

**BUILDING CONSENT APPLICATION
POOL HOUSE
107 HINEMOA STREET
BIRKENHEAD 0626**

DOC B

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(Building Consent only)

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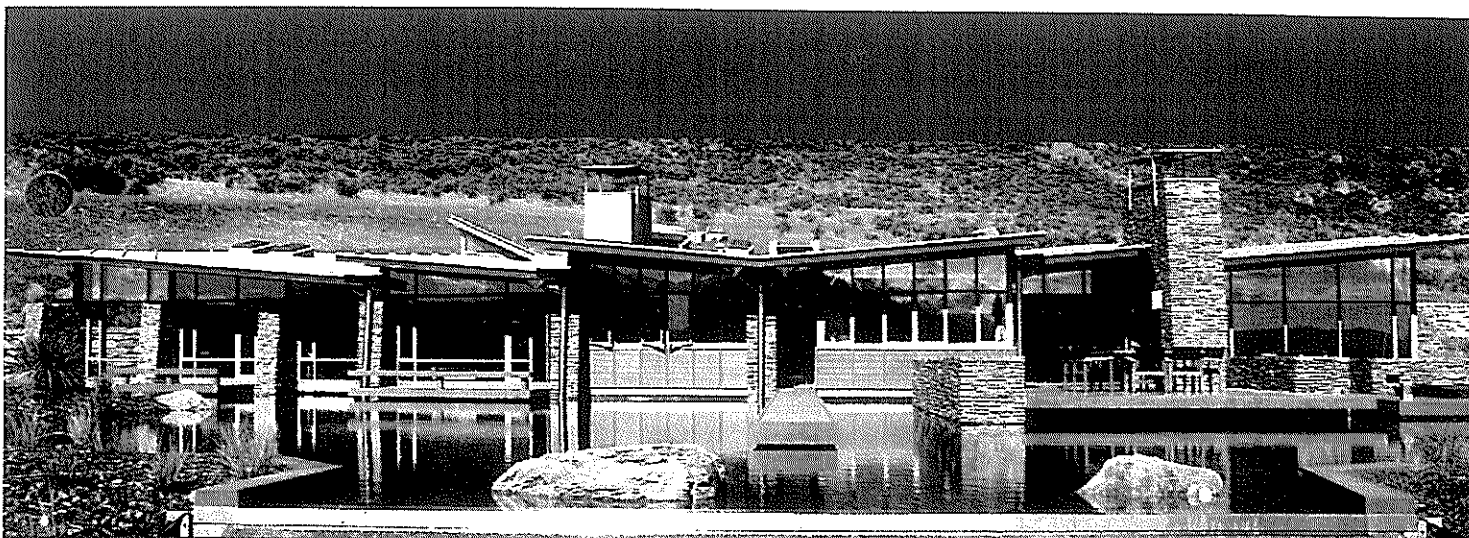
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Queenstown home

NURAPLY 3P SYSTEM Technical Brochure

Introduction

Nuraply 3P system is a tough, reinforced bituminous waterproofing membrane, of great strength, suitable for maintenance foot traffic and finished in any selected colour using Nuracolor coating system.

The membrane layers are 3mm thick of APP bitumen with a heavy reinforcing layer of non-woven polyester inside.

The Nuraply 3P capsheet is torch-on applied to the base sheet of either Nuraply 3PB or 3PV to create a very robust, double layer, fully bonded membrane waterproofing system – ideal for flat roofs and decks protected with timber or tiles.

To provide protection, added strength and an attractive appearance the installed Nuraply 3P roof sandy surface is finished with either Nuracoat BAC (Bitumenious Aluminium Coating), Nuracolor Gel or Nuracoat Heavy Duty.

The membrane is manufactured by ATAB of Belgium but has been specifically refined for New Zealand conditions. ATAB manufacture over 10 million square meters of membranes per annum.

BRANZ have appraised the Nuraply 3P system as suitable for flat roofs and decks protected from foot traffic by installing tiles or timber decks on Nurajacks – (New Zealand's only torch-on membrane with a complete deck system appraisal).

Where to use Nuraply 3P

Nuraply 3P has been developed for long-term, low maintenance waterproofing of steep or low pitched roofs, decks, gutters, terraces and canopies in new or restoration situations.

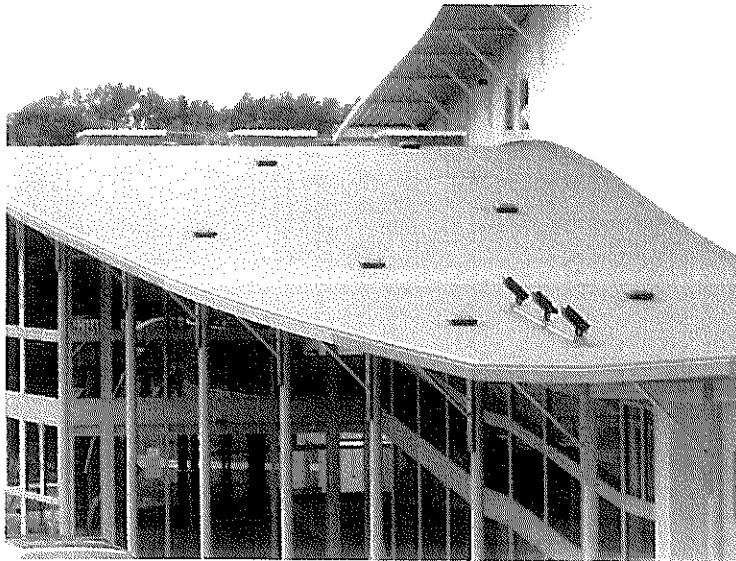
BRANZ Appraisal



BRANZ Appraised
Appraisal No 547 (2007)

BRANZ has appraised the Nuraply 3P system and has concluded that it complies with NZBC E2 – weathertightness and B2 durability. We are happy to work with you on any building consent issues, especially if something outside the scope of usual work is planned.

