formaldehyde is a natural gas, which will break down when exposed to the atmosphere, but in confined spaces this dissipation is slower.

Formaldehyde is irritating to the nose and throat, eyes and skin. Some people are hypersensitive to formaldehyde and experience allergic reactions resembling asthma. They also experience runny noses and skin reactions.

11.2.4 Detecting formaldehyde

Air-borne formaldehyde is detectable by smell at about 0.3 – 0.4 parts per million (ppm) and at this level may cause mild eye irritation for some people.

At 0.5 ppm some people notice a mild effect in the throat. At 1.0 ppm and over, watering of the eye begins. At 10.0 ppm, intolerable irritant effects on the nose and throat are felt.

C11.2.4 See Section 3 - Material properties for information about Strandfloor formaldehyde emission levels.

12 Product Warranty

12.1 Strandfloor® Warranty Information

Laminex New Zealand (a division of Fletcher Building Products Limited) ("Distributor") confirms the terms and conditions of the Strandfloor 50 Year Limited Warranty (the Warranty") in respect of the Strandfloor supplied by the distributor to you.

When stored, handled, installed and maintained in accordance with the Strandfloor Technical Manual that is current at the time of installation, Strandfloor will meet the durability requirements of the New Zealand Building Code (NZBC) B2.3.1(a) and has a serviceable life of at least 50 years.

Laminex New Zealand will not be liable to any persons if the conditions as to storage, handling and installation and maintenance of Strandfloor panels as outlined within the Strandfloor Technical Manual are not complied with. It is the obligation of the installer of the Strandfloor to convey this information to the relevant owner / occupant.

If you have any questions, or in the unlikely event of a problem with Strandfloor, please contact Laminex New Zealand Customer Services. Contact details are at the bottom of this page.

Strandfloor Technical information is available from Strandfloor stockists. Refer to website for warranty. For more information visit laminex.co.nz or call 0800 303 606.

VISIT US

laminex.co.nz

CALL US

0800 303 606

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Laminex[™]
NEW ZEALAND



BRANZ Appraised
Appraisal No. 651 [2019]

**THERMAKRAFT
COVERTEK 407 FIRE
RETARDANT SELF-
SUPPORTING ROOF
UNDERLAY**

Appraisal No. 651 [2019]

This Appraisal replaces BRANZ
Appraisal No. 651 [2009].

Amended 9 July 2019



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is a synthetic building underlay for use under roof claddings. The product consists of a micro-porous water resistant film laminated to two layers of non woven spun-bonded polyolefin.

Scope

- 2.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has been appraised for use as a self-supporting roof underlay on buildings within the following scope:
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - with masonry tile roof cladding; and,
 - with metal tile and profiled metal roof cladding; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [a], not less than 50 years, B2.3.1 [b], 15 years and B2.3.2. Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the roof cladding system, Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay meets this requirement and will not present a health hazard to people.



Technical Specification

- 4.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is a synthetic building underlay for use under roof claddings. The product consists of a micro-porous water resistant film laminated to two layers of non woven spun-bonded polyolefin. Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is coloured white on the top bottom faces.
- 4.2 The product is supplied in rolls 1.250 m wide x 20 m and 40 m long and 2.55 m wide x 29.4 m long. The product is printed with the Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.

Accessories

- 4.3 Accessories used with Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay which are supplied by the installer are:
- Fixings - stainless steel staples, clouts, screws or proprietary underlay fixings, or other temporary fixings to attach the roof underlay to the framing.

Handling and Storage

- 5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather. They must be stored on end, under cover, in clean, dry conditions and must not be crushed.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Timber and Steel Framing

- 7.1 Timber and steel roof framing must be provided in accordance with the requirements of the NZBC and the roof cladding manufacturer.

General

- 7.2 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is intended for use as an alternative to conventional kraft paper roof underlays, which are fixed over timber or steel framed roofs in order to limit the entry of wind into the roof cavity, and to assist in the moisture management of the roof cladding system.
- 7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the roof weathertight and some wetting of the underlying structure is always possible before the roof cladding is installed. Hence, the entire building must be closed-in and made weatherproof before moisture sensitive materials such as ceiling linings and insulation materials are installed.
- 7.4 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is suitable for use under roof claddings on buildings as a roof underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23. Refer to Table 1 for the material properties of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC E2/AS1 Table 23 Roof Underlay Properties	Property Performance Requirement	Results
Absorbency	$\geq 150 \text{ g/m}^2$	Pass $> 150 \text{ g/m}^2$
Vapour Resistance	$\leq 7 \text{ MN s/g}$	Pass
Water Resistance	$\geq 100 \text{ mm}$	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	$\leq 0.5\%$	Pass
Mechanical	Edge tear and tensile strength	Edge tear [Average]: Machine direction = 320 N Cross direction = 289 N Tensile strength [Average]: Machine direction = 6.0 kN/m Cross direction = 5.8 kN/m

- 7.5 Thermakraft Covertek 407 is suitable for use in residential and commercial roofs with roof pitches of minimum 3°. The product must not span unsupported more than 1200 mm in one direction. Spans greater than 1200 mm require additional support such as galvanised wire mesh or safety mesh.
- 7.6 At roof pitches of 10° or more, Thermakraft Covertek 407 may be run horizontally or vertically.
- 7.7 At roof pitches less than 10° [minimum 3°], Thermakraft Covertek 407 may be run horizontally, or vertically if installed over a roof underlay support.
- 7.8 Refer to Table 2 for a summary of the roof underlay support requirements.

Table 2: Roof Underlay Support Requirements

Roof Pitch	Span	Roof Underlay Support Required?	
		Horizontally Installed	Vertically Installed
10° or more	Greater than 1200 mm	Yes	Yes
	1200 mm or less	No	No
Less than 10° [Minimum 3°]	Greater than 1200 mm	Yes	Yes
	1200 mm or less	No	Yes

Structure

- 8.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is suitable for use in all Wind Zones of NZS 3604 up to, and including, Extra High.

Durability

- 9.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay meets code compliance with NZBC Clause B2.3.1 [a], not less than 50 years for roof underlays used where the roof cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry roof tile cladding, and code compliance with NZBC Clause B2.3.1 [b], 15 years for roof underlays used where the roof cladding durability requirement is 15 years.

Serviceable Life

- 9.2 Provided it is not exposed to the weather or ultra-violet light for a total of more than 7 days, and provided the roof cladding is maintained in accordance with the cladding manufacturer's instructions and the roof cladding remains weather resistant, Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay is expected to have a serviceable life equal to that of the roof cladding.

Control of Internal Fire and Smoke Spread

- 10.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has an AS 1530 Part 2 flammability index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Prevention of Fire Occurring

- 11.1 Separation or protection must be provided to Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 12.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay must only be used under roof claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or roof claddings covered by a valid BRANZ Appraisal.
- 12.2 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay, when installed in accordance with the Technical Literature and this Appraisal, will assist in the total cladding system's compliance with NZBC Clause E2.

Installation Information

Installation Skill Level Requirements

- 13.1 Installation must always be carried out in accordance with the Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay Technical Literature and this Appraisal, by competent tradespersons with an understanding of roof underlay installation.

Underlay Installation

- 14.1 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay must be fixed at maximum 300 mm centres to all framing members with large-head clouts 20 mm long, 6-8 mm stainless steel staples, self drilling screws or proprietary underlay fixings. The membrane must be pulled taut over the framing before fixing.
- 14.2 Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay may be run horizontally or vertically. Refer to Table 2 for a summary of roof underlay support requirements. The roof underlay must extend from the ridge and overhang the fascia board by 20-25 mm.

- 14.3 Vertical laps must be no less than 150 mm wide. Horizontal laps must also be no less than 150 mm, with the direction of the lap ensuring that water is shed to the outer face of the underlay. End laps must be made over framing and be no less than 150 mm wide. To assist with achieving the correct lap dimension, Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has a 150 mm lap line printed continuously along the top face.
- 14.4 When fixing the product in windy conditions, care must be taken due to the large sail area created.
- 14.5 Any damaged areas of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay, such as tears, holes or gaps around service penetrations, must be repaired. Damaged areas can be repaired by covering with new material lapping the damaged area by at least 150 mm and taping, or by taping small tears.

Inspections

- 14.6 The Technical Literature must be referred to during the inspection of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay installations.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 15.1 The following tests have been carried out on Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay in accordance with NZBC Acceptable Solution E2/AS1, Table 23: tensile strength, edge-tear resistance and resistance to water vapour transmission in accordance with AS/NZS 4200.1, shrinkage in accordance with AS/NZS 4201.3, resistance to water penetration in accordance with AS/NZS 4201.4, surface water absorbency in accordance with AS/NZS 4201.6 and pH of extract in accordance with AS/NZS 1301.421s. A range of these tests were completed before and after Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay was exposed to ultra-violet light.
- 15.2 The Flammability Index of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has been evaluated in accordance with AS 1530.2.

Other Investigations

- 16.1 A durability opinion has been given by BRANZ technical experts.
- 16.2 An evaluation of the expected performance of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay in direct contact with metal roof cladding has been completed by BRANZ.
- 16.3 The practicability of installation of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has been assessed by BRANZ and found to be satisfactory.
- 16.4 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

- 17.1 The manufacture of Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 17.2 The quality of supply to the market is the responsibility of Thermakraft Limited.
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the roof underlay into their design in accordance with the instructions of Thermakraft Limited.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Thermakraft Limited.



Sources of Information

- AS 1530.2: 1993 Test for Flammability of Materials.
- AS/NZS 1301.421s: 1998 Determination of the pH value of aqueous extracts of paper, board and pulp - cold extraction method.
- AS/NZS 4200.1: 1994 Pliable building membranes and underlays - materials.
- AS/NZS 4201.3: 1994 Pliable building membranes and underlays - Methods of test - Shrinkage.
- AS/NZS 4201.4: 1994 Pliable building membranes and underlays - Methods of test - Resistance to water penetration.
- AS/NZS 4201.6: 1994 Pliable building membranes and underlays - Methods of test - Surface water absorbency.
- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 8, 30 November 2018].
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 9 July 2019

This Appraisal has been amended to update Table 1.



In the opinion of BRANZ, **Thermakraft Covertek 407 Fire Retardant Self-Supporting Roof Underlay** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Thermakraft Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Thermakraft Limited**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Thermakraft Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Thermakraft Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

20 March 2019



FRAMED ALUMINIUM BALUSTRADES



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1. Product Introduction
2. General Notes
3. Connection Type 1 – Timber Side – Fix (Coach Screws)
4. Connection Type 2 – Bolt Side-Fix
5. Connection Type 3 – Timber Top-Fix
6. Connection Type 4 – Timber Top-Fix
7. Connection Type 5 – Concrete Top-Fix
8. Connection Type 6 – Concrete Side-Fix
9. Gutter Bracket – Timber and Concrete Fixing
10. Gutter Bracket Design
11. Base Plate Design – Semi Frameless
12. Handrail Dimensions

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COMMERCIAL & RESIDENTIAL BALUSTRADE DESIGN



Framed Aluminum Balustrades Introduction

Description:

Provista Balustrade Systems Framed Aluminium balustrade solutions feature modern aluminium post and handrail profile designs suiting both classic and contemporary building design. Hidden post-fixings when face-fixing to a deck structure provide an ultra-clean look. There's a choice of flat or rounded handrail profiles and infill panels are made up of a square-section baluster. The two main styles are Villa, where the baluster panel meets the underside of the upper handrail and is held at the bottom within a lower rail, and Tudor, where there is a gap between the upper handrail and an additional rail. The baluster panel fits into this rail and a lower rail.

Key Features:

- Designed for residential and commercial applications including apartment balconies and decks
- Suitable for both interior or exterior applications
- Hidden-fixings for face-fixed solutions
- The infill is constructed of a modern square-section baluster profile
- Designed for all building structures including membrane decks
- T6 Temper Grade alloy used for all profiles, providing approx. 20% increased strength for greater post spacings
- Multiple finish options – can be powder-coated or anodised in all available NZ colours, including Dulux Duratec powder coating for high-corrosion zones
- National design service to assist with project specific design and detailing
- National network of fabricators and installers
- Complies with AS/NZS 1170, NZS3603, AS/NZS 1664, AS/NZS 2208 and NZS 4223.3 2016
- 5 year warranty on balustrade, 10 year warranty on Dulux Duralloy powder-coating, 20 year warranty on Dulux Duratec powder-coating



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Scope of Use:

Provista Framed Aluminum solutions are designed to comply with A, B, E and C3 loadings for residential and commercial occupancy types and are suitable for decks, balconies and stairways.

Suitable building structures can be timber, concrete, steel and typical combinations of each. Provista Framed Aluminum solutions can also be used in conjunction with the Provista Gutter Bracket – a robust 6061 T6 aluminum product designed to be specified where membrane decks and gutters are required.

A rectangular ('Retro') handrail and rounded ('Euro') handrail options are available.

Address or Site-specific design and Producer Statements can be arranged as required.



Limitations on Use:

- Provista Framed Aluminium solutions should only be used in accordance with the Provista Technical Manual. The Manual confirms post spacings and fixing methods available
- Not suitable for Commercial Occupancy Type C5
- Specified for use in **Extra High Wind Zones**
- For high corrosion zones use Dulux Duratec powder-coating

NZS 3604 MAXIMUM SUITABILITY



Extra High Wind Zone

"THE CHOICE IS CLEAR"

In-service History:

Provista has over 10 years of balustrade and pool fence design, development and installation experience across New Zealand. Provista products are designed and manufactured for NZ conditions. The Provista Framed Aluminium styles have been installed in thousands of homes, apartments, schools, aged care villages etc. Many kilometres of Provista Framed Aluminium solutions are installed across the length and breadth of NZ

Statement of Building Code Compliance:

- Provista Balustrade Systems solutions have been designed and tested by independent engineers to comply with:
 - o AS/NZS 1170 Structural Design Actions
 - o NZS3603 Timber Structures Standard
 - o AS/NZS 1664 Aluminium Structures – allowable stress design
 - o AS/NZS 2208 Safety Glazing Materials in Buildings
 - o NZS 4223.3 2016 Glazing in Buildings – Human Impact Safety Requirements
- Villa and Tudor Framed Aluminium styles are designed for Occupancy A, B, E and C3
- Designs are engineered to comply with B1, B2, F2 and F4 of the NZ Building Code
- For applications outside of the Provista Product Technical Statement specifications, a Site Specific PS1 can be prepared upon request

NZBC DESIGNED TO COMPLY

B1

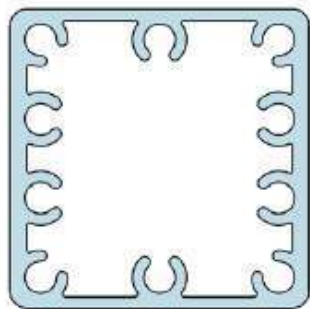
B2

F2

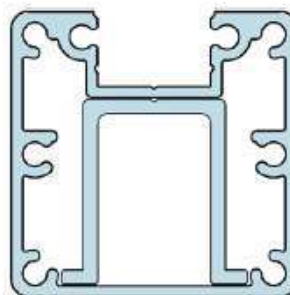
F4

Structure Durability Hazardous Materials Safety From Falling

Provista Balustrade Systems Framed Aluminum Post Sections
50mm x 50mm dedicated top and side fixed post options.



33143
53x53
Heavy Duty Post



31742 **
50x50
Side Fixed Post

**** 31742 profile:** The insert shown is only required at the balustrade deck connection point

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General Notes

GENERAL NOTE:

- (1) THE BALUSTRADE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE ARCHITECTS AND ENGINEERS DRAWINGS.
- (2) ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE AGAINST THE ARCHITECTS AND ENGINEERS DRAWINGS PRIOR TO COMMENCING WORK – ANY VARIATIONS OR DISCREPANCIES ARE TO BE REFERRED TO THE CONSULTANT FOR RESOLUTION.
- (3) ALL WORK IS TO COMPLY WITH THE NZ BUILDING CODE.
- (4) REMOVE ALL EXCESS MATERIALS AND RUBBISH FROM SITE AND REINSTATE ANY DAMAGE ON COMPLETION OF WORK.
- (5) THE CONSULTANTS ARE TO BE GIVEN 24 HOURS NOTICE FOR ANY SITE INSPECTIONS AS REQUIRED – A PS4 CANNOT BE PROVIDED (PRODUCER STATEMENT FOR CONSTRUCTION REVIEW) IF THE CONSULTANT IS NOT INFORMED OF AND INSPECTS ANY WORK REQUIRING A SPECIFIC INSPECTION AS REQUIRED BY THE LOCAL TERRITORIAL AUTHORITY.

EXISTING SUPPORT STRUCTURE:

- (1) THE EXISTING DECK, BALCONY OR PAVING STRUCTURE MUST HAVE BEEN CONSTRUCTED TO COMPLY WITH THE LOCAL TERRITORIAL AUTHORITY REGULATIONS AND REQUIREMENTS. THE NZ BUILDING CODE AND NZS 3604.
- (2) ALL CONCRETE USED IS TO HAVE A CRUSHING STRENGTH OF 20 MPA AT 28 DAYS AND IS TO COMPLY WITH NZS 3109.
- (3) ALL WELDS ARE TO BE 5MM FILLET WELDS ALL ROUND UNLESS NOTED OTHERWISE – ALL WELDING TO BE CARRIED OUT BY WELDERS QUALIFIED IN ACCORDANCE WITH NZS4711.
- (4) ALL BOLTS AND BRACKETS ARE TO BE HOT DIP GALVANISED UNLESS NZS 3604: 1999 CORROSION ZONE TABLES REQUIRE A BETTER PROTECTION.
- (5) ALL CHEMSET ANCHORS TO BE FIXED TO MANUFACTUR'S SPECIFICATION.
- (6) ALL STEELWORK IS TO BE PROTECTED AS REQUIRED BY THE NZ BUILDING CODE.

NEW CONSTRUCTION NOTES:

- (1) THE EXISTING SUPPORTING STRUCTURE DETAILS ARE NOT COVERED BY THESE DRAWINGS.
- (2) THESE DRAWINGS ONLY COVER INSTALLATION DETAILS OF THE NEW STAINLESS STEEL BALUSTRADE AND GLASS FENCE/HANDRAIL.
- (3) ALL BOLTS CLASS 80 AND BRACKETS ARE TO BE 316 STAINLESS STEEL.
- (4) ALL DYNABOLTS OR CHEMSET CONCRETE ANCHORS TO BE CLASS 80 STAINLESS STEEL AND FIXED TO MANUFACTURER'S SPECIFICATION.
- (5) ALL DAMAGE TO EXISTING STRUCTURE CAUSED BY CONSTRUCTION TO BE REINSTATED.
- (6) PREVENT CONTACT BETWEEN ALL DISSIMILAR MATERIALS IE: GALVANISED STEEL AND ALUMINIUM BY SEPARATING WITH NEOPRENE WASHERS.
- (7) ALL SEALANTS ARE TO COMPLY WITH THE REQUIREMENTS FOR THE SPECIFIC USE INTENDED DURING CONSTRUCTION.



DRAWING SHEET #: G01

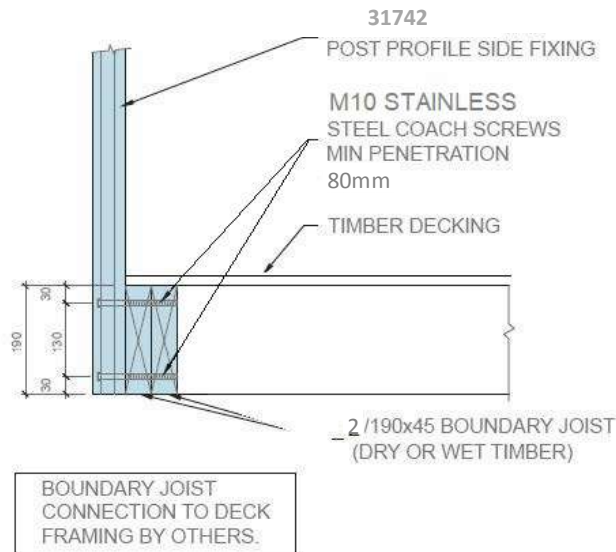
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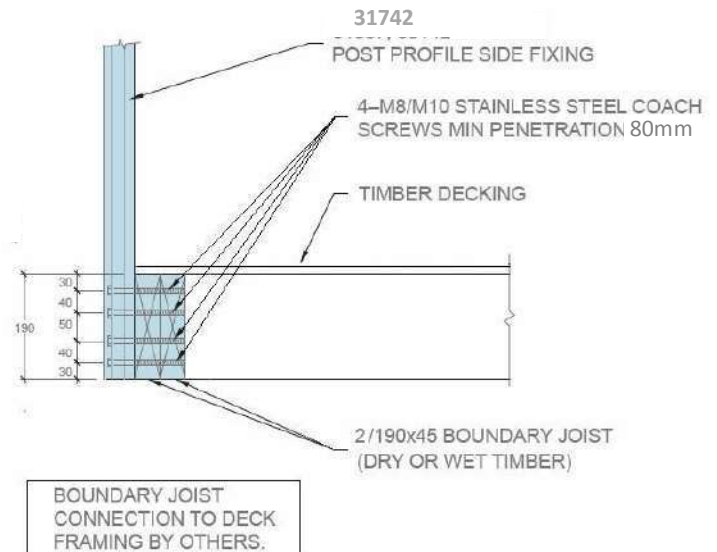
“THE CHOICE IS CLEAR”

FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 2 x 190x45 (Coach Screws)



1a CONNECTION TYPE 1A – SIDE FIXING TO 2/190x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



1b CONNECTION TYPE 1B – SIDE FIXING TO 2/190x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

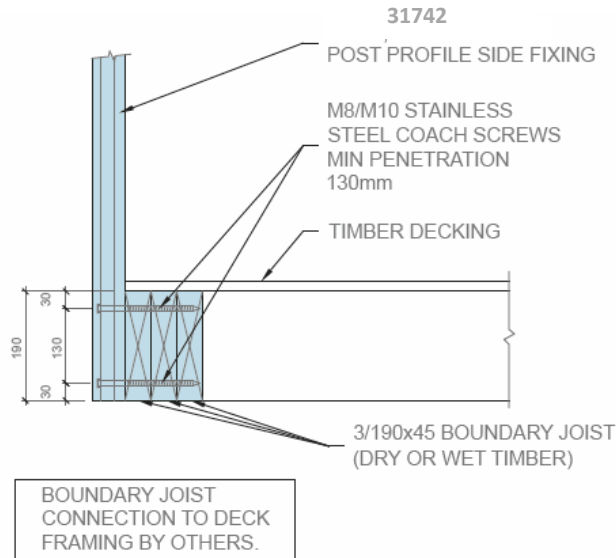
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)			
			Type 1a & 1b			
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck			
			2/190x45 Boundary Joist			
			2/M10	4/M8	4/M10	
			Dry	Dry	Dry	Wet
1M	31742	Side	0.80	0.90 0.85	1.10 1.10	0.85 0.80
1.1M	31742	Side	-	0.80	1.00 0.90	0.80
1.2M	31742	Side	-	-	0.85 0.80	-

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

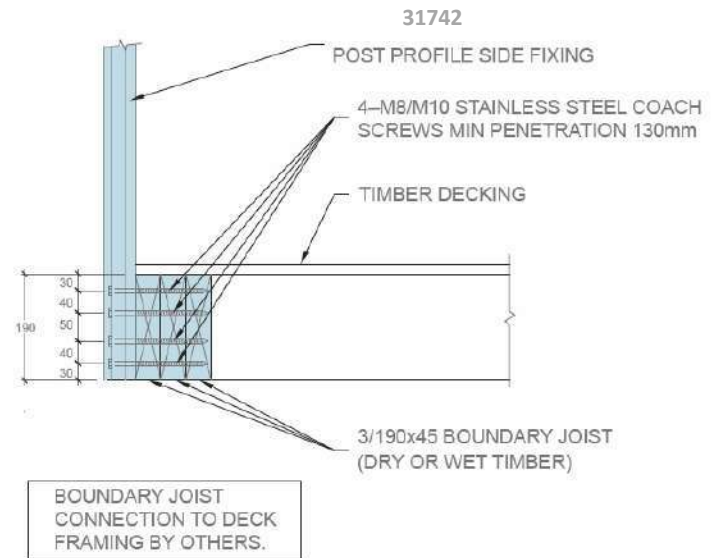
"THE CHOICE IS CLEAR"

FRAMED ALUMINIUM BALUSTRADES

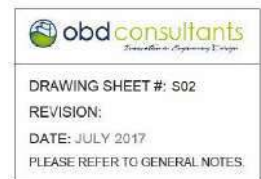
Connection Type 1 – Timber Side-Fix 3 x 190x45 (Coach Screws)



1a CONNECTION TYPE 1A – SIDE FIXING TO 3/190x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



1b CONNECTION TYPE 1B – SIDE FIXING TO 3/190x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

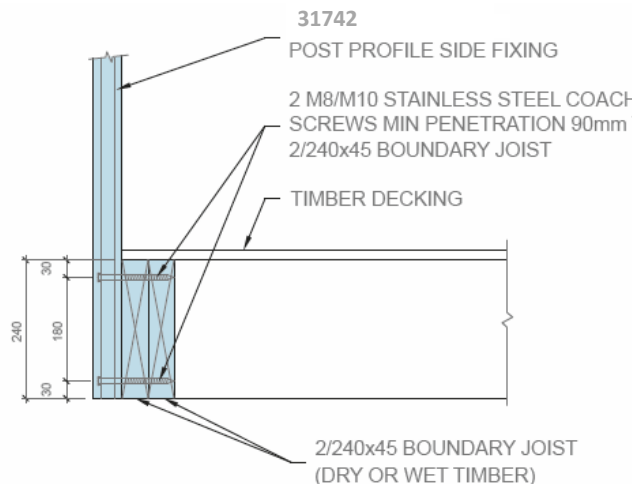
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)							
			Type 1a & 1b							
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck							
			3/190x45 Boundary Joist							
			2/M8	2/M10		4/M8		4/M10		
			Dry	Dry	Wet	Dry	Wet	Dry	Wet	
1M	31742	Side	0.95 0.90	1.15 1.10	0.90 0.85	1.25 1.20	1.00 0.95	1.25 1.20	1.25 1.20	
1.1M	31742	Side	0.85 0.80	1.05 0.90	0.80	1.20 1.20	0.90 0.80	1.15 1.00	1.15 1.00	
1.2M	31742	Side	0.70	0.90 0.80	-	1.00 0.80	0.80	1.10 0.80	0.95 0.80	

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 1 – Timber Side-Fix 2 x 240x45 (Coach Screws)

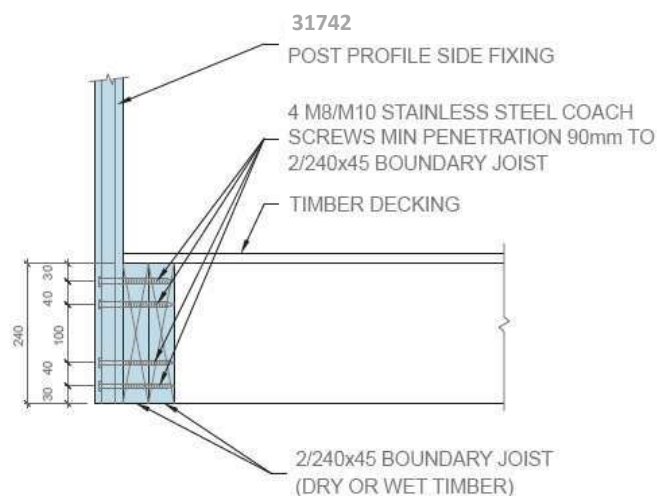


BOUNDARY JOIST
CONNECTION TO DECK
FRAMING BY OTHERS.

1c

CONNECTION TYPE 1C – SIDE FIXING TO
2/240x45 TIMBERS WITH 2 COACH SCREWS

SCALE 1:10

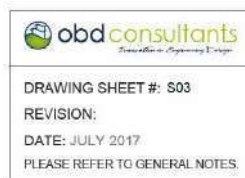


BOUNDARY JOIST
CONNECTION TO DECK
FRAMING BY OTHERS.

1d

CONNECTION TYPE 1E – SIDE FIXING TO
2/240x45 TIMBERS WITH 4 COACH SCREWS

SCALE 1:10



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

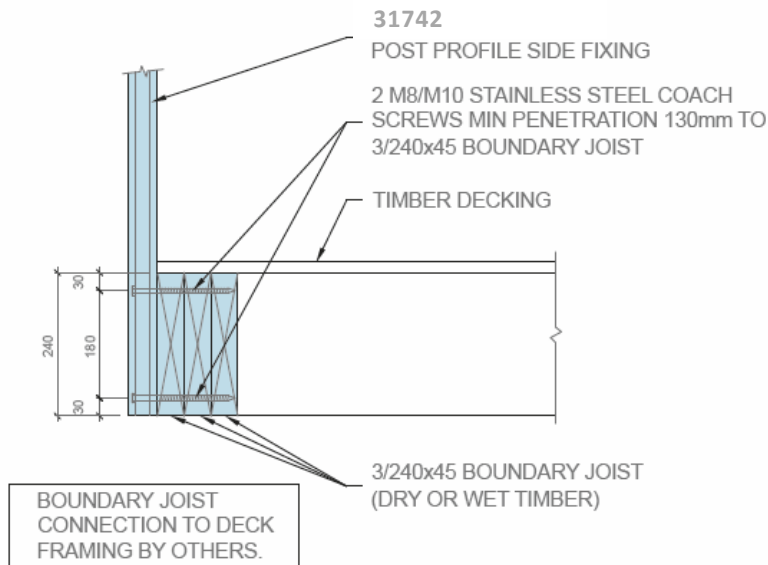
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)													
			Type 1c & 1d													
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck													
			2/240x45 Boundary Joist													
			2/M8		2/M10		4/M8		4/M10							
			Dry		Dry	Wet	Dry	Wet	Dry	Wet						
1M	31742	Side	0.90	0.85	1.10	1.05	0.85	0.80	1.35	1.20	1.10	1.00	1.35	1.20	1.25	1.20
1.1M	31742	Side	0.80		1.00	0.90	0.80		1.25	1.00	1.00	0.85	1.25	1.00	1.15	1.00
1.2M	31742	Side	-		0.85	-			1.15	0.80	0.85		1.15	0.80	0.95	0.80

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

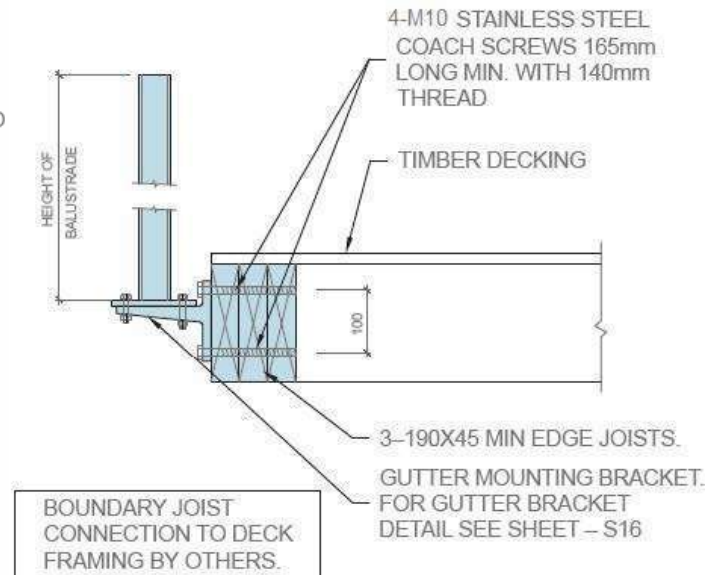
"THE CHOICE IS CLEAR"

FRAMED ALUMINIUM BALUSTRADES

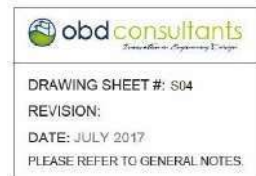
Connection Type 1 – Timber Side-Fix 3 x 240x45 (Coach Screws)



1e
CONNECTION TYPE 1E – SIDE FIXING TO
3/240x45 TIMBERS WITH 2 COACH SCREWS
SCALE 1:10



1f
CONNECTION TYPE 1F – SIDE FIXING TO
3/190x45 TIMBERS WITH 4 COACH SCREWS
SCALE 1:10



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind** / **Extra High Wind**

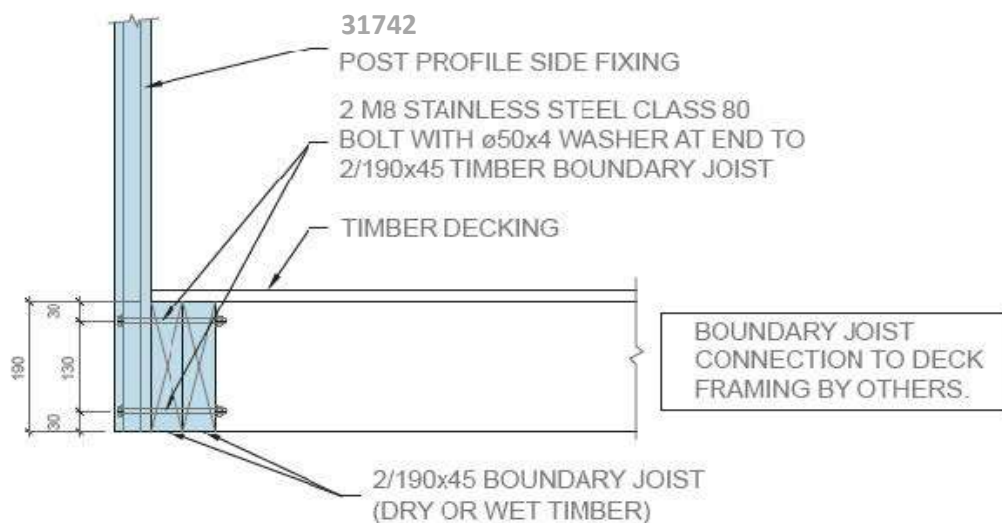
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)							
			Type 1e & 1f							
			Coach Screw with HIT-RE 500 Epoxy Side Fixing to Timber Deck							
			3/240x45 Boundary Joist				3 x 190x45 Boundary joist			
			2/M8		2/M10		4/M10 Gutter Bracket			
			Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
1M	31742	Side	1.25	1.00	1.35	1.25	1.45	1.45		
			1.20	0.95	1.20	1.20	1.35	1.35	1.35	1.35
1.1M	31742	Side	1.15	0.90	1.25	1.15	1.35	1.30	1.30	1.20
			1.00	0.80	1.00	1.00	1.25	1.25	1.20	1.20
1.2M	31742	Side	0.95	0.80	1.15	0.95	1.15	1.15	1.00	1.00
			0.80	0.80	0.80	0.80	1.00	1.00	1.00	1.00

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 2 – Bolt Side-Fix 2 x 190x45



2a
CONNECTION TYPE 2A – SIDE FIXING TO 2/190x45
TIMBERS WITH 2 BOLTS WASHERS & NUTS
SCALE 1:10

obdconsultants
Consultants in Engineering & Design

DRAWING SHEET #: S05
REVISION:
DATE: JULY 2017
PLEASE REFER TO GENERAL NOTES:

Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

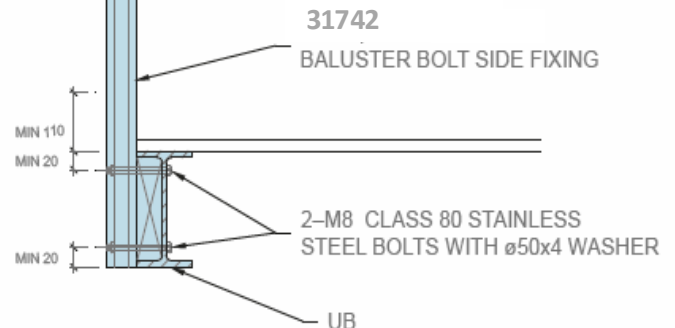
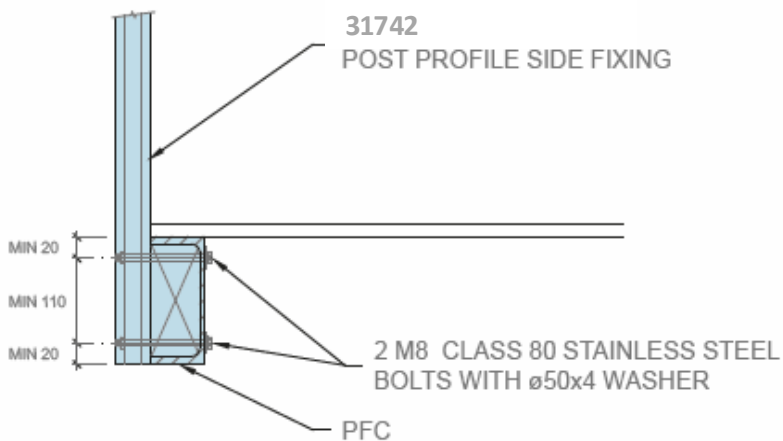
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)	
			Type 2	
			Bolt side fixing to timber 2 x 190x45	
			2/M8	
1M	31742	Side	1.35	1.20
1.1M	31742	Side	1.25	1.00
1.2M	31742	Side	1.15	0.80

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths from types 2 to 6

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 2 – Bolt Side Fix Steel Beam



2b
CONNECTION TYPE 2B – SIDE FIXING TO
STEEL BEAMS WITH 2 BOLTS WASHERS & NUTS
SCALE 1:10



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

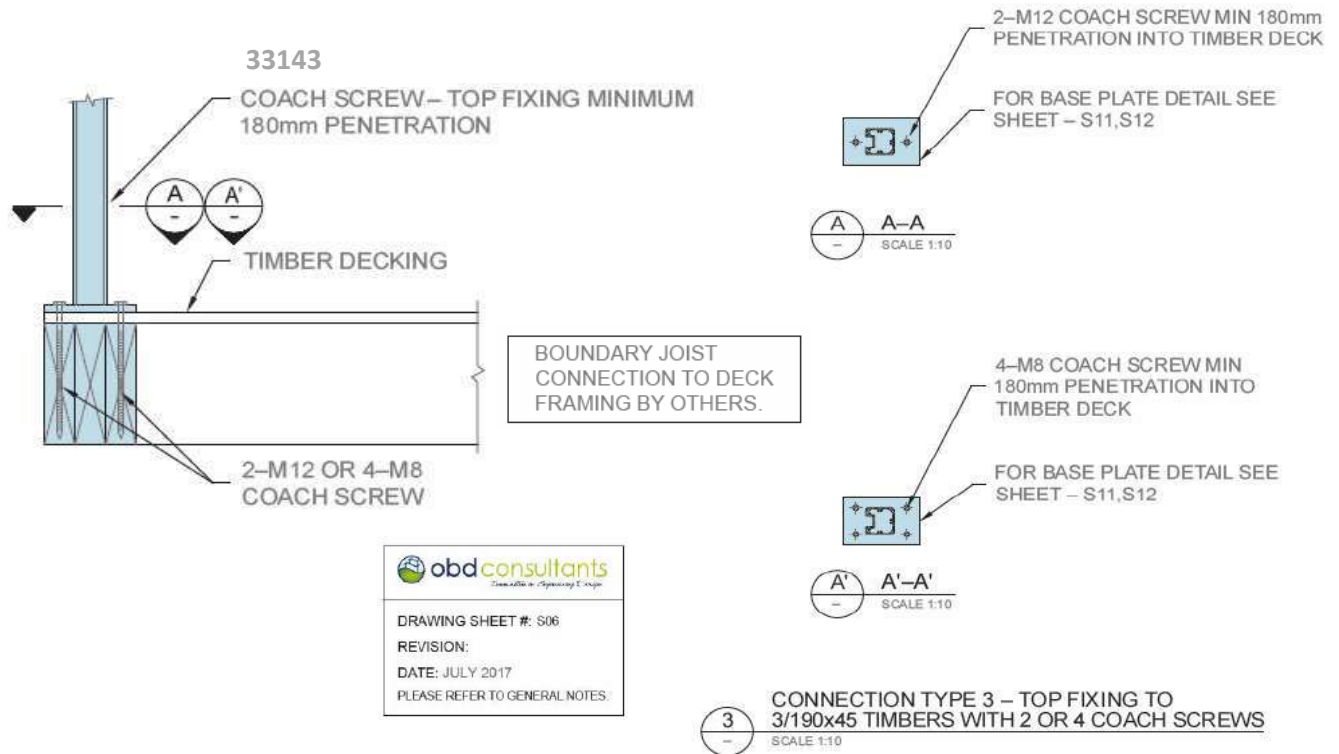
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)	
			Type 2	
			Bolt Side Fix Steel Beam	
			2/M8	
1M	31742	Side	1.35	1.20
1.1M	31742	Side	1.25	1.00
1.2M	31742	Side	1.15	0.80

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths from types 2 to 6

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 3 – Timber Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind** / **Extra High Wind**

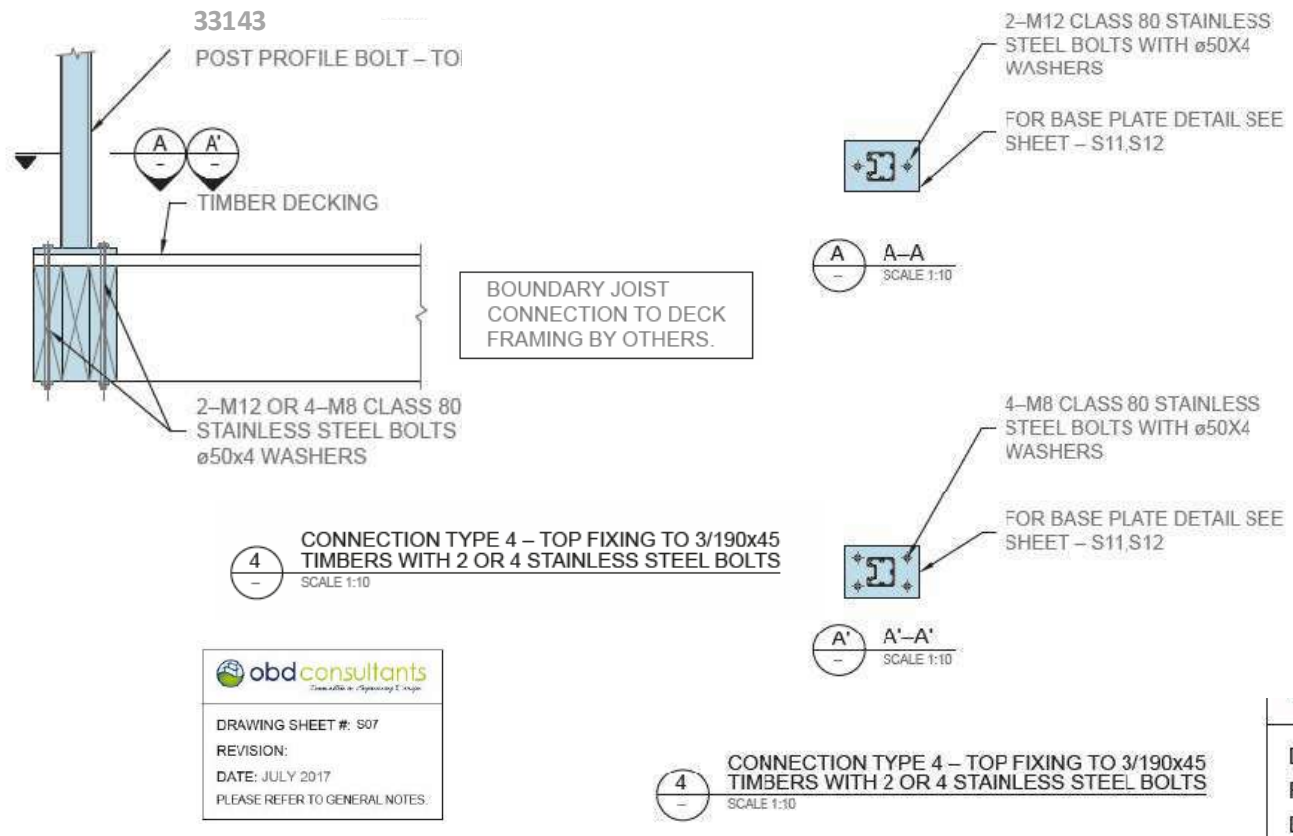
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)			
			Type 3			
			Coach Screw with HIT-RE 500 Epoxy Top Fixing to Timber Deck			
			4/M8		2/M12	
			Dry	Wet	Dry	Wet
1M	33143	Top	1.55 1.35	1.55 1.35	1.55 1.35	1.20 1.05
1.1M	33143	Top	1.40 1.10	1.40 1.10	1.40 1.10	1.10 0.85
1.2M	33143	Top	1.25 0.95	1.25 0.95	1.25 0.95	1.00 0.95

The above table summarises the maximum balustrade post spacing that can be achieved based on balustrade post strength and connection strengths using Hilti HIT-RE Epoxy.

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 4– Timber Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind** / **Extra High Wind**

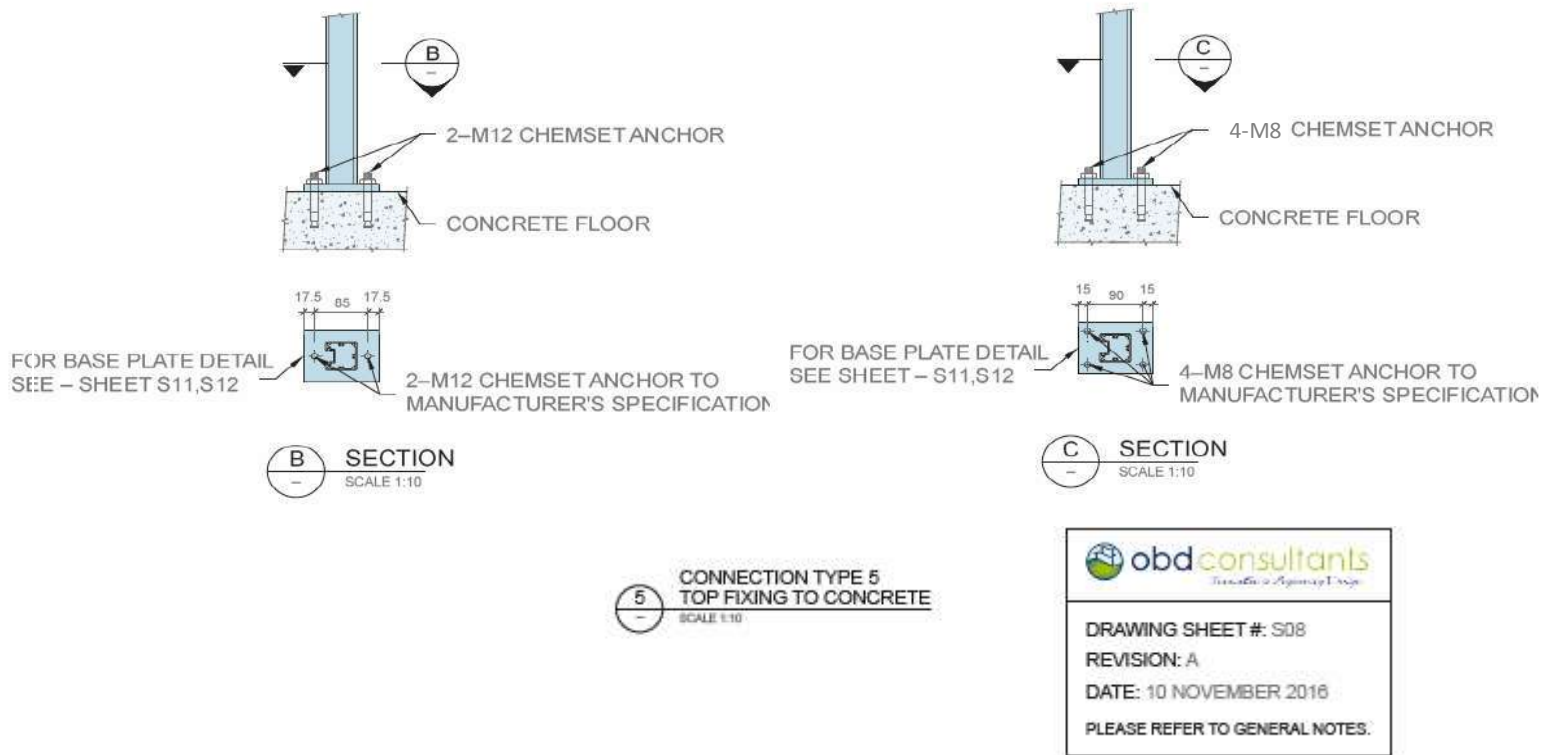
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)			
			Type 4			
			Bolt Top Fixing Timber Deck			
			4/M8		2/M12	
			Dry & Wet			
1M	33143	Top	1.55	1.35	1.25	1.05
1.1M	33143	Top	1.40	1.10	1.15	0.90
1.2M	33143	Top	1.25	0.95	1.05	

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 5 – Concrete Top-Fix



Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind** / **Extra High Wind**

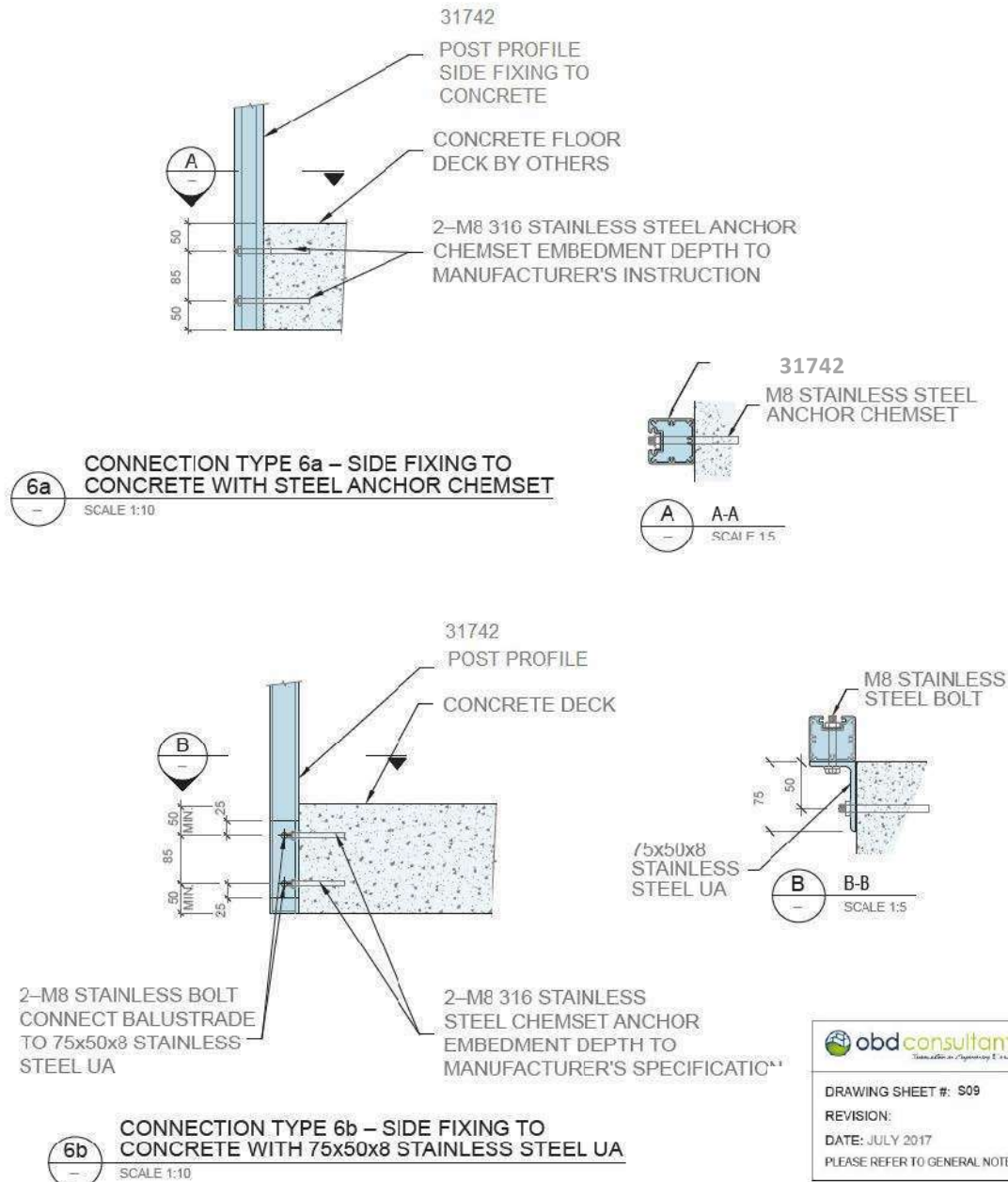
Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)	
			Type 5	
			Chemset Anchor Top Fixing Concrete	
1M	33143	Top	1.55	1.35
1.1M	33143	Top	1.40	1.10
1.2M	33143	Top	1.25	0.95

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths

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FRAMED ALUMINIUM BALUSTRADES

Connection Type 6 – Concrete Side-Fix



POST SPACING TABLE ON NEXT ON NEXT PAGE

"THE CHOICE IS CLEAR"

FRAMED ALUMINIUM BALUSTRADES

Connection Type 6 – Concrete Side-Fix

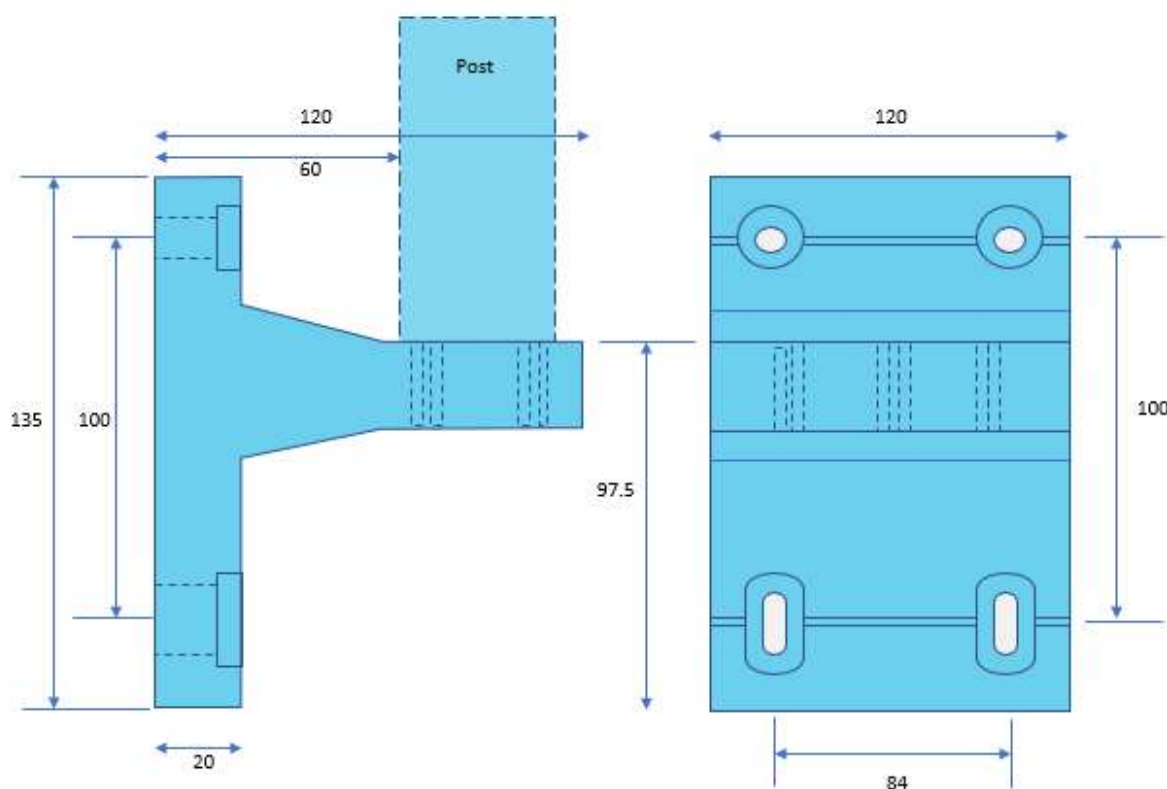
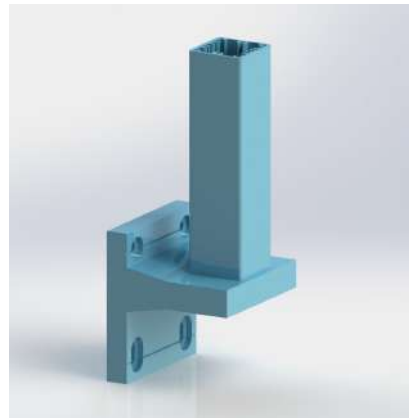
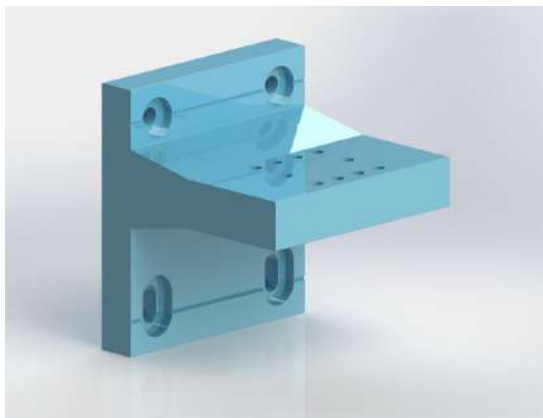
Balustrade Spacing summary Table to NZS:1170 Minimum Imposed Action to Barrier and NZS:3604 **Very High Wind / Extra High Wind**

Balustrade Height	Post Section Model	Fixing Type	Maximum Post Spacing (M)	
			Type 6	
			Chemset Anchor Side Fixing Concrete	
1M	31742	Top	1.45	1.20
1.1M	31742	Top	1.30	1.00
1.2M	31742	Top	1.20	0.85

The above table summarises the maximum balustrade post spacings that can be achieved based on balustrade post strength and connection strengths

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Gutter Bracket Design



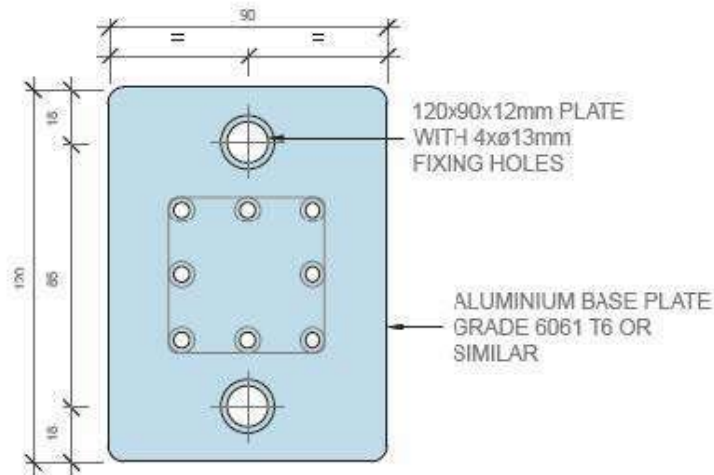
11 GUTTER MOUNTING BRACKET
SCALE 1:2



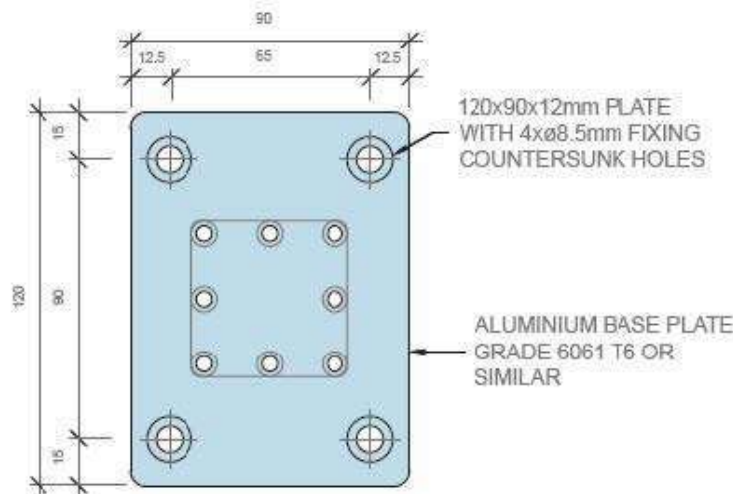
DRAWING SHEET #: S13
REVISION: A
DATE: 10 NOVEMBER 2016
PLEASE REFER TO GENERAL NOTES.

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Base Plate Design – Framed Aluminum Balustrade



9 PART NO. HDFC213 BASE PLATE
SCALE 1:2



10 PART NO. HDFW485 BASE PLATE
SCALE 1:2

NOTE - BOTH FC213 AND FW485 BASE PLATES
MATE WITH 33143 POST PROFILE



DRAWING SHEET # S12

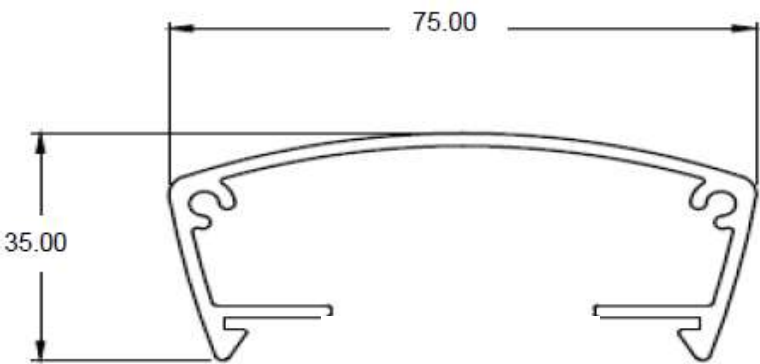
REVISION: A

DATE: 10 NOVEMBER 2016

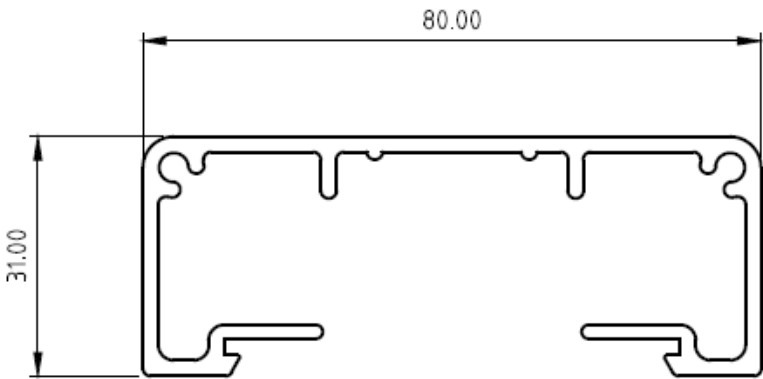
PLEASE REFER TO GENERAL NOTES.

Handrail Dimensions

Euro Handrail



Retro Handrail



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Product Data Sheet

SUPERCOURSE 500

Synthetic Damp Proof Course

Supercourse 500 is a general damp-proof course (DPC) used to prevent moisture transfer between building materials. It is also used as a concealed flashing for masonry veneer cladding.

Manufactured using a single layer of black polyethylene, Supercourse 500 is tough, high-impact and tear resistant. It is a suitable moisture impermeable alternative to bituminous DPC.

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Supercourse 500

Synthetic Damp Proof Course

Supercourse 500 comes in eleven roll sizes:

Product Code	Roll Size	Rolls Per Carton
SPC05030	50mm x 30m	42
SPC07530	75mm x 30m	24
SPC09030	90mm x 30m	24
SPC10030	100mm x 30m	18
SPC15030	150mm x 30m	12
SPC20030	200mm x 30m	6
SPC25030	250mm x 30m	6
SPC30030	300mm x 30m	6
SPC40030	400mm x 30m	
SPC50030	500mm x 30m	
SPC100030	1000mm x 30m	

Scope of Use

- Supercourse 500 intended for use as a damp-proof course separating timber and wood-based products and metal from concrete, masonry elements or clay bricks.
- Can also be used to separate timber jack studs or bearers from concrete or timber piles.
- Supercourse 500 can be used as a concealed flashing in masonry veneer walls.

General

- Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
- Available in 11 product width sizes.

Limitations

- Maximum weather or UV exposure is 30 days.
- Supercourse 500 is NOT a window flashing tape and NOT a thermal break product.

Compliance

When Supercourse 500 is used and installed as a damp-proof course and/or concealed flashing behind masonry veneer walls, the product will meet or contribute to meeting the following provisions of the NZBC:

- Clause B2 Durability: Performance B2.3.1 (a), not less than 50 years and B2.3.2.
- Clause E2 External Moisture: Performance E2.3.2 and E2.3.3. When used as a flashing as part of a masonry veneer cladding system, Supercourse 500 will contribute to meeting the requirement of E2.3.2. When used as a damp-proof course, Supercourse 500 will meet the requirements of E2.3.3.
- Clause F2 Hazardous Building Materials: Performance F2.3.1. Supercourse 500 meets this requirement and will not present a health hazard to people.

More details can be found in Supercourse 500 BRANZ Appraisal 329 (2016)

Durability

Supercourse 500 is expected to have a serviceable life in excess of 50 years when it is:

- Installed in accordance with Thermakraft's literature and BRANZ Appraisal.
- Not over exposed to the weather or UV (not more than 30 days).
- Never exposed to chemicals or solvents that will degrade or affect polyethylene material.

Product Warranty

Standard Thermakraft warranty applies. Refer to Thermakraft Warranty Statement for further details. This is available online at thermakraft.co.nz or call **0800 806 595**.

Thermakraft Limited / 0800 806 595

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The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards. Literature subject to change without notification. Latest documentation can be found on the website. E&OE.



BRANZ Appraised

Appraisal No. 329 [2016]

SUPERCOURSE 500 DAMP-PROOF COURSE AND CONCEALED FLASHING

Appraisal No. 329 [2016]

This Appraisal replaces BRANZ
Appraisal No. 329 [2005]

Amended 23 February 2017



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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BRANZ

BRANZ

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Porirua 5240,
New Zealand
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Product

- 1.1 Supercourse 500 is a single layer black polyethylene, embossed on both faces to produce a small diamond pattern. It is for use as a general damp-proof course (DPC), and also as a concealed flashing for masonry veneer cladding.

Scope

- 2.1 Supercourse 500 has been appraised for use as a damp-proof course for separating timber, wood-based products and metal from concrete, masonry or clay brick in accordance with NZS 3604.
- 2.2 Supercourse 500 has also been appraised for use as a damp-proof course and flashing in masonry veneer walls in accordance with NZBC Acceptable Solution E2/AS1.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, Supercourse 500 Damp-Proof Course and Concealed Flashing, if used, designed, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet, or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [a], not less than 50 years and B2.3.2. Supercourse 500 meets these requirements. See Paragraph 8.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2 and E2.3.3. When used as a flashing as part of a masonry veneer cladding system, Supercourse 500 will contribute to meeting the requirements of E2.3.2. When used as a DPC, Supercourse 500 will meet the requirements of E2.3.3. See Paragraphs 11.1 and 11.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Supercourse 500 meets this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** DPC in terms of the New Zealand Building Code compliance. This is also an Appraisal of an **Acceptable Solution** flashing when used behind masonry veneer in accordance with NZBC Acceptable Solution E2/AS1.

Technical Specification

- 4.1 Supercourse 500 is 0.5 mm thick, extruded polyethylene film. It consists of a single layer of black polyethylene, embossed on both faces to produce a small diamond pattern. The total thickness of the product after embossing is 0.75 mm. Supercourse 500 is supplied in rolls 30 m long and is available in widths of 50, 75, 90, 100, 150, 200, 250, 300 and 1000 mm. Other widths are available upon request.
- 4.2 Each roll is labelled with the product name, dimensions, standards reference, and manufacturer's information.

Handling and Storage

- 5.1 Handling and storage of the product, whether on or off site, is under the control of the installer. The rolls must be protected from damage and weather and must be stored under cover, in clean, dry conditions.

Technical Literature

- 6.1 Refer to the Appraisals listings on the BRANZ website for details of the current Technical Literature for Supercourse 500. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

General

- 7.1 Supercourse 500 exceeds the vapour resistance requirements of NZBC Acceptable Solution E2/AS1, Table 23 for DPC's and is a suitable moisture impermeable alternative to bituminous DPC's.
- 7.2 Supercourse 500 is intended for use as a DPC separating timber, wood-based products and metal from concrete or masonry elements, or where required, timber jack studs or bearers from concrete or timber piles, e.g. where required by NZS 3604, Paragraph 2.3.3 and Figure 6.3. When used as a DPC, the roll width selected must enable the Supercourse 500 to extend at least 6 mm beyond each face of the timber in accordance with the requirements of NZS 3604, Paragraph 2.3.3 [b].
- 7.3 Supercourse 500 is also intended for use as a flashing material with masonry veneer in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.2.4 and also as a DPC in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.2.5.

Timber Treatment

- 7.4 Supercourse 500 when used as a DPC or flashing, is suitable for use in contact with timber treated with light organic solvent preservative (LOSP) or water-based timber preservatives. The solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of Supercourse 500.

Exposure Zone Fixing Selection

- 7.5 Where Supercourse 500 is used as a flashing behind masonry veneer, fixings shall be hot dip galvanised clouts in Exposure Zones B and C and stainless steel clouts in Exposure Zone D.

Durability

Serviceable Life

- 8.1 Supercourse 500 is expected to have a serviceable life in excess of 50 years when it is installed in accordance with the requirements of this Appraisal and the Technical Literature, provided it is not exposed to the weather or ultra-violet (UV) light for a total of more than 30 days, and is never exposed to chemicals, or solvents that will degrade polyethylene.

Control of Internal Fire and Smoke Spread

- 9.1 Damp-proof courses and flashings are exempt from the surface finish requirements of NZBC Acceptable Solutions C/AS1 – C/AS6 by NZBC Acceptable Solution C/AS1, Paragraph 4.2.2 e), and NZBC Acceptable Solutions C/AS2 – C/AS6, Paragraph 4.17.6 e).

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to Supercourse 500 from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 11.1 Supercourse 500, when installed as a flashing in accordance with the Technical Literature and this Appraisal, will assist in the masonry veneer cladding system meeting the performance requirements of Clause E2.3.2.
- 11.2 Supercourse 500 when used as a DPC in accordance with this Appraisal, prevents walls, floors and structural elements in contact with the ground from absorbing or transmitting moisture in quantities that could cause undue dampness or damage to building elements to meet the performance requirements of Clause E2.3.3

Installation Information

Installation Skill Level Requirements

- 12.1 Installation must always be carried out in accordance with the Technical Literature and this Appraisal, by competent tradespersons with an understanding of DPC and flashing installation.

Supercourse 500 Installation

General

- 13.1 Strips of Supercourse 500 may be cut to length with a sharp knife.

DPC Installation

- 13.2 The surfaces to be separated must be smooth and flat, free from projections such as small stones or sharp ridges that may puncture the membrane when pressure is applied.
- 13.3 When used to separate timber and wood-based products from concrete or masonry, Supercourse 500 should be temporarily held in place with small hot-dip galvanised clouts or zinc plated staples. The strip of DPC must be wide enough to fully protect the width of the material in contact with the concrete or masonry. Refer also to Paragraph 7.2.
- 13.4 When used under timber plates fixed over concrete floor slabs and foundation walls, a small slit should be made in the material before pushing down over the bolts or fixings. Alternatively, a small hole can be formed by gently tapping the product resting on top of the bolt until a puncture is formed.

Flashing Installation

- 13.5 Supercourse 500 must be fixed in place to framing members at maximum 300 mm centres with small hot-dip galvanised clouts.
- 13.6 Horizontal and vertical joints must be no less than 75 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the flashing.
- 13.7 At the sill/jamb junction, the jamb flashing must overlap the sill flashing.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 14.1 The following tests have been carried out on Supercourse 500 by Amdel Ltd, a NATA Certified laboratory: Water permeability, thickness, mass per unit area, pigment, impact resistance, and labelling, all in accordance with AS/NZS 2904 and AS/NZS 4347. The test results have been reviewed by BRANZ experts and found to be satisfactory.

Other Investigations

- 15.1 Durability and weathertightness opinions were given by BRANZ technical experts.
15.2 The practicability of installation has been assessed by BRANZ and found to be satisfactory.
15.3 The Technical Literature, including installation instructions, has been examined by BRANZ and found to be satisfactory.

Quality

- 16.1 The manufacture of Supercourse 500 has been examined by BRANZ, and details of the methods adopted for quality control and the quality of the materials used, have been obtained.
16.2 The quality management system of the Supercourse 500 manufacturer, Cromford Pty Ltd, has been assessed and registered as meeting the requirements of ISO 9001: 2008 by ApprovalMark International, Certificate Number QMS 27839.
16.3 The quality of supply to the market is the responsibility of Thermakraft Limited.
16.4 Building designers are responsible for the design of the building, and for the incorporation of Supercourse 500 into their design in accordance with the instructions of Thermakraft Limited.
16.5 Quality of installation is the responsibility of the installer in accordance with the instructions of Thermakraft Limited.

Sources of Information

- AS/NZS 2904: 1995 Damp-proof courses and flashings.
- AS/NZS 4347 Damp-proof courses and flashings - Methods of test.
- NZS 3604: 2011 Timber Framed Buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 7, 01 January 2017].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 23 February 2017.

This Appraisal has been amended to update the Appraisal Holder.



In the opinion of BRANZ, **Supercourse 500 Damp-Proof Course and Concealed Flashing** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Thermakraft Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Thermakraft Limited**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Thermakraft Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Thermakraft Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

22 December 2016



Product Data Sheet

COVERTEK 407

Heavy duty self-supporting roof underlay

Covertek 407 is our strongest synthetic underlay, designed as a means of managing condensation, water vapour transfer and water ingress in the most trying conditions including applications where roof pitch is 3° and above. Covertek 407 is fire retardant.

Covertek 407 comes in three roll sizes:

1250mm wide	20m long	25m ² Coverage ²
1250mm wide	40m long	50m ² Coverage ²
2550mm wide ¹	29.4m long	75m ² Coverage ²

Cut to Length available – Contact your TK Representative.

1 Note: made to order.

2 Note: m² is the roll size for actual coverage, allow for laps and joins.

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Coverttek 407

Heavy duty self-supporting roof underlay

Scope of Use

- Suitable with masonry tile, metal tile and profiled metal roof cladding.
- Suitable for timber or steel framed buildings - Direct fix or cavity fix.
- Can be used on roofs up to and including NZS 3604 Extra High wind zones.
- Self-supporting - Refer to installation guide regarding underlay support requirements.
- Not suitable for roof pitch less than 3 degrees. Roof pitch below 3 degrees is Specific Engineering Design.
- Will provide temporary weather protection during construction (maximum 7 days), same day coverage recommended.
- Suitable for use under dark coloured roofs.

General

- Is fire retardant.
- Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
- Tear resistant and strong.

Limitations

- Cannot be used as a wall underlay
- Must NOT be exposed to the weather or UV for more than 7 days.
- Must NOT be used under translucent sheeting.

Compliance

- Can be used as a roof underlay within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1, with regards to building height and floor plan area.
- Refer BRANZ Appraisal No 651 (2019) and CodeMark Certificate for full details.

Flammability Index

Thermakraft Coverttek 407 Underlay has an AS 1530 Part 2 Flammability Index of not greater than 5 and therefore meets the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 4.17.8 b), for the surface finish requirements of suspended flexible fabric used as an underlay to exterior cladding that is exposed to view in occupied spaces. It may therefore be used with no restrictions in all buildings.

Durability

Meets the Performance Requirements of NZBC Clauses B2, Durability (B2.3.1 (a) 50 years, B2.3.1 (b) 15 years and B2.3.2), C3 Fire affecting areas beyond the fire source C3.4 (c) E2 External Moisture, and F2 Hazardous Building Materials F2.3.1/C, providing:

- It is not damaged.
- Is installed in accordance with instructions.
- Is not left exposed for more than 7 days (roof) same day coverage recommended.
- Is installed by or under guidance of Licensed Building Practitioners.
- Is compatible with cladding system used*.

* **Note:** specifiers and product user must test for roof cladding system compatibility with the underlay before installation.

Control of Condensation

In climatic regions where condensation risks are high, such as cold or high humidity areas, care needs to be taken in specifying the correct design and installation to prevent moisture build-up in the roof cavities.

Factors which adversely affect the condensation risk in roofing systems include:

- Humid, and/or cold climatic regions.
- Warm/Skillion roof construction.
- Low roof cavity air volume and restricted air movement.
- Omitting Vapour Control Layers.
- Occupancy activities which have high moisture loading on conditioned spaces.
- Ceiling penetrations and entry of warm air into roof cavities.
- Low pitched roof.
- Bulk insulation.
- Building structures ability to naturally dry construction moisture.

Skillion and Warm Roof Construction are particularly sensitive to moisture accumulation and the design and installation of roof construction needs to take into account the higher condensation risks. Refer MRM Code of Practice for details.

For passive ventilation of the roof space, it is recommended that all roof underlays are terminated at the ridge, and if not it should be slit or slotted to allow for passive ventilation. (For further information refer to the NZ MRM Roofing Code of Practice).

Covertex 407

Heavy duty self-supporting roof underlay

Property Performance

NZBC E2/AS1 Table 23 (NZS2295) Wall Underlay Properties	Absorbency	Vapour Resistance	pH of Extract	Shrinkage	Water Resistance	Air Resistance
Property Performance Requirement	≥ 150gsm	≤ 0.5 MN.s/g	≥ 5.5 and ≤ 8	≤ 0.5%	≥ 100mm	≥ 0.1 MN.s/m ³
Property Performance	Pass	Pass	Pass	Pass	Pass	Pass*

* **Note:** Can be used as an air barrier.

Product Warranty

Standard Thermakraft warranty applies. Refer to Thermakraft Warranty Statement for further details.

This is available online at **thermakraft.co.nz** or call

0800 806 595.

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The recommendations contained in Thermakraft's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to any conditions contained in the Warranty. All product dimensions and performance claims are subject to any variation caused by normal manufacturing process and tolerances. Furthermore, as the successful performance of the relevant system depends on numerous factors outside the control of Thermakraft (for example quality of workmanship and design), Thermakraft shall not be liable for the recommendations in that literature and the performance of the Product, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code, regulations and standards. Literature subject to change without notification. Latest documentation can be found on the website. E&OE.

natural wool blend

CEILING INSULATION

The complex natural design of wool fibre has properties and advantages you will not find in synthetic insulations, making it an exceptional insulating material.

APPLICATIONS

- Skillion & Truss ceilings
- New and retrofit
- Residential and commercial buildings

NATURAL BENEFITS

- **Acoustic Excellence** Terra Lana wool blend insulation is specifically formulated with high density of at least 18kg/m². Its high flow resistance rating makes it suitable for specialised sound control in a wide range of applications
- **Detoxifying** Wool can absorb toxic vapours from building materials, trapping them within its cellular structure for a healthier, non-irritating and non-toxic indoor air environment
- **Durability** Terra Lana Insulation will perform to specification for buildings' lifetime. Blended with polyester and thermally bonded to form a dimensionally stable, durable product
- **Internal Moisture Management** The structure of sheep wool fibre is hygroscopic—allowing it to actively absorb and release moisture in the form of vapour. This helps to mitigate against moisture and condensation for a drier, more comfortable environment
- **Environmentally Friendly** Made with a natural, renewable resource—wool! 100% recyclable
- **Insect Resistance** Manufactured from new & recycled textile wool fibres that are treated for insect resistance
- **BRANZ Appraised** Appraisal 682 : 2010
- **Quality Assurance** 50 year warranty.

INSTALLATION

Simply rip with bare hands across the bale and friction fit within framing cavities. Safe to handle without protective clothing. A 20mm craft knife or shears (hire from Terra Lana) can be used to cut along lengths. Staples can be used for extra support if needed.

Supplied in bales of segments or rolls, or our proprietary double layer system. We will pre-cut custom widths free of charge for orders of more than 50m² per width.

COMPOSITION

Terra Lana Wool Blend insulation is made with pre-consumer waste wool fibre from New Zealand textile and carpet manufacturers. We blend the wool with polyester—mostly from recycled PET bottles—for a durable, friction fit product designed to never slump or lose its loft.

SPECIFICATIONS

R VALUE	mm	CODE	SIZE	M ²
ROOF BATTEN INSULATION for skillion and truss				
R0.9	35	09.35.570	2 x 6m x 570mm	6.84 m ²
R1.2	45	12.45.570	2 x 5m x 570mm	5.70 m ²
SKILLION ROOF (Blanket)				
R3.0	115	30.115.570	5 x 2.6m x 570mm	7.41 m ²
R3.2	140	32.140.570	5 x 2.6m x 570mm	7.41 m ²
R3.6	140	36.140.570	4 x 2.6m x 570mm	5.93 m ²
R3.2	165	32.165.570	6 x 2.6m x 570mm	8.89 m ²
R3.6	165	36.165.570	5 x 2.6m x 570mm	7.41 m ²
R4.0	165	40.165.570	4 x 2.6m x 570mm	5.93 m ²
R3.6	180	36.180.570	5 x 2.6m x 570mm	7.41 m ²
R4.0	180	40.180.570	5 x 2.6m x 570mm	7.41 m ²
R5.0 (R2.4 + R2.6)	210	50.210.570	4 x 2.6m x 570mm	5.93 m ²
R6.2 (R3.0 + R3.2)	240	62.240.570	3 x 2.6m x 570mm	4.45 m ²
R7.2 (R3.6 + R3.6)	290	72.290.570	3 x 2.6m x 570mm	4.45 m ²
TRUSS ROOF (Roll)				
R1.9	105	19.105.870	2 x 5m x 870mm	8.70 m ²
R2.6	145	26.145.870	2 x 4m x 870mm	6.96 m ²
R3.2	165	32.165.870	2 x 4m x 870mm	6.96 m ²
R3.6	180	36.180.870	2 x 3.5m x 870mm	6.09 m ²
R4.0	180	40.180.870	2 x 3.5m x 870mm	6.09 m ²
DOUBLE LAYER TRUSS ROOF INSULATION (2 layers)				
R3.8 (R1.9 + R1.9)	210	38.210.870d	2 x 5m x 870mm	4.35 m ²
R4.5 (R1.9 + R2.6)	250	45.450.870d	2 x 4.5m x 870mm	3.92 m ²
R5.2 (R2.6 + R2.6)	290	52.290.870d	2 x 4m x 870mm	3.48 m ²
R6.4 (R3.2 + R3.2)	330	64.330.870d	2 x 4m x 870mm	3.48 m ²
R7.2 (R3.6 + R3.6)	360	72.360.870d	2 x 3.5m x 870mm	3.05 m ²
R8.0 (R4.0 + R4.0)	360	80.360.870d	2 x 3.5m x 870mm	3.05 m ²



Declare.



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55 Francella St, PO Box 19755, Christchurch, NZ // terralana.co.nz

natural wool blend

EXTERNAL WALL INSULATION

The complex natural design of wool fibre has properties and advantages you will not find in synthetic insulation, making it an exceptional insulating material.

APPLICATIONS

- External wall cavity insulation
- New and retrofit
- Residential and commercial buildings

NATURAL BENEFITS

- **Internal Moisture Management** The structure of sheep wool fibre is hygroscopic—allowing it to actively absorb and release moisture in the form of vapour. This helps to mitigate against moisture and condensation for a drier, more comfortable environment
- **Environmentally Friendly** Made with a natural, renewable resource—wool! 100% recyclable in our factory
- **Detoxifying** Wool can absorb toxic vapours from building materials, trapping them within its cellular structure for a healthier, non-irritating and non-toxic indoor air environment
- **Durability** Terra Lana Insulation will perform to specification for buildings' lifetime. Blended with polyester and thermally bonded to form a dimensionally stable, durable product
- **Acoustic Excellence** Terra Lana external wall insulation is specifically formulated with high density of at least 18kg/m². Its high flow resistance rating makes it suitable for specialised sound control in a wide range of applications
- **Insect Resistance** Manufactured from new & recycled textile wool fibres that are treated for insect resistance
- **BRANZ Appraised** Appraisal 682 : 2010
- **Quality Assurance** 50 year warranty.

INSTALLATION

Simply rip with bare hands across the bale and friction fit within framing cavities. Safe to handle without protective clothing. A 20mm craft knife or shears (hire from Terra Lana) can be used to cut along lengths. Staples can be used for extra support if needed.

Supplied in bales of segments or rolls. We will pre-cut custom widths free of charge for orders of more than 50m² per width.

COMPOSITION

Terra Lana Wool Blend insulation is made with pre-consumer waste wool fibre from New Zealand textile and carpet manufacturers. We blend the wool with polyester—mostly from recycled PET bottles—for a durable, friction fit product designed to never slump or lose its loft.

SPECIFICATIONS

R VALUE	mm	CODE	NOMINAL PACKAGING	M ² /BALE
WALL INSULATION for service cavity				
R1.2	45	12.45.570	2 x 5m x 570mm	5.70 m ²
WALL INSULATION for 600mm studs				
R1.8	70	18.70.560	7 x 2.6m x 560mm	10.19 m ²
R2.2	90	22.90.560	6 x 2.6m x 560mm	8.74 m ²
R2.4	90	24.90.560	5 x 2.6m x 560mm	7.28 m ²
R2.8	140	28.140.560	6 x 2.6m x 560mm	8.74 m ²
R3.2	140	32.140.560	5 x 2.6m x 560mm	7.28 m ²
R3.6	140	36.140.560	4 x 2.6m x 560mm	5.82 m ²
WALL INSULATION for 400mm studs				
R1.8	70	18.70.360	7 x 2.6m x 360mm	6.55 m ²
R2.2	90	22.90.360	6 x 2.6m x 360mm	5.62 m ²
R2.4	90	24.90.360	5 x 2.6m x 360mm	4.68 m ²
R2.8	140	28.140.360	6 x 2.6m x 360mm	5.62 m ²
R3.2	140	32.140.360	5 x 2.6m x 360mm	4.68 m ²
R3.6	140	36.140.360	4 x 2.6m x 360mm	3.74 m ²



Declare.



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natural wool blend

UNDERFLOOR INSULATION

The complex natural design of wool fibre has properties and advantages you will not find in synthetic insulations, making it an exceptional insulating material.

APPLICATIONS

New and existing suspended floors, installed from underside after flooring has been laid. A 350mm minimum clearance between the ground and the bearer is required for access.

NATURAL BENEFITS

- **Internal Moisture Management** The structure of sheep wool fibre is hygroscopic—allowing it to actively absorb and release moisture in the form of vapour. This helps to mitigate against moisture and condensation for a drier, more comfortable environment
- **Environmentally Friendly** Made with a natural, renewable resource—wool! 100% recyclable
- **Detoxifying** Wool can absorb toxic vapours from building materials, trapping them within its cellular structure for a healthier, non-irritating and non-toxic indoor air environment
- **Durability** Terra Lana Insulation will perform to specification for buildings' lifetime. Blended with polyester and thermally bonded to form a dimensionally stable, durable product
- **Acoustic Excellence** Terra Lana wool blend insulation is specifically formulated with high density of at least 18kg/m². Its high flow resistance rating makes it suitable for specialised sound control in a wide range of applications
- **Insect Resistance** Manufactured from new & recycled textile wool fibres that are treated for insect resistance
- **BRANZ Appraised** Appraisal 682 : 2010
- **Quality Assurance** 50 year warranty.

INSTALLATION

Simply rip with bare hands across the bale and friction fit within framing cavities. Safe to handle without protective clothing. A 20mm craft knife or shears (hire from Terra Lana) can be used to cut along lengths. Staples can be used for extra support if needed.

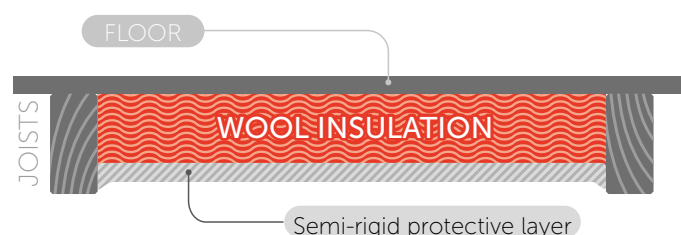
Supplied in bales of segments or rolls. We will pre-cut custom widths free of charge for orders of more than 50m² per width.

COMPOSITION

Designed to completely fill the underfloor cavity with each of the carefully engineered insulation layers performing a specific purpose:

- A bonded wool mid-layer provides thermal/acoustic insulation and regulates moisture movement.
- A hard, resistant polyester outer layer provides resistance against sagging and staple tear through as well as mitigates against draft disturbance.

This unique construction provides a semi rigid product with superior insulation properties. This makes it easier and faster to install than closed cell foam insulations, as precise cutting is not require for a perfect friction fit, thus reducing installation costs.



UNDERFLOOR for 450mm joists

R VALUE	THICKNESS	CODE	NOMINAL PACKAGING	M ² /BALE
R1.8	100mm	18.100.460	2 x 4m x 460mm	3.68 m ²
R2.6	140mm	26.140.460	4 x 4m x 460mm	7.36 m ²



Declare.



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Product Data Sheet

THERMATHENE BLACK

Damp Proof Membrane (DPM)

Thermathene Black is a concrete underlay that is made from a tear and puncture resistant polyethylene film. It is commonly known as a Damp Proof Membrane (DPM).

Thermathene Black comes in two roll sizes:

Product Code	Width	Length	Coverage
PF250025	4000mm	25m	100m ² coverage
PF250050	4000mm	50m	200m ² coverage

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Thermathene Black

Damp Proof Membrane (DPM)

Scope of Use

Thermathene Black intended for use as a damp-proof membrane separating concrete slab from ground soil. The product acts as a vapour barrier to stop ground moisture penetrating the concrete. Thermathene Black must be sealed with Thermakraft White General Purpose tape at the laps joints to form a complete vapour barrier.

General

- Unaffected by LOSP treated timber. However, LOSP treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
- 4m x 25m [100m²] and 4m x 50m [200m²] unfolded size.
- 250 Micron in thickness.

Limitations

- Maximum weather or UV exposure is 28 days.
- Cannot be used as a roof or wall underlay.

Compliance

Thermathene Black is an acceptable solution as per the requirements of the NZBC. Thermathene Black meets the requirements of NZBC 3604:2011 Clause 7.5.4.2, NZBC Acceptable Solutions E2/AS1, Table 23 and NZS 4229:2013 Clause 7.4 & 7.6.

When Thermathene Black is used and installed as a damp-proof membrane as per Thermakraft's literature, the product will meet or contribute to meeting the following provisions of the NZBC: Clause B2 Durability: Performance B2.3.1 (a), 50 years, Clause E2 External Moisture: Performance E2.3.3 & Clause F2 Hazardous Materials: Performance F2.3.1.

Product Warranty

Standard Thermakraft warranty applies. Refer to Thermakraft Warranty Statement for further details. This is available online at **thermakraft.co.nz** or call **0800 806 595**.

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Installation Manual

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WE VALUE YOUR FEEDBACK

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™

Fax 0800 808 988

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1 Introduction

James Hardie have a wide range of soffit linings and pre-finished soffit linings that enable you to create the look you want.

Cool, wide soffits and verandahs have, over the years, been a feature which specifiers have used to provide shade from the hot summer sun and to give UV protection to exterior paintwork and interior fabrics.

Today's high energy costs demand that all avenues be explored to develop cost-efficient ways for keeping our homes cool. One

of these methods — tried and proven — is the use of wide soffits, verandahs and covered outdoor living areas. James Hardie products are resistant to fire and damage from moisture and rotting when installed and maintained as directed.

James Hardie HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining are not suitable for use as a cladding.



1.1



HardieSoffit™ Linings are 4.5mm thick and are specifically manufactured for the narrow soffit around the perimeter of the house or building. Standard widths of 450mm, 600mm and 750mm are available.

- HardieSoffit Linings have an unsanded finish suitable for semi-gloss acrylics or lightly textured semi-gloss or high-gloss coatings. Smooth high-gloss coatings must be avoided as some surface undulations may be visible in critical light.
- HardieSoffit Linings can be nail-fixed to timber or mechanically fixed to a steel frame.
- HardieSoffit Linings can be uPVC jointed or the joints can be left expressed.



1.2



HardieFlex™ Eaves Lining are 4.5mm in thickness and are available in wider widths for use in wider soffits, ceilings and verandahs. They are complementary to the HardieSoffit Lining and are fixed and jointed in a similar way.

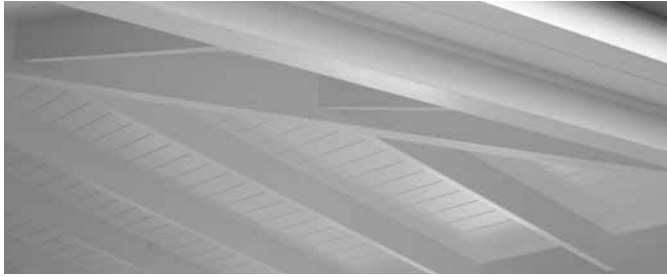
- HardieFlex Eaves Lining has an unsanded finish suitable for semi-gloss acrylics or lightly textured coatings. Smooth high-gloss coatings must be avoided as some surface undulations may be visible in critical light.
- HardieFlex Sheet 6mm, can also be used in eaves application for extra rigidity on larger spanning eaves.
- When higher impact or wind resistance is required, 6mm thick HardieFlex Sheet is used.

1.3



Eclipsa™ Eaves Lining is a 4.5mm thick, pre-finished acrylic eave providing innovative style and enduring performance.

- Easy to install, saving both time and money.
- A slipsheet minimises surface marks on paint during transportation and installation.



1.4

HardieGroove™ | 
SOFFIT LINING

HardieGroove™ Soffit Lining has the charm of traditional tongue and groove timber panelling, but has all the qualities of a modern James Hardie fibre cement product. It's perfect for enhancing design lines on modern buildings or renovating old villas and bungalows.

- HardieGroove Soffit Lining comes with a half groove length ways along the edge of the sheet to achieve concealed joints.



1.5

Villaboard™ | 
SOFFIT LINING

Villaboard™ Soffit Linings are 6mm and 9mm in thickness to suit both residential and commercial applications. The recessed edges are suitable for flush jointing to give a smooth flush finish. Ideal for larger sized soffits.

- The sheets are fully sanded to give a smoother face surface.
- Two long sheet edges are supplied with a recessed finish and site-cut edges can be readily ground on site. Other combinations are also available. Refer Table 2, page 5.
- Square-edge sheets are also available. These sheets can be used for the alternative expressed, sealant-filled or uPVC joint finish.



This manual covers the use of HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining, and Villaboard Soffit Lining in external eave and soffit applications. Further technical literature relating to these products and internal linings are available from James Hardie in the following manuals:

- HardieFlex Sheet Technical Specification.
- Villaboard Lining Installation Manual.
- HardieGroove Lining Installation Manual.
- Fire and Acoustic Design Manual.

The specifier or other responsible party for the project must ensure the information and details in this manual are appropriate for the intended application and specific design and detailing is undertaken for areas which fall outside the scope of this document.

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 or Ask James Hardie™ on 0800 808 868.

1.6 PRODUCT DESCRIPTION

Table 1

HardieSoffit Lining Sheet Sizes					
Square-cut edge for use with jointers 	Length (mm)	Mass (kg/m ²)	Width 1200mm		
			450	600	750
	4.5mm thickness	6.5			
	2400		401948	401947	401946

Table 2

HardieFlex Eaves Lining Sheet Sizes							
Square-cut edge for use with jointers		Width (mm)	Mass (kg/m ²)	Length (mm)			
				1800	2400	2700	3000
		4.5mm thickness	6.5				
		900			400194		
		1200		400190	400187	400185	400183

Table 3

Eclipsa Eaves Lining Sheet Sizes				
Pre-finished square-cut edge sheet for use with jointers 	Length (mm)	Mass (kg/m ²)	Width (mm)	
	4.5mm thickness	6.6	600	1200
	2400		404807	404808

Table 4

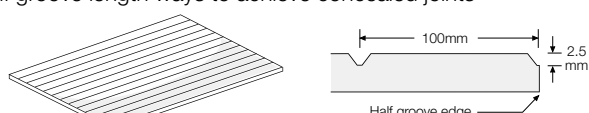
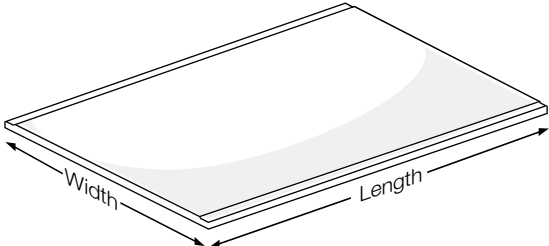
HardieGroove Soffit Lining Sheet Sizes				
Half groove length ways to achieve concealed joints 	Length (mm)	Mass (kg/m ²)	Width (mm)	
	7.5mm thickness	10.4	1200	
	2400		400246	
	2700		400245	

Table 5

Villaboard Soffit Lining Sheet Sizes

Smooth recessed edge for flush jointing.
Square-cut edge also available for use with jointers.

Villaboard Lining 6mm has no chamfer on square edge sheet.
Villaboard Lining 9mm has small chamfer on square edge sheet.



Length (mm)	Mass (kg/m²)	Width 1200mm		
		Edge Finish		
		4 rec/ edges	2 rec/ edges (long)	Square edges
6mm thickness	8.6			
2400		400432	400429	400444
2700			400428	
3000			400427	400442
9mm thickness	12.4			
2400		400439	400436	400445
2700			400435	
3000			400434	400059

1.7 ACCESSORIES

Table 6

HardieFlex™ Eaves Lining And HardieSoffit™ Lining — Accessories / Tools Supplied by James Hardie					
Accessories	Description	Product Code	Accessories	Description	Product Code
	Soffit 4.5mm PVC 2-way Jointer 2400mm long, uPVC / White	300915		Hardiejointer 5mm uPVC / White 2400mm long 750mm long 600mm long 450mm long	300729 300921 300920 300919
	6mm Hardiejointer uPVC/Bone colour 2400mm long 3000mm long	300730 300734		HardieFlex 5mm Capping Mould 2400mm long, uPVC / White	300538
	6mm Capping Mould uPVC/Bone colour 2400mm long 3000mm long	300539 300540		Scotia Mould (base and cap) 2400mm long, uPVC / White	300916
	Fastfix Fasteners 38 x 12mm, Nylon / White	300632		Inseal 3259 1.5mm thick 50mm wide x 50m long, Black compressible foam	300767
	HardieKnife™ Scoring tool for easy cutting.	305926			

Table 7

Eclipsa Eaves Lining — Accessories / Tools Supplied by James Hardie					
Accessories	Description	Product Code	Accessories	Description	Product Code
	Hardiejointer 5mm uPVC 2400mm long 750mm long 600mm long 450mm long	300729 300921 300920 300919		Soffit 4.5mm PVC 2-way Jointer 2400mm long, uPVC / White	300915
	Soffit Scotia Mould (base and cap) 2400mm long, uPVC / White	300916		HardieFlex Capping Mould 5mm 2400mm long, uPVC / White	300538
	Fastfix Fasteners 38 x 12mm, Nylon / White	300632		Inseal 3259 1.5mm thick 50mm wide x 50m long, Black compressible foam	300767
	Eclipsa Eaves Lining Touch-up Paint 15ml	Free Ask James Hardie on 0800 808 868		HardieKnife™ Scoring tool for easy cutting.	305926

Table 8

HardieGroove Soffit Lining — Accessories / Tools Supplied by James Hardie					
Accessories	Description	Product Code	Accessories	Description	Product Code
	Soffit Scotia Mould (base and cap) 2400mm long, uPVC / white	300916		Inseal 3259 1.5mm thick 50mm wide x 50m long, black compressible foam	300767
	HardieBlade Saw Blade Ø184mm poly crystalline diamond blade, for fast, clean cutting of James Hardie fibre cement.	300660		James Hardie Base Coat Base compound for filling over screws. 4kg Pail 15kg Bag	304490 304491
	HardieDrive Screw s/s 316 30mm x 7g. 100 per jar For fastening to timber frames.	300928		Villadrive Screw 6g x 30mm For fastening to timber frames. 100/jar 5kg Box Collated/ 1000	300992 300993 300994
	HardieKnife™ Scoring tool for easy cutting.	305926			

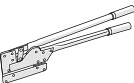
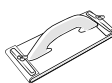
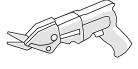
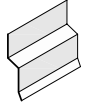
Table 9

Villaboard® Soffit Lining — Accessories / Tools Supplied by James Hardie					
Accessories	Description	Product Code	Accessories	Description	Product Code
	Soffit Scotia Mould (base and cap) 2400mm long, uPVC / White	300916		Inseal 3259 1.5mm thick 50mm wide x 50m long, Black compressible foam	300767
	Hardiejointer 6mm uPVC / Bone colour 2400mm long 3000mm long	300730 300734		9mm Hardiejointer uPVC / Bone colour 3000mm long	300736
	HardieFlex Capping Mould 6mm uPVC / Bone colour 2400mm long 3000mm long	300539 300540		Control Joint 2700mm long, uPVC / White	300978
	Corner Angle uPVC 3000mm long	300669		James Hardie Top Coat Topping compound for flush finished jointing. 3kg Pail 15kg Pail	304492 304493
	James Hardie Base Coat Base compound for flush finished jointing. 4kg Pail 15kg Bag	304490 304491		HardieBlade Saw Blade Ø184mm poly crystalline diamond blade, for fast, clean cutting of James Hardie fibre cement.	300660
	HardieDrive Screw s/s 316 30mm x 7g 100 per jar For fastening to timber frames.	300928		Villadrive Screw 6g x 30mm For fastening to timber frames. 100/jar 5kg Box Collated/1000	300992 300993 300994
	FibreZip® Screws Self drilling rib head screw Box 1000	303840		HardieKnife™ Scoring tool for easy cutting.	305926

Table 10

Components Not Supplied by James Hardie

James Hardie recommends the following products for use in conjunction with its eaves and soffit linings. James Hardie does not supply these products. Please contact component manufacturer for information on their warranties and further information on their products.

Accessories	Description	Accessories	Description
	HardieFlex Nail 40 x 2.8mm galvanised or stainless steel nails.		Second Coat Trowel 200mm For installing second coats on set joints on Villaboard Lining.
	Rondo P35 Control joint used in movement joints.		Finishing Coat Trowel For installing top coats on set joints on Villaboard Lining.
	Perforated Paper Tape Joint reinforcing tape.		Corner Tool For setting of internal corners on Villaboard Lining.
	Level/straight Edge For checking straightness of frame.		Hawk To assist in the application of finishing compounds especially with the use of trowels.
	Hand Guillotine Guillotine for cutting fibre cement.		Hand Sander For sanding set joints on Villaboard Lining.
	Collated Screw Gun		Notched Trowel For applying tile adhesive to face of Villaboard Lining.
	Hole Saw		Broadknife 150mm For setting of joints on Villaboard Lining.
	Electric shear/Fibreshear For cutting Villaboard Soffit Lining, HardieGroove Soffit Lining, HardieSoffit Lining, HardieFlex Eaves Lining.		Flashing to Table 20 'E2/AS1' Flashing fabricator
	Flashing Tape Proprietary tape to adhere to building wrap. Tyvek, Protecto wrap or similar		Flexible Joint Sealant Tube Sikaflex MS or similar
	Masking Tape 3M Scotch™ Blue 2090 - I8E 70006576972 or Sellotape 5855 Long Life		Paperback Corners 'Goldline' corner moulds
	Polyurethane Tape		Adhesive Sealant Sikaflex-11FC by Sika Seal N Flex-1 by Bostik
	Acrylic Paint Dulux X10 or similar brand		Waterproofing Admixture Multiplast Resin by Plaster Systems. Used in diluted form over Villaboard Lining sheet edges to control moisture suction before flush stopping.

2 Safe working practices

STAY HEALTHY WHEN WORKING WITH BUILDING PRODUCTS CONTAINING CRYSTALLINE SILICA

Crystalline Silica

What is it? Why and when is it a health hazard?

Crystalline Silica is

- Commonly known as sand or quartz
- Found in many building products e.g. concrete, bricks, grout, wallboard, ceramic tiles, and all fibre cement materials

Why is Crystalline Silica a health hazard?

- Silica can be breathed deep into the lungs when present in the air as a very fine (respirable) dust
- Exposure to silica dust without taking the appropriate safety measures to minimise the amount being breathed in, can lead to a potentially fatal lung disease – silicosis – and has also been linked with other diseases including cancer. Some studies suggest that smoking may increase these risks.
- The most hazardous dust is the dust you cannot see!

When is Crystalline Silica a health hazard?

- It's dangerous to health if safety protocols to control dust are not followed when cutting, drilling or rebating a product containing crystalline silica.
- Products containing silica are harmless if intact (e.g. an un-cut sheet of wall board).

FAILURE TO ADHERE TO OUR WARNINGS, SAFETY DATA SHEETS AND INSTALLATION INSTRUCTIONS WHEN WORKING WITH JAMES HARDIE PRODUCTS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

AVOID BREATHING IN CRYSTALLINE SILICA DUST!

Safe working practices

- 👎 NEVER use a power saw indoors or in a poorly ventilated area
- 👎 NEVER dry sweep
- 👍 ALWAYS use M Class extractor unit as a minimum and always hose down with water/wet wipe for clean up
- 👎 NEVER use grinders
- 👍 ALWAYS use a circular sawblade specifically designed to minimise dust creation when cutting fibre cement – preferably a sawblade that carries the HardieBlade™ logo or one with at least equivalent performance.
- 👍 ALWAYS follow tool manufacturers' safety recommendations
- 👍 ALWAYS expose only the minimum required depth of blade for the thickness of fibre cement to be cut
- 👍 ALWAYS wear an approved properly-fitted, approved dust mask (P1 or P2) or respirator

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

BEST

- HardieKnife™
- Hand guillotine
- Fibreshear

BETTER

- Dust reducing circular saw equipped with HardieBlade™ Saw Blade and M Class extractor unit.

GOOD

- Dust reducing circular saw with HardieBlade™ Saw Blade

Working outdoors

- 👍 Make sure you work in a well ventilated area
- 👍 Position cutting station so wind will blow dust away from yourself and others in the working area
- 👍 Cut products with either a HardieKnife or fibre cement shears or, when not feasible, use a HardieBlade™ Saw Blade (or equivalent) and a dust-reducing circular saw attached to a M Class extractor unit
- 👍 When sawing, sanding, rebating, drilling or machining fibre cement products, always:
 - Wear your P1 or P2 mask (correctly fitted in accordance with manufacturers' instructions) and when others are close by, ask them to do the same
 - If you are not clean shaven, then use a powered air respirator with a loose fitting head top.
 - Wear safety glasses
 - Wear hearing protection
 - When others are close by, ask them to do the same.

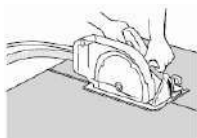
Working indoors

- 👎 Never cut using a circular saw indoors
- 👍 Position cutting station in a well ventilated area
- 👍 Cut ONLY using a HardieKnife, hand guillotine or fibreshears (manual, electric or pneumatic)
- 👍 Make sure you clean up BUT never dry sweep. Always hose down with water/wet wipe or use an M Class extractor unit

IF CONCERN STILL EXISTS ABOUT EXPOSURE LEVELS OR YOU DO NOT COMPLY WITH THE ABOVE PRACTICES, YOU SHOULD ALWAYS CONSULT A QUALIFIED INDUSTRIAL HYGIENIST.

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 is ideal for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector 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 that the sheet edges are properly supported.

STORAGE & DELIVERY

Keeping products and people safe

Off loading

- James Hardie products should be off-loaded carefully by hand or by forklift.
- James Hardie products should not be rolled or dumped off a truck during the delivery to the jobsite.

Storage

James Hardie products should be stored:

- in their original packaging
- under cover where possible or otherwise protected with a waterproof covering to keep products dry
- off the ground – either on a pallet or adequately supported on timber or other spacers
- flat so as to minimise bending

James Hardie products must not be stored:

- directly on the ground
- in the open air exposed to the elements

JAMES HARDIE IS NOT RESPONSIBLE FOR DAMAGE DUE TO IMPROPER STORAGE AND HANDLING.

TIPS FOR SAFE AND EASY HANDLING

Weatherboard products

- Do not lift planked products flat and in the middle
- Carry the products on the edge
- If only one person is carrying the product, hold it in the middle and spread arms apart to better support the product
- If two people are carrying the plank, hold it near each end and on edge
- Exercise care when handling weatherboard products to avoid damaging the edges/corners

Sheet products

- Carry with two people
- Hold near each end and on edge
- Exercise care when handling sheet products to avoid damaging the edges/corners

3 Framing

3.1 TIMBER FRAME

Timber framing must be in accordance with NZS 3604 Timber Frame Buildings.

Specific design to NZS 3603 and AS/NZS 1170 can also be undertaken providing that:

- the framing centres do not exceed those given in this specification
- the framing member widths conform to this specification.

Also refer to the Approved Document for NZBC Clause B2 'Durability' and NZS 3602 (Timber and Wood-Based Products for use in Buildings) regarding timber treatment requirements and allowable moisture contents in timber for various components of the building. Also refer to the framing manufacturer's literature for further guidance on the use of treated timber.

3.2 STEEL FRAME

The figures in this brochure are drawn for timber framing. However, steel framing and furring channels can also be used.

All metal framing centres are to be the same as specified for timber frame in this manual.

Steel framing members must be fabricated from light-gauge sheet steel 0.55mm thick minimum to 1.6mm maximum. If heavier sections are used difficulties may be experienced in fixing the self-drilling, self-tapping fasteners. Refer to specific details for the minimum flange width requirements.

Sheets must not be fixed directly to drawn steel or hot-rolled steel sections. These must first be battened out with ex 50mm-thick (40mm minimum) timber battens or light-gauge metal furring channels.

Screw-fix 6mm or thicker sheets only.

Screw fixings can be finished flush or sunk a maximum of 0.5mm below the sheet surface ready for filling.

NOTE: The fasteners must not be over driven as will reduce the holding capacity of the sheet.

3.3 FRAMING SET-OUT

For the framing set-out of up to 600mm-wide soffit refer to Figure 1.

For the framing set-out of 601mm to 1200mm wide soffits refer to Figure 2.

3.3.1 Pre-finished steel fascia/gutters

When pre-finished steel fascia/gutters are used the soffit edge must be supported 4mm minimum into fascia recess, similar to Figure 10.

Ribbon board to be continuous for product fixing.

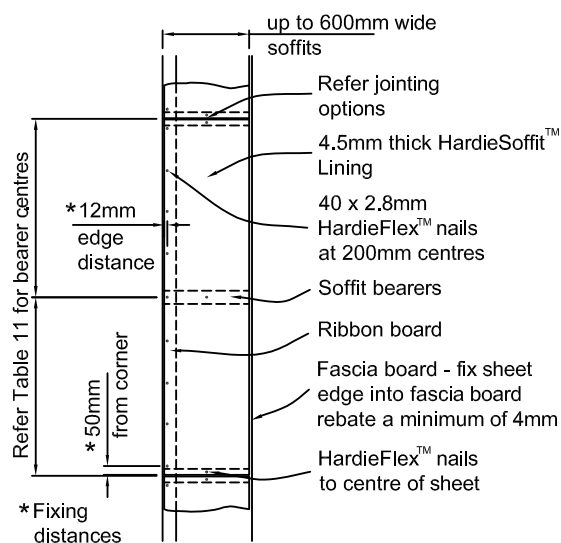
NOTE: Because of the limited fascia groove available with some metal fascias a supporting ribbon board will be required with fixings at 300mm centres maximum. Pre-finished soffits can distort due to surface tension when adequate edge support is not provided.

Table 11

Eaves Lining Framing Centres		
Eaves And Soffit Width (mm)	Wind Zone	Max. Soffit Bearer Centres (mm)
Up to 450	L, M	1200
	H, VH	900
451 - 600	L, M	1200
	H, VH	600
601 - 1200	L, M, H, VH	600
Various	EH*	600

*HardieFlex Sheet 6mm or Villaboard Lining 6mm must be used in EH Wind Zone with soffit bearers maximum 600mm centres.

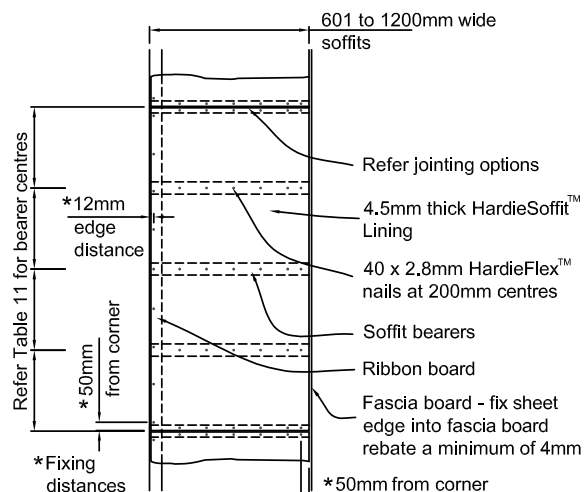
Figure 1: Eaves and soffit up to 600mm



Notes

1. HardieFlex™ nails are the usual fixing method for HardieSoffit™ Lining. The fastfix method can also be used as an alternative.
2. When fastfix fastenings are used refer to Table 7 and Figure 8 and 9.

Figure 2: Eaves and soffits 601mm to 1200mm



1. HardieFlex™ nails are the usual fixing method for HardieSoffit™ Lining. The fastfix method can also be used as an alternative.
2. When fastfix fastenings are used refer to Table 7 and Figure 8 and 9.

NOTE: Because of the limited fascia groove available with some metal fascias a supporting ribbon board will be required with fixings at 300mm centres maximum. Pre-finished soffits can distort due to surface tension when adequate edge support is not provided.

3.4 BATTEN REQUIREMENTS

Battens are required when sheets are fixed over:

- Gypsum board exceeding 20mm in thickness
- Softboard, polystyrene or similar
- Concrete, masonry block or brick.

Timber battening is to be a minimum of 35mm deep x 40mm wide to achieve adequate sheet nail penetration.

Steel battens must be minimum 0.55mm thick, 23mm deep and have a bearing surface of 38mm min. Battens must be galvanised to meet the durability requirements of the New Zealand Building Code (NZBC) and fixed to manufacturer's specifications. All battening centres and sheet fixing is to be strictly in accordance with the framing and fixing required by this manual. Care must be taken to ensure the battens are packed and aligned to give a true even surface for the sheets to be fixed. Check the face of the battens with a long straight-edge before fixing sheets.

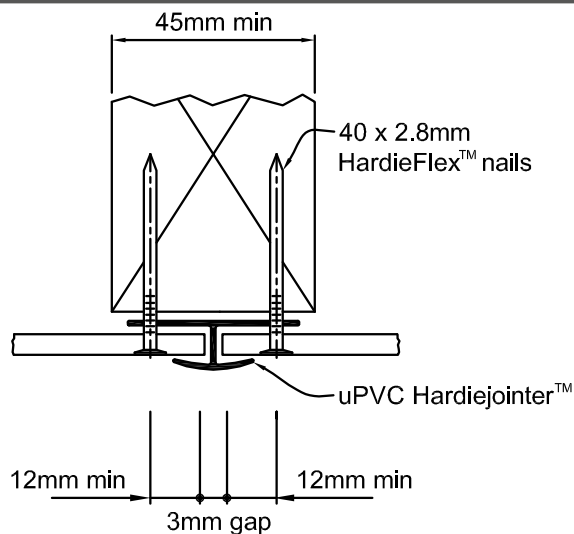
3.5 SKILLION ROOF DESIGN

When installing soffit linings direct to the under side of skillion roof framing, ensure that sufficient ventilation has been provided within the roof space. The temperatures within these smaller roof spaces can reach very high levels in certain conditions and this can cause cracking in flush stopped joints due to excessive movement in roof framing. Therefore the framing in skillion soffits and ceilings need a specific engineering design consideration.

General design guide for a narrow strip of flash stopped soffits is to provide a control joint at 4.8m centres.

General design guide for large flash stopped soffits is to provide control joints at 4.8m x 3.6m in either direction when fixing to this type of framing.

Figure 3: uPVC Hardiejointer detail



4 Jointing options

- All soffit lining sheet edges must be supported by framing and/or a fascia board.

HARDIESOFFIT LINING

- Refer to Figure 3 for uPVC Hardiejointer detail
- Refer to Figure 5 for express joint detail
- Refer to Figure 9 for two-way uPVC jointer

HARDIEFLEX EAVES LINING

- Refer to Figure 3 for uPVC Hardiejointer detail
- Refer to Figure 4 for butt joint detail
- Refer to Figure 5 for express joint detail
- Refer to Figure 9 for two-way uPVC jointer

ECLIPSA EAVES LINING

- Refer to Figure 3 for uPVC Hardiejointer detail
- Refer to Figure 8 for Fastfix Fasteners fixing detail. Use a 6mm diameter masonry drill bit to drill a hole and fix fasteners
- Refer to Figure 9 for Two-way uPVC Jointer

HARDIEGROOVE SOFFIT LINING

- Sheets have half groove along the long edges for butt jointing
- Sheets to have chamfer formed on site along the short edge for butt jointing

VILLABOARD SOFFIT LINING

- Refer to Figure 6 for flush joint details. Refer to Section 5.5 for flush jointing
- Refer to Figure 3 for uPVC Hardiejointer detail
- Refer to Figure 4 for butt joint detail
- Refer to Figure 5 for express joint detail
- Refer to Figure 7 for sealant joint detail

Figure 4: Butt joint detail

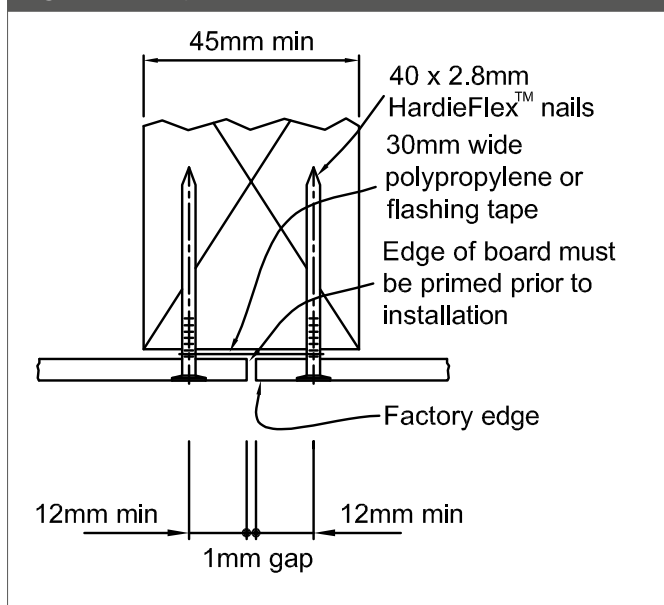


Figure 5: Expressed joint detail

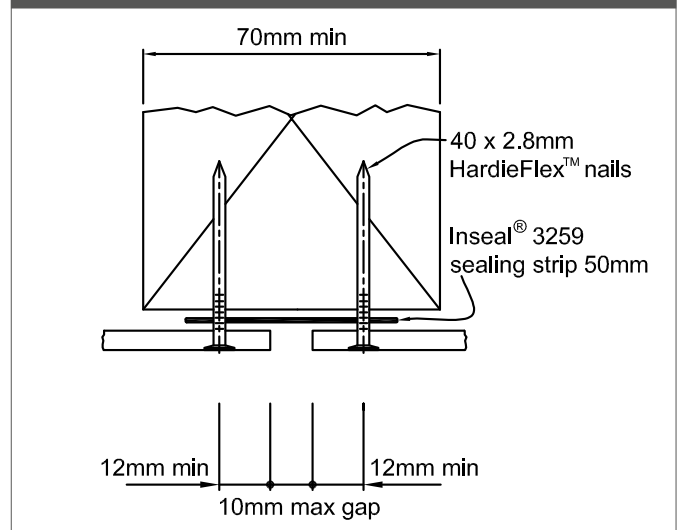


Figure 6: Vertical flush joint setout

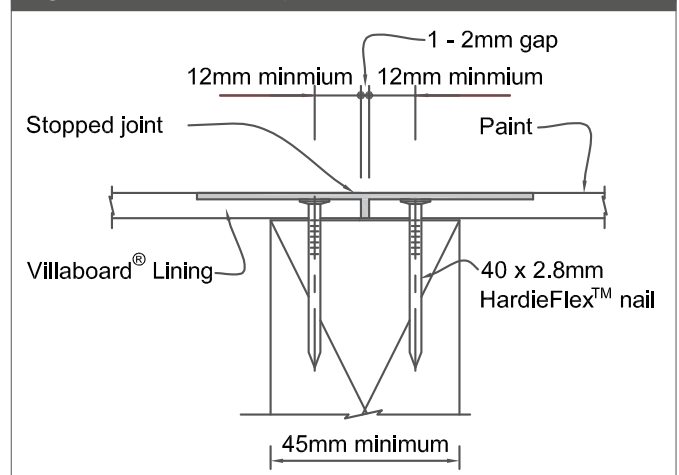


Figure 7: Sealant joint detail

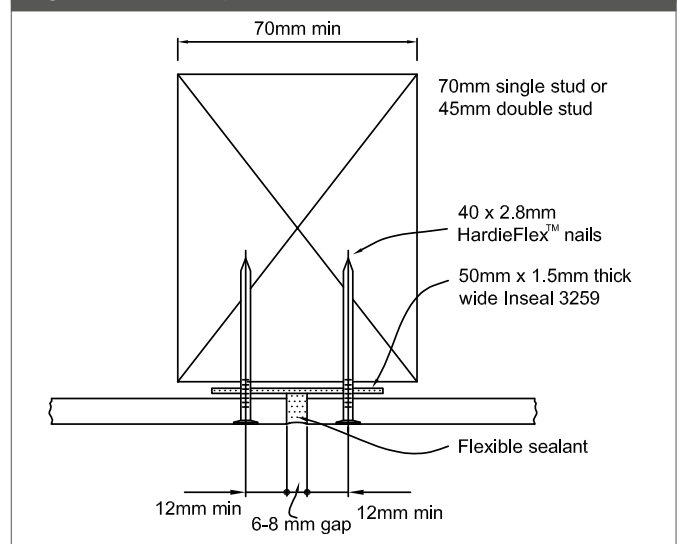
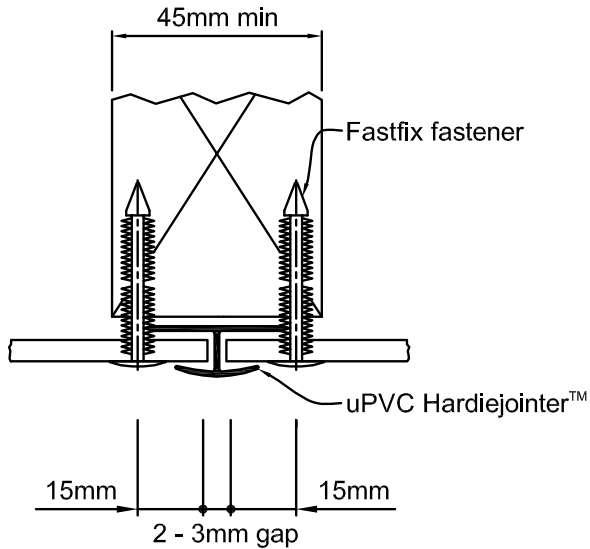


Figure 8: Fastfix fastener fixing detail



Note: Use a 6mm drill bit for drilling holes in sheet for fixing Fastfix fasteners.

Figure 10: Cladding detail with scotia mould

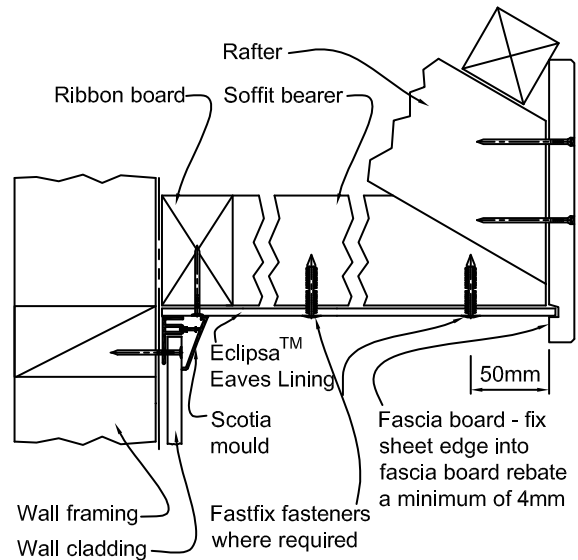
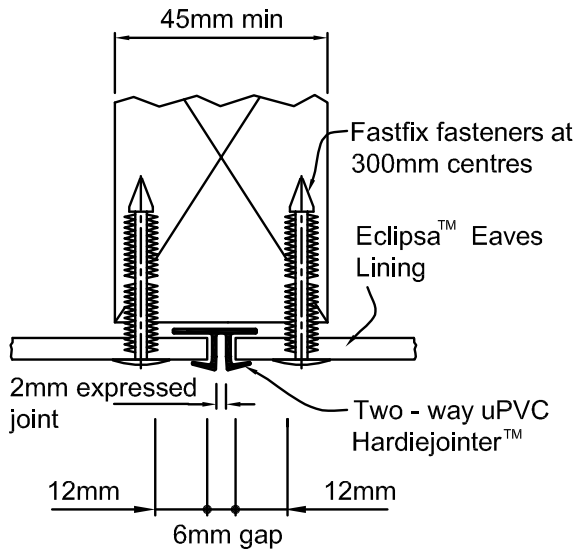
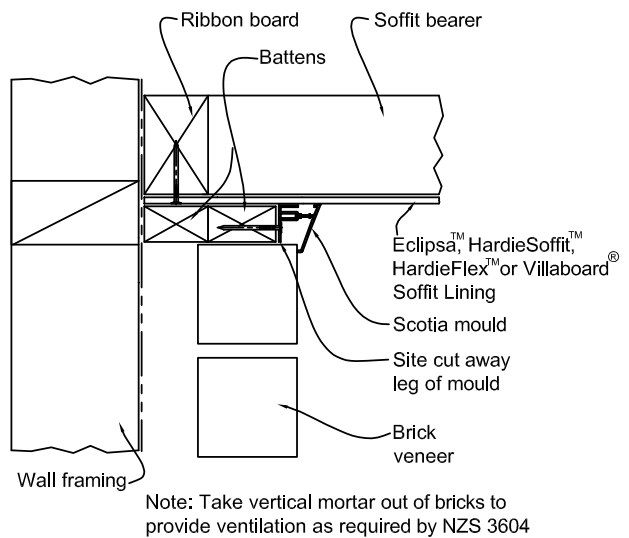


Figure 9: Two-way uPVC jointer



Note: Use a 6mm drill bit for drilling holes in sheet for fixing Fastfix fasteners.

Figure 11: Brick veneer detail with scotia mould



Note: Take vertical mortar out of bricks to provide ventilation as required by NZS 3604

5 Installation

This installation manual covers the use of James Hardie Eaves and Soffits for buildings within the scope of NZS 3604. For all other buildings specific engineering design is required.

5.1 GENERAL

Refer to Table 11 and Figure 1 and 2 regarding nail fixing centres, for framing and types of fasteners.

The eaves/soffits must be sealed against claddings to minimise moisture ingress behind the claddings. The roof must have been installed before installing the soffits linings. Where the soffits are sloping upwards away from the wall, a mechanical flashing must be provided in the soffit to wall junction. The flashing is fixed under soffit lining and laps over the face of cladding by 35mm minimum. Refer to Figure 27 - Figure 30.

5.1.1 Drip Edge

All soffit linings must either be installed with a grooved fascia, refer Figure 10, or with exterior cladding which forms a drip edge below the soffit lining by 15mm minimum. Soffit linings are generally fitted into the recess formed in fascia board to form the drip edge.

5.1.2 Structural Ceiling Diaphragms

HardieFlex Eaves Lining and Villaboard Soffit Lining are suitable for use in structural ceiling diaphragms as per NZS 3604. Refer to the James Hardie Bracing Design Manual.

5.1.3 Curved Applications

HardieFlex Eaves Lining and Villaboard Soffit Lining can be used for curved applications.

The minimum bending radii are shown below.

Table 12

Curved Soffit/Ceiling Minimum Bending Radii	
	Along length (mm)
9mm Villaboard Lining	3000
6mm Villaboard Lining	1800
HardieFlex Eaves Lining	1800
HardieSoffit Lining	1800

NOTE: The bending radii given above require no pre-wetting of the sheet. Mechanical fix at 200mm centres maximum to entire framing.

To maintain the smoothness of the curve, ceiling battens are generally required at spacings as shown below.

Table 13

Curved Lining — Soffit Batten Spacing	
Range of Radii (mm)	Soffit batten spacing (mm)
1800 to 3000	300
Above 3001	400

5.1.4 FIRE RATED SOFFITS

For full details refer to the James Hardie Fire and Acoustic Design Manual or Ask James Hardie on 0800 808 868.

5.2 FASTENER DURABILITY

Fasteners used in external applications must meet the minimum durability requirements of the NZBC. NZS 3604 specifies the requirements for fixing's material to be used in relation to the exposure conditions and are summarised in Table 14.

Table 14

Exposure conditions and nail selection prescribed by NZS 3604

Zone / Nail Material		
Zone D*	Zone C outside sea spray zone and Zone B and geothermal hot spots	Bracing — All zones
Grade 316 Stainless	Hot-dipped galvanised or 316 stainless	Grade 316 Stainless

* (Zone C areas where local knowledge dictates that increased durability is required, appropriate selection shall be made)

When using screws to fix into steel framing a minimum class-3 coated screw must be used.

5.3 HARDIESOFFIT LINING

For framing and fixing schedules refer to Section 3.

All sheet edges are to be supported by framing or a fascia board. Fixings are to be at 200mm centres to all framing (refer Figures 1 and 2).

HardieSoffit Lining up to a max. width of 600mm can be jointed up to a maximum 150mm off the ceiling/soffit batten when using uPVC jointers.

NOTES

1. Use of 6mm thick sheets will minimise the deflection and enhance the impact resistance.
2. Sheets can be jointed as per Section 4.
3. Do not screw fix 4.5mm thick sheets.

5.4 HARDIEFLEX EAVES LINING

For framing and fixing schedules refer to Section 3.

All sheet edges are to be supported by framing or a fascia board. Fixings are to be at 200mm centres to all framing (refer Figures 1 and 2).

NOTES

1. Use of 6mm thick sheets will minimise the deflection and enhance the impact resistance.
2. Sheets can be jointed as per Section 4.
3. Do not screw fix 4.5mm thick sheets.

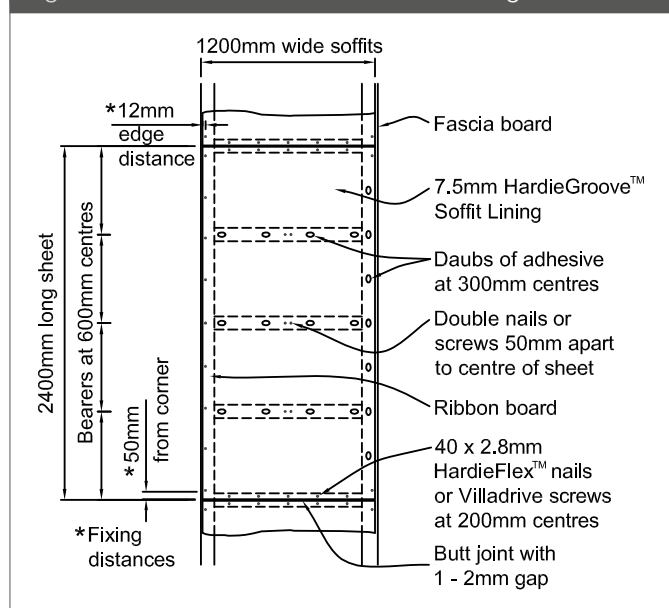
5.5 HARDIEGROOVE SOFFIT LINING FIXING METHOD

For framing and fixing schedules refer to Section 3.

The recommended fixing methods are combined nail and adhesive or screw and adhesive. (Refer Figure 12).

To achieve a concealed joint, butt the long edges together (half grooved). (Refer Figure 13).

Figure 12: Nail or screw and adhesive fixing



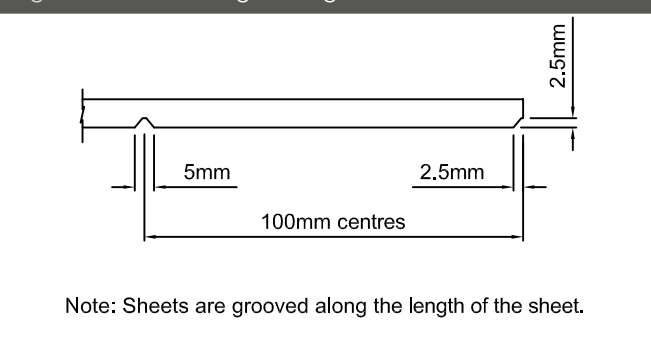
NOTES

1. Do not place nails or screws within 100mm of the adhesive daubs.
2. Fix with either HardieFlex nails 40 x 2.8mm (galvanised or 316 stainless steel), Villadrive wood screws or HardieDrive stainless steel 30mm x 7g wood screws.
3. Use only stainless steel fixings in sea spray zones.
4. When butt jointing short ends of HardieGroove Lining in ceiling/soffit applications, the short edges must be cut square and have chamfer formed.

Nails must be finished flush with the sheet surface. Screw heads can be finished 0.5mm below the sheet surface and stopped.

In steel framing the fasteners should be driven as close as possible to the stud corners to avoid deflection of the stud flange

Figure 13: Sheet edge and groove detail



Note: Sheets are grooved along the length of the sheet.

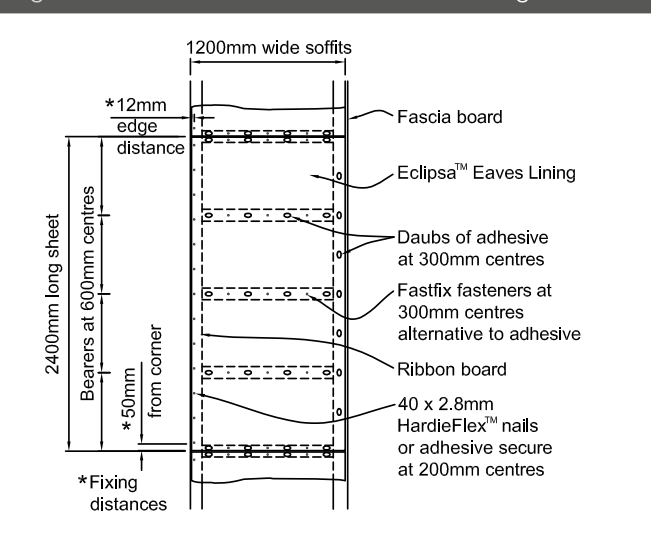
5.5.1 Finishing

Once the sheets are in place, fill over all driven fixings with James Hardie Base Coat to the required level of finish.

5.6 ECLIPSA EAVES LINING

- Eclipsa Eaves Lining are to be supported by bearers and fasteners at the maximum spacings specified for the 4.5mm sheets in Section 3, Table 11 and Figures 3, 8 and 9 of this manual
- To fix larger soffit, ceiling or verandah applications provide a perimeter frame to all sheet edges and intermediate nogging at the centres shown in Table 11.
- Fix the Eclipsa Eaves Lining into the fascia board groove then nail into the ribbon board at 300mm centres with 40 x 2.8mm HardieFlex nails. Ensure nails will be hidden by the scotia mould or timber scotia (refer Figures 10, 11 and 14).
- Use a 6mm-diameter masonry bit to drill holes and fix Fastfix fasteners (refer Figures 8 and 9).
- Eclipsa Eaves Lining up to a maximum 600mm width can be jointed up to a maximum 150mm off the ceiling/soffit batten when using uPVC jointers.

Figure 14: Fastfix fastener and adhesive fixing



5.6.1 Fastfix fasteners

Fastfix fasteners (38mm long) can be used as an alternative fixing for prefinished soffit and ceiling systems in conjunction with adhesives. Drill a 6mm-diameter hole through the sheet and framing to insert the Fastfix fastener. In timber the hole must be 40mm deep.

5.6.2 Masking Tape

The recommended masking tape for use with Eclipsa Eaves Lining is 3M Scotch Blue I8E 2090 or Sellotape 5855 longlife. This tape can only be left on the Eclipsa Eaves Lining for maximum 7 days, otherwise tape removal may cause paint loss.

5.7 VILLABOARD SOFFIT LINING (SOFFITS UP TO 1200mm)

Villaboard Lining 6mm-thick is used when a smooth sanded sheet is required to achieve a painted flush finish.

Refer to the framing fixing schedule Section 3 Table 11, Figures 1 and 2, and finishing schedules on Section 6.

Refer to the flush jointing procedures, Section 6.

Fix with either HardieFlex nails 40 x 2.8mm (galvanised or 316 stainless steel), Villadrive sood screws or HardieDrive stainless steel 30mm x 7g wood screws

Screws finished 0.5mm below surface,

Nails finished flush with surface.

Figure 15: Nail/screw and adhesive fixed soffit

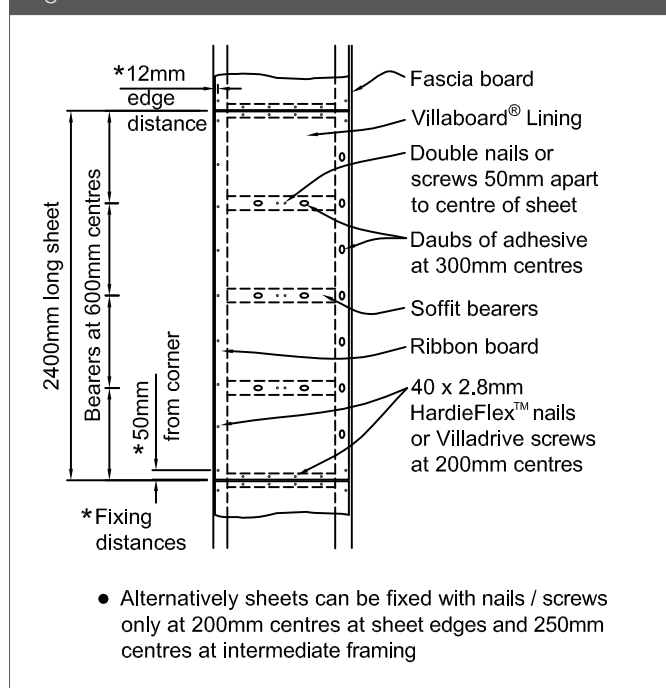
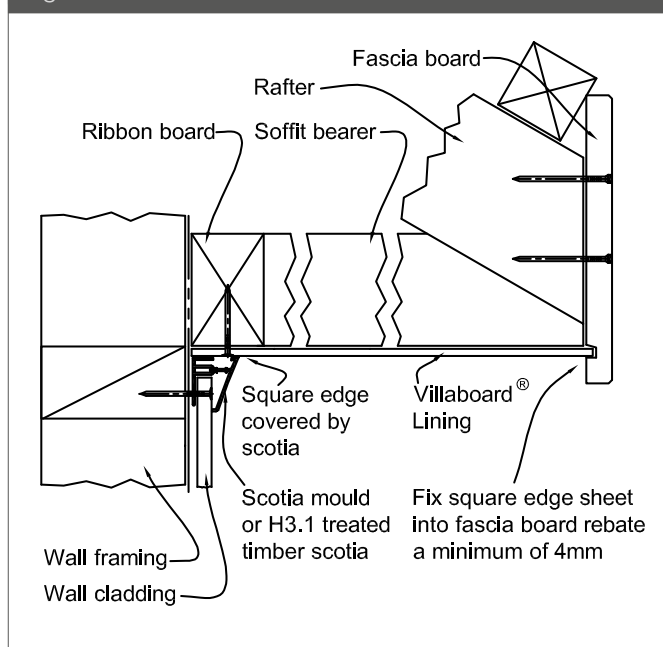


Figure 16: Soffit cross section



5.7.1 Control Joints

Control joints are required in long runs of Villaboard Lining soffits/ceilings to accommodate structural movement. Control joints must also be provided where the soffits change in direction, change in level, where there is a construction joint in framing or where the soffits continue into passage ways etc. See Table 15 for maximum control joint spacing and Figure 17 for a typical control joint detail.

5.7.2 Jointing Options

Villaboard Soffit Lining is suitable for:

- Flush-jointed narrow strip soffits around a building
- Flush-jointed ceilings over verandahs, porches and entryways to residential and small-scale commercial buildings
- Expressed, uPVC-jointed and sealant-filled joint ceilings where a smooth surface finish is required
- All edges to be supported by the framing.

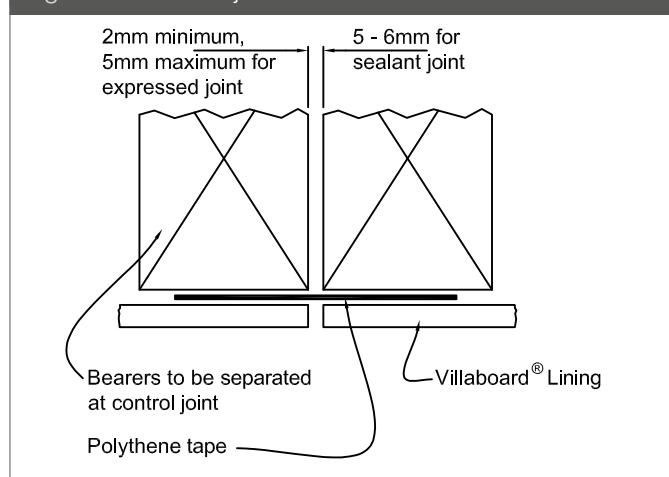
Table 15

Maximum spacing for control joints (m)		
	STEEL FRAMING	TIMBER FRAMING
General	4.8	7.2

5.7.3 Narrow-Strip Flush-Jointed Soffits And Ceilings

In these applications sheets must be jointed on the framing as shown in Figures 1 and 2. Control joints, as shown in Figure 17, must be located at a distance as specified in Table 15. Sheets must not be fixed to the bottom cord of roof trusses.

Figure 17: Control joint



NOTE

Refer Section 5.7.3 for skillion roof design.

5.8 VILLABOARD SOFFIT AND CEILING LINING (LARGE AREAS)

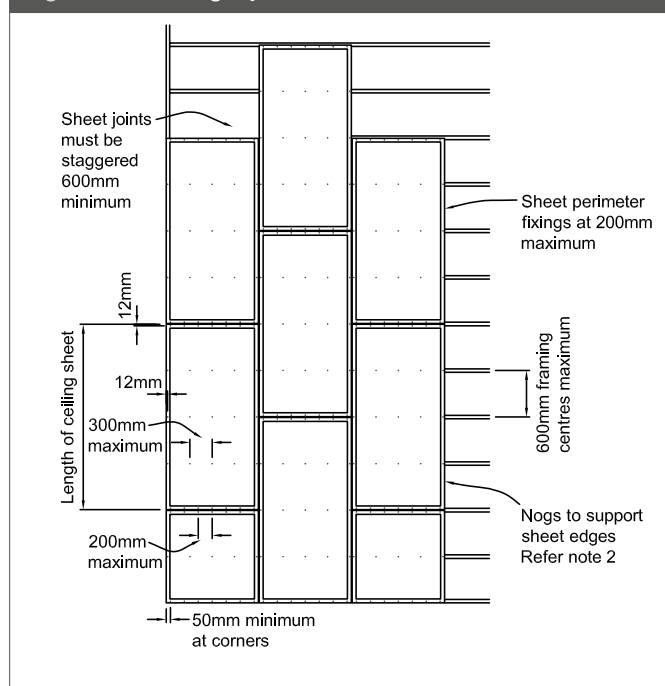
For standard commercial soffits and ceilings, framing must be at 600mm maximum centres and 6mm thick Villaboard Soffit Lining can be used. For high-impact areas, heavy-use commercial areas, and high-wind areas, framing at 600mm maximum centres and 9mm thick Villaboard Soffit Lining should be used. Sheets must not be fixed to the bottom cord of roof trusses. Timber or steel ceiling battens must be fixed to the underside of the roof truss. Sheets must be laid in an offset pattern so that adjacent end joints do not coincide. Timber ceiling battens must comply with the requirements of NZS 3604 or the specific engineering design. Steel ceiling battens must be a minimum of 37mm wide x 23mm deep x 0.55mm thick and have a bearing surface of 37mm minimum. Battens must be galvanised steel (275 g/m² zinc coating), have a suitable coating to meet the durability requirements and be fixed to the manufacturer's specifications. Refer to the flush-jointing and finishing procedures on Section 6.

For specific engineering design projects consideration must be given to framing deflections expected due to loadings and appropriate selection of sheet jointing method must be made.

NOTE

1. It is recommended that flush stopping of joints is suitable when using recessed edge Villaboard Lining.
2. When nogs not installed for perimeter support, the unsupported sheet edges across the framing must be supported by back blocking using a 300 – 400mm wide Villaboard Lining strip adhered to rear face and centred between the framing.

Figure 18: Ceiling layout



5.8.1 Control Joints

The ceilings must be divided into bays not exceeding 7.2 x 4.8m. To permit movement, control joints must be formed at the perimeter of each bay (refer Figures 19, 20, 21 and 22) and at the junction of large ceilings with narrow passage strips or where there is a change in direction (also refer Figures 20 and 21). Each bay must be independent of adjacent bays and the surrounding building structure. When the ceilings or soffits contain sloping areas then control joint centres must be reduced to coincide with the slope change lines (refer Figure 22). Framing members (to which the sheet is fixed) must not continue across this control joint. Sheets shall be fixed across the ceiling joists or ceiling battens (refer Figures 24 and 25). Figures 20 and 21 show control joints with the battens running in the same direction as the sheet joint. When these ceilings are wider than one sheet width the sheets can be fixed to the framing provided the control joints are placed to limit the bay size to 7.2m x 4.8m maximum.

Figure 19: Control joint layout

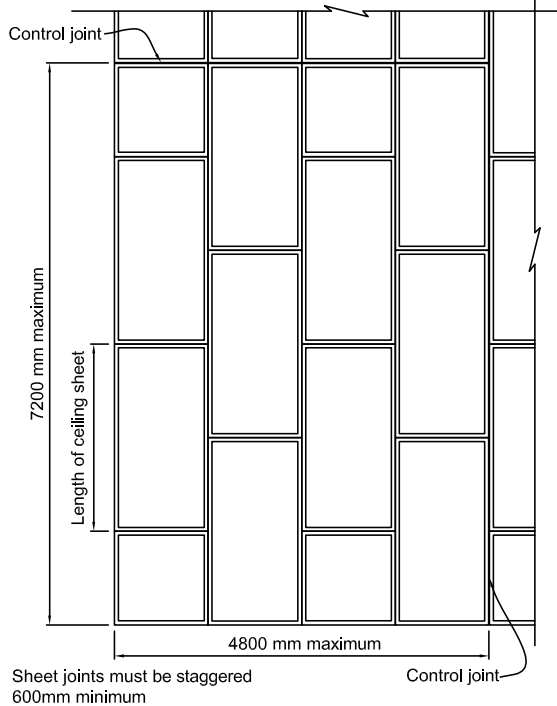


Figure 21: Timber control joint detail

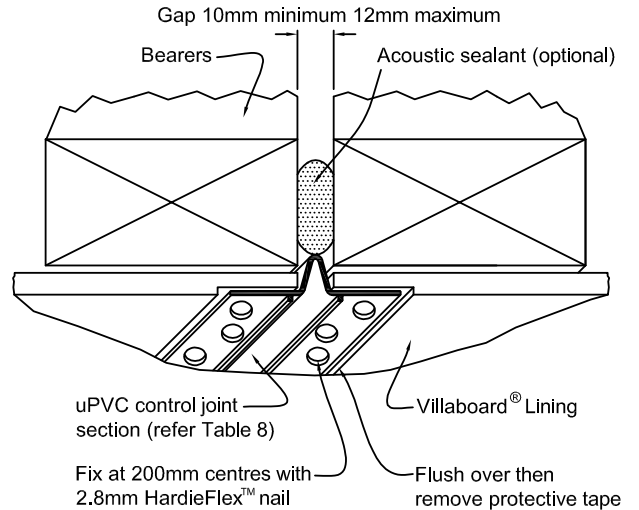


Figure 20: Steel ceiling batten control joint detail

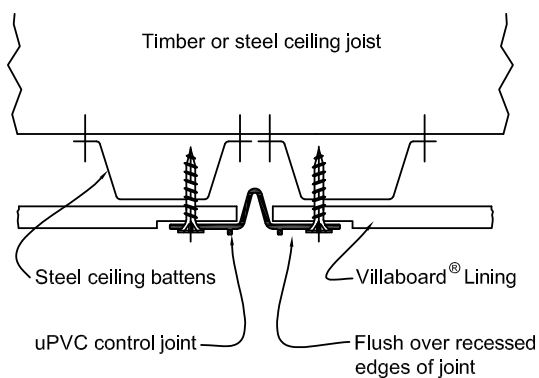
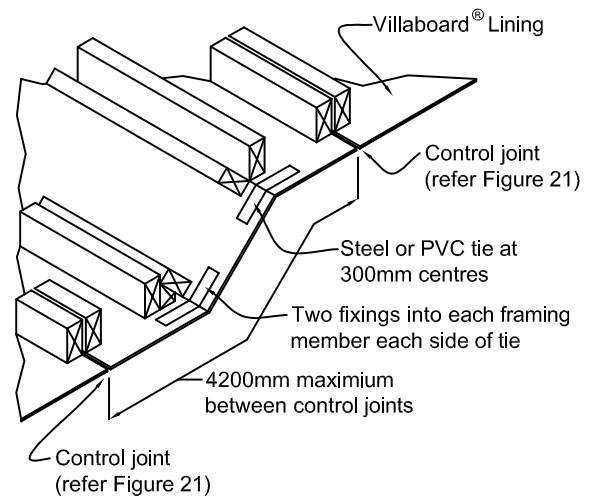
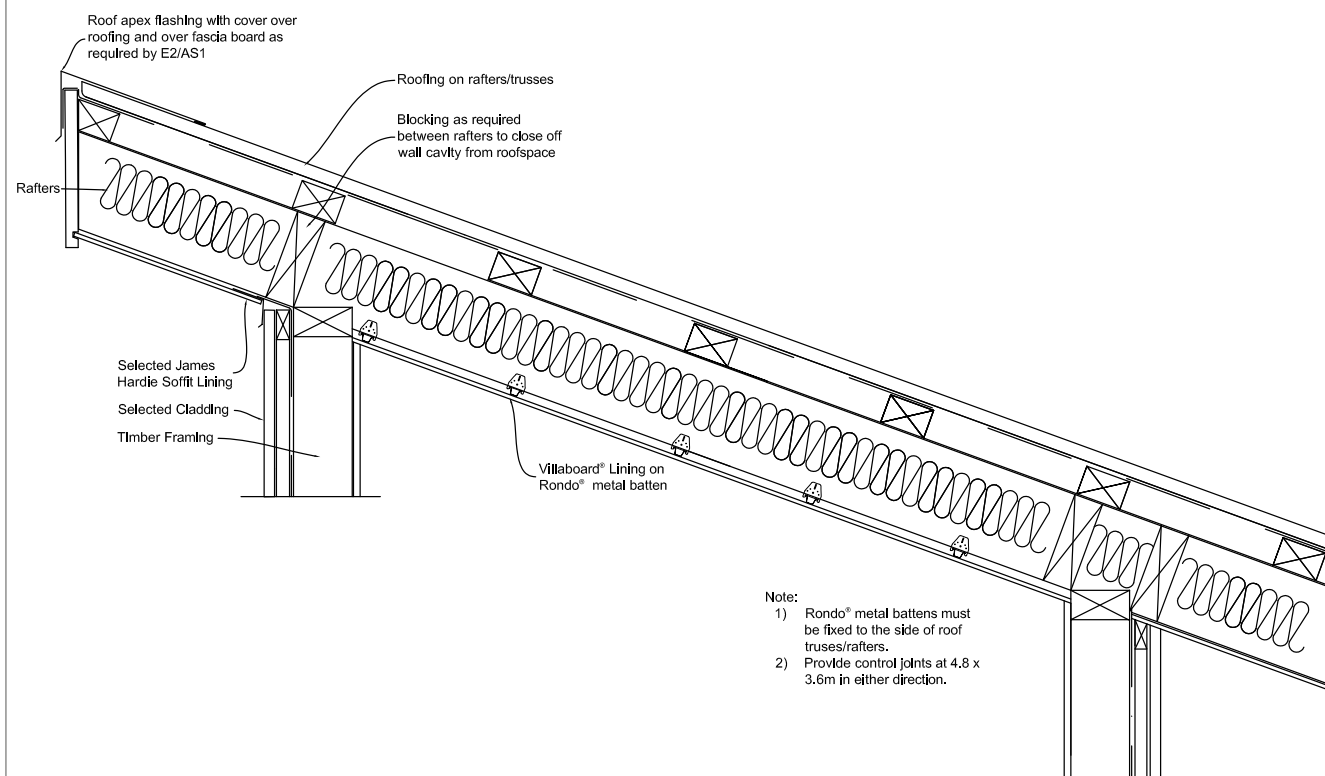


Figure 22: Directional changes to soffits and ceilings — control joint



Note: Tie fixings to be 40 x 2.8mm HardieFlex™ nails.

Figure 23: Skillion Roof/Ceiling



5.8.2 Skillion Roof Design

When installing soffit linings direct to skillion roof framing ensure that sufficient ventilation has been provided within the roof space. The temperatures within these smaller roof spaces can reach very high levels in certain conditions and this can cause cracking in flush stopped joints due to excessive movement in framing. Therefore the framing in skillion soffits and ceiling need a static engineering design consideration. General design guide is to provide control joints at 4.8m x 3.6m in either direction when fixing to this type of framing.

5.8.3 Fixing Option One

A smooth surface finish is obtained by minimising the visible sheet fixings. For painted finishes the combined nail or screw and adhesive method gives this superior finish (refer Figure 24). Fix at 200mm centres down each sheet end with edge fixings in each joist or batten. Double-fix in the centre of each joist or batten. Do not place nails or screws within 100mm of adhesive daubs. Daubs of wallboard adhesive 25mm diameter and 15mm thick must be applied to the intermediate joists or battens at 250mm centres (refer Figure 24). When nogs are not installed for perimeter support, the unsupported edges between ceiling joists or battens must be supported with back blocking using a 300-400mm wide Villaboard Lining strip adhered to rear face and centred between framing.

NOTES

1. All surfaces to receive adhesive must be clean, free of dust, oil etc.
2. Ensure daubs of adhesive never coincide with permanent fastener points, as adhesive shrinkage may cause fastener head protrusion.

Figure 24: Nail or screw and adhesive fixing

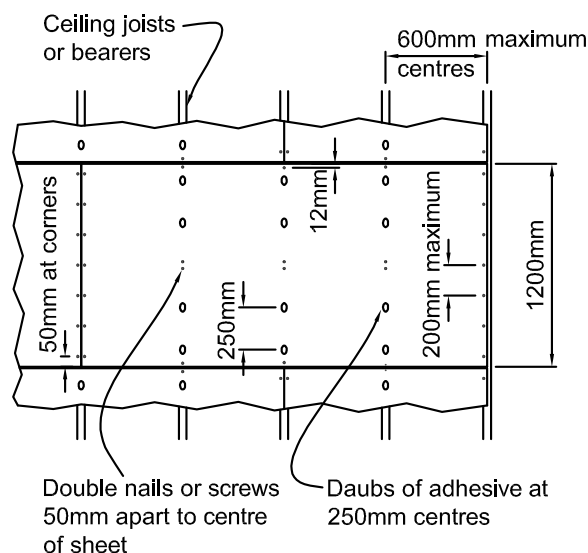
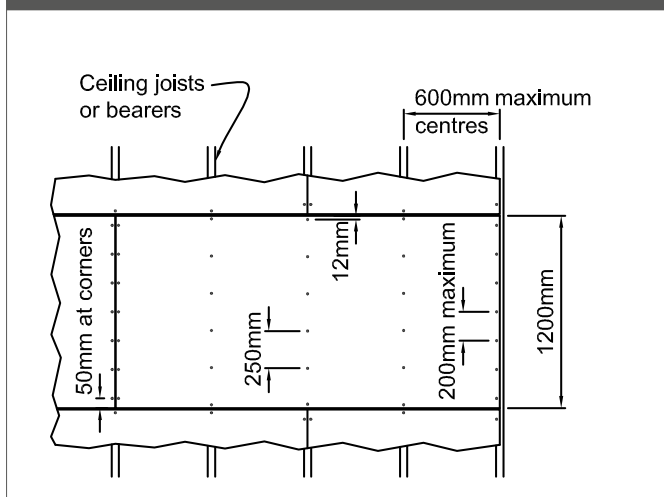


Figure 25: Nail or screw



5.8.4 Fixing Option Two

For an alternative nail or screw-fixing method, fasteners are to be driven along the sheet perimeter at 200mm centres and along intermediate ceiling battens at 250mm centres (refer Figure 25).

When nogs are not installed for perimeter support, the unsupported edges between ceiling joists or battens must be supported with back blocking using a 300-400mm wide Villaboard Lining strip adhered to rear face and centred across ceiling joists.

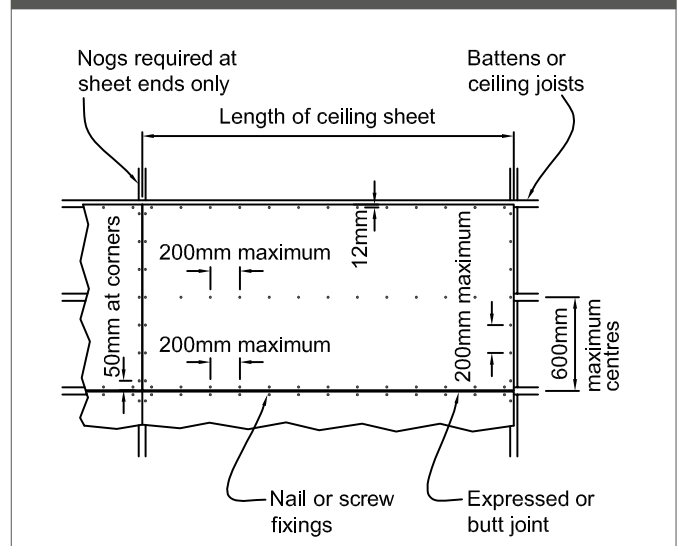
5.8.5 Column Or Wall Abutments

Soffit sheeting must be free to move independently from the building element it abuts with. This is critical for flush-jointed sheeting, otherwise cracking at the joint may occur.

5.8.6 Square-Edge Villaboard Lining Ceilings And Soffits

Square-edge Villaboard Lining is used for butt-joint; expressed-joint or uPVC-jointed ceilings.

Figure 26: Nail or screw along ceiling joist (expressed or butt joints)



5.9 TITAN FACADE PANEL

May be used as soffit with expressed joint when installed as per Figure 5 and fixings as per Villaboard Soffit Lining.

5.10 INTERNAL SWIMMING POOL APPLICATION

For fixing Villaboard Lining and HardieGroove Lining in internal swimming pool areas;

- The sheets must be back and edge sealed before installation.
- When fixing Villaboard Lining to the ceiling under a skillion roof, roof ventilation must be considered to minimise thermal movement and sheet joint cracking.
- All Villaboard Lining recessed sheet joints must be stopped.
- Alternatively, when using square edge Villaboard Lining, the sheet joint must be butted over an Inseal 3259 tape with an appropriate flexible sealant in the 1mm joint.
- All HardieGroove Lining joints must have continuous bead of sealant applied to edge of sheet before butting together.

Only stainless steel fasteners must be used.

- Full perimeter fixing required.
- In addition, it is recommended that H3.1 treated timber ceiling battens are used to resist decay due to higher condensation levels present in this area.

5.11 SPECIAL DETAILS

Figure 27: Sloping soffit and direct fixed flatsheet cladding

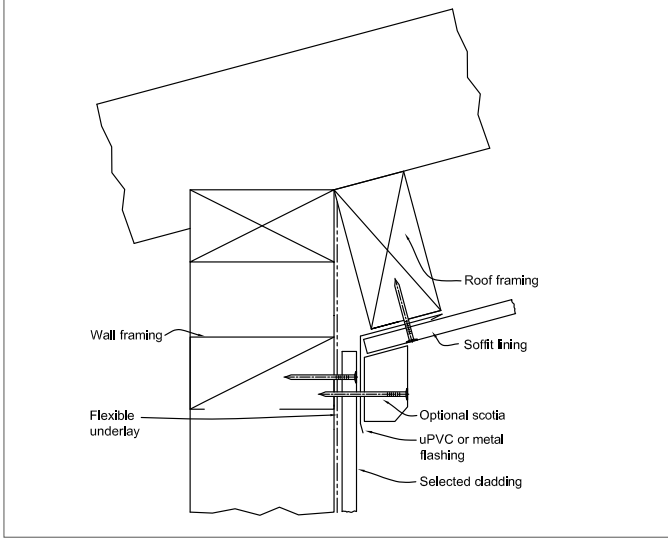


Figure 29: Sloping soffit and direct fixed weatherboard cladding

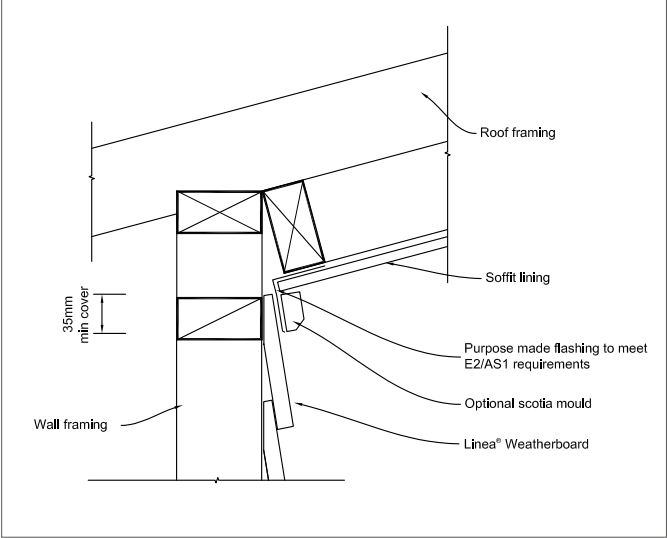


Figure 28: Sloping soffit and cavity fixed flatsheet cladding

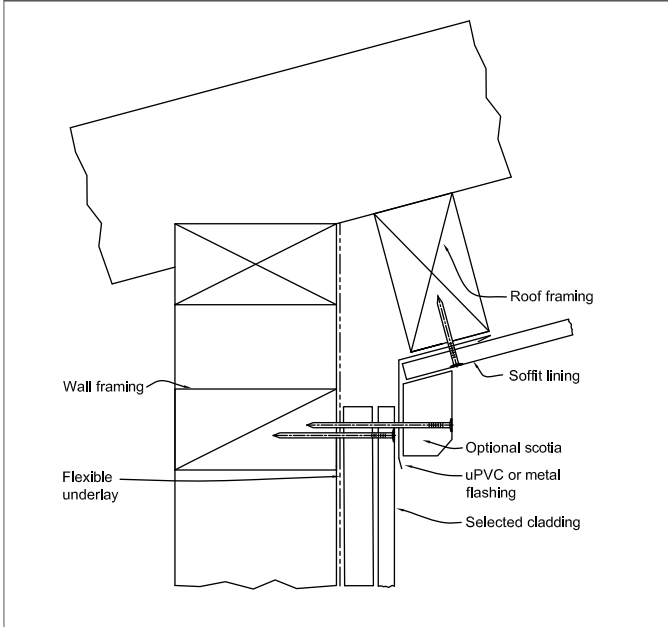
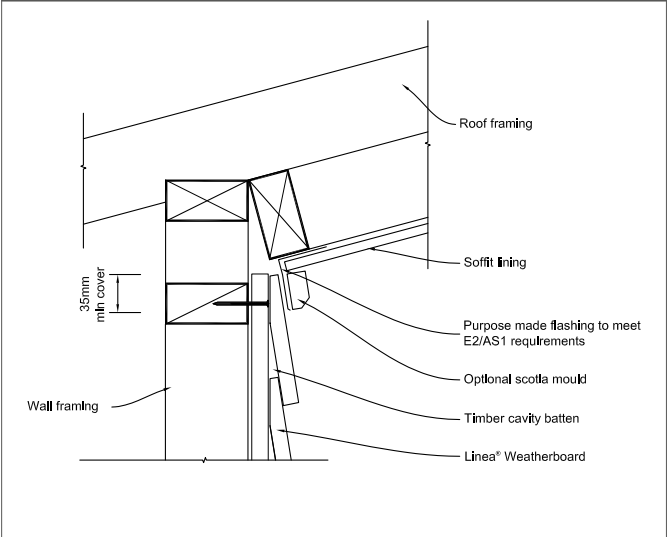


Figure 30: Sloping soffit and cavity fixed weatherboard cladding



6 Villaboard Joint Stopping

FOR VILLABOARD LINING

6.1 GENERAL

Villaboard Soffit Lining is finished with paint complying with parts 7, 8, 9 and 10 of AS 3730. The application and maintenance must be in accordance with the manufacturer's specifications.

NOTE: Before flush stopping sheet edges must be sealed with Multiplast resin, water proofing admixture or other similar products.

6.2 GLANCING LIGHT

In some instances, due to glancing light, set joints may be noticeable in Villaboard Lining walls, especially where paint finishes have a high gloss level. Work closely with your builder or designer to minimise this.

Artificial lighting needs to be considered in relation to soffits.

Where glancing light is an issue its effect can be lessened by:

- Artificial light shading devices.
- The use of light coloured, matt finish paints.

6.3 LEVEL OF FINISHES

Different levels of finishes are typically specified for different applications. Higher levels of finishes are used to address the glancing light issues with painted Villaboard Soffit Lining referred to above. A description of the various levels of finishes and the jointing/coating requirements can be found in Table 16.

Table 16

Levels of Finishes			
Level of finish	Definition*	Typical jointing/setting	Finish
0	This level of finish may be useful in temporary construction.	No stopping, taping, finishing or accessories are required. The work is confined to gluing or screwing/nailing sheets in place.	For use in areas where finishing and stopping is not considered necessary.
1	For use in plenum areas above ceilings, in areas where the work would generally be concealed, or in building service corridors and other areas not normally open to public view.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape.	Surface free from excess jointing compound. Tool marks and ridges are generally acceptable.
2	For use in warehouse, storage or other areas where surface appearance is not of primary concern.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape and James Hardie Top Coat.	Minor tool marks and ridges are generally acceptable.
3	For use in areas which are to receive heavy or medium texture (spray or hand applied) finishes or where heavy wall paper coverings are to be applied as the final decoration. This level of finish is not generally suitable where smooth painted surfaces or light to medium wall coverings are specified.	Joints and corner joints will be set with James Hardie Base Coat reinforced with perforated paper tape and James Hardie Top Coat.	This level of finish must be sufficiently smooth to accept heavy vinyl, tiles or textured coatings without blemishes.
4	This is generally the accepted level of finish for domestic construction. It is used where light textures or wall coverings and smooth textured finishes and satin/flat/low sheen paints are illuminated by noncritical lighting.	Refer to flush jointing recommendations on page 24. All joints and corner joints will have tape embedded in James Hardie Base Coat applied over all joints, angles, fastener heads and accessories. This application is applicable to recessed edge sheets only. The use of square edge sheets will require a high build application and coating finish.	For use where light-texture coatings or wallpaper or other lightweight wall coverings are to be applied. For painted finishes in non-critical lighting areas flat and low-sheen textured paints are to be applied. Gloss and semi-gloss paints are not generally suitable over this level of finish as any minor blemish will show under critical light. The weight, texture and sheen level or wall coverings applied over this level of finish must be carefully evaluated. Joints and fasteners must be adequately concealed if the wall-covering material is lightweight, contains limited pattern, has a gloss finish, or any combination of these features is present. Unbacked vinyl wall coverings are not suitable over this level of finish.
5	This level of finish is for use where gloss or semi-gloss paints are specified or where critical lighting conditions occur on satin, flat or low sheet paints.	Refer to page 23 steps 1–4 for jointing. Final James Hardie Base Coat application should be feathered out to approximately 200mm + each side of the joint. Then a full skim coat of James Hardie Top Coat must be applied over entire sheet surface in order to achieve a uniform finish. This application is applicable to recessed edge sheets only. The use of square edge sheets will require a high build application and coating finish.	This level of finish is for use where gloss, semigloss, low-sheen or non-textured paints are specified or where critical lighting conditions occur.

*Reference: AS/NZS 2589.1: 'Gypsum lining in residential and light commercial construction — Application and finishing. Part 1: Gypsum plasterboard'

6.4 PAINT FINISHES

Prior to application of paint finishes, remove any residual sanding dust and ensure the surface is suitable for paint application.

Always follow the paint manufacturer's recommendations for paint suitability, mixing and application.

NOTES

1. Use of a 'sealer coat' or 'preparation undercoat' is recommended.
2. Do not tile ceilings.

6.5 VILLABOARD SOFFIT LINING JOINTING AND STOPPING

Villaboard Soffit Lining joints are set with James Hardie jointing compounds reinforced with perforated paper tape. Recessed edge sheet joints require joint setting by using the jointing products outlined. The performance of joints is the responsibility of the installer, as this is governed by the installation practices and the standard of workmanship applied. However, James Hardie considers that the recommendations provided in Table 16 describe best practice to reduce the risk of joint cracking or other problems. There are various factors that can affect the performance of jointing compounds on edge recessed fibre cement substrates. These factors include the framing, movement, installation quality, vibrations, moisture, humidity, temperature, etc. To achieve satisfactory joint performance these factors need to be carefully considered and understood by the installer and designer when positioning joints and selecting jointing compounds. Furthermore, it is important that the jointing compound used has the physical attributes required to perform considering these factors. James Hardie compounds have been specifically developed for use with Villaboard Soffit Lining.

In addition, provision for movement needs to be made by the installation of control joints. Refer to clause 5.7.1.

COMPOUND COVERAGE

1kg of Base Coat will provide approximately 5 lm of standard joints.

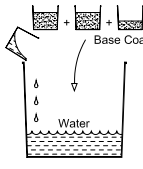
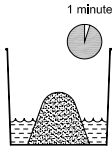
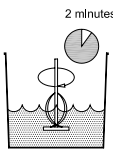
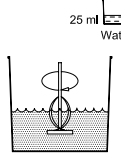
1kg of Top Coat will provide approximately 5.6 lm of standard joints.

NOTE

Follow the mixing instructions carefully when mixing James Hardie Base Coat and Top Coat.

MIXING INSTRUCTIONS

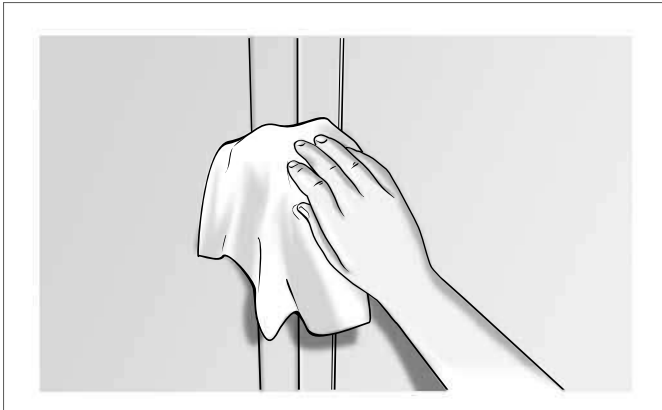
Table 17

James Hardie Base Coat Mixing Instructions	
	Step 1 First, add 1 part of clean water into bucket. Then add 2½ parts James Hardie Base Coat powder Allow to soak for 1 minute. 
	Step 2 Mix for 1½ – 2 minutes using paint mixer or equivalent. (approximately 2500-3000rpm) James Hardie Base Coat is NOT like the plaster based compounds. Initial mixing will indicate a dry mix and further mixing WITHOUT further addition of water will deliver the ideal workable paste. Warning: Inadequate or over mixing can lead to poor workability and can cause performance issues. Do not hand mix.
	Step 3 The mix at this stage should be consistently smooth. Based on the environmental conditions (i.e. temperature and humidity) you may add maximum of 25ml of water per 1Kg of base coat powder in the mix at this stage to adjust workability. Mix it well. (Note: Adding excess water than the recommendation may delay the drying of base coat and may cause joint cracking due to excessive shrinkage.) Mix should be glossy and smooth. There should be no lumps in the mix.
Important Notes: 1. Do not apply James Hardie Base Coat in temperatures above 40° C or below 5° C. 2. Allow the compounds to dry before applying the next coat. The drying time will vary between 12 to 24 hours depending upon the weather conditions. 3. Site cut and site recessed sheet edges must be sealed with an acrylic sealer e.g. Dulux Acraprime 501/1, Dulux 1 Step or similar product. 4. In corners, use James Hardie uPVC internal/external corner mould primed with Dulux Primerlock or similar. A 'GIB® Goldline™ Platinum' corner mould can also be used. 5. Use only perforated paper tapes in straight joints. 6. It is recommended that one (1) base coat bag is mixed in three (3) portions. 7. Before stopping the sheet edges, Multiplast Resin or a similar product in diluted form must be applied over the sheet edges. Mix the resin as per the manufacturers recommendations.	
Product Life: James Hardie Base Coat has a shelf life of 12 months in unopened bags when stored in a cool dry place. James Hardie Base Coat has a bag life of 1 month if opened bags are resealed and stored in a cool dry place.	

6.6 SET JOINTS

Step 1 — Preparation

Ensure that the recesses are clean and free of dust and contaminants. Sheet edges must be sealed with Multiplast resin, water proofing admixture or other similar products. If working conditions are hot and dry, dampen the area around the joint prior to working.

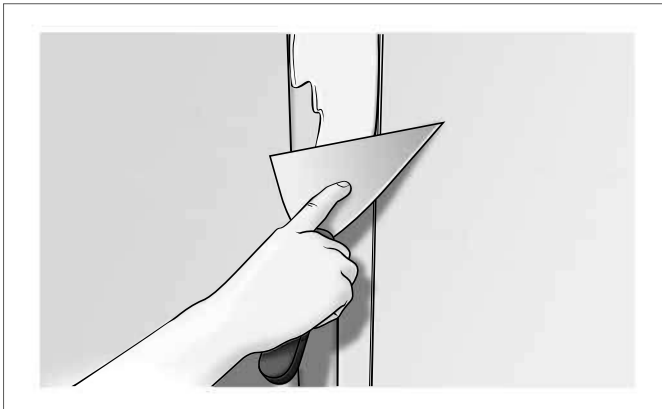


NOTE

The jointing method shown below provides a Level 4 finish. For more information about this and other finishes refer to page 21.

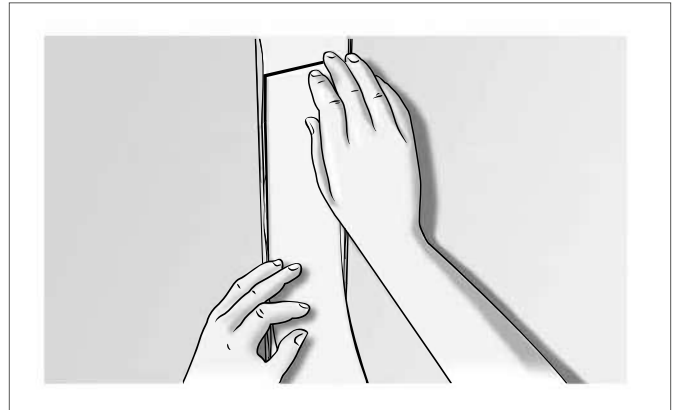
Step 2 — First Coat

Apply James Hardie Base Coat to fill the recess with a 150mm broad knife.



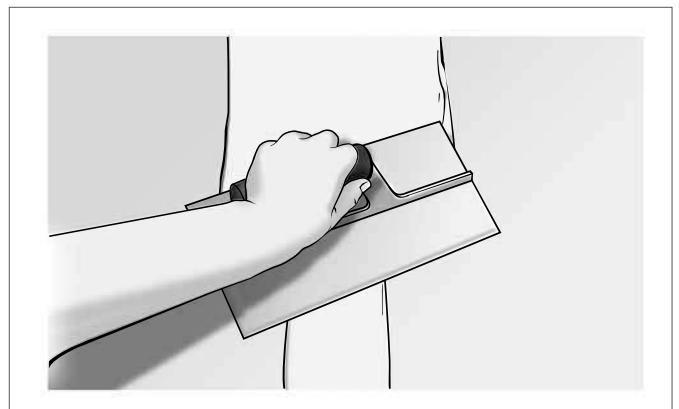
Step 3 — Embed Tape

Firmly embed the perforated paper tape centrally into the joint using a 50mm broad knife. Ensure that there are no voids under the tape and remove excess compounds.



Step 4 — Thin Layer

Immediately cover tape with a thin layer of James Hardie Base Coat applied with a 150mm broadknife.



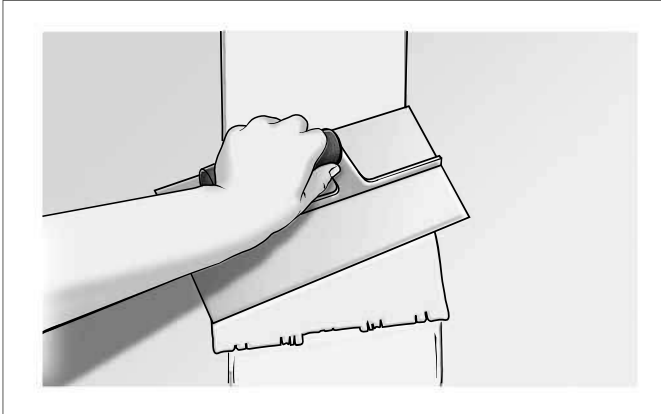
NOTE

Steps 5, 6 and 7 are only required for paint and wall paper finish.

7 Finishing

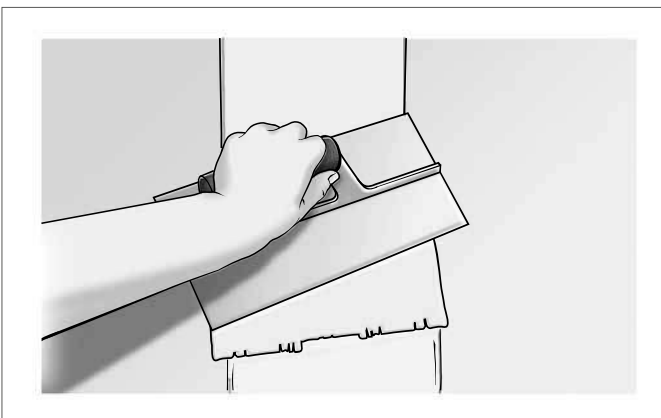
Step 5 — Second Coat

When the first coat is fully dry, use a 200mm wide second coat trowel to apply the James Hardie Base Coat. Apply this coat approximately 180mm wide, laid down over the recess and feather the edges.