NURALITE



Keri Keri Community Centre



Auckland Regional Botanical Gardens

WARRANTY

Nuralite warrants Nuraply 3P against material defects for 20 years from the date of installation. The warranty must be applied for at the completion of the job. For this extended warranty to remain current the customer must maintain the roof and have it inspected every five years by a qualified Nuralite applicator.

The workmanship is covered by a separate workmanship warranty issued by the applicator. Nuralite will inspect the completed job if requested.

CHOICE OF SUBSTRATE

The substrate provides the foundation for a successful system. The two most common substrate problems are movement and ponding. To alleviate these ensure when plywood is being used that:

- ▶ Unless specifically designed otherwise the treated plywood substrate should be at least 17.5mm thick, 20mm on decks, supported at 400mm x 400mm. The plywood must be tightly butted and staggered or brick pattern laid. Stainless steel fixings and glue bonding of the plywood must be used.
- ▶ Falls are as much as possible. The minimum is as per E2/AS1 with 1:30 for roofs, 1:40 for decks and 1:100 in gutters. Pay attention to detailing around scuppers as they often are a source of ponding.

Ventilation is very important to keep the ceiling space cooler, and so limit substrate movement, as well as removing condensation buildup. A Nuravent every 20m² is recommended but attention must be paid to placement relative to rafters to allow for cross flow air movement. Soffit vents can also be useful addition to a flat roof design.

If the membrane is being tiled over, the preferred method is to keep the membrane accessible by using Nurajacks.

Building maintenance is important. Annual cleans and visual inspections are recommended. Five yearly detailed inspections by a qualified Nuralite applicator is a warranty requirement.

ROOF COVERED SYSTEMS

Plywood - Nuraply 3PB

- ▶ APP modified sheet membrane which is fully bonded to the substrate using Nurabond #10 adhesive.

Concrete - Nuraply 3PV

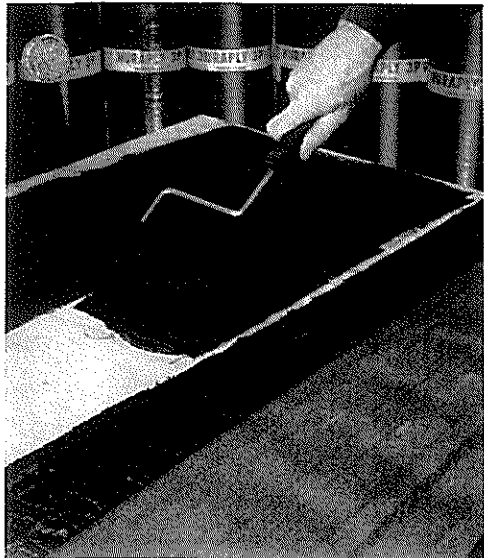
- ▶ Special ventilating grade membrane which allows substrate moisture and vapour to dissipate.

COATING OPTIONS

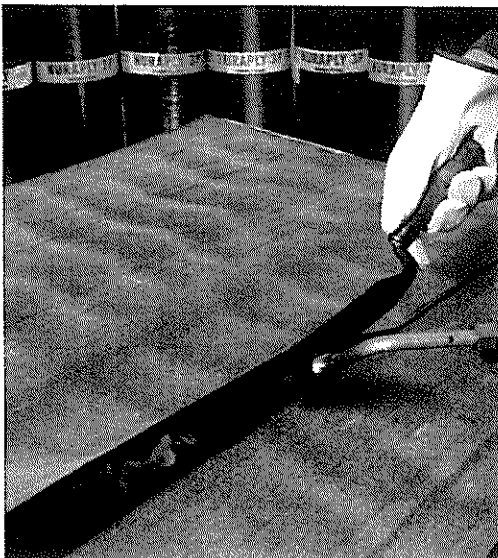
With any of these systems new coats will be required during the life of the Nuraply 3P roof system. Depending on environmental factors and the quality of the roof maintenance programme the coating will need recoating between every 5 and 10 years.

For a smooth finish without needing to recoat, consider Nuratech TPE which comes in a choice of three colours.

1. **Nuracolour:** is available in any colour but it is recommended that lighter colours are used (RV > 40) to keep the roof system cooler. The most common colour choice is 9095-Grey which has an RV of 42.
2. **Nuracoat Heavy Duty:** In circumstances where people are expected to walk on the membrane, such as for maintenance access, Nuracoat Heavy Duty should be installed. It forms a thick, robust, rubberized coating which protects the membrane while clearly delineating a slip resist pathway for people on the roof.
3. **Nuracoat BAC:** The traditional roof coating system for bitumen membranes – Nuracoat Bituminous Aluminum Coating (BAC) provides a highly reflective surface.



A - Nurabond No. 10 adhesive



B - Welding lap joints



C - Nuracolour surface dressing

Notes on product use - Important!

Not for green roofs or planter boxes – specify the Nuraply 3PG system and related drainage mat to ensure the plant roots will not attack the membrane and that there is proper drainage within the waterproofing system.

Not on decks where the Nuraply 3P is likely to be directly exposed to high foot traffic, or where it may be mechanically or chemically damaged. In these cases ensure the Nuraply 3P is completely protected by overlaying of pavers or similar.

Not if collecting drinking water. The Nuracolour provides a potable surface but requires recoating. Consequently we recommend Nuratech TPE in these situations.

Accessories

Nuratrims – a smart way to provide a sharp edge finish where the membrane must lap over the roof edge. Detailed to ensure watertightness. Available in mill finish aluminium, powdercoated or painted.

Nurajacks – designed so that the client can have tiles or pavers, but the membrane is still accessible, Nurapads come in a range of sizes to enable tiles to be floating just above the deck or raised up to the level of the building interior if desired

Nuravents – are unobtrusive and have a large capacity for air circulation.

Drains & Scuppers – Nuralite stocks a range of metal scuppers and drains. Alternative sized outlets can be fabricated on request. See www.nuralite.co.nz for detailed discussion of the accessories.

General Application Method - Plywood

1. Nurabond No. 10 cold adhesive is applied to the substrate. This ensures the membrane will be fully bonded to the substrate. **(Photo A)**
2. The Nuraply 3PB is lightly heated to melt the protective film – but not the sheet itself. This ensures the membrane is completely undamaged when it is laid.
3. The membrane is laid up the slope of the roof to allow for the best drainage flow towards the gutter.
4. The lap joints are welded as a separate process. As this step is vital, a three pass method is used so that the quality of the weld is checked during the process. **(Photo B)**
5. The Nuraply 3P capsheet is offset from the runs of Nuraply 3PB and is then fully heat welded to the Nuraply 3PB.
6. All lap joints are welded as a separate process. As this step is vital, a three pass method is used so that the quality of the weld is checked during the process.
7. A layer of Nurastone primer is applied before applying two coats of Nuracolour or Nuracoat Heavy Duty. Alternatively, two coats of Nuracoat BAC is applied. **(Photo C)**

Applicators

All Nuralite authorized applicators have been trained in Nuralite's system followed by on-site monitoring. Most Nuralite applicators have been working with Nuralite systems for many years. We work closely with applicators to ensure quality standards are maintained. If clients require an independent quality check during the course of a job or at completion, please contact a Nuralite technical advisor and a site report will be provided.

A comprehensive set of design details and specifications are available at www.nuralite.co.nz

Nuralite technical advisors are all very experienced and willing to help either on the phone, in your office or on site
Call 09 579 2046 or 0800 Nuralite (0800 687254)

Technical specifications

A waterproofing membrane consisting of straight run bitumen heavily modified with polymers (APP = Atactic Polypropylene) and reinforced with non-woven polyester.

- ▶ Top surface finished with white calibrated sand, then coated in situ with either Nuracoat BAC in reflective silver, Nuracolour in any colour or Nuracoat Heavy Duty for foot traffic
- ▶ Underside finished with a smooth thermofusible film

Reinforcement

- ▶ Reinforcement: non-woven polyester 180 g/m²
- ▶ Coating mass: plastomer bitumen, consisting of ±70 % bitumen and ±30% atactic polypropylene (APP) modifier

Technical specifications (average values)

	Basesheet: Plywood		Basesheet: Concrete
	Nuraply 3P	Nuraply 3PB	Nuraply 3PV
▶ Tensile strength (U.E.A.t.c.):	L: 700 N T: 600 N	L: 650 N T: 500 N	L:900N T:550N
▶ Elongation at break (U.E.A.t.c.):	L: 45% D: 45%	L:45% D: 45%	L:45% D:45%

Dimensions

▶ Thickness:	3 mm	3 mm	4 mm
▶ Length:	10 m	10 mm	7.5 mm
▶ Width:	1 m	1 m	1 m
▶ Surface:	10 m ²	10 m ²	7.5 m ²
▶ Average weight:	37.1 kg	36 kg	32kg

Nuraply 3P, No.10, Nuracolour, Nuracoat Heavy Duty are non-hazardous products. Nuraflux, Nuracoat BAC and Nurastone sealer are Class III Dangerous Goods and are flammable. Care is required in use.