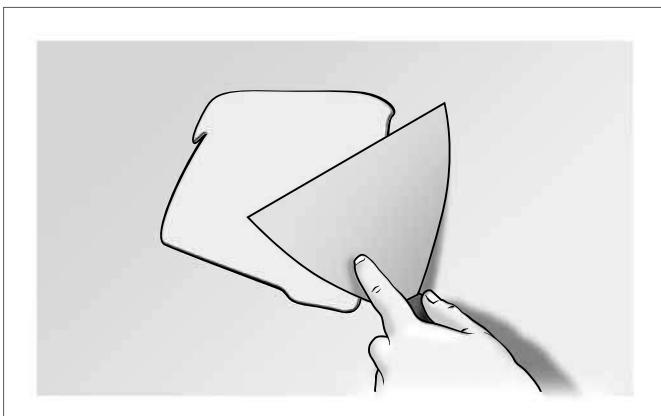
Step 6 — Finishing Coat

Ensure the second coat is fully dry. Using a finishing trowel, apply a coat of James Hardie Top Coat 280mm wide centrally over the joint and feather out the edges. Allow to dry fully before sanding. Sand with a 180 grit sand paper to achieve a smooth finish for painting.



Step 7 — Fastener Heads

Apply a finishing coat of James Hardie Base Coat to fastener heads, feathering out the edges. Allow to fully dry before sanding.



7.1 PAINTING

HardieSoffit Lining, HardieFlex Eaves Lining, Villaboard Soffit Lining and HardieGroove Soffit Lining sheets are to have a minimum of two coats of acrylic paint applied after fixing in order to meet the requirements of the NZBC. All sheets must be coated within 3 months of installation.

Use quality 100% acrylic paints. Economy paints are not recommended because generally they are less well bound, less moisture resistant and more prone to mould growth.

In all cases the manufacturer's specification for the selected paint must be followed. Note that some paints require an undercoat before applying finish coats.

Damp, shady situations, proximity to bush, agricultural paddocks or seaspray environments may induce an extra tendency to mould growth. Use mould-inhibiting and alkaline-resistant undercoats and consult the paint manufacturer for details of maximum mould-resistant paints.

Before painting, remove any surface grime or other contaminants and ensure the HardieSoffit Lining, HardieFlex Eaves Lining, Villaboard Soffit Lining and HardieGroove Soffit Lining is dry. Paint must not be applied when the air temperature is below 10°C.

When using uPVC moulds avoid dark colours (paints must have light reflection of 40% or more) as excessive movement may cause buckling of the uPVC when exposed to direct sunlight.

Enamel-based paints can be used, utilising a three-coat system.

For full details apply to the selected paint manufacturer before commencing the work.

8 Product information

8.1 GENERAL

HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water.

HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining is manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 'Fibre Cement Flat Sheets').

James Hardie New Zealand Limited is an ISO 9001 'Telarc' certified manufacturer. HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining 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 or Ask James Hardie on 0800 808 868.

8.2 DURABILITY

Resistance to moisture/rotting

HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining has demonstrated resistance to permanent moisture induced deterioration (rotting) and has passed the following tests in accordance with AS/NZS 2908.2:

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

8.3 FINISHES

HardieSoffit Lining, HardieFlex Eaves Lining, Eclipsa Eaves Lining, HardieGroove Soffit Lining and Villaboard Soffit Lining must be paint finished within 90 days of their installation. Refer to the paint manufacturer for paint suitability, mixing and application.

8.4 GROUP NUMBER CLASSIFICATION

HardieGroove Lining and Villaboard Lining have a 'Group Number' classification of 1 – S as per the requirements of Clause C of the NZBC.

9 Maintenance

It is the responsibility of the specifier to determine normal maintenance requirements for eaves and soffits to comply with NZBC Acceptable Solution B2/AS1. 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:

- Washing down exterior surfaces every 6-12 months*,
- Pre-painted soffits, such as Eclipsa Soffit Lining, when used in harsh coastal environments, the soffit must be washed down using a hose and soft brush minimum once every four months in addition to the other maintenance requirements*,
- Re-applying exterior protective finishes**,
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealants,
- Cleaning out gutters, blocked pipes and overflows as required,
- Pruning back vegetation close to or touching the building.

* Do not use a water blaster to wash down the soffits.

**Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.

Product Warranty

Eaves & Soffits

All James Hardie eaves and soffit linings come with a 15 year product warranty. Pre-finished products such as Eclipsa Eaves Lining come with a 10 year coating warranty and 15 year warranty on the base sheet. All accessories supplied by James Hardie are warranted for a period of 15 years. For full warranty details visit www.jameshardie.co.nz or Ask James Hardie on 0800 808 868.

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) in each products warranty under "Conditions of Warranty". James Hardie has tested the performance of the HardieSoffit™ Lining, HardieFlex™ Eaves Lining, Eclipsa™ Eaves Lining, HardieGroove™ Lining and Villaboard™ Soffit Lining, and when installed in accordance with the HardieSoffit™ Lining, HardieFlex™ Eaves Lining, Eclipsa™ Eaves Lining, HardieGroove™ Lining and Villaboard™ Soffit Lining installation manual, in accordance with the standards and verification methods required by the New Zealand Building Code (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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HC	SHIP	000	Drawing Index	16/10/2017
HC	SHIP	001	Drawing Index	16/10/2017
HC	SHIP	002	Isometric View	16/10/2017
HC	SHIP	100	Vertical Shiplap Weatherboard System Profiles	16/10/2017
HC	SHIP	101	Trim and Moulding Profiles	16/10/2017
HC	SHIP	102	Moulds & Weatherboard System Profiles	16/10/2017
HC	SHIP	200	Window Head Detail, Aluminium Joinery	16/10/2017
HC	SHIP	201	Window Sill Detail, Aluminium Joinery	16/10/2017
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HC	SHIP	202A	Window Jamb Detail, Aluminium Joinery	16/10/2017
HC	SHIP	210	Door Head Detail Aluminium Joinery	16/10/2017
HC	SHIP	211	Door Sill Detail, Aluminium Joinery	16/10/2017
HC	SHIP	212	Door Jamb Detail, Aluminium Joinery	16/10/2017
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HC	SHIP	301	Internal Corner Edge to Edge	16/10/2017
HC	SHIP	302	Enclosed Deck Balustrade to Wall Junction	16/10/2017
HC	SHIP	303	Internal Corner - HP352, HP399 - HP1852	16/10/2017
HC	SHIP	303A	Internal Corner - HP352, HP399 - HP1852	16/10/2017
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HC	SHIP	305	Internal Corner - HP351, HP399 - HP1851	16/10/2017
HC	SHIP	305A	Internal Corner - HP351, HP399 - HP1851	16/10/2017
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HC	SHIP	307	Internal Corner - HP41 & HP399	16/10/2017
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HC	SHIP	311	Internal Corner - HP360	16/10/2017



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Cavity Fix Vertical Shiplap Weatherboard System

Drawing Index

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Product	Suffix	Dwg No.	Description	Issued
HC	SHIP	400	External Corner Boxed	16/10/2017
HC	SHIP	401	External Corner HP40	16/10/2017
HC	SHIP	402	External Corner HP42	16/10/2017
HC	SHIP	403	External Corner	16/10/2017
HC	SHIP	404	External Corner - HP321	16/10/2017
HC	SHIP	405	External Corner - HP310, HP399 - HP1802	16/10/2017
HC	SHIP	405A	External Corner - HP310, HP399 - HP1802	16/10/2017
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HC	SHIP	407A	External Corner - HP42, HP399 - HP1803	16/10/2017
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HC	SHIP	802	Pipe Penetration Plan Detail	16/10/2017



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Drawing Index

HC-SHIP-001
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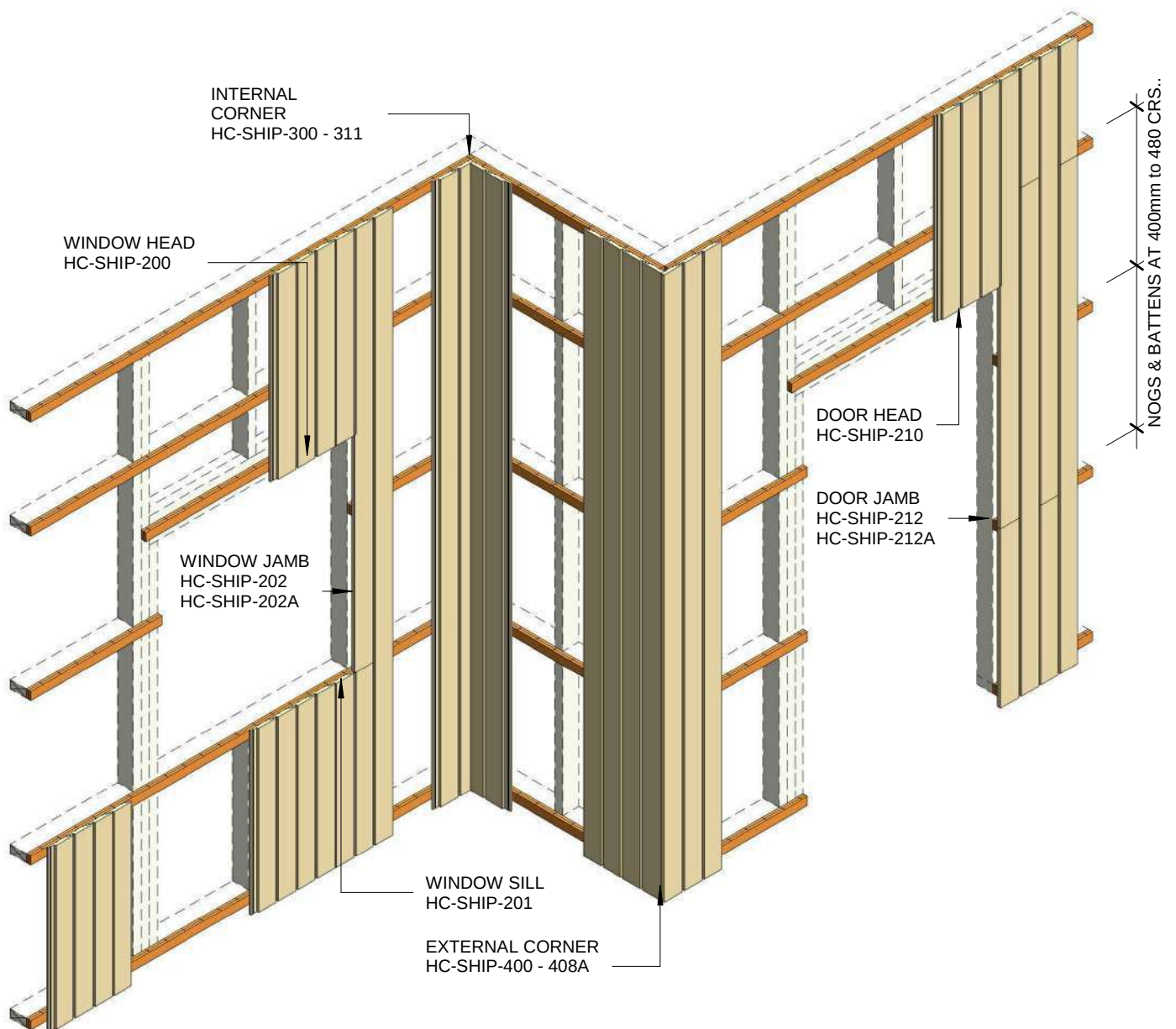


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Note:
Building Underlay and Flashings not shown for clarity.

BC200427
Further Information Received
14/09/20



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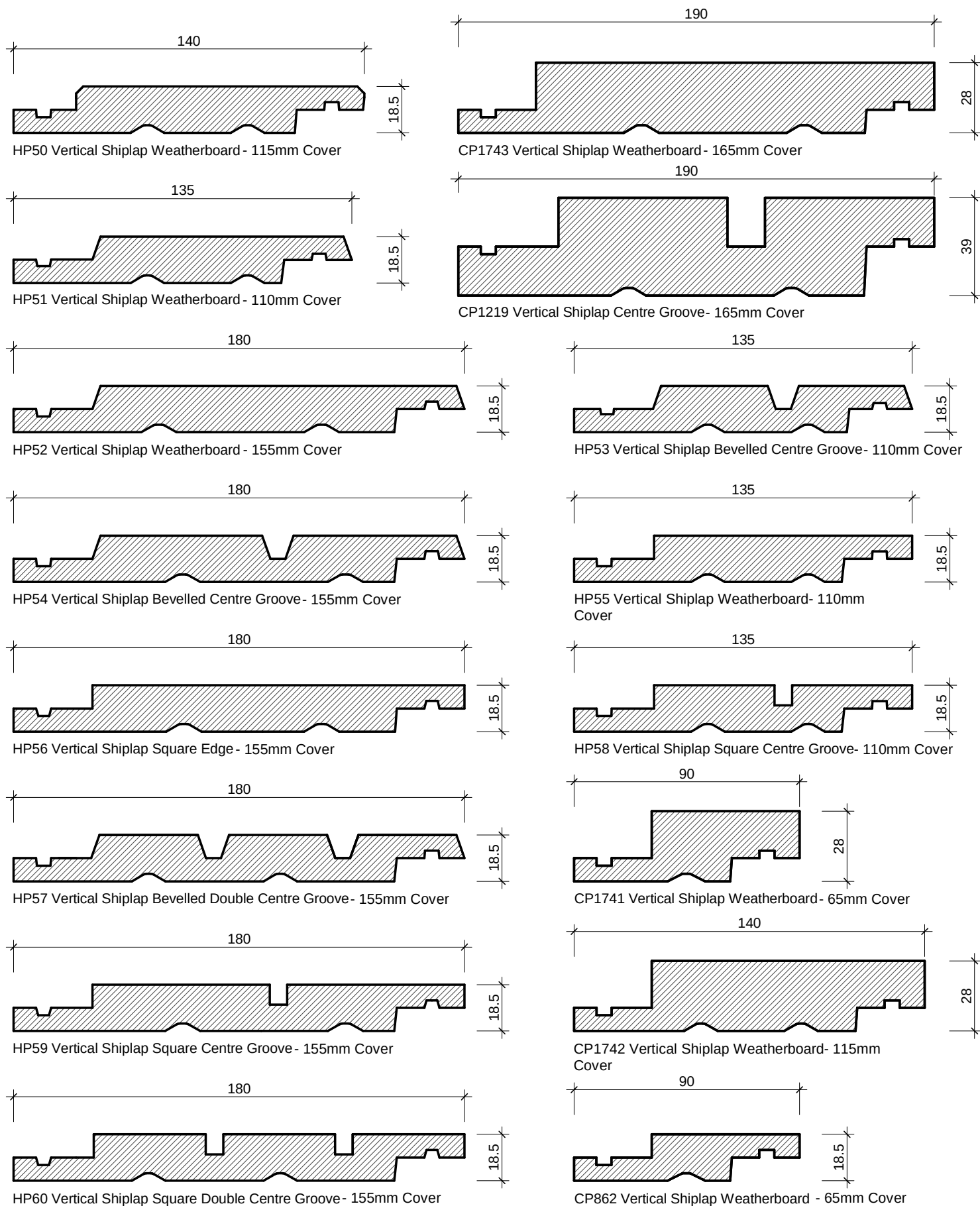
Cavity Fix Vertical Shiplap Weatherboard System
Isometric View



HC-SHIP-002
DRAWING

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SCALE

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NOTE:
Custom HP Profiles Available Upon Request



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Cavity Fix Vertical Shiplap Weatherboard System

**Vertical Shiplap Weatherboard
System Profiles**

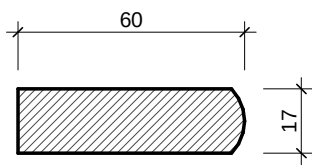


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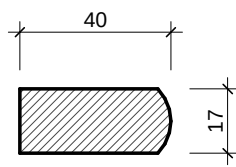
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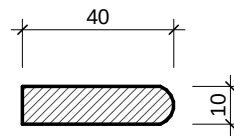
16/10/2017
ISSUED DATE



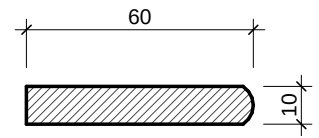
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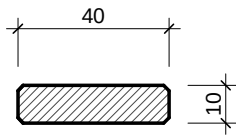
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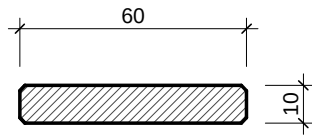
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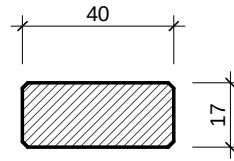
HP 14 Timber Scriber



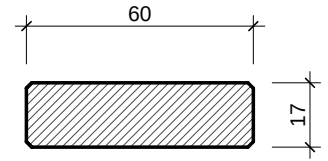
HP 15 Timber Scriber



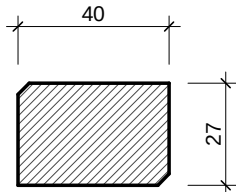
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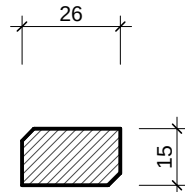
HP 17 Timber Scriber



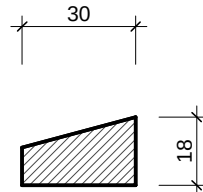
HP 18 Timber Scriber



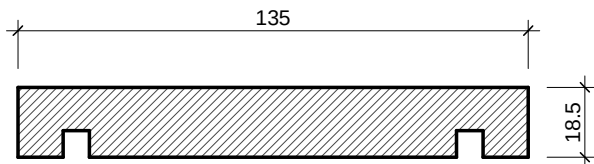
HP32 Eaves Moulding



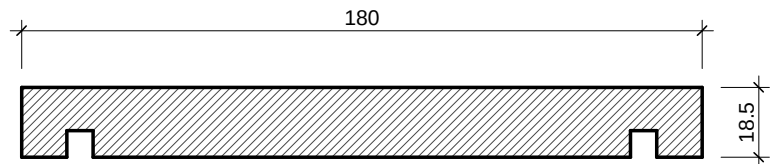
HP33 Eaves Moulding



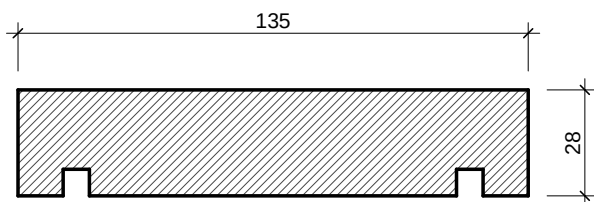
HP7 Cornice



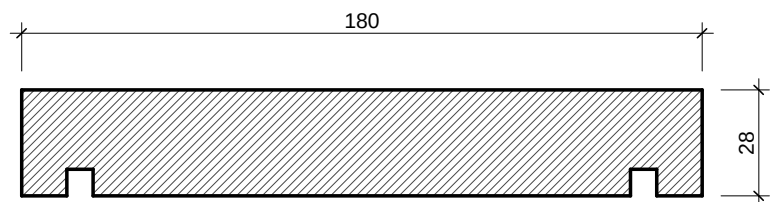
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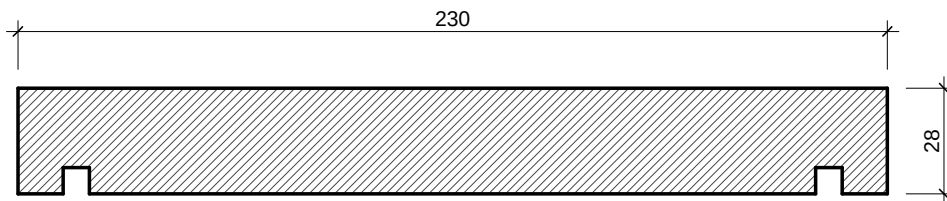
HP70 Grooved Fascia



HP71 Grooved Fascia



HP72 Grooved Fascia



HP73 Grooved Fascia

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Cavity Fix Vertical Shiplap Weatherboard System

Trim and Moulding Profiles

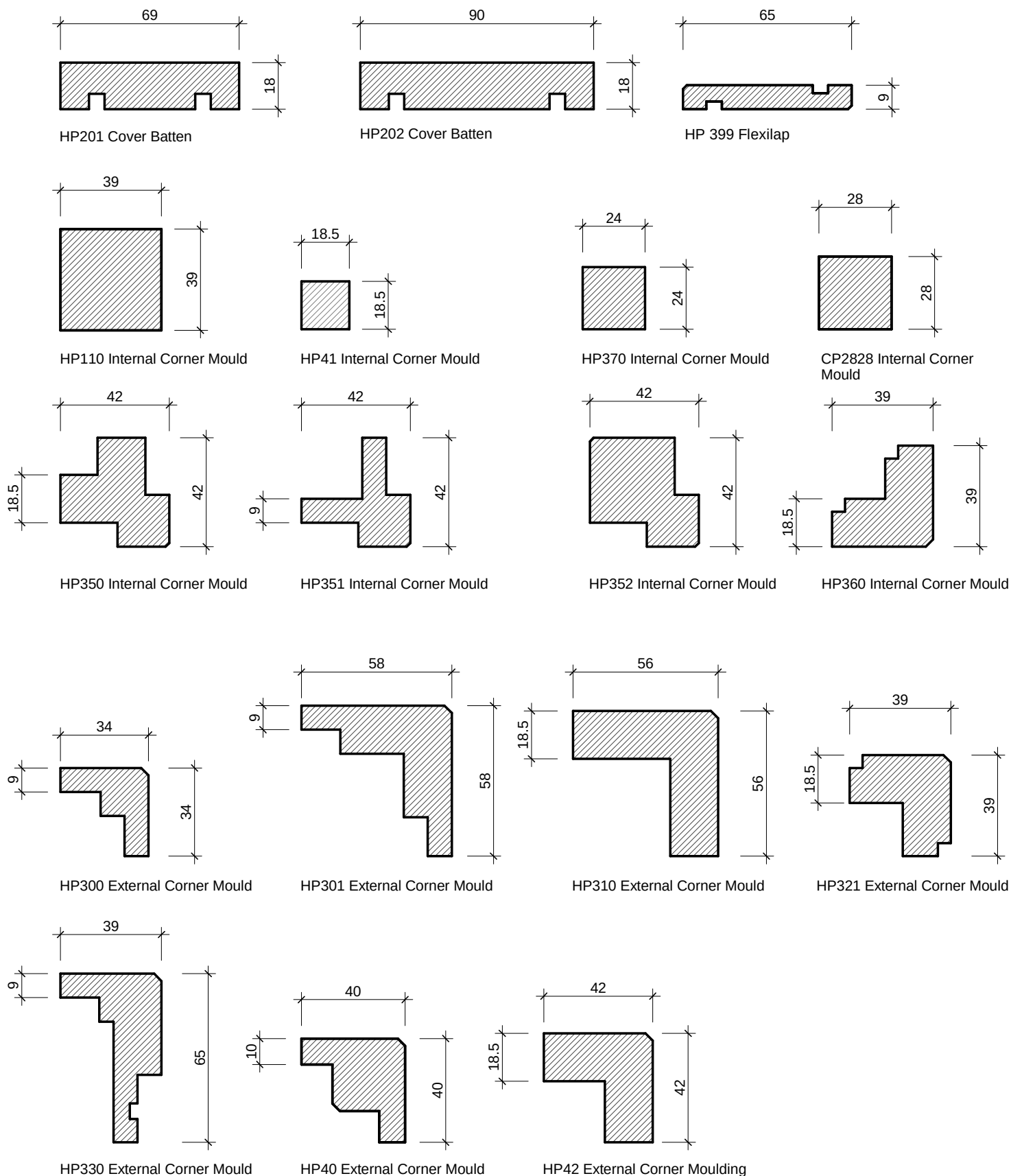


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Moulds & Weatherboard System Profiles



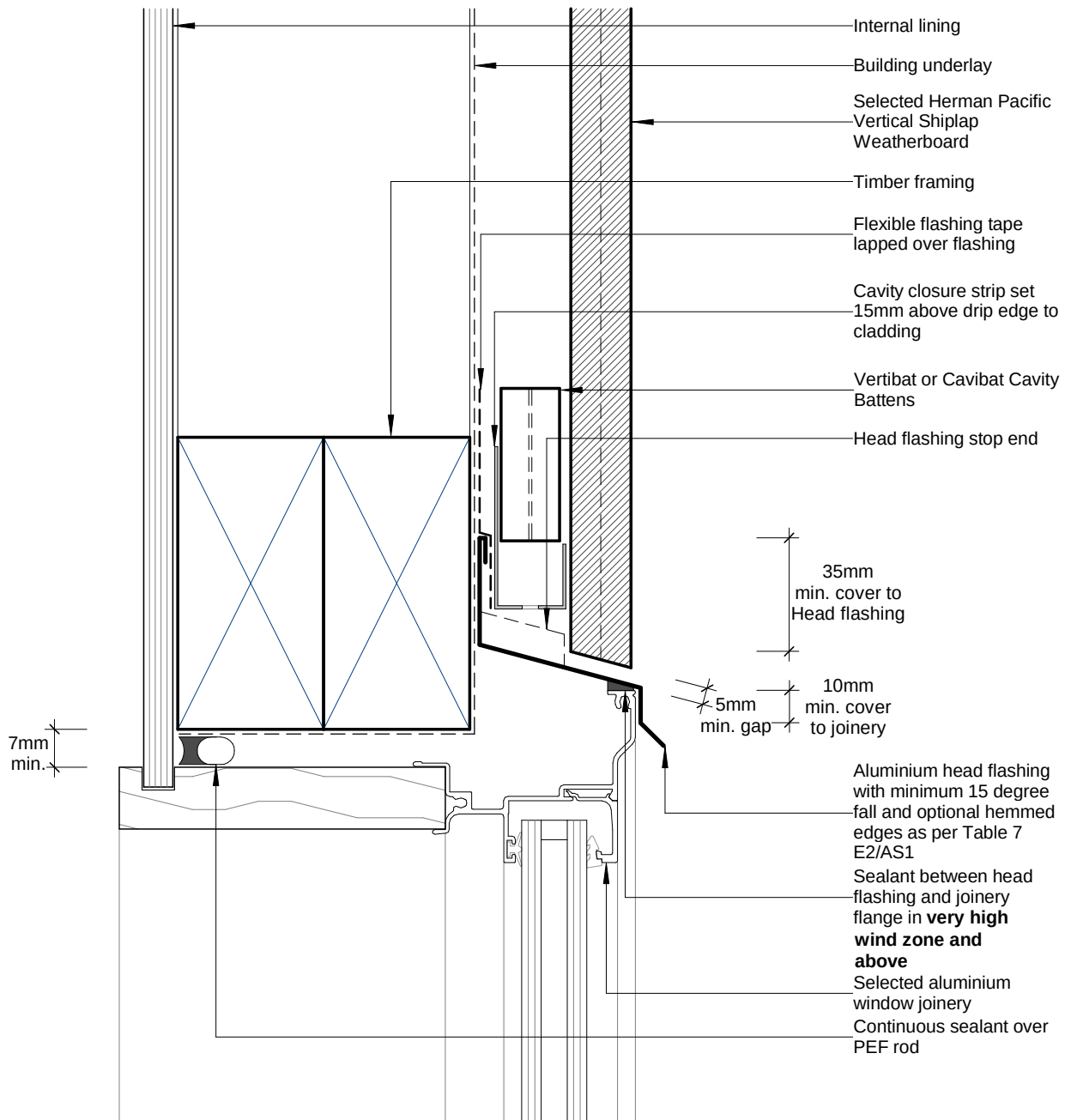
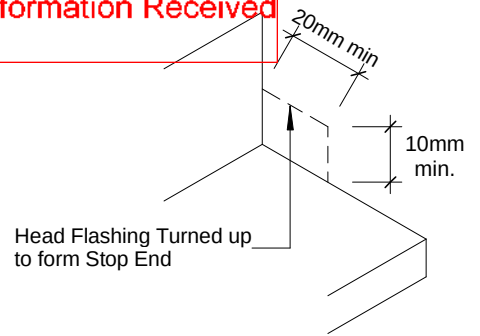
HC-SHIP-102
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SCALE

16/10/2017
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Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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Cavity Fix Vertical Shiplap Weatherboard System

Window Head Detail, Aluminium Joinery



HC-SHIP-200

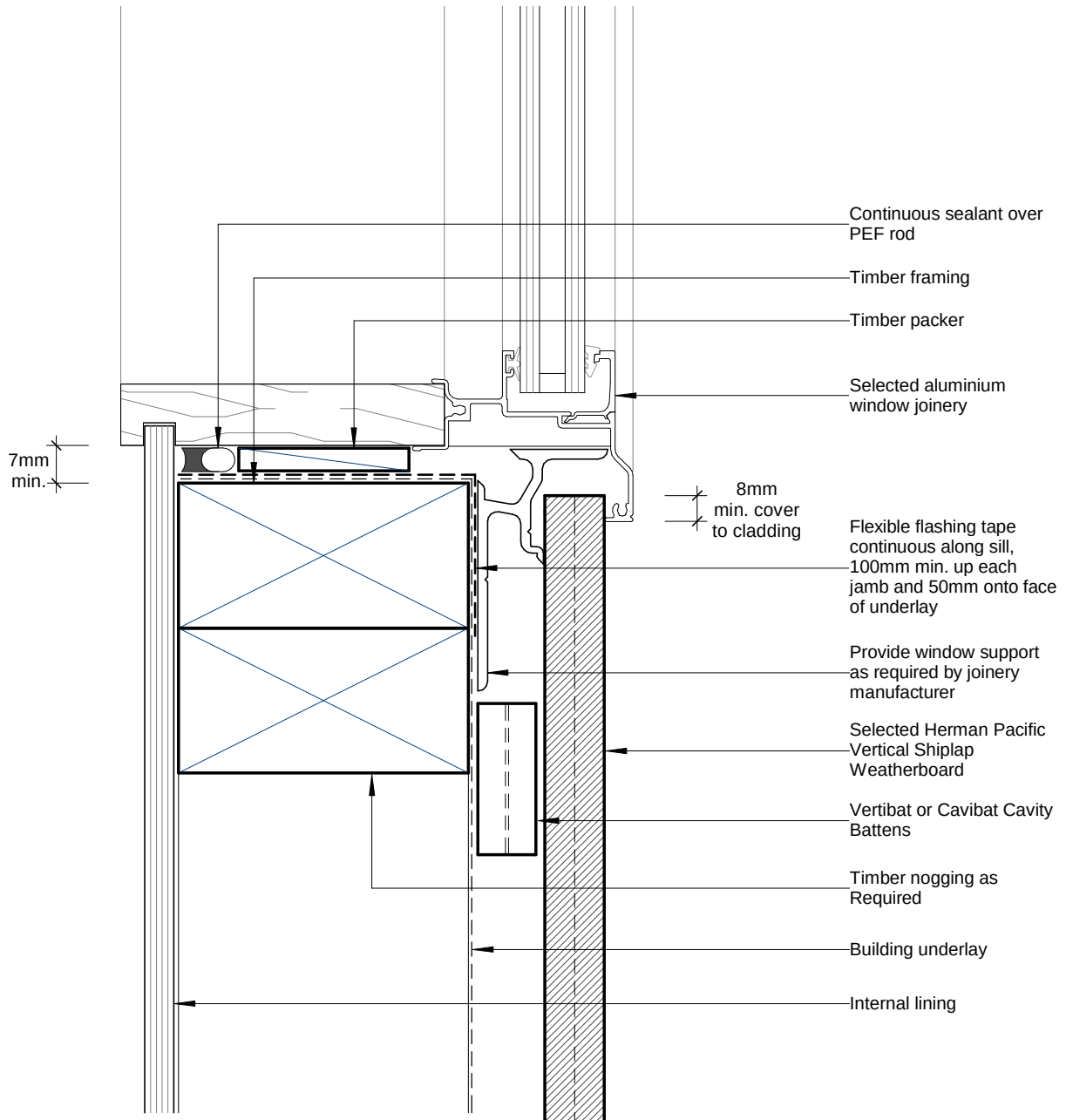
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SCALE

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ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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Cavity Fix Vertical Shiplap Weatherboard System

Window Sill Detail, Aluminium Joinery



HC-SHIP-201

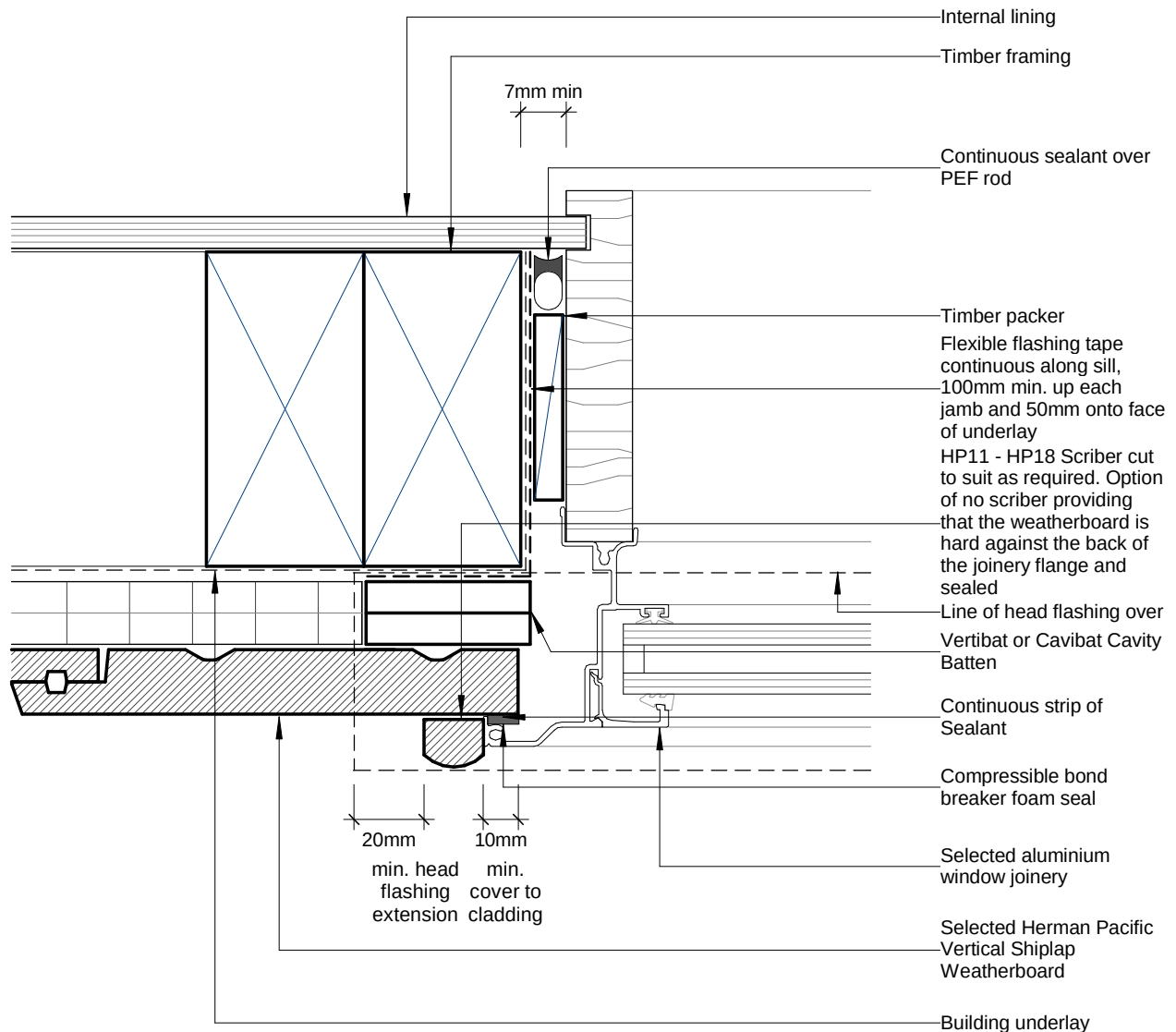
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SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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Cavity Fix Vertical Shiplap Weatherboard System
Window Jamb Detail, Aluminium Joinery



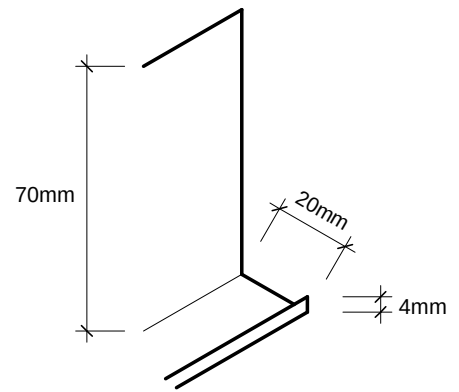
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ISSUED DATE

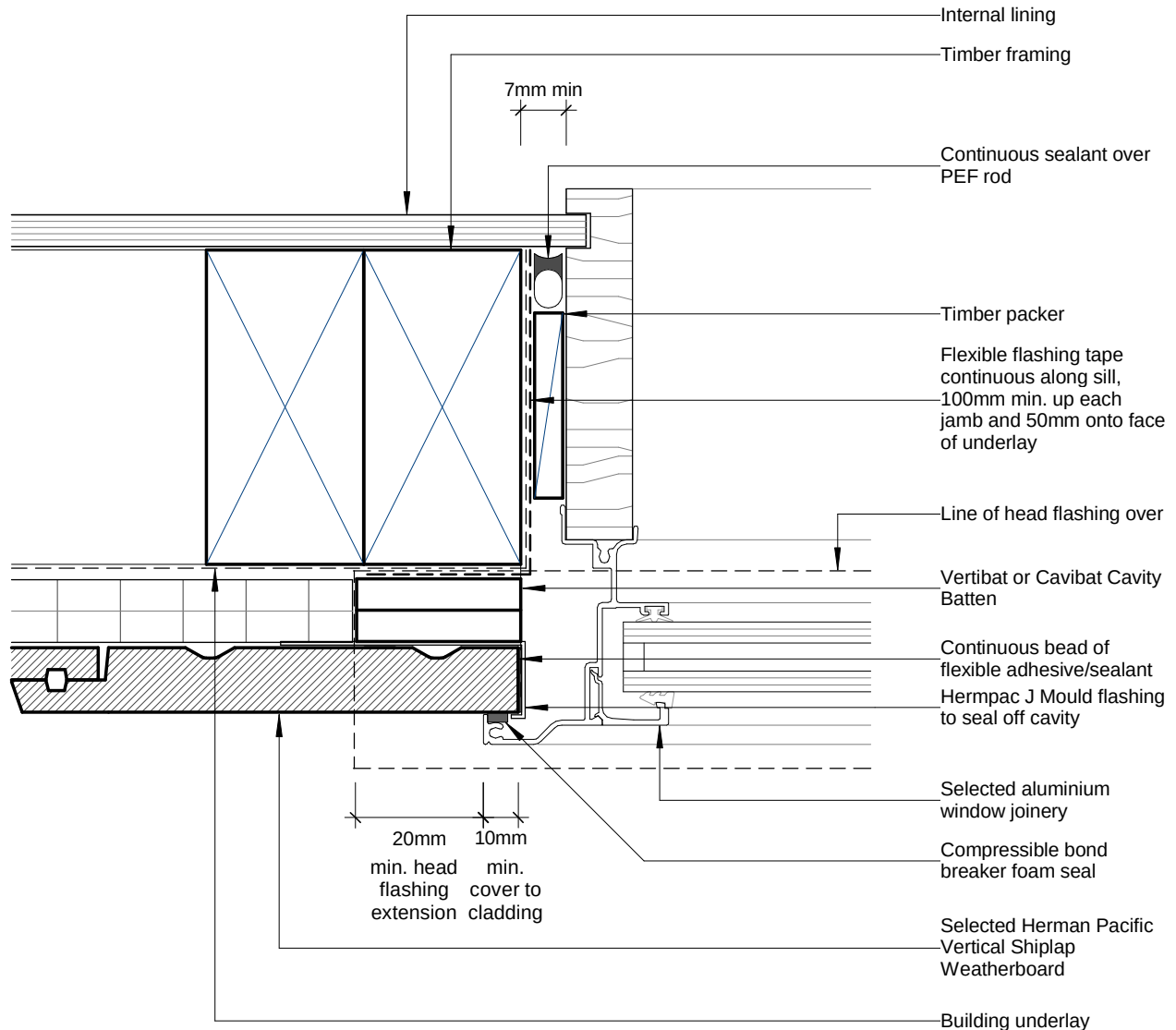
Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Window Jamb Detail, Aluminium Joinery



HC-SHIP-202A

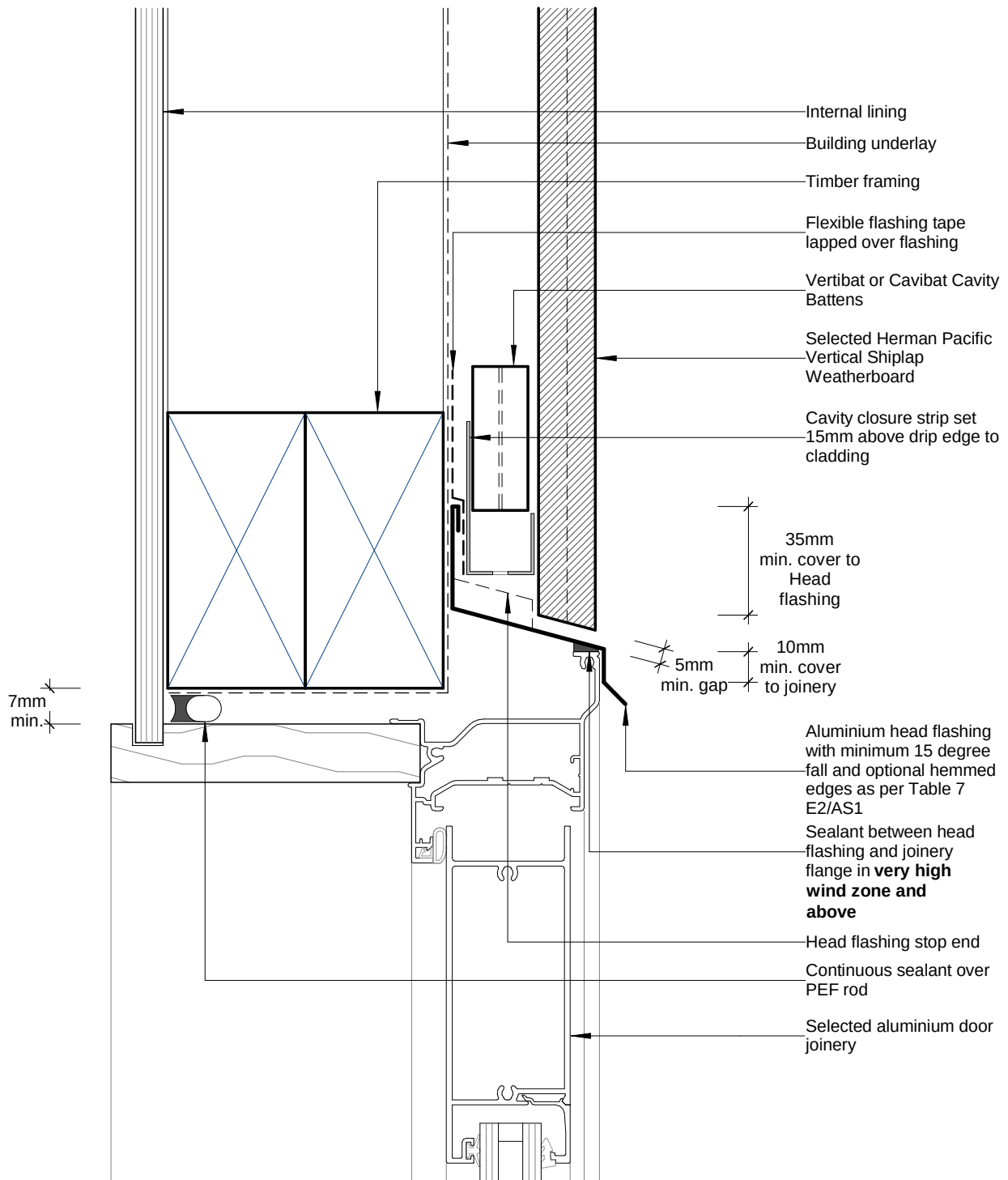
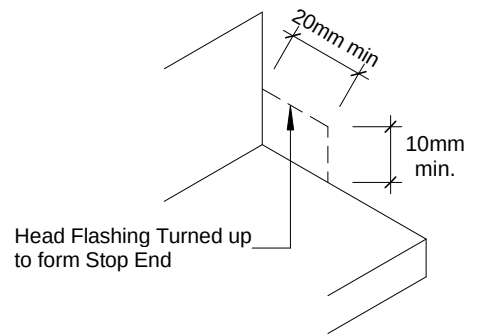
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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Cavity Fix Vertical Shiplap Weatherboard System

Door Head Detail Aluminium Joinery

HC-SHIP-210

DRAWING

1 : 2 @ A4
SCALE

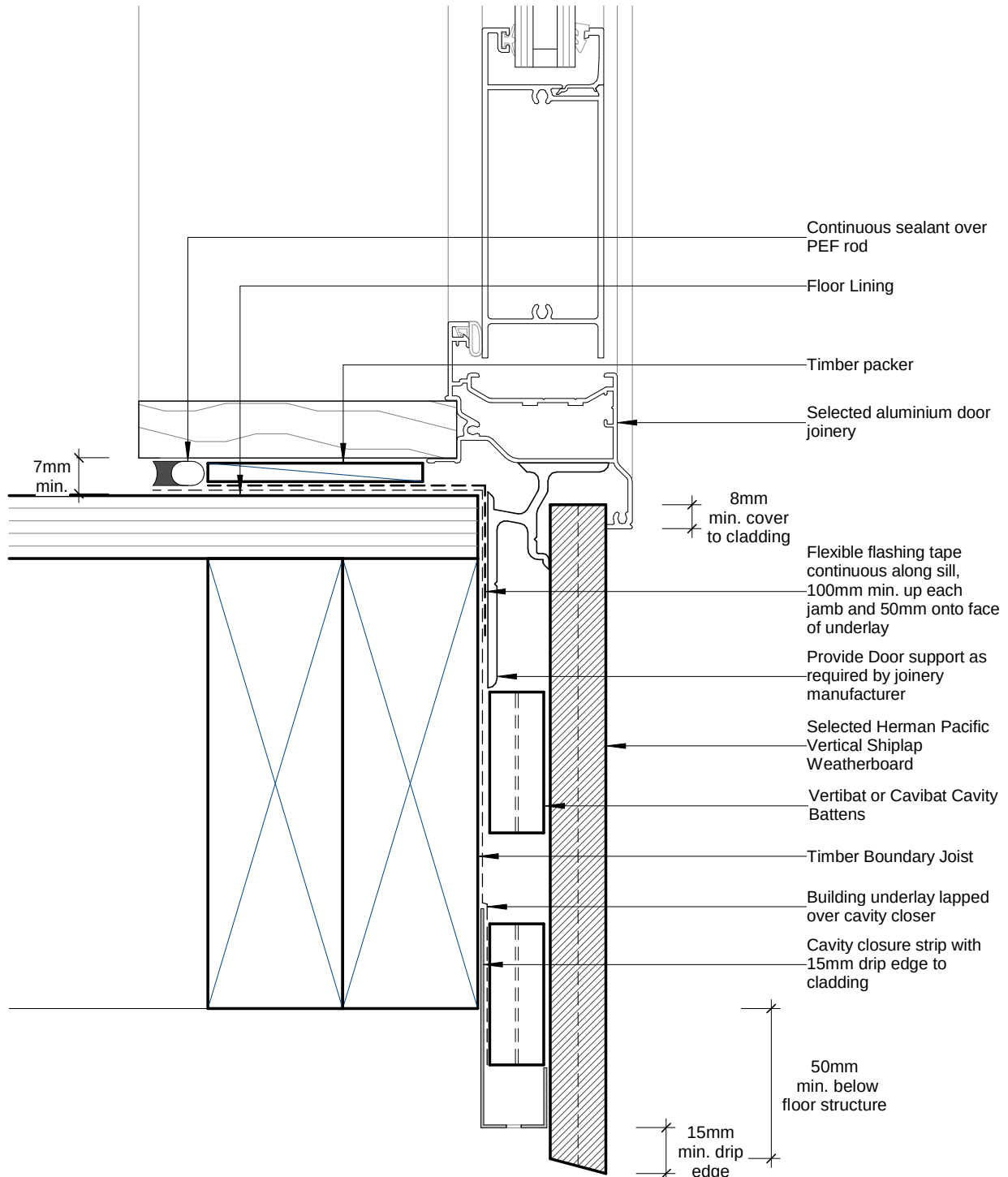
16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



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Cavity Fix Vertical Shiplap Weatherboard System

Door Sill Detail, Aluminium Joinery



HC-SHIP-211

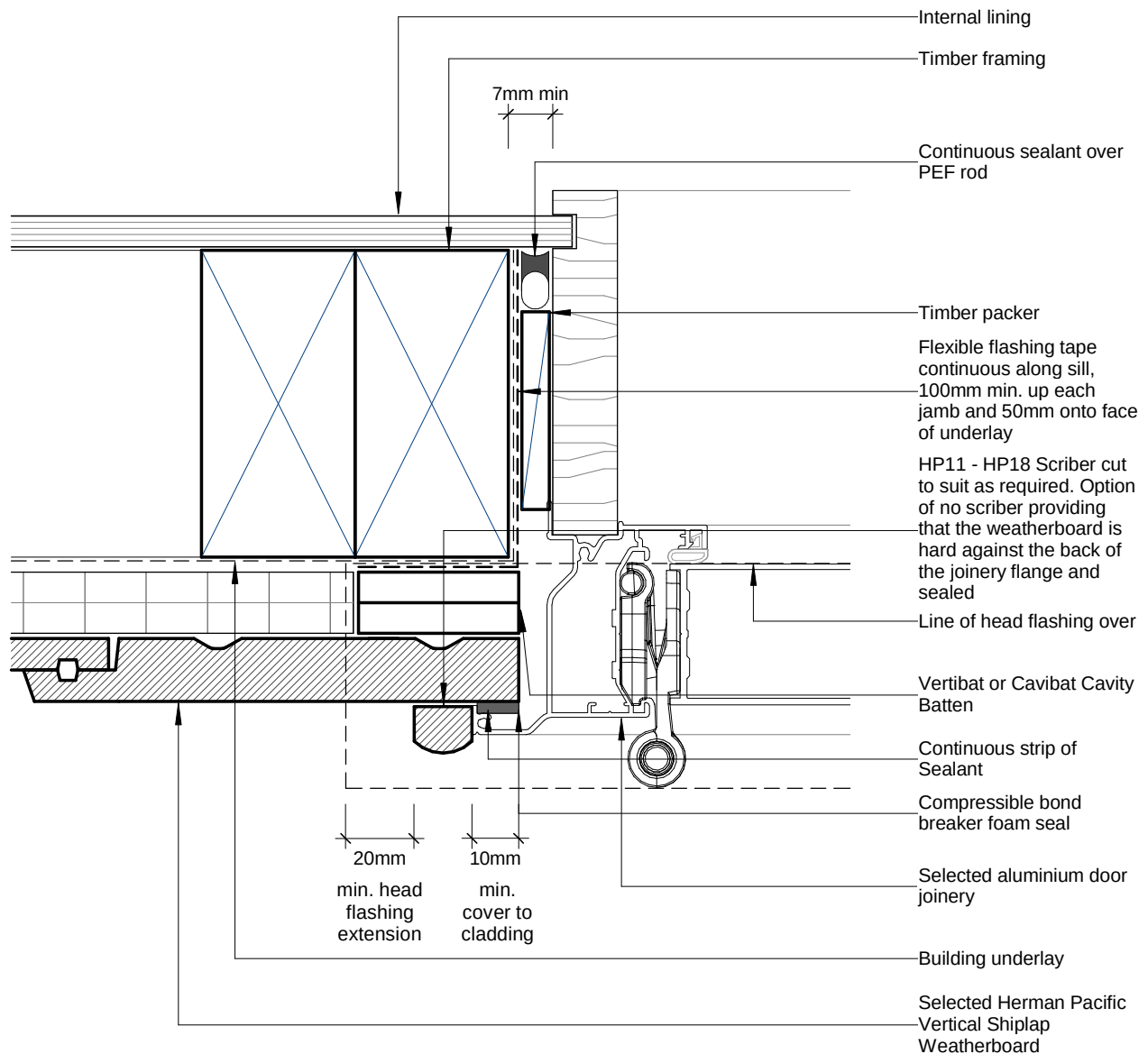
DRAWING

1 : 2 @ A4
 SCALE

16/10/2017
 ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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Cavity Fix Vertical Shiplap Weatherboard System

Door Jamb Detail, Aluminium Joinery

HC-SHIP-212

DRAWING

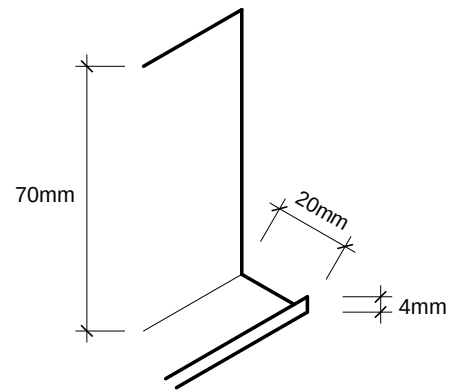
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SCALE

16/10/2017
ISSUED DATE



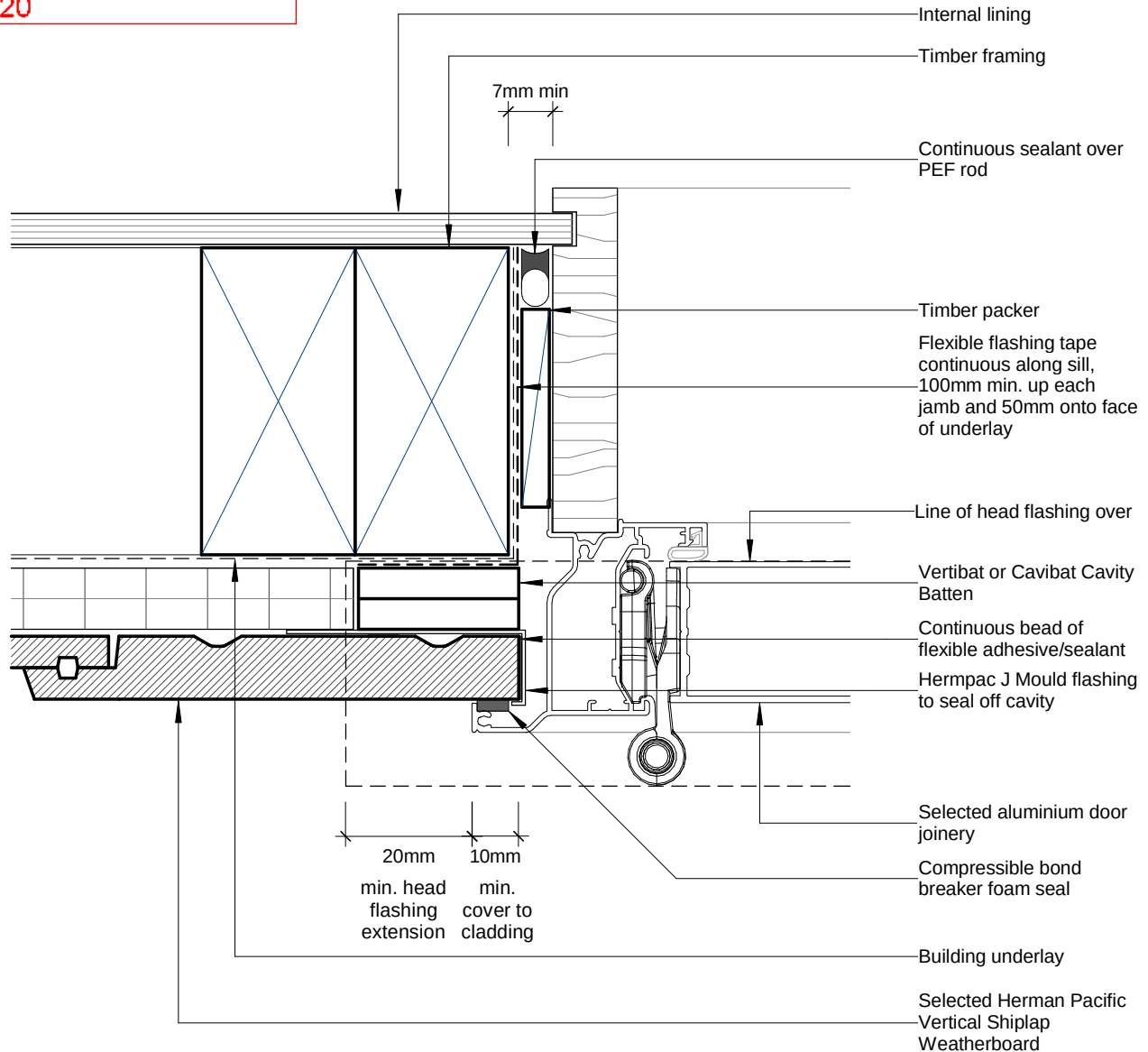
Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



Hermpac J Mould flashing

BC200427
Further Information Received
14/09/20



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Cavity Fix Vertical Shiplap Weatherboard System

Door Jamb Detail, Aluminium Joinery

HC-SHIP-212A

DRAWING

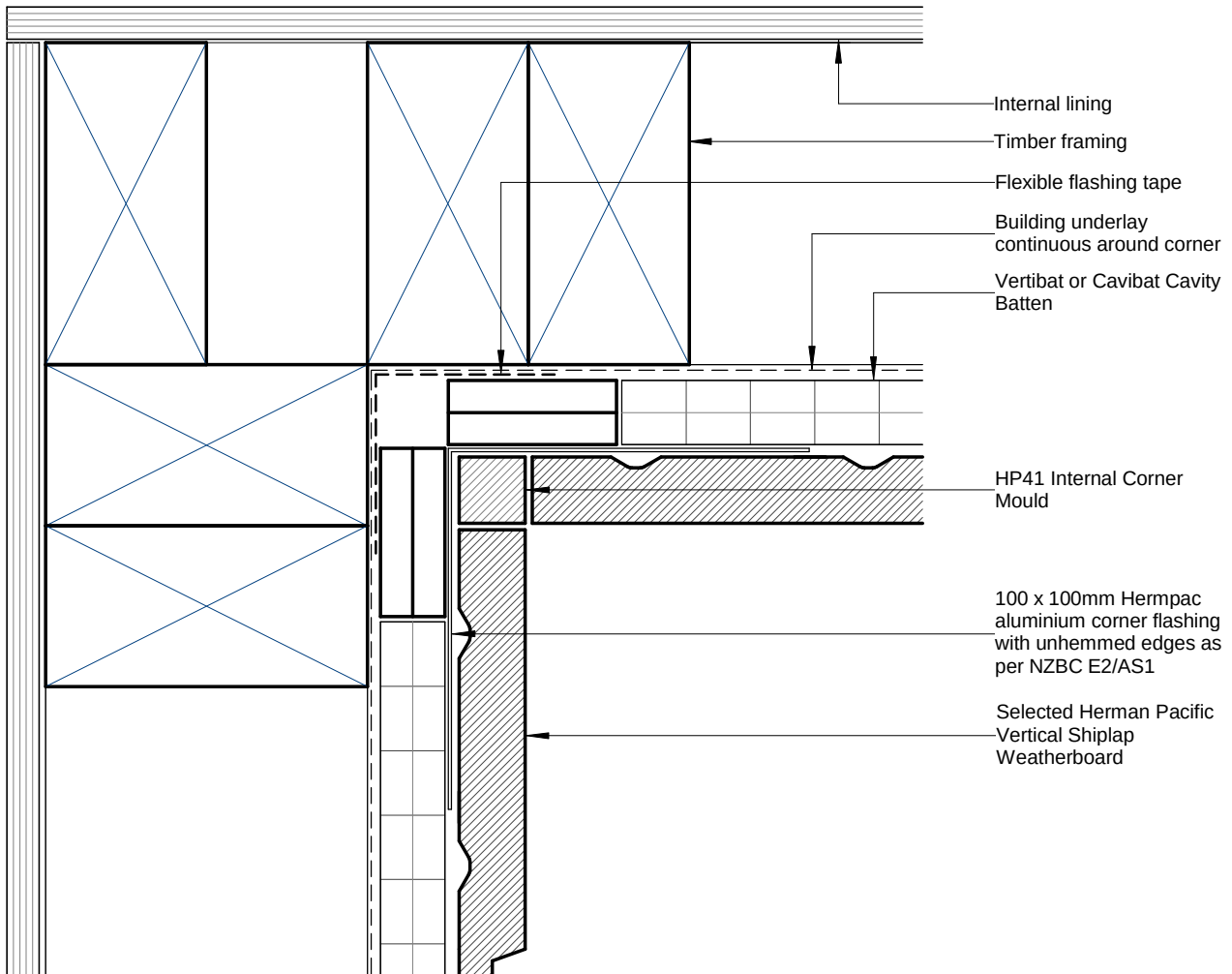
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner HP41



HC-SHIP-300

DRAWING

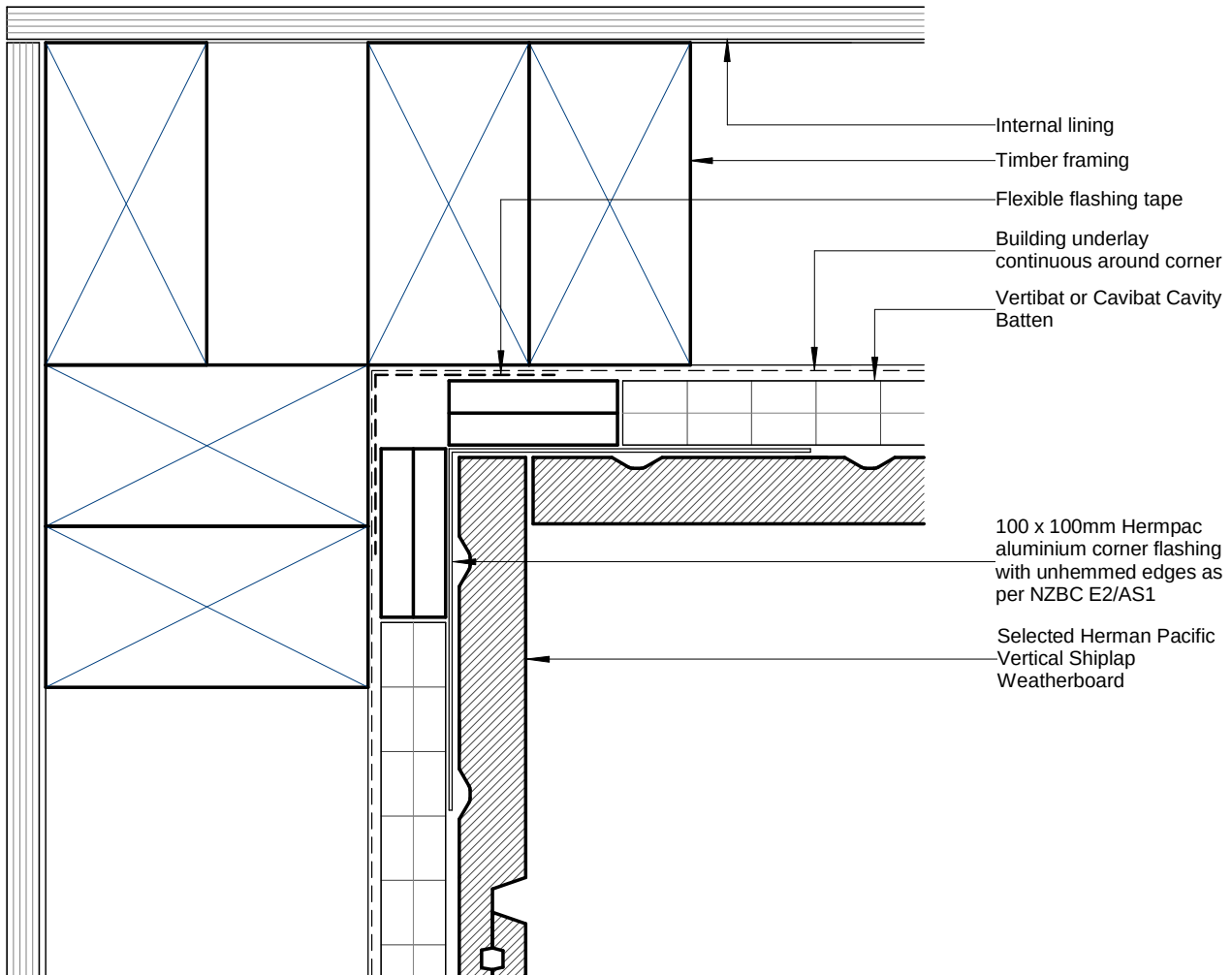
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner Edge to Edge



HC-SHIP-301

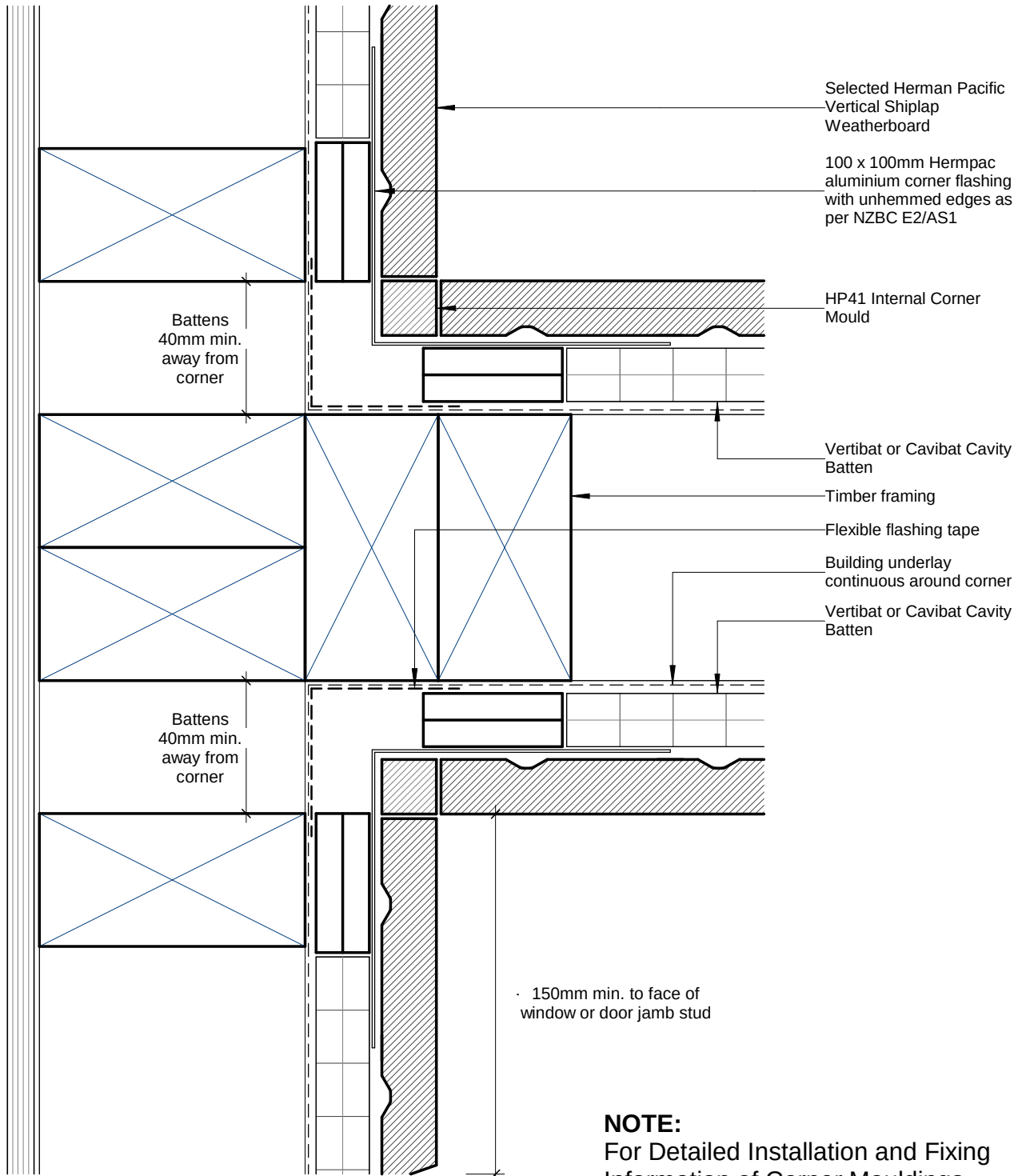
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Enclosed Deck Balustrade to Wall Junction



HC-SHIP-302

DRAWING

1 : 2 @ A4
SCALE

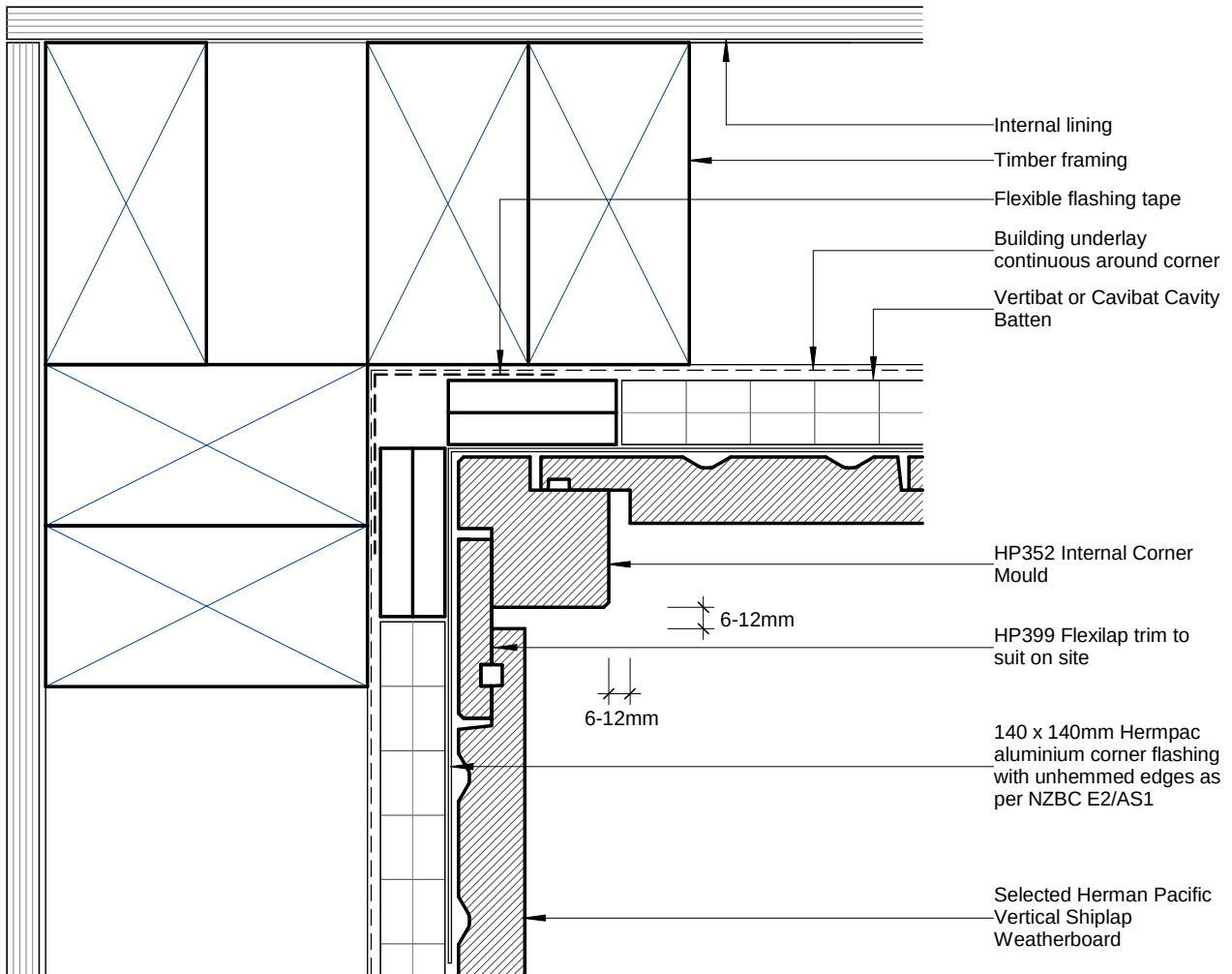
16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427

Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP352, HP399 - HP1852



HC-SHIP-303

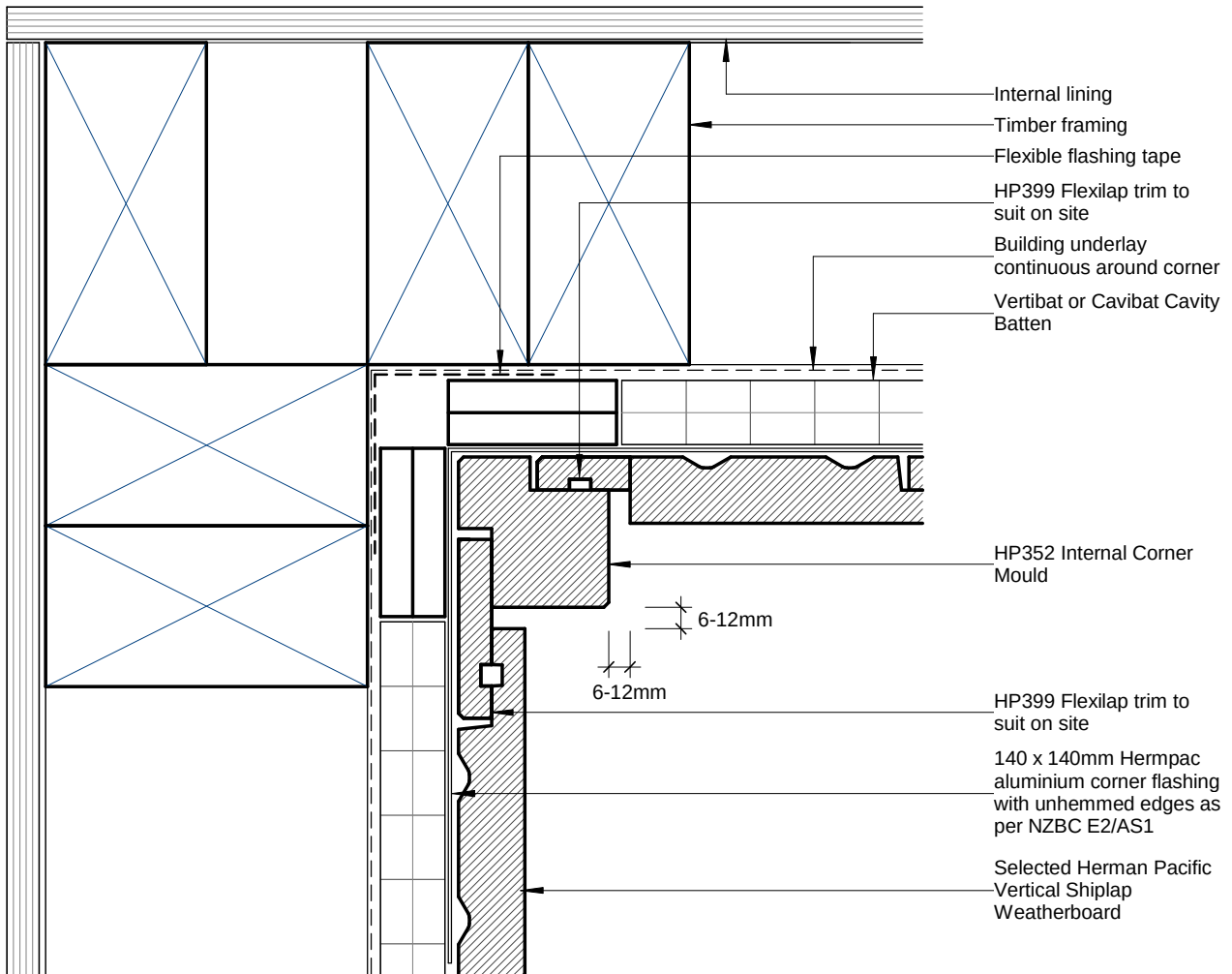
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

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Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP352, HP399 - HP1852



HC-SHIP-303A
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

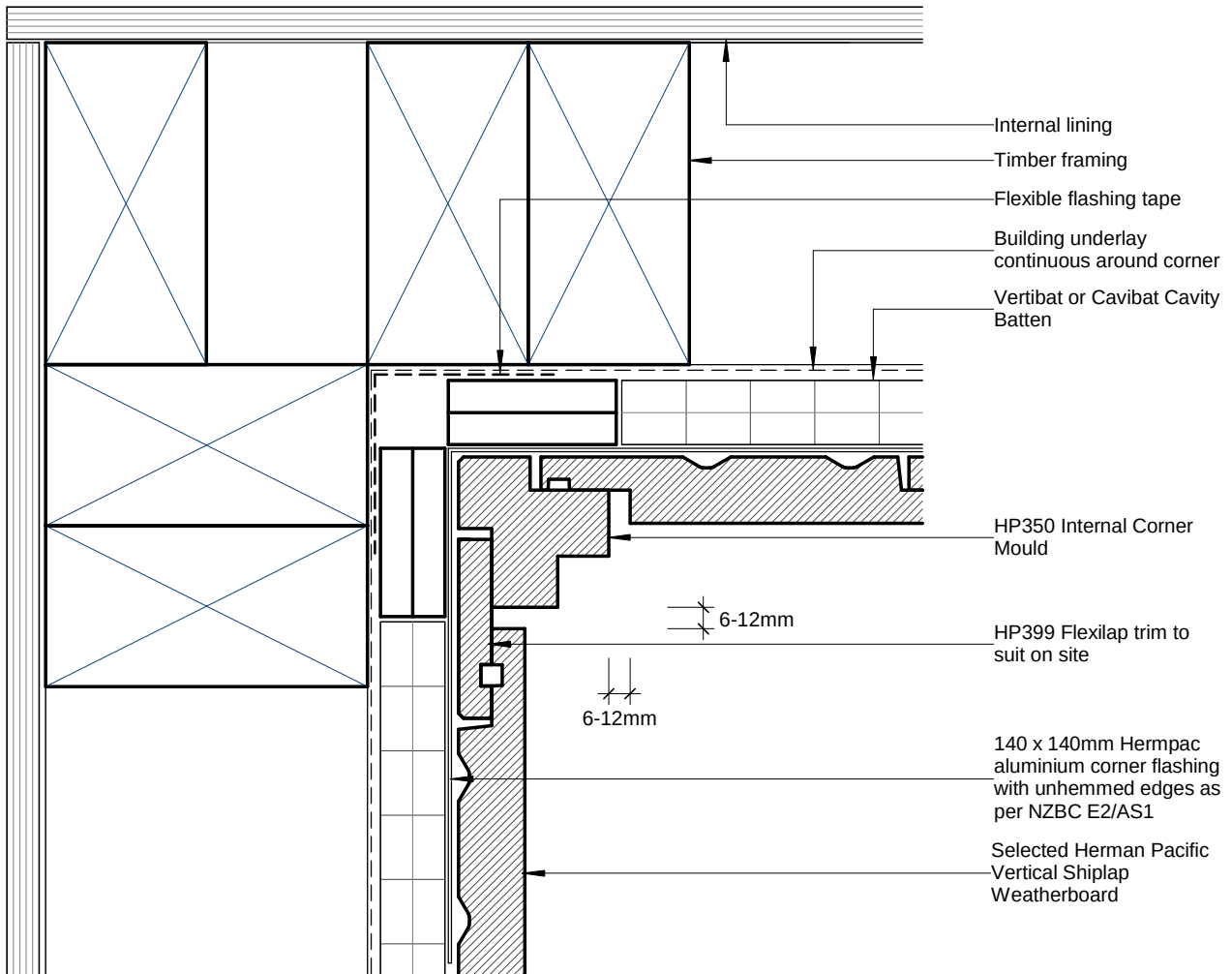
Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427

Further Information Received

14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP350, HP399 - HP1850



HC-SHIP-304

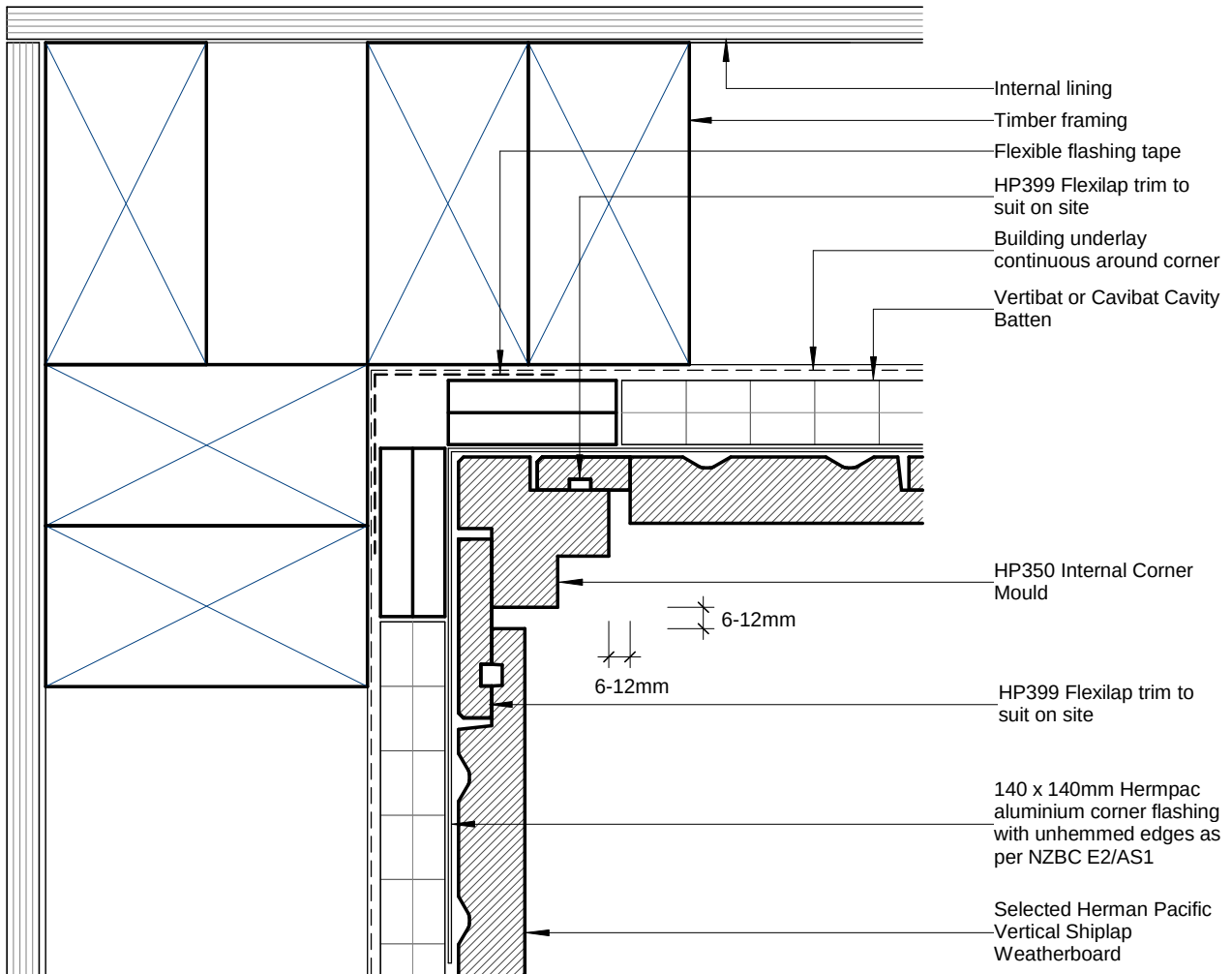
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP350, HP399 - HP1850



HC-SHIP-304A

DRAWING

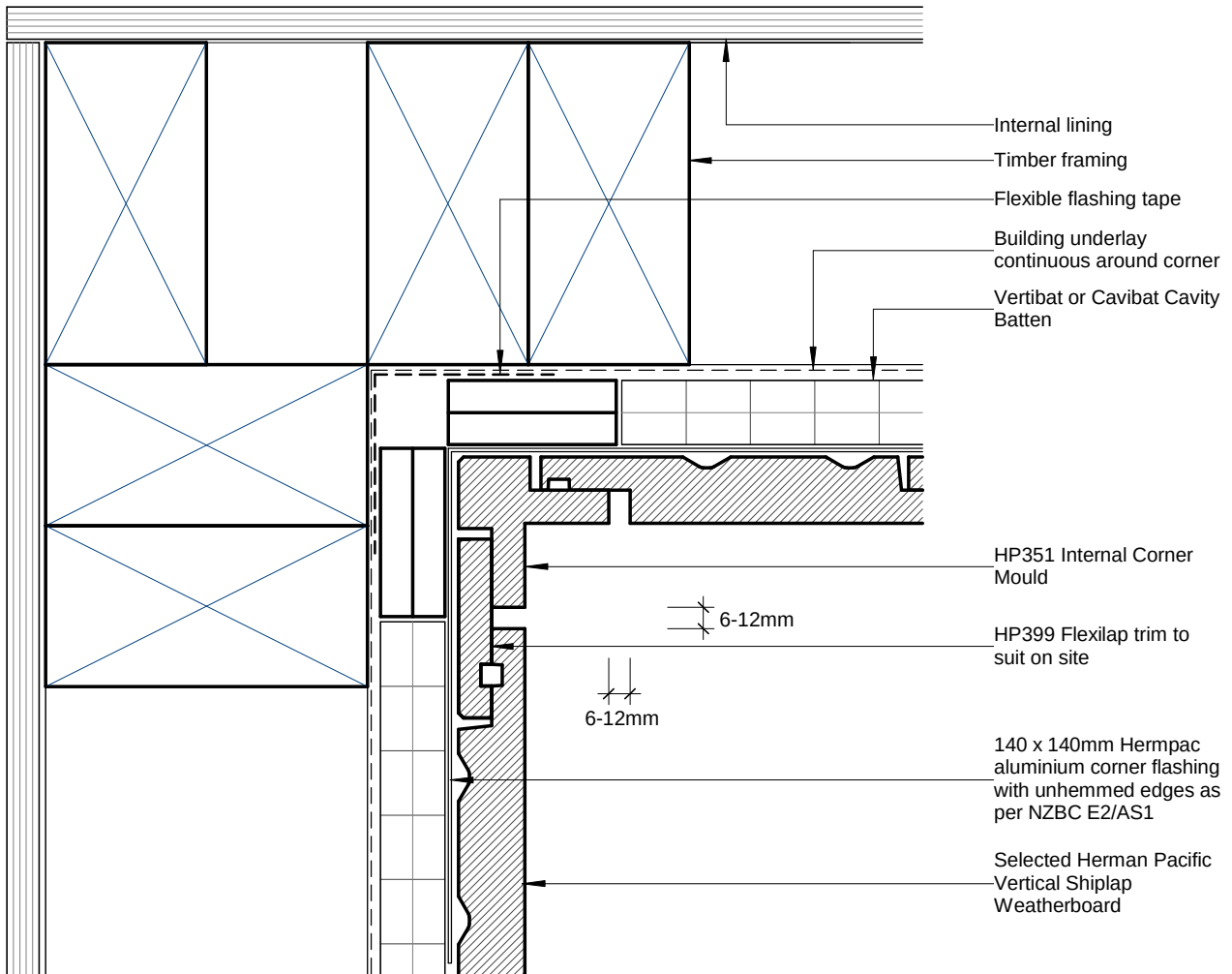
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SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP351, HP399 - HP1851



HC-SHIP-305

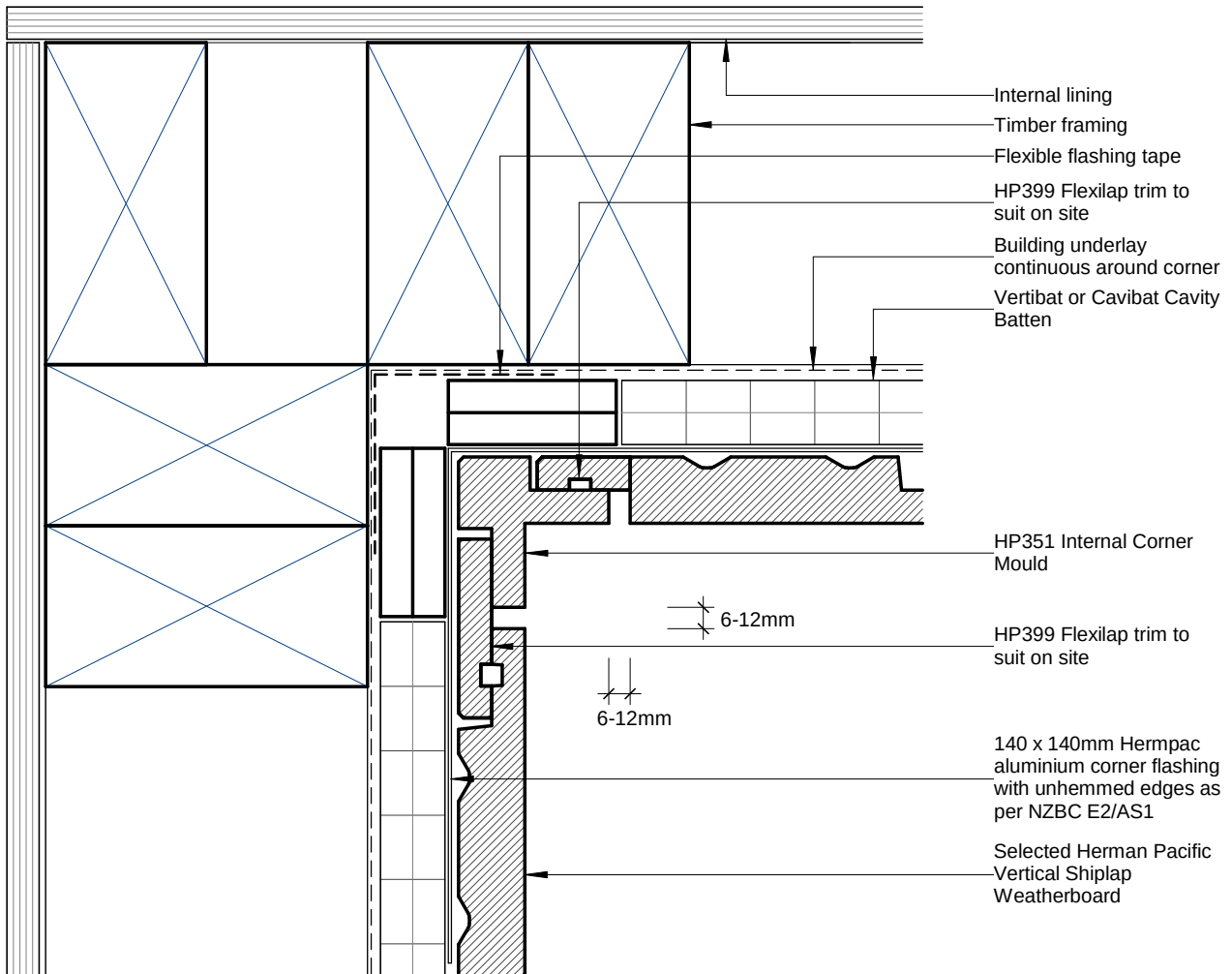
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP351, HP399 - HP1851



HC-SHIP-305A

DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

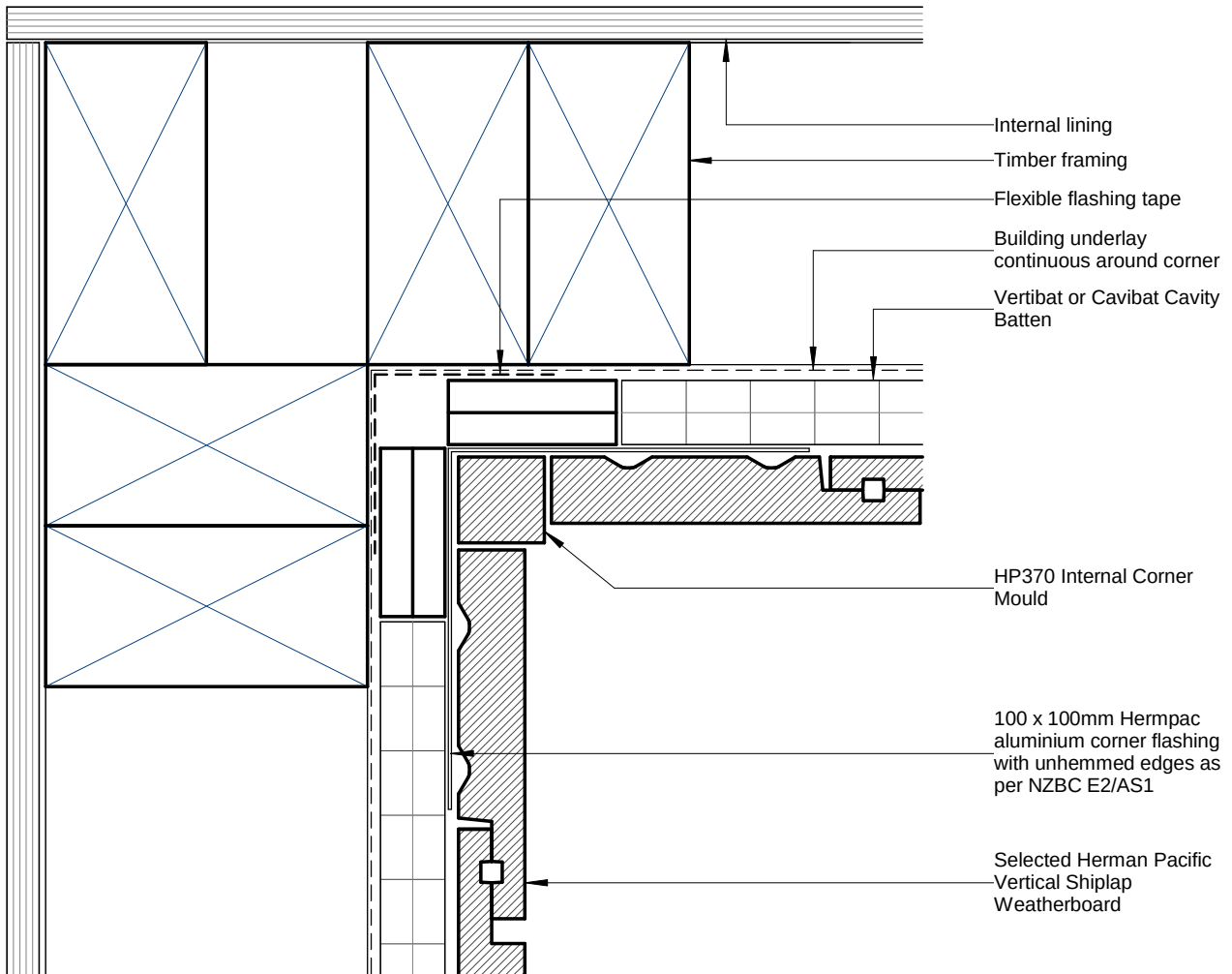
Notes:

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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427

Further Information Received

14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP370

HC-SHIP-306

DRAWING

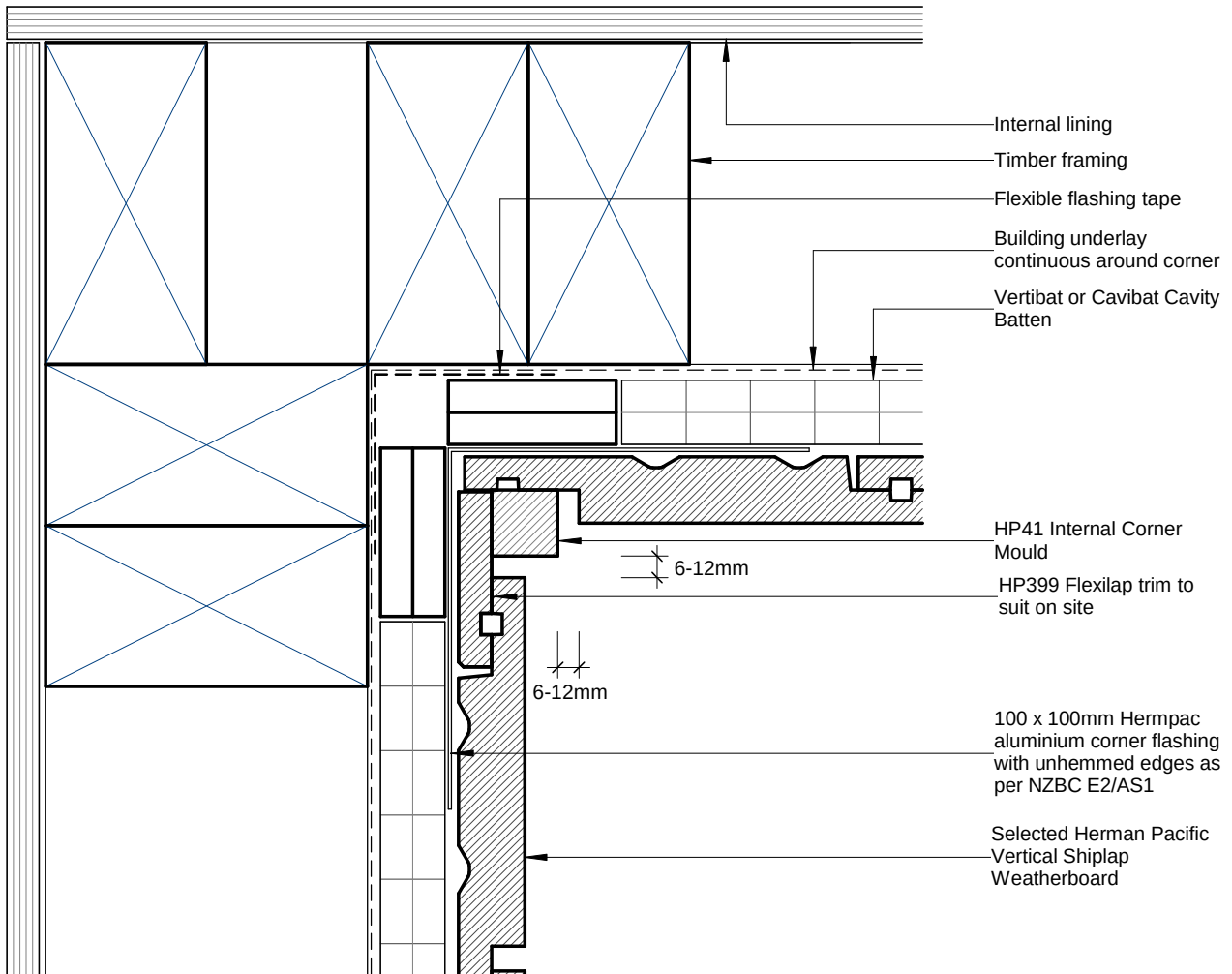
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SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP41 & HP399



HC-SHIP-307

DRAWING

1 : 2 @ A4
SCALE

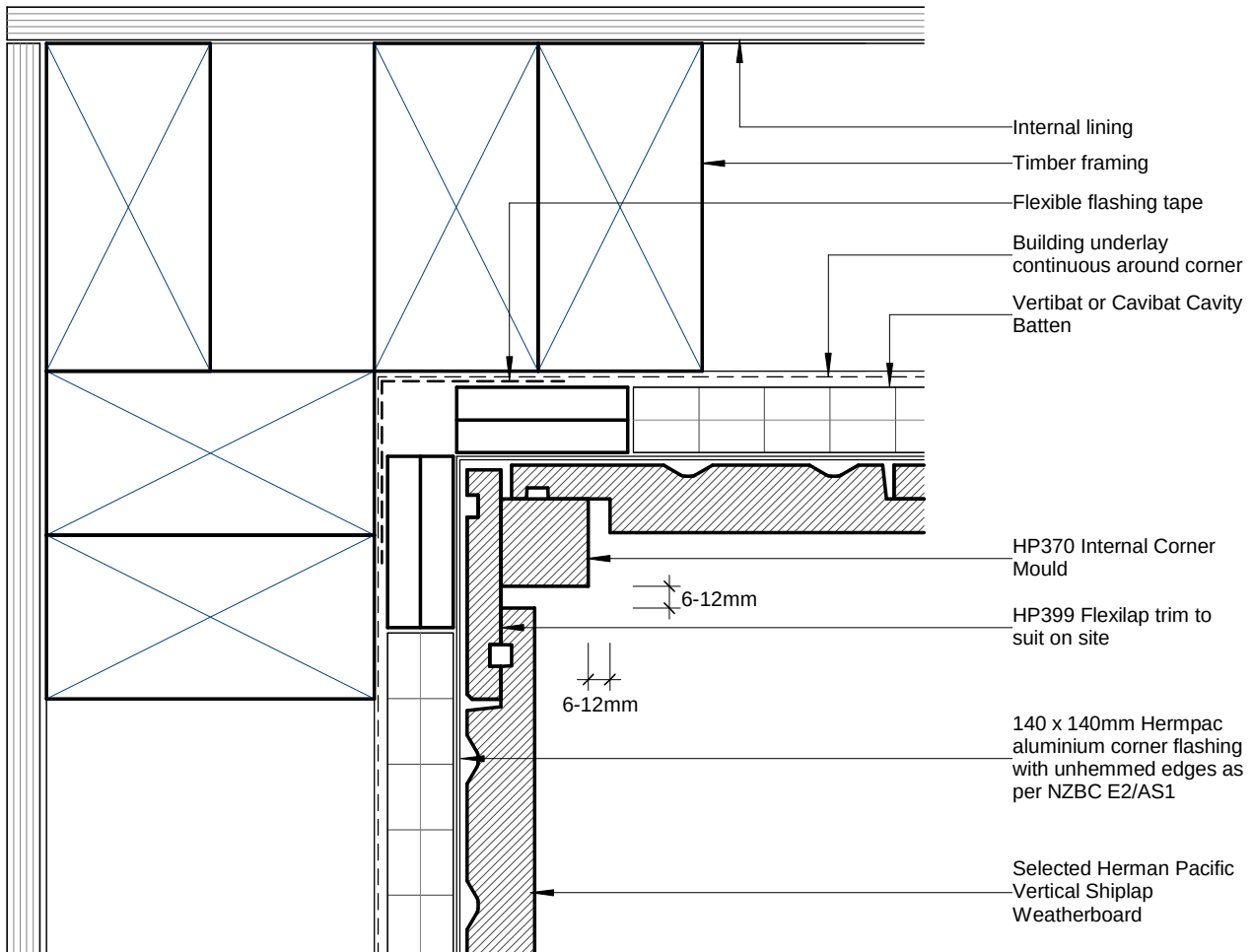
16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
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BC200427

Further Information Received
14/09/20



NOTE:

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Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP370, HP399 - HP1853



HC-SHIP-308

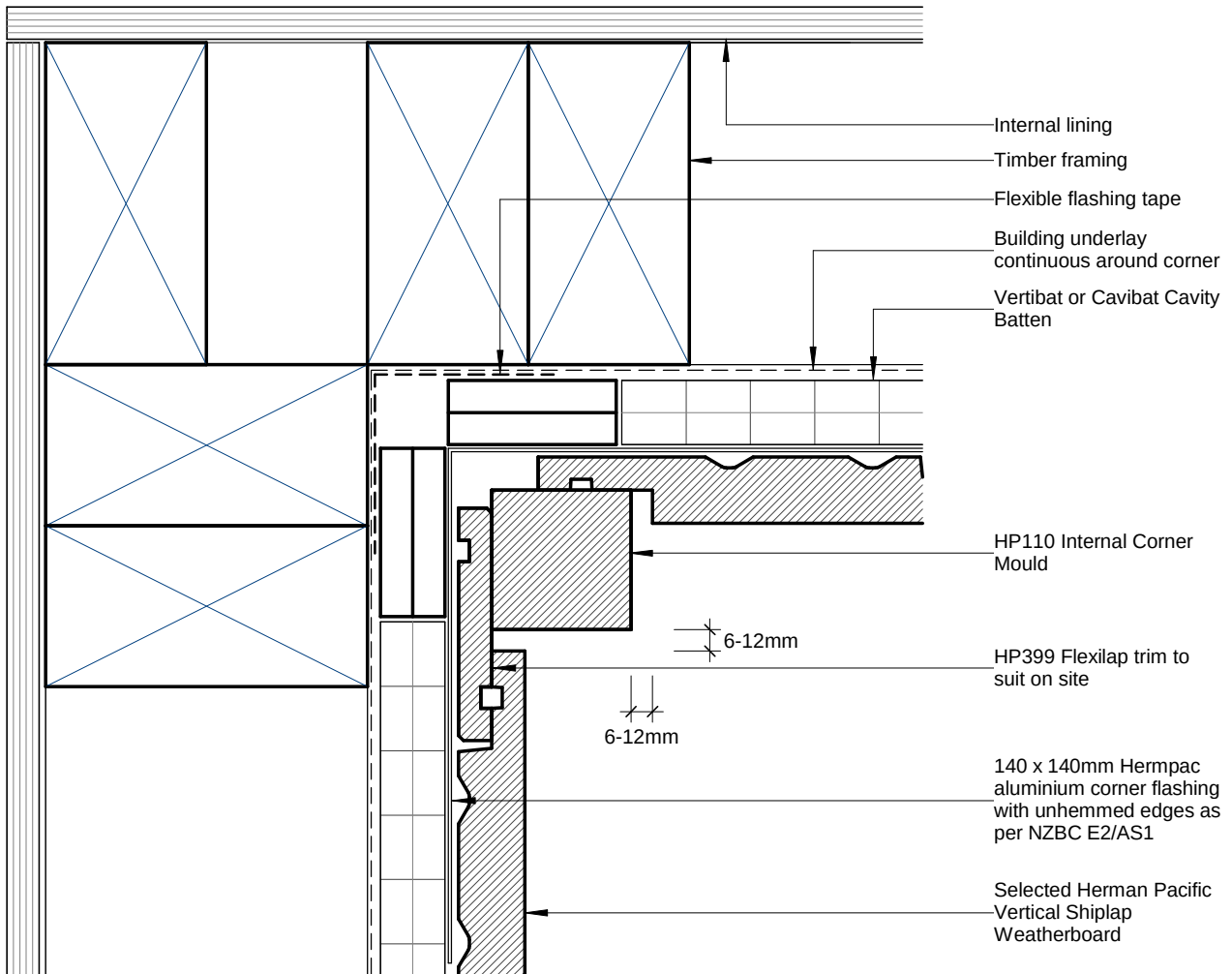
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP110 & HP399



HC-SHIP-309

DRAWING

1 : 2 @ A4
SCALE

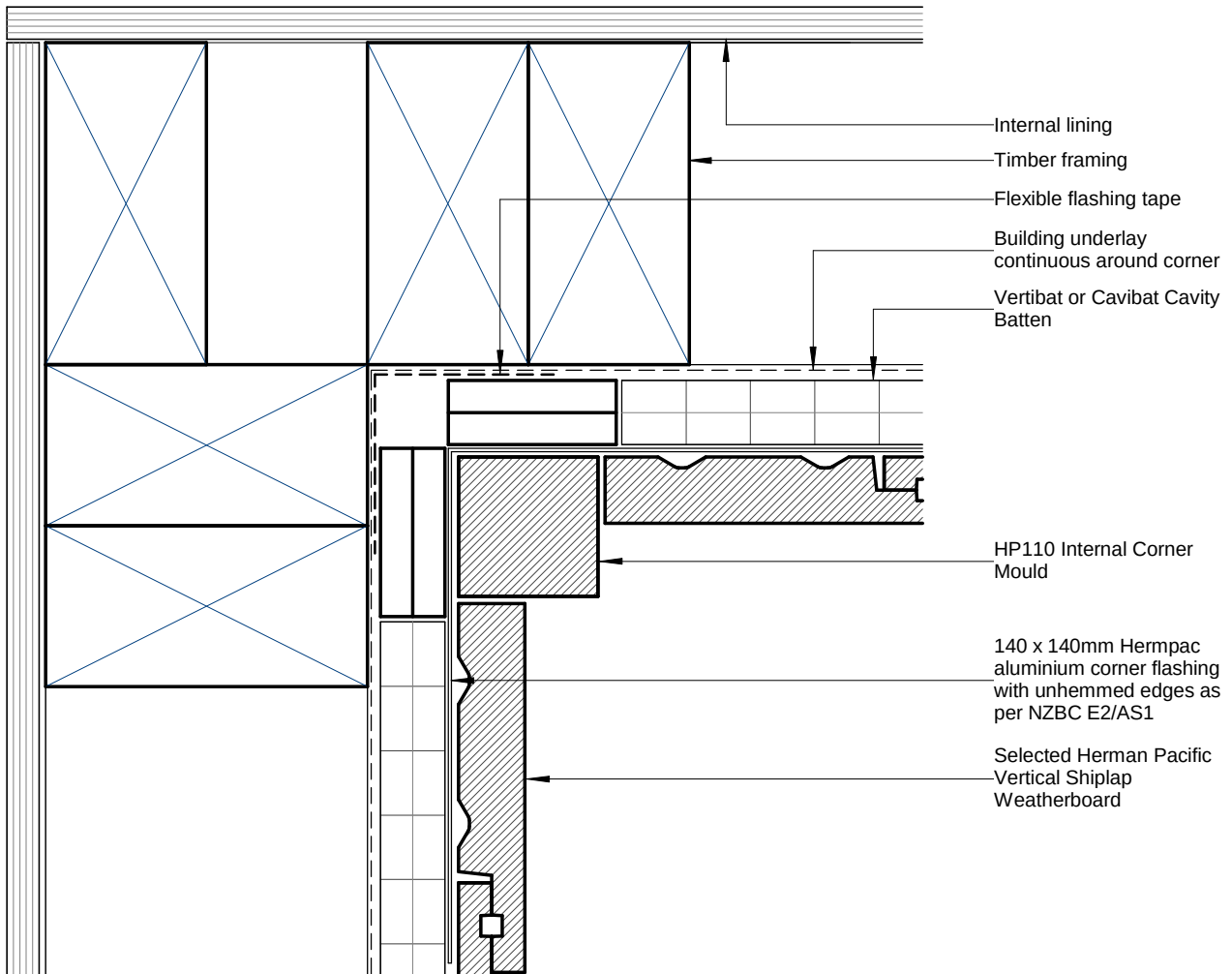
16/10/2017
ISSUED DATE

Notes:

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BC200427

Further Information Received
14/09/20



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP110



HC-SHIP-310

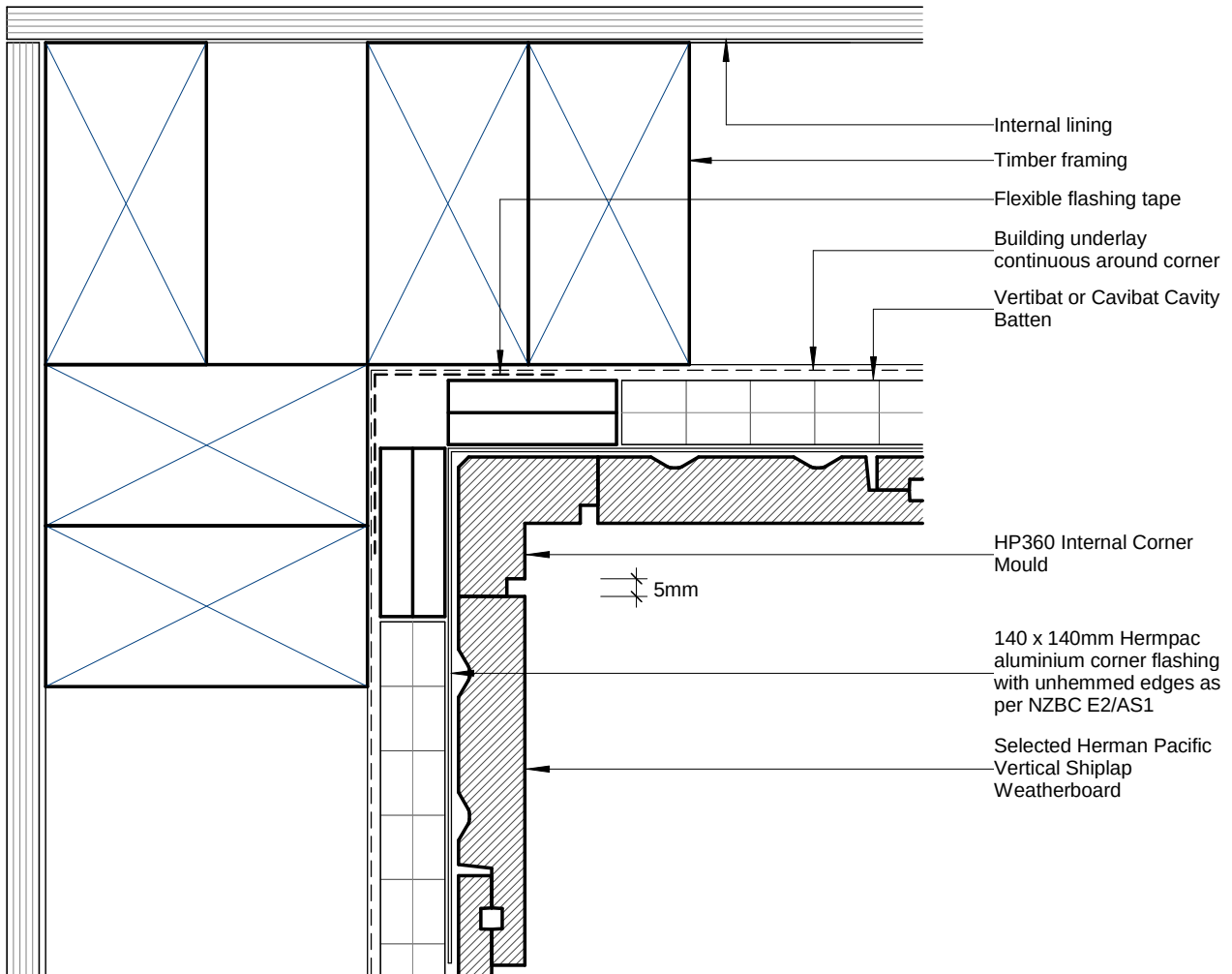
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Internal Corner - HP360



HC-SHIP-311

DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

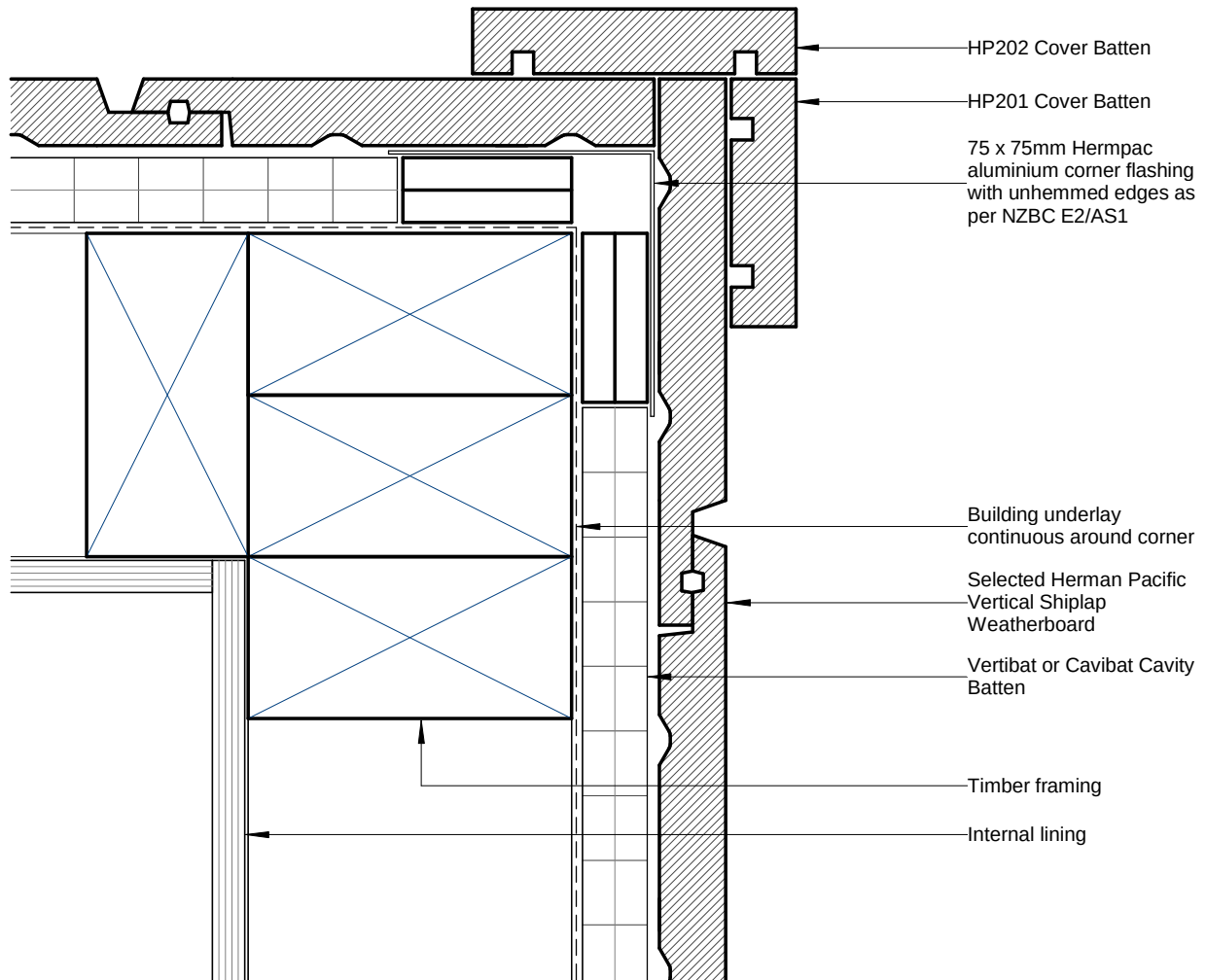
Notes:

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BC200427

Further Information Received

14/09/20



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner Boxed

HC-SHIP-400

DRAWING

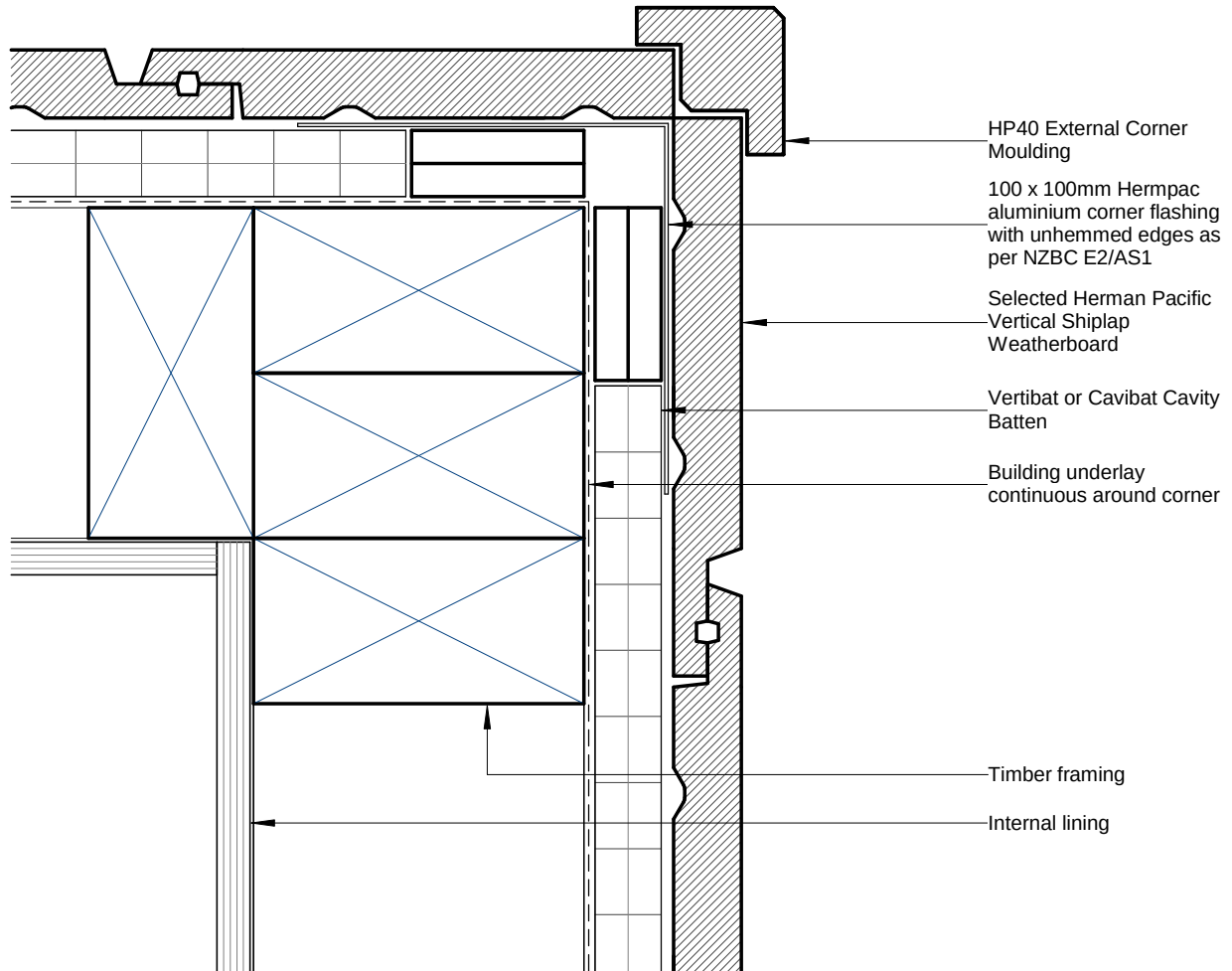
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

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NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner HP40



HC-SHIP-401

DRAWING

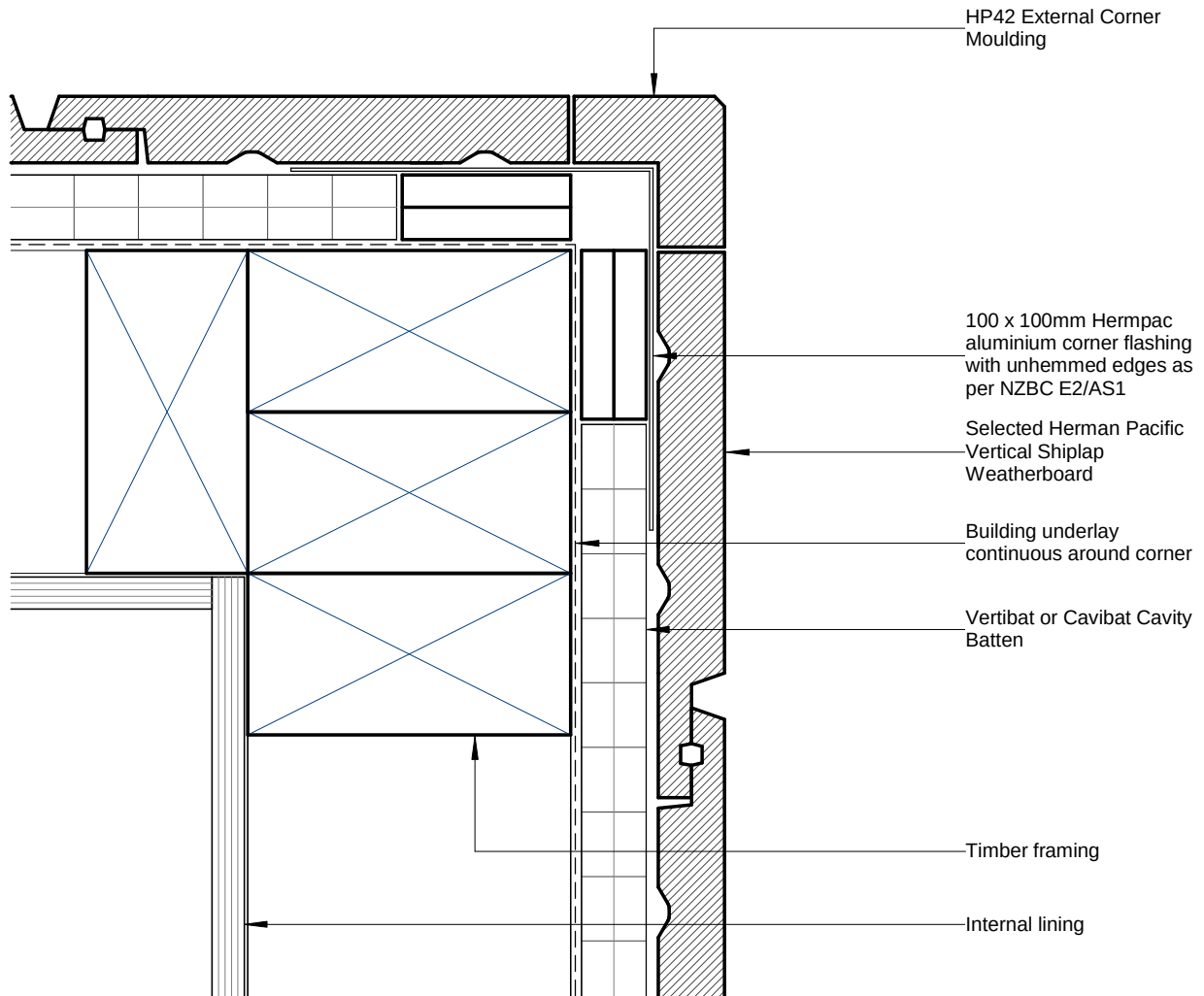
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner HP42



HC-SHIP-402

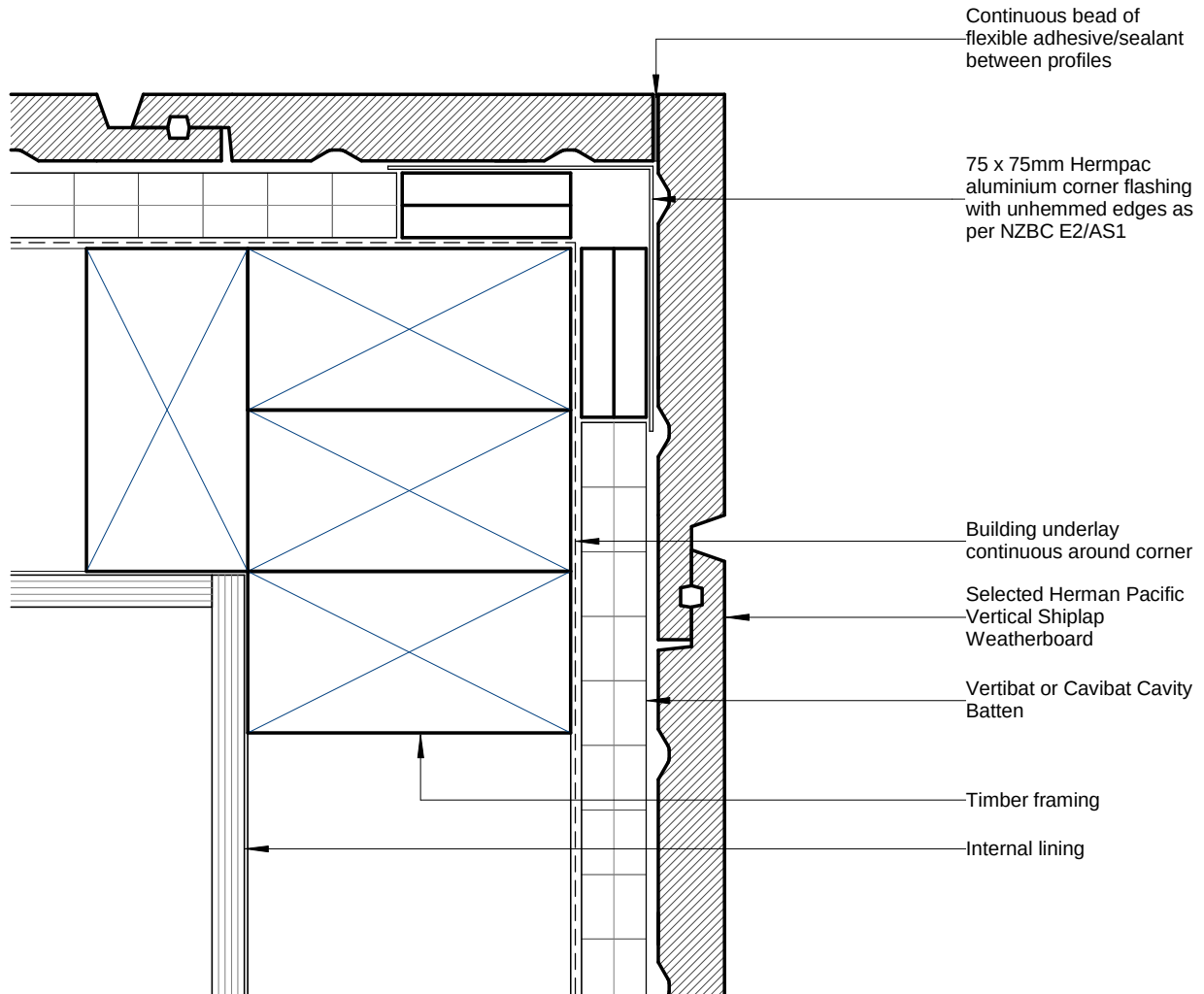
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner

HC-SHIP-403

DRAWING

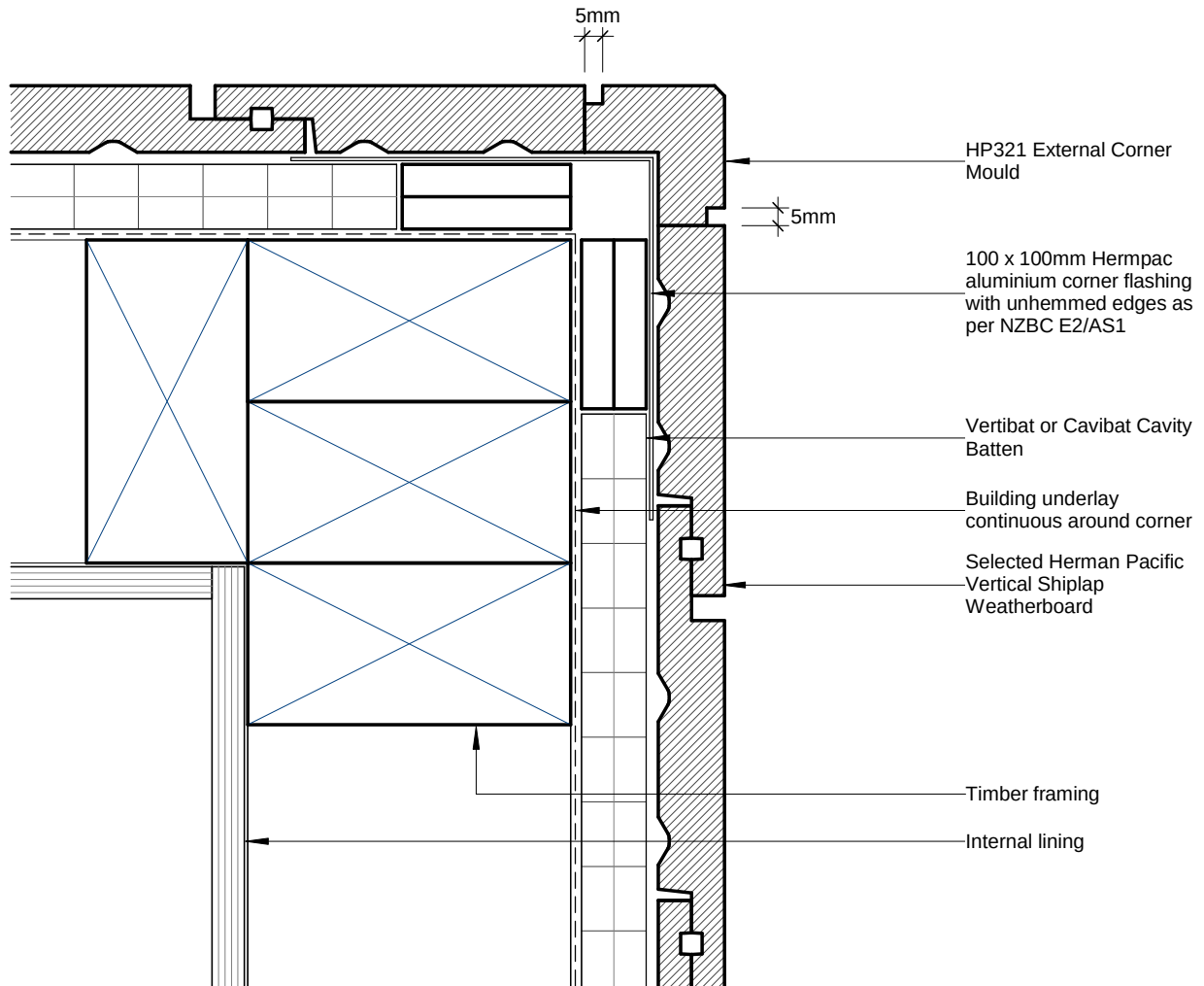
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP321



HC-SHIP-404

DRAWING

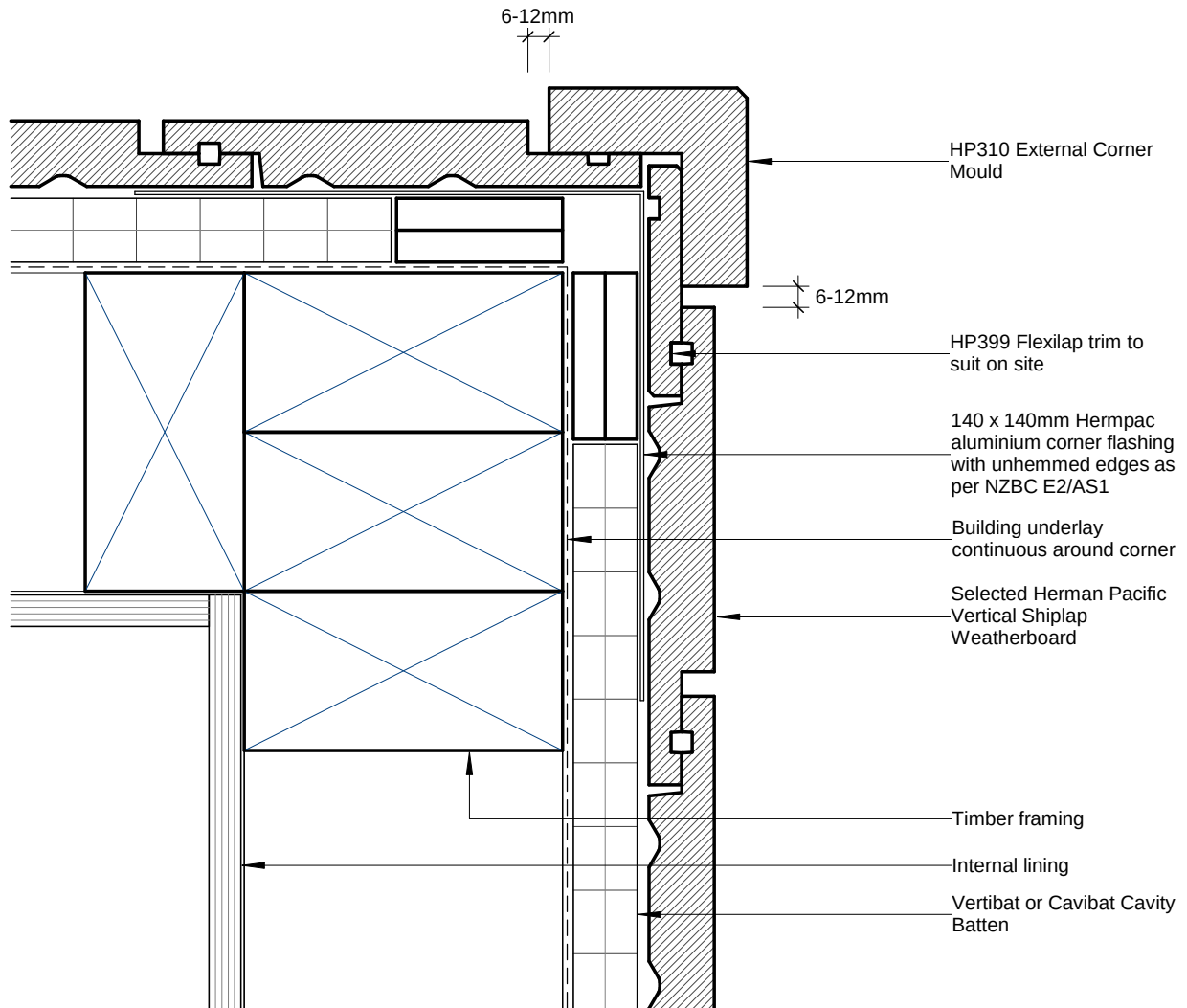
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP310, HP399 - HP1802



HC-SHIP-405

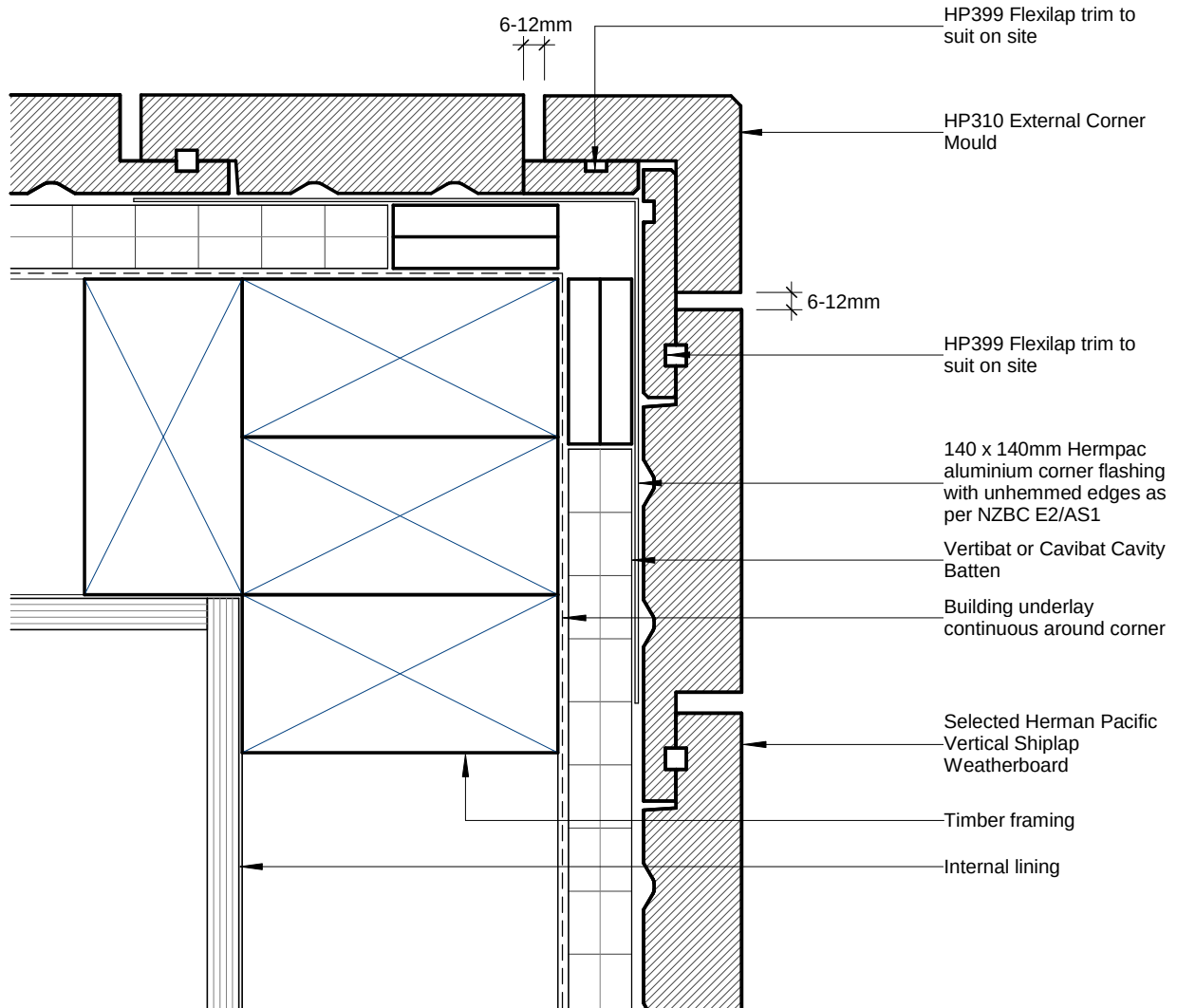
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP310, HP399 - HP1802



HC-SHIP-405A

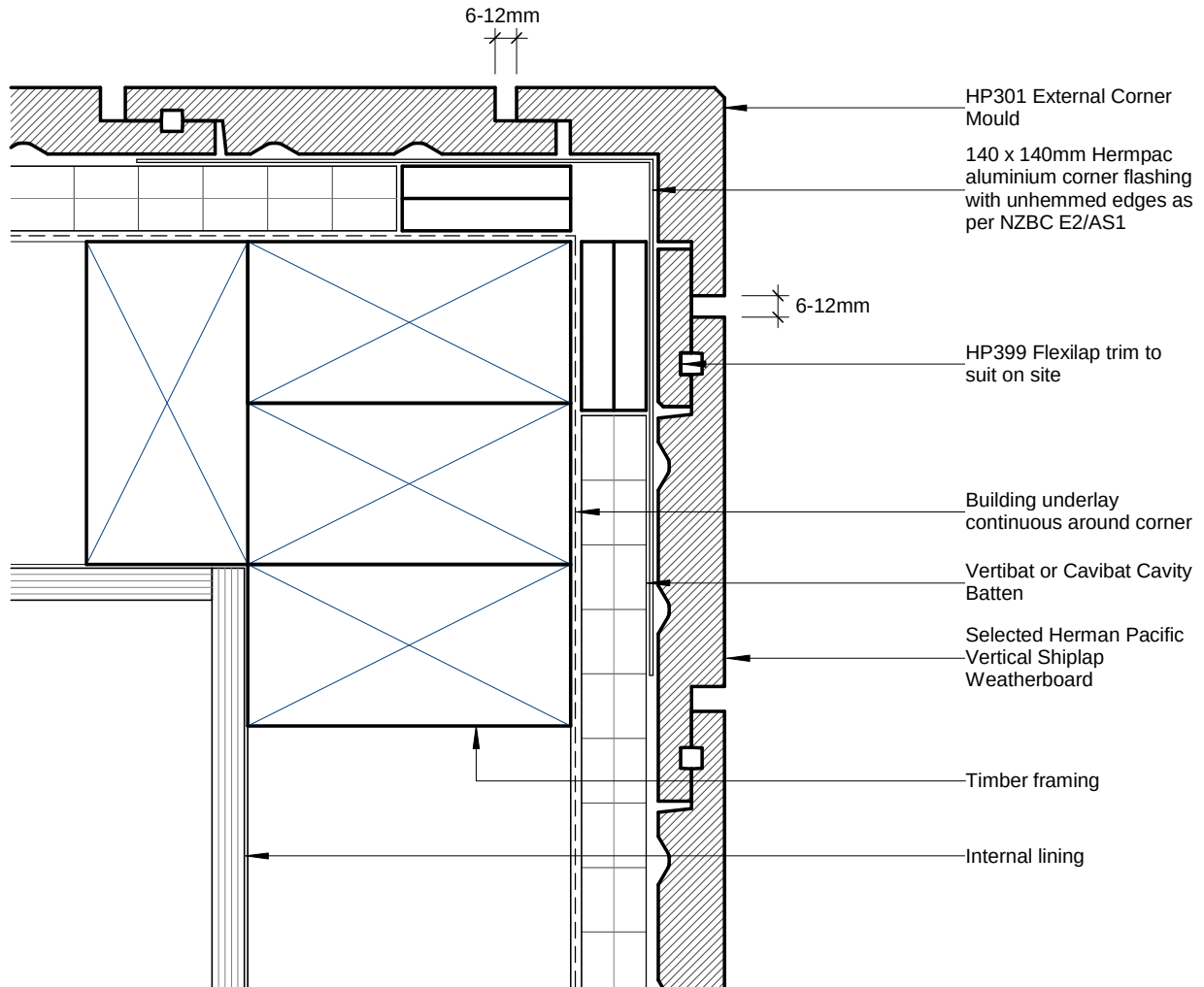
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP301, HP399 - HP1854



HC-SHIP-406

DRAWING

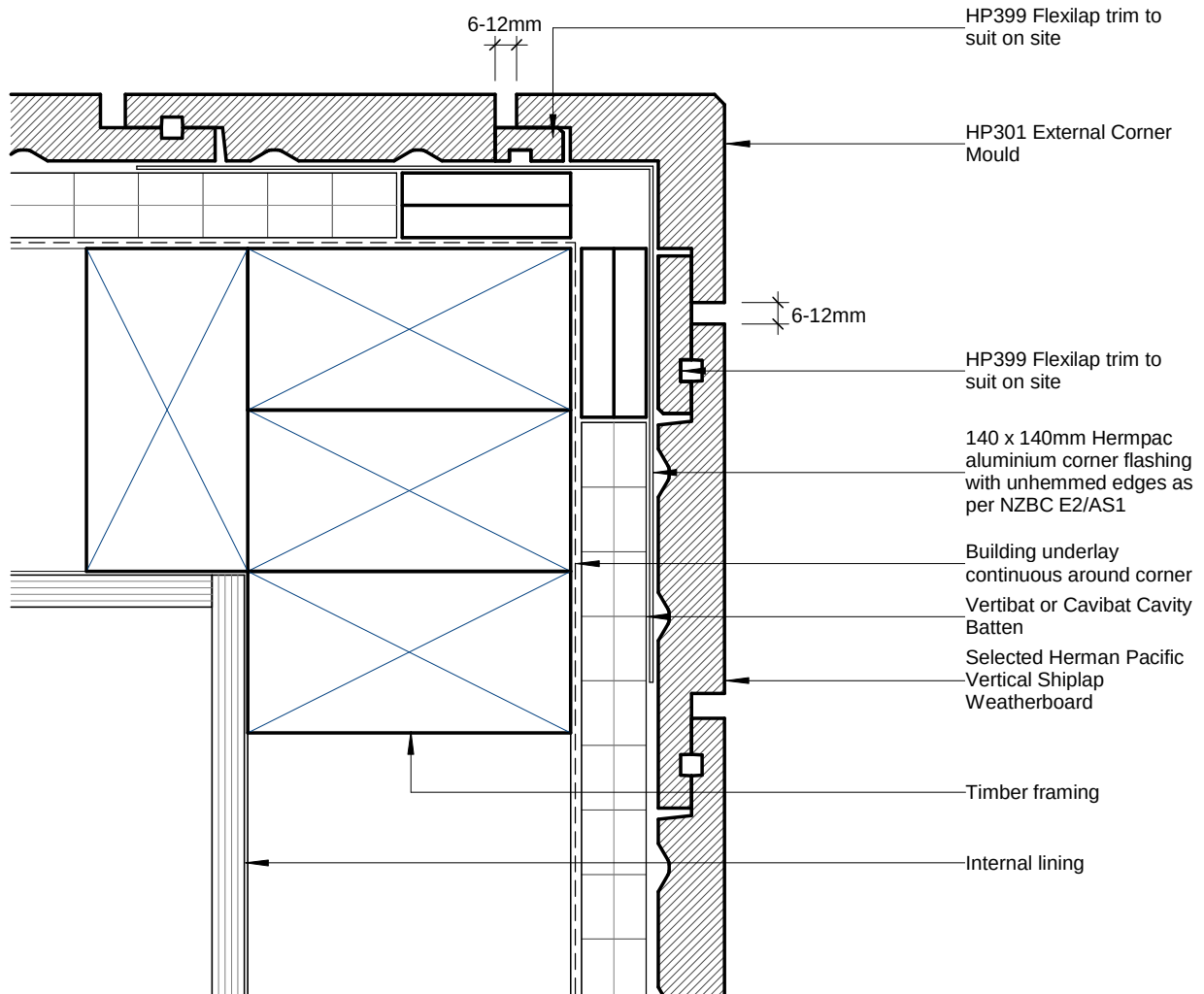
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SCALE

16/10/2017
ISSUED DATE

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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP301, HP399 - HP1854



HC-SHIP-406A

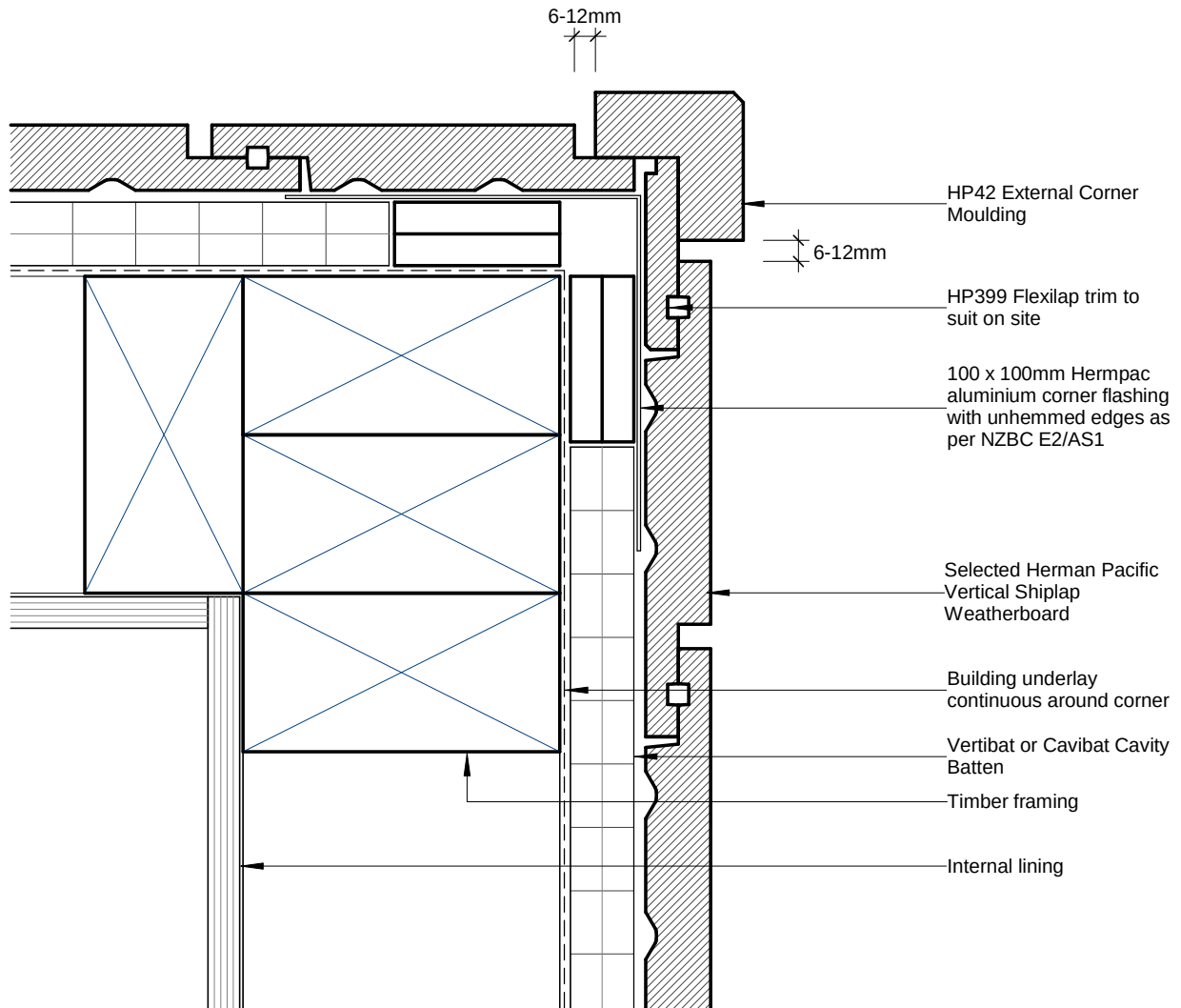
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP42, HP399 - HP1803



HC-SHIP-407

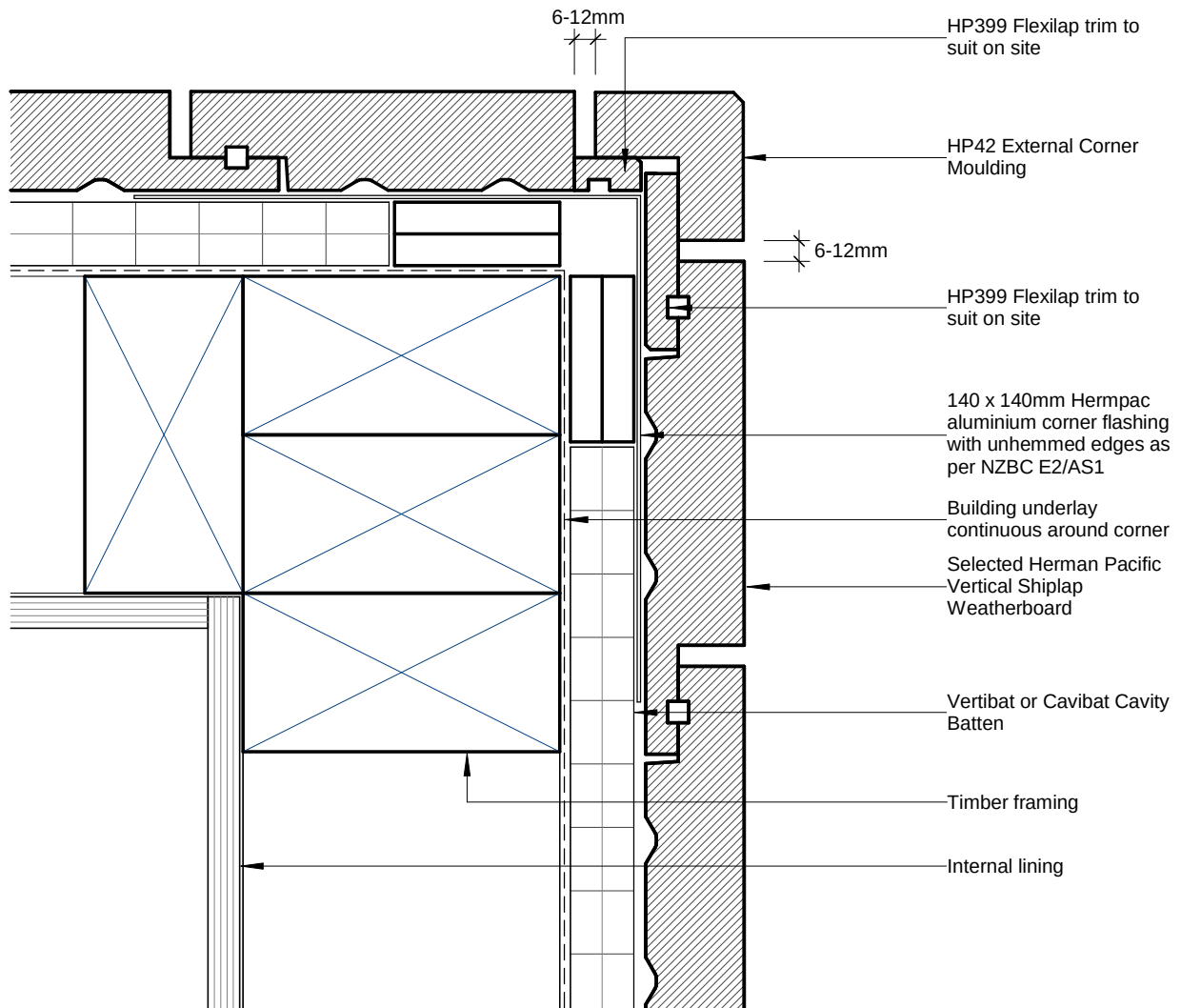
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP42, HP399 - HP1803



HC-SHIP-407A

DRAWING

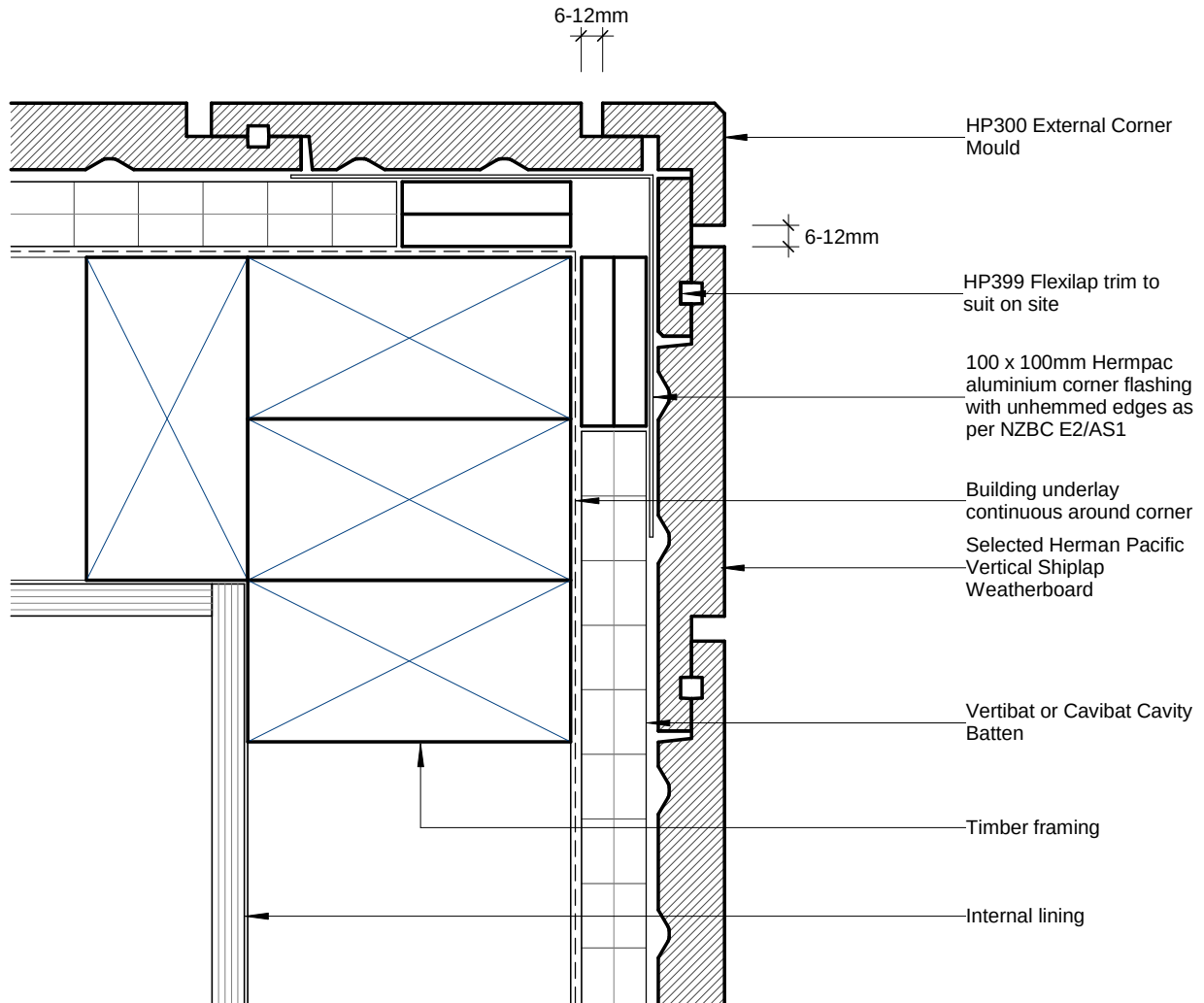
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SCALE

16/10/2017
ISSUED DATE

Notes:

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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427
Further Information Received
14/09/20



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP300, HP399 - HP1801



HC-SHIP-408

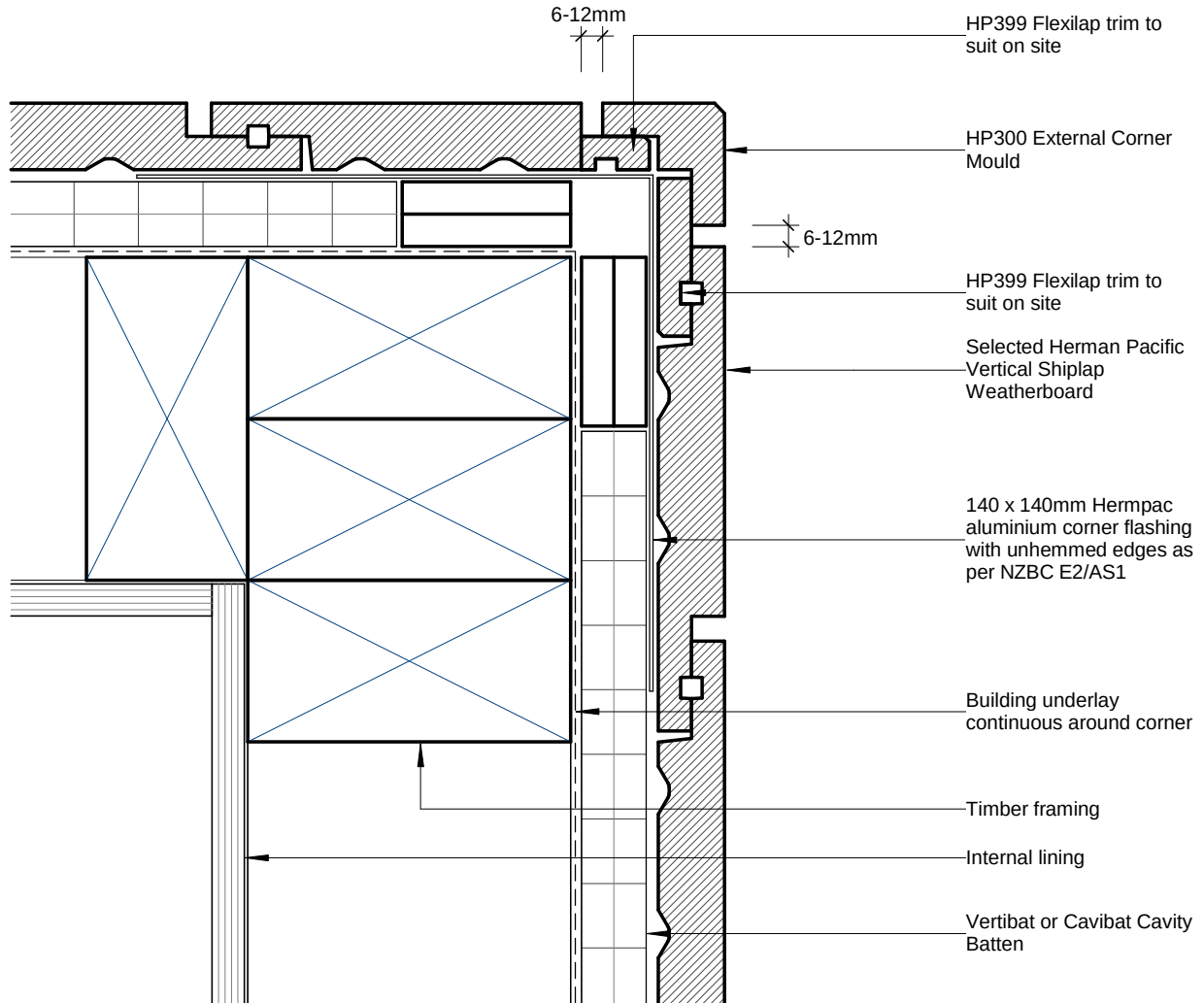
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

For Detailed Installation and Fixing Information of Corner Mouldings Email technical@hermpac.co.nz



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

External Corner - HP300, HP399 - HP1801



HC-SHIP-408A

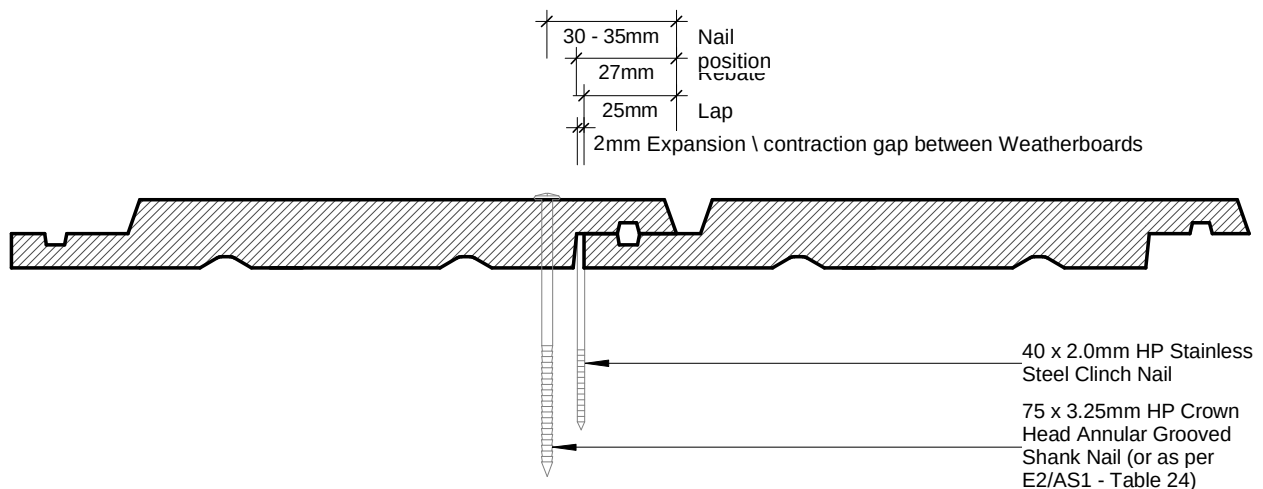
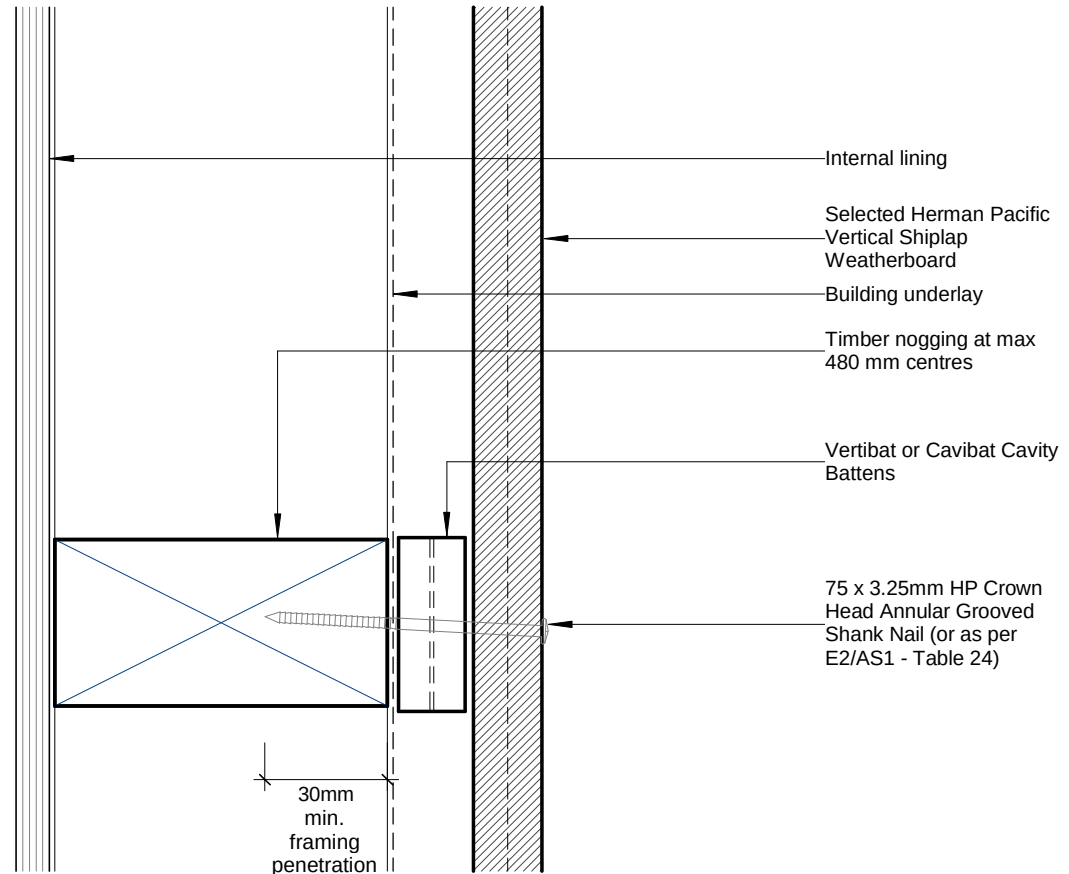
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

General Detail Cavity Fix, Stain Finish



HC-SHIP-410

DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

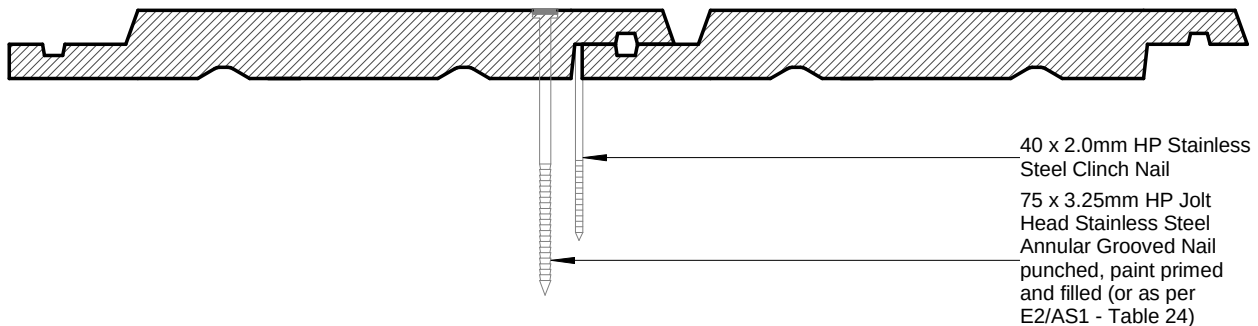
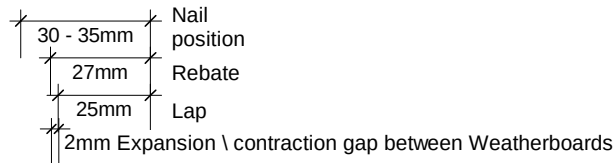
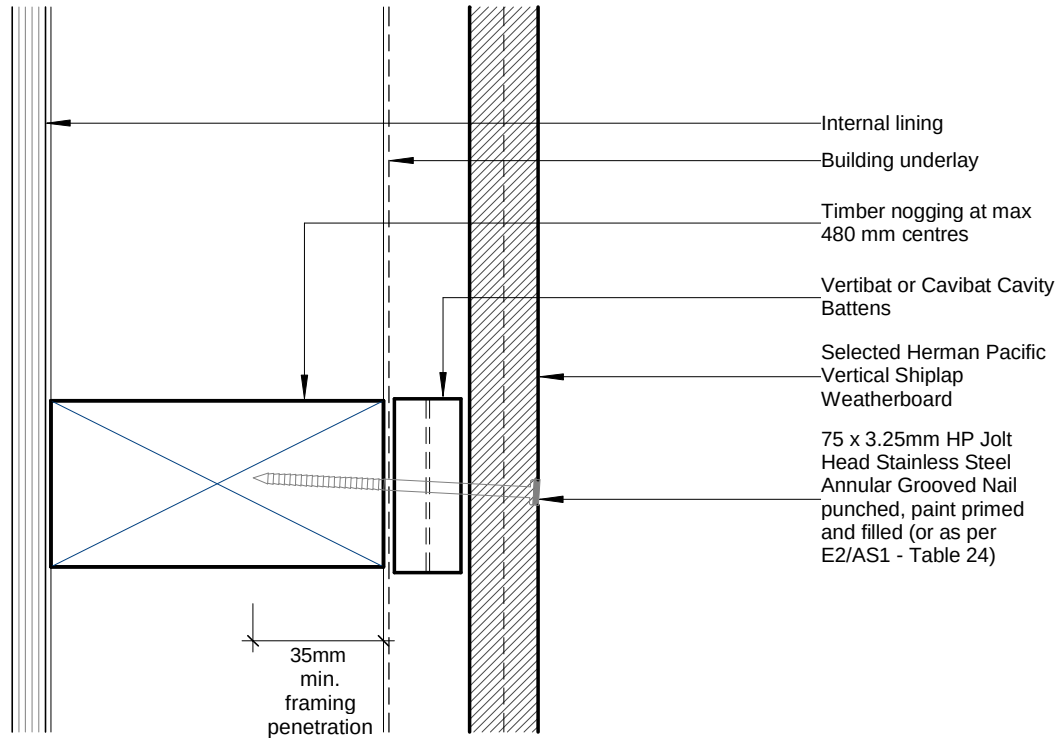
Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
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BC200427

Further Information Received

14/09/20



Note: Hermpac Cedar weatherboards fixed with jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Medium when dwangs or structurally fixed Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structurally fixed Vertibat cavity battens are at maximum 400 mm centres.

Hermpac DuraLarch and Ashin-Dura weatherboards fixed with jolt head nails are limited to use in NZS 3604 Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480 mm centres.



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

General Detail Cavity Fix, Paint Finish

HC-SHIP-411

DRAWING

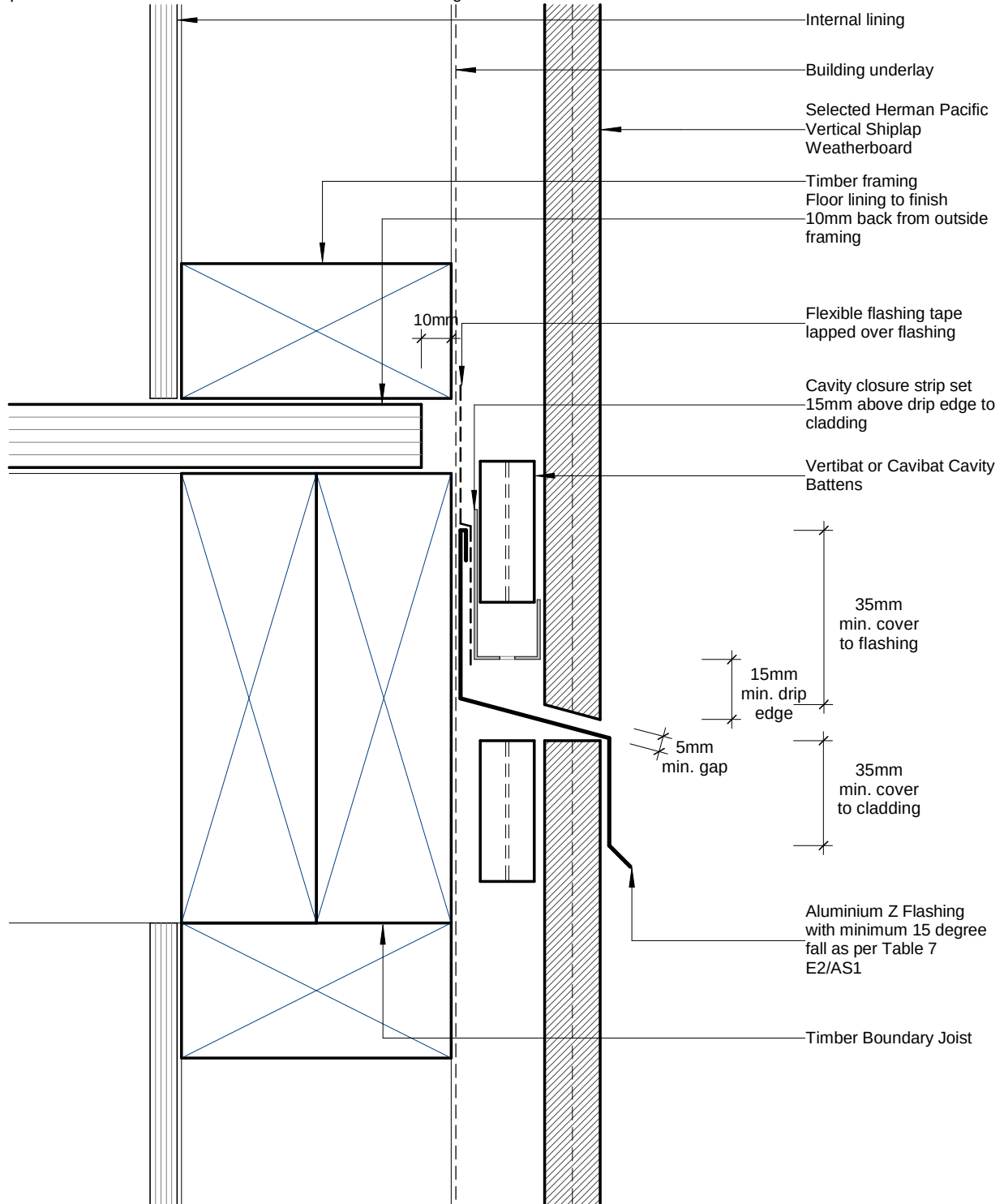
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Drained Inter-Storey Joint



HC-SHIP-412

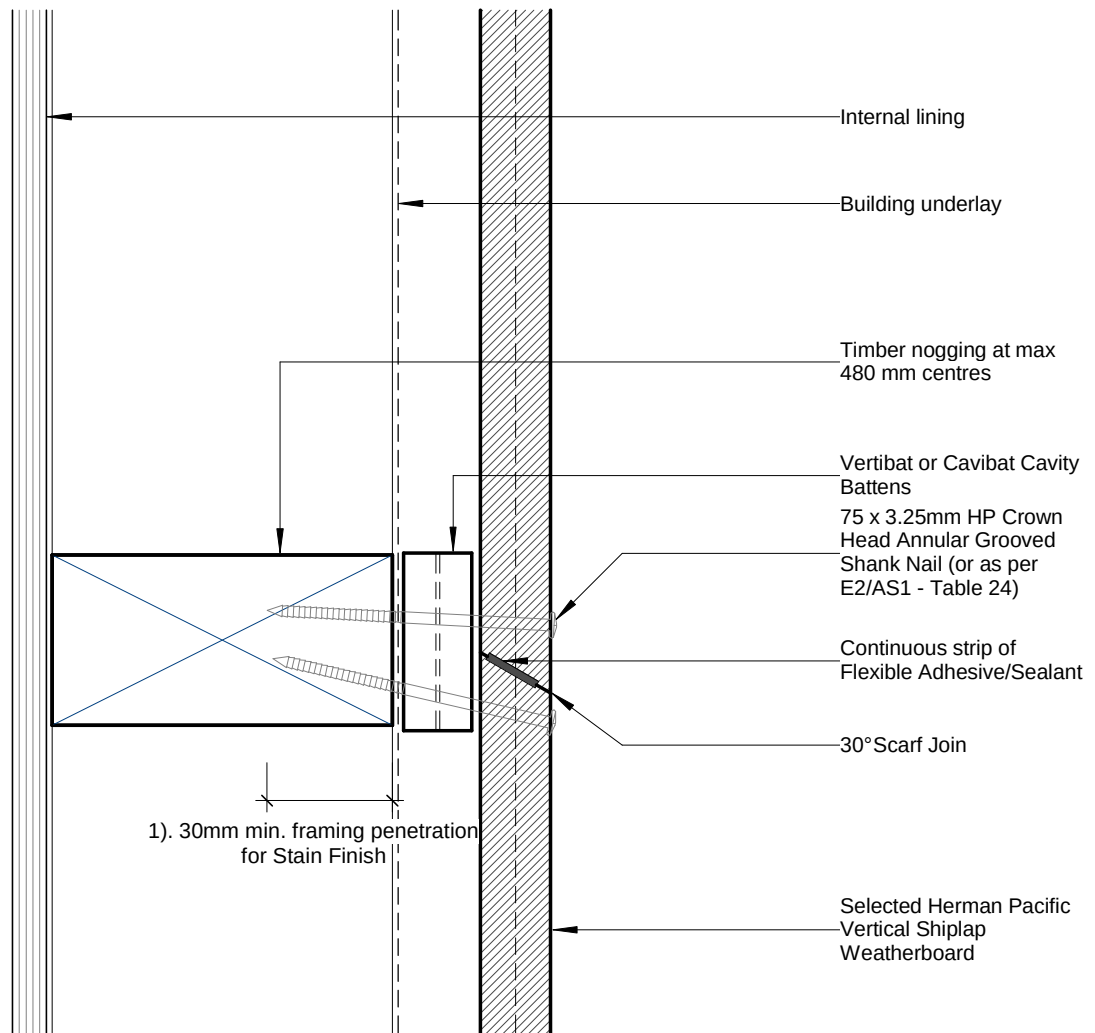
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
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- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



NOTE:

Cut ends of scarf join must be double coated with oil or stain.