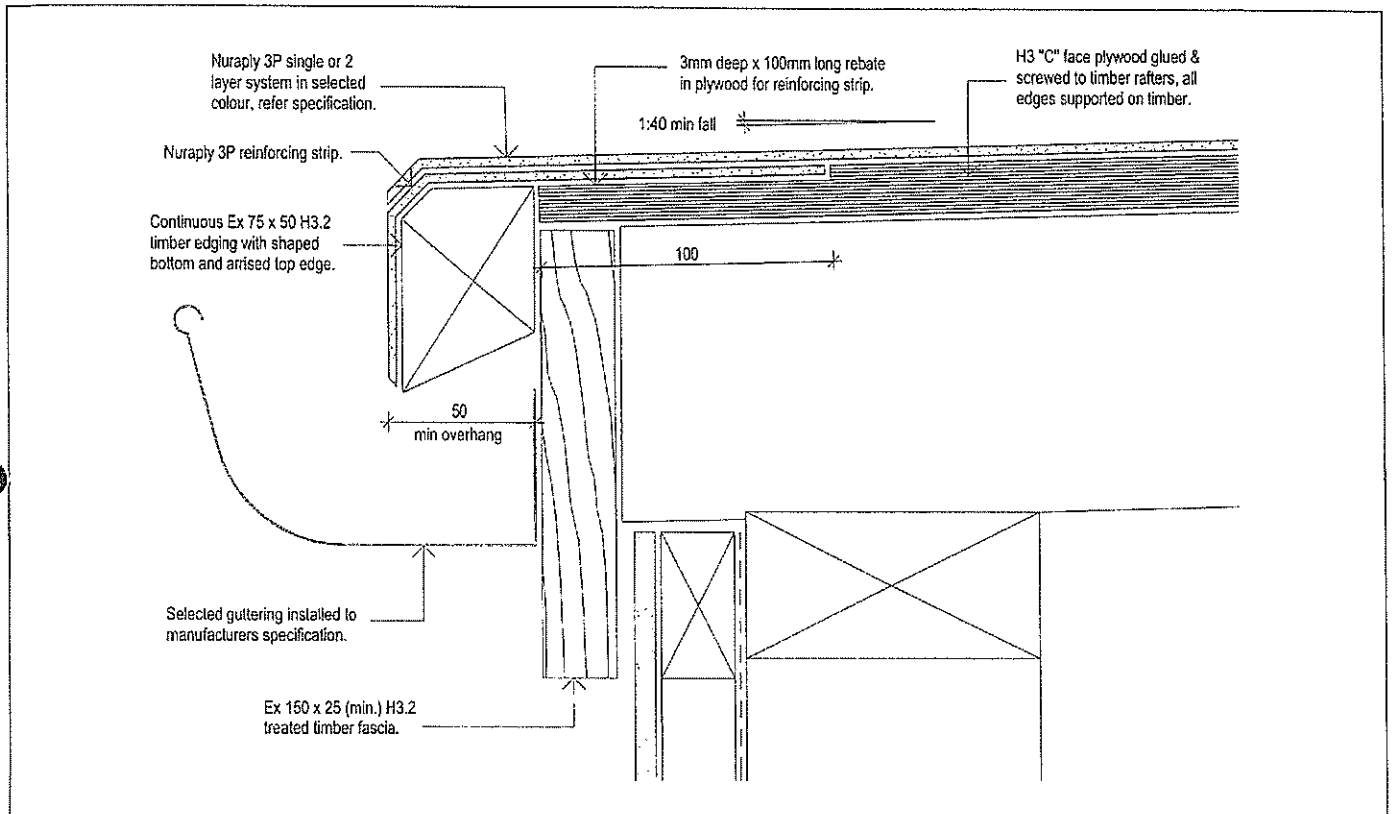
To the best of our knowledge, the information in this brochure is accurate at the time of printing
Nuralite Waterproofing Ltd reserves the right to alter information, formulation or parameters at any time without notice.

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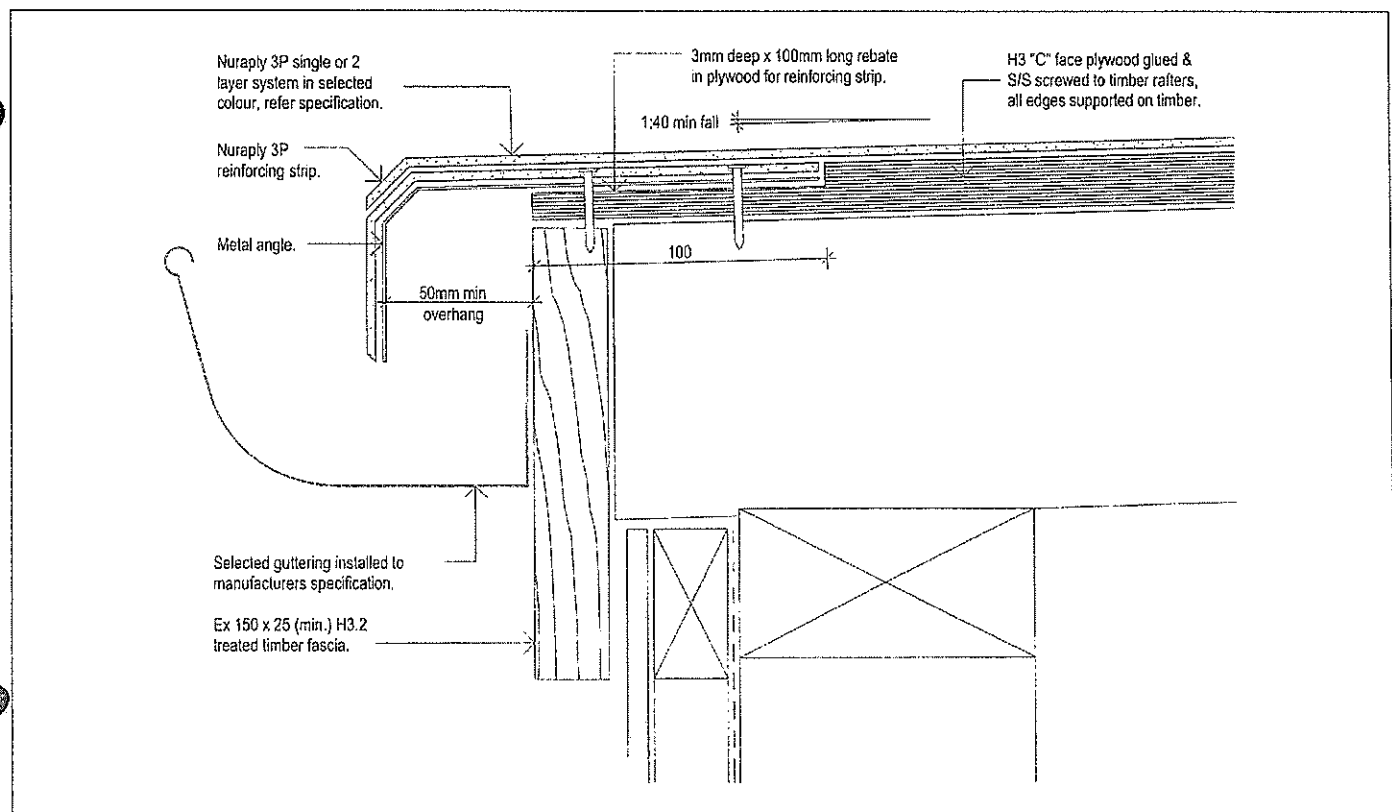