35mm framing penetration using HPJolt Head Stainless Steel Annular Grooved nail for paint finish



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Scarf Join Stain Finish

HC-SHIP-413

DRAWING

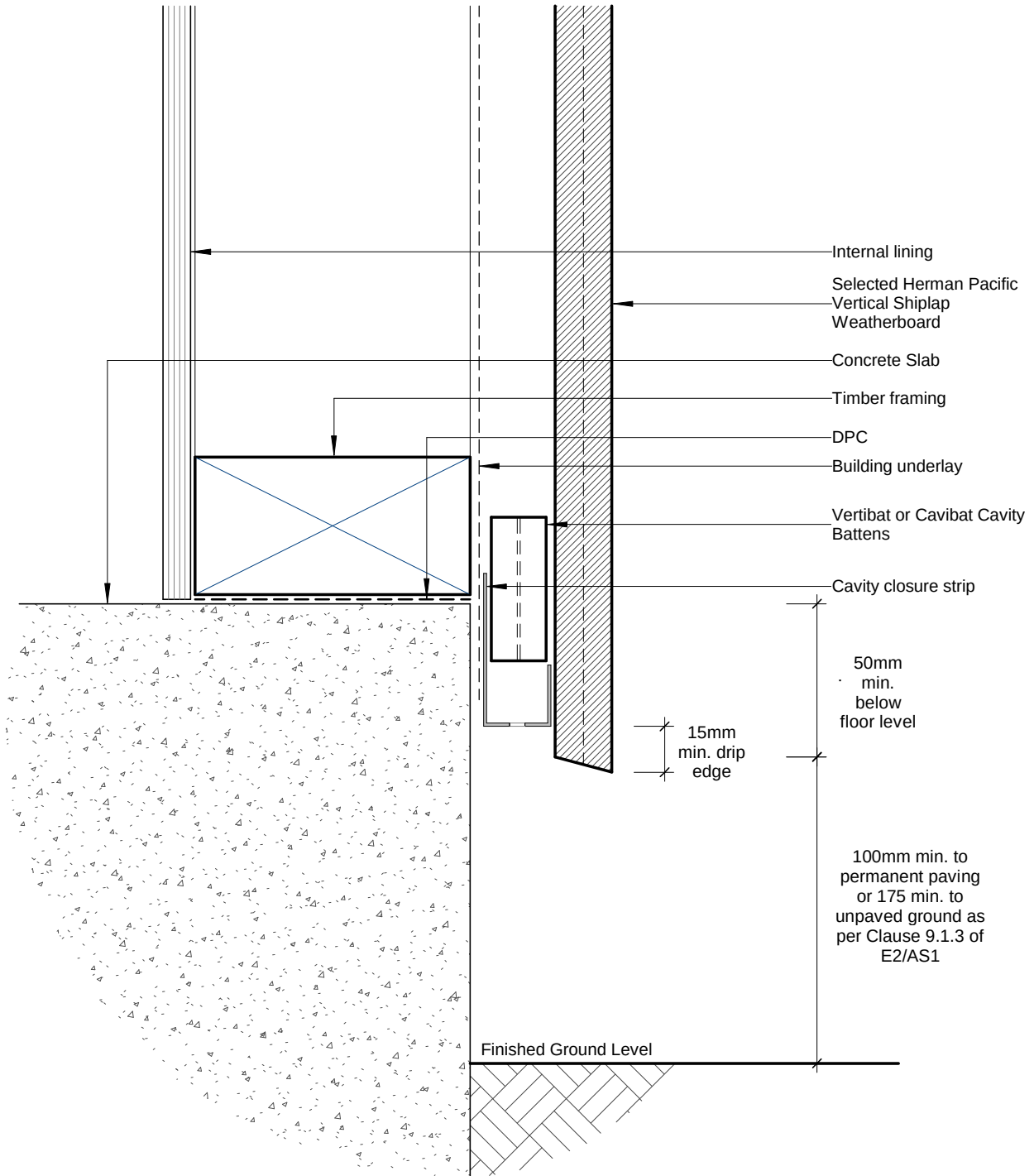


1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Base of Wall, Concrete



HC-SHIP-500

DRAWING

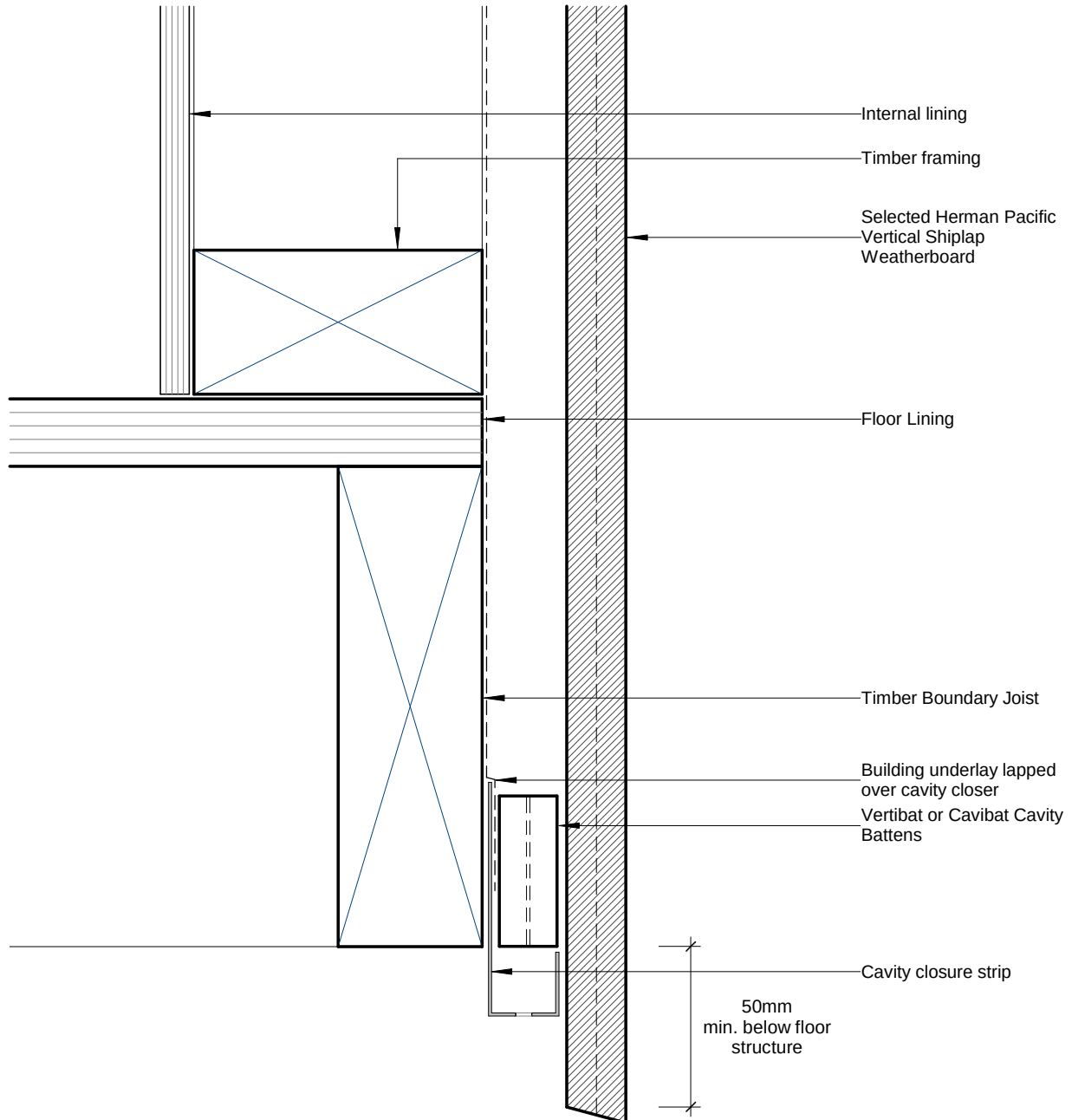
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SCALE

16/10/2017
ISSUED DATE

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BC200427
Further Information Received
14/09/20



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Base of Wall, Timber



HC-SHIP-501

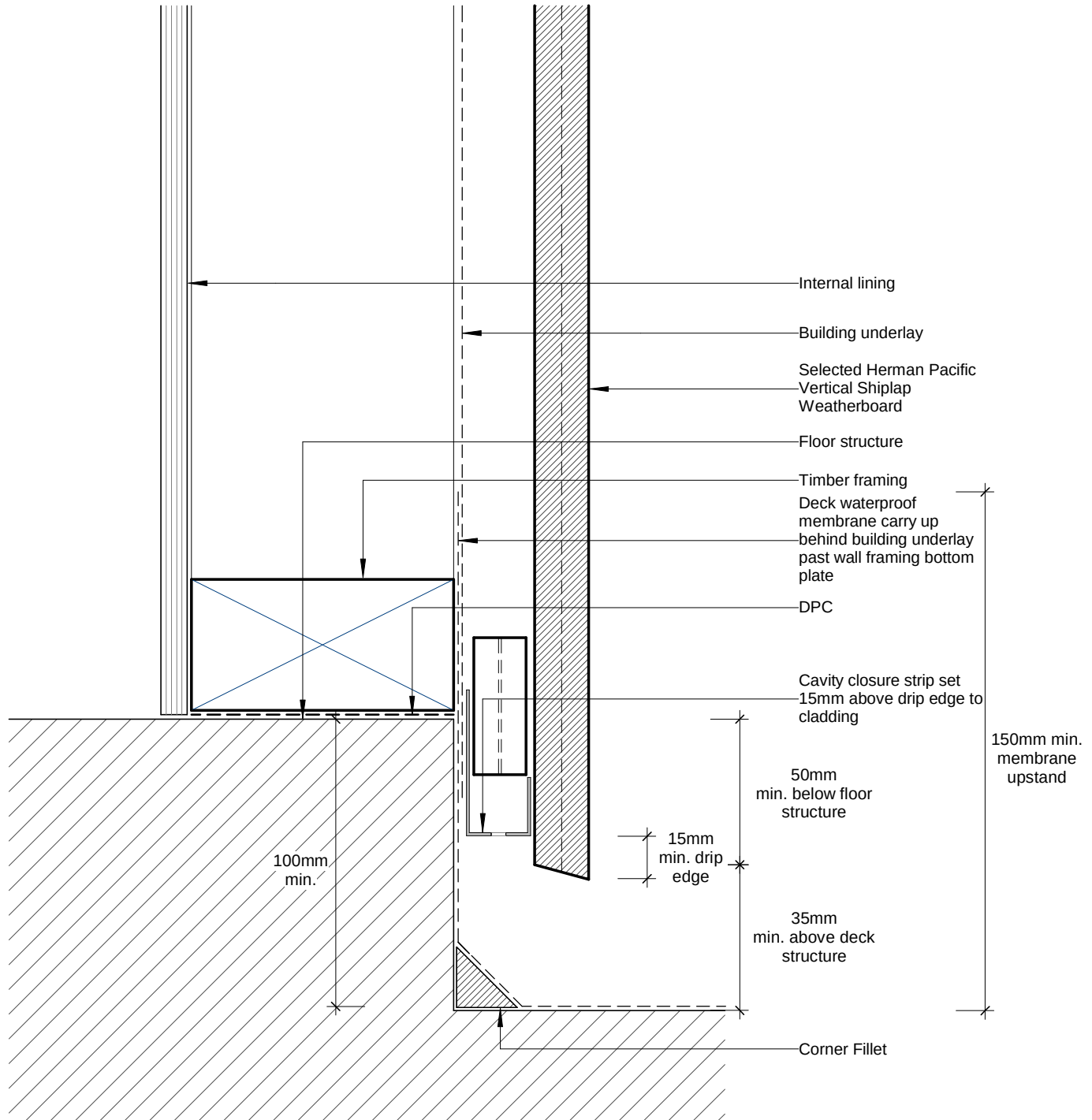
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1 : 2 @ A4
 SCALE

16/10/2017
 ISSUED DATE

Notes:

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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Cavity at Enclosed Deck



HC-SHIP-502

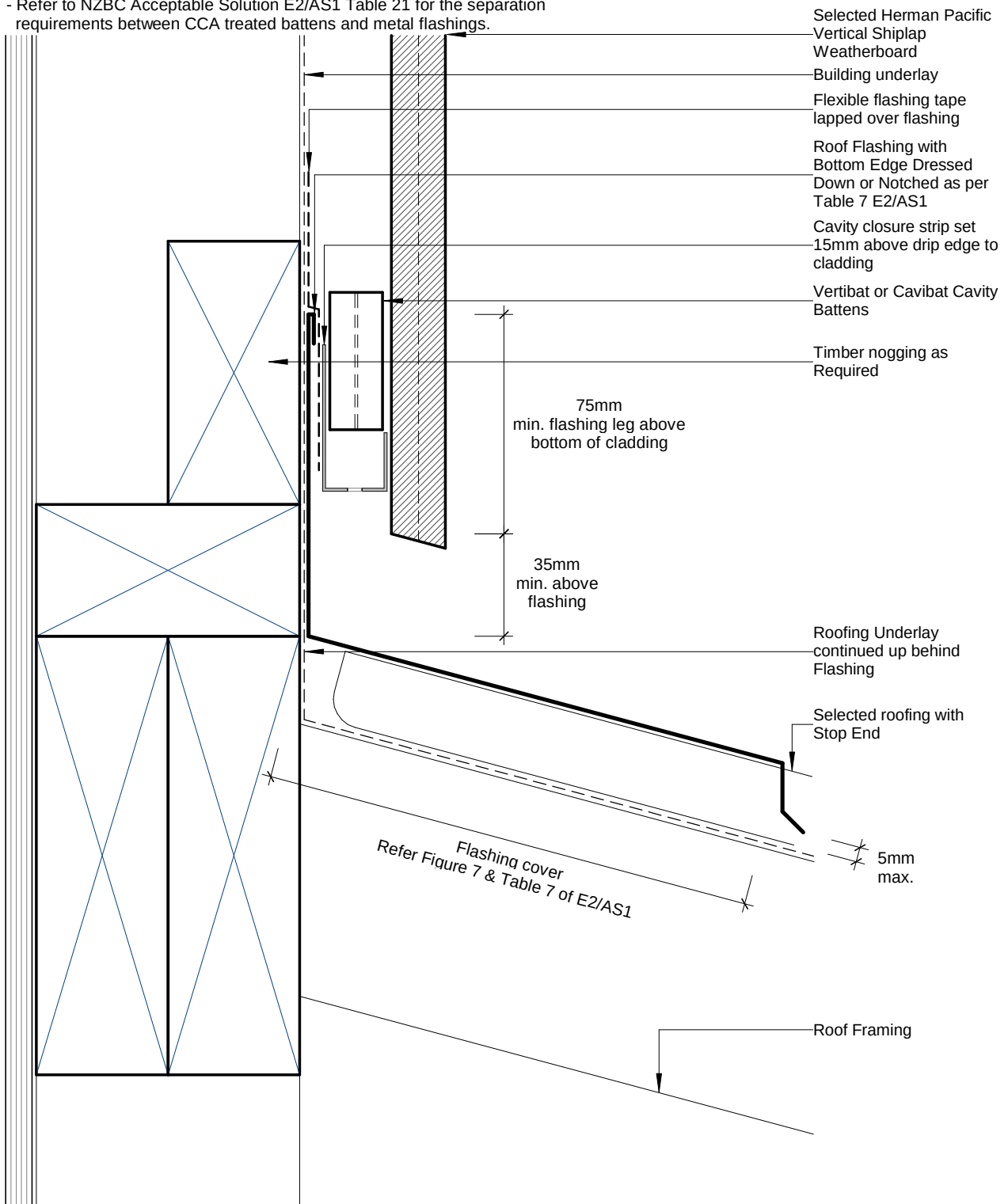
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1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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SUBJECT TO CHANGE WITHOUT NOTICE

**Cavity Fix Vertical Shiplap Weatherboard System
Roof/Wall Junction**



HC-SHIP-600
DRAWING

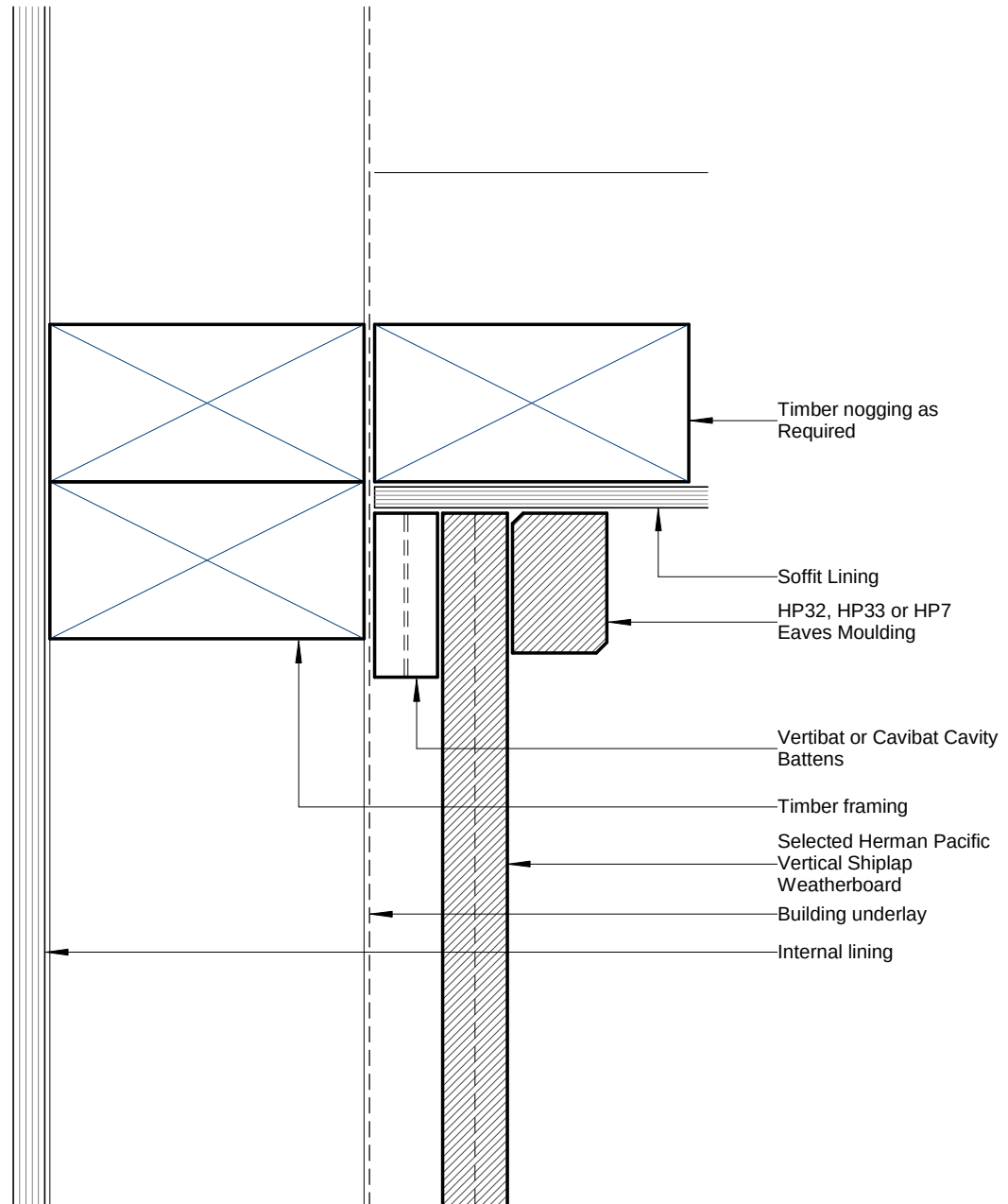
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SCALE

16/10/2017
ISSUED DATE

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BC200427
Further Information Received
14/09/20



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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Soffit Detail, Overhang



HC-SHIP-601

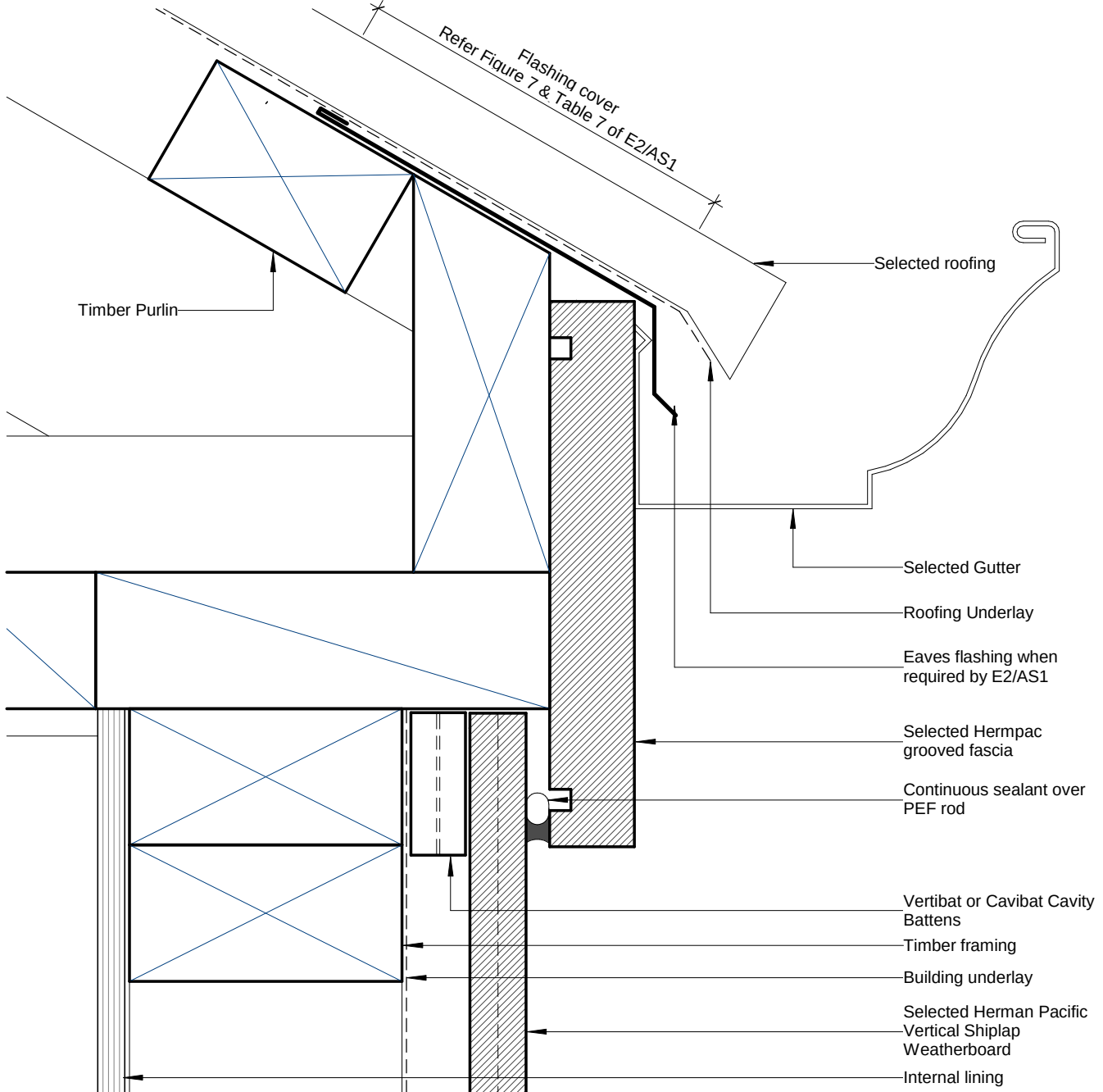
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

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- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
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SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Eaves Detail, No Overhang



HC-SHIP-602

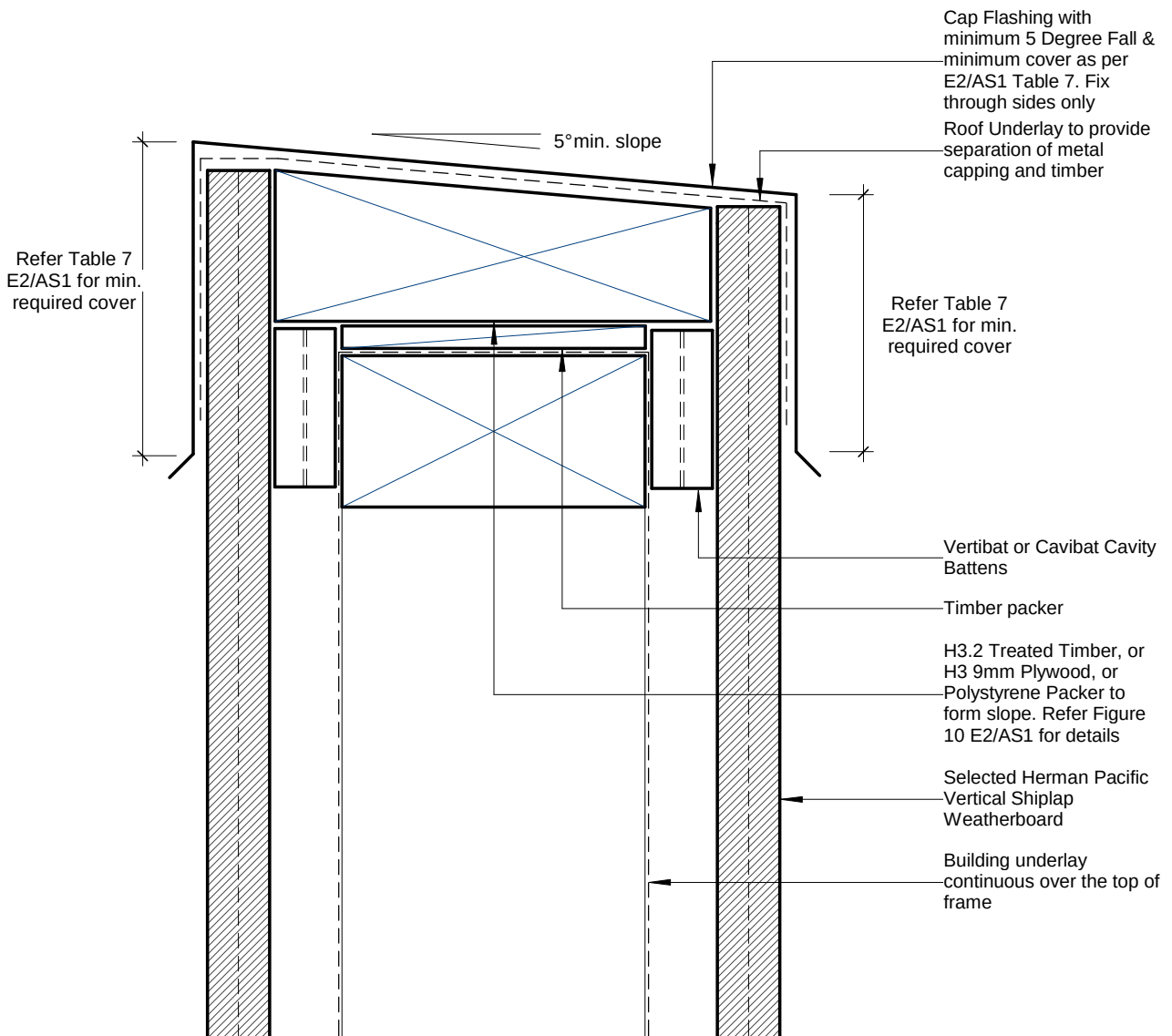
DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



Hermipac

www.hermipac.co.nz

SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Parapet Detail

HC-SHIP-700

DRAWING

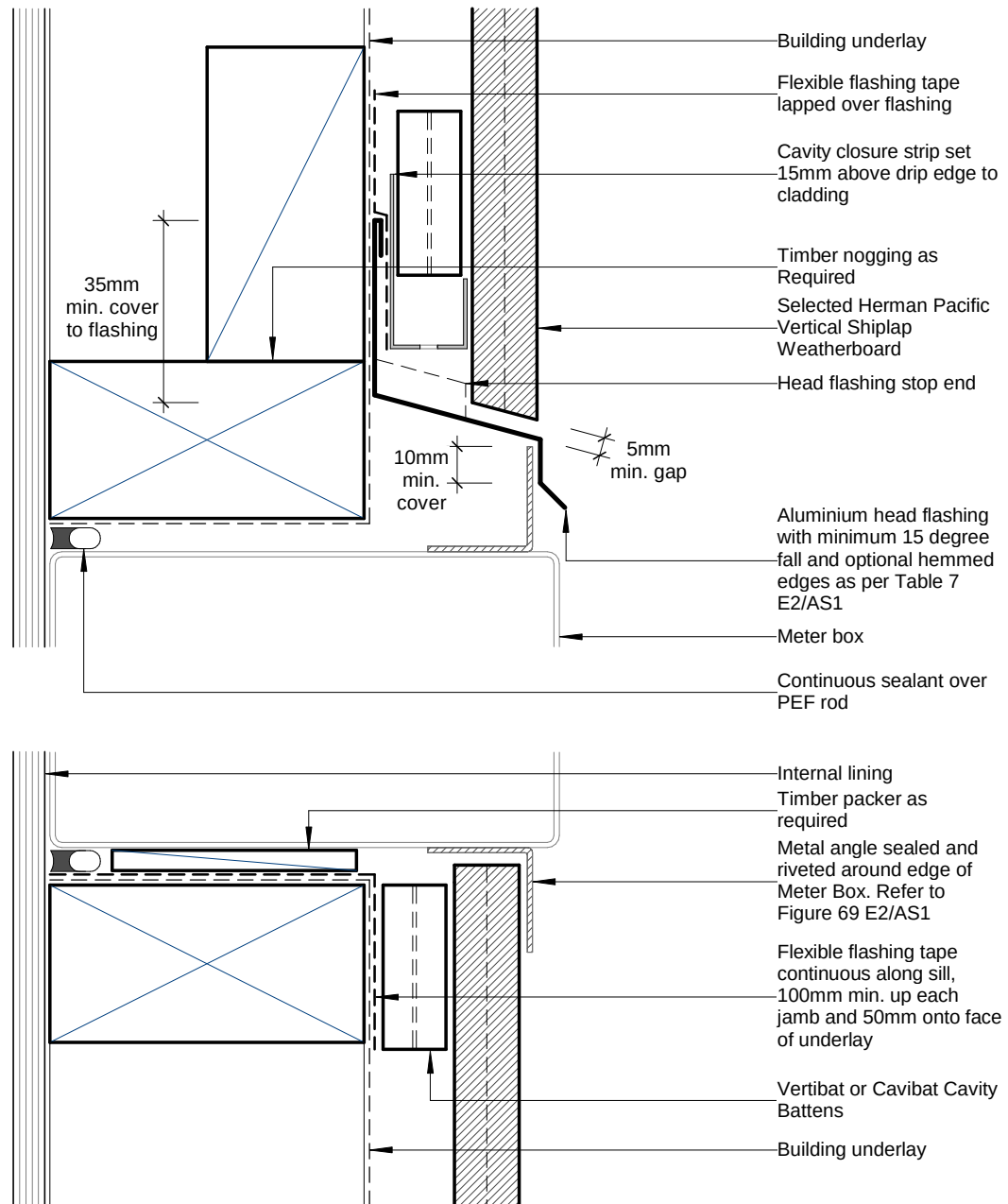
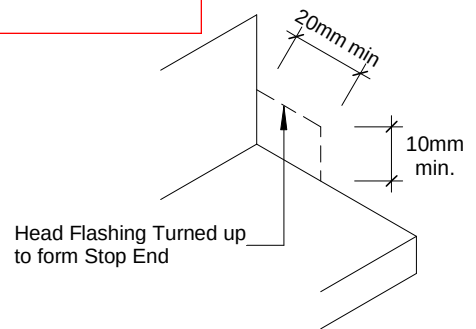
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



Note:

Jamb detail similar to sill



Hermipac

www.hermipac.co.nz

SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Meter Box Detail

HC-SHIP-800

DRAWING

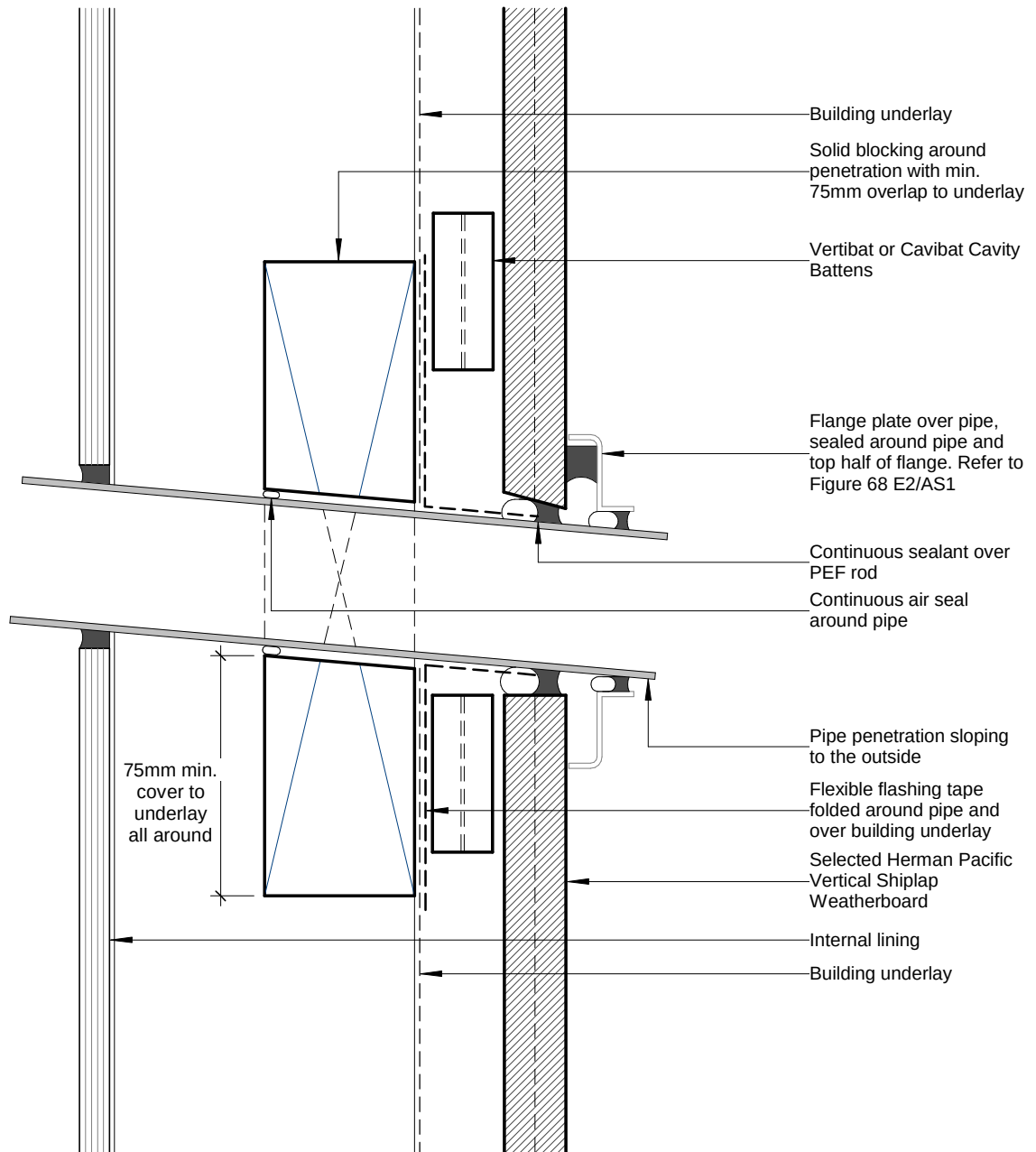
1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be precoated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.



Hermipac

www.hermipac.co.nz

SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Pipe Penetration Detail

HC-SHIP-801

DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE

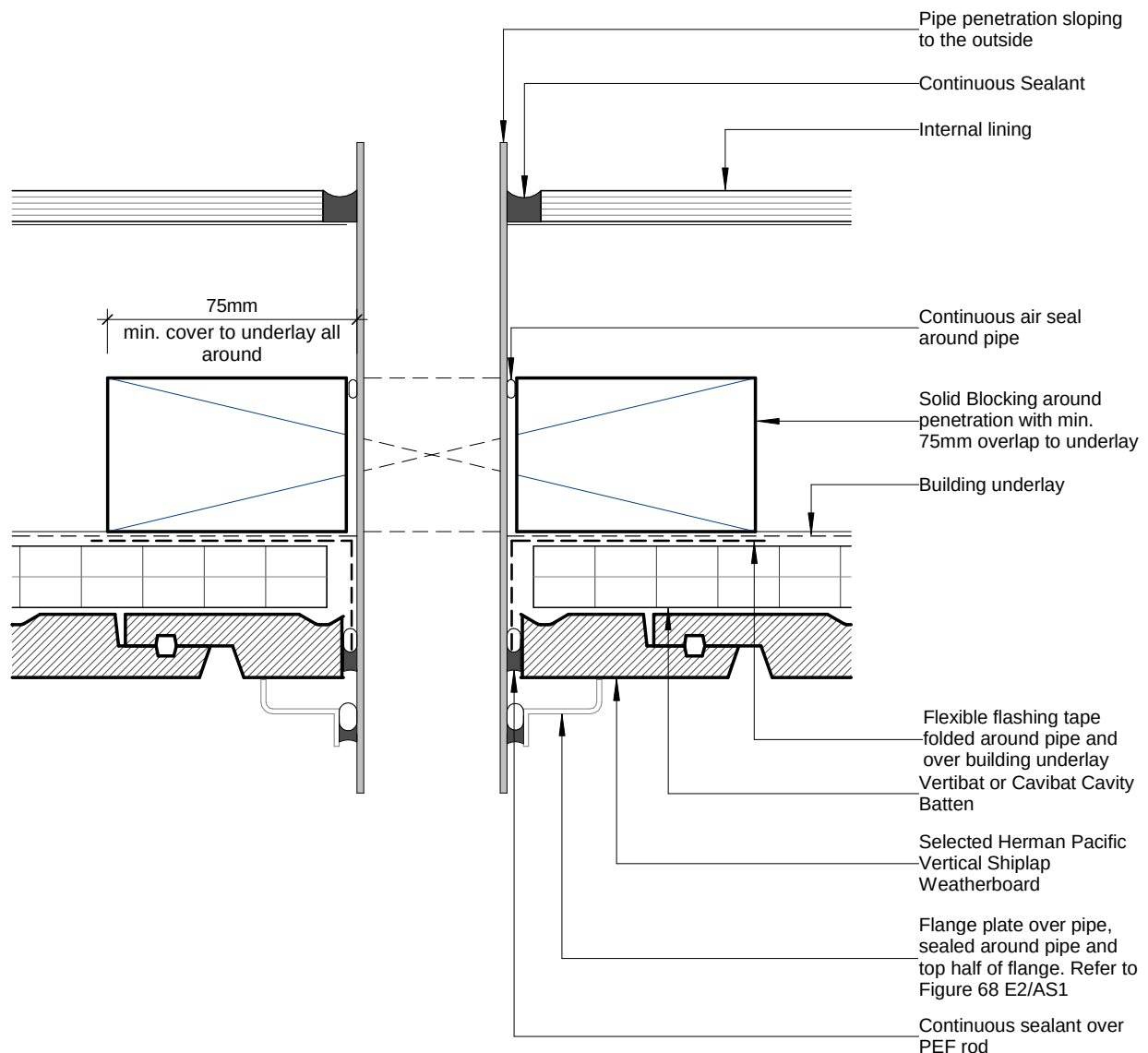


Notes:

- All nail fixings pre-drilled minimum 1mm diameter smaller than the nail gauge.
- All Herman Pacific timber products to be pre-coated & cut ends and edges and all fresh cut surfaces double coated and sealed before fixing.
- All materials and fixtures are to comply with E2/AS1 Clause 2.2
- For non-hemmed corner flashings, ensure a minimum 75mm cover to Weatherboards beyond the point where BRANZ bulletin 411 compliant Weatherboard lap or rebate combinations terminate at the corner junction. In Extra High Wind Zone and above, the 75mm cover requirement remains and hemmed edges must also be used.
- Refer to NZBC Acceptable Solution E2/AS1 Table 21 for the separation requirements between CCA treated battens and metal flashings.

BC200427

Further Information Received
14/09/20



Hermipac

www.hermipac.co.nz

SUBJECT TO CHANGE WITHOUT NOTICE

Cavity Fix Vertical Shiplap Weatherboard System

Pipe Penetration Plan Detail



HC-SHIP-802

DRAWING

1 : 2 @ A4
SCALE

16/10/2017
ISSUED DATE



BRANZ Appraised

Appraisal No.524 [2007]

BRANZ Appraisals

Technical Assessments of products
for building and construction

**BRANZ
APPRAISAL
CERTIFICATE
No. 524 [2007]**

**CAVIBAT
CAVITY BATTEN
SYSTEM**

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Product

1.1 Cavibat is an extruded fluted batten designed for use as a non-structural cavity batten in cavity-based wall cladding systems.

1.2 The Cavibat Cavity Batten System creates an 18 mm cavity, providing a secondary means of weather resistance by separating the cladding from the external wall framing, as well as providing an unobstructed path for any occasional ingress of water that may get past the external skin to drain to the exterior of the building. The Cavibat Cavity Batten System also acts as a total moisture barrier between the cladding and external wall frame.



Scope

2.1 The Cavibat Cavity Batten System has been appraised for use as a non-structural cavity batten system for use with non-structural wall cladding systems on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with cavity-based wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal Certificate that specifies a nominal 20 mm (minimum 18 mm) drained and vented cavity; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

(Note: Cavibat cavity battens can also be used on buildings subject to specific weathertightness design. Weathertightness design and detailing of these installations is the responsibility of the designer and is outside the scope of this Certificate. Cavibat cavity battens are not suitable for use where pressure equalized cavities are required.)

Building Regulations

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Cavibat Cavity Batten System if designed, used, installed and maintained in accordance with the statements and conditions of this Certificate, will meet or contribute to meeting the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The Cavibat Cavity Batten System meets the requirements for loads arising from wind and impact [i.e. B1.3.3 (h) and (j)]. See Paragraphs 9.1 - 9.3.

Clause B2 DURABILITY: Performance B2.3.1 (b), 15 years and B2.3.2. The Cavibat Cavity Batten System meets these requirements. See Paragraphs 10.1 and 10.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Cavibat Cavity Batten System when used to form a drainage cavity behind a cladding system will contribute to meeting this requirement. See Paragraphs 13.1 - 13.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Cavibat Cavity Batten System meets this requirement and will not present a health hazard to people.

3.2 This Certificate appraises an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

4.1 System components and accessories supplied by Cavity Batten Systems Limited are:

Cavibat Cavity Battens

- Cavibat cavity battens are manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 18 mm thick. The battens are supplied in 1200 mm long lengths.
- 4.2 System components and accessories supplied by the building contractor are:
- Cavibat cavity batten fixings – 40 x 2.5 mm flat head galvanised nails or galvanised or stainless steel finishing brads used to temporarily fix the battens in place until the cladding is installed.

Handling and Storage

5.1 Handling and storage of the Cavibat cavity battens, whether on or off site, is under the control of the building contractor. Cavibat cavity battens must be protected from direct sunlight and physical damage, and should be stored flat and under cover.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Cavibat Cavity Batten System. The Technical Literature must be read in conjunction with this Certificate. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Certificate must be followed.

Design Information

General

8.1 Cavibat cavity battens can be used to form drained cavities as specified by NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2, except that Cavibat cavity battens can also be installed continuously in a horizontal orientation as ventilation and drainage is permitted through the batten flutes.

8.2 Cavibat cavity battens can be used as an alternative to the timber and polystyrene cavity battens specified within NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.4.

8.3 Cavibat cavity battens do not provide vermin proofing to the bottom of the drained cavity. A cavity vent strip complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3 must be installed as part of the selected cladding system.

8.4 Where the Cavibat cavity battens are installed vertically or horizontally at greater than 450 mm centres, a building wrap support in accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5 must be installed over the building wrap behind the cavity battens to prevent bulging of the building wrap into the drainage cavity.

8.5 Cavibat cavity battens are compatible with wood based, cement based, fibre cement, polystyrene based, metal and uPVC cladding products and kraft paper based and synthetic building wraps.

Structure

9.1 The Cavibat cavity batten must be treated as a non-structural packer only. Fixing lengths for the cladding material must be as required for non-structural timber cavity battens. If the Cavibat cavity batten is to be used with a cladding system that was originally direct fixed, the fixing length must be increased by a minimum of 18 mm to ensure frame penetration depths are maintained.

Impact Resistance

9.2 Cavibat cavity battens have adequate resistance to impact loads likely to be encountered in normal residential and commercial use. The battens also have adequate resistance to compressive loads likely to be encountered during fixing of the cladding.

Wind Zone

9.3 Cavibat cavity battens are able to transfer the positive wind loads on the wall cladding to the structural wall frame. Cavibat cavity battens are suitable for use on buildings situated in all Building Wind Zones of NZS 3604, up to, and including 'Very High'.

Durability

Serviceable Life

10.1 Provided the Cavibat Cavity Batten System is not exposed to weather or ultra-violet (UV) light for a total of more than 60 days, it is expected to have a serviceable life of at least 15 years.

10.2 The Cavibat Cavity Batten System will have a durability equivalent to that of the cladding to meet code compliance with NZBC Clause B2.3.2 provided the cladding system is maintained in accordance with this Certificate and the batten is continually protected from UV light.

Maintenance

11.1 No maintenance is required for the Cavibat Cavity Batten System. Regular checks, at least annually, must be made of the wall cladding, flashings and penetrations to ensure they are maintained weathertight and continue to perform their function, to ensure that water will not penetrate the cladding.

Outbreak of Fire

12.1 The Cavibat Cavity Batten System must be separated from chimneys and flues in accordance with the requirements of NZBC Acceptable Solution C/AS1, Part 9 for the protection of combustible materials.

External Moisture

13.1 Cavibat cavity battens alone will not prevent airflow into the roof space. The cavity must be sealed off from the roof space to meet code compliance with NZBC Clause E2.3.5.

13.2 Drained cavities constructed using the Cavibat Cavity Batten System allow excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with NZBC Clause E2.3.6.

13.3 Where a cladding manufacturer specifies a drained cavity that complies with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.2 as part of their system, the Cavibat Cavity Batten System may be used. Where a proprietary cladding system manufacturer specifies timber or polystyrene cavity battens as part of their system, permission must be obtained from the cladding manufacturer before the timber or polystyrene cavity battens are substituted with Cavibat cavity battens.

13.4 The detailing of the cladding system including junctions between the cladding system and external joinery, other wall penetrations, e.g. meter boxes, and other cladding and roofing junctions is the responsibility of the building designer for compliance with the NZBC. These details have not been assessed as part of this Appraisal.

13.5 The use of the Cavibat Cavity Batten System to form a drained cavity where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations etc of the cladding system to remain weather resistant.

Installation Information

Installation Skill Level Requirements

14.1 Installation of the Cavibat Cavity Batten System must be completed by competent tradespersons with an understanding of cavity construction.

System Installation

Building Wrap and Flexible Sill and Jamb Tape Installation

15.1 The selected building wrap and flexible sill and jamb flashing tape must be installed in accordance with the wrap and flashing tape manufacturer's instructions prior to the installation of the Cavibat cavity battens.

Cavibat Cavity Battens

15.2 Cavibat cavity battens may be cut on site with a knife, hand saw or drop saw.

15.3 Cavibat cavity battens must be installed over the building wrap to the wall framing. The cavity battens must be fixed in place with 40 x 2.5 mm galvanised flat head nails or galvanised or stainless steel finishing brads at approximately 400 mm centres.

15.4 Where the studs are at greater than 450 mm centres, a building wrap support must be installed over the building wrap.

15.5 The battens must be installed in continuous lengths and may be installed vertically and/or horizontally to suit the requirements of the selected cladding.

Inspections

15.2 The Technical Literature must be referred to during the inspection of Cavibat Cavity Batten System installations.

Health and Safety

16.1 There are no specific health and safety requirements for the Cavibat Cavity Batten System, however safe use and handling procedures for the components that make up the cladding system must be followed in accordance with the requirements of the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

17.1 The following testing has been completed by BRANZ:

- Assessment of the face load strength of the Cavibat cavity batten was completed by fixing a representative cladding material through the cavity batten into timber framing. Power-driven nails, hand driven nails, wood screws and Tek screws were used to fix the cladding and the results were used in assessing the impact resistance of the Cavibat Cavity Batten System.
- BRANZ expert opinion on NZBC E2 code compliance for the Cavibat Cavity Batten System was based on testing to the relevant components of E2/VM1. The testing assessed the performance of the Cavibat cavity batten in a continuous vertical and horizontal orientation. In addition to the weathertightness test, the Technical Literature has been reviewed, and an opinion has been given by BRANZ technical experts that the Cavibat Cavity Batten System will meet the performance levels of Acceptable Solution E2/AS1 Third Edition July 2005 for drained cavity claddings.

Other Investigations

18.1 A durability opinion has been given by BRANZ technical experts.

18.2 Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

18.3 The Technical Literature for Cavibat Cavity Batten System has been examined by BRANZ and found to be satisfactory.

Quality

19.1 The manufacture of the Cavibat cavity batten has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

19.2 The quality of supply to the market is the responsibility of Cavity Batten Systems Limited.

19.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems, building wraps, flashing tapes, airseals and cladding system in accordance with the instructions of the designer.

19.4 The quality of installation, handling and storage on site of the Cavibat cavity battens is the responsibility of the installer.

Sources of Information

- NZS 3604: 1999 Timber framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- The Building Regulations 1992, up to, and including October 2004 Amendment.



BRANZ

In the opinion of BRANZ, Cavibat Cavity Batten System is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used, designed, installed and maintained as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Cavity Batten Systems Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the technical literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. The Certificate Holder:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. BRANZ makes no representation as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by the Certificate Holder.
5. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.

For BRANZ

P Robertson
Chief Executive

Date of issue: 21 March 2007



BRANZ Appraised

Appraisal No. 650 [2014]

HERMPAC VERTILINE VERTICAL SHIPLAP WEATHERBOARD CAVITY SYSTEM

Appraisal No. 650 [2014]

This Appraisal replaces BRANZ
Appraisal No. 650 [2009].

Amended 13 October 2017



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System is a cavity-based shiplap timber weatherboard external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.
- 1.2 The system consists of vertically fixed Herman Pacific Limited shiplap weatherboards, ventilated cavity battens, flashings and accessories and is finished with a premium penetrating oil stain or an exterior paint system to Herman Pacific Limited specifications.
- 1.3 The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with a minimum 18 mm drained cavity.

Scope

- 2.1 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards and paint finished DuraLarch and Ashin-Dura weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
 - the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Extra High.
- 2.2 The Hermac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating stain finished weatherboards has also been appraised for weathertightness and structural wind loading when used as an external wall cladding system for buildings within the following scope:
 - the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
 - constructed with timber framing subject to specific engineering design; and,
 - situated in specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.

- 2.3 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards has been appraised as an external wall cladding system for buildings within the following scope:
- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
 - constructed with timber framing complying with the NZBC; and,
 - with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
 - situated in NZS 3604 Wind Zones up to, and including Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.
- 2.4 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System must only be installed vertically on vertical, flat surfaces.
- 2.5 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is appraised for use with aluminium window and door joinery that is installed with vertical jambs and horizontal heads and sills. *[The Appraisal of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Wind Zone or wind pressure.]*

Building Regulations

New Zealand Building Code [NZBC]

- 3.1 In the opinion of BRANZ, the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:
- Clause B1 STRUCTURE:** Performance B1.3.1, B1.3.2 and B1.3.4 for the relevant physical conditions of B1.3.3 being self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 9.1 - 9.5.
- Clause B2 DURABILITY:** Performance B2.3.1 (b), 15 years and B2.3.2. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets these requirements. See Paragraphs 10.1 and 10.2.
- Clause E2 EXTERNAL MOISTURE:** Performance E2.3.2. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement. See Paragraphs 14.1 - 14.5.
- Clause F2 HAZARDOUS BUILDING MATERIALS:** Performance F2.3.1. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System meets this requirement and will not present a health hazard to people.

Technical Specification

- 4.1 System components and accessories supplied by Herman Pacific Limited are as follows:

Hermpac Shiplap Weatherboards

- Hermpac shiplap weatherboards are manufactured from Canadian Coastal Western Red Cedar. Selected weatherboards are also manufactured from DuraLarch and Ashin-Dura.
- The weatherboard lap and rebate profiles are in accordance with NZS 3617 and BRANZ Bulletin 411. The weatherboards are minimum 18.5 mm thick and are available in a range of widths and face profiles. They are supplied in random lengths. Lengths outside of the general specification may be available by special contract.
- Cedar and DuraLarch weatherboards are supplied unfinished for site finishing with stain or paint prior to installation, or prefinished using the flood coat application method by Machinecoat NZ Limited. Ashin-Dura weatherboards are treated to Hazard Class H3.1 and must be paint finished only. They are supplied primed, or prefinished by Machinecoat NZ Limited. Refer to the Appraisals listing on the BRANZ website for details of the Herman Pacific shiplap weatherboard profiles covered by this Appraisal. *[Note: This Appraisal is only valid when weatherboards with profiles as listed are supplied by Herman Pacific Limited.]*

Accessories

- **Herm pac external corner mouldings** – 40 x 40 mm, 42 x 42 mm and the Herm pac ‘Smart Corner’ series of profiled external corner moulds supplied in lengths 1.8 m and longer.
- **Herm pac internal corner mould** – 18.5 x 18.5 mm through to 39 x 39 mm and the Herm pac ‘Smart Corner’ series, supplied in 1.8 m and longer.
- **Herm pac cover boards** – 18 mm thick boards in widths of 69 and 90 mm. The cover boards are supplied in lengths 1.8 m and longer.
- **Herm pac eaves moulding** – 40 x 27 mm, 26 x 15 mm and 30 x 18 mm bevelled profile, supplied in 1.8 m and longer.

[Note: All timber accessories are manufactured from Canadian Coastal Western Red Cedar or Siberian Larch heartwood.]

- **Herm pac J Mould Flashing** – an extruded aluminium J-shaped flashing to cap the ends of the weatherboards at window and door jambs. The J Mould is available 20 and 29.5 mm wide with a 70 mm return and is supplied in 2.4 and 3.0 m lengths.
- **Herm pac aluminium cavity closure** – an extruded aluminium cavity closure available 20 and 40 mm wide. The cavity closure is supplied in 2.4 and 3.0 m lengths.
- **Vertibat cavity battens** – 45 x 20 mm [V1], 45 x 40 mm [V3], 45 x 45 mm [V5], 70 x 20 mm [V2], 70 x 40 mm [V4] or 70 x 45 mm [V6] Radiata pine batten treated to Hazard Class H3.1 or H3.2. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20 mm wide x 5 mm deep rebates at 100 mm centres. The grooves are offset on each face.
- **Vertibat cavity batten fixings** [for 40 or 45 mm thick battens when fixed to studs only] – 12 gauge x 65 mm long Grade 304 or 316 stainless steel screws [for 40 mm battens] and 12 gauge x 75 mm long Grade 304 or 316 stainless steel screws [for 45 mm battens].
- **Herm pac stain finished shiplap weatherboard fixings** [for Vertibat and Cavibat battens fixed to dwangs] – silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Herm pac stain finished shiplap weatherboard fixings** [for 40 or 45 mm Vertibat battens fixed to studs only] – silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails. The nail shank must be minimum 2.8 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Herm pac paint finished shiplap weatherboard fixings** [for Vertibat and Cavibat battens fixed to dwangs] – Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame.
- **Herm pac paint finished shiplap weatherboard fixings** [for 40 or 45 mm Vertibat battens fixed to studs only] – Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the Vertibat cavity batten.
- **Herm pac clinch nails** – 27 x 2.0, 40 x 2.0 or 50 x 2.0 mm Grade 316 stainless steel annular grooved nails with an off-set flat head.
- **Herm pac cover board fixings** – 50 x 2.8 mm silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Herm pac Crown Head, Rose Head or Flat Head nails.

4.2 Accessories used with the Herm pac VertiLine Vertical Shiplap Weatherboard Cavity System which are supplied by the building contractor are:

- **Flexible wall underlay** – building paper complying with NZBC Acceptable Solution E2/AS1, Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall underlays.
- **Flexible wall underlay support** – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the flexible wall underlay in place and preventing bulging of the bulk insulation into the drainage cavity. *[Note: mesh and wire galvanising must comply with AS/NZS 4534.]*

- **Rigid wall underlay** - Plywood or fibre cement sheet complying with NZBC Acceptable Solution E2/AS1, Table 23, or rigid sheathing covered by a valid BRANZ Appraisal for use as rigid air barrier systems.
- **Flexible sill and jamb flashing tape** - flexible flashing tapes complying with NZBC Acceptable Solution E2/AS1, Paragraph 4.3.11, or flexible flashing tapes covered by a valid BRANZ Appraisal for use around window and door joinery openings.
- **Window and door trim cavity air seal** - air seals complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6, or self-expanding, moisture cure polyurethane foam air seals covered by a valid BRANZ Appraisal suitable for use around window, door and other wall penetration openings.
- **Cavibat cavity battens** - manufactured from extruded polypropylene. The battens are cut after extruding to a finished size of approximately 45 mm wide by 18 mm thick. The battens are coloured green and are supplied in 1200 mm long lengths. Cavibat cavity battens are covered by BRANZ Appraisal No. 524 [2012].
- **Cavibat fixings** - 40 x 2.5 mm flat head hot-dip galvanised nails or stainless steel finishing brads used to temporarily fix the battens in place until the cladding is installed.
- **Vertibat cavity batten fixings** [20 mm thick batten] - 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Vertibat cavity batten fixings** [40 or 45 mm thick battens when fixed to dwangs] - 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails to temporarily fix the battens in place prior to installation of the cladding.
- **Cavity vent strip** - uPVC, aluminium or stainless steel, punched with 3-5 mm diameter holes or slots complying with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3.
- **Flashings** - including external corner flashing, internal corner flashing, horizontal inter-storey joint flashing, balustrade and parapet saddle flashing and balustrade and parapet cap flashings. Refer to NZS 3604, Section 4 and NZBC Acceptable Solution E2/AS1, Table 20 and Table 21 for durability and material compatibility requirements.
- **Aluminium joinery head flashings** - as supplied by the joinery manufacturer or contractor.
- **Flexible sealant** - sealant complying with NZBC Acceptable Solution E2/AS1, or sealant covered by a valid BRANZ Appraisal for use as a weather sealing sealant for exterior use.

Finishing System Specification - Stain Finish

- 4.3 Prior to the installation of stain finished weatherboards, the back, face, ends and edges of the Hermpac shiplap weatherboards not supplied prefinished must be sealed with an exterior grade oil-based penetrating stain. At least two coats of an exterior grade quality oil-based penetrating stain must be used over the front face of the Hermpac shiplap weatherboards to protect the weatherboards and give the desired finish colour to the exterior walls. The stain must be recommended for use as a wall cladding stain by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary stain systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: Herman Pacific Limited recommends the use of oil based stains manufactured by Resene and WoodX.]*

Finishing System Specification - Paint Finish

- 4.4 Prior to the installation of paint finished weatherboards that are supplied unprimed, the back, face, ends and edges of the Hermpac shiplap weatherboards must be primed in accordance with the Technical Literature for the relevant timber type. All exposed edges, including top edges at sills and all bottom edges of Hermpac shiplap weatherboards and accessories not supplied prefinished, must be finished with at least two coats of an exterior grade acrylic latex paint complying with any of Parts 7, 8, 9 or 10 of AS 3730 to protect the weatherboards and give the desired finish colour to the exterior walls. The paint must be recommended for use as a wall cladding paint for the selected timber by the manufacturer and must be applied in accordance with the manufacturer's instructions. Proprietary paint systems have not been assessed, and are therefore outside the scope of this Appraisal. *[Note: For Hermpac shiplap weatherboards, Herman Pacific Limited recommends using paint with a colour that has a Light Reflectance Value (LRV) of greater than or equal to 40%.]*

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Herman Pacific Limited or the building contractor, whether on site or off-site, is under the control of the building contractor. Hermpac vertical shiplap weatherboards must be stacked flat and true, clear of the ground by a minimum of 150 mm and supported on dry and clean timber bearers at maximum 900 mm centres. They must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. Care must be taken to avoid damage to edges, ends and the weatherboard surfaces.
- 5.2 Accessories must be stored so they are kept clean, dry and undamaged. All accessories must be used within the maximum storage period recommended by the manufacturer.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

Framing

Timber Treatment

- 7.1 Timber wall framing behind the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber Framing

- 7.2 Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. In all cases studs must be at maximum 600 mm centres. Where Vertibat or Cavibat cavity battens are fixed to dwangs, the dwangs must be fitted flush between the studs at maximum 480 mm centres. Where 40 or 45 mm thick Vertibat cavity battens are fixed to studs only, dwangs must be fitted flush between the studs at maximum 800 mm centres.
- 7.3 Additional framing may be required at soffits, internal and external corners and window and door openings for the support and fixing of cavity battens and the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System.
- 7.4 Timber wall framing behind where weatherboards are joined over a cavity batten must be nominal 50 mm thickness [i.e. 45 mm minimum finished thickness].
- 7.5 Timber wall framing must have a maximum moisture content of 24% at the time of the cladding application. *[Note: If Hermpac shiplap weatherboards are fixed to framing with a moisture content of greater than 24% problems may occur at a later date due to excessive timber shrinkage.]*

General

- 8.1 When the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is used for specifically designed buildings up to 2.5 kPa design differential ULS wind pressure, only the weathertightness aspects of the cladding and maximum framing centres are within the scope of this Appraisal. All other aspects of the building need to be specifically designed and are outside the scope of this Appraisal.
- 8.2 Punchings in the cavity vent strip must provide a minimum ventilation opening area of 1000 mm² per lineal metre of wall in accordance with the requirements of NZBC Acceptable System E2/AS1, Paragraph 9.1.8.3 [b]. *[Note: Vertibat cavity battens can be used to provide vermin proofing at the bottom of the cavity. Cavibat cavity battens do not provide vermin proofing to the bottom of the drained cavity and an additional cavity vent strip must be used.]*

- 8.3 The ground clearance to finished floor levels as set out in NZS 3604 must be adhered to at all times. At ground level, paved surfaces, such as footpaths, must be kept clear of the bottom edge of the cladding system by a minimum of 100 mm, and unpaved surfaces by 175 mm in accordance with the requirements of NZBC Acceptable System E2/AS1, Table 18.
- 8.4 At balcony, deck or roof/wall junctions, the bottom edge of the Herculac VertiLine Vertical Shiplap Weatherboard Cavity System must be kept above the top surface of any adjacent roof flashing by a minimum of 35 mm in accordance with NZBC Acceptable System E2/AS1, Paragraph 9.1.3.
- 8.5 All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including Very High, and rigid underlays for buildings in the Extra High wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure. Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.
- 8.6 Where the system abuts other cladding systems, designers must detail the junction to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Inter-storey Junctions

- 8.7 Inter-storey drained joints must be constructed in accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4 [b].

Structure

Mass

- 9.1 The mass of the Herculac VertiLine Vertical Shiplap Weatherboard Cavity System is less than 30 kg/m². The system is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

- 9.2 The Herculac VertiLine Vertical Shiplap Weatherboard Cavity System has good resistance to impact loads likely to be encountered in normal residential use. The likelihood of impact damage to the system when used in light commercial situations should be considered at the design stage, and appropriate protection such as the installation of bollards and barriers should be considered for vulnerable areas.

Wind Zones

- 9.3 The VertiLine Cavity System incorporating stain finished weatherboards is suitable for use in all Wind Zones of NZS 3604, up to and including Extra High where buildings are designed to meet the requirements of NZBC Acceptable System E2/AS1, Paragraph 1.1, or up to 2.5 kPa design differential ULS wind pressure where buildings are specifically designed.
- 9.4 The Herculac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished DuraLarch and Ashin-Dura weatherboards is suitable for use in all Wind Zones of NZS 3604, up to and including Extra High where buildings are designed to meet the requirements of NZBC Acceptable System E2/AS1, Paragraph 1.1.
- 9.5 The Herculac VertiLine Vertical Shiplap Weatherboard Cavity System incorporating paint finished cedar weatherboards is suitable for use in NZS 3604 Wind Zones up to, and including Medium when dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.

Durability

Serviceable Life

- 10.1 Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installations are expected to have a serviceable life of at least 20 years provided the system is maintained in accordance with this Appraisal and the Hermpac shiplap weatherboards are continuously protected by a stain or paint finish. *[Note: For stain finished weatherboards, this opinion only covers serviceability with regards to structural and weathertightness performance. It does not cover appearance, which may deteriorate significantly, especially when proper and regular maintenance is not carried out.]*
- 10.2 Microclimatic conditions, including geothermal hot spots, industrial contamination and corrosive atmospheres and contamination from agricultural chemicals or fertilisers can convert mildly corrosive atmosphere into aggressive environments for fasteners. The fixing of weatherboards in areas subject to microclimatic conditions requires specific design in accordance with NZS 3604, Paragraph 4.2.4, and is outside the scope of this Appraisal.

Maintenance

- 11.1 Regular maintenance is essential to ensure the performance requirements of the NZBC are continually met and to ensure the maximum serviceability of the system.
- 11.2 Regular cleaning [at least annually] of the stain or paint coating is required to remove grime, dirt and organic growth and to maximise the life and appearance of the coating. Grime may be removed by brushing with a soft brush, warm water and detergent.
- 11.3 Recoating of the stain finish will be necessary throughout the life of the cladding system. Restaining must be carried out every 2-3 years or in accordance with the stain manufacturer's instructions. Restaining will be required more frequently on exposed northern and western facing walls. When restaining, care must be taken to ensure bottom edges and shiplap edges are well covered and penetrated with the stain.
- 11.4 Recoating of the paint finish will be necessary throughout the life of the cladding system. Repainting must be carried out every 7-10 years or in accordance with the paint manufacturer's instructions. When repainting, care must be taken to ensure bottom edges and shiplap edges are well covered with the paint.
- 11.5 Annual inspections must be made to ensure that all aspects of the cladding system, including flashings and joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately. Sealant, stain or paint coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.
- 11.6 Minimum ground clearances as set out in this Appraisal and the Technical Literature must be maintained at all times during the life of the system. *[Note: Failure to adhere to the minimum ground clearances given in this Appraisal and the Technical Literature will adversely affect the long term durability of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System.]*

Control of External Fire Spread

- 12.1 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is suitable for use on buildings with an SH Risk Group classification, a building height of ≤ 10 m and at a distance of ≥ 1.0 m to the relevant boundary. Refer to NZBC Acceptable Solutions C/AS2 - C/AS6, Paragraph 5.8.1 for the specific exterior surface finishes requirements for other building Risk Groups. *[Note: The scope of this Appraisal limits building heights to 10 m in accordance with the limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 (a). The building heights referenced in Paragraph 12.1 above are as defined in the Definitions Sections of NZBC Clauses C1 - C6 Protection from Fire.]*

Prevention of Fire Occurring

- 13.1 Separation or protection must be provided to the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 14.1 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, when installed in accordance with this Appraisal and the Technical Literature will prevent the penetration of moisture that could cause undue dampness or damage to building elements.
- 14.2 The cavity must be sealed off from the roof and sub-floor space to meet code compliance with NZBC Clause E2.3.5.
- 14.3 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System allows excess moisture present at the completion of construction to be dissipated without permanent damage to building elements to meet code compliance with Clause E2.3.6.
- 14.4 The details given in the Technical Literature for weather sealing are based on the principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing joinery and wall interfaces as shown in the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.
- 14.5 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System, where there is a designed cavity drainage path for moisture that penetrates the cladding, does not reduce the requirements for junctions, penetrations, etc to remain weather resistant.

Internal Moisture

- 15.1 Buildings must be constructed with an adequate combination of thermal resistance and ventilation, and space temperature must be provided to all habitable spaces, bathrooms, laundries and other spaces where moisture may be generated or may accumulate.

Water Vapour

- 15.2 The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is not a barrier to the passage of water vapour, and when installed in accordance with this Appraisal will not create a risk of moisture damage resulting from condensation.

Installation Information

Installation Skill Level Requirements

- 16.1 Installation must always be carried out in accordance with the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Technical Literature and this Appraisal by, or under the supervision of, a Licensed Building Practitioner [LBP] with the relevant Licence Class.

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation

Wall Underlay and Flexible Sill and Jamb Tape Installation

- 17.1 The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System. Flexible wall underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Generic rigid wall underlay materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems must be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the wall underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

Vertibat Cavity Batten Installation [to Dwangs]

- 17.2 Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum dwang spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with 40 x 2.5 mm flat head hot-dipped galvanised nails or 50 x 2.87 mm hot-dipped galvanised gun nails [for 20 mm thick battens], or 60 x 2.8 mm flat head hot-dipped galvanised nails or 60 x 2.87 mm hot-dipped galvanised gun nails [for 40 mm thick battens] to temporarily fix the battens in place prior to installation of the cladding.

Vertibat Cavity Batten Installation [to Studs]

- 17.3 40 or 45 mm thick Vertibat cavity battens must be installed horizontally over the wall underlay to the wall framing [studs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with one 12 gauge x 65 mm long Grade 304 or 316 stainless steel screw at each stud crossing [maximum 600 mm centres] for 40 mm thick battens or one 12 gauge x 75 mm long grade 304 or 316 stainless steel screw at each stud crossing for 45 mm thick battens.

Cavibat Cavity Batten Installation

- 17.4 The Cavibat cavity battens must be installed horizontally over the wall underlay to the wall framing [dwangs] at maximum 480 mm centres. [Refer to Paragraph 9.5 for the maximum Vertibat cavity batten spacings for paint finished cedar weatherboards.] The cavity battens must be fixed in place with 40 x 2.5 mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at 400 mm centres. Refer to BRANZ Appraisal Number 524 [2012] for further information.

Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Installation

- 17.5 Hermpac shiplap weatherboards may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.
- 17.6 Hermpac shiplap weatherboards must be dry prior to installation.
- 17.7 Before stain finished Hermpac shiplap weatherboards are installed, the back, face and edges must be sealed with an exterior grade oil-based penetrating stain. During installation, cut ends must be sealed with an exterior grade oil-based penetrating stain.
- 17.8 Before paint finished Hermpac shiplap weatherboards are installed, the back, face and edges must be primed with an exterior grade primer. During the installation of paint finished Hermpac shiplap weatherboards, cut ends must be sealed with two coats of an exterior grade alkylid timber primer.
- 17.9 Before the weatherboards are installed, the corner detail must be prepared to suit the selected option, e.g. external box corner, external corner moulding etc. The necessary flashings must be installed before commencing weatherboard fixing and the cavity closure must be installed continuously around the bottom of the cavity.
- 17.10 Hermpac shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50 mm. The weatherboards should be installed with the lap facing away from the prevailing winds.
- 17.11 Immediately prior to installing the weatherboards over the internal and external corner flashings, a continuous bead of sealant must be applied to the face of the flashing along the fixing line.
- 17.12 Hermpac shiplap weatherboards must be overlapped a minimum of 25 mm with an expansion gap of 2 mm at the overlap. In NZS 3604 Wind Zones up to and including Very High, it is recommended that the top of the weatherboard lap is restrained using the Hermpac clinch nail at every cavity batten. Hermpac clinch nails must be used to restrain the top of the weatherboard lap in the Extra High Wind Zone and specific design wind pressures up to a maximum design differential ultimate limit state [ULS] of 2.5 kPa.

- 17.13 Hermpac shiplap weatherboards must be pre-drilled with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten. Fixing of stain finished weatherboards must be carried out using silicon bronze or Grade 304 or 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Fixing of paint finished weatherboards must be carried out using Grade 316 stainless steel annular grooved jolt head nails. The nail shank must be minimum 3.15 mm diameter (2.8 mm diameter for stain finished weatherboards fixed to 40 or 45 mm Vertibat battens fixed to studs only) and the length must allow minimum 30 mm penetration of the wall frame (for Vertibat and Cavibat battens fixed to dwangs) and minimum 30 mm penetration of the batten (for 40 or 45 mm thick Vertibat battens fixed to studs only). The fixing must be located 30-35 mm in from the weatherboard lap and a minimum of 32 mm from the end of the board. and Crown Head, Rose Head or Flat Head nails must finish flush onto the surface of the weatherboard, not into or below the surface. The nail must be installed with a slight upslope to reduce capillary draw. Jolt head nails must be punched a maximum of 2 mm beneath the surface of the board.
- 17.14 Fix weatherboards in full lengths where possible. Where joints are unavoidable, scarf the weatherboard at 30° over a cavity batten and fix with one fixing through the overlapping board.

Aluminium Joinery Installation

- 17.15 Aluminium joinery and associated head flashings must be installed by the building contractor in accordance with the Technical Literature. A 7.5 - 10 mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed after the joinery has been secured in place.

Finishing

- 17.16 The stain manufacturer's instructions must be followed at all times for application of the stain finish.
- 17.17 To prevent swelling of the weatherboard around punched fixings, the fixing must be filled immediately, or alternatively the weatherboard and the head of the fixing must be primed with a premium alkyd timber primer.
- 17.18 The paint coating manufacturer's instructions must be followed at all times for the application of the paint finish. Hermpac shiplap weatherboards must be painted as soon as practicable following fixing and must be clean and dry before commencing. If the Hermpac shiplap weatherboards are exposed to the weather for more than 2 months they must be reprimed with one coat of primer prior to the application of the finishing coats. Allow the recommended drying time between coats and follow the temperature limitations for application.

Inspection

- 17.19 The Technical Literature must be referred to during the inspection of VertiLine Cavity System installations.

Health and Safety

- 18.1 Cutting of Hermpac shiplap weatherboards must be carried out in well ventilated areas and dust masks, eye and hearing protection must be worn.
- 18.2 Safe use and handling procedures for the components that make up the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System are provided in the relevant manufacturer's Technical Literature.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

19.1 The following testing has been completed by BRANZ:

- BRANZ expert opinion on NZBC E2 code compliance for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System is based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System was tested to NZBC E2/VM1. The testing assessed the performance of the Vertibat and Cavibat cavity battens, foundation detail, window head, jamb and sill details, meter box head, jamb and sill details, vertical joints, internal and external corners and balustrade to wall junction. In addition to the weathertightness test, the details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the system will meet the performance levels of NZBC Acceptable Solution E2/AS1 for cavity-based weatherboard claddings.
- Fastener pull through testing. BRANZ determined design wind suction pressures, and by comparing these pressures with AS/NZS 1170 pressure coefficients, the fixing requirements were determined for timber framed walls.

Other Investigations

- 20.1 Structural and durability opinions have been provided by BRANZ technical experts.
- 20.2 The performance of timber weatherboard wall cladding products in New Zealand has been considered, including the structural and durability performance, and non-hazardous nature.
- 20.3 Site visits have been carried out by BRANZ to assess the practicability of installation.
- 20.4 The Technical Literature for the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

- 21.1 The manufacture of Hermpac shiplap weatherboards has been examined by BRANZ, including methods adopted for quality control. Details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 21.2 The quality of materials, components and accessories supplied by Herman Pacific Limited is the responsibility of Herman Pacific Limited.
- 21.3 Quality of installation on site of components and accessories supplied by Herman Pacific Limited and the building contractor is the responsibility of the installer.
- 21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, wall underlays, flashing tapes, air seals, cavity battens and the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.
- 21.5 Building owners are responsible for the maintenance of the Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.

Sources of Information

- AS/NZS 1170: 2002 Structural design actions.
- AS/NZS 4534:2006 Zinc and zinc/aluminium-alloy coatings on steel wire.
- NZS 3602:2003 Timber and wood-based products for use in building.
- NZS 3603:1993 Timber Structures Standard.
- NZS 3604:2011 Timber-framed buildings.
- NZS 3617:1979 Specification for profiles of weatherboards, fascia boards and flooring.
- NZS 4211:2008 Specification for performance of windows.
- BRANZ Bulletin Number 411, April 2001, Recommended Timber Cladding Profiles.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 7, 01 January 2017].
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 13 October 2017.

- This Appraisal has been amended to update the system name, to include Dura-Larch and Ashin-Dura as alternative timber types for selected Hermpac Shiplap weatherboards, and to include paint as an alternative finish.
- This Appraisal has been amended to update the system name [07 December 2017].
- This Appraisal has been amended to update the Appraisal Holders details [18 December 2017].



In the opinion of BRANZ, the **Hermipac Vertiline Vertical Shiplap Weatherboard Cavity System** is fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided it is used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Herman Pacific Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Herman Pacific Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Herman Pacific Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Herman Pacific Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

16 September 2014

VertiLine Vertical Shiplap Weatherboard **Cavity System**

Installation Specifications

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VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

1.0 General Information

1.1 Introduction

The VertiLine Vertical Shiplap Cavity System is a cavity-based external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

The cladding system consists of vertically fixed Hermpac shiplap timber weatherboards installed over ventilated battens, flashings and accessories and is finished with a premium penetrating oil stain or paint finish to Hermpac specifications.

The system incorporates a primary and secondary means of weather resistance (first and second line of defence) against water penetration by separating the cladding from the external wall frame with an 18-45mm minimum drained cavity.

1.2 BRANZ Appraisal

The VertiLine Vertical Shiplap Cavity System has been appraised by BRANZ. Refer to Appraisal No. 650 (2014).

1.3 CODEMARK Certification

The VertiLine Vertical Shiplap Cavity System has the Codemark Certificate of Conformity. Refer Certificate No. GM-CM30036.

1.4 Hermpac Vertical Shiplap Weatherboards

Hermpac vertical shiplap weatherboards are manufactured from Canadian Coastal Western Red Cedar. Selected vertical shiplap weatherboards are manufactured from DuraLarch (oil/stain or paint finish) and Ashin-Dura (paint finish only).

The weatherboard lap and rebate profiles are in accordance with NZS 3617 and BRANZ Bulletin 411. The weatherboards are minimum 18.5mm thick and are available in a range of widths and face profiles. They are supplied as a random length supply. Select lengths are outside of the general specification and are available by special contract.

1.5 Cavity Battens

The VertiLine Vertical Shiplap Cavity System uses 20, 40 or 45mm thick Vertibat timber cavity battens, or 18mm Cavibat polypropylene cavity battens to separate the weatherboards from the wall frame and form the cavity.

The 20, 40 and 45mm Vertibat batten and 18mm Cavibat batten are installed horizontally over nogs/dwangs to provide support for the weatherboards at fixings points. The 40 and 45mm thick Vertibat batten can be structurally fixed, installed horizontally across the studs where the weatherboards are then fixed into the batten only.

Vertibat cavity battens are 45 x 20mm (V1), 45 x 40mm (V3), 45 x 45mm (V5), 70 x 20mm (V2), 70 x 40mm (V4), 70 x 45mm (V6) thick Radiata pine treated to minimum Hazard Class H3.1. The top and bottom edges are bevelled with a slope. The front and back face of the batten is grooved with 20mm wide x 5mm deep rebates at 95mm centres. The grooves are offset on each face.

Refer to www.cavibat.co.nz and BRANZ Appraisal No. 524 (2012) for full specifications for the Cavibat cavity battens.

1.6 Accessories

Accessories supplied by Hermpac for use with the VertiLine Vertical Shiplap Cavity System include:

- Hermpac external corner mouldings – HP40 (40 x 40mm) and HP42 (42 x 42mm) and the Hermpac ‘Smart Corner’ series, profiled external corner moulds.
- Hermpac internal corner mould – HP41 (18.5 x 18.5mm), through to HP110 (39 x 39mm) profiles and the Hermpac ‘Smart Corner’ series.
- Hermpac cover battens – HP201 (69 x 18mm) and HP202 (90 x 18mm).
- Hermpac cover batten fixings – 50 x 2.8mm silicon bronze, Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails for

stain finish or Grade 316 stainless steel annular grooved Jolt Head nails for paint finish.

- Hermpac eaves moulding – HP32 (40 x 27mm), HP33 (26 x 15mm) and HP7 (30 x 18mm) bevelled profile.
- Screw fixings for 40-45mm thick Vertibat cavity batten fixed to studs only – 12 gauge x 65-75mm long Grade 304 stainless steel screws. Minimum 25mm penetration to frame required.
- Nail fixings for weatherboards – selection options:
- For oil/stain finish for 18-20mm Cavibat or Vertibat battens fixed to nogs/dwangs) – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank minimum 3.25mm diameter and length to allow 30mm minimum penetration of the wall frame.
- For CedarOne or paint finish for 18-20mm Cavibat or Vertibat battens fixed to nogs/dwangs – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length to allow 35mm minimum penetration of the wall frame.
- For oil/stain finish for 40-45mm Vertibat battens fixed to nogs/dwangs only – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank must be minimum 3.25mm diameter and the length to allow 30mm minimum penetration of the wall frame
- For CedarOne or paint finish for 40-45mm Vertibat battens fixed to nogs/dwangs only – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length must allow 35mm minimum penetration of the wall frame
- For oil/stain for structurally fixed 40-45mm Vertibat battens fixed to studs only – ref: HC-SHIP40-410A – silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails. Nail shank must be minimum 2.8mm diameter and the length must allow 30mm minimum penetration of the Vertibat V3-V6 cavity batten.
- For CedarOne or paint for structurally fixed 40 or 45mm Vertibat battens fixed to studs only – ref: HC-SHIP40-411A – Grade 316 stainless steel annular grooved Hermpac Jolt Head nails. Nail shank must be minimum 3.25mm diameter and the length must allow 35mm minimum penetration of the Vertibat V3-V6 cavity batten.
- Hermpac clinch nails – Grade 316 stainless steel annular grooved nails with an off-set flat head.
- Hermpac aluminium flashings – widths to suit specified corners – 2.4m or 3.0m lengths.
- Hermpac J Mould Flashing – for window jambs – 20mm or 29.5mm, 2.4m or 3.0m lengths.
- Hermpac aluminium Cavity Closure – 20mm or 40mm, 2.4m or 3.0m lengths.

1.7 Handling and Storage

Hermpac vertical shiplap weatherboards must be stacked flat and true, clear of the ground by a minimum of 150mm and supported on dry and clean timber bearers at maximum 900mm centres.

The weatherboards must be kept dry at all times either by storing within an enclosed building or when stored externally an additional secondary cover to the plastic wrapping is required. Care must be taken to avoid damage to edges, ends and the weatherboard surfaces.

2.0 Design Information

2.1 Design Responsibility

The Specifier for the project must ensure that the details in this literature are suitable for the intended application and

VertiLine Vertical Shiplap Weatherboard Cavity System

Installation Specifications

that additional detailing is provided for specific design or any areas that fall outside the scope and specifications of this literature.

2.2 Scope

The use of the VertiLine Vertical Shiplap Cavity System as an external vertically fixed wall cladding system for buildings within the following scope:

Stain finished weatherboards with crown/rose/flat head nails. Paint finished DuraLarch and Ashin-Dura weatherboards fixed with annular grooved jolt/crown/rose/flat head nails. Paint finished Western Red Cedar weatherboards fixed with annular grooved crown/rose/flat head nails:

- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
- constructed with timber framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including 'Extra High'.

Any stain or paint finished weatherboards if fixed with annular grooved flat/crown/rose head nails, only for weathertightness and structural wind loading for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- constructed with timber framing complying with the NZBC; and,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5 kPa.

CedarOne or other paint finished Western Red Cedar weatherboards if fixed with annular grooved jolt head nails:

- the scope limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1; and,
- constructed with timber framing complying with the NZBC; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- situated in NZS 3604 Wind Zones up to, and including Medium when nogs/dwangs or structural Vertibat cavity battens are at maximum 480 mm centres, and NZS 3604 Wind Zones up to, and including Very High when nogs/dwangs or structural Vertibat cavity battens are at maximum 400 mm centres.

For applications which are outside the scope of this literature and details which are not in this literature the specifier must ensure that the design meets the relevant performance requirements of the NZBC.

Hermipac recommends that professional design advice is sought in these circumstances.

2.3 Building Regulations

The VertiLine Vertical Shiplap Cavity System if designed, used and installed in accordance with the statements and conditions of this literature and the supporting BRANZ Appraisal, will meet the following provisions of the New Zealand Building Code:

- Clause B1 Structure
- Clause B2 Durability
- Clause E2 External Moisture
- Clause F2 Hazardous Building Materials

2.4 Ground Clearances

The finished floor level must have a minimum clearance to paved or unprotected ground as required by NZS 3604:2011.

Hermipac weatherboards must overhang the bottom plate

on a concrete slab by a minimum of 50mm as required by NZBC Acceptable Solution E2/AS1, Table 18.

The bottom edge of the VertiLine Vertical Shiplap Cavity System must finish a minimum of 100mm above paved surfaces or 175mm above unprotected ground.

At deck or low pitch roof/wall junctions, the bottom edge of the Hermipac weatherboards must be kept clear of any adjacent surface, or above the top surface of any adjacent roof flashing by a minimum of 35mm.

2.5 Structure & Framing

Timber wall framing behind the VertiLine Vertical Shiplap Cavity System must be treated as required by NZBC Acceptable Solution B2/AS1.

Timber framing must comply with NZS 3604 for buildings or parts of buildings within the scope limitations of NZS 3604. Buildings or parts of buildings outside the scope of NZS 3604 must be to a specific design in accordance with NZS 3603 and AS/NZS 1170. Where specific design is required, the framing must be of at least equivalent stiffness to the framing provisions of NZS 3604. Use of timber framing must be in accordance with framing manufacturer's specifications.

In all cases studs must be at maximum 600mm centres. Where Vertibat or Cavibat cavity battens are fixed to nogs/dwangs, the nogs/dwangs must be fitted flush between the studs at maximum 480mm centres. Where 40 or 45mm thick Vertibat cavity battens are fixed to studs only, nogs/dwangs must be fitted flush between the studs at maximum 800mm centres.

Note: For CedarOne or painted cedar weatherboards fixed with annular grooved Grade 316 stainless steel Jolt Head nails, nogs/dwangs or structurally fixed Vertibat cavity battens must be at a maximum 480mm centres for NZS 3604 Wind Zones up to, and including Medium and at a maximum 400mm centres for NZS 3604 Wind Zones High and Very High.

2.6 Framing Tolerances

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 NZS 3604:2011.

2.7 Cavity Closure Strip

The VertiLine Vertical Shiplap Cavity System must incorporate a cavity closure strip to close off the bottom of the cavity and provide resistance against the penetration of vermin. The cavity closure strip must be in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.3. The cavity closure strip must be manufactured from uPVC, aluminium or stainless steel, and be punched with 3-5mm holes or slots which provide a minimum ventilation opening area of 1000mm² per lineal metre of wall.

2.8 Wall Underlay

The VertiLine Vertical Shiplap Cavity System must be installed over wall underlay complying with NZBC Acceptable Solution E2/AS1, Table 23, or wall underlays covered by a valid BRANZ Appraisal.

All external walls of buildings must have barriers to airflow in the form of interior linings with all joints stopped for wind zones up to and including 'Very High', and rigid underlays for buildings in the 'Extra High' wind zone and specifically designed buildings up to 2.5 kPa design differential ULS wind pressure.

Unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable Solution E2/AS1, Table 23. For attached garages, wall underlays must be selected in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.3.4. Where rigid underlays are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the underlay.

2.9 Inter-storey Junctions

Inter-storey drained joints must be constructed in

VertiLine Vertical Shiplap Weatherboard Cavity System

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accordance with the Technical Literature. Inter-storey drained joints must be provided to limit continuous cavities to the lesser of 2-storeys or 7 metres in height, in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.9.4(b).

2.10 Hermpac Vertical Shiplap Weatherboards

Hermpac vertical shiplap weatherboards shall be fixed with an approximate 2mm vertical expansion gap at the overlap between boards. Hermpac vertical shiplap profiles are all manufactured in accordance with BRANZ Bulletin 411 (Refer to E2/AS1 page 121, Paragraph 9.4.1.1) and have a 27mm rebate for a 25mm lap.

The weatherboards shall be pre-coated with the selected coating (prior to site delivery and installation) by Hermpac associate Machinecoat (NZ) Ltd, by the flood coat inundation method or in-line spray coat system (subject to coating type selected).

Pre-finished vertical shiplap weatherboards shall be over-coated and maintained in accordance with the coating manufacturer's specification. All cut ends and/or uncoated surfaces shall be double coated during installation to protect against the penetration of moisture, post installation.

The weatherboards shall be fixed to nogs/dwangs (or structurally fixed to 40-45mm Vertibat cavity battens) at 400-480mm maximum centres using Hermpac shiplap weatherboard fixings (refer to Section 1.5 of this specification).

External corners shall be weatherproofed by the use of corrosion resistant corner flashings and corner facings, e.g. Hermpac proprietary profiles HP40, HP42 the Hermpac 'Smart Corner' series or cover battens HP201 and HP202.

Internal corners shall be weatherproofed by the use of corrosion resistant internal corner flashings along with internal mouldings, e.g. Hermpac profiles HP41 and HP110 or the Hermpac 'Smart Corner' series.

3.0 Installation Information

3.1 System Installation

This section of the literature should be read in conjunction with the installation details.

The selected wall underlay and flexible sill and jamb tape system must be installed by the building contractor in accordance with the underlay and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the VertiLine Vertical Shiplap Cavity System.

Flexible building underlay must be installed horizontally and be continuous around corners. Underlay must be lapped 75mm minimum at horizontal joints and 150mm minimum over studs at vertical joints.

Generic rigid sheathing materials must be installed in accordance with NZBC Acceptable Solution E2/AS1 and be overlaid with a flexible wall underlay. Proprietary systems shall be installed in accordance with the manufacturer's instructions. Particular attention must be paid to the installation of the building underlay and sill and jamb tapes around window and door openings to ensure a continuous seal is achieved and all exposed wall framing in the opening is protected.

The selected cavity closure strip must be installed so a minimum 15mm drip edge to the bottom of the weatherboards is maintained at all times.

There are several options available for the installation of cavity battens as outlined below.

Vertibat Cavity Battens to Nogs/Dwangs

Vertibat cavity battens must be installed horizontally over the building underlay to the wall framing (nogs/dwangs) at 400-480mm maximum centres. The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The

cavity battens must be fixed in place with 40 x 2.5mm flat head hot-dipped galvanised nails or 50 x 2.8mm hot-dipped galvanised gun nails (for 20mm thick battens), or 60 x 2.8mm flat head hot-dipped galvanised nails or 60 x 2.8mm hot-dipped galvanised gun nails (for 40 or 45mm thick battens) to temporarily fix the battens in place prior to installation of the cladding.

Cavibat Cavity Battens to Nogs/Dwangs

The Cavibat cavity battens must be installed horizontally over the building underlay to the wall framing (nogs/dwangs) at 400-480mm maximum centres. The cavity battens must be fixed in place with 40 x 2.5mm hot-dip galvanised flat head nails or galvanised or stainless steel finishing brads at 400mm centres. Refer to BRANZ Appraisal Number 524 (2012) for further information.

40 or 45mm thick structurally fixed Vertibat Cavity Battens to Studs

40 or 45mm thick Vertibat cavity battens must be installed horizontally over the building underlay to the wall framing (studs) at 400-480mm maximum centres. The battens must be installed with the top edge sloping away from the wall underlay towards the back of the weatherboards. The cavity battens must be fixed in place with one 12 gauge x 65mm long (for V3 or V4) or 12 gauge x 75mm long (for V5 or V6) Grade 304 stainless steel screw at each stud crossing (maximum 600mm centres). A 25mm minimum penetration of the framing is required.

3.1.1 Aluminium Joinery Installation

Aluminium joinery and associated head flashings must be installed in accordance with the window manufacturer's instructions. A 7.5-10mm nominal gap must be left between the joinery reveal and the wall framing so a PEF rod and air seal can be installed in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.6 after the joinery has been secured in place.

3.1.2 Hermpac Vertical Shiplap Weatherboard Installation

Hermpac vertical shiplap weatherboards must not be wet prior to installation. Prior to installation, the back face and edges of the Hermpac shiplap weatherboards must be sealed with an exterior grade oil-based penetrating oil stain or paint. During installation, cut ends and edges and all fresh cuts or exposed timber must be double sealed with an exterior grade oil-based penetrating oil stain or paint.

Hermpac shiplap weatherboards must be installed starting at the corner of the wall section being clad. The first weatherboard must be installed plumb to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50mm. The weatherboards should be installed with the lap facing away from the prevailing winds.

Immediately prior to installing the weatherboards over the internal and external corner flashings, a continuous bead of sealant must be applied to the face of the flashing along the fixing line.

Hermpac shiplap weatherboards must be overlapped a minimum of 25mm with an expansion gap of 2mm at the overlap. The top of the weatherboard lap should be restrained using the Hermpac clinch nail at every cavity batten.

NB: Clinch nails are a proprietary component of all Hermpac cladding systems. We recommend their use on all installations for best performance. Use of clinch nails is mandatory for installations in 'Extra High' wind zones and above.

Hermpac shiplap weatherboards must be pre-drilled on a slight up-slope, with a hole slightly smaller than that of the nail. Fix each weatherboard with one nail per board at every cavity batten.

The fixing must be located 30-35mm in from the weatherboard lap, be located no closer than 32mm (where practical) from the end of the board, and must finish flush onto the surface of the weatherboard, not into or below

VertiLine Vertical Shiplap Weatherboard Cavity System

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the surface.

Fix weatherboards in full lengths where possible. Where joints are required, scarf the weatherboard at 30° over a cavity batten and fix as per detail 'HC-SHIP-413' or 'HC-SHIP40-413'.

For oil/stain finished weatherboards:

Weatherboard fixing must be carried out using silicon bronze or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails.

- For 18mm Cavibat or 20, 40 or 45mm Vertibat fixed to nogs/dwangs, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 30mm penetration of the wall frame.
- For structurally fixed 40-45mm Vertibat battens fixed to studs only, the nail shank must be minimum 2.8mm diameter and the length must allow minimum 30mm penetration of the batten.

For CedarOne and paint finished weatherboards:

Weatherboard fixing must be carried out using Grade 316 stainless steel annular grooved Hermpac Jolt Head nails.

Punch nails 2mm below the weatherboard surface, prime nail holes and fill prior to sanding and finishing.

- For 18mm Cavibat or 20, 40 or 45mm Vertibat fixed to nogs/dwangs, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 35mm penetration of the wall frame.
- For structurally fixed 40-45mm Vertibat battens fixed to studs only, the nail shank must be minimum 3.25mm diameter and the length must allow minimum 35mm penetration of the batten.

3.1.3 Boxed Corners, Cover Battens and Mouldings

External and internal corners must be finished in accordance with the installation detailing.

Most Hermpac 'Smart Corners' mouldings can be fixed by applying a continuous bead of sealant to the inside surfaces of the moulding or the faces of the flashing to which the moulding is to be bonded. Excess coating should be wiped off areas of the moulding intended to contact the adhesive.

Wherever possible, the moulding should be bonded to the flashing prior to installation. If this is not possible, the moulding shall be temporarily held in place while the sealant cures.

A continuous bead of sealant should also be applied at the joint between the moulding and the end-grain cross section of any butted weatherboard and direct to flashing along the line of weatherboard nail fixing (if the weatherboard fixing will pierce the flashing).

Sealant options for Wood-X, Traditional Oil Stains or Resene Waterborne Oil Stains include Bostik Seal N Flex FC or Sikaflex AT Façade (NB: for other stains please check with the manufacturer to determine the most suitable sealant).

Further or sole mechanical support of the Moulding-Flashing interface can be achieved in some cases with a pre-drilled and suitably placed Hermpac nail. The requirement for a continuous bead of sealant as detailed above still applies.

3.1.4 Finishing

At least two coats of an exterior grade quality oil-based penetrating stain must be used over the front face of the Hermpac shiplap weatherboards to protect the weatherboards and give the desired finish colour to the exterior walls. The stain must be recommended for use as a wall cladding stain by the manufacturer and must be brush or Machinecoat NZ Ltd applied. Hermpac recommends the use

of oil based stains manufactured by Wood-X and Resene.

Follow the stain manufacturer's instructions at all times for application of the stain finish.

For paint finish the paint must be recommended for use as a wall cladding paint by the manufacturer and must be brush or Machinecoat NZ Ltd applied.

To ensure a top quality paint finish:

1. Any sharp edges should be removed to provide a radius to aid in uniform paint film coverage.
2. Use a premium alkyd oil or acrylic based primer to envelope prime all cut ends and bare timber surfaces twice.
3. Punch nail holes and prime promptly after punching.
4. Fill holes with a suitable filler and allow to dry.
5. When filler is fully dry and cured, sand area smooth.
6. Apply one coat of an alkyd oil or acrylic based primer to sanded area and allow to fully dry before sanding lightly.
7. Ensure surface is clean and free from any chalking, dirt, dust, mould or other contaminants prior to painting top coats.
8. Apply two coats of premium high quality 100% exterior grade acrylic to surface allowing adequate time for drying between coats.

Timber is a natural product and for best results use a colour with a LRV of 40-45 or above. Please consult with us for a specific recommendation minimum for your chosen timber.

Follow the paint manufacturer's instructions at all times for application of the paint finish.

Refer to Section 4.0 for maintenance requirements.

4.0 Maintenance

Building owners are responsible for the maintenance of the VertiLine Vertical Shiplap Cavity System. Annual inspections must be made to ensure that all aspects of the cladding system, including flashings remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress, must be repaired immediately. Sealant, coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.

Regular cleaning (at least annually) of the surface finish with water and a mild detergent is recommended to remove grime, dirt and organic growth, to maximise the life and appearance of the cladding.

Recoating of the stain finish will be necessary throughout the life of the cladding system. Re-staining must be carried out every 2-3 years in accordance with the stain manufacturer's instructions. Re-staining will be required more frequently on exposed northern and western facing walls. When re-staining, care must be taken to ensure bottom edges and shiplap edges are well covered and penetrated with the stain.

Recoating of the paint finish will be necessary throughout the life of the cladding system. Re-coating must be carried out every 7-10 years in accordance with the paint manufacturer's instructions. When re-coating, care must be taken to ensure bottom edges are well covered and penetrated with the paint.

5.0 Health & Safety

Cutting of Hermpac shiplap weatherboards must be carried out in well ventilated areas and dust masks, eye and hearing protection must be worn.



Hermpac

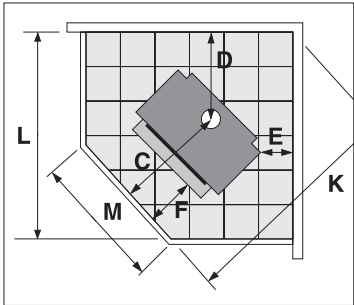
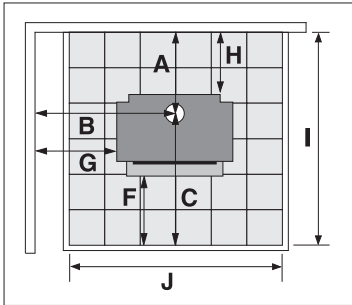
For further information please contact us
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Wood Fire Installation & Owner’s Operation Manual



metrofires

Freestanding Wood Fires

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WARNING! Important Information

- **WE HIGHLY RECOMMEND YOU READ THIS ENTIRE MANUAL AS INCORRECT OPERATION, MISUSE AND/OR LACK OF MAINTENANCE WILL VOID THE WARRANTY**
- The appliance and flue-system shall be installed in accordance with AS/NZS2918 and the appropriate requirements of the relevant building code or codes
- Any modification of the appliance that has not been approved in writing by the testing authority is considered to be in breach of the approval granted for compliance with AS/NZS4013 and will void the warranty
- The appliance must be installed correctly. We recommend a competent and suitably qualified NZHHA installer

All Metro wood fires comply with AS/NZS2918:2001 when installed in accordance with this manual. Please ensure you are fully conversant with the relevant standard and the contents of this manual. Correct installation is critical to the safe operation and performance of this wood fire.

Please take particular note of the following:

- It is recommended that Metro fires be installed with a Metro ECO flue system which has been developed to enhance the performance of Metro wood fires. Any alternative flue system must have a minimum flue pipe length of 4.2 metres of 150mm diameter flue pipe and have been tested to AS/NZS2918:2001 with a 12mm spaced ceiling plate of no less than 345mm square
- The 150mm active flue pipe must be fully encased from the ceiling to the underside of the flashing cone at the top of the flue system, (i.e. there must not be any 150mm flue pipe exposed)

CAUTION! Important Information

- Mixing of appliance or flue-system components from different sources or modifying the dimensional specification or components may result in hazardous conditions. Where such action is considered, the manufacturer should be consulted in the first instance
- Do not install a Metro fire if there is any sign of visible damage to the product
- This appliance must be regularly maintained.
- Use authorised Metro replacement parts only. The use of unauthorised parts may void the warranty
- This manual **MUST** be left with the home owner

- All flue pipe joints must be sealed and riveted. The bottom of the flue pipe in particular **MUST** be fully sealed into the flue outlet of the Metro fire
- In New Zealand, the Metro fire must be bolted through the floor protector into the floor to comply with the seismic restraint provisions of AS/NZS2918:2001
- All Metro's are extremely heavy, varying in weight from 75kgs up to 185kgs. During the installation process do not lift the appliance by yourself, and take care not to damage the panel coating
- Please take care when lifting the Metro fire into place onto the hearth or floor protector as point loading may break tiles and/or scratch surfaces.

Assembling your Metro wood fire

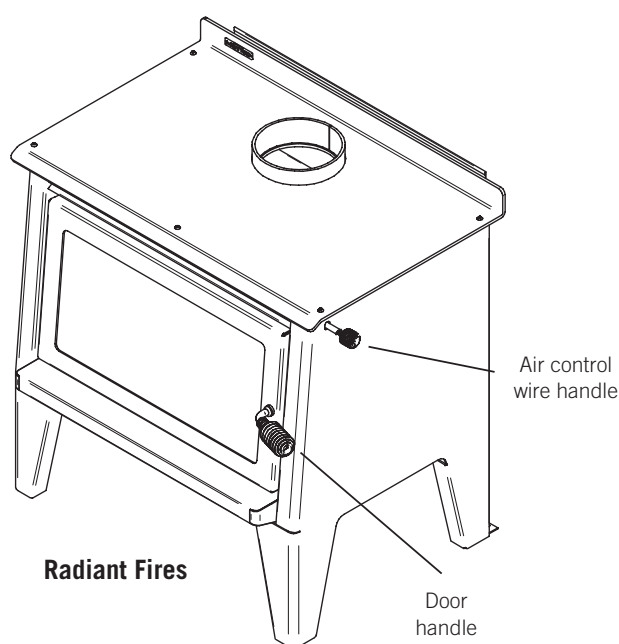
Please note: You should only assemble this wood fire if you are suitably experienced in wood fire assembly and installation. The Metro carton shows the model Metro you are about to install, enabling you to select the appropriate model's assembly instructions.

All Metro wood fires are packed in a single heavy-duty carton, and tek screwed to a wooden pallet. Having removed the packaging and located this manual, familiarise yourself with the illustrations on pages 2 & 3, and proceed as follows.

Metro radiant fires

These Metro's are supplied virtually fully assembled. Packed inside the firebox you will find bricks in a cardboard wrapper, a wire door handle and the air control wire handle.

- Remove the two tek screws located at the base of each rear leg which secure the Metro to the wooden pallet, and carefully 'walk' the Metro off the pallet
- Open the door fully and fit the side bricks to each side of the firebox. Location lugs are fitted to the base and rear wall of the firebox to retain the side bricks in position. Refer to Diagram 2
- Attach the door handle to the door latch assembly by screwing it on clockwise
- Attach the air control wire handle by screwing it on clockwise.



Assembling your Metro wood fire

Please note: You should only assemble this wood fire if you are suitably experienced in wood fire assembly and installation.

Metro pedestal and base model fires

To eliminate freight damage, the pedestal base has been packaged inside the firebox. To safely assemble your Metro, please proceed as follows:

- Lift off the top grill (convection models only) and place somewhere safe. Be careful not to chip the enamel coating or damage paint
- Open the door 45 degrees and lift the door off the hinge and place somewhere safe. Be careful not to damage the finish
- Remove the pedestal packed in a cardboard wrap
- Remove, rotate and re-fix the mount plate to the pedestal.

Note: The pedestal mount plate is fixed to the back of the pedestal base with 4x screws. This mounting plate must be removed, rotated and re-fixed to the pedestal as detailed on page 4 in diagrams 3 and 3A. The return fold must face back the opposite way to create the mount plate and fixing points for seismic restraint of the wood fire.

- Remove the pedestal heat shield

Note: For some models the pedestal heat shield may be taped to the rear heat shield. The ECO Tiny Ped's pedestal heat shield is pre-fitted.

- Remove the side bricks, door handle and the bolt bag
- Remove the 2 tek screws at the base of the inside of the firebox that fix the wood fire to the pallet.

It is recommended that 2 people work together with the next step:

- Grab the underneath top of the firebox door opening with one hand, holding the flue spigot with the other, slowly lift the front of the wood fire all the way back and rest the wood fire on its rear heat shield on the floor. Remove the packaging pallet.
- Fit the pedestal heat shield over the 4 bolts as shown in Diagram 1, with the open edge facing the front of the Metro (up)
- Position the pedestal with its front facing over the 4 bolts and fit the washers and nuts supplied, check to ensure the pedestal is correctly aligned and securely tighten the nuts.

It is recommended that 2 people work together with the next step:

- Grab the flue spigot with one hand and the other hand underneath the top of the firebox door opening, lift upwards standing the wood fire onto its pedestal
- Fit the side bricks to each side of the fire box. Location lugs are fitted to the base and rear wall of the firebox to retain the side bricks in position. Refer to Diagram 2. (Classic Rad also features two side rear bricks).
- Re-fit the door and top grill (Convection models only)

All Metro models

Check to ensure the top baffle is in its correct position in the top chamber of the firebox. It should be resting on four support lugs (two on each side of the firebox). The baffle must be hard back against the rear of the firebox with the "promet extension" (white board) or return front steel edge of the baffle facing forward as illustrated in Diagram 2.

Note: Some models feature a two-piece top baffle.

Diagram 1

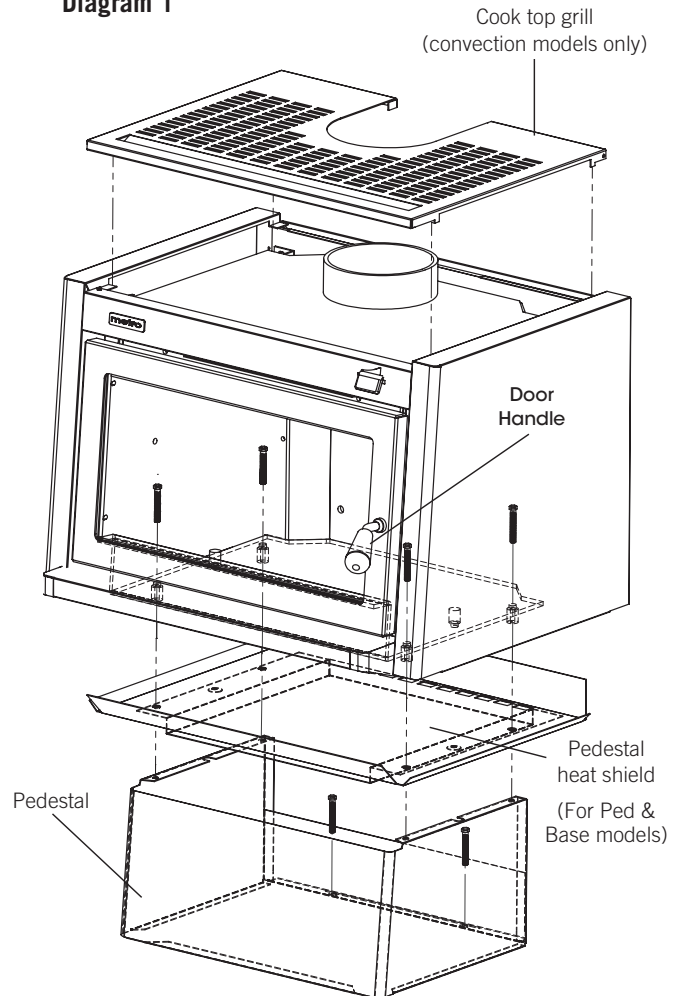
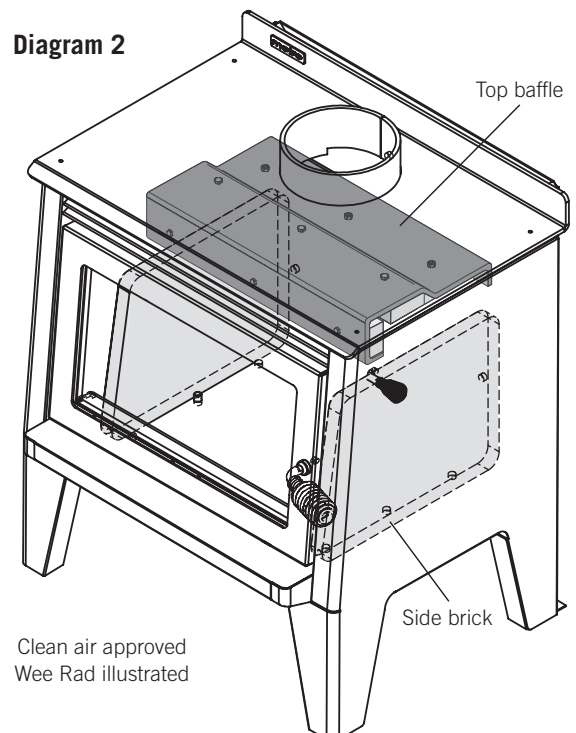


Diagram 2



Floor protector size, construction and fitting

Pioneer manufacture an extensive range of Pioneer 'Ash Floor Protectors' which comply with the minimum floor protector requirements of AS/NZS2918:2001, and can be installed with any freestanding Metro wood fire. Metro freestanding wood fires do not require an insulated floor protector as they comply with the minimum floor protector requirements of AS/NZS2918:2001. These minimum floor protector requirements are;

- They must be of adequate size to give appropriate wall, rear and front clearances/projections as detailed below and in the chart illustrated on page 7. Note;
- The floor protector must extend 200mm horizontally to the rear and each side directly below the door opening, and 300mm forward of the door opening
- The upper surface of the floor protector must be made of non-combustible material.

A suitable floor protector for a Metro freestanding wood fire is therefore any non-combustible material which could include;

- Ceramic tiles with grouted joints fixed directly to a hard base over timber flooring
- A sheet of toughened glass, panel steel etc. laid directly onto a wooden or other combustible floor.

Metro radiant fires

Lift the Metro fire onto the floor protector and using a suitable measuring device, ensure that the minimum wall clearances and front floor protector projections as detailed in the chart on page 7 are met or exceeded. Once the Metro's location on the floor protector is established and if the installation is within New Zealand, seismic restraint is required.

Using masonry anchors if the floor protector is on a concrete floor or coach bolts if a wooden floor, secure through the holes provided at the base, behind both rear legs.

Note: The anchors must pass through the floor protector and securely anchor the Metro to the floor.

Metro pedestal and base model fires

Prior to lifting the Metro fire onto the floor protector, ensure you have removed, rotated and re-assembled the mount plate from the back of the pedestal base as detailed in diagrams 3 & 3A above. This rear panel must be rotated with the return fold facing back the opposite way to create the mount plate and fixing points for seismic restraint of the wood fire.

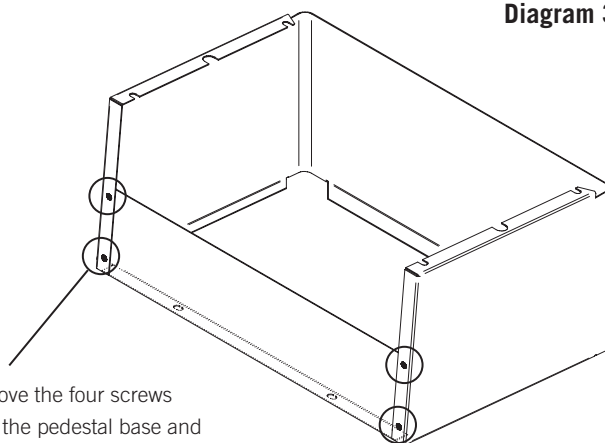
Lift the Metro fire onto the floor protector and using a suitable measuring device, ensure that the minimum wall clearances and front floor protector projections as detailed in the chart on page 7 are met or exceeded.

Once the location of the fire is established, you can then secure the Metro through the floor protector into the floor using the two seismic restraint holes in the rear edge of the mount plate. Use masonry anchors if the floor protector is on a concrete floor or coach bolts if a wooden floor

Note: The anchors must pass through the floor protector and securely anchor the Metro to the floor.

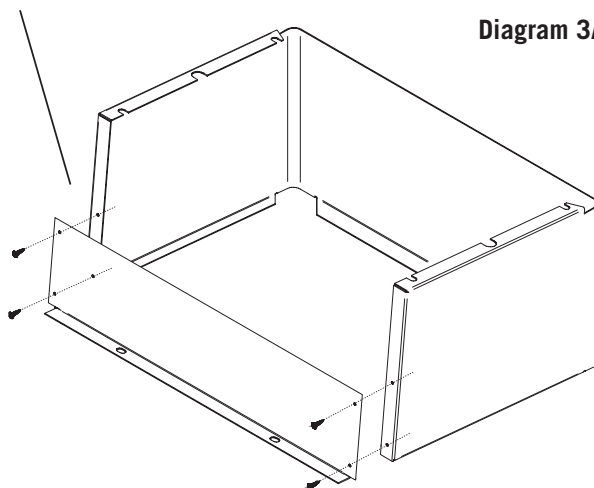
Preparing the mount plate

Diagram 3

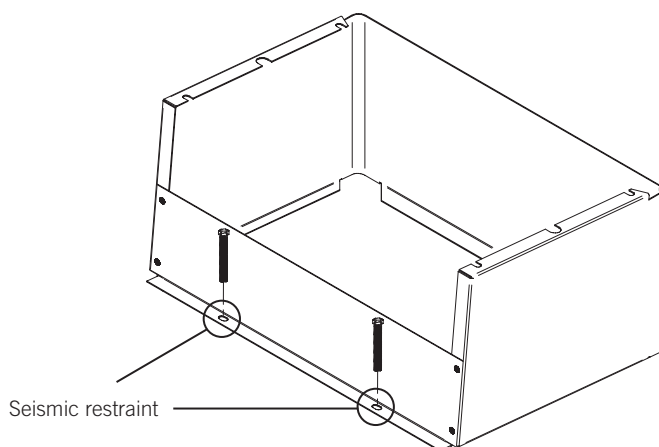


Remove the four screws from the pedestal base and rotate the mount plate so the return fold faces back the other way. Refix in place.

Diagram 3A



Correct mount plate position



Flue installation

It is recommended that all Metro freestanding wood fires be installed with the energy efficient ECO Flue System which comes complete with a detailed installation manual. This installation manual must be presented with your application to gain consent with your local council.

A copy of the ECO Flue System installation manual can be downloaded from metrofires.co.nz, or a copy can be obtained from your Metro retailer. Any alternative flue system must comply with and be installed as detailed in AS/NZS2918:2001, and a copy of the installation manual must also be presented with your application to gain consent with your local council.

All Metro fires require a 150mm diameter flue. Please note:

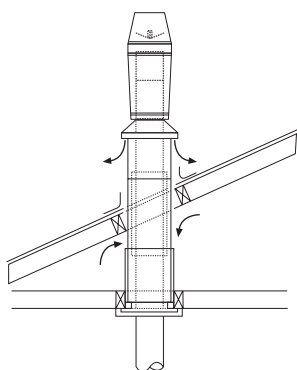
- Metro ECO flue systems must be installed to allow unrestricted air supply from either the ceiling cavity for an ECO Flue Kit, or above the roof line if the ECO Flue Kit and ECO Option Kits are both installed
- The ECO Flue system must be installed into a 'vented' flat ceiling cavity, or have an ECO Option Kit added to the flue system to provide an external air supply

- ECO Flue systems shall be installed in accordance with AS/NZS2918:2001 and the appropriate requirements of the relevant building codes
- Any modification to this flue system that has not been approved in writing by the testing authority is considered to be in breach of all approvals granted
- The flue systems 150mm diameter flue pipe must terminate a minimum of 4.6 metres above the top surface of the floor protector
- All joints in the flue pipe must be sealed with Pioneer fire cement (or similar) and riveted. The base of the flue pipe must also be sealed into the Metro fires flue outlet. This is critical for optimum operation.

All Metro fires have been tested with a Pioneer double flue shield. For the Metro fire to be installed with minimal clearances as the clearance table on page 7 states, only the Pioneer double flue shield can be used. All other flue shields will invalidate the installation.

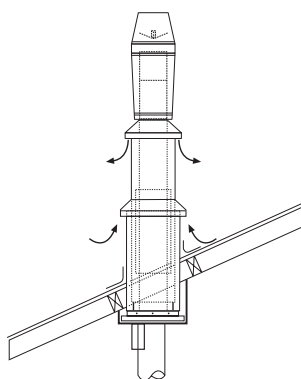
Detailed below are the more common installation methods for installing Metro ECO Flue Systems. To ensure a safe and efficient installation, this flue system must be installed as detailed below by either a registered installer, or someone competent in installing solid fuel appliances.

Single Storey Installations



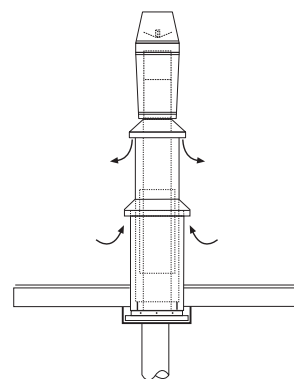
Flat Cavity Ceiling

ECO Flue Kit only required as air is drawn into the flue system direct from the ceiling cavity.



Sloping Ceiling

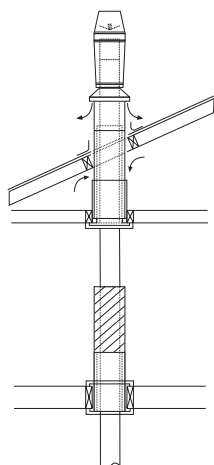
Both the ECO Flue Kit and ECO Option Kit are required to enable air to be drawn from outside the home.



Flat Ceiling/Roof

Requires both ECO Flue Kit and ECO Option Kit as per sloping ceiling unless a vented ceiling cavity exists.

Two Storey Installations



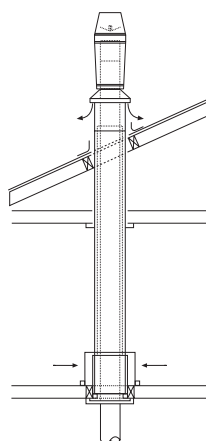
2nd Floor - Exposed Flue pipe

Requires an ECO Flue Kit only with additional lengths of flue pipe.

Additional components below are not supplied by Metrofires but are also required for this installation*

- A floor penetration kit
- 1x 1200mm long mesh/screen

*In accordance with AS/NZS2918:2001



2nd Floor - Enclosed Flue pipe

Requires an ECO Flue Kit only with additional lengths of flue pipe.

Additional components below are not supplied by Metrofires but are also required for this installation*

- 200mm & 250mm inner/outer combination liners.
- 2nd floor vent cover and an additional ceiling plate with a 250mm diameter hole

*In accordance with AS/NZS2918:2001

Wetback installation

WARNING! Important Information

- **DO NOT** connect to an unvented hot water system
- Install in accordance with AS 3500.4.1 or NZS 4603 and the appropriate requirements of the relevant building code or codes.

CAUTION! Important Information

- Wetbacks must be connected with water before operating the fire and available to the wetback while the fire is in operation
- Wetback systems are not suitable for use in locations where the water supply has lime content. Lime build up inside the coil will eventually block the coil causing the wetback to fail
- Rainwater collection tanks installed lower than the wetback that use a water pump to supply the home, can cause problems if the pump is not operational. In these situations either the type of wetback or a roof header tank should be considered

Wetback	Suitable for models:
2kW Wetback 	• ECO Tiny Rad • ECO Tiny Ped
Side Wetback 	• Tiny Rad Woody • Wee Rad Leg & Wee Rad Base • Wee Rad Woody • Wee Ped • Classic Rad
3kW Wetback 	• Xtreme Rad Leg & Xtreme Rad Base • Xtreme Rad Woody • Xtreme Ped • Mega Rad • All LTD rural models
4kW Wetback 	• All LTD rural models

The Wee Rad V2 Base model cannot be fitted with a wetback.

Water heating is another key feature of your Metro wood fire; nearly all Metro models can be fitted with a wetback, which are designed to give maximum output with minimal effect on the operation of the fire. Only the Pioneer cast jacket wetback system should be fitted to your Metro; alternative wetbacks will void the Metro's emission approvals and may seriously affect the performance of the appliance and void its warranty.

Wetback connections are as follows, taken facing the Metro/wall; the return pipe connection is directly above the inlet connection. Heights for all models are illustrated and detailed opposite on page 7.

- ECO Tiny Ped and ECO Tiny Rad models are 92mm left of the flue centre
- The Tiny Rad Woody model is 184mm left of the flue centre
- Wee Series models are 226mm left of the flue centre
- The Classic Rad model is 184mm left of the flue centre
- All other models are 140mm left of the flue centre

All wetbacks are fitted to the inside rear wall of the firebox, with the exception of the Tiny Rad Woody, clean air Wee Series models and the Classic Rad model. Side wetback position for these models is to the outside left hand firebox wall. Please see the specific installation instructions in the 'Side Wetback' box for installation of a wetback into these appliances.

It is recommended the return pipe has a minimum rise of 1 in 12; performance will reduce as the distance to the storage cylinder increases.

To fit the wetback proceed as follows

1. Remove the rear panel of the Metro by removing the four pozi drive screws. Remove the two pre-punched knockouts from this panel.
 2. Two further knockouts will be visible on the inner rear heatshield, remove these also. Once these are removed 6mm nuts will be visible through the knockout holes.
 3. Open the Metro's door and locate two bolts securing the pressed washers which are visible on the left hand side of the firebox for both inlet and outlet connection points.
 4. A further three bolt heads will also be visible on the inside rear wall of the firebox; these are threaded into the 6mm thick firebox. Remove all three.
 5. Using the tube of sealant supplied with the wetback, apply a liberal bead of sealant around both the two connection pipes and also the outer circumference of the wetback which will face and press against the inside rear wall of the firebox. This will completely seal the wetback to the inside rear wall of the fire on installation.
- Ensure there is no gap between pipe and rear wall access holes. This cement must fully cure before appliance use.
6. Fit the wetback into the firebox and carefully pass the connection pipes through the holes in the rear of the firebox. Securely attach the wetback using the three bolts previously removed from the rear face of the firebox, fitting them through the slots provided in the wetback's jacket.
 7. The wetback is now ready for connection to the storage cylinder by a registered plumber.

Metro clearances and specifications (Minimum clearances shown are in mm, with a Pioneer double flue shield fitted)

Minimum clearances

All Metro wood fires comply with AS/NZS2918:2001. Minimum clearances shown below are detailed in millimetres, with a Pioneer double flue shield fitted to the appliance. Measurements are taken from the following reference points as illustrated:

- From the nearest combustible wall or surface (A, B, D, E, G, H)
- From the Metro's flue centre (A, B, C, D)
- From the Metro's cabinet/heatshield outermost point (E, F, G, H)
- To the edge of the ash floor protectors non-combustible surface (C, F, I, J, K, L, M)

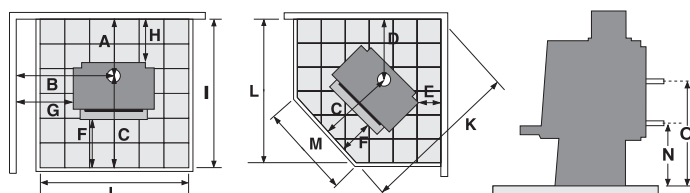
AS/NZS2918:2001 allows for a reduction in minimum clearances as detailed in Section 3, tables 3.1 and 3.2 of the standard.

Some Metro models have undergone additional testing which allows for reduced clearances. Please see the footnotes below the clearance table for the applicable models.

Wetback connections (taken facing the Metro/wall)

- ECO Tiny Ped and ECO Tiny Rad models are 92mm left of the flue centre
- The Tiny Rad Woody model is 184mm left of the flue centre
- Wee Series models are 226mm left of the flue centre
- The Classic Rad model is 184mm left of the flue centre
- All other models are 140mm left of the flue centre

Specifications were correct at the time of printing, but may alter and those detailed within should be used only as a guide. If in doubt, please consult your Metro retailer or metrofires.co.nz.



	Minimum installation clearances with a Pioneer double flueshield fitted (mm)													Wetback		Dimensions		
Clean air models	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Width	Depth	Height
ECO Tiny Ped	211	433	580	290	25	235	185	60	791	650	990	780	250	280	470	496	492	659
ECO Tiny Rad	230	553	585	419	150	232	300	75	815	650	1180	910	250	280	470	505	508	667
Tiny Rad Woody	251	568	580	382	110	232	310	100	831	650	1120	870	250	365	555	515	498	758
Wee Rad - Leg ¹	251	568	580	456	150	232	260	100	831	825	1225	1016	425	295	485	615	501	688
Wee Rad - Base	271	678	580	486	180	232	370	120	851	825	1270	1048	425	295	485	615	501	691
Wee Rad - Woody	271	708	580	506	200	232	400	120	851	825	1295	1066	425	365	555	615	501	758
Wee Rad V2 - Base	318	768	580	586	250	232	460	150	898	825	1410	1147	425	N/A	N/A	615	518	691
Wee Ped ²	263	651	580	473	170	230	350	110	843	825	1250	1034	425	295	485	602	503	665
Classic Rad ³	257	695	780	500	220	229	430	100	1037	728	1490	1170	328	393	583	530	708	680
Xtreme Ped	251	624	630	442	110	226	280	100	881	907	1260	1070	507	312	502	688	554	707
Xtreme Rad - Leg	251	650	630	458	100	227	280	100	881	907	1280	1084	507	312	502	740	554	743
Xtreme Rad - Base	251	650	630	458	100	227	280	100	881	907	1280	1084	507	312	502	740	554	743
Xtreme Rad - Woody	251	680	630	478	120	227	310	100	881	907	1306	1103	507	382	572	740	554	813
Mega Rad	285	720	728	497	100	224	300	130	1013	1006	1435	1229	606	300	490	840	659	744
LTD rural models	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Width	Depth	Height
LTD Wee Rad - Leg	251	548	580	426	120	232	240	100	831	825	1185	989	425	295	485	615	501	688
LTD Wee Rad - Base	251	658	580	486	180	232	350	100	831	825	1270	1048	425	300	490	615	501	691
LTD Wee Rad - Woody	271	708	580	506	200	232	400	120	851	825	1295	1066	425	365	555	615	501	758
LTD Xtreme Rad - Leg	251	650	630	458	100	227	280	100	881	907	1280	1084	507	350	540	740	554	743
LTD Xtreme Rad - Base	251	650	630	458	100	227	280	100	881	907	1280	1084	507	350	540	740	554	743
LTD Xtreme Rad - Woody	251	680	630	478	120	227	310	100	881	907	1306	1103	507	420	610	740	554	813
LTD Mega Rad	285	720	728	497	100	224	300	130	1013	1006	1435	1229	606	300	490	840	659	744

The Wee Rad installed with a Pioneer double flue shield with the Wee Rad corner wing shields fitted allows for reduced clearances as follows:

¹ Wee Rad - Leg corner clearance (E) can be reduced to 120mm. This in turn also reduces clearances (D) to 426mm, (K) to 1185mm and (L) to 987mm. When fitting the corner wing shields, the Wee Rad - Leg itself must be installed to a corner clearance (E) of 120mm. The corner wing shields are then fitted which gives a wall to shield corner clearance of 100mm.

The following models installed with a Pioneer double flue shield with the side extensions fitted allows for reduced clearances as follows:

² Wee Ped corner clearance (E) can be reduced to 115mm. This in turn also reduces clearances (D) to 418mm, (K) to 1170mm and (L) to 978mm.

³ Classic Rad corner clearance (E) can be reduced to 180mm. This in turn also reduces clearances (D) to 460mm, (K) to 1435mm and (L) to 1131mm.

WARNING! Important Information

• **WE HIGHLY RECOMMEND YOU READ THIS ENTIRE MANUAL AS INCORRECT OPERATION, MISUSE AND/OR LACK OF MAINTENANCE WILL VOID THE WARRANTY**

- Any modification of the appliance that has not been approved in writing by the testing authority is considered as breaching AS/NZS 4013 and will void the warranty
- Do not use flammable liquids or aerosols in the vicinity of this appliance when it is operating
- Never operate your Metro with the top grill removed
- Do not dry clothes on or near this appliance
- Do not use flammable liquids or aerosols to start or rekindle the fire OR store fuel within the Metro's specified installation clearances
- Never operate your Metro with the door ajar, except on initial start up
- Open the air control fully before opening the Metro's door.

CAUTION! Important Information

- This appliance should be maintained & operated at all times in accordance with this instruction manual
- This appliance should not be operated with cracked door glass, over worn, faulty or missing door seals
- Do not use driftwood, treated or unseasoned (wet) fuel, the use of most types of preservative treated wood as fuel can be hazardous and will damage your appliance
- Burning unseasoned (wet) fuel or incorrect operation on extended low burn cycles will cause excessive creosote to form. Creosote is very corrosive and excessive buildups will result in the flue pipe, flue spigot and upper burn chamber failing. Failure of the appliance and/or flue system due to creosote damage is not covered under warranty. The formation of such is not an appliance issue it is a fuel and operational issue
- This appliance must be regularly maintained and replacement parts must be authorised Metro parts only
- Do not empty ash into a combustible container.

Congratulations on the purchase of your Metro wood fire

This slow combustion appliance is designed to give you many years of warmth and service, subject to the following key factors. These key factors, if not adhered to are the major causes of unsafe installation, poor performance and flue blockages and potential product failure.

1. Your Metro wood fire must be installed correctly. Metro recommend a competent and suitably qualified NZHHA installer.
2. The only fuel to be used in this appliance shall be wood that meets the following criteria.
 - Less than 25% moisture content
 - Has not been treated with preservatives or impregnated with chemicals or glue,
 - Is not chipboard, particle board, or laminated board,
 - Is not painted, stained or oiled
 - Is not driftwood or other salt impregnated wood
3. The appliance shall be operated at all times in accordance with the "Installation and Operating Instructions" supplied with each appliance.
4. It is preferable that Metro wood fires should be installed with a Metro ECO Flue System.
5. Coal must not be used as a fuel.

Please also note the following important points:

- In New Zealand a building consent is required from your local building authority. The homeowner is responsible for obtaining this consent
- As correct installation is critical to the performance and safe operation of your Metro, it is recommended your Metro be installed by a NZHHA registered installer or a person suitably qualified in the installation of wood fires. Your Metro retailer will be able to arrange professional installation for you
- During the very first fire your Metro will give off an odour and fumes as the firebox paint cures. Do not be alarmed; open all windows and externally opening doors in that room and close any internally opening doors. This curing process will last for approximately one hour and is likely to happen this one time

- Properly seasoned (dry) timber is necessary for the Metro to operate efficiently; firewood that contains a high moisture content will result in flue pipe blockages, reduce heat output and create other issues.

Note: Once split, Softwood usually takes 12 months to season - Hardwood can take up to 24 months to season - Wood must be stored in a location that enables air circulation. Unseasoned wood stored in a closed woodshed without air circulation will still be unseasoned 12 months later.

- It is critical that the fire not be operated with over worn, faulty or missing door seals. Door seals will harden over time and become over-worn (3-4 year's) this will cause air to leak into the fire, causing the appliance to 'over fire'
- It is critical that the fire not be operated with over worn, faulty or missing bricks, baffle plate, promet extension (white board on the baffle plate)
- It is critical that the fire not be operated with cracked or broken door glass.

Please note, the above 3 points require regular inspection/maintenance (every time the ash bed is cleaned out, generally 3-5 times a season) and if not maintained will void the firebox warranty. A glowing firebox or lower fluepipe is just one sign you are over firing your appliance. Please ensure you keep your proof of purchase/receipt on any parts you purchase.

- For optimum performance fuel must be loaded so the logs lay "front to rear" in preference to laying across the width of the firebox. Spaces should be left between the logs to enable oxygen to get to as much of the surface of the fuel as possible
- A small hot fire loaded frequently is more efficient than a large fire burning on a low setting
- Your Metro is covered by a full unconditional 12 month warranty on replacement parts, and a 10 year firebox warranty.

Where to install a Metro wood fire in your home

Wood fires are usually installed in the main living area, which is the section of the home that is usually kept the warmest, being the area in the home most frequently occupied. However, before deciding on the best location for your Metro wood fire you may wish to consider:

- Water heating. If you are intending to have a wetback it is important that the wood fire is as close as practically possible to the water storage cylinder
- Split level homes are best heated when the wood fire is installed on the lower level, as the heated air will rise to the higher levels
- Building construction is another consideration. Specified clearances from walls, curtains etc must be maintained and you need to ensure no structural beams or internal gutters etc are directly above your preferred site. If you have a two storey dwelling you need to consider the second storey to ensure you don't have the flue directly outside a second storey window.

Generally, you can install your Metro in your home anywhere that suits you; Pioneer offer various fan systems to transfer heat to other sections of the home that are not heated sufficiently. It is necessary if using a fan system that the Metro you have purchased has sufficient output to heat the total area you wish to heat. Your Metro retailer or installer will be able to advise if you are uncertain.

Optional wetbacks

Water heating is another key feature of your Metro wood fire; nearly all Metro models can be fitted with a wetback, which are designed to give maximum output with minimal effect on the operation of the fire. Only the Pioneer cast jacket wetback system should be fitted to your Metro; alternative wetbacks will void the Metro's emission approvals and may seriously affect the performance of the appliance and void its warranty.

Other considerations are:

- Distance from your Metro to the storage cylinder will affect the amount of hot water produced
- Your climate & the manner in which you will 'fire' your Metro will determine the amount of hot water produced.

Note: Wetbacks are not suitable for use in locations where the water supply has lime content. Lime build up inside the coil will eventually block the coil causing the wetback to fail.

Cost Savings

Wetbacks can enable substantial power savings, dependent on the climate in the area in which you live. If you live in a cold climate you are likely to use your Metro for many months of the year, in which case a Pioneer wetback will reduce or even eliminate your water heating costs over those months. If however you live in a warmer climate and use your Metro for only a few hours a day over the colder months, electricity savings will be considerably less.

Water Pressure

A common misconception is that you must have a low-pressure system to have a wetback; this is not true. You must have a 'vented' system and high-pressure cylinders are usually not vented. However you can install an 'indirect' cylinder which contains a secondary coil inside the storage cylinder, enabling you to have a wetback while retaining a high-pressure system.

Wetback	Suitable for models:
2kW Wetback 	• ECO Tiny Rad • ECO Tiny Ped
Side Wetback 	• Tiny Rad Woody • Wee Rad Leg & Wee Rad Base • Wee Rad Woody • Wee Ped • Classic Rad
3kW Wetback 	• Xtreme Rad Leg & Xtreme Rad Base • Xtreme Rad Woody • Xtreme Ped • Mega Rad • All LTD rural models
4kW Wetback 	• All LTD rural models

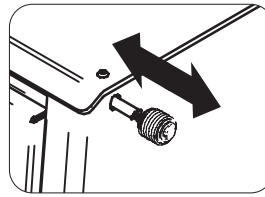
The Wee Rad V2 Base model cannot be fitted with a wetback.

Getting to know your Metro wood fire

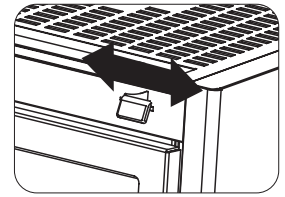
Operating your Metro fire is simple and you will quickly learn how to get the best from it. First take a minute to familiarise yourself with your new Metro.

- Raise the door handle anti-clockwise until the latch releases, and then slowly pull the door open. You will note that if you let the door go before it is at 90° to the appliance, it will fall closed. This is a safety feature that ensures the door cannot fall open if it is not latched securely. For the door to remain open, you must open it fully
- There is a single air control making your Metro fire easy to adjust. This control moves from left to right, which is 'low to high'.

All Metro radiant fires have a wire air control handle located at the upper right hand side of the appliance. Simply pull out to increase burn rate or push in to reduce burn rate.



Radiant fires air control



All other fires air control

All other Metro fires have an air control knob located on the upper front panel of the appliance.

Slide this control knob gently from right to left until you reach a stop. This is a pre-set 'low' position. Your Metro fire must not be operated at a lower burn rate than this pre-set low allows.

Operating your Metro wood fire

If your Metro has only been installed within the past few days, the fire cement seal at the base of the flue will not be fully cured. To ensure the cement sets without blistering it is recommended you burn 2-3 sheets of loosely crumpled newspaper at a time, approximately once every hour over a 6-8 hour period.

During the very first fire your Metro will give off an odour and fumes as the firebox paint cures. Do not be alarmed. Open all windows and externally opening doors in that room and close any internally opening doors. This curing process will last for approximately one hour and is likely to happen this one time.

Start up

Place a quantity of loosely crumpled newspaper on the base of the firebox until it is approximately half full of paper, or place firelighters on the base of the firebox. Add dry kindling and move the air control knob fully to the right, being the 'full open' position.

Light the paper at two or three locations across the front of the door opening and leave the door slightly ajar resting on the latch pin if necessary for a few minutes while the fire establishes. Once the kindling is burning well, open the door and add 2-3 small logs at a time until you have a well-established fire. Usually this will take approximately 30 minutes, during which time the air control should be set on "high" and the door should be closed, except for the initial few minutes and when fuel is being added.

Normal operation

Once the fire is well established, regulate the air control to achieve the desired burn rate and heat output. As you move the air control to the right, burn rate, firebox temperature and heat output will increase, if you move the control to the left they will decrease. Please note:

- Always open the air control fully prior to opening the door, then open the door slowly. Every time you refuel, leave the air control on 'high' for a minimum of 20-25 minutes
- When loading logs, place them end-on, 'front to back'; air spaces should be left between the logs to enable oxygen to get to as much of the surface of the fuel as possible
- Never use the door to force wood into the firebox, as this is likely to break the glass.

Extended burning (rural models only)

It is most important if your Metro is to be refuelled and turned down for an extended period, such as an overnight burn that you operate it correctly:

- The wood used as fuel for extended burning MUST BE FULLY SEASONED (DRY). Once the fuel is loaded, the appliance must be operated on high for a period of at least 20 minutes to drive out residual moisture from the fuel (dry wood is usually 20% water content) and ensure surface area combustion.
- Do not turn the air control down lower than you need to, if you want the Metro to burn overnight, endeavour to obtain an 8 hour burn time, not 12 hours. It will take a few burns to find the correct location of your Metro's air control setting to achieve the length of burn cycle you desire as this setting is affected by several variables including fuel density, flue length and outside wind velocity.
- A smouldering fire over a long time frame is likely to deposit corrosive elements into your system which could be detrimental to your Metro.

CAUTION! Important Information

- If not operated correctly on extended burn cycles, your Metro is likely to incur flue blockages, corrosion of the upper baffle, lower flue pipe and firebox flue spigot. As these are not covered under warranty if they fail through improper use, it is important you operate your Metro correctly.

Cooking

All Metro's are designed to enable cooking of soups, stews and casseroles etc, and your Metro will easily boil a flat bottom stainless steel kettle. The Radiant Series have a dedicated cooking top enabling large pots to be placed on the cook top, while all other models have a lift-off grill.

Note: Metro's supplied with a lift-off top grill have this feature to enable the grill to be removed for cleaning if you have a spill. The lift-off top grill must be left on when cooking, because if removed the wall temperatures next to the appliance may become excessive and the top of the firebox is generally too hot to cook on directly.

Cleaning and maintenance for your Metro wood fire

Your Metro fire will give you many years of efficient service with minimal maintenance if operated correctly using seasoned fuel. Your Metro fire must be regularly maintained and replacement parts must be authorised Metro fires parts only.

The Metro radiant fires are painted wood fires and coated with 'Pioneer Metallic Black' high temperature paint and will require periodic repainting to keep them looking their best.

All other Metro fires are coated with vitreous enamel. Vitreous enamel is extremely durable and designed to last the life of the appliance. As vitreous enamel is glass, a solid or heavy object dropped or banged against a panel could chip the enamel surface.

All model Metro fires can be cleaned with a soft cloth when the appliance is not in operation.

Door glass

Providing your fuel is properly seasoned, under normal operating conditions the air-wash design of the Metro's firebox will keep the door glass clear. If the glass requires cleaning you may use either a razor blade scraper or crumpled wetted newspaper dipped in wood ash rubbed over the glass.

If your door glass breaks it must be replaced with 5mm thick ceramic glass which is available from your local Metro retailer.

Door seals

Over time, usually 3-4 years, the door and glass seals will become hard and cause air to leak into the firebox, causing the appliance to 'over fire'. Your Metro retailer stocks replacement woven fibreglass door and glass seals, which need replacing when they become hard and over worn.

The door of your Metro is easily removed. Hold it in both hands and lift the hinge end of the door up and over the top hinge pin, then lower the door from the bottom hinge pin.

Side bricks

Hair-line cracks are not uncommon and are a result of the intense heat within the Metro's firebox, coupled with mechanical damage caused by accidental impact when fuel is being loaded. However if the side bricks become cracked to the extent that they start to break up, they must be replaced.

Door adjustment

Provision is available on both sides of the door for adjustment.

To adjust the hinge end of the door, open the door fully, loosen the top hinge nut and slightly lift the latch end of the door; you will see the hinge assembly move back 1-2mm which will usually be sufficient. Retighten, then repeat by loosening the lower hinge nut, this time applying a slight downwards pressure onto the door to move the lower hinge assembly back a similar distance, then retighten.

The door latch is also adjustable, as the latch pin on the right side of the firebox is fitted through a slot which enables the latch pin to be loosened, moved back and re-tightened.

Ash removal

Over a period of time ash will build up in the base of the Metro's firebox and require removal. The time this build-up takes depends on the density and cleanliness of your fuel.

To remove the excess ash your Metro should not be operating.

- Open the door, and using a hearth shovel or similar, empty the excess ash directly into a steel or non-combustible container.
- If the ash is not disposed of immediately, be careful where you store it, as the ash can retain heat for many days and become a fire hazard.
- You must leave a bed of ash in the base of the firebox approximately 10mm deep; this insulates the base of the firebox and improves combustion.

Top baffle

This is a 'sacrificial' wear part of the firebox and should be checked monthly. Usually only the promet (white board) front/underneath section needs to be replaced when it starts to disintegrate.

Note: Cracks in the promet are not uncommon and have no adverse effect on the operation of your Metro. These cracks are the result of intense heat coupled with expansion and contraction. Burning wood which is not properly seasoned, i.e. 25% moisture content or more, will over time cause the promet to disintegrate and require replacement.

Flue systems

Should be checked annually, particularly the bottom end of the lower flue section at its rear lock formed joint. If deterioration is noticed contact your Metro retailer or installer.

The flue pipe should also be swept a minimum of once a year, or as required during the winter season. If smoke enters the room when you open the Metro's door this usually indicates the flue pipe is becoming restricted and needs cleaning. The frequency of flue pipe cleans depends on many factors, with the main variables being:

- The seasoning of the wood. If not properly seasoned you will require frequent flue pipe cleans.
- The density of the wood. Softwoods generally result in more deposits building up in the flue pipe.

To clean the flue pipe of your Metro, proceed as follows:-

- Open the Metro's door fully, reach inside with the palm of your hand face-up and extended, lift the top baffle approximately 20mm, then lift it forward out through the door opening, placing it on a sheet of newspaper you have placed on the front of the floor protector. To prevent jamming, removal and replacement of the top baffle is best performed using both hands.

Note: Some appliances have a two piece top baffle.

- Close the door and slide the air control to the left.
- Once on the roof, remove the cowl from the top of flue system and sweep the flue pipe using a 150mm-diameter flue pipe brush as detailed in the instructions provided with the fluebrush.
- Once the flue pipe is clear, clean and refit the cowl. Remove the excess soot which has fallen into the firebox, leaving a layer of ash 10mm deep on the base of the firebox, then refit the top baffle.

Note: The baffle must be fitted so its rear is touching the back of the firebox; if uncertain refer to page 3 in the installation section at the front of this manual, which shows illustrations of the baffle location.

Troubleshooting your Metro wood fire

If your Metro is installed correctly, your fuel is dry and you operate your fire correctly, you will find it to be a pleasure to use. Metro's many years of experience within the wood heating industry has shown that dissatisfaction is mainly due to:

- unseasoned fuel
- faulty installation
- operational error
- or a combination of the above 3 points.

Correct operation

Modern day wood fires need to be operated hard and fast, more so than low and lazy to ensure the firebox and flue pipe runs hot and efficiently. If the fire and flue pipe is up to temperature it will perform extremely well, the smoke will draw up the flue pipe with ease, and the fire will produce good amounts of heat.

If the fire is operated on low a lot of the time, the door glass will run black, the flue pipe will tend to block up more frequently and the fire will end up smoking into the room when reloading. It's better to have a small fire running hard and fast, rather than a big fire running low and lazy.

The following may be of assistance if you are experiencing any problems with the operation of your Metro Fire.

Smoke enters the room when the Metro's door is ajar

(possible reasons and solutions)

Check flue pipe joins

If the flue pipe joins are not sealed correctly, the flue pipe will not draw as well as it should. The flue pipe join connecting into the flue spigot on top of the Metro is most critical, if this is not sealed correctly, smoke will enter the room when the door is ajar. To check this join is sealed correctly, run a match or lighter flame around the join. If the flame is sucked into the spigot then it is not sealed correctly. This check needs to be done when the fire is not going. Ensure you check the rear of the flue pipe/spigot join, as due to the seam in the flue pipe, this is the most common area for not being sealed correctly.

Ensure the fuel you are using is correctly seasoned

If you are burning unseasoned fuel (wet), the fire will cause nothing but problems. The Metro won't deliver much heat, it will be lazy, smoke will enter the room when the door is ajar, and the door glass will run black. Unseasoned fuel is the main contributor to excessive creosote deposits which can be corrosive to your appliance and flue system.

Flue pipe length is too short

Add more flue pipe as the longer the flue system, the better the draw of the flue pipe. Please note, if you did not purchase the Metro ECO Flue System, you will not have the ECO Cowl which increases draw. We highly recommend the Metro ECO Cowl is fitted as this will increase the draw. If you already have an ECO Cowl and smoke is still entering the room, please add another 600mm length of flue pipe.

Downdraft/Turbulence blockage

If you have checked all of the previous factors and the fire is still smoking into the room, it's possible there may be a down draft issue. Down draft is environmental and can be caused by many variables, and it is purely trial and error to ascertain the cause.

Air turbulence and/or negative air pressure influences around the flue termination can be caused by too close or overhanging trees or natural/artificial ridges etc. Address these where possible or look to extend the flue above the roofline.

Other options may be:

- 'H' Cowl, designed purely for downdraft issues, but if you have an ECO Cowl fitted as standard, you will also need to add another 600mm of flue pipe to compensate as the H Cowl is shorter in length
- Directional Cowl, designed for high wind areas.

Air control setting

Ensure the air control setting is on high before opening the door to reload, as this increases the draw up the flue pipe. Open the door slowly.

If your Metro did not smoke, but its starting too and is getting worse:

The flue pipe is in need of a clean. It is recommended that the flue pipe be cleaned every season, however if you are burning the fire on low a lot, or are using unseasoned fuel, flue pipe cleans will be required more frequently.

Other issues you may experience

I can smell smoke in the room after a low burn cycle

The smell is creosote that will be seeping through the flue pipe join or out of the flue spigot onto an external surface, thus creating the smell in your room. The cause will be either unseasoned fuel, fuel mass too large, incorrect operation on low burn cycles or a combination. Creosote is very corrosive and excessive buildups will result in the flue pipe and potentially the flue spigot and upper burn chamber failing. The formation of excessive creosote is not an appliance issue, it is a fuel and operational issue. Failure of flue pipe or firebox due to creosote build up is not covered under warranty as excessive creosote build up is only possible from either unseasoned fuel or incorrect operation.

The Metro is noisy as it heats up and cools down

There will always be some expansion and contraction noise as the Metro heats and cools. This can usually be reduced by loosening three nuts at the rear of the appliance. To remedy, locate the 25mm deep cavity at the rear of your Metro between the 'rear panel' and the 'inner rear heat shield'. You will see a 6mm nut and two 6mm bolt heads in this cavity. Using a 10mm ring or open ended spanner, loosen all three so they are finger tight only.

On all Metro freestanding fires the air channel that allows the combustion air to enter the fire is fitted to the top underneath of the door opening. It is fitted with two M6 bolts. Slightly loosen both of these bolts.

The Metro won't turn down as much as it did

The door itself may need readjusting, the hinge and latch is slotted and allows for movement. Loosening the hinge and moving it back a few mm will make the door seal tighter and stop air leaking into the fire. The door and glass seals may be in need of replacing, which is generally required every 3-4 years.

Familiarise yourself with the instructions on page 10 before proceeding with this maintenance.

Warranty details for your Metro wood fire

Metro wood fires are manufactured in New Zealand, using the highest quality of materials, workmanship and the latest manufacturing techniques, which is why we offer a full 10 year firebox warranty and a 1 year parts warranty for your peace of mind.

Metro Warranty

(NZ Consumer laws apply to this warranty)

Pioneer Manufacturing Limited (Pioneer) warrants the steel firebox against defective materials and workmanship which would render it unfit for normal domestic use, from the date of purchase by the original consumer, for a period of 10 years.

Components including panel coating, door retainers, door seals, glass, trim, baffle & bricks are warranted for a period of 1 year from the date of original purchase for normal domestic use against defective materials and workmanship.

All associated accessories including, but not limited to, fans, flue systems, flue shields, wetbacks, tool sets, ash pots etc, are covered by a 1 year warranty against defective materials and workmanship.

It is recommended, but not a condition of this warranty, that a full service/inspection of the Metro fire be carried out at the end of each winter season.

Warranty Conditions

- The Metro fire must be installed, operated and maintained strictly in accordance with the building code and this installation and operation manual
- The Metro fire must be installed and used in a domestic application
- This warranty covers appliance like for like replacement or repair at the manufacturer's discretion but excludes freight, travel, installation, labour and/or any other associated costs
- Pioneer or their agents are not liable for any loss or expense direct or indirect arising from the failure of any part or operation of the appliance
- Operation of this appliance in violation of the warnings in this operation and installation manual will void this warranty
- Your Metro fire must be regularly maintained and we recommended it is also serviced annually. Proof of servicing may be required. If a wood fire is not regularly maintained and serviced, the life span will be reduced. If your Metro wood fire has been neglected, by not being regularly maintained and serviced, warranty may be declined

CAUTION! Important Information

Note: The following 3 points require regular inspection/maintenance (every time the ash bed is cleaned out, generally 3-5 times a season) and if not maintained will void the firebox warranty. Please ensure you keep your proof of purchase/receipt on any parts you buy.

- It is critical the fire not be operated with over worn, faulty or missing door seals. Door seals will harden over time and become over-worn (3-4 year's) and will cause air to leak into the fire, causing the appliance to 'over fire'. Do not operate the fire with cracked, or broken door glass
- It is critical the fire not be operated with over worn, faulty or missing bricks, baffle plate or baffle extension (white board on or under the baffle plate)
- A claim under this warranty should be directed to the retailer who supplied the Metro fire. If this is not possible write directly to the manufacturer stating details of fault, model, serial number of your Metro, dated proof of purchase and name of retailer purchased from.

Warranty Exclusions

(This manufacturer's warranty does not cover)

- Service calls which are not related to any defect in the product (i.e. operational, installation or fuel issues). The cost of a service call will be charged if the problem is not found to be a product fault
- Defects caused by factors other than normal domestic use or use in accordance with the product's operation manual
- Defects caused through the product being operated in an 'over-fired' manner resulting in sections of the firebox operating excessively hot to the point that sections glow red. (Note – This will result in distortion of the firebox)
- Defects to the product caused by accident, neglect, misuse or act of God
- The cost of repairs carried out by non-authorised repairers or the cost of correcting such unauthorised repairs
- Required maintenance as set out in this manual.

Service under this manufacturer's warranty must be provided by a repairer authorised by Pioneer Manufacturing Ltd. Such service shall be provided during normal business hours.

IMPORTANT! Complete and retain these details at time of purchase:

Purchase Date

Serial Number

Model

Colour

Retailer



Parts guide for your Metro – Promet, baffles and wetback options

Your Metro wood fire must be regularly maintained and we recommended it is also serviced annually. If a wood fire is not regularly maintained and serviced, the life span will be reduced.

If your Metro wood fire has been neglected, by not being regularly maintained and serviced, with authorised Metro parts replaced as required, your warranty may be declined.

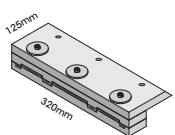
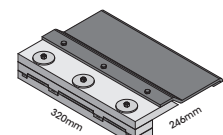
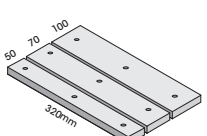
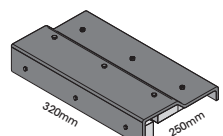
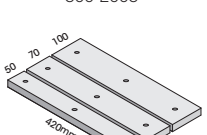
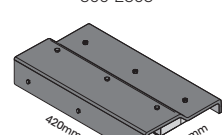
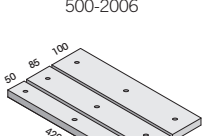
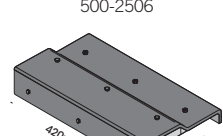
Listed below are the parts and product codes for your Metro wood fire. The promet/baffle should be regularly checked and must always be in place during the operation of your fire.

The baffle should be resting on four support lugs (two on each side of the firebox). It must be hard back against the rear of the firebox with the 'promet extension' (white board) or return front steel edge of the baffle facing forward.

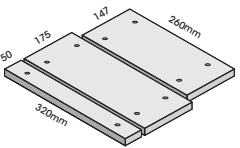
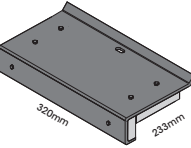
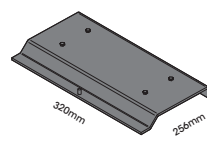
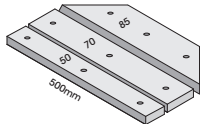
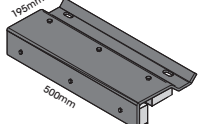
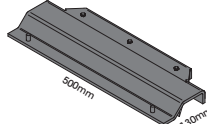
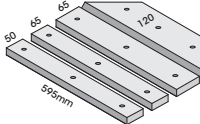
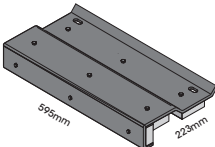
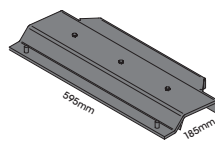
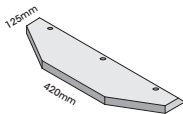
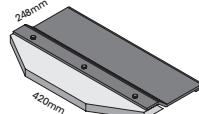
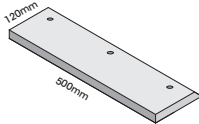
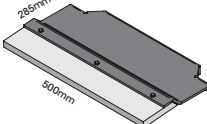
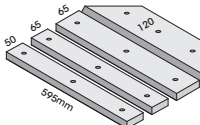
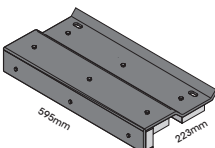
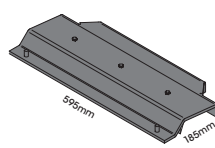
Hairline cracks in the promet extension are not uncommon and will have no adverse effect on the operation and performance of your Metro wood fire. These cracks are the result of intense heat coupled with expansion and contraction and is normal wear and tear.

If the promet extension starts to break up and pieces fall into the firebox it must be replaced.

Note: Impact damage when loading wood and burning wood which is not properly seasoned, i.e. 25% moisture content or more, will cause the promet to disintegrate and require replacement. Always burn dry well seasoned wood and take care when loading wood into the firebox.

Model	Type of promet required / Type of steel baffle(s) required		Wetback options
• Tiny Ped • Tiny Rad	Tiny Promet 500-1550 	Tiny Baffle 500-2050 	2kW Wetback 450-0050 
• Tiny Rad Woody	Tiny Woody Promet Set 500-2004 	Tiny Woody Baffle 500-2504 	Side Wetback 450-0275 
• Wee Rad Base • Wee Rad Leg • Wee Rad Woody • Wee Ped	Wee/R1 Promet Set 500-2005 	Wee/R1 Baffle 500-2505 	Side Wetback 450-0275 
• Wee Rad V2 Base	Wee V2 Promet Set 500-2006 	Wee V2 Baffle 500-2506 	No wetback can be fitted to this appliance

Parts guide for your Metro – Promet, baffles and wetback options

Model	Type of promet required / Type of steel baffle(s) required			Wetback options
Classic Rad	Classic Rad Promet Set 500-2015 	Classic Rad Front Baffle 500-2520 	Classic Rad Rear Baffle 500-2525 	Side Wetback 450-0275 
- Xtreme Rad Base - Xtreme Rad Leg - Xtreme Rad Woody - Xtreme Ped	Xtreme/R2 Promet Set 500-2010 	Xtreme/R2 Front Baffle 500-2510 	Xtreme/R2 Rear Baffle 500-2515 	3kW Wetback 450-0100 
Mega Rad	Mega Rad Promet Set 500-2020 	Mega Rad Front Baffle 500-2530 	Mega Rad Rear Baffle 500-2535 	3kW Wetback 450-0100 
- LTD Wee Rad Base - LTD Wee Rad Leg - LTD Wee Rad Woody		LTD Small Promet 500-1700 	LTD Small Baffle 500-2600 	3kW Wetback 450-0100 or 4kW Wetback 450-0150 
- LTD Xtreme Rad Base - LTD Xtreme Rad Leg - LTD Xtreme Rad Woody		LTD Large Promet 500-1850 	LTD Large Baffle 500-2650 	3kW Wetback 450-0100 or 4kW Wetback 450-0150 
LTD Mega Rad	Mega Rad Promet Set 500-2020 	Mega Rad Front Baffle 500-2530 	Mega Rad Rear Baffle 500-2535 	3kW Wetback 450-0100 or 4kW Wetback 450-0150 

Metro wood fire specifications

Metro have a Specifications Brochure available which details relevant compliance data for every model. This brochure is updated annually and details the minimum clearances and specifications for all models, which is generally required when applying for a building consent. See your Metro retailer to obtain a copy, or visit www.metrofires.co.nz

metrofires.co.nz

Visit the Metro website: metrofires.co.nz to view Metro's 'video demos' showing the latest in wood fire technology energy saving options. You can view the entire Metro product range, find out where your nearest Metro retailer is located or simply check out the latest specifications, installation requirements and emission and efficiency data for the Metro of your choice.



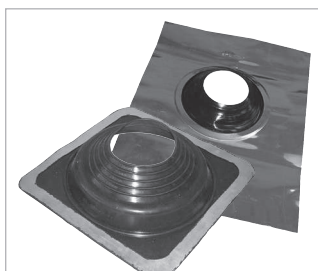
Pioneer heating accessories

Pioneer/Metro Fires offer a wide range of heating accessories designed to complement your Metro wood fire. The range includes ECO flue systems, floor protectors, wetbacks, heat transfer systems, baffles, bricks and more.

For further details talk to your Metro agency or visit www.metrofires.co.nz



ECO Flue Systems



Flashrites and Versatiles



Wetbacks



High Temperature Paint



Corner and Wall Floor Protectors



Heat Transfer Systems



Universal Door Seal Kits



Fire Cement And Silicone



Glass Tape



Door Seal Rope



Chubb Smoke Detectors

Standard Flue System Installation Manual



metrofires

Standard Flue Systems

Standard flue system components..... 2
Standard flue system installation 3
Flue system minimum heights..... 4

⚠ WARNING! Important Information

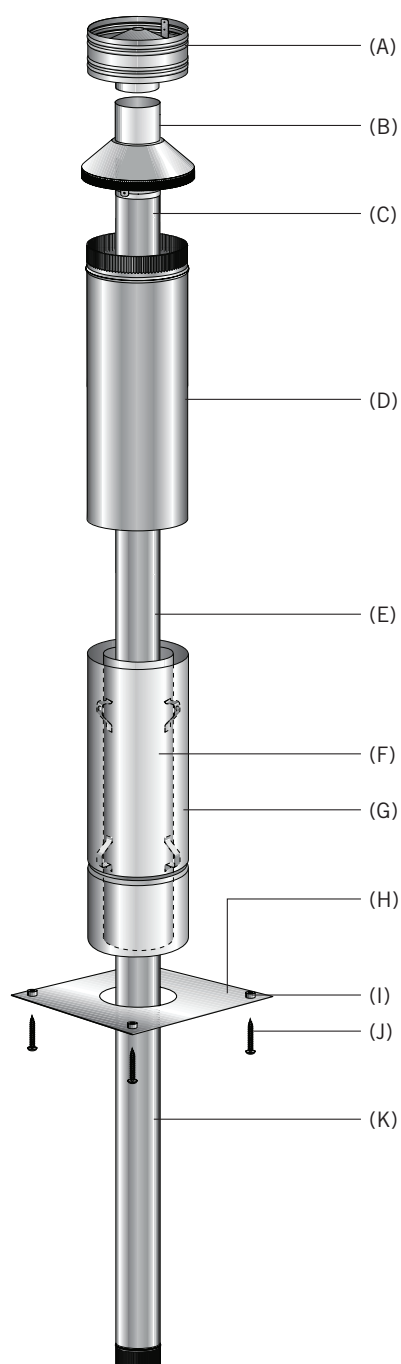
THIS FLUE KIT HAS BEEN MANUFACTURED IN ACCORDANCE WITH AS/NZS2918:2001 & TESTED TO APPENDIX F. TO ENSURE SAFETY THIS FLUE KIT MUST BE INSTALLED AS OUTLINED IN THESE INSTRUCTIONS AND THE APPROPRIATE REQUIREMENTS OF THE RELEVANT BUILDING CODE OR CODES.

- Wood fire and flue clearances from combustible walls must be in accordance with the wood fire manufacturer's specifications and AS/NZS2918:2001.
- These installation instructions are for tested appliances only.

⚠ CAUTION! Important Information

- Mixing flue system components from different sources or modifying the dimensional specification of components may result in hazardous conditions. Where such action is considered, the manufacturer should be consulted in the first instance.
- It is the responsibility of the installer to ensure that the installation of this flue kit complies with AS/NZS2918:2001, the appliance manufacturers specifications for flue pipe shield and ceiling plate and that the relevant building codes are adhered to.
- Bends and extensions to the length of a flue system are permitted (AS/NZS2918:2001 4.1)

Standard flue system components



Standard Flue System Components

- (A) 1 x Anti down-draught cowl (ADD)
- (B) 1 x Combination bracket casing cover
- (C) 1 x 405mm length of 150mm diameter stainless steel flue pipe
- (D) 1 x 1000mm x 250mm diameter galvanised outer casing slip extension
- (E) 1 x 1200mm length of 150mm diameter stainless steel flue pipe
- (F) 1 x 1190mm x 200mm diameter galvanised inner casing
- (G) 1 x 1200mm x 250mm diameter galvanised outer casing
- (H) 1 x ceiling plate (345mm x 345mm)
- (I) 4 x ceramic spacers
- (J) 4 x self tapping screws
- (K) 2 x 1200mm lengths of 150mm diameter stainless steel flue pipe painted metallic black

Installing the flue system

1. Locate the wood fire in its proposed position and mark a point on the ceiling that is directly above the centre of the wood fire's flue spigot. Check that the wood fire's location allows the outer casing to clear all structural roof timbers.
2. Cut a 250mm square hole in ceiling. Directly above cut a hole in roof to accommodate the outer casing.
3. Fit timber nogs around ceiling. i.e. Nogs form a 250mm square aperture that allows air to circulate freely over the outer casing surface.
4. Position the outer casing so that it is flush with the underneath of the ceiling and protrudes through the roof the required height. Please Note: AS/NZS2918:2001 4.9.1(a) states, 'the flue pipe shall extend not less than 4.6m above the top of the floor protector'. (Refer to Diagram B).
 - a) If the flue pipe is within 3 metres of the ridge, the flue pipe must protrude at least 600mm above the ridge of the roof.
 - b) If the distance from the ridge is more than 3 metres, the flue pipe must protrude at least 1000mm above roof penetration.
 - c) The flue pipe must be more than 3 metres from any nearby structure. (Refer Diagram C).

Additional inner and outer casing may be required to ensure the following:

- i) The correct minimum roof penetration height.
- ii) Sufficient overall height to encase the flue pipe which must extend a minimum of 4.6 metres from the floor protector. Refer Diagram B.

Please note: The inner casing should extend 200mm above roof penetration. Do not secure the outer casing slip extension onto the outer casing, as final adjustment will be required when fitting cowl assembly. See Paragraph 11.

5. Fix an appropriate flashing around the outer casing to seal onto the roofing material. Refer to the manufacturer's recommendations for correct fitting.

Please note: On iron roofs, fixings such as metal angle brackets (approximately 25mm x 25mm) can be fitted under the flashing to securely fix the roof to outer casing.
6. Place the ceiling plate over wood fire flue spigot, ensuring the folded edges are facing up towards the ceiling.
7. Position the bottom length of flue pipe (crimped end downwards) into wood fire flue spigot. Refer to the manufacturer of the wood fire and use flue pipe sealant if recommended.
8. Assemble the flue pipes together ensuring seams are straight, offsetting the seams will ensure a neat fit. Flue pipes must be assembled with crimped ends down (towards wood fire). Secure each joint with a minimum of 3 monel steel rivets equally spaced around the joint. If using Hi-Therm flue pipe the protective wrapping should be left on the flue pipe during installation.
9. From the roof lower flue pipe through outer casing into the bottom flue pipe securing with three monel rivets.
10. Check that the flue pipe spacing brackets inside the inner casing are correctly positioned and then from the roof slide the inner casing into the outer casing until the brackets rest on to the internal swage ring of the outer casing, this will ensure the inner casing is the correct 12mm above ceiling level. Check the inner casing when correctly positioned extends a minimum of 200mm above the roof penetration.

11. Before securing the outer casing slip extension to the outer casing with 3 rivets, ensure the flue pipe is either flush with or extends above the top of the outer casing slip extension by no more than 15mm. Adjust slip extension to obtain this measurement.
12. Push casing cover (with spigot inside flue pipe) down onto the outer casing slip extension. The 3 locating brackets with holes must be on the outside of the outer casing slip extension and are secured using 3 rivets.
13. Fit cowl but do not secure, as removal for flue cleaning will be necessary. Deform or ovalise the stub of the cowl to ensure it is a tight friction fit.
14. Fasten ceiling plate to ceiling using screws and ceramic spacers provided. Ensure an even air gap around flue pipe when fixing. Remove protective plastic from ceiling plate.

Please note: A 12mm air gap between ceiling plate and ceiling must be maintained.
15. Leave all installation and operating instructions with the owner.

Hi-therm stainless steel flue pipe

- Hi-Therm flue pipe is a high temperature, metallic black finish flue pipe designed for use on slow combustion, solid fuel heaters.
- Hi-Therm flue pipe is ideal for heaters that have high flue temperatures and that also can be operated under circumstances that may produce creosoting of Flue Pipes for short periods of time, ie, on refuelling and with air control in shut or low position. Clean air guidelines must be observed.
- Hi-Therm flue pipe is a maintainable surface finish product.

Conditions of use

The wood fire must be operated in accordance with the manufacturer's instructions. Clean air guidelines and regulations must be observed.

- Hi-Therm flue pipe must be swept by mechanical means only. (We recommend mixed head or polypropylene brushes). Under NO circumstances should chemical flue cleaners, (soot destroyers) or steel chimney brushes be used.
- Hi-Therm flue pipe should not be used on a wood fire burning treated or wet (unseasoned) wood. Only use newspaper when lighting the fire; never burn colour printed brochures or junk mail.
- Hi-Therm flue pipes must be secured together with a minimum of three Monel Steel rivets equally spaced around the joint.

The paint finish appearance may change, depending on heater operation and is designed to be a maintainable finish. To maintain paint finish or touch up use only genuine Pioneer Aerosol. (Refer label on packaging).

Hi-Therm flue pipe can be touched up using only Pioneer metallic black aerosol paint.

Hi-Therm flue pipe must be installed in accordance with this installation instructions, using flue componentry supplied by SFP. It is the responsibility of the installer to ensure no water leaks into the Hi-Therm Flue System.

The Stainless Steel Flue Pipe used in 'Hi-Therm Stainless Steel Flue Pipe' is warranted for five years, providing the above conditions are met.

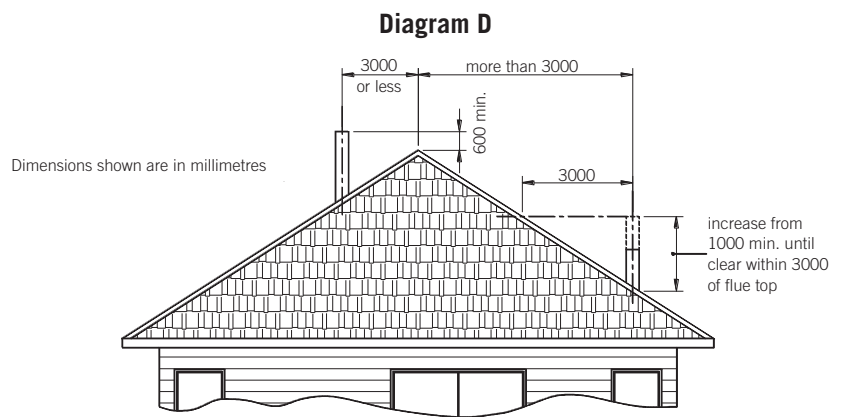
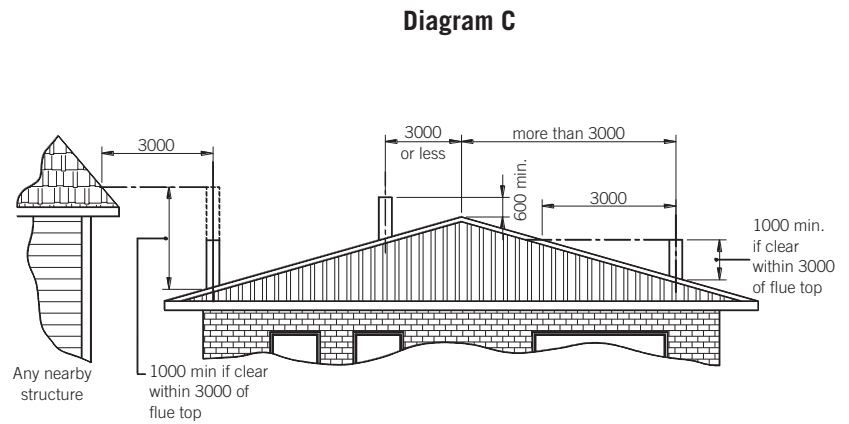
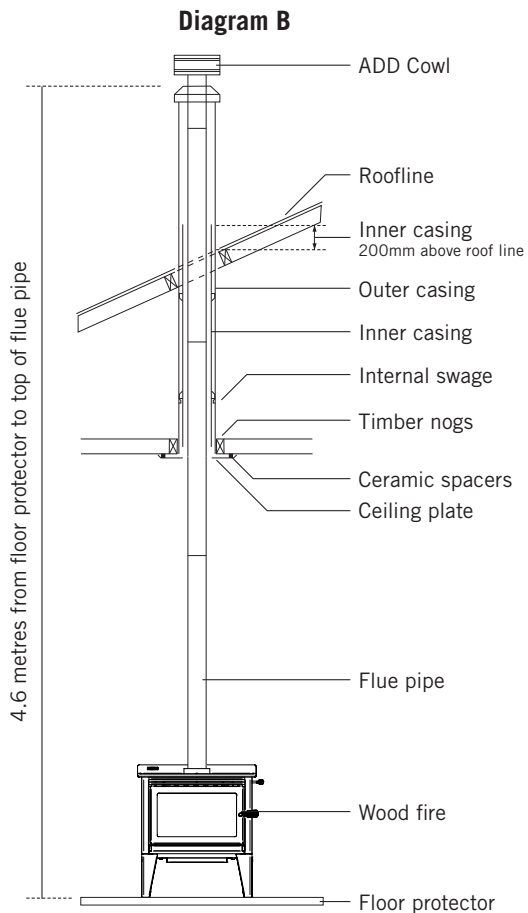
FAILURE TO OBSERVE THESE CONDITIONS MAY NEGATE ALL PRODUCT WARRANTIES

Minimum Heights for all Metro Flue Systems (In compliance with AS/NZS2918:2001)

This Standard Flue System complies with AS/NZS2918:2001 and its 4.6 metre height requirement (4.6 metre minimum from the top of the floor protector to the top of the flue pipe). However as external structures and the proximity of other buildings will differ for every installation, some situations will require additional flue height to comply with the standard.

Please refer to Diagrams C and D below right. (All measurements in mm)

Please note: AS/NZS2918:2001 Section 4, details flue system installation requirements in full.



Bath Installation & Operation Instructions

BC200427

Further Information Received

28/09/20



Important

Please read the following instructions carefully before commencing installation

**BEFORE INSTALLATION CHECK THAT YOUR ATHENA BATH IS COMPLETE AND
UNDAMAGED**

These instructions cover the installation of the following :

- **Bath Only**
 - **Factory Framed Bath**
 - **Acrylic Wall Lining**
 - **Spa Bath** (Includes Factory Framed Bath)
-
- Qualified tradesmen must carry out all plumbing and electrical works.
All aspects of the installation should be in accordance with the relevant Building Code

**Installer - Please make the Care / Maintenance & Operating Guide
at the rear of these Instructions available to the Homeowner**

Bath Installation



Bath Only

- If your Athena bath has been ordered unframed, a timber frame must be constructed to fully support the bath . (See Factory Framed example)
- Construction of the frame and installation of the bath should be carried out by a qualified tradesman.
- The bath **must be fully supported** under the perimeter of the top flange, and supported in several areas underneath the bath floor.
Note: An optional method of ensuring full support under the bath floor is to bed the bath base down into a concrete slurry.



Factory Framed Bath

- Your Factory Framed Athena bath has been supplied ready to install by a qualified tradesman.
- Check the floor area under the bath is level, as the bath has been leveled in the frame at our factory .

Framed Bath Heights

Model	Bath Height
Liquid 1675	515mm
Liquid 1800	540mm
Solace 1675	505mm
Solace 1800	505mm



Setting the Bath in position

- The bath does not require “checking” into the studs and the walls do not require packing. (assuming walls are straight and square)
- Ensure the bath is sitting level in the frame by placing a spirit level on the top flange.
Do not check for level from the bath floor
- It is recommended that the bath frame be fixed to the floor using either an adhesive or fasteners.
- Connect any plumbing before enclosing the perimeter of the bath
- For Spa & Hydrotherapy baths please refer to the dedicated section later on in these instructions

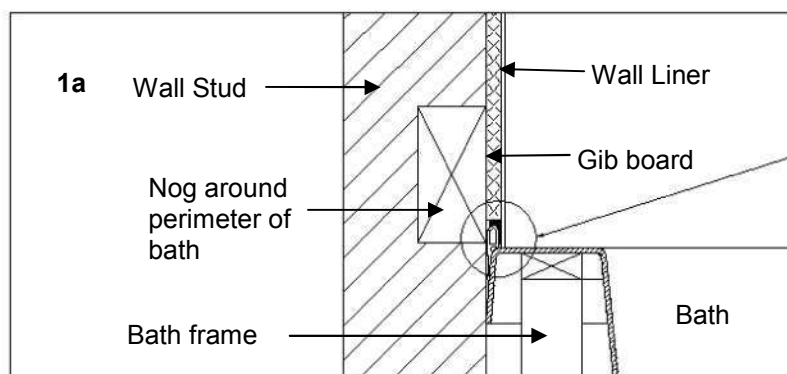
Installing Acrylic Wall Linings

1. The bath is to be installed in accordance with Athena Bath Installation Instructions.
2. Walls are to be lined with new unpainted / unsealed & un-stopped Gib board or a similar plaster board.
3. The acrylic lining should rest flat on the top surface of the bath.
4. Dry fit the liner on bath and mark its perimeter on the Gib board with a pencil.
5. Mark and drill holes for tap ware. (See Cutting & Drilling Guide)
6. Trial fit in position.
7. If fitting to a bath with the optional factory upstand (recommended) apply a continuous generous bead of silicone NG to the upper area between the Gib lining and the inside edge of the bath upstand. 30mm in from the ends fill the cavity with silicone to prevent any water tracking beyond the wall liner ends. Also seal the edge of the wall liner. Refer to diagram **1a** . If fitting to a bath without upstands apply silicone to fill the entire cavity between the Gib board and top of bath. Refer to diagram **1b**
8. Starting 10mm in from the edge of each wall apply a 5mm vertical bead of Sika Showerbond adhesive finishing just below the marked height of the liner. Continue to apply 5mm beads at 100mm centres. **Do not use any other adhesives– your warranty will be voided**

Note: From start to finish the application of adhesive should take no longer than 15 minutes.
Any delay may cause the adhesive to 'tack off' and affect the bond.