NURALITE Detail Drawings

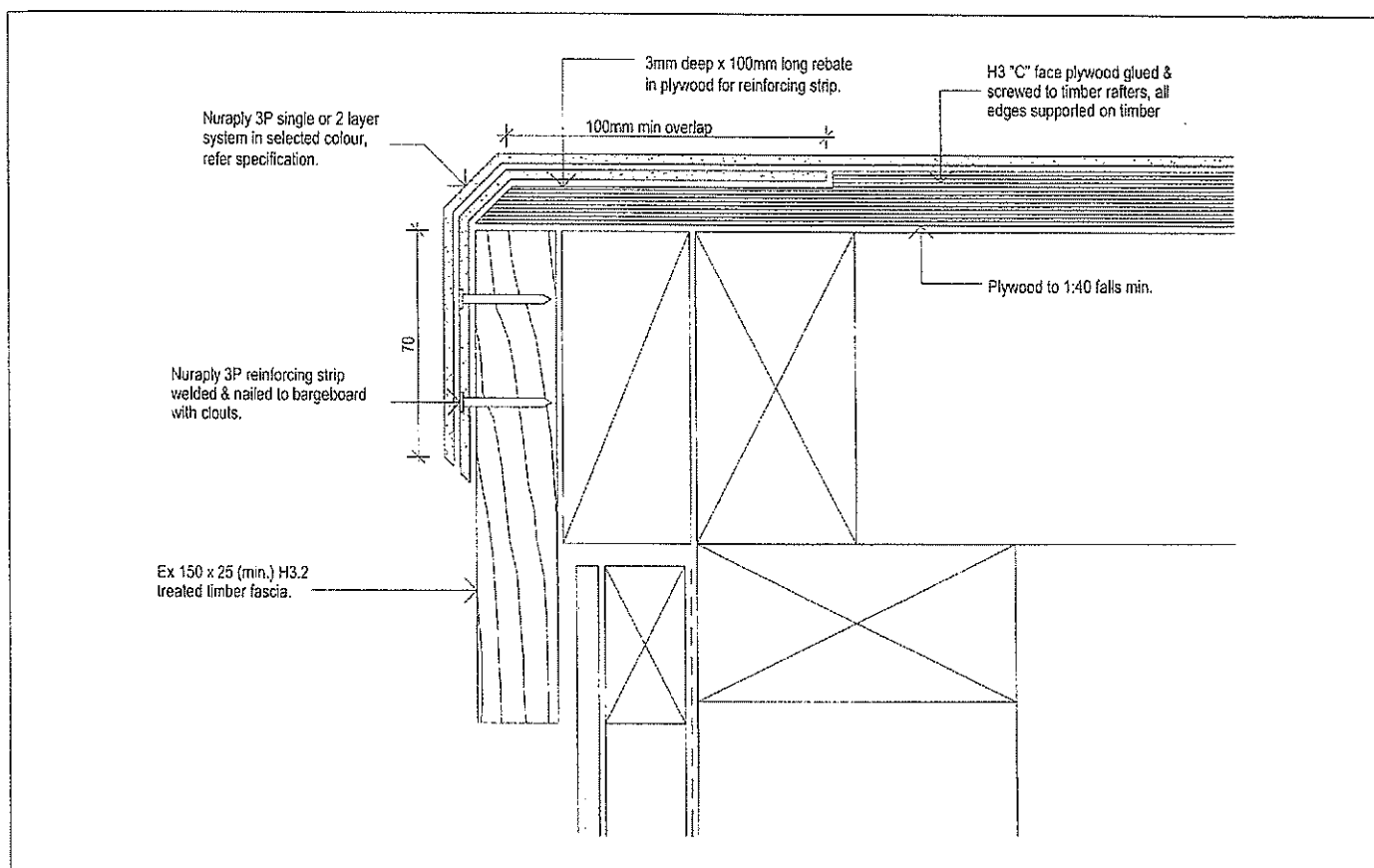
Edge trims - Nuraply 3P Wrapped Timber Drip Edge with 3mm Deep Rebate