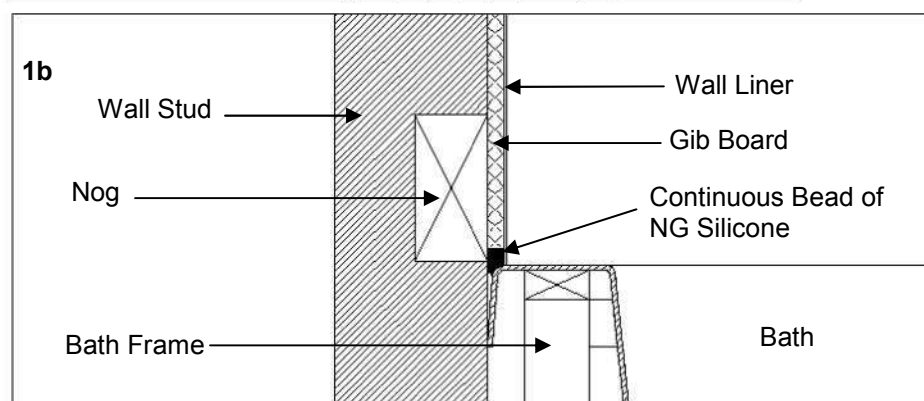
9. Place the wall lining into position and press firmly onto adhesive over the entire area.
10. Seal the top edge of the wall liner with 'Selley's No More Gaps' or a similar sealant that can be painted.
11. Clean up any excess silicone that may have oozed out from under the bottom edge of the acrylic liner using a small amount of white spirits on a clean cloth. Leave to cure for a minimum of 24 hrs

Optional Factory Fitted Upstand



Continuous bead of Silicone NG sealant

30mm in from the ends fill the cavity with Silicone NG sealant
Ensure to seal across the edge of wall liner



Cutting & Drilling Guide

- Use a jigsaw or hacksaw with minimum 18 TPI blade.
- Holes up to 12mm use a standard twist drill with reduced cutting angle.
- Holes larger than 12mm use a high speed steel or tungsten carbide hole-saw.

Spa Bath & Hydrotherapy Bath Installation Instructions

athena
B A T H R O O M S



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Further Information Received
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- All Athena Spa baths are supplied factory framed and water tested.
- Please ensure the bath is installed in accordance with the 'Bath Installation Instructions'
- It is recommended that all Spa baths are water tested onsite **prior** to installation to ensure no damage to fittings has occurred during transit.

IMPORTANT

**Pump must be accessible (removable) after installation
Failure to provide access will void warranty**

Electrical

- All baths - 930 Watt pump & 1000 Watt heater - total unit current 8.1 amp
- Power supply to be installed by a qualified electrician in accordance with current New Zealand Electrical Code of Practice.

Spa Pump Installation

- The Spa pump is factory fitted and tested. The position of the pump must NOT be changed under any circumstances.
- Due to obstructions once installed it is recommended one of the pump fastening bolts be removed prior to final installation of the bath (this will be the bolt closest to the wall). This will enable removal of the pump if required in the future. One bolt should remain in place.

Water Test

- Fill the bath to the normal bathing level with water below 50°C (at least 50mm above Spa jets)
- Turn on Spa pump by pressing On/Off on electronic switch pad.
- Leave bath to run for 5-10 minutes to ensure bath is free from any leakage.

Caring For your Bath



Please read before using your Athena bath.

This advice is relevant for all Athena baths and is vital in ensuring your bath remains in pristine condition throughout its life.

Care and Maintenance

Acrylic has excellent resistance to most things it is likely to come into contact within the bathroom. However it should not be exposed to a naked flame, cigarettes or strong solvents.

To maintain your bath it is recommended you adopt the following:

The temperature of the supply water should not exceed 55 degrees Celsius.

When filling the bath start with cold water to allow the bath to gradually adapt to the temperature.

To maintain the high gloss finish of your bath rinse with warm water and dry polish with a towel after each use. Athena Bathrooms recommend 'Vibrance Acrylic Surface Cleaner' for regular cleaning. Available through most Bathroomware retailers.

If by accident your bath gets scratched it may be restored by using a fine polish such as Brasso. If this will not remove the scratch it maybe cut back with a very fine wet and dry paper (1200# -1500#) used liberally with water. After removing the scratch restore gloss with Brasso or a car paint cutting compound.

Spa Bath Operating Guide

When filling the bath it is recommended to partially fill with cold water as the pump features a safety protection device that will prevent the heater operating in temperatures exceeding 50°C. The bath should be filled to a minimum of 50 mm above the jets

The heater unit is designed to maintain water temperature not heat water from ambient

To start the Spa Pump

- Check there is power to the bath, the **Power light** on the control touch pad will be illuminated
- Press the Spa button to start or stop the pump and heater together. **Pump and Heat lights** will illuminate
- Pressing the **ECO Heat** button will turn the heater off or on while the pump will continue to operate. **Heat light** will either be off or on respectively



Spa Bath Operating Guide Continued

Using the Air Control

- Turning the Air Control anti-clockwise will induce more air into the spa system creating a vigorous massage.
- Turning the Air Control clockwise will reduce the air intake into the spa system for a gentle massage effect.
- Closing the Air Control totally will only allow water to pass through the jets



Spa Jets

- The spa jet “eyeball” can be swivelled to adjust the direction of water flow. Simply place the tip of the index finger onto the edge of the eyeball and move accordingly



Hydrotherapy Operating Guide

To start the Spa Pump

- Refer to Spa Bath operation section

Rotating Mini Jets - Lumbar & Foot

- Mini jets rotate delivering a concentrated hydro massage
- These jets cannot be adjusted for flow or direction



Spa Jets

- Please refer to the Spa section above

Using the Air Control

- Like the main spa jets, the Mini jet's water and air mixture can also be adjusted with its own Air Control. For operation please refer to The Air control instructions above



Spa Bath Trouble Shooting

athena
B A T H R O O M S

BC200427
Further Information Received
28/09/20
Cause/Remedy

Spa Bath

Symptom

Spa pump does not start

Check power available to socket.
Check electronic touch pad is connected to pump

Spa pump starts but no water from jets

Check bath installed level (top edge level).
Check water at least 50mm above jet level.
Check jets are in open position

Spa pump starts then stops

Insufficient water in bath.
Blocked suction inlet.

Technical Assistance

Should you continue to experience a problem or for further technical information please contact Athena:

Toll Free: 0800 4 ATHENA
Email: information@athena.co.nz

For any fault related enquires please contact the merchant where the bath was purchased from and provide them with the following information:

- Pump Serial Number (located on pump casing)
- Nature of fault

Rinnai

INFINITY A-series

continuous flow gas hot water heaters

PTS

01:18

A Product Technical Statement (PTS) is a way to show how a product or system is fit for purpose for use in New Zealand and to demonstrate compliance with the New Zealand Building Code (Building Code Amendment Act 2013).

Product description

Designed and made in Japan, the Rinnai INFINITY A-series are continuous flow gas hot water heaters with inbuilt frost protection. They have electronic ignition and require electricity to operate. The temperature dip switch setting is factory preset at 55 °C.

The INFINITY A-series comes in a range of sizes, model selection is dependent on the number of outlets in the house. Click on any of the thumbnail images to view the product information.

Scope of use

Suitable for mains and medium pressure residential applications. They are designed to be externally mounted on an outside wall and located as close as practicable to the most frequently used hot water outlet(s), to reduce the delay for hot water delivery.

They are not suitable as a spa or swimming pool heater. They are also not suitable for commercial installations.

Hard or acidic water will need to be treated to use this product.

Available for connection to natural gas or LPG, this must be specified at the time of purchase.

Flue terminations must comply with the flue terminal locations shown in AS/NZS 5601.1.

Design guidelines

Specification and installation must be in accordance with Rinnai installation requirements and with the Building Code.

Rinnai specify that installation must be in compliance with AS/NZS 5601.1:2013, AS/NZS 3000:2007, and AS/NZS 3500.

Quality assurance

- ISO 9001 Certified System
- ISO 14001 Certified System



A16



A20



A24



A26



Experience our innovation

Rinnai.co.nz | 0800 746 624
<http://www.youtube.com/rinnainz>

Compliance with the NZ Building Code

If specified, installed and maintained in accordance with all Rinnai requirements the INFINITY A-series will comply with the below provisions of the NZ Building Code. AS/NZS 5601.1 is an acceptable solution within the NZBC for gas installations as per NZBC G11/AS1 9.0.1.

Code clause	Evidence of compliance
B1.3.1 B1.3.2 B1.3.3 (a, b, c, h, , m)	The INFINITY A-series units are certified to AS/NZS 4552, a series of standards for safety, performance and energy efficiency in gas fired water heaters for hot water supply and/or central heating.
B.2.3.1 (c)	In service history.
C2.2 and C2.3	Certification of continuous flow gas water heaters to AS/NZS 4552.
E2.3.2	Achieved by following E2/AS1
G4.3.3 (f, i)	Achieved as long as the building complies with G4/AS1
G9.3.1 (a, b, c, d, f), G9.3.3	G9/AS1 as required by Rinnai installation guidance
G10.3.1 (a, b, c, d), G10.3.2, G10.3.3, G10.3.4, G10.3.5, G10.3.6	G10/AS1 (NZS 5442 natural gas) and (NZS 5435 LPG)
G11.3.1, G11.3.2, G11.3.3, G11.3.4	G11/AS1 (AS/NZS 5601.1) as required by Rinnai installation guidance
H1.3.4	Certification of continuous flow gas water heaters to AS/NZS 4552.2 (Minimum energy performance standards for gas water heaters).

Additional evidence to support the above statements

Energy Safety Supplier Declaration of Compliance:

- INFINITY A16: Declaration number - [1825920179](#)
- INFINITY A20: Declaration number - [1825820179](#)
- INFINITY A24: Declaration number - [1825720179](#)
- INFINITY A26: Declaration number - [1825620179](#)

Seismic restraint

Rinnai has prepared a seismic restraint calculation using NZS 4219. This can be accessed from the A-series product page (technical tab) on the Rinnai website.

Special conditions - installation requirements

Full appliance information can be found at www.rinnai.co.nz.

Limitations: To be installed in accordance with all Rinnai installation requirements and by a licensed gasfitter/plumber, and electrician. Upon completion of the installation, a final inspection and test to demonstrate that the gas appliance has been installed in accordance with Rinnai's instructions and in accordance with Gas (safety and measurement) Regulations 2013 is required by the installer. The gasfitter is to issue a certificate of compliance.

Special conditions - maintenance requirements

For reliable operation Rinnai INFINITY units should be serviced every two years. Installation, servicing and repair shall be carried out only by authorised personnel.





BRANZ Appraised
Appraisal No. 913 [2016]

DYNAFLASH FLASHINGS



Appraisal No. 913 [2016]

Amended 06 October 2016

BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Avondale

Auckland

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Web: www.dynex.co.nz



BRANZ

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Porirua 5240,

New Zealand

Tel: 04 237 1170

branz.co.nz



Product

- 1.1 DynaFlash Flashings are concealed corner and transition flashings designed to meet the flashing requirements of NZBC Acceptable Solution E2/AS1.

Scope

- 2.1 DynaFlash Flashings have been appraised for use as concealed flashings on timber and steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area; and,
- with direct fixed or cavity-based wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or with proprietary direct fixed or cavity-based cladding systems covered by a valid BRANZ Appraisal; and,
- situated in NZS 3604 Wind Zones up to, and including Extra High.

[Note: DynaFlash can also be used on buildings subject to specific weathertightness design. Weathertightness design and detailing of these installations is the responsibility of the designer and is outside the scope of the Appraisal].

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, DynaFlash Flashings if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [b], 15 years and B2.3.2. DynaFlash Flashings meet these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. DynaFlash Flashings contribute to meeting this requirement. See Paragraphs 11.1 and 11.2.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. DynaFlash Flashings meet this requirement and will not present a health hazard to people.

- 3.2 This is an Appraisal of an **Alternative Solution** in terms of New Zealand Building Code compliance.

Technical Specification

- 4.1 DynaFlash Flashings are extruded from 1 mm thick white polypropylene with co-extruded black EPDM rubber seals along each edge. They are available 100 mm wide [50 x 50 mm when folded], 150 mm wide [75 x 75 mm when folded] and 200 mm wide [100 x 100 mm when folded]. They are supplied in 25 m coils.
- 4.2 The flashings are extruded with a groove along the centre line to enable them to be bent in either direction to suit internal and external corner applications, or they can be left unfolded for flat transition flashing applications. The 200 mm wide flashing has additional grooves to enable it to be bent as a stepped transition flashing.
- 4.3 Accessories used with the DynaFlash Flashings, which are supplied by the building contractor, are:
 - **Fixings [timber frame]** – 30 or 40 x 2.5 mm hot-dip galvanised flat head nails, or staples.
 - **Fixings [steel frame]** – self-drilling 6-gauge AS 3566 Corrosion Class 4 galvanised screws, or staples [when fixing to timber cavity battens].

Handling and Storage

- 5.1 Handling and storage of all materials supplied by Dynex Extrusions Ltd, whether on site or off site, is under the control of the installer. DynaFlash Flashings must be protected from physical damage and must be stored in clean, dry conditions.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for DynaFlash Flashings. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

- 7.1 DynaFlash Flashings can be used as an alternative to concealed internal and external corner flashings specified within NZBC Acceptable Solution E2/AS1.
- 7.2 DynaFlash Flashings must not be exposed to the weather or ultra violet light for a total of more than 90 days before being covered by the wall cladding.
- 7.3 Where a proprietary cladding manufacturer specifies a specific flashing as part of their system, permission must be obtained from the cladding manufacturer before the flashing system is substituted with DynaFlash Flashings.
- 7.4 Where DynaFlash Flashings are used with other cladding systems not covered by this Appraisal [refer to Paragraph 2.1], designers must detail the junction between the DynaFlash Flashings and the cladding to meet their own requirements and the performance requirements of the NZBC. Details not included within the Technical Literature have not been assessed and are outside the scope of this Appraisal.

Durability

- 8.1 Assessment of durability to meet the NZBC is based on difficulty of access and replacement, and the ability to detect failure of DynaFlash Flashings both during normal use and maintenance of the building.

Serviceable Life

- 8.2 Provided they are not exposed to the weather or ultra-violet light for a total of more than 90 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, DynaFlash Flashings are expected to have a serviceable life equal to that of the cladding.

Maintenance

- 9.1 No maintenance is required for DynaFlash Flashings. Annual inspections must be made to ensure that all aspects of the cladding system, and any sealed joints remain in a weatherproof condition. Any damaged areas or areas showing signs of deterioration which would allow water ingress must be repaired immediately.

Prevention of Fire Occurring

- 10.1 Separation or protection must be provided to the DynaFlash Flashings from heat sources such as flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 – C/AS6 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

- 11.1 DynaFlash Flashings when installed in accordance with this Appraisal and the Technical Literature assist in preventing the penetration of moisture that could cause undue dampness or damage to building elements.
- 11.2 The details given in the Technical Literature for weather sealing are based on the design principle of having a first and second line of defence against moisture entry for all joints, penetrations and junctions. The ingress of moisture must be excluded by detailing flashings and wall interfaces as shown in NZBC Acceptable Solution E2/AS1 and the Technical Literature. Weathertightness details that are developed by the designer are outside the scope of this Appraisal and are the responsibility of the designer for compliance with the NZBC.

Installation Information

Installation Skill Level Requirements

- 12.1 Installation of DynaFlash Flashings must be completed by, or under the supervision of Licensed Building Contractors with the relevant Licence Class, in accordance with instructions given within the DynaFlash Technical Literature and this Appraisal.

System Installation

DynaFlash Flashings Installation

- 13.1 DynaFlash Flashings are supplied in coils and are cut to length on site. Flashings must be installed in a continuous length where possible, but to avoid wastage, the flashing can be lapped 100 mm. The direction of the lap must ensure that water is shed to the outer face of the flashing.
- 13.2 DynaFlash Flashings must be installed over the wall underlay (for direct fixed wall cladding), or cavity battens (for cavity-based wall cladding). The flashings must be fixed in place with 30 or 40 x 2.5 mm hot-dip galvanised flat head nails or staples (timber frame construction), or self-drilling 6-gauge AS 3566 Corrosion Class 4 galvanised screws (steel frame construction) at approximately 400 mm centres. The fixings should be installed through the section of flashing between the EPDM seal and outside edge.
- 13.3 DynaFlash Flashings must be used and installed in conjunction with the selected cladding system in accordance with the installation methods and requirements of NZBC Acceptable Solution E2/AS1, or the proprietary cladding system manufacturer.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

- 14.1 BRANZ expert opinion on NZBC E2 code compliance for DynaFlash Flashings was based on evaluation of all details within the scope and as stated within this Appraisal. The details contained within the Technical Literature have been reviewed, and an opinion has been given by BRANZ technical experts that the flashings will meet the performance levels of NZBC Acceptable Solution E2/AS1.
- 14.2 The practicability of installation of DynaFlash Flashings has been assessed by BRANZ.
- 14.3 The Technical Literature for DynaFlash Flashings has been examined by BRANZ and found to be satisfactory.

Quality

- 15.1 The manufacture of DynaFlash Flashings has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 15.2 The quality of materials, components and accessories supplied by Dynex Extrusions Ltd is the responsibility of Dynex Extrusions Ltd. The quality control system of Dynex Extrusions Ltd has been assessed and registered as meeting the requirements of ISO 9001: 2008.
- 15.3 The environmental management system of Dynex Extrusions Ltd has been assessed and registered as meeting the requirements of ISO 14001: 2004.
- 15.4 Quality on site is the responsibility of the installer.
- 15.5 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing systems, wall underlays, cavity battens and cladding system in accordance with the instructions of the designer.
- 15.6 Building owners are responsible for the maintenance of the cladding system in accordance with the instructions of cladding manufacturer and designer.

Sources of Information

- NZS 3604: 2011 Timber-framed buildings.
- Acceptable Solutions and Verification Methods for New Zealand Building Code External Moisture Clause E2, Ministry of Business, Innovation and Employment, Third Edition July 2005 [Amendment 6, 14 February 2014].
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 06 October 2016.

This Appraisal has been amended to include the 200 mm wide DynaFlash Flashing.



In the opinion of BRANZ, **DynaFlash Flashings** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Dynex Extrusions Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Dynex Extrusions Limited**:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
 - d) Warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Dynex Extrusions Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Dynex Extrusions Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

29 April 2016

Rinnai

Installation guide

Rinnai INFINITY A-Series continuous flow water heaters

REU-A2626WG-ZK



REU-A2426WG-ZK



REU-A2024WG-ZK



REU-A1620WG-ZK



The Rinnai INFINITY A-Series models are not suitable for commercial or solar applications

Important

This appliance must be installed in accordance with:

- Manufacturer's installation instructions
- Current AS/NZS 3000, AS/NZS 3500, AS/NZS 5601.1 and G12/AS1

For use with Natural Gas or Universal LPG as indicated on the appliance.

Not suitable as a spa or swimming pool heater.

Not suitable for commercial or solar applications.

Appliance must be installed, commissioned and serviced by an authorised person, being in New Zealand a licensed gasfitter, in accordance with these instructions and all applicable local rules and regulations.

Warning

Improper installation, adjustment, alteration, service and maintenance can cause property damage, personal injury or loss of life.

For more information about buying, using, and servicing of Rinnai appliances call: 0800 RINNAI (0800 746 624).

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Before installation

- **Check for damage:** Unpack the appliance and check for damage. DO NOT install any damaged items.
- **Check components and gas type:** Check all components have been supplied and that you have the correct gas type.
- **Read these instructions:** Get an overview of the steps required before starting the installation. Failure to follow these instructions could cause a malfunction of the appliance. This could result in serious injury and property damage.
- **Applicable models:** These instructions apply only to the Rinnai A-Series continuous flow water heater models listed on the cover page of this guide.

Appliance location

This appliance is designed for outdoor installations only. It MUST BE located above ground in open air with natural ventilation, without stagnant areas, where gas leakage and products of combustion can be rapidly dispersed by wind and natural convection.

The appliance MUST BE mounted on a vertical structure with the water and gas connections on the underside pointing downwards.

Location of the flue terminal MUST BE in accordance with Section 6 and Figure 6.2 of the AS/NZS 5601.

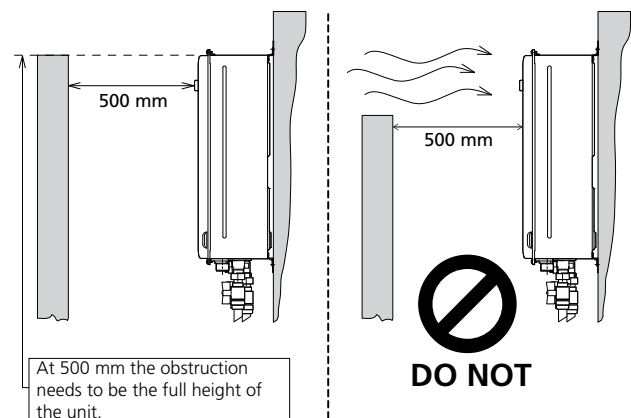
The appliance MUST BE placed **as close as practicable to the most frequently used hot water outlet** or outlets to reduce the delay time for hot water delivery¹. For installations where the distance between the water heater and the outlets is considerable, a flow and return system can be used to minimise the waiting time for hot water delivery. Alternatively multiple appliances can be strategically placed to serve outlets with minimal delay time.

An AC 230 V, 10 A earthed power point must be provided adjacent² to the appliance. This power point must be weatherproof. It must be clear of the gas and water connections to the appliance and also the flue exhaust and water pressure relief valve. The power cord of the appliance is 1.5 m long.

All appliances MUST BE installed to ensure access can be gained without hazard or undue difficulty for maintenance and servicing. Sufficient clearances shall allow access and removal of all serviceable components. Appliances should not be mounted more than 2.5 m above the ground or floor level unless the customer can arrange permanent and safe access, or can provide another means of safe access.

Horizontal obstructions

AS/NZS 5601 states a minimum horizontal clearance of 500 mm between a building structure and obstruction facing the terminal. At 500 mm the obstruction needs to be the full height of the unit (as shown), and not a partial obstruction. A partial obstruction of less than 1 m could result in wind pushing the flue gases back into the flue terminal.



¹ Rinnai recommend a maximum pipe run of 10 m.

² Power point can be within the pipe cover if a pipe cover is installed—must comply with AS/NZS Wiring rules

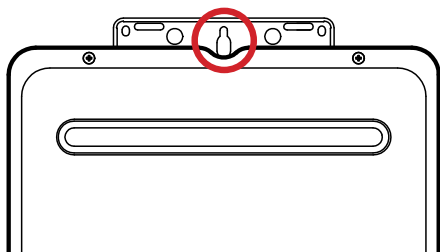
General installation information

Securing the Rinnai INFINITY

The wall or structure on which the units are mounted **MUST BE** capable of supporting the weight of the appliance and associated pipe work. Refer p. 7 for the specific model weight.

Ensure that suitable fixing screws or bolts are used to secure the unit to the wall, in accordance with AS/NZS 5601 section 6. Wooden plugs shall not be used.

The top bracket has a keyhole slot so that the appliance can be positioned by hanging it on one screw, once in position the appliance can then be secured with appropriate fittings.



The appliance can be mounted directly against the wall or structure. There is no need to use non-combustible sheeting between the appliance back panel and the wall or structure for the purposes of meeting the temperature hazard requirements of AS/NZS 5601.

Pipe sizing

If the gas pipe sizing is insufficient the appliance won't perform properly. Gas pipe sizing must consider the gas input into this appliance as well as other gas appliances in the premises. The gas meter and regulator must be specified for this gas rate.

An approved sizing chart such as the one in AS/NZS 5601 should be used. Refer p. 7 for model specific gas consumption details.

Water pipe sizing and layout should be performed in accordance with AS/NZS 3500. All hot water pipe work should be insulated to optimise performance and energy efficiency.

Water supply

The appliance is intended to be permanently connected to the water mains.

Refer p. 7 for model specific operational water pressure limitations. Approved pressure limiting valves may be required if the maximum rated water supply pressures are exceeded. To achieve the rated flow, the minimum water supply pressures must be met.

The A-Series water heaters will operate at lower pressures than the specifications, but will not achieve the rated flow. Contact Rinnai for gravity fed or low pressure installations.

Water chemistry and impurity limits are detailed in the operation guide within the warranty section. Most metropolitan water supplies fall within the requirements.

If you are unsure about your local water quality, contact your water authority. If sludge or foreign matter is present in the water supply, a suitable filter or strainer should be incorporated in the water supply to the Rinnai INFINITY.

Water delivery temperature

Requirements of AS/NZS 3500 MUST BE considered regarding the temperature limitations of hot water supplied to areas used primarily for personal hygiene. The temperature of these areas may be limited to 55 °C or less.

If the appliance is to deliver water primarily for the purposes of personal hygiene in an early childhood centre, school, nursing home or similar facility as defined in AS/NZS 3500.4, a Temperature Limiting Device (TLD), such as a tempering valve may be required, even if the appliance is set to 55 °C or less. For these types of applications contact Rinnai.

Requirements for Rinnai INFINITY units installed without controllers

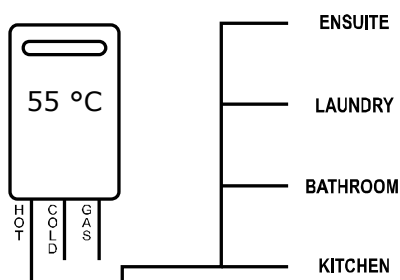


Diagram 1 - 55 °C Appliance

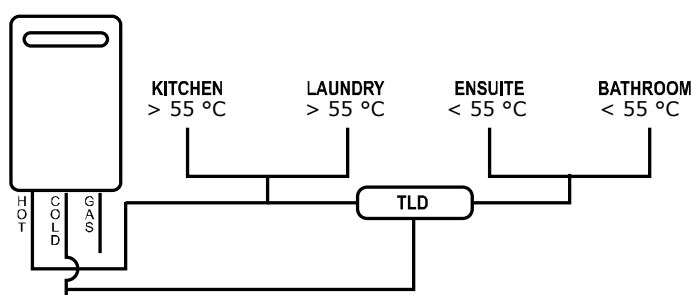
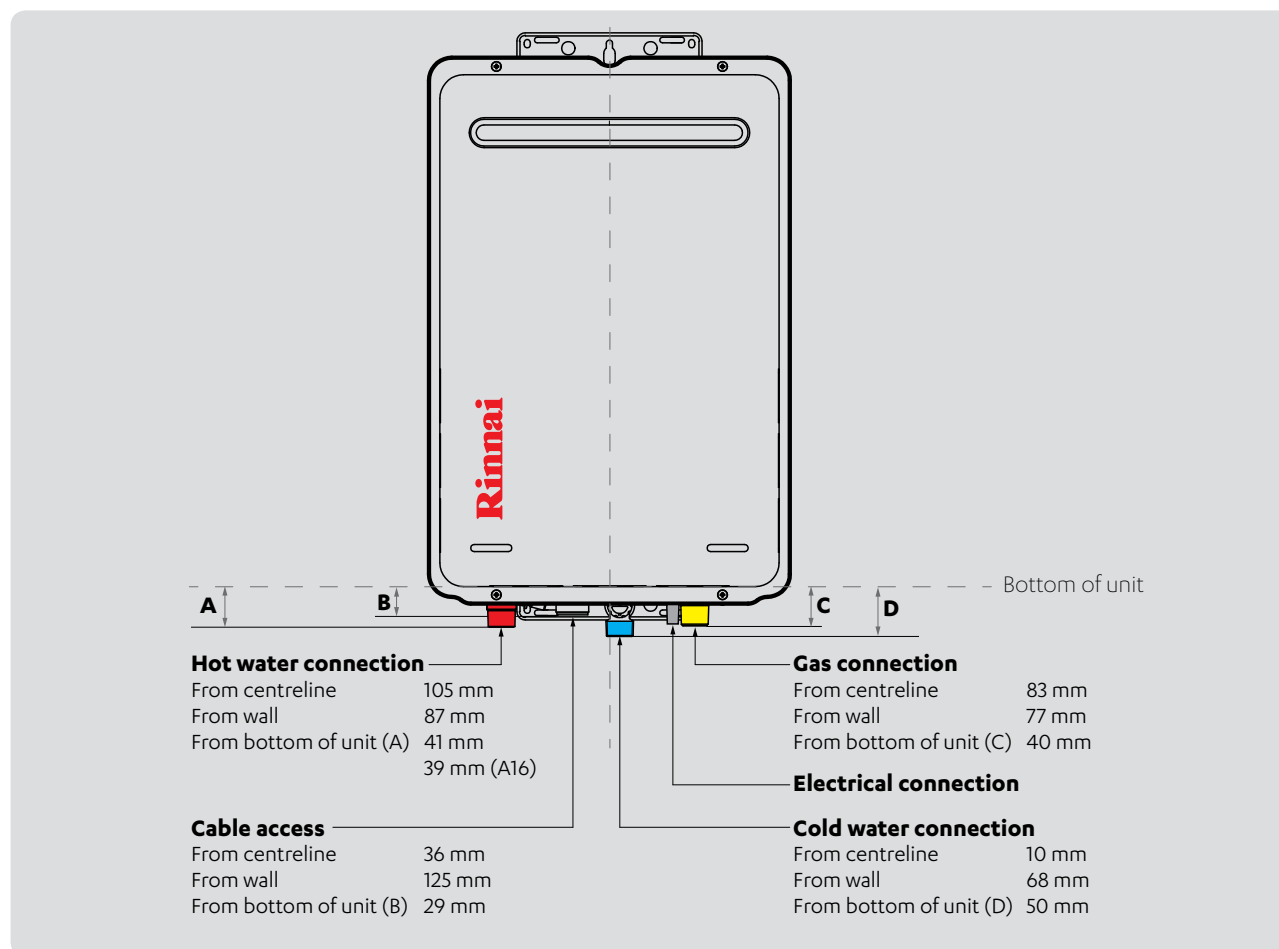


Diagram 2 - Not a 55 °C Appliance
(TLD = Temperature Limiting Device)

When the Rinnai INFINITY is set to deliver water at a temperature higher than 55 °C, it will be necessary to fit a Temperature Limiting Device for delivery to areas used for the purposes of personal hygiene.

Connections and fittings



Model	Gas consumption MJ/h	Water Supply kPa		Weight kg	Fittings		
		Min.	Max.		Hot	Cold	Gas
A16 external REU-A1620WG-ZK	16.3-124	120	1000	13	R $\frac{1}{2}$ (15 mm)	R $\frac{1}{2}$ (15 mm)	R $\frac{3}{4}$ (20 mm)
A20 external REU-A2024WG-ZK	19.9-156	160	1000	14	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)
A24 external REU-A2426WG-ZK	16.3-184	200	1000	15	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)
A26 external REU-A2626WG-ZK	16.3-199	200	1000	15	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)	R $\frac{3}{4}$ (20 mm)

Service connection points

An approved full flow isolation valve and disconnection union **MUST BE** fitted to the cold water inlet. A non-return valve is not required unless required by local regulations.

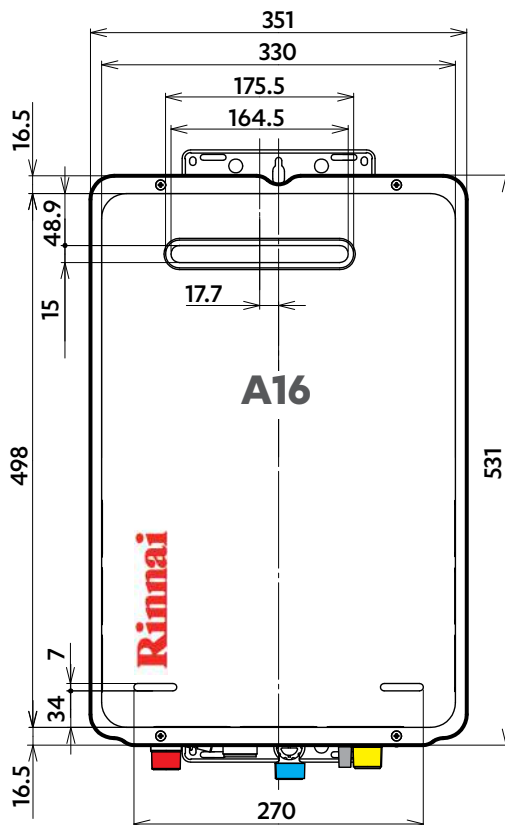
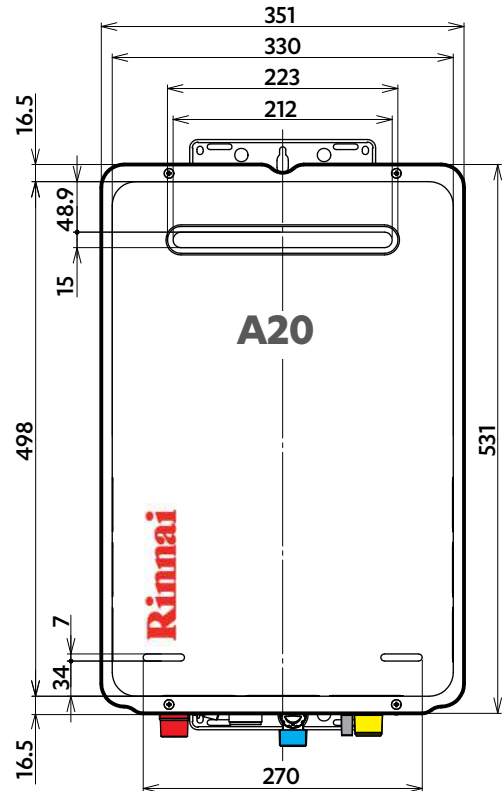
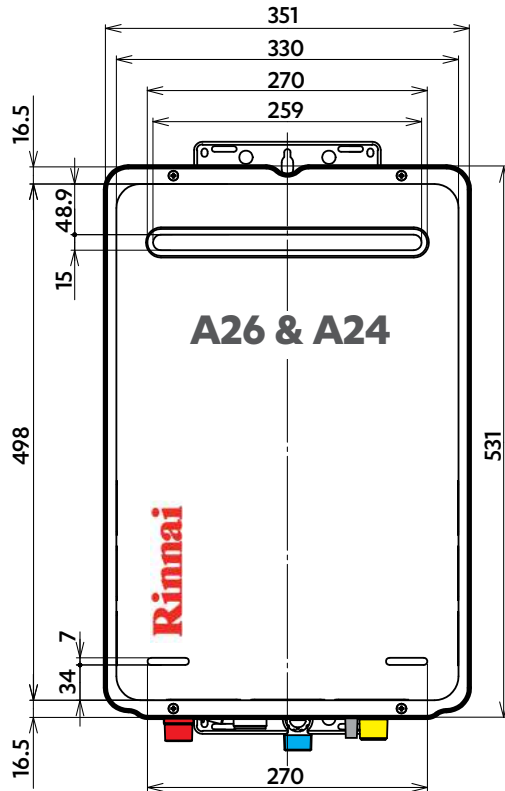
Isolation valves **MUST NOT** be fitted directly to the appliance.

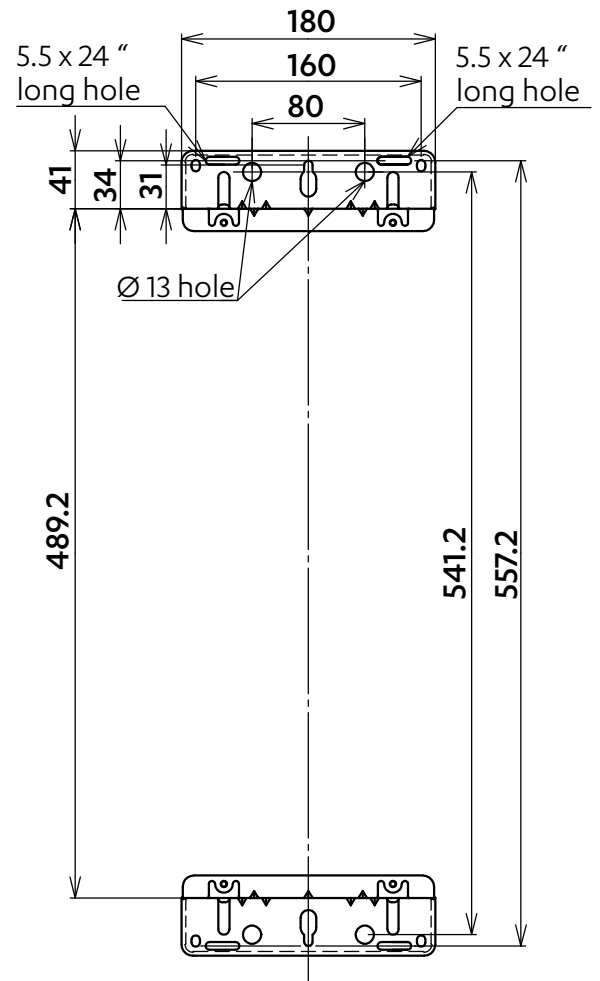
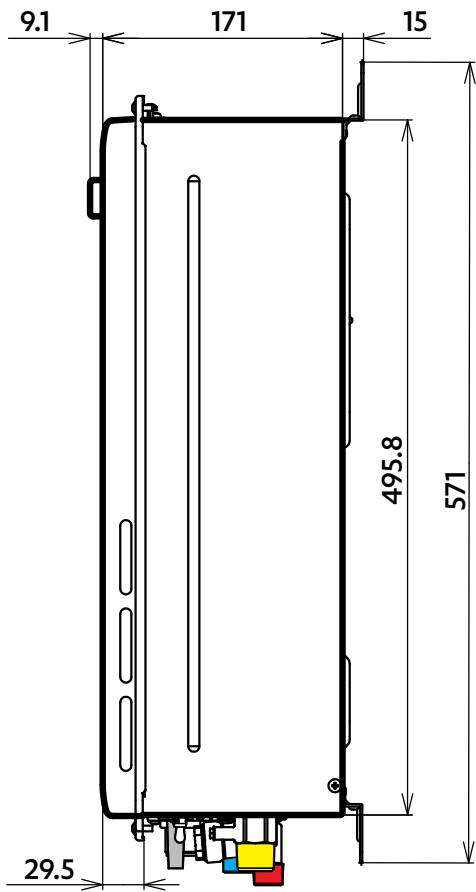
It may be necessary to fit a temperature limiting device for delivery to areas used primarily for the purposes of personal hygiene, refer previous page for 'Water delivery temperature' information.

Purge gas and cold water supply lines to remove air and swarf before final connection. Swarf in the gas or water supplies may cause damage, a common problem, which is not covered by warranty.

Dimensions (mm)

The basic dimensions, (height, width, and depth) are the same. The difference between the models are the dimensions and position of the flue outlet.





Commissioning

AS/NZS 5601.1, clauses 2.6.8 and 6.11.2, states that every part of a gas installation shall be commissioned prior to initial use. It is the installer's responsibility to ensure all current AS/NZS 5601 requirements are met. The URL's provided are links to short videos on how key steps are performed.



The appliance operation must be tested after installation. Ensure the building occupants do not have access to the hot water outlets during this procedure.

Please note

The Rinnai INFINITY A-Series comes with a factory preset outlet temperature of 55 °C. The high and low gas operating pressures are also factory preset. Under normal circumstances the operating pressures do not require adjustment during installation. Make adjustments ONLY if the unit is not operating correctly and all other possible causes for incorrect operation have been eliminated.

Inlet supply pressure to the appliance **MUST BE** checked and set within the operating parameters of the appliance in all instances.

If the appliance can not be adjusted to perform correctly call 0800 RINNAI (0800 746 624) for assistance.

Steps to commissioning a Rinnai INFINITY A-Series model

1

Flush water pipes, and gas line

Before final connection of the water heater flush the gas, hot and cold water supply lines. Swarf in the gas or water supplies may cause damage, a common problem, which is not covered by warranty.

2

Connect gas line

3

Purge the gas line of air

4

Final connection test

5

Check supply pressure

Operate ALL other gas appliances at their maximum gas rate. With all gas appliances on maximum the supply pressure must read between 1.13-3.0 kPa on Natural Gas. On LPG the pressure must be 2.75-3.0 kPa.

If the pressure is lower, the gas supply is inadequate and the appliance will not operate to specification. It is the installer's responsibility to check the gas meter, service regulator and pipe work for correct operation and sizing, and rectify as required.

6 **PCB and/or dip switch settings checked.**

Refer p.12-14.

PCB settings checked if the factory default temperature has been changed.

Dip switch settings checked if a flue diverter is fitted.

 Short video: <http://rinnai.co.nz/007>

7 **Operate and test for gas leaks**

Replace the appliance front cover otherwise the unit won't operate correctly, and operate and test for gas leaks using an electronic leak detector.

8 **Operational test—water flow and temperature at the hot water outlets**

Confirm the hot water delivery temperatures using a thermometer.

If water controllers are fitted, it is necessary to test their operation through the complete range of functions, refer separate instructions provided with the water controllers.

9 **Check cold water inlet filter**

Inspect and clean the water inlet filter. This may need to be repeated to ensure the filter remains clear, especially on new installations.

 Short video: <http://rinnai.co.nz/006>

If you feel the customer is capable of doing this check it would be beneficial to show them how to inspect and clean the filter as well.

10 **Customer handover**

After testing is completed, explain to the customer the functions and operation of the water heater and water controllers (if fitted).

Also talk to them about the gas, power, and water connections, how frost protection works, the procedure for draining the water heater, where to find the data plate, maintenance and servicing. If the customer is not there try and contact them by phone to relay the important points.

Ensure the installer details section is completed in the operation guide, the commissioning checklist has been completed and signed, and that guide and checklist are left with the customer.

PCB interface and dip switch settings

The PCB interface and dip switch settings must only be changed by a licensed gasfitter. They have been provided as there may be a requirement to change the temperature of the water delivered from the water heater or change the dip switch settings if fitting a flue diverter.



Care must be taken when changing the temperature or dip switch settings as they can be easily switched or bumped into the wrong position. Fully check the operation of the water heater before leaving including the temperature of the water delivered.

The cover of the water heater will need to be removed to carry out this operation. As this will expose live mains voltage wiring **please disconnect the power supply before removing the front cover.**

We wish to draw your attention to the requirements of the New Zealand Building Code and compliance document G12. This requires that water delivered to sanitary fixtures be no more than 55 °C. Increasing the water heater set temperature will require that you protect all sanitary fixtures to which the appliance is plumbed with suitable tempering valves or something similar.

Rinnai will accept no liability for issues arising out of the use of this information.

If you have any doubts about the performance of the water heater, please contact Rinnai by phoning 0800 RINNAI (0800 746 624).

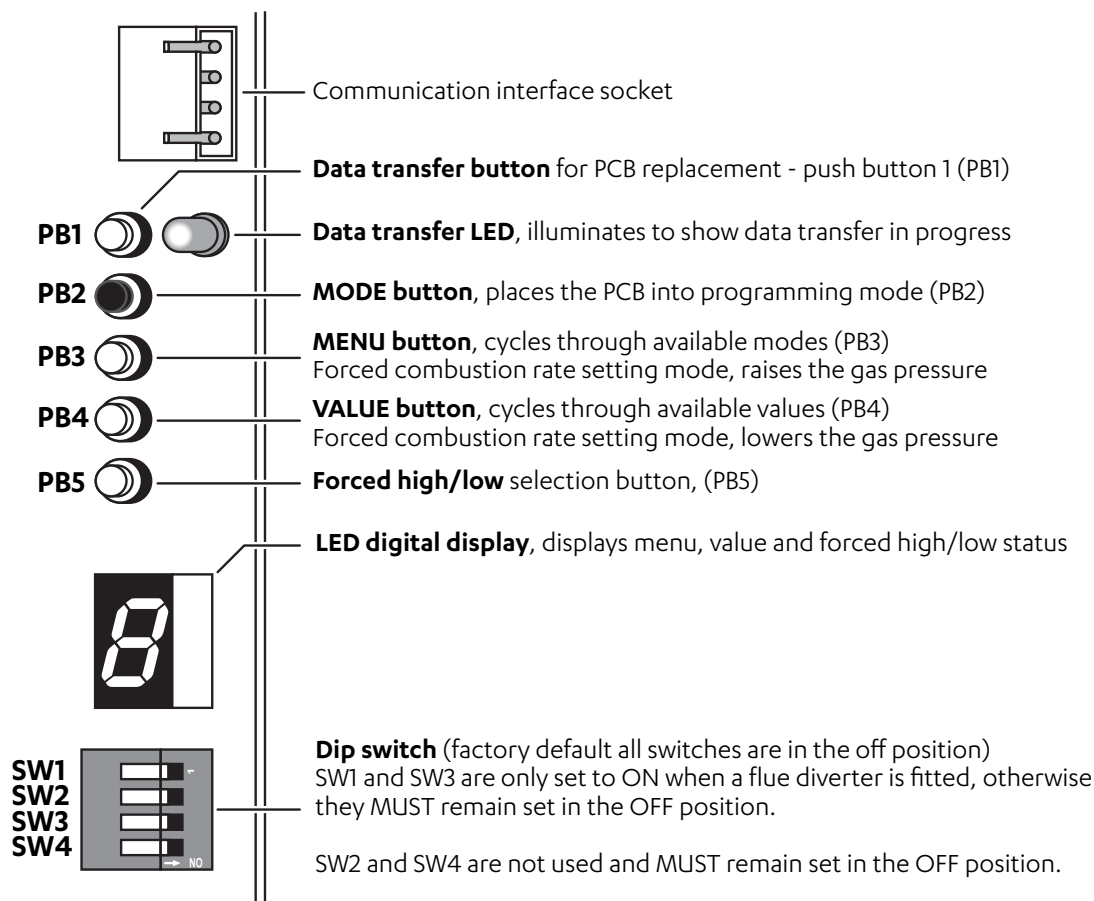
The following information details settings for the Rinnai INFINITY A-Series models only. They are not applicable for other models.

Basic operation of the PCB interface

- To place the PCB into programming mode press PB2 until the LED digital display shows *1*, noting that the current set value will be displayed shortly afterwards.
- To alter a value press PB4, each press of the button will select the next available value.
- To change to another menu, press PB3, each press of the button will select the next available menu.
- To exit the programming mode and save the selected settings press PB2 until the LED display goes blank.

Note:

- If no buttons are pressed the PCB will automatically exit programming mode after 10 mins.
- Exiting programming mode sets the value last viewed as the current value.



Menu	Menu description	Value							
		A	b	C	d	E	F	H	J
1	Gas type	ULPG	NG	N/A	N/A	N/A	N/A	N/A	N/A
2*	Model	2626	2426	2024	1620	N/A	N/A	N/A	N/A
3	Fixed / Max. temp	55 °C ¹	65 °C	60 °C	50 °C	42 °C	40 °C	N/A	N/A
4	OFF water flow rate	+ 3 °C ²	+ 6 °C	N/A	N/A	N/A	N/A	N/A	N/A
5	50 °C delivery adjustment temp.	Min Step 0	Increase Step 1	Increase Step 2	Increase Step 3	Increase Step 4	Increase Step 5	Increase Step 6	Increase Max

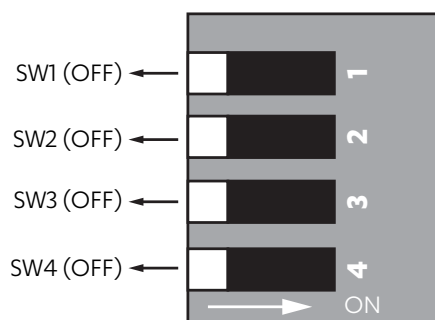
The temperature of outgoing hot water is constantly monitored by a built-in sensor. If the temperature of the outgoing hot water rises to more than 3 °C (6 °C #) above the selected temperature shown on the digital monitor or the preset limit when water controllers are fitted, the burner will automatically go out.

- * Values in menu 2 cannot be adjusted.
- 1 Factory default
- 2 OFF water flow rate (+3 °C, factory default)

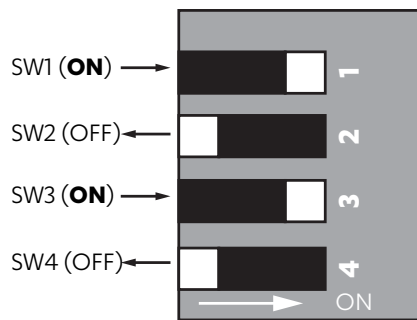
Flue diverter dip switch changes

When delivered ex-factory, by default SW1, SW2, SW3, and SW4 of the DipSW are set to the OFF position.

If a flue diverter is installed onto the water heater, SW1 and SW3 of the DipSW must be set to the ON position.



Default dip switch settings as they are ex-factory.



Dip switch settings required for flue diverter installation.

The dip switch change for flue diverters is required to increase the combustion fan speed, which helps overcome the friction losses from have a flue diverter installed on the water heater.

Appendix 1:

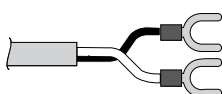
Water controller communication cables

Wired water controllers operate at an extra low voltage (12 V DC) which is supplied from the water heater, a 10 m long communication cable is supplied for connection to the water heater. Only Rinnai supplied communication cables may be used.

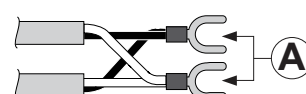
The water heater end of the cables is fitted with spade terminals. Only two pairs of cables (four spade connectors in total) may be terminated. When attaching three or four cables it is necessary to join the cable terminators as shown below.

For each pair cut off the existing spade connectors and re-terminate each pair into a new spade connector (A). Spade connectors are available from your local electrical component retailer

Single cables can be used when terminating up to two communication cables.



Paired cables are to be used when terminating three or four communication cables.

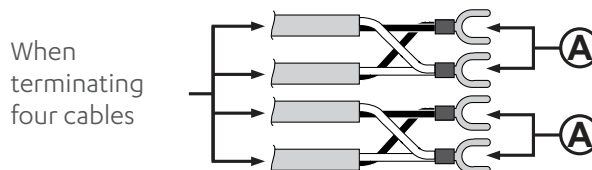
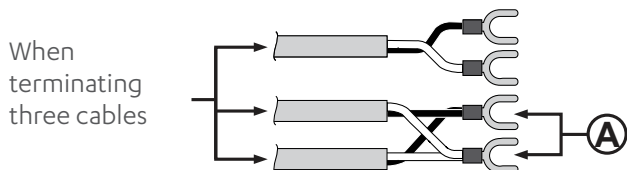


Connecting one or two communication cables

Follow steps one through five below to terminate the cables to the water heater.

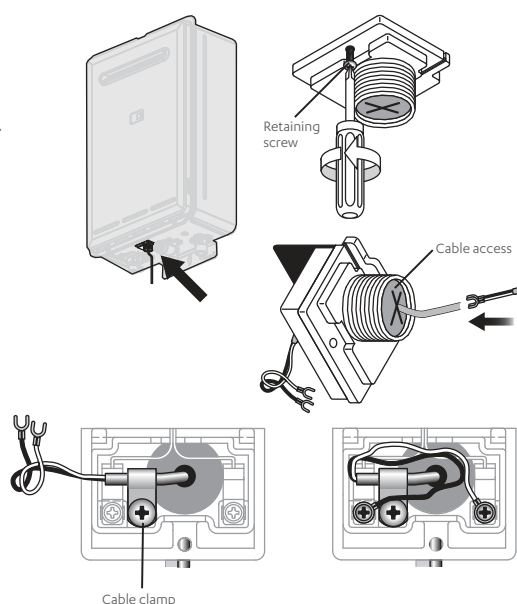
Connecting three or four communication cables

To connect three or four cables, separate all the cables to be fitted into pairs.



Follow steps one through five below to terminate the joined cable pairs to the water heater.

1. Isolate the power supply by switching the power point off and removing the power plug of the water heater from the electric power socket.
2. Removing the retaining screw of the cable connector at the base of the unit.
3. Swing the cable connector door open and thread the cable through the weather seal of the cable access hole, allowing sufficient cable length so that the sheath of the cable can be secured with the cable clamp supplied with the transceiver.
4. Loosen the screw terminals and connect the cable spade connectors to these terminals and re-tighten.
Polarity is not important, either wire colour can be connected to either terminal.
5. Return the cable connector to the original position, taking care not to damage the cable wires in the process, and replace the retaining screw.



*a touch
of magic*



Experience our innovation

Rinnai.co.nz | **0800 746 624**

<http://www.youtube.com/rinnainz>

U340-1336(01)



Promax Tank Installation Guide

Failure to properly install your tank will void the warranty.

Promax Enduro and Xpress Tanks are only to be used for storing water at ambient temperatures.

Delivery

Delivery is to the road entrance of your property. Access to the property is at the driver's discretion.

Installation is purchasers responsibility.

Site Preparation

Correct Tank site preparation, as well as preservation is the sole responsibility of the purchaser.

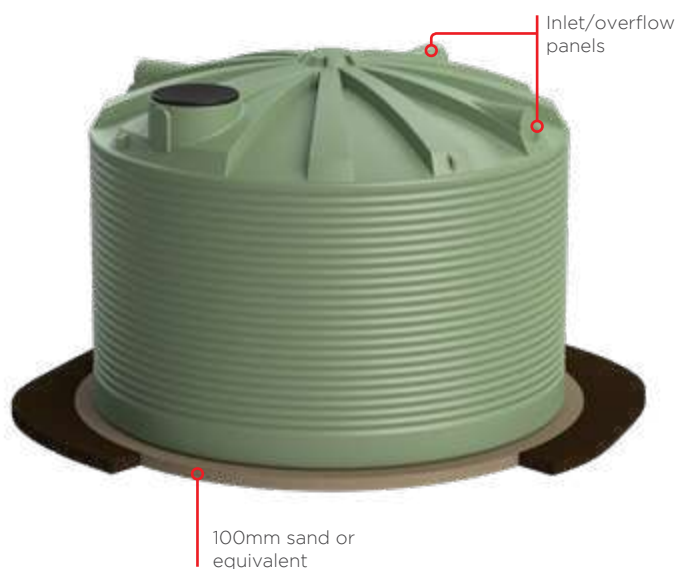
- Ensure that the tank site is flat and level, free from rocks or stones and any foreign matter that may damage the tank's base.
- Ensure the tank site is well compacted, if fill is used to prepare or level the site.
- Ensure that the tank site is at least 300mm larger in diameter than the tank.
- 100mm layer of Sand or fine gravel is to be used to bed the tank.
- If a sand base is used, a retaining cover must be provided to prevent sand from washing away after installation.
- Where ground water is present, ensure sufficient drainage is installed around base of tank eliminate risk of hydraulic uplift.

Flexible hose must be used



Plumbing

- Overflow pipework must match the capacity of the incoming pipe work.
- Pipe overflow away from the base of tank to prevent erosion.
- Use the appropriately sized holesaw to cut the hole for inlets and outlets.
- Pipework between tanks or rigid structures must include a flexible hose to allow for expansion & contraction.



Promax Enduro tanks 10000-30000L May be buried to 1m in ground if the following instructions are adhered to.





ARDEX WPM 002

(Superflex Bathroom and Balcony Two Part)

Rapid drying time

Two component undertile waterproofing membrane

Advanced acrylic – will not re-emulsify

Liquid reinforced – eliminates the need for reinforcing mat

Meets class III category for AS4858 Wet Area Membranes

Conforms to AS4654.1, Waterproofing membrane: non-exposed liquid membrane

Low VOC content – meets Green Building Council of Australia Green Star IEQ-13 requirements

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ARDEX WPM 002

(Superflex Bathroom and Balcony Two Part)

Two Component Undertile Waterproofing Membrane

PRODUCT DESCRIPTION

ARDEX WPM 002 (Superflex Two Part) is a tough, fast drying two component waterproofing membrane specifically designed for use under tiles. The product has been uniquely formulated with synthetic microfibres to increase its strength and eliminate the need for a separate reinforcement mat. ARDEX WPM 002 is based on the most advanced acrylic polymer technology, and is totally resistant to re-emulsification.

ARDEX WPM 002 is flexible, low in odour, and is fully compatible with polymer modified tile adhesives. ARDEX WPM 002 is one of the fastest drying acrylic membranes on the market – normally ready to tile in 16–24 hours @ 23°C.

ARDEX WPM 002 meets the Green Building Council of Australia Green Star IEQ-13 requirements for Architectural Sealant when tested in accordance with SCAQMD Method 304-91 Determination of Volatile Organic Compounds (VOC) in Various Materials as referenced by South Coast Air Quality Management Division (SCAQMD) Rule 1168.

Conforms to AS4654.1, Waterproofing membrane: non-exposed liquid membrane

FEATURES/BENEFITS

Fast drying ARDEX WPM 002 can be tiled over in 16–24 hours, or 4 hours @ 23°C / 50% RH in non critical areas*.

Features benefits

- Fibre reinforced: Excellent strength, eliminates need for reinforcing mat.
- Flexible: Accommodates normal building movement.
- Advanced acrylic: Will not re-emulsify.
- Designed for tiling: Fully compatible with ARDEX tile system adhesives.
- Water based, low odour and easy cleaning for undertile waterproofing in shower recesses.
- Conforms to the requirements of AS/NZ 4858:2004 Wet Area Membranes (Ref: CSIRO Report 3879).

*Critical areas include areas where the membrane is applied at greater than 0.5mm or over impermeable substances such as over bond breakers or incorporating other reinforcement. Longer drying times are necessary in these areas.

APPLICATION RANGE

Performance levels

Commercial and residential.

Location

Internal and external wet areas, balconies, decks, and other areas that will be tiled or otherwise protected from regular foot traffic.

Surfaces

Walls and floors.

Substrates

Concrete	Cured for min. 28 days or sealed when set with one coat ARDEX HydrEpoxy WPM 300 at a coverage rate of 3.0 square metres per litre and allowed to cure overnight. Wet concrete should be allowed to dry thoroughly or sealed with one coat of ARDEX HydrEpoxy WPM 300 as above.
Renderers and screeds	Cured for min. 7 days or sealed when set with one coat ARDEX HydrEpoxy WPM 300 at a coverage rate of 3.0 square metres per litre and allowed to cure overnight. Wet render should be allowed to dry thoroughly or sealed with one coat of ARDEX HydrEpoxy WPM 300 as above.
Fibre cement	Wet area grade only.
Plasterboard	Wet area grade only.
Plywood	Structural plywood (PAA branded) or marine grade or other wet area grade only. Not recommended for external use (refer ARDEX).
Particleboard	Wet area grade, internal use only (special preparation is required – contact ARDEX). Not recommended for external use (refer ARDEX).
Permanent Immersion	In conditions of permanent immersion, it is recommended that WPM 002 must be covered with tiles for full immersion applications.

Contact ARDEX for use over existing membranes, covering materials, and any other substrates not listed.

SPECIFICATION CLAUSE

ARDEX WPM 002 (Superflex Two Part)

The waterproofing membrane shall be ARDEX WPM 002, a two component cementitious acrylic modified fibre reinforced membrane formulated to provide a tough, long lasting water barrier under tiling systems.

PACKAGING

Two component: 20kg (approx 20 litres) liquid pail/
2 x 10kg bags powder.

SHELF LIFE

12 months when stored in the original unopened packaging, in a dry place at 23°C. Do not store in direct sunlight. Replace lid tightly after use. Use remaining contents from part used containers within 3 months.

TABLE 1

	Thickness per coat		Total dry film thickness (2 coats)	Theoretical coverage		Per unit
	Dry film	Wet film		Per coat	For 2 coats	
FLOORS	0.6mm	0.9mm	1.2mm	32m ²	16m ²	40kg kit
WALLS	0.4mm	0.6mm	0.8mm	48m ²	24m ²	40kg kit

COVERAGE

Two coats are recommended for an effective waterproof membrane.

Coverage will vary depending on the porosity of the surface.

One 40kg kit will cover approximately 16–24m² (based on two coats) depending on area requirements between wall and floor surfaces to be treated.

DRYING TIMES

Curing time will vary depending on temperature and humidity.

Recoat time

1–2 hours (23°C / 50% RH) between first and second coats. Alternatively, if a woven cloth reinforcement mat is used in corners between coats then the second coat can be applied whilst the first coat is still wet.

Dry through

The slowest drying areas are those where the membrane has been applied over a silicone bond breaker, eg. wall and floor junctions. The membrane cannot be tiled over until these critical areas are completely dry.

ARDEX WPM 002 membrane is totally dry in 16 hours at 23°C / 50% RH but can take up to 24 hours at 10°C / 50% RH in corners or for thick films.

In areas where bond breakers or additional reinforcement are not used, ARDEX WPM 002 can be tiled over after 4 hours at 23°C / 50% RH.

Fully cured

The shower should not be used until the membrane has reached its full strength. Normally ARDEX WPM 002 membranes are fully cured after 3 days at 23°C, or after 5 days at 10°C.

Drying times will vary depending on humidity, surface temperature and surface porosity.

Do not apply on substrates where the surface temperature is below 10°C or above 35°C.

CLEANING

Wash hands, brushes, rollers, etc, with water while the membrane is still fresh. Remove cured material with mineral turpentine.

SAFETY PRECAUTIONS

Do not use the product in the following situations:

- Areas subject to negative hydrostatic pressure or rising damp, unless treated with ARDEX HydrEpoxy WPM 300.
- Where the substrate is wet – wet surfaces can be sealed with one coat of ARDEX HydrEpoxy WPM 300 at a coverage rate of 3.0 square metres per litre and allowed to cure overnight.
- Where rain is imminent.
- Where the membrane will be left exposed and subjected to regular foot traffic.
- On glazed, glass or other totally impervious surfaces (eg. areas pre-treated with water repellants).
- Where the surface temperature is below 10°C or greater than 35°C.
- All floor areas must have adequate falls either built into the substrate or achieved with a sand/cement screed prior to application of the ARDEX WPM 002.

For substrates or situations other than those listed contact ARDEX.

SAFETY DATA

ARDEX WPM 002 Part A is non-hazardous. It may produce discomfort of the respiratory system. It should not be swallowed or inhaled. Avoid contact with skin and wear eye/face protection. In case of contact with eyes, rinse with plenty of water and contact a doctor or Poisons Information Centre.

ARDEX WPM 002 Part B is hazardous. It may cause burns and serious damage to eyes. Do not breathe dust and avoid contact with eyes. Wear dust masks, goggles and gloves when handling. Keep container locked up and in a well ventilated place.

ADDITIONAL INFORMATION IS LISTED IN THE MATERIAL SAFETY DATA SHEET.

ARDEX WPM 002

(Superflex Bathroom and Balcony Two Part)

Two Component Undertile Waterproofing Membrane

APPLICATION

Apply ARDEX WPM 002 by brush or roller. A medium nap (12–15mm pile) paint roller is recommended. New rollers should be dampened with water before being used for the first time.

For best results with a paint brush use a good quality, 50mm long bristle variety.

To achieve the required dry film thickness per coat application must consist of laying the product onto the surface and light finish the surface. Do not try to apply in the same manner as a building paint. A conventional building paint is normally applied at 25–40 micrometers wet film thickness while ARDEX WPM 002 needs to be applied at between 0.6 and 0.9 millimetres per coat depending on product and application (Refer Table 1).

Critical areas:

INTERNAL WET AREAS

1. Construction should be in accordance with AS3740 – 2010/12 Waterproofing of wet areas within residential buildings.
2. All render and tile bed requirements should be completed before application of the membrane and tiles or other floor coverings should be direct bonded to the membrane.
3. Ensure wall and floor sheets are installed as per sheet manufacturer's recommendations.
4. Ensure suitable brick/concrete hobs are used (do not use timber), and that the top of the hob does not slope outwards.
5. Ensure that falls to the waste are min 1:100 (ie. approx. 30mm in 2m) before waterproofing. Ensure outlet pipes are fixed securely and that the waste or drainage flanges are recessed into the floor.
6. Avoid sheet joints in shower recess floor. Ensure that sheets are securely fixed to the wall at the bottom edge, and sheet joints are sealed with a neutral cure silicone sealant spread approximately 8mm on either side of the joint.
7. Treat nail and screw holes with neutral cure silicone sealant.
8. Seal the perimeters of taps, shower outlets and waste outlets with neutral cure silicone sealant.
9. Apply a bead of neutral cure silicone sealant to all horizontal and vertical corners.
10. Apply a bead of neutral cure silicone sealant to the junction of the hob or angle and walls.
11. Waste outlets shall incorporate a puddle flange or similar in accordance with AS3740 and the top surface shall be set flush with the surface to which the membrane is to be applied. A bead of neutral cure silicone shall be applied across the intersection of the puddle flange and the screed/floor.
12. Apply the membrane to the entire shower recess floor and down into waste or drainage flange. Apply the membrane over the hob and at least 100mm beyond the outside edge of the hob (ideally to entire wet area floor).
13. Plastic (eg. PVC) fittings should be primed with a solvent based plumbers primer. Prime metal surfaces with a suitable metal primer.
14. Apply the membrane 1800mm up the walls or 80mm above the height of the shower rose within the shower recess.
15. Install the shower screen to inside edge of the hob.

BALCONIES AND DECKS

1. Ensure that the deck is constructed with falls to edge/drains of min 1:100 (ie. 20mm in 2m) or else achieve the fall with a sand/cement screed.
2. Ensure suitable flashing is installed, ideally prior to the installation of the balcony screen/sliding door.
3. Treat any sheet joints with a neutral cure silicone prior to waterproofing.

Fig.1 – Shower recess – Critical areas

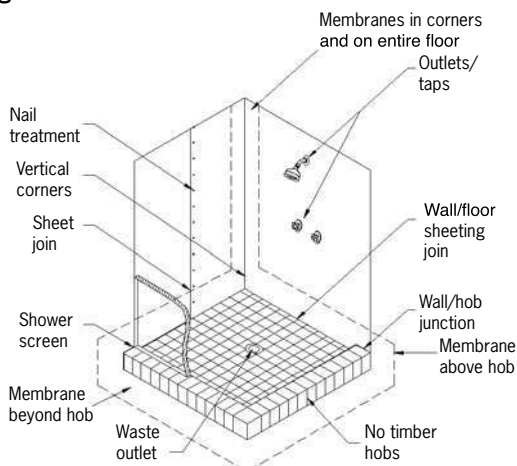
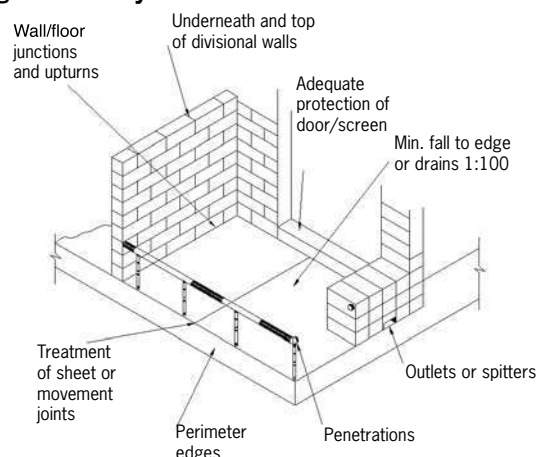


Fig.2 – Balcony – Critical areas



4. Prepare and seal all wall/floor junctions with a bead of neutral cure silicone.
5. Apply the membrane as far up underneath the screen door flashing as possible (ideally waterproof prior to installing door).
6. Where possible, apply the membrane prior to building divisional walls.
7. Apply the membrane to the entire balcony floor and at least 100mm up the wall above the top surface of the finished tiles and finished below the wall drainage vents.
8. Apply the membrane to the top of the parapets and divisional walls, or else install suitable metal capping.
9. Apply the membrane down over the front edge of the balcony onto the drip rail.
10. Carefully seal any gaps around balcony penetrations prior to applying the membrane.
11. Apply the membrane down into outlets and drains, ensuring excess material is removed.
12. Ensure all weep holes are above the membrane application area.

APPLICATION NOTES

Surface preparation

- Ensure all surfaces are structurally sound and totally dry. The pores of concrete surfaces should be open (absorbent surface). All sheet substrates must be securely fixed in accordance with the manufacturers instructions.
- Falls to outlets of at least 1:100 or approx. 30mm in 2m (wet areas) or 1:100 externally, must be achieved prior to tiling.
- The surface to be coated should be free from dust, oil, paint, curing compounds and any other contaminating materials.
- Damaged concrete should be repaired (leveled) and surface defects including all cracks and sharp protrusions should be treated prior to the application of the membrane.
- Remove laitance on concrete or screeds by mechanical means.
- Highly dense (>40MPa) or steel trowelled concrete should be roughened by suitable mechanical means (shot blasting, grinding, etc).

Priming

The primer is a critical part of the waterproofing system. Apply one coat of ARDEX WPM 265 water based primer by brush or roller to all areas to be waterproofed including the floor waste. Allow the primer to be completely dry prior to the application of the ARDEX WPM 002 membrane. This will take around 20–30 minutes depending upon weather conditions and porosity of the substrate. Coverage is approximately 6m² per litre. Plastic (eg. PVC) pipes should be primed with a solvent based plumbers pink primer. Prime metal surfaces with a suitable metal primer such as epoxy polyamide primer.

GENERAL APPLICATION

Crack preparation

Cracks <2mm:

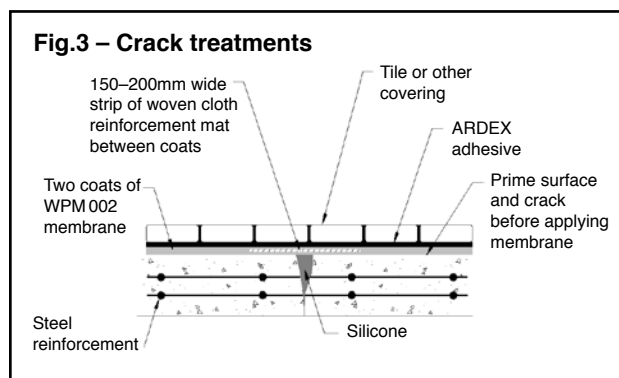
Clean and remove any loose particles in the crack. Prime the crack and adjacent area carefully with ARDEX WPM 265 water based primer and allow to dry before applying two coats of ARDEX WPM 002 membrane, in a band at least 200mm wide equidistantly across the crack, along the length of the crack.

Cracks 2–6mm:

(Refer Fig.3) prepare and prime the crack as above. Apply a bead of neutral cure silicone into the crack and extend it 6mm either side. Apply a 300mm wide band of ARDEX WPM 002 equidistantly across the crack along the entire length of the crack. Place a 190mm wide band of ARDEX Deckweb woven cloth reinforcement over the applied membrane. Thoroughly wet out the cloth and remove all creases in, or air pockets under the mat. Immediately apply a second coat to completely fill the mat.

Cracks >6mm:

Contact your local ARDEX representative.



ARDEX WPM 002

(Superflex Bathroom and Balcony Two Part)

Two Component Undertile Waterproofing Membrane

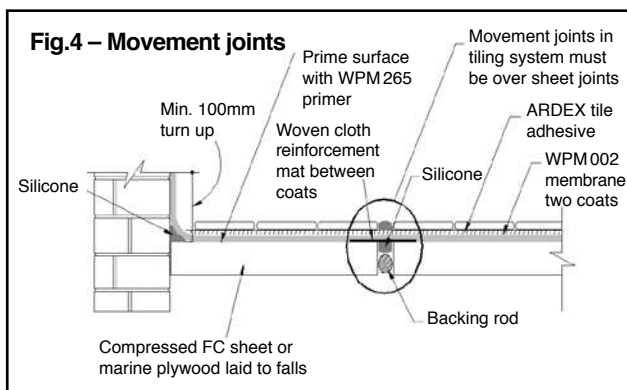
Movement/construction joints

Movement joints (<6mm)

Clean and prime the joint before filling it with a bead of neutral cure silicone and extending it 6mm each side of joint. Apply a 300mm wide band of ARDEX WPM 002 (Superflex Two Part) equidistantly across the crack along the entire length of the crack. Place a 190mm wide band of ARDEX Deckweb woven cloth reinforcement over the applied membrane. Thoroughly wet out the cloth and remove all creases in, or air pockets under the mat. Immediately apply a second coat to completely fill the mat.

Construction joints (>6mm)

Use the same procedure as above, but replace the reinforcing mat with 120mm of ARDEX Coving Bandage. Note: if tiling, movement joints should be taken to the surface of the tiles. Fill the joints between the tiles immediately above the movement joints with an appropriate joint sealant. (Refer Fig.4)



Corners and coving areas

After priming with ARDEX WPM 265 water based primer and allowing it to dry, apply a generous bead (16mm) of neutral cure silicone sealant in coving areas and corners. Smooth over the silicone so that it extends 8mm up the wall and 8mm over the floor and allow to touch dry.

Apply a first coat of ARDEX WPM 002 to the area and allow the membrane to dry.

Apply a second coat ensuring that excess product is removed from the junction (the final dry film thickness should be around 1.2mm) Alternatively, if a woven cloth reinforcement mat is used between coats then the second coat can be applied as soon as the mat is fully bedded into the first coat.

WALL/FLOOR JUNCTION

After priming with ARDEX WPM 265 water based primer and allowing to dry, apply a generous bead (16mm) of neutral cure silicone sealant to seal all junctions between two substrates. Smooth over the silicone so that it extends 8mm up the wall and 8mm over the floor and allow to touch dry. Place a 190mm wide band of ARDEX Deckweb woven cloth reinforcement over the applied membrane. Thoroughly wet out the cloth and remove all creases in, or air pockets under the mat. Immediately apply a second coat to completely fill the mat. The ARDEX WPM 002 should be applied to at least 150mm up the wall surfaces as per the recommendations for the application of ARDEX WPM 002 to floors.

Walls

Two coats of ARDEX WPM 002 are required to achieve a minimum total dry film thickness of 0.8mm.

After priming with ARDEX WPM 265 water based primer and allowing to dry, apply two coats of ARDEX WPM 002 (to achieve a minimum dry film thickness of 0.8mm) in two opposite directions. Wall sheet joints should be treated with a neutral cure silicone, PVC duct tape or base jointing compound. In balcony situations take the membrane up underneath any existing cover flashing or install appropriate flashing. Allow the first coat to dry before applying the second coat.

Floors

Two coats of ARDEX WPM 002 are required to achieve a minimum total dry film thickness of 1.2mm. The membrane should be extended at least 100mm up all perimeter walls.

Prime the surface with ARDEX WPM 265 water based primer and allow to dry.

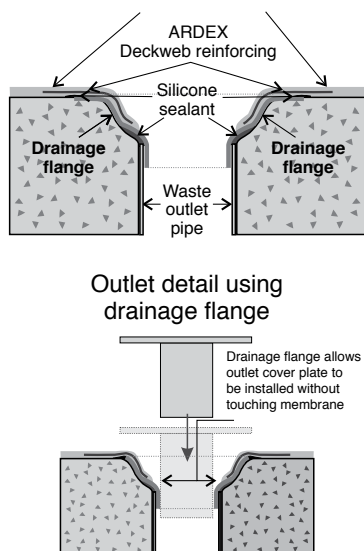
Apply the first coat over the primed surface and allow it to dry (1–2 hours at 23°C, 50% RH) before applying a second coat in an opposite direction. In shower recesses a drainage flange must be installed on all timber/sheeted floors, and are strongly recommended on all other substrates. Where possible rebate the flange into the floor. Seal the perimeter of the flange with neutral cure silicone sealant. If a flange is not installed the membrane must be applied down into the pipe. (Refer Fig.5) Allow the membrane to dry completely before tiling. Refer drying times above.

Waste outlet

Prime the surface with ARDEX WPM 265 water based primer and allow to dry. Surfaces of outlet flange must be primed with an appropriate primer.

Apply ARDEX WPM 002 (Superflex Two Part) over the adjacent floor surface extending down into the waste outlet pipe overlapping the pipe surfaces by at least 30mm. Place ARDEX Deckweb woven cloth reinforcement over the applied membrane. Thoroughly wet out the cloth and remove all creases in, or air pockets under the mat. Immediately apply a second coat to completely fill the mat. (Refer Fig.5).

Fig.5 – Waste outlet



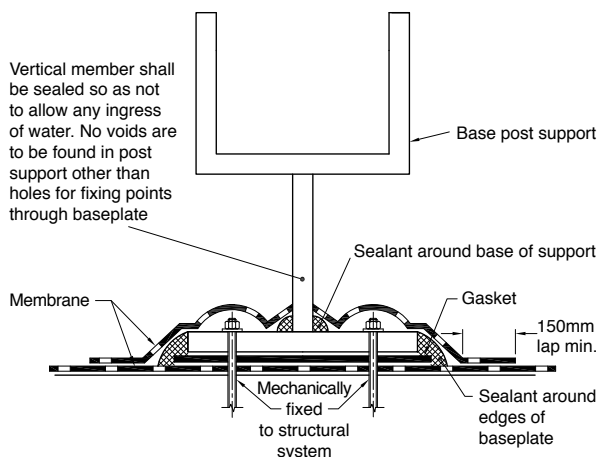
Balcony penetrations (Refer Fig.6)

All upstands are to be mechanically fixed through the membrane, which must be fabricated with a base plate flange.

Prime the metal with an appropriate metal primer such as an epoxy polyamide primer and allow to dry. Apply a 10mm bead of neutral cure silicone around the perimeter of the penetration. Apply the first coat of ARDEX WPM 002 on the substrate and the flanged metal.

Allow first coat to dry before applying a second coat ensuring a finished dry film thickness of no less than 1.2mm is achieved. Place a suitable flashing collar around the penetration sealing it with a suitable sealant.

Fig.6 – Post membrane installation



Tiling systems

It is advisable to conduct a flood test of the waterproofed areas once the membrane has cured (normally after 48 hours), and before the tiling commences. A broad range of ARDEX tile adhesives can be used over ARDEX Superflex membranes. Contact ARDEX or your nearest ARDEX stockist for advice on the most suitable system.

QUALITY PRODUCT

ARDEX WPM 002 is manufactured and tested to ARDEX procedures which are maintained in accordance with Quality System Standard ISO 9001.

USER NOTES

The technical details and recommendations contained in this data sheet are given in good faith and represent the best of our knowledge and experience at the time of printing. It is the responsibility of the user to ensure that the product is used in accordance with ARDEX instructions and in applications for which they are intended.

TECHNICAL DATA

ARDEX WPM 002

Characteristics of components

Form and colour Liquid: white, medium viscosity
Powder: off white

Characteristics of mixed product

Mixing ratio 1:1 by weight
SG of mixed product 1.4kg/litre
Colour light grey/green

Characteristics of cured membrane

Shore A hardness ASTM D2240

– dry film 85 – 90
– wet film 75 – 80

Tensile strength

7 days dry AS1145 1.7 MPa

Full cure 28 days 2.9 MPa

Elongation at break

7 days dry AS1145 332%

VOC content

25g/L

Waterproofing membrane: non-exposed liquid membrane (AS4654.1)

Pass

NOTE: Most of the tests have been carried out in the ARDEX laboratory under standard conditions (23±2°C, 50±5% RH).

DISCLAIMER

The technical details, recommendations and other information contained in this data sheet are given in good faith and represent the best of our knowledge and experience at the time of printing. It is your responsibility to ensure that our products are used and handled correctly and in accordance with any applicable Australian Standard, our instructions and recommendations and only for the uses they are intended. We also reserve the right to update information without prior notice to you to reflect our ongoing research and development program.

Country specific recommendations, depending on local standards, codes of practice, building regulations or industry guidelines, may effect specific installation recommendations.

The supply of our products and services is also subject to certain terms, warranties and exclusions, which may have already been disclosed to you in prior dealings or are otherwise available to you on request. You should make yourself familiar with them.

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BRANZ Appraised

Appraisal No. 472 [2017]

ARDEX UNDERTILE INTERNAL LIQUID WATERPROOFING MEMBRANES

Appraisal No. 472 [2017]

This Appraisal replaces BRANZ
Appraisal No. 472 [2011]



BRANZ Appraisals

Technical Assessments of
products for building and
construction.



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Product

- 1.1 ARDEX Undertile Liquid Membranes are premixed and two-part liquid-applied waterproofing membranes for use under ceramic or stone tile finishes in internal wet areas.

Scope

- 2.1 ARDEX Undertile Liquid Membranes have been appraised for use as waterproofing membranes for the internal wet areas of buildings, within the following scope:
- on floor substrates of concrete, flooring grade particleboard, plywood, compressed fibre cement sheet and fibre cement sheet tile underlay, and on wall substrates of concrete, concrete masonry, wet area fibre cement sheet lining systems and wet area plasterboard lining systems; and,
 - when protected from physical damage by ceramic or stone tile finishes; and,
 - where floors are designed and constructed such that deflections do not exceed 1/360th of the span.
- 2.2 The use of ARDEX Undertile Liquid Membranes on concrete slabs where hydrostatic or vapour pressure is present from below is outside the scope of this Appraisal.
- 2.3 Movement and control joints in the substrate must be carried through the membrane and tile finish. The design and construction of the substrate and movement and control joints is specific to each building, and is therefore the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.
- 2.4 The ceramic or stone tile finishes are outside the scope of this Appraisal.
- 2.5 The membranes must be installed by trained installers, approved by ARDEX New Zealand Limited.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, ARDEX Undertile Liquid Membranes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years and B2.3.2. ARDEX Undertile Liquid Membranes meet these requirements. See Paragraph 9.1.

Clause E3 INTERNAL MOISTURE: Performance E3.3.6. Internal wet area floors and walls incorporating ARDEX Undertile Liquid Membranes meet this requirement. See Paragraphs 11.1-11.6.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. ARDEX Undertile Liquid Membranes meet this requirement and will not present a health hazard to people.

Technical Specification

4.1 Materials supplied by ARDEX New Zealand Limited are as follows:

- **ARDEX WPM 001** is a one part, polymer-based, ready-to-use, liquid-applied membrane containing micro-fibres. It is supplied as a light blue thixotropic paste 20 kg [approximately 15 litres] pails.
- **ARDEX WPM 002** is a fast drying, two part, flexible, cementitious-based, liquid applied membrane containing micro-fibres. It is supplied as ARDEX WPM 002 Part A Liquid in 20 kg pails and ARDEX WPM 002 Part B Powder in 10 kg multi-wall bags. When dry, the membrane is light grey in colour.
- **ARDEX WPM 155 Rapid** is a one part, water-based polyurethane-acrylic, ready-to-use, liquid applied, rapid setting membrane. It is supplied as blue/grey colour in 4 and 15 litre pails.
- **ARDEX STB Tape** is an uncured butyl tape with a fleece layer that is used in the ARDEX WPM 155 Rapid under tile waterproofing system.
- **ARDEX Multiprime** is a water-based primer used to seal substrates and enhance the adhesion of the membranes. It is supplied as a red coloured liquid in 1, 4 and 20 litre plastic containers.

Handling and Storage

5.1 All materials must be stored inside, up off concrete floors, in dry conditions, out of direct sunlight and freezing conditions. The membrane products have a shelf life of 12 months from date of manufacture in the original unopened packaging. Once opened, the products must be used within 3 months.

Technical Literature

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the ARDEX Undertile Liquid Membranes. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

- 7.1 ARDEX Undertile Liquid Membranes are for use in buildings where an impervious waterproof membrane is required to floors and walls to prevent damage to building elements and adjoining areas.
- 7.2 ARDEX WPM 002 and ARDEX WPM 155 Rapid are designed to be used where a quicker curing time is required, such as in cool or humid conditions.
- 7.3 The membrane must be protected from physical damage by the application of ceramic or stone tile finishes.
- 7.4 Movement and control joints may be required depending on the shape and size of the building or room, and the tile finish specified. Design guidelines can be found in the BRANZ Good Practice Guide - Tiling.
- 7.5 Timber framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and all sheet edges are fully supported. Timber framing systems supporting the substrates must be constructed such that deflections do not exceed $1/360^{\text{th}}$ of the span. Where NZS 3604 is used, the allowable joist spans given in Table 7.1 shall be reduced by 20%.

Substrates

Plywood

- 8.1 Plywood must be a minimum of 17 mm thick complying with AS/NZS 2269, CD Grade Structural with the sanded C face upwards and treated to H3 [CCA treated]. LOSP treated plywood must not be used.
- 8.2 The plywood must be supported with dwangs or framing with a maximum span of 400 mm in each direction, fixed with 10 g x 50 mm stainless steel countersunk head screws at 150 mm centres along the sheet edges and 200 mm centres through the body of the sheets.

Fibre Cement Compressed Sheet/ Fibre Cement Sheet Tile Underlay

- 8.3 Fibre cement compressed sheet and tile underlay must be manufactured to comply with the requirements of AS/NZS 2908.2 and must be specified by the manufacturer as being suitable for use as a wet area membrane substrate. Installation must be carried out in accordance with the instructions of the manufacturer.

Particleboard

- 8.4 Particleboard must be specified for the end use in accordance with NZS 3602.

Concrete and Concrete Masonry

- 8.5 Concrete and concrete masonry substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101, concrete slab-on-ground to NZS 3604 or NZS 4229, and concrete masonry to NZS 4229 and NZS 4230.

Wet Area Wall Linings

- 8.6 Plasterboard wall linings must be manufactured to comply with AS/NZS 2588 and be suitable for use in internal wet areas.
- 8.7 Fibre cement sheet must be suitable for use in wet areas and comply with AS/NZS 2908.2.
- 8.8 Installation of plasterboard or fibre cement wall linings must be carried out in accordance with the instructions of the manufacturer.

Durability

Serviceable Life

- 9.1 ARDEX Undertile Liquid Membranes, when subjected to normal conditions of environment and use, are expected to have a serviceable life of at least 15 years and be compatible with ceramic or stone tile finishes with a design serviceable life of 15-25 years.

Maintenance

- 10.1 No maintenance of the membrane will be required provided significant substrate movement does not occur and the tile finish remains intact. Regular checks must be made of the tiled areas to ensure they are sound and will not allow moisture to penetrate. Any cracks or damage must be repaired immediately by repairing the tiles, grout and sealant.
- 10.2 In the event of damage to the membrane, the tiling must be removed and the membrane repaired by removing the damaged portion and applying a patch as for new work.
- 10.3 Drainage outlets must be maintained to operate effectively, and tile finishes must be kept clean.

Internal Moisture

- 11.1 ARDEX Undertile Liquid Membranes are impervious to water, and when appropriately designed and installed will prevent water from penetrating behind linings or entering concealed spaces.
- 11.2 Surfaces must be finished with ceramic or stone tiles. A means of compliance with NZBC Clause E3.3.3 and E3.3.4 is given in NZBC Acceptable Solution E3/AS1 Paragraph 3.1.1 [b], 3.1.2 [b] and 3.3.1 [b].
- 11.3 Falls in showers and shower areas must be a minimum of 1 in 50. In unenclosed showers, falls must extend a minimum of 1500 mm out from the shower rose. Floor wastes and drainage flanges must be provided and the floor must fall to the outlet.
- 11.4 ARDEX Undertile Liquid Membranes are suitable for use to contain accidental overflow to meet NZBC Clause E3.3.2. A means of compliance for overflow is given in NZBC Acceptable Solution E3/AS1, Section 2.
- 11.5 The waterproofing membranes must completely cover shower bases, and for unenclosed showers it must extend a minimum of 1500 mm out from the shower rose. Further design guidance on waterproofing wet areas, including waterproofing walls and junctions can be obtained from AS 3740, BRANZ Good Practice Guide – Tiling, and the flooring and wall lining manufacturers.
- 11.6 Where water resistant wall finishes such as prefinished sheet materials are used, they must overlap the membrane a minimum of 30 mm.

Installation Information

Installation Skill Level Requirement

- 12.1 Installation of the membranes must be completed by trained installers, approved by ARDEX New Zealand Limited.
- 12.2 Installation of substrates must be completed by, or under the supervision of, licensed Building Practitioners with the relevant Licence Class, in accordance with instructions given within the ARDEX New Zealand Limited Technical Literature and this Appraisal.

Preparation of Substrates

- 13.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be even and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents.
- 13.2 The relative humidity of concrete substrates must be 75% or less before membrane application. The concrete can be checked for dryness by using a hygrometer as set out in BRANZ Bulletin No. 585.
- 13.3 All voids, cracks, holes, joints and excessively rough areas must be filled to achieve an even and uniform surface. Junctions of substrate abutments, such as at wall/floor and wall/wall junctions must have reinforcements installed as set out in the Technical Literature.
- 13.4 Substrates must be primed with ARDEX Primer and allowed to dry fully before the membrane is installed.

Membrane Installation

- 14.1 Installation must not be undertaken where the substrate surface temperature is below 10°C or above 35°C.
- 14.2 ARDEX WPM 002 liquid and dry components must be mixed and left to stand for 5 minutes before re-mixing, then applying. ARDEX WPM 001 and ARDEX WPM 155 Rapid must be thoroughly stirred before application.
- 14.3 The membranes must be applied in a minimum of two coats at the rates set out in the Technical Literature to give a total finished thickness of 1.0 - 1.5 mm. Subsequent coats must be applied at an opposite direction to the previous coat.
- 14.4 Application can be made by roller (medium/long nap), brush (long bristle), or a flat steel trowel.
- 14.5 Reinforcement fabric is bedded into the wet layer between coats to provide movement protection at wall/wall and wall/floor junctions, and at any other areas such as joints in the flooring substrate, floor cracks or around penetrations in the membrane. ARDEX STB Tape must be used with ARDEX WPM 155 to take advantage of the rapid/fast drying features.
- 14.6 Clean up may be undertaken with water.