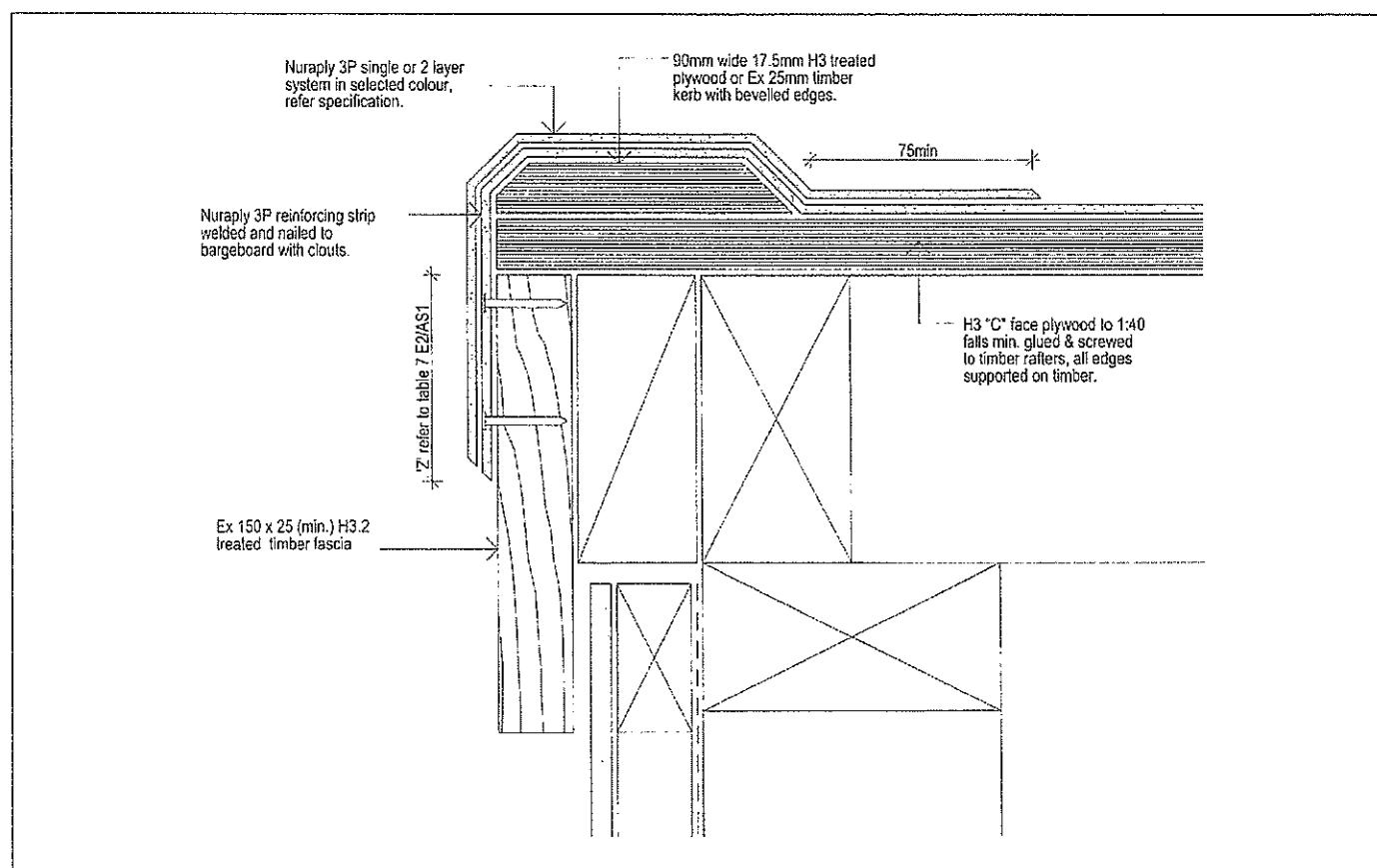
Edge trims - Nuraply 3P Wrapped Metal Angle Edge with 3mm Deep Rebate



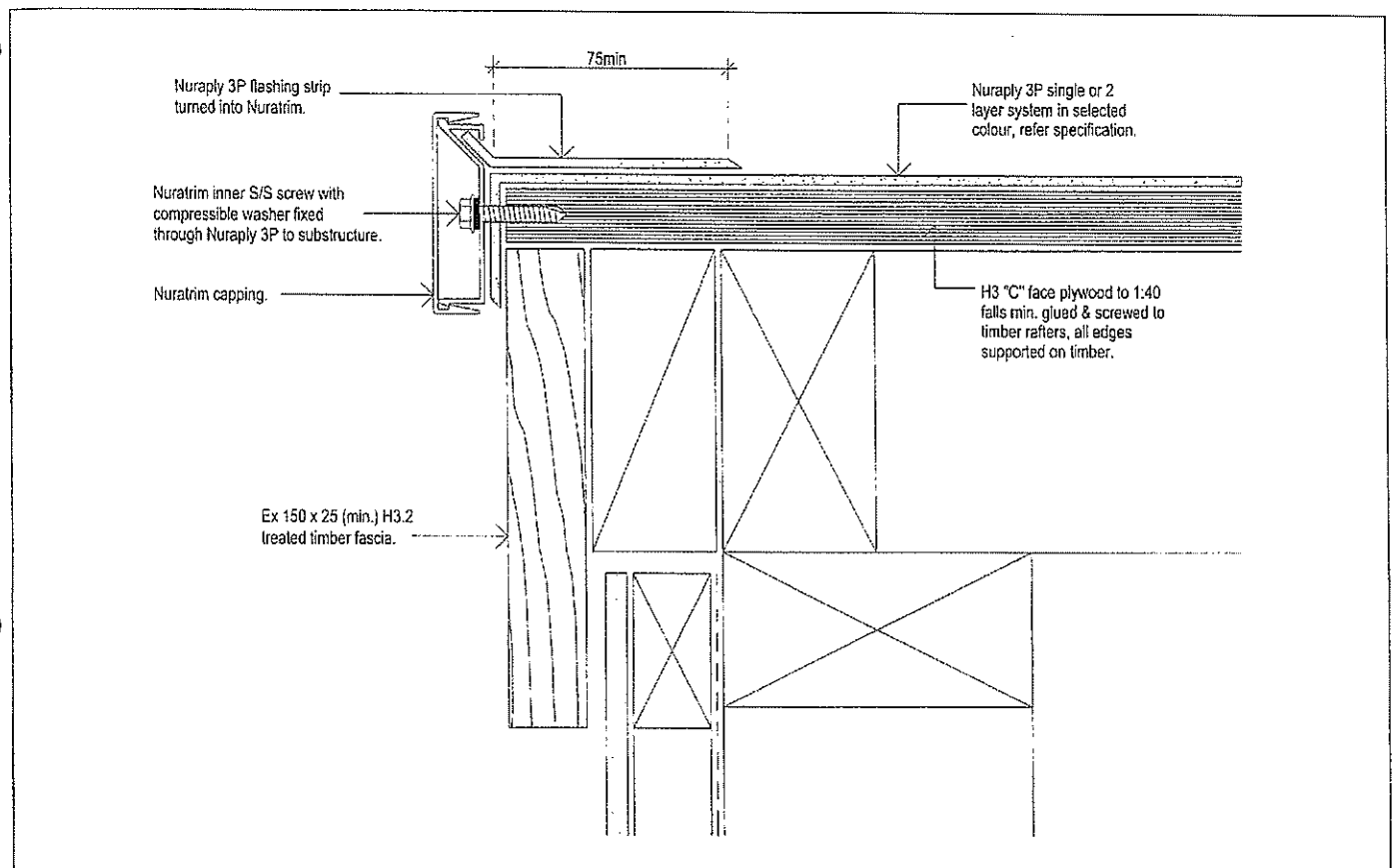
Edge trims - Nuraply 3P Reinforced Edge with 3mm Deep Rebate



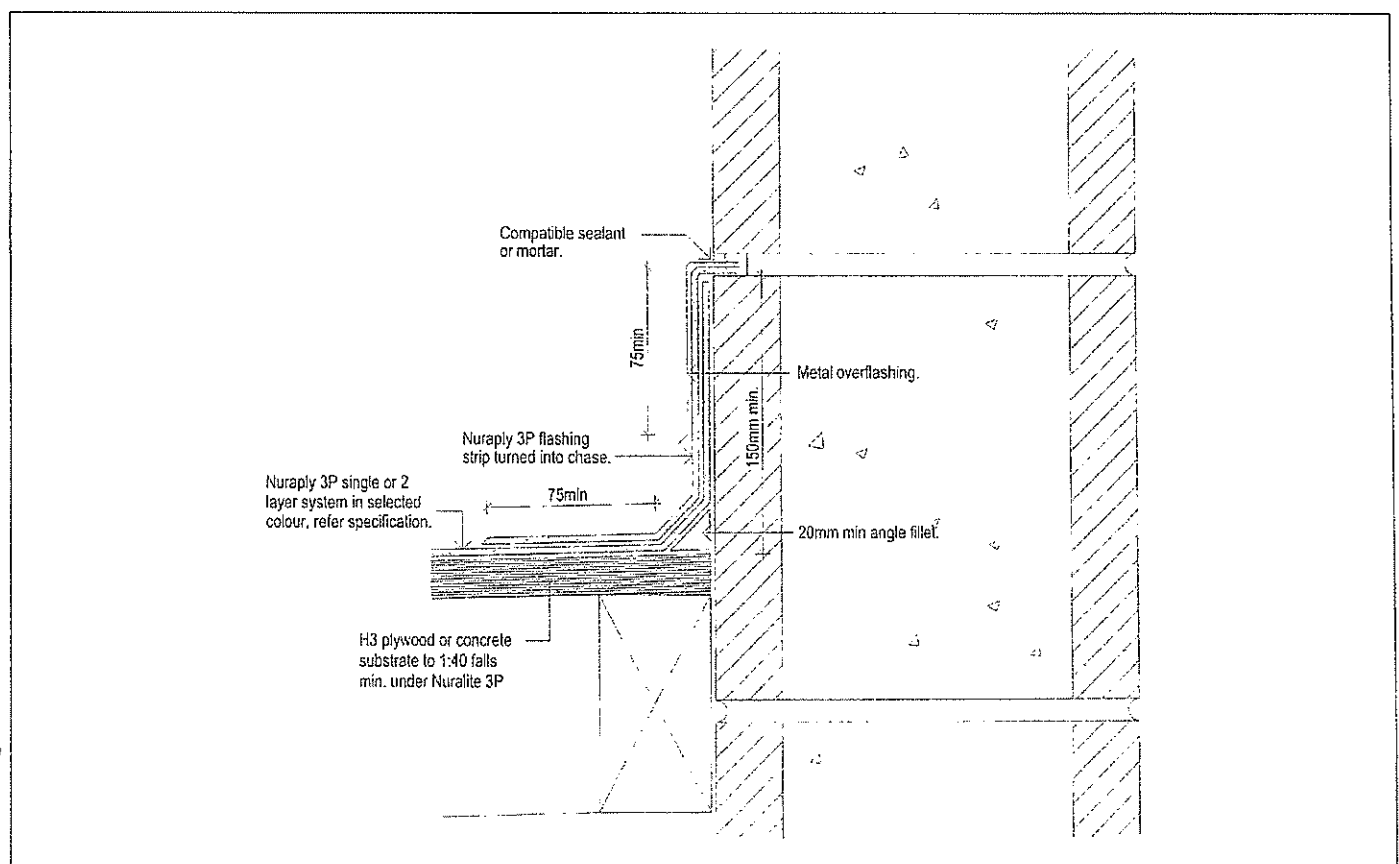
Edge Trims - Nuraply 3P Non Draining/Watercheck Detail