Tiling

- 15.1 The membrane must be fully cured before tiling. The cured membrane must be protected at all times to prevent mechanical damage, so may require temporary covers until the finishing is completed.
- 15.2 Tiling must be undertaken in accordance with AS 3958.1 and the BRANZ Good Practice Guide - Tiling. The compatibility of the tile adhesive must be confirmed with the adhesive manufacturer or ARDEX New Zealand Limited.

Inspections

- 16.1 Critical areas of inspection are:
 - Construction of substrates, including crack control and installation of bond breakers and movement control joints.
 - Moisture content of the substrate prior to the application of the membrane.
 - Acceptance of the substrate by the membrane installer prior to application of the membrane.
 - Installation of the membrane to the supplier's instructions, particularly installation to the correct thickness and use of reinforcement.
 - Membrane curing and integrity prior to the installation of tiles including protection from mechanical damage during curing and prior to tile installation.

Health and Safety

- 17.1 Safe use and handling procedures for the membrane are provided in the Technical Literature. The materials must be used in conjunction with the relevant Material Safety Data Sheet.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 18.1 The following testing of ARDEX WPM 001 and ARDEX WPM 002 has been undertaken by ARDEX Australia Pty Ltd research and development laboratory: water vapour transmission; water absorption; tensile strength and elongation before and after UV exposure, immersion in bleach, immersion in industrial detergent and immersion in water. Test methods and results were reviewed by BRANZ and found to be satisfactory.
- 18.2 The following testing of ARDEX WPM 001 was undertaken by the Commonwealth Scientific Industrial Research Organisation [CSIRO] Australia:
 - In accordance with ANSI A118.10 for ICBO Evaluation Service - dimensional stability; waterproofness; shear strength to ceramic tile and cement mortar; and fungal and micro-organism resistance.
 - In accordance with AS 1145 - behaviour under cyclic strain.
- 18.3 Testing of ARDEX WPM 001 and ARDEX WPM 002 has been undertaken by BRANZ for low temperature flexibility and peel adhesion after heat/humidity aging.
- 18.4 The following testing of ARDEX WPM 155 Rapid was undertaken by various organisations:
 - Durability testing to AS/NZS 4858 Appendix A including effect of heat aging, bleach, detergent and water on tensile strength and elongation.
 - Cyclic movement resistance requirements of AS/NZS 4858:2004 Appendix B.
 - Water Vapour Transmission using both wet and dry cup methods from ASTM E96.
 - Water transmission behaviour following the procedures of AS/NZS 4858 Appendix C.
- 18.5 The above test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

- 19.1 An assessment was made of the durability of the ARDEX Undertile Liquid Membranes by BRANZ technical experts.
- 19.2 Site inspections have been carried out by BRANZ to examine the practicability of installation.
- 19.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

- 20.1 The manufacture of the membrane has been examined by BRANZ, and details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 20.2 The quality management system of membrane's manufacturer has been assessed and found to be satisfactory.
- 20.3 The quality of supply of the membrane system materials to the market is the responsibility of ARDEX New Zealand Ltd.
- 20.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of the framing systems and substrate.
- 20.5 Quality on site is the responsibility of the trained installers, approved by ARDEX New Zealand Ltd.
- 20.6 Building owners are responsible for the maintenance of the ceramic or stone tiles in accordance with the instructions of ARDEX New Zealand Ltd.



Sources of Information

- AS 3740 – 2010 Waterproofing of wet areas within residential buildings.
- AS 3958.1: 2007 Ceramic Tiles – Guide to the installation of ceramic tiles.
- AS/NZS 1170: 2002 Structural design actions
- AS/NZS 2908.2: 2000 Cellulose-cement products – flat sheet.
- AS/NZS 4858 – 2004 Wet area membranes.
- AS/NZS 2269: 2012 Plywood – Structural.
- Good Practice Guide – Tiling, BRANZ, April 2015.
- NZS 3101: 2006 Concrete Structures Standard.
- NZS 3602: 2003 Timber and wood-based products for use in buildings.
- NZS 3604: 2011 Timber framed buildings.
- NZS 4229: 2013 Concrete masonry buildings not requiring specific engineering design.
- NZS 4230: 2004 Code of practice for the design of masonry structures.
- Ministry of Business, Innovation and Employment Record of amendments – Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.



In the opinion of BRANZ, **ARDEX Undertile Internal Liquid Waterproofing Membranes** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **ARDEX New Zealand Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **ARDEX New Zealand Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **ARDEX New Zealand Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **ARDEX New Zealand Limited** or any third party.

For BRANZ



Chelydra Percy

Chief Executive

Date of Issue:

17 January 2018

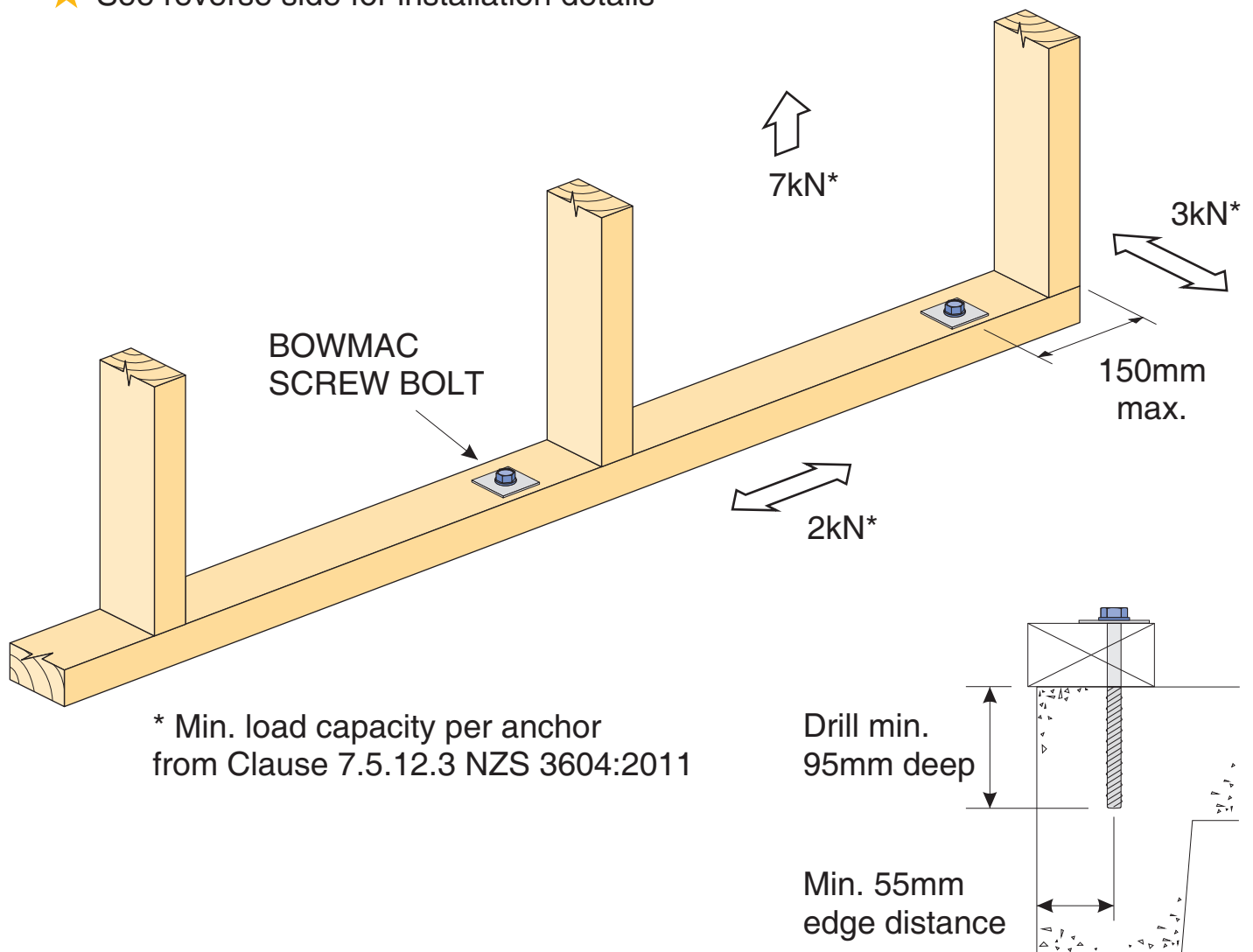


BOWMAC®

BC200427
Further Information Received
20/08/20 04/2013

BOTTOM PLATE SCREW BOLT M10 X 140 BOWMAC BLUE HEAD

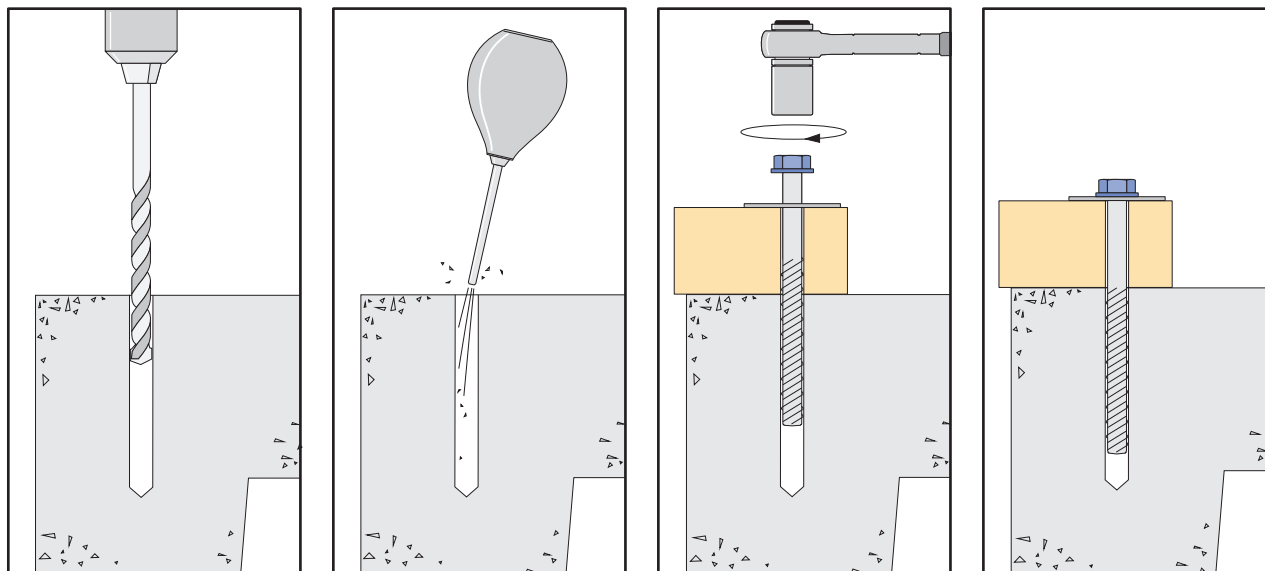
- ★ Complies with Clause 7.5.12.2 NZS 3604:2011 Proprietary Post Fixed Anchors
- ★ BRANZ tested. Ref# ST0895 Oct. 2012
- ★ Suitable for both external and internal wall frame anchor to concrete slab or masonry header blocks
- ★ Complies with durability requirements for "All Zones" in a "CLOSED" environment as defined in Table 4.1 NZS 3604:2011
- ★ See reverse side for installation details



**Available from leading Builders Supply Merchants
throughout New Zealand**

Installation Details

- ★ Install BOWMAC SCREW BOLT and washer supplied to concrete slabs at 900mm max. crs., or 600mm max. crs. when using masonry header blocks.
- ★ SCREW BOLT must be located within 150mm from end of timber wall frame.



- Use a 10mm diameter masonry bit for drilling into concrete substrate.
- Drill a hole into the concrete base to a minimum depth of 95mm and clean out dust and debris from hole prior to installation of BOWMAC SCREW BOLT.
- Insert SCREW BOLT through washer and timber and into the hole.
- Begin tightening SCREW BOLT by applying downward pressure when engaging the first thread.
- Additional downward pressure may be required for installation in high strength, dense concrete.
- Continue tightening SCREW BOLT until the head is firmly seated against the washer.
- In extremely dense material, use of an impact wrench is recommended.
- Ensure SCREW BOLT is at the required embedment depth.
- Don't exceed the maximum clamping torque of 80Nm.
- The installation is now complete.

Installation Tips

- Use quality hexagonal socket with a ratchet spanner.
- Where substrate allows, a torque controlled wrench can be used.
- During installation debris or dust created by the thread cutting action may cause some resistance to be experienced. This is easily overcome by unscrewing the BOWMAC SCREW BOLT for one turn, or more and then continue to fix to the full embedment.

Code: BPS
Packed: 10 SCREW BOLTS & washers per bag
5 bags per carton outer

Jan 2012

D313

Resene Non-Skid Deck & Path

Resene Non-Skid Deck & Path is a 100% acrylic coating filled with graded silicas tinted to a range of standard colours.

Designed for use on both concrete and bitumen to give a durable, tough, non-skid finish on all areas where foot traffic is likely.

exterior/interior

Typical uses

- Bitumen
- Concrete
- Timber

Vehicle type
Pigmentation
Thinner
Finish
Colour

Dry time (minimum)

Recoat time (minimum)
Theoretical coverage

Dry film thickness
Usual no. of coats
Abrasion resistance
Durability
Thinning and clean up
VOC

Physical properties

100% acrylic
Inorganic pigments and gap graded silicas
Water
Rough texture
Standard range of Resene Non-Skid Deck & Path colours; may be tinted to other colours on request
1 hour at 17°C (75% RH)
Allow at least 24 hours before using coated area
3 hours
First coat – 2-6 sq. metres per litre
Second coat – 4-6 sq. metres per litre
165 microns at 3 sq. metres per litre
2
Excellent
Excellent
Water
c 13 grams per litre (see [Resene VOC Summary](#))

Performance

Performance and limitations

1. Easy to apply.
2. High film build.
3. Excellent durability.
4. Excellent traction properties.
5. An Environmental Choice approved product.

Limitations

1. Do not apply at temperatures below 10°C or when it is liable to drop below 10°C during the drying period. Thicker application such as can occur in depressions will take longer to dry and will remain consequently more liable to damage by early rain.
2. Requires conscientious surface preparation.
3. Repaints require the existing coating to have good integrity and adhesion. Resene Non-Skid Deck & Path should only be applied over old Resene Non-Skid Deck & Path or similar products in sound condition, otherwise existing coatings should be stripped back to bare substrate.

Please ensure the current Data Sheet and Safety Data Sheet are consulted prior to specification or application of Resene products. View Data Sheets online at www.resene.com/datasheets. If in doubt contact Resene.



Non-Skid Deck & Path

Surface preparation

Bare bitumen

Clean surface using Resene Paint Prep and Housewash (see [Data Sheet D812](#)). Machine scrubbing will enhance removal of dirt and contaminants. Rinse clean with freshwater and allow to dry thoroughly.

Bare concrete

Clean surface using Resene Paint Prep and Housewash (see [Data Sheet D812](#)). Rinse clean with freshwater and allow to dry until free of excess surface water. Acid etch the damp surface with either hydrochloric acid diluted with 6 parts by volume of water or phosphoric acid diluted with 10 parts by volume of water. (Consult manufacturer for details on acid etching). Rinse with freshwater until neutral or slightly alkaline to litmus. Allow to thoroughly dry.

Timber decking - new

Envelope priming of timber decking is recommended for best performance. This includes priming of all end cuts. If the timber is LOSP treated then you must allow the treatment solvents to release from the timber before priming/painting.

Clean down thoroughly to remove all dirt, dust and loose material. Ensure surface is free from oil, grease and mould. If moss and/or mould is present treat with Resene Moss & Mould Killer (see [Data Sheet D80](#)). Any timber that has been left exposed to weather for more than one week requires thorough sanding of the surface to remove damaged fibres and then application of Resene TimberLock (see [Data Sheet D48](#)) prior to priming.

Prime with Resene Wood Primer (see [Data Sheet D40](#)) or Resene Quick Dry (see [Data Sheet D45](#)).

For hardwoods such as Kwila, Purple Heart or Green Heart prepare the timber by washing with Resene Timber and Deck Wash (see [Data Sheet D813](#)) and allow to thoroughly dry, then prime with Resene Wood Primer (see [Data Sheet D40](#)).

Timber decking - old/weathered

If moss and/or mould is present then treat with Resene Moss & Mould Killer (see [Data Sheet D80](#)) as for new timber. Wash down and scrub with Resene Timber and Deck Wash (see [Data Sheet D813](#)), rinse with fresh water and allow to thoroughly dry. Sand the surface to remove damaged fibres and then application of Resene TimberLock (see [Data Sheet D48](#)) prior to priming as for new timber.

Repaints

Clean surface using Resene Paint Prep and Housewash (see [Data Sheet D812](#)). Rinse clean with freshwater and allow to thoroughly dry.

Resene Non-Skid Deck & Path should only be applied over old Resene Non-Skid Deck & Path or similar products in a sound condition, otherwise existing coatings should be stripped back to bare substrate.

Sanding dust from old lead or chromate based paints or old building materials containing asbestos may be injurious to the health if inhaled or ingested. Seek expert advice if the presence of these materials is suspected.

Application

Roller application using a PAL Hi-Solids roller sleeve is recommended. May also be applied by brush, spray (specialist equipment required) or squeegee.

Bare bitumen

1. Apply one full coat of Resene Membrane Roofing Primer (see [Data Sheet D49](#)).
2. Apply two full coats of Resene Non-Skid Deck & Path allowing at least three hours between coats.

Bare concrete

Prepare surface as per above schedule. Apply two full coats of Resene Non-Skid Deck & Path allowing at least three hours between coats.

Repaints - painted bitumen

1. Prepare surface as per above schedule and spot prime any bare concrete areas with Resene Membrane Roofing Primer (see [Data Sheet D49](#)).
2. Apply two full coats of Resene Non-Skid Deck & Path allowing at least three hours between coats.

Repaints - painted concrete

1. Prepare surface as per above schedule and spot prime any bare concrete areas with Resene Concrete Primer (see [Data Sheet D405](#)).
2. Apply two full coats of Resene Non-Skid Deck & Path allowing at least three hours between coats.



Non Skid Deck & Path SDS

Please ensure the current Data Sheet is consulted prior to specification or application of Resene products. View Data Sheets online at www.resene.com/datasheets. If the surface you propose to coat is not referred to by this Data Sheet, please contact Resene for clarification.

In Australia
PO Box 924, Beenleigh, Qld 4207
Call 1800 738 383, visit www.resene.com.au
or email advice@resene.com.au

Resene
the paint the professionals use

In New Zealand
PO Box 38242, Wellington Mail Centre, Lower Hutt 5045
Call 0800 RESENE (737 363), visit www.resene.co.nz
or email advice@resene.co.nz

Printed on environmentally responsible paper, which complies with the requirements of environmental management systems EMAS and ISO14001. Please recycle.

Promax Tank Installation Guide

Failure to properly install your tank will void the warranty.

Promax Enduro and Xpress Tanks are only to be used for storing water at ambient temperatures.

Delivery

Delivery is to the road entrance of your property. Access to the property is at the driver's discretion.

Installation is purchasers responsibility.

Site Preparation

Correct Tank site preparation, as well as preservation is the sole responsibility of the purchaser.

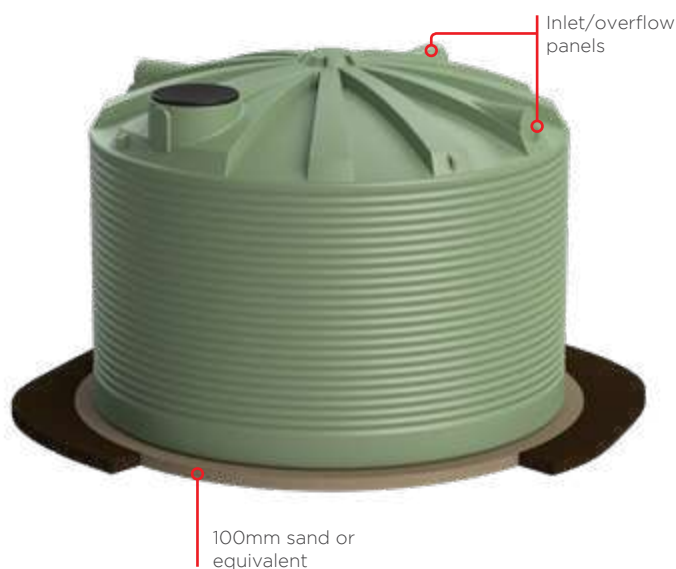
- Ensure that the tank site is flat and level, free from rocks or stones and any foreign matter that may damage the tank's base.
- Ensure the tank site is well compacted, if fill is used to prepare or level the site.
- Ensure that the tank site is at least 300mm larger in diameter than the tank.
- 100mm layer of Sand or fine gravel is to be used to bed the tank.
- If a sand base is used, a retaining cover must be provided to prevent sand from washing away after installation.
- Where ground water is present, ensure sufficient drainage is installed around base of tank eliminate risk of hydraulic uplift.

Flexible hose must be used



Plumbing

- Overflow pipework must match the capacity of the incoming pipe work.
- Pipe overflow away from the base of tank to prevent erosion.
- Use the appropriately sized holesaw to cut the hole for inlets and outlets.
- Pipework between tanks or rigid structures must include a flexible hose to allow for expansion & contraction.



Promax Enduro tanks 10000-30000L May be buried to 1m in ground if the following instructions are adhered to.



SPECIFICATION

of work to be done and materials to be used in carrying out the works shown on the accompanying drawings

Pine Ridge Deck House

Pine Ridge Deck House Specification

6 Pine Ridge, Waikanae Beach, Kapiti, New Zealand

Project Ref: 966

Printed: 19 August 2020



masterspec

Specification built using Masterspec software

Project ID: 197382 - 178493

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masterspec

Verified spec ID: **205176-178493**

This specification has been produced using Masterspec software and completed on 19/08/2020.
Scan to verify or go to masterspec.co.nz/verify

1210 PROJECT.

1 GENERAL

1.1 PROJECT

Street address:	6 Pine Ridge, Waikanae Beach, Kapiti 5036
Legal description:	Lot 21 , D.P. 50400
Site area:	691.54 m2
Project type:	New building/Addition / Internal alteration / Demolition
Intended use:	Single residential building
Intended life:	Indefinite but not less than 50 years

1.2 PROJECT DESCRIPTION

New residential dwelling.

1.3 LBP REQUIREMENT

Any site license LBP's shall have a minimum:

Site license in area of practice 1

Carpentry

Foundations 1: Concrete foundation walls and concrete slab-on-ground

Foundations 2: Concrete or timber pile foundations

Roofing 2: Profiled metal roof and/or wall cladding

1.4 OWNER

Name:	Garth & Elisabeth Deck
Mailing address:	23 Rangihiroa St, Waikanae Beach, Kapiti 5036
Telephone:	0211027735
Email:	garth_deck@hotmail.com

1.5 DESIGNER

Name:	Lance Goodwin - Cosgrove Goodwin Architects
Mailing address:	57b Ottawa Road, Ngaio
Telephone:	(04) 479 1600
Email:	lance@cgarch.co.nz

1.6 ENGINEER

Name:	Shannon O'Leary - Certa Engineering
Mailing address:	Level 1, Kayel Building, Margaret Road, Raumati Beach
Telephone:	(04) 902 5750
Email:	shannon@certa.nz

1.7 CONTRACTOR

Name:	~
Mailing address:	~
Telephone:	~
Email:	~

1211 DOCUMENTATION

1 GENERAL

1.1 DRAWINGS

Refer architectural drawings cover page.

1.2 ENGINEERS DOCUMENTS

Refer engineers drawings cover page.

1.3 OTHER DOCUMENTS

Engineers specification & calculations.

1.4 PRODUCER STATEMENTS

See Specification appendix.

1.5 BRANZ OR OTHER APPRAISALS

Refer manufacturers information appendix.

1.6 MANUFACTURERS LITERATURE

Refer manufacturers information appendix.

1212 COMPLIANCE

1 GENERAL

1.1 SITE DATA

Soil type:	Refer engineers documentation (to NZS 3604 , 3.2 Soil types)
Exposure zone:	Zone C (to NZS 3604 , 4.2 Exposure zones or E2/AS1 Zone E severe marine)
Wind zone:	Very High as per KCDC Wind map.
Earthquake zone:	Zone 3 (to NZS 3604 , figure 5.4 Earthquake zones)

1.2 BUILDING DATA

Building classification:	2 Importance Level (to NZS 3604 , table 1.1 Classification of buildings)
Floor live load:	1.5 KPa (to NZS 3604 , table 1.2 Imposed floor live load reference values)
Overall height:	6.5 metres (in accordance with NZS 3604 , Fig 1.2 Buildings covered by this Standard)
Risk assessment:	16 Max Total Risk Score (to NZBC E2/AS1 , 3.1 Establishing the risk)

1.3 PRODUCER STATEMENTS

Provide Producer Statements for the following

- Wet area interior waterproofing
- Aluminium joinery
- Glazing
- Fireplace
- Structural Engineering
- Aluminium Balustrades

Provide Producer Statements in the required form. Where no form is specified provide in the industry/trade standard form. Provide all Producer Statements before the Building Consent Authority carries out the final inspection.

1.4 RECORDS OF WORK

Provide Records of Work for Restricted Building Work:

- Carpentry
- Roofing
- Interior Membranes
- Foundations

Refer to the Building Consent for specific requirements. Provide Records of Work in the required form. Provide all Records of Work before the Building Consent Authority carries out the final inspection.

1213 SELECTIONS

1 GENERAL

The following selections are to be read in conjunction with the related work sections, where they are available, and the general sections.

2 SITE

<< 2100 DEMOLITION WORK >>

2.1 DEMOLITION ITEMS FOR REUSE / RETURN TO THE OWNER

Confirm with Owner.

<< 2200 GROUNDWORKS AND PREPARATION >>

2.2 FILL FOR GROUNDWORK

Type: Reuse existing stockpiled soil. Confirm with engineer.

<< 2310 PILE FOUNDATIONS >>

2.3 PILE FOUNDATIONS

Type/treatment: Radiata pine, SG6, H5 CCA (preservative code 01 or 02)
Size: 125mm x 125mm square or minimum 140mm dia. round

3 STRUCTURE

<< 3110 CONCRETE WORK >>

3.1 DAMP-PROOF MEMBRANE - UNDER SLAB

Type/thickness: Thermakraft Thermathene Black - 250 micron.

3.2 INSULATION - UNDER SLAB (IF REQUIRED)

Type/thickness: Expol ThermaSlab S / 50 mm

3.3 CONCRETE REINFORCEMENT

Type: As per engineers specification to comply with AS/NZS4671:2001

3.4 CONCRETE

All concrete to comply with the requirements of NZS3109:1997

Strength: Slabs & Footings: 25MPa
Piles: 17.5MPa
Tidy Slabs: 10MPa

Surface finish: Slabs: U3
Exposed footings: F4

<< 3410 STRUCTURAL STEELWORK >>

There is no work section specification relating to the following selections

3.5 STEELWORK

All Steelwork to comply with the requirements of NZS3404:2009

Item: As per engineers plans.
Finish: As per engineers specification

<< 3800 TIMBER FRAMING >>

3.6 SUB FLOOR TIMBER FRAMING (PILES & BEARERS)

Type/treatment: Radiata pine, Grade SG8, Treated H1.2 (minimum 150mm above ground)

3.7 FLOOR TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2
 Cantilevered deck joists: Radiata pine, Grade SG8, Treated H3.2

3.8 EXTERIOR WALL TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2
 Cavity battens: Radiata pine, Treated H3.1 (non-structural)
 Jamb battens: Radiata pine, Treated H3.1

3.9 ROOF TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

3.10 INTERIOR WALL TIMBER FRAMING

Type/treatment: Radiata pine, Grade SG8, Treated H1.2

3.11 EXTERIOR EXPOSED TIMBER

Cladding & trim: Radiata pine, Dressing, Treated H3.1
 Roof & Posts: Radiata pine, Grade SG8 (VG8 where non structural), Treated H3.2 CCA (preservative code 01 or 02). Allow for clears, discuss with owner.
 Deck framing & joists: Radiata pine, Grade SG8, Treated H3.2 CCA (preservative code 01 or 02)

3.12 ENGINEERED TIMBER

Location: As per structural & Engineering plans.
 Type/treatment: H3.2 Exterior. H1.2 Interior.

4 ENCLOSURE**<< 4160 DAMP-PROOFING, UNDERLAYS AND RIGID AIR BARRIERS >>**

There is no work section specification relating to the following selections

4.1 DAMP-PROOF COURSE

Brand/Type: Thermakraft / Supercourse 500. or similar approved.

4.2 WALL UNDERLAY/ROOF UNDERLAY

Brand/Type: Thermakraft / Covertex 407 OR 220

4.3 RIGID AIR BARRIER

Brand/Type: ECOPLY® Barrier system / 7mm

4.4 WINDOW FLASHING TAPE

Brand/Type: Thermakraft (or similar approved by architect)

<< 4220 WALL CLADDING >>**4.5 CLADDING - WEATHERBOARD**

Brand/Type: South Pacific Timber / 19 x 187 (155mm Cover) H3.2 Pre-primed Pine clears OR similar profile - Confirm with owner.
 External Corners: South Pacific Timber / 18mm T&G Boxed Corner H3.2 Pre-primed Pine Fascia & 30x18 sribes
 Finish: Painted - See << 6700 PAINTING >>

4.6 CLADDING - VERTICAL SHIPLAP CEDAR

Location: Exterior as per plans.
 Species: Western Red Cedar
 Grade: HERMPAC Premium Clears No.1 (PC1)
 Profile: HP51
 Number/Series:
 Profile type: Vertical Shiplap
 Cover dimensions: 110mm
 Thickness: 18.5mm
 Cavity system: Cavibat
 Surface finish: Band Sawn Face (BSF)
 Moisture content: ≤18 % at fixing
 Colour/Finish: See << 6700 PAINTING >>

4.7 CLADDING - DF FIBRE CEMENT

Board Brand/Type: James Hardie Villaboard / 9mm
 Batten: 10x65 H3.1 Pine batten
 Fixings: HardieDrive stainless steel screws
 Finish: Painted see << 6700 PAINTING >>

<< 4239 SOFFIT LINING >>**4.8 SOFFIT**

Brand/Type/thickness: James Hardie Villaboard / 6 or 9mm
 Fixings: HardieDrive stainless steel screws
 Joints: 10x65 H3.1 Pine batten
 Finish: Painted see << 6700 PAINTING >>

<< 4310 ROOFING >>**4.9 ROOFING - METAL**

Brand/Type: Dimond Styleline (Or similar approved)
 Material/Flashings: 0.55mm ColourSteel Maxx
 Colour: Titania - Confirm with owner

4.10 ROOFING - TRANSLUCENT

Brand/Type: Dimond Durolite (to match roofing profile)
 Material/Flashings: 1.1mm glass fibre reinforced polyester
 Colour: Confirm with owner.

4.11 ROOF SKYLIGHTS

Brand/Type: Velux / FCM 3046 (90°) - Confirm selection matches drawings.
 Flashings: 0.55mm ColourSteel Maxx
 Colour: White (standard)

<< 4337 TIMBER & PLYWOOD, DECKING & ROOFING >>**4.12 TIMBER SPACED BOARD DECKING - GENERAL**

Brand/size: HP90/ 90mm x 21mm
 Species/grade: Vitex
 Top side: Watershed profile up.

4.13 TIMBER SPACED BOARD DECKING - ENTRY & RAMP

Brand/size: HP90/ 90mm x 21mm
 Species/grade: Vitex
 Top side: Watershed profile up.

<< 4520 ALUMINIUM WINDOWS AND DOORS >>

4.14 ALUMINIUM WINDOWS AND DOORS

Brand/Type: APL / ThermalHEART Metro Series
 Finish/colour: White - TBC
 Jamb liners: PP Pine.
 Flashings: 0.55 Coloursteel Maxx
 Hardware: Allow for Urbo. Confirm with owner.

<< 4555 GARAGE DOORS >>

There is no work section specification relating to the following selections

4.15 GARAGE DOOR - OPTION A

Type/Material: Roller Door / Colorsteel Maxx
 Finish/Colour: Colorsteel Maxx / TO BE CONFIRMED

4.16 GARAGE DOOR - OPTION B

Brand/Type: Exterior Barn Slider Door. TO BE CONFIRMED TBC
 Face panel: TO BE CONFIRMED
 Finish: TO BE CONFIRMED

4.17 GARAGE DOOR CONTROLLER

Brand/Type: TO BE CONFIRMED
 Remotes quantity: TO BE CONFIRMED

<< 4610 GLAZING >>**4.18 GLAZING - ORDINARY**

Location: Louvres - W.06 - Confirm on plans.
 Type: Metro performance glass.

4.19 GLAZING - SAFETY

Location: Bathrooms and elsewhere as determined by the NZ Building Code and relevant NZ Standards, specified by Window & Door manufacturers.
 Type: Metro performance glass. Laminated Safety Glass Or similar approved by architect.

4.20 GLAZING - INSULATING GLASS UNITS

Location: Exterior.
 Type: Metro glass OR similar approved / Low-e, Argon gas
 Tint: No. Confirm with client.

4.21 GLAZING - SHOWER SCREENS

Location: Bathroom
 Type: 10mm toughened clear glass
 Hardware: Proprietary.

4.22 GLAZING - GLASS BLOCKS

Location: Ensuite
 Brand/Type: Metro Glass / 190x190x80 Flemish & Flemish corner - Confirm with owner
 Silicone joins - Max panel size 2.5x2.5m.
 Accessories: Metro Glass Proprietary

<< 4710 THERMAL INSULATION >>**4.23 UNDER SLAB INSULATION**

Brand/Type: Expol ThermaSlab S
 R value/Thickness: R1.32 / 50mm

4.24 INSULATION BETWEEN CANTILEVERED STEEL BEAMS AND FLOORING

Brand/Type: Expol ThermaSlab S
 R value/Thickness: R0.53 / 20mm

4.25 UNDERFLOOR INSULATION

	OPTION 1	OPTION 2
Brand/Type:	Terra Lana /	Pink Batts / Snugfloor
R value/Thickness:	R2.6 / 140mm	R2.6 / 110mm

4.26 WALL INSULATION

	OPTION 1	OPTION 2
Brand/Type:	Terra Lana / Wall	Pink batts / Classic Wall
R value/Thickness:	R 2.4 / 90mm	R 2.4 / 90mm

4.27 CEILING/ROOF INSULATION

Brand/Type: Terra Lana / Skillion Ceiling
 R value/Thickness: R4.0 / 165mm

<< 4820 FLASHINGS >>

There is no work section specification relating to the following selections

4.28 FLASHINGS - GENERALLY

Type: 0.55 Coloursteel Maxx

4.29 FLASHINGS - CONCEALED

Type: Dynaflash or similar approved.

5 INTERIOR**<< 5110 INTERIOR LININGS AND TRIM >>****5.1 WALL & CEILING LININGS - GENERAL**

Location: General Interior
 Brand/Type/thickness: GIB / Standard / 10mm walls, 13mm Ceiling
 Finish: Painted - See << 6700 PAINTING >>

5.2 WALL & CEILING LININGS - BATHROOMS

Location: Bathrooms
 Brand/Type/thickness: GIB / Aqualine / 10mm walls, 13mm Ceiling
 Finish: Tiled over or Painted - See << 6700 PAINTING >>

5.3 WALL LININGS - SHOWER OPTION

Location: Ensuite shower
 Brand/Type/thickness: James Hardie / Villaboard / 6mm
 Finish: Tiled over

5.4 WALL LININGS - BRACING (BL)

Location: BL Walls
 Brand/Type/thickness: GIB / Braceline / 10mm walls
 Finish: Painted - See << 6700 PAINTING >>

5.5 WALL LININGS - PREFINISHED

Location: Kitchen, Laundry and cupboard - Central unit external walls
 Brand/Type/colour: To match joinery - Confirm with owner.

5.6 WALL LININGS - PLYWOOD

Location:	Garage	Living Room (option)
Brand/Type/thickness:	TBC / 10mm min.	TBC
Grade/Finish:	TBC	Appearance grade TBC
Jointer:	TBC	TBC

5.7 INTERIOR TRIM

Skirtings: 90x10 Pine - Confirm with owner
 Architraves: 60x10 Pine - Confirm with owner
 Scotia: Square stop - Confirm with owner

<< 5230 INTERIOR DOORS & FRAMES >>**5.8 INTERIOR DOORS**

Location: See drawing W2.00/01 Plans
 Leaf type/finish: See drawing W3.22 door schedule
 Frame type/finish: Pine
 Hardware: Confirm with owner

<< 5410 FLOORS >>**5.9 FLOOR - GENERAL**

Location: General Living Level
 Brand/Type/thickness: Laminex (or similar) / Strandfloor / 20mm
 Fixing method: 50 x 8g screws - as per manufacturers requirements

5.10 FLOOR - LAUNDRY & KITCHEN

Location: Laundry and kitchen floors
 Brand/Type/thickness: Laminex (or similar) / Strandfloor H3.1 / 20mm
 Fixing method: 50 x 8g screws - as per manufacturers requirements

5.11 FLOOR - BATHROOMS

Location: Bathroom & Ensuite
 Brand/Type/thickness: James Hardie / Secura Interior Flooring / 19mm
 Fixing method: 50 x 2.87mm RounDrive nails at 200mm maximum centres

<< 5510 JOINERY FIXTURES AND FITTINGS >>**5.12 FABRICATED JOINERY ITEMS**

Location/item: Kitchen Joinery. Entry Seat. Wardrobes.
 Carcass/finish: TBC
 Bench top: TBC

5.13 PROPRIETARY JOINERY ITEMS

Location/item: Corner desk - TBC
 Assemble/install: Assemble, install

5.14 FABRICATED TIMBER STAIRS

Stair/Location:	Interior	Exterior Entry	Exterior Rear
Type:	Confirm with owner.	Aluminium	Aluminium
Balustrade/handrail:	Confirm with owner.	Provista, Villa Retro. Side Fix.	Provista, Villa Retro. Side Fix.
Finish:	Confirm with owner.	Powder coated - White TBC	Powder coated - White TBC

<< 5520 HARDWARE >>

There is no work section specification relating to the following selections

5.15 HARDWARE BRAND TYPE

TO BE CONFIRMED by owner.

6 FINISH**<< 6200 TILING >>**

6.1 TILES

Location:	Bathroom	Ensuite
Floor	TBC / See << 5410 FLOORS >>	TBC / See << 5410 FLOORS >>
Tile/substrate:		
Wall	TBC / See << 5110 INTERIOR	TBC / See << 5110 INTERIOR
Tile/substrate:	LININGS AND TRIM >>	LININGS AND TRIM >>
Grout/colour:	TBC	TBC

6.2 UNDER TILE HEATING

Location:	Bathroom & Ensuite floor (not shower)
Brand/type:	Proprietary to fit

6.3 WET AREA WATERPROOFING

Location:	Bathroom floor, skirting, bath and upstand. Ensuite floor, skirting, Shower walls and floor
Brand/type:	Ardex Superflex WPM 002
Tile adhesive:	Floor: Ardex X56. Walls: Ardex D2 or X10
Grout:	TBC
Silicone:	Ardex Se or Ardex ST

<< 6300 FLOOR COVERING >>**6.4 TIMBER OVERLAY FLOORING**

Location:	As per plan W2.00.
Brand/Type/finish:	TBC by owner
Laying method:	TBC by owner

6.5 CARPET

Location:	Bedrooms
Brand/Type:	TBC by owner
Underlay:	TBC by owner
Trim:	TBC by owner
Laying method:	TBC by owner

<< 6700 PAINTING >>**6.6 EXTERIOR PAINTING**

Timber Louvres & facing boards:	To match weatherboards.	White-TBC
Pergola/Exposed rafters/beams:	To match weatherboards.	White-TBC
Steel posts:	Refer engineers specification	White-TBC
Non-slip decking (ramp & entry):	Resene D313 Non-Skid Deck & Path	TBC

6.7 EXTERIOR PAINTING - WEATHERBOARD

Brand:	Resene
Base coat:	Wood Primer (if pre-primed timber used)
Top coat (x2/3)	Sonyx 101
Colour:	TO BE CONFIRMED with owner.

6.8 EXTERIOR PAINTING - VERTICAL CEDAR

Brand:	Machinecoat (NZ) Ltd
Product:	Wood-X penetrating wood oil
Coating process:	Machinecoat (NZ) Ltd. Flood Coat Inundation
Colour:	TO BE CONFIRMED with owner.
Factory coats:	One
On site coats:	One, or as per coating manufacturers specification

6.9 INTERIOR PAINTING

Wall - Plasterboard:	Resene wall & Ceiling - Alkyd Flat enamel
Wall - Bathrooms:	Resene wall and ceiling - Zylone SpaceCote - Low Sheen
Wall - Plywood:	TBC
Ceiling - Plasterboard:	Resene 15i 1.5L4- Ceiling Paint D305- Flat
Ceiling - Bathrooms:	Resene wall and ceiling - Zylone SpaceCote - Low Sheen
Ceiling - Plywood:	Resene etching primer - smooth surface sealer- Wood primer- Lumbersider- Low sheen
Doors	TBC ~
Cabinetry:	TBC - By Joiners
Trim:	Resene 3i 1.2 - Lustacryl - semi-gloss

7 SERVICES**<< 7120 WATER SYSTEM >>****7.1 WATER SYSTEM**

Pipework concealed:	Polybutylene water pipe to NZS 3501
Exposed internal pipe finish:	TBC to comply with NZS 3501
Water heater type:	Gas Infinity Boiler
Water heater brand/model:	A26: INFA26N/L - REU-A2626WG-ZK / LPG. TBC with heating specialist/supplier.

<< 7150 SANITARYWARE, TAPWARE & ACCESSORIES >>

7.2 SANITARYWARE, TAPWARE & ACCESSORIES

<u>Location:</u>	<u>Item/brand/reference:</u>
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LAUNDRY

Laundry tub:	TBC by owner.
Tub waste:	TBC by owner
Tub trap:	Standard plastic trap
Tub tap&mixer:	TBC by owner.

BATHROOM

WC:	Back to wall - TBC by owner.
WC holder:	TBC by owner.
Vanity Basin:	TBC by owner.
Basin waste:	TBC by owner.
Basin trap:	TBC by owner.
Basin tap/mixer:	TBC by owner.
Handtowel holder:	TBC by owner.
Floor Waste:	TBC by owner.
Bath tub:	TBC by owner.
Bath waste:	TBC by owner.
Bath trap:	TBC by owner.
Bath tap/mixer:	TBC by owner.
Shower:	1m x 1m enclosed 3 sides - TBC by owner.
Shower rose/rail:	TBC by owner.
Shower mixer:	TBC by owner.
HTR:	See << 7700 ELECTRICAL >>

ENSUITE

Toilet Suite:	Back to wall - TBC by owner.
WC holder:	TBC by owner.
Vanity Basin:	TBC by owner.
Basin waste:	TBC by owner.
Basin trap:	TBC by owner.
Basin tap/mixer:	TBC by owner.
Handtowel holder:	TBC by owner.
Shower Floor Waste:	Allproof (or similar approved) 65G Linear drainage channel with stainless steel grate.
Shower rose:	TBC by owner.
Shower Mixer:	TBC by owner.
HTR:	See << 7700 ELECTRICAL >>

KITCHEN

Sink unit:	TBC by owner.
waste kit:	TBC by owner.
Sink tap/mixer:	TBC by owner.
Insinkerator:	TBC by owner.

<< 7210 GAS SYSTEM >>

7.3 GAS

Gas bottle type:	Twin LPG
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7.4 GAS APPLIANCES

Brand/type/reference: Kitchen Hob / confirm brand and type with owner
 Brand/type/reference: Hot water heater - See << 7120 WATER SYSTEM >>

<< 7410 RAINWATER SPOUTING SYSTEM >>

7.5 SPOUTING

Brand/type/size:	Metalcraft / Box Gutter / 125
Material:	Coloursteel Maxx
Accessories:	Proprietary.

- 7.6 DOWNPIPES
 Brand/type/size: Marley / Round downpipe - White / See drainage plan. Or similar approved.
 Accessories: Marley Curve Leaf Diverter.

- 7.7 WATER TANK
 Brand/type/size: Promax / PMXBT25000 / 25000L Water Tank
 Accessories: Propreitary & Promax First Flush Diverter Kit - 90mm
 Pump: Promax Pump Kit 40LPM

<< 7420 SANITARY WASTE SYSTEM >>

- 7.8 FINISHES - EXPOSED SANITARY WASTE ITEMS

Exposed traps: TBC by owner.
 Exposed pipe: TBC by owner.
 Floor waste grates: TBC by owner.

<< 7550 HEATING >>

Refer to manufacturers information for more information.

- 7.9 FIREPLACE
 Brand/type/reference: Metro Classic Rad 17kW with proprietary flue and shield.

- 7.10 SPACE HEATING
 Brand/type/reference: TBC by owner.

<< 7700 ELECTRICAL >>

- 7.11 ELECTRICAL OUTLETS AND SWITCHES

Brand/type/reference: PDL Iconic - Confirm selection with owner
 Brand/type/reference: Confirm with owner.

- 7.12 LIGHT FITTINGS
 Brand/type/reference: Confirm with owner.

- 7.13 SMOKE ALARMS
 Brand/type/reference: Proprietary in compliance with NZBC F7/AS1. Confirm selection with owner.

- 7.14 EXTRACT SYSTEMS

Kitchen extract: Through Roof fan. TO BE CONFIRMED. Minimum Requirements: 180m³/h (50L/s)
 Bathroom extract: TO BE CONFIRMED. Minimum Requirements: 11-15 ACH @ 17.3m³ = 190.3m³/h (52.9L/s)
 Ensuite extract: TO BE CONFIRMED. Minimum Requirements: 11-15 ACH @ 13.7m³ = 150.7m³/h (41.9L/s)
 Laundry extract: TO BE CONFIRMED. Minimum Requirements: 6-10 ACH @ 3.0m³ = 18m³/h (5L/s)

- 7.15 ELECTRICAL APPLIANCES AND EQUIPMENT

Location:	Item:	Brand/type/reference:
Kitchen	Dishwasher	TBC by owner.
	Fridge	TBC by owner.
	Oven	TBC by owner.
	Insinkerator	TBC by owner.
	Other	TBC by owner.
Bathroom	HTR	TBC by owner.
Ensuite	HTR	TBC by owner.

8 EXTERNAL

<< 8000 LANDSCAPE >>

8.1 DRIVEWAY

Type/finish: Compacted hardfill

8.2 PATHS

Type/finish: TO BE CONFIRMED by owner.

8.3 FENCES & GATES

Type/finish: TO BE CONFIRMED by owner.

8.4 GARDEN RETAINING STRUCTURES

Retaining type: H4 timber. ex200/ex150x50. support piles as per engineers specifications.

1220 GENERAL REQUIREMENTS

1 GENERAL

1.1 THE WORKS

The works are as described in this specification and shown on the drawings.

1.2 PERSONNEL

Owner: The person defined as "owner" in the New Zealand Building Code.

Contractor: The person contracted by the owner to carry out the contract.

1.3 THE SITE

The site of the works, the site address and the legal description are listed under the sections 1210 PROJECT. Confine access and work to the area of site indicated on the drawings.

1.4 SPECIFICATION SECTIONS

Sections are for reference and convenience only and do not constitute individual trade sections or work elements. Read all sections together and read this section with all other sections.

1.5 INTERPRETATIONS

Required:	Required by the documents, or by a statutory authority.
Proprietary:	Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
Approval:	Approval in writing.
Direction:	Direction in writing.
Notified:	Notified in writing.

1.6 ABBREVIATIONS

The following abbreviations are commonly used throughout the specification:

AS	Australian Standard
AS/NZS	Joint Australian/New Zealand Standard
BCA	Building Consent Authority
BRANZ	Building Research Association of New Zealand
LBP	Licensed Building Practitioner
NZBC	New Zealand Building Code
NZS	New Zealand Standard
NZS/AS	Joint New Zealand/Australian Standard
NUO	Network Utility Operator
OSH	Occupational Safety and Health
RBW	Restricted Building Work
TA	Territorial Authority

1.7 INCONSISTENCIES

If there are any inconsistencies, errors or omissions in or between documents, the contractor must seek direction in resolving it. Figured dimensions take precedence over scaled dimensions; drawings to a larger scale take precedence over drawings to a smaller scale and drawings take precedence over specification.

1.8 SUBSTITUTIONS

A substitution may be proposed where specified products are not available, or if substitute products are brought to the attention of and are considered by the owner as equivalent or superior to those specified. Except where a specified product is not available, the owner is not bound to accept any substitutions.

Notify proposed substitution of specified products. Include sufficient information to allow the owner to confirm that the substitution is equivalent or superior to that specified. Advise the owner whether an amendment will or may be required to the Building Consent and the expected costs of such amendment.

1.9 THE WORDS "PROVIDE" OR "FIX"

The words "provide" (or "supply") or "fix" if used separately mean "provide and fix" unless explicitly stated otherwise.

1.10 MANUFACTURERS AND SUPPLIERS

Manufacturers and suppliers requirements, instructions, specifications or details are those issued by them for their particular material, product or component and are the latest edition.

1.11 REFERENCED DOCUMENTS

Reference is made to various New Zealand Building Code (NZBC) acceptable solutions (AS) and verification methods (VM) for criteria and/or methods used to establish compliance with the [Building Act 2004](#). Reference is also made to various Standards produced by Standards New Zealand (NZS, AS/NZS) and to listed Acts, Regulations and various industry codes of practice and practice guides.

The latest edition (including amendments and provisional editions) at the date of this specification applies unless stated otherwise. Documents cited both directly and within other cited publications are part of this specification.

1.12 PRECEDENCE OF REFERENCED DOCUMENTS

This specification takes precedence in the event of it being at variance with and requiring a higher standard than, the cited documents. Resolution of any variance must be confirmed in writing and where Building Consent is affected, the change notified to the BCA for advice as to whether an amendment is required to the Building Consent Authority.

1.13 BUILDING CONSENT COMPLIANCE

It is an offence under the [Building Act 2004](#) to carry out any work not in accordance with the Building Consent. Refer the resolution of matters concerning compliance to the owner for a direction. Where Building Consent is affected refer any change to the BCA for advice as to whether an amendment is required to the Building Consent.

1.14 STATUTORY OBLIGATIONS

Comply with all statutory obligations and regulations of regulatory bodies controlling execution of the works.

1.15 BUILDING CONSENT

Obtain the original or copies of the Building Consent form and documents from the owner and keep on site. Liaise with the BCA and/or the building certifier for all required notices and all inspections required during construction to ensure compliance. Return the consent form and documents to the owner on completion.

1.16 INSPECTIONS

Do not proceed with work noted on the Building Consent for inspection until it has been inspected and passed by the BCA inspector.

1.17 KEY PERSONNEL

Provide names and contact detail of LBP's/ key personnel. Prior to Restricted Building Work being carried out, provide names, registrations numbers (where appropriate) and contact detail of LBP's that are required for RBW by the Building Consent Authority as part of the Building Consent.

Include the following as applicable:

- Person with the appropriate site license
- Carpenter
- Registered drainlayer
- Registered plumber
- Registered gasfitter
- Registered electrician
- Roofer
- Block layer
- External window manufacturer
- Waterproof membrane applicator

1.18 PRODUCER STATEMENTS AND LBP DOCUMENTATION

When Records of Work or producer statements verifying construction are required, for the application for the Code Compliance Certificate, provide copies to both the BCA and the owner. Provide LBP documents and producer statements in the form required by the BCA.

1.19 CODE COMPLIANCE CERTIFICATE

Provide documentation that the Owner requires in order to obtain a Code Compliance Certificate for the consented work.

1.20 TRADE GUARANTEES AND WARRANTIES

Where specific trade guarantees/warranties are offered covering materials and/or execution of proprietary products or complete installations, or are required as a condition of Building Consent, provide guarantees/warranties to the owner.

1.21 SITE ACCOMMODATION

Provide, erect and maintain scaffolding, sheds, toilets, water, power and hoardings. Allow for cartage, craneage, plant hire and storage. Arrange for temporary works and services necessary for the completion of the works.

1.22 HEALTH AND SAFETY

Make the works safe and provide and maintain a safe working environment, to the requirements of the [Health and Safety at Work Act 2015](#). Ensure that all those working on or visiting the site are aware of the rules governing site safety, are properly supervised and are not unnecessarily exposed to hazards and risks.

1.23 PROTECT THE WORKS

Protect parts of the work liable to damage until completion of the works. Take all precautions necessary to protect the works from damage by unauthorised entry or inclement weather. Brace and support all parts of the works against damage during construction.

1.24 STORAGE AND PROTECTION

Provide temporary storage areas and protective covers and screens. Fillet stack and protect all framing and structural members from moisture and contamination. Completely protect finishing materials from the weather and damage and store in accordance with the manufacturer's requirements. Protect fabricated elements from the weather and damage, and store in accordance with suppliers requirements.

1.25 ANTIQUITIES AND ITEMS OF VALUE AND INTEREST

Report immediately the finding of any fossils, antiquities, pre-1900 items, or objects of value. Ensure they remain undisturbed until approval is given for their removal.

1.26 MEANS OF COMMUNICATION

All directions and approvals in writing.

1.27 WORKING HOURS

Work on site is restricted to between 0800 to 1800, Monday to Friday, excluding statutory holidays. Work outside these hours may be permitted, with prior approval in writing by the owner.

1.28 RESTRICTIONS

Do not:

- smoke on site
- light rubbish fires on the site
- bring dogs on to or near the site
- bring radios/audio players on to the site.

1.29 QUALITY ASSURANCE

Carry out and record regular checks of material quality and accuracy. Provide all necessary materials, equipment, plant, attendances, supervision, inspections and programming to ensure required standards are met.

1.30 DAMAGE AND NUISANCE

Prevent damage and nuisance from water, fire, smoke, vehicles, dust, rubbish, noise and other causes resulting from the contract works. Comply with the requirements of the TA and relevant Acts and Standards.

1.31 SET-OUT AND DATUM

Set out the works to conform with the drawings. Establish a permanent site datum to confirm the existing ground floor level and its relationship to other existing and new building levels.

1.32 EXECUTION OF THE WORK

Conform to the requirements of this specification. Ensure work is level, plumb, and true to line and face. Employ only experienced workers familiar with the materials and techniques specified.

1.33 MATERIALS AND PRODUCTS

Use only new materials and products, unless stated otherwise, of the specified quality and complying with cited documents.

1.34 COMPATIBILITY

Ensure all parts of a construction or finish are compatible and their individual use approved by the manufacturers and suppliers of other parts of the system. Source all parts of a system from a single manufacturer or supplier.

1.35 CLEAR AWAY

Regularly clear away trade debris, unused materials and elements from the site. On completion of the work leave the building clean and ready for occupancy, with all services operating and mechanical parts in good working order. Remove temporary markings, coverings and protective wrappings.

1.36 CLEAN

Clean and wash down external surfaces to remove dirt, debris and marking. Clean interior surfaces including floors, glass, cabinetwork, joinery, sanitary and hardware items.

1233 DOCUMENTS REFERENCED

1 GENERAL

Documents listed below are, when referred to in the text, part of this specification. However, this specification takes precedence in the event of it being at variance with and requiring a higher standard than any cited document.

The latest edition of the cited document (including amendments and provisional editions) at the date of this specification applies unless stated otherwise.

1.1 ACTS AND REGULATIONS

[Building Act 2004](#)

[Gas \(Safety and Measurement\) Regulations 2010](#)

[Health and Safety at Work Act 2015](#)

[Health and Safety at Work \(Asbestos\) Regulations 2016](#)

[Electricity \(Safety\) Regulations 2010](#) (Reprint as at 4 April 2016)

[Plumbers, Gasfitters and Drainlayers Act 2006](#)

1.2 NEW ZEALAND BUILDING CODE VERIFICATION METHODS

[NZBC E2/VM1](#) External moisture

[NZBC G12/VM1](#) Water supplies

1.3 NEW ZEALAND BUILDING CODE ACCEPTABLE SOLUTIONS

[NZBC B1/AS1](#) Structure - general

[NZBC B2/AS1](#) Durability

[NZBC C/AS2](#) Protection from fire

[NZBC D1/AS1](#) Access routes

[NZBC E1/AS1](#) Surface water

[NZBC E2/AS1](#) External moisture

[NZBC E2/AS3](#) External moisture

[NZBC F2/AS1](#) Hazardous building materials

[NZBC F4/AS1](#) Safety from falling

[NZBC F7/AS1](#) Domestic smoke alarms

[NZBC G1/AS1](#) Personal hygiene

[NZBC G10/AS1](#) Piped services - Gas

[NZBC G11/AS1](#) Gas as an energy source

[NZBC G12/AS1](#) Water supplies

[NZBC G13/AS2](#) Foul water - Drainage

1.4 NEW ZEALAND STANDARDS

AS/NZS 1604.3	Specification for preservative treatment - Plywood
NZS/AS 1884	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2269.0	Plywood - Structural - Specifications
AS/NZS 2455.1	Textile floor coverings - Installation practice - General
AS/NZS 2455.2	Textile floor coverings - installation practice - Carpet tiles
AS/NZS 2589	Gypsum linings - Application and finishing
AS/NZS 2642.2	Polybutylene pipe systems - Polybutylene pipe for hot and cold water applications
AS/NZS 2699.1	Built-in components for masonry construction Wall ties
AS/NZS 3000	Electrical installations (known as the Australian/NZ Wiring Rules)
AS/NZS 3500.2	Plumbing and drainage - Sanitary plumbing and drainage
AS/NZS 4130:2009	Polyethylene (PE) pipes for pressure applications
NZS 3101.1	Concrete structures standard
NZS 3103	Sands for mortars and plasters
NZS 3104	Specification for concrete production
NZS 3109	Concrete construction
NZS 3114	Concrete surface finishes
NZS 3501	Specification for copper tubes for water, gas and sanitation
NZS 3602	Timber and wood-based products for use in building
NZS 3603	Timber structures standard
NZS 3604	Timber-framed buildings
NZS 3622	Verification of timber properties
NZS 3631	New Zealand national timber grading rules
NZS 4210	Masonry construction materials and workmanship
NZS 4211	Specification for the performance of windows
NZS 4218	Thermal insulation - Housing and small buildings
NZS 4223.1	Glazing in buildings - Glass selection and glazing
NZS 4223.2	Glazing in buildings - Insulating glass units
NZS 4223.3	Glazing in buildings - Human impact safety requirements
NZS 4223.4	Glazing in buildings - Wind, dead, snow and live actions
NZS 4229	Concrete masonry buildings not requiring specific engineering design
NZS 4246	Energy efficiency - Installing bulk thermal insulation in residential buildings
NZS 4251.1	Solid plastering - Cement plasters for walls, ceilings and soffits
AS/NZS 4666	Insulating glass units
AS/NZS 4671	Steel reinforcing materials
AS/NZS 4858	Wet area membranes
AS/NZS 5601.1	Gas installations - general installations
NZS 6803	Acoustics - Construction noise

1.5 OVERSEAS STANDARDS

EN 513	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Determination of the resistance to artificial weathering
EN 12608	Unplasticized polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors. Classification, requirements and test methods

1.6 BUILDING RESEARCH ASSOCIATION OF NEW ZEALAND (BRANZ)

Weathertight Solutions Vol. 2: Stucco
 Good practice guide: Tiling
 Good practice guide: Membrane roofing
 Bulletin 441 - Sealed joints in external claddings - 2. Sealants
 Bulletin 519 - Fasteners selection

1.7 OTHER DOCUMENTS

Concrete NZ

- [CCANZ CP 01](#): Code of practice for weathertight concrete and concrete masonry construction

WorkSafe New Zealand (OSH)

- [Good Practice Guidelines - Excavation Safety](#)
- [Repainting lead based paints](#)
- [Management and Removal of Asbestos \(Approved CoP\)](#)

Waterproofing Membrane Association Inc.

- [WMAI CoPTM](#): Code of practice for torch-on membrane systems for roofs and decks

New Zealand Demolition and Asbestos Association (NZDAA)

- [Best Practice Guideline for Demolition in New Zealand](#).

New Zealand Metal Roofing Manufacturers Inc

- [NZMRM COP](#): NZ Metal roof and wall cladding: Code of practice

Window & Glass Association NZ (WGANZ)

- [PQAS](#): Powder Coating Quality Assurance System
- [Window Installation Guide](#): Guide to Window Installation as described in E2/AS1 Amendment 7.

2200 GROUNDWORKS & PREPARATION

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

1.2 SITE SAFETY

Provide proper support for excavations. Cover holes and fence off open trenches and banks.

2 PRODUCTS

2.1 FILLING MATERIALS

Volcanic tuff:	Scoriaceous tuff of variable grading excluding silt or clay material, capable of being placed and compacted as specified.
Rock fill:	Hard material comprising rock, broken stone, hard brick, concrete, run of pit scoria, or other comparable inert material capable of being placed and compacted as specified.
Sand fill:	Clean sand of such grading in particle size as to allow for mechanical compaction to 90% maximum density.
Hardcore:	Scoria or crushed rock to GAP (General All Passing) 40 grading.
Granular base:	Screened crushed gravel or scoria graded in size from 20mm to 7mm, clean. When tested with a standard sieve of 4.75 opening no material is to pass.
Dressing course:	Scoria to GAP 20 grading, or "dirty footpath scoria", or equivalent "all in" graded crushed metal aggregate.
Free-draining aggregate:	Scoria or crushed gravel graded 50 to 14 clean.

3 EXECUTION

3.1 EXCAVATION GUIDELINES

Carry out excavation to the guidelines set in [WorkSafe NZ, Good Practice Guidelines - Excavation Safety](#).

3.2 PROTECT EXISTING

Protect from damage existing buildings, structures, roads, paving and services nominated on the drawings as being retained, throughout the course of the work.

3.3 SURFACE PREPARATION

To [NZS 3604](#), 3.5 **Site preparation**, remove all turf, vegetation, trees, topsoil, stumps and rubbish from the area being built on.

3.4 UNDERGROUND ELEMENTS AND SERVICES

Break out and remove underground elements and redundant services. Report for instructions when unexpected voids, made-up ground or services are encountered. Seal off the ends of drains or remove to NUO approval.

3.5 STOCKPILE TOPSOIL

Stockpile excavated topsoil on site where directed. Keep separate from other excavated materials. Spread and level where directed before completion of the works.

3.6 GENERAL EXCAVATION

Trim ground to required profiles, batters, falls and levels. Remove loose material. Protect cut faces from collapse. Keep excavations free from water.

3.7 EXCAVATION FOR FOUNDATIONS

Take foundation excavations to depths shown. Keep trenches plumb and straight, bottoms level and solid, stepped as detailed and clean and free of water.

3.8 INADEQUATE BEARING

If localised bearing is not to [NZS 3604](#), 3.1.2 **Foundations** and 3.1.3 **Determination of good ground**, then excavate further and backfill with material as follows:

- Below slabs on grade: Hardfill compacted in 150mm layers
- Below footings: 10 MPa concrete

If excavation exceeds the required depths, backfill and compact to the correct level with material as listed.

Confirm any changes with the territorial authority.

For inadequate bearing or over excavation, in service trenches, use hardfill compacted in 150mm layers.

3.9 GRANULAR BASE FOR SLABS

To [NZS 3604](#), 7.5.3 **Granular base**. Consolidate with a vibrating roller. Blind the surface with coarse sand or sand/cement and roll ready to receive a damp-proof membrane.

3.10 GENERAL BACKFILLING

Compact backfilling in 150mm layers, with the last 200mm in clean topsoil, lightly compacted and neatly finished off.

2310 PILE FOUNDATIONS

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade. Work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 TIMBER PILES

Radiata pine H5 CCA (preservative code 01 or 02) treated, to [NZS 3602](#), table 1 **Requirements for wood-based building components**, and to [NZS 3604](#), 6.4 **Piles**, for types and footings.

2.2 ACCESSORIES

Nails:	Steel, stainless steel and galvanized steel of pattern to NZS 3604 , table 6.6 Nailing schedule for hand-driven and power driven-nails , and NZS 3604 , 4, Durability .
Bolts:	Steel, stainless steel and galvanized steel to NZS 3604 , 6 Foundation and subfloor framing , and NZS 3604 , 4 Durability .
Nail plates:	Stainless steel and galvanized steel toothed or nailed steel plates to the plate manufacturer's design for the particular locations shown on the drawings and to NZS 3604 , 4 Durability .
Concrete:	For piles, prescribed grade 17.5 MPa to NZS 3104 , table 3.1 Prescribed mixes (P) .
Corrosion risk	If timber treatments other than CCA (preservative code 01 or 02) are used, stainless steel fixings/connectors must be used in wet/damp areas in all zones.

3 EXECUTION

3.1 EXECUTION GENERALLY

Comply with [NZS 3602](#), [NZBC B2/AS1](#) and [NZS 3604](#) except as varied by this specification.

Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

In the Canterbury Earthquake Region comply with the changes to [NZS 3604](#) in [NZBC B1/AS1](#).

3.2 INSTALL DRIVEN ROUND TIMBER PILES

Prepare for and drive timber piles to [NZS 3604](#), 6.6 **Driven timber piles**. Protect pile heads with a suitable cushion.

3.3 INSTALL SQUARE TIMBER PILES

Prepare for, place and secure as detailed on the drawings.

3110 CONCRETE WORK

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade. Structural and foundation work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 REINFORCEMENT

Bars to [AS/NZS 4671](#), grade 300E deformed, other than for ties, stirrups and spirals, unless shown otherwise on the drawings. Welded reinforcing mesh to [AS/NZS 4671](#) Class E. Mild drawn steel tying wire not less than 1.2mm diameter.

2.2 SPACERS AND CHAIRS

Precast concrete or purpose made moulded PVC. Use concrete spacer blocks only where the concrete surface is not exposed in the finished work.

2.3 CONCRETE

Strength as selected. Ready-mix normal grade, maximum aggregate size 19mm to [NZS 3104](#). Site mixed prescribed grade, using either separate batching of sand and coarse aggregate, or builder's mix, to [NZS 3104](#).

3 EXECUTION

3.1 HANDLE AND STORE REINFORCING

Handle and store reinforcing steel and accessories without damage or contamination. Ensure reinforcement is clean and remains clean and free of contamination that may reduce bonding capacity.

3.2 FALSEWORK AND FORMWORK

Use falsework and formwork of sufficient strength to retain and support the wet concrete to the required profiles and tolerances. Select formwork finish to produce the specified finished quality.

3.3 CUT AND BEND

Cut and bend bars using proper bending tools to avoid notching and to the requirements of [NZS 3109](#). Do not rebend bars without written approval. Bend main reinforcing bars, stirrups and ties to the former pin diameters as given in [NZS 3109](#), figure 3.1, **Standard bend, hook and stirrup**.

3.4 SECURE REINFORCEMENT

Secure reinforcement adequately with tying wire and place, support and secure against displacement when concreting. Bend tying wire back well clear of the formwork. Spacing as dimensioned, or if not shown, to the clear distance minimums laid down in [NZS 3109](#), 3.3. **Hooks and bends**.

3.5 LAPPED SPLICES

Set length of laps, where not dimensioned on the drawings, in accordance with [NZS 3109](#): 3.7, **Splices in reinforcement**. Plain bars lapped splices must be hooked.

3.6 REINFORCEMENT COVER TO NZS 3604

Minimum cover to all reinforcing bars, stirrups, ties and spirals, as shown on drawings. Where cover is not shown on drawings provide minimum cover to [NZS 3604](#) requirements.

3.7 CONCRETE PLACEMENT

To comply with [NZS 3109](#).

3.8 SURFACE FINISHES

To comply with [NZS 3114](#), section 105 **Specification of finishes**, or as denoted on the drawings. Formwork linings and surface finishes as nominated for both fair face and concealed or exposed surfaces. Surface tolerances to comply with [NZS 3114](#), section 104 **Surface tolerances** and 105.3.2.

3.9 CASTING IN

Build in grounds, bolts and fixings for wall plates and bracing elements, holding down bolts, pipes, sleeves and fixings as required. Form pockets, chases and flashing grooves as required. No grounds exceeding 100mm in length. Minimum cover on conduits 40mm. Do not encase aluminium items in concrete. Do not paint steel embedded items more than 25mm into the concrete encasement. Cut back form ties to specified cover and fill the cavities with mortar. Wrap all pipes embedded in concrete with tape to break the bond and to allow for expansion.

3.10 SURFACE REPAIRS

Make good surface defects as soon as forms are stripped. Make good hollows or bony areas with 1:2 mortar, finished to the same tolerances as the parent concrete. Fill tie rod holes with 1:2 mortar.

3.11 CURING OF CONCRETE

Keep damp for not less than seven days. Ensure curing of slabs commences as soon as possible after final finishing, by the use of continuous water sprays, or ponding. Alternately, apply a curing membrane. Ensure any membrane used will not affect subsequent applied finishes.

3.12 STRIKE FORMWORK

Strike formwork without damaging or overloading structure.

3800 TIMBER FRAMING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

Use experienced competent carpenter familiar with the materials and techniques specified. Work to be carried out by or supervised by the appropriate LBP.

2 PRODUCTS

2.1 TIMBER FRAMING GENERALLY

Species, grade and level of treatment to [NZBC B2/AS1](#), [NZS 3602](#), tables 1 to 3 **Requirements for wood-based building components** ..., and moisture content to [NZS 3602](#), table 4 **Allowable moisture content** Structural Grade (SG) to [NZS 3604](#), [NZS 3622](#) with properties to [NZS 3603](#).

2.2 ACCESSORIES

Damp-proof course:	High impact embossed polyethylene
Stud straps	Polypropylene tape run horizontal at 300mm centres over flexible wall underlay, for drained cavities with stud spacings greater than 450mm.
Nails, bolts and screws:	Steel, stainless steel, galvanized steel of pattern to suit the location and to BRANZ BU 519: Fasteners selection. To NZS 3604 , 4 Durability and NZBC E2/AS1 .
Nail plates connectors:	Stainless steel and/or galvanized steel toothed or nailed plates to the plate manufacturer's design for the particular locations as shown on the drawings and to NZS 3604 , 4 Durability . Galvanized steel and stainless steel connectors and brackets to the connector manufacturer's design for locations shown on drawings and to NZS 3604 , 4 Durability and NZBC E2/AS1
Corrosion risk	For exterior timber, timber in damp areas and timber subject to occasional wetting, use only stainless steel (or equivalent) fixings and connectors, when the timber is treated with; Copper Azole (CuAz, Preservative code 58), Alkaline Copper Quaternary (ACQ, Preservative code 90), Micronise Copper Azole (code 88) or Micronised Copper Quaternary (code 89). For interior timber, treated with copper-based timber preservatives (H3.2 or higher), use a minimum of hot-dipped galvanized steel fixings and fasteners.

3 EXECUTION

3.1 ATTENDANCE

Provide and fix blocks, nogs, openings and other items as required by others.

3.2 MOISTURE CONTENT

Maximum allowable moisture content to [NZS 3602](#), table 4 **Allowable moisture content...**, for framing supporting interior linings:

Framing at erection	24%
Framing at enclosure	20%
Framing at lining	16%

3.3 EXECUTION GENERALLY

To [NZS 3604](#) except as varied in this specification. To include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs). When necessary provide framing to suit any required cladding/lining control joints. Set out framing in accordance with the requirements of [NZS 3604](#) and as required to support sheet linings and claddings.

3.4 INSTALL SUB-FLOOR FRAMING

Frame up off foundation walls and piles, all fabricated, fastened and braced to [NZS 3604](#), 6 **Foundation and subfloor framing**.

3.5 INSTALL FLOOR, WALL AND ROOF FRAMING

Floors and bottom plates framed and fastened to [NZS 3604](#), 7 **Floors**. Frame walls to required loading and bracing complete with lintels, sills and nogs, all fabricated and fastened to [NZS 3604](#), 8 **Walls**. Frame roof to required loading and bracing complete with valley boards, ridge boards and purlins to [NZS 3604](#), 10 **Roof framing**. Design and fit roof trusses complete with anchorage. All fabricated and fastened to [NZS 3604](#), 9 **Posts**, and [NZS 3604](#), 10 **Roof framing**.

3.6 BATTENS

For drained cavity construction nominal 20mm H3.1 cavity battens (non-structural) to [NZBC E2/AS1](#), 9.1.8.4 **Cavity battens**. For direct fix cladding window and door openings nominal 20mm H3.1 jamb battens to [NZBC E2/AS1](#), Fig. 72A.

4220 WALL CLADDING

1 GENERAL

Refer to 1213 SELECTIONS/drawings for specific product, material, accessories and finish selections.

1.1 QUALIFICATIONS

Carry out work using persons competent and experienced in the trade.

2 PRODUCTS

2.1 PLYWOOD

Structural plywood to [AS/NZS 2269.0](#).

2.2 TIMBER WEATHERBOARD

As selected, or radiata pine to [NZS 3631](#) for grading and to [NZS 3602](#), table 2 **Requirements for wood-based building components...**, for selection and treatment.

2.3 FIBRE CEMENT SHEET CLADDING

Cellulose cement autoclaved sheets.

2.4 FIBRE CEMENT SOFFIT LINING

Cellulose cement autoclaved sheets.

2.5 TIMBER FASCIAS AND BARGE BOARDS

As selected, or radiata pine to [NZS 3631](#) for grading and to [NZS 3602](#), table 2 **Requirements for wood-based building components...**, for selection and treatment.

2.6 ACCESSORIES

Wall underlay:	Breather type, waterproof.
Rigid Air Barriers:	Proprietary rigid sheet pre-cladding systems.
Jointers:	To suit cladding type and thickness.
Nails, screws, fastenings:	Metal, size and pattern, to cladding manufacturer's requirements and complying with the relevant aspects of NZS 3604 , section 4: Durability and E2/AS1.

3 EXECUTION

3.1 MOISTURE CONTENT

Maximum allowable moisture content to [NZS 3602](#), table 4 **Allowable moisture content....**

3.2 EXECUTION GENERALLY

To [NZBC E2/AS1](#) except as varied in this specification. Execution to include those methods, practices and processes contained in the unit standards for the National Certificate in Carpentry and the National Certificate in Joinery (cabinetry, exterior joinery, stairs).

3.3 INSTALL WALL UNDERLAY/RIGID AIR BARRIER

Fix to the manufacturer's requirements. Refer to 1213 SELECTIONS for type.

3.4 CAVITY BATTENS OR JAMB BATTENS

As specified in the section 3800 TIMBER FRAMING, to suit the selected wall cladding and construction type.

3.5 INSTALL PLYWOOD

Install plywood sheet and timber joint battens to [NZBC E2/AS1](#), 9.8 **Plywood sheet**.

3.6 PRIME OR SEAL TIMBER WEATHERBOARDS

Prime (for opaque finish) or seal (for clear finish) front and back faces, edges and end grain (minimum 2 coats) before fixing weatherboards and exterior trim.

3.7 INSTALL TIMBER WEATHERBOARDS

Install level, true to line and face, to [NZBC E2/AS1](#), 9.4 **Timber weatherboards**.

3.8 INSTALL FIBRE CEMENT SHEET CLADDING

Install level, true to line and face, to the manufacturer's requirements, as detailed and [NZBC E2/AS1](#), 9.7 **Fibre cement sheet**.

3.9 INSTALL FIBRE CEMENT SOFFITS

Cut sheets dry and scribe fit to fully support all edges and joints. Nail and drill for and insert fasteners to the sheet manufacturer's requirements. Fit complete with jointers and capping moulds. Refer to the cladding manufacturer's literature for fixing details and fixings durability requirements to [NZS 3604](#), section 4 **Durability**.

3.10 INSTALL EXTERIOR TIMBER FINISHINGS

Install timber fascias, barge boards, facings, beads, trim and enclosures level, true to line and face, with all end grain sealed and joints mitred.

3.11 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to [NZBC E2/AS1](#), 4.0 **Flashings**.

3.12 USE OF SEALANTS

Selection and use of sealants to follow BRANZ BU 601: Sealants for cladding joints.

3.13 COMPLETE

Complete all flashings, finishings and trim so the cladding system is completely weathertight.

4221HV HERMPAC VERTICAL WEATHERBOARD CLADDING SYSTEM

1 GENERAL

This section relates to the supply and fixing of **Hermipac** Vertical cladding:

- Vertical Shiplap weatherboards
- Board and Batten weatherboards
- Fascia
- Mouldings
- Proprietary flashing systems
- Vertical Shiplap 'VertiLine' cavity batten systems

1.1 RELATED WORK

Refer to painting sections for finishes to weatherboard cladding.

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

FSC®	Forest Stewardship Council®
COC	Chain of Custody
PEFC	Programme for the Endorsement of Forest Certification
CSA	Canadian Standards Association (International Standards)
SFI	Sustainable Forestry Initiative

Documents

1.3 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

NZBC B2/AS1	Durability
NZBC E2/AS1	External moisture
NZS 3602	Timber and wood-based products for use in building
NZS 3604	Timber-framed buildings
NZS 3617	Profiles of weatherboards, fascia boards and flooring

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

[Hermpac Construction Drawings](#)

[Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System installation specifications](#)

[Hermpac Vertical Shiplap Weatherboard Direct Fix System Installation Specifications](#)

Quality Assurance Checklist - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

[Hermpac Board and Batten Weatherboard Cavity System Installation Specifications](#)

Hermpac Board and Batten Weatherboard Direct Fix System Installation Specifications

Quality Assurance Checklist - Hermpac Board and Batten Weatherboard Cavity System

[Hermpac Standard and Custom profiles](#)

[Hermpac Profile Portfolio](#)

[Hermpac Grade descriptions](#)

[Hermpac Nail fixings](#)

[Hermpac Legal and / or Sustainable Certification](#)

Hermpac Product Technical Statement

[Machinecoat - Flood Coat Inundation versus Spray Application](#)

Maintenance of selected Wood Oil/Oil Based Stain Finishes

[BRANZ Appraisal 650](#) - Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System

[BRANZ Appraisal 828](#) - Hermpac Board and Batten Cavity System

[BRANZ Appraisal 524](#) - Cavibat Cavity Battens

CodeMark Certificate of Conformity for Hermpac VertiLine Vertical Shiplap Weatherboard Cavity System Certificate Number [GM-CM30036-RevG](#)

Hermpac Limited - FSC Licence No FSC-C102539, Certificate Code SGS-COC-008082, expires 30 Nov 2024

Hermpac Limited - PEFC Forestry Sustainable Certificate Code SGS-PEFC/COC-1212, expires 23 Nov 2020.

Manufacturer/supplier contact details:

Company: **Hermpac Ltd**

Contacts: Kyle Deans - 021 771 857, kyle.deans@hermpac.co.nz
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Requirements

1.5 PEFC CERTIFIED RESPONSIBLY SOURCED TIMBER

PEFC (Programme for the Endorsement of Forest Certification) is a global alliance of national forest certification systems, which endorses national forest certification systems developed through multi-stakeholder processes that are tailored to local conditions.

PEFC Chain of Custody certification tracks forest based products from sustainable sources to the final product. Each step of the supply chain is closely monitored through independent auditing ensuring that unsustainable sources are excluded.

Organisation website details:

Programme for the Endorsement of Forest Certification website: www.pefc.org

Hermpac Limited - PEFC Certificate Code SGS-PEFC/COC-1212, expires 23 Nov 2020.

Performance

1.6 FIXINGS, WIND

Design and use the fixings appropriate for the wind zone (R) and topographical classification (T) of this site and building height; as required by [NZS 3604](#).

1.7 PERFORMANCE

Accept responsibility for the weather-tight performance of the completed cladding system, including all penetrations. To [NZBC B2](#) Durability and [NZBC E2/AS1](#) External moisture.

2 PRODUCTS

2.1 WESTERN RED CEDAR

Hermipac Canadian Coastal Western Red Cedar (*Thuja plicata*) harvested from the sustainable managed forests of British Columbia, Canada. Hermipac Western Red Cedar is supplied from forest sources, certified legal and sustainable under one or more independent third party verified certification systems (PEFC, CSA, SFI or FSC).

2.2 VERTICAL SHIPLAP / VERTICAL BOARD AND BATTEN

Weatherboards to Hermipac profiles, Lap and Rebate details to BRANZ BU 411 and general design to the [NZS 3617](#), species and grading to [NZS 3602](#), table 2, reference 2A.1, Requirements for wood-based building components to achieve a 15-year durability performance. Weatherboards in lengths relevant to profile selection and application, with all unsound and open split knots excluded by cross cut removal prior to fixing into position.

Acceptable Solution is limited to the following types of weatherboards and their derivatives:

- Vertical Standard Shiplap and Hermipac Custom Profiles
- Vertical Standard Board and Batten and Hermipac Custom Profiles

A selection of the above profiles are also available in Western Red Cedar Finger-Joint (CEDARONE) and AshinDura™ pre-primed and undercoated, sanded and/or de-nibbed/buffed between coats.

2.3 COVER BOARDS, SMART CORNERS, MOULDINGS AND SCRIBERS

To Hermipac profiles as detailed, with species and grading to [NZS 3602](#), but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To [NZS 3602](#), table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

2.4 FASCIA BOARDS

To Hermipac profiles, with species and grading to [NZS 3602](#), but with all unsound and open split knots excluded by cross cut removal prior to fixing into position. To [NZS 3602](#), table 2, reference 2A.3, Requirements for wood-based building components to achieve a 15-year durability performance.

2.5 WALL UNDERLAYS

For flexible wall underlays, rigid wall underlays and rigid air barriers, refer to the appropriate separate section(s).

2.6 CAVIBAT EXTERIOR CAVITY WALL BATTENS - NON STRUCTURALLY FIXED

Cavibat extruded fluted polypropylene cavity batten system. Refer to [BRANZ Appraisal 524](#).

2.7 EXTERIOR CAVITY CLOSER/VERMIN-PROOFING

Aluminium, PVC or stainless steel cavity closure strip, punched with 3mm-5mm holes or slots to provide a minimum ventilation opening area of 1000mm² per lineal metre of wall. Length and width to suit cavity. To [NZBC E2/AS1](#): clause 9.1.8.3 and figure 66.

Components

2.8 NAILS, SILICON BRONZE

Hermipac Crown, Rose or Flat Head, Annular Grooved Silicon Bronze fixings to [NZBC E2/AS1](#) Table 24. Refer to [Hermipac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

2.9 NAILS, STAINLESS STEEL

Hermipac Crown, Rose or Flat Head, Annular Grooved Grade 316 Stainless Steel fixings to [NZBC E2/AS1](#) Table 24. Refer to [Hermipac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

2.10 JOLT HEAD NAILS, STAINLESS STEEL

Hermipac Jolt Head, Annular Grooved Grade 316 Stainless Steel fixings to [NZBC E2/AS1](#) Table 24. Refer to [Hermipac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

2.11 CLINCH NAILS, STAINLESS STEEL

Hermipac proprietary 40 x 2.0mm, 50 x 2.0mm and 27 x 2.0mm Clinch Nail, Annular Grooved Grade 316 Stainless Steel.

2.12 FLASHINGS

To [NZBC E2/AS1](#), 4.0 **Flashings**. Material, grade and colour as detailed and scheduled and to [NZBC E2/AS1](#); Table 21: Compatibility of materials in contact and table 22: Compatibility of materials subject to run-off. Ensure that materials used for flashings are compatible with the window frame materials and fixings and cladding materials and fixings.

Finishes

2.13

FACTORY PRE-FINISHING - MACHINECOAT (NZ) - PENETRATING WOOD OIL / OIL BASED STAIN

Flood Coat Inundation: Factory application of selected oil-based stain finishes by flood inundation and enhanced penetration of timber surface by roller pressure and fibre saturation.

Refer to: www.herpac.co.nz/our-products/coatings

Wood X:	Penetrating wood oil - exclusive Machinecoat (NZ) factory formulation, standard and custom colour range.
Resene:	Machinecoat (NZ) Waterborne Woodsman oil stain - exclusive pigment and fungicide enriched factory formulation.

Site applications to manufacturers specifications. All Hermpac weatherboards and mouldings must be coated all six sides prior to installation.

3 EXECUTION

Conditions

3.1 GENERALLY

Execution to [NZBC E2/AS1](#): 3.0 Weathertightness risk factors, and 9.0 Wall claddings, 9.1.8 Drained cavities and 9.4 Timber weatherboards.

3.2 STORAGE

Take delivery of Hermpac timber products, dry, unmarked and undamaged from freight and handling (Grade characteristics excluded). Stack Hermpac weatherboards flat and true, clear of the ground by a minimum of 150mm and supported on dry, clean timber bearers at maximum 900mm centres.

Keep weatherboards dry at all times, either by storing within an enclosed building, or when stored externally place an additional secondary cover on the plastic wrapping. Care must be taken to avoid damage to weatherboard edges and surfaces.

3.3 SUBSTRATE

Before starting fixing ensure that the substrate conforms to [NZS 3604](#), section 2, table 2.1 Timber framing tolerances, and the requirements of [NZS 3604](#), section 6, **Foundation and subfloor framing**, and [NZBC E2/AS1](#), 9.4 **Timber weatherboards**, governing support for timber board cladding.

Application - vertical cladding over cavity battens

3.4 CAVIBAT DRAINED CAVITY / NON-STRUCTURALLY FIXED

Install Cavibat 18mm drained cavity. Wall framing studs lined with Cavibat battens vertically and horizontally. The Cavibat battens are temporarily fixed over the wall underlay using galvanized nails or galvanized or stainless-steel finishing brads and then firmly fixed by the cladding fixings which will penetrate the wall framing studs.

3.5 CAVITY CLOSER / VERMIN PROOFING

Refer to Hermpac Cavity System Installation Specification. Seal the top of the cavity and install cavity closer/vermin-proofing at base of walls, open horizontal (or raking) junctions, over openings (windows, meters etc). Use cavity spacers where fixing is required between cavity battens.

3.6 PENETRATIONS

Confirm that exterior wall openings have been prepared ready for the installation of all window and door frames and other penetrations through the cladding. Required preparatory work includes the following:

- wall underlay to openings finished and dressed off ready for the installation of window and door frames and other penetrations
- claddings neatly finished off to all sides of openings
- installation of flashings (those required to be installed prior to installation of penetrating elements).

[Hermpac Construction Drawings](#) call for a compressible bond breaker, closed cell PVC foam seal to [NZBC E2/AS1 9.1.10.7](#).

3.7 SET-OUT

Use a string line, laser or mechanical device to set out all nailing that will be visible in the finished work. Align all nailing accurately in straight lines. Refer to relevant Hermpac Installation Specification and Construction Drawings to establish correct angle of nail and consistent, accurate placement relative to visible edge of board. For vertical shiplap boards, where possible the exposed lap should face away from the prevailing wind.

Application - fixing

3.8 FIXING - OIL / STAIN FINISH

Install level, true to line and face, to [NZBC E2/AS1: 9.4 Timber weatherboards](#). Double coat all cut ends before fixing. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Finish the heads of Hermpac Crown, Rose and Flat head nails flush onto and not into the board surface. Do not over drive the nail head and crush the timber surface beneath and surrounding the nail.

Refer to [Hermpac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

3.9 FIXING/FINISH - WIND ZONE

Hermpac Western Red Cedar, DuraLarch™ or AshinDura™ weatherboards fixed with Stainless Steel or Silicon Bronze Hermpac Crown, Rose and Flat Head nails are limited to use in [NZS 3604](#) Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Hermpac Western Red Cedar weatherboards fixed with stainless steel jolt head nails are limited to use in [NZS 3604](#) Wind Zones up to and including Medium when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres, and [NZS 3604](#) Wind Zones up to and including Very High when dwangs or structurally fixed Vertibat cavity battens are at maximum 400mm centres.

Hermpac DuraLarch™ and AshinDura™ weatherboards fixed with jolt head nails are limited to use in [NZS 3604](#) Wind Zones up to and including Extra High when dwangs or structurally fixed Vertibat cavity battens are at maximum 480mm centres.

Refer to [Hermpac Construction Drawings](#) for fixing details and to SELECTIONS for fixing sizes.

3.10 FIXING VERTICAL SHIPLAP WEATHERBOARDS

Install level, true to line and face, to [NZBC E2/AS1: 9.4 Timber weatherboards](#). Single nail weatherboards to every fixing point, clear of the adjacent lapped board. Nails to be driven in with a slightly upward slope. Line nails horizontally across the boards. Pilot drill all fixings slightly smaller than gauge of fixing to ensure a snug fit and to minimise risk of moisture entry. Refer to [Hermpac Construction Drawings](#) for accurate weatherboard fixing information.

Using a Hermpac specialty clinch nail, prior to the next row of Vertical Shiplap boards being fixed alongside (nogs or dwangs at maximum 480mm centres) and at a position hard up against but not into the hidden lap board edge at every fixing point, restrain the hidden lap tongue by driving the clinch nail into the frame so that the clinch head settles flush into the weatherboard's surface. The clinch nail head must not sit proud of the timber surface nor prevent the correct separation of each adjacent row of boards.

Refer to [Hermpac Construction Drawings](#) and Installation Specification for external and internal corner construction and fixing details.

3.11 INSTALL FLASHINGS

Install flashings, covers and soakers as detailed on the drawings and to [NZBC E2/AS1](#).

3.12 COMPLETE

Ensure the work is complete with all flashings, finishings and trim properly installed so the cladding system is completely weathertight.

Completion

3.13 REPLACE

Replace all damaged or marked elements.

3.14 LEAVE

Leave work to the standard required for following procedures.

3.15 REMOVE

Remove all debris, unused materials and elements from the site.

4 SELECTIONS

Refer <<1213 Selections>> for selections related to this product.

Substitutions are not permitted to the following, unless stated otherwise. Contact technical@hermpac.co.nz for assistance or more information.