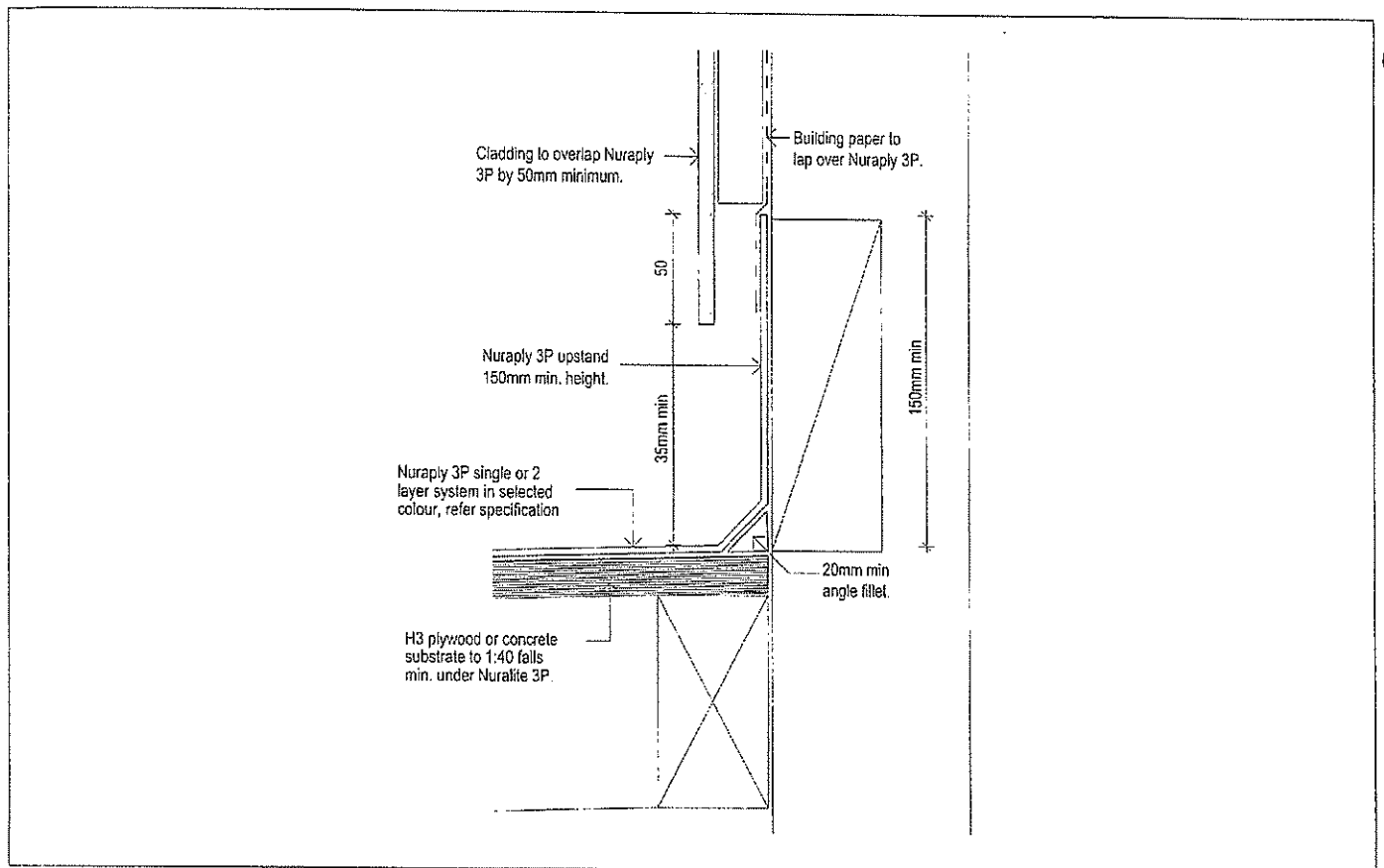
Edge Trims - Nuraply 3P Nuratrim Non Draining Edge Detail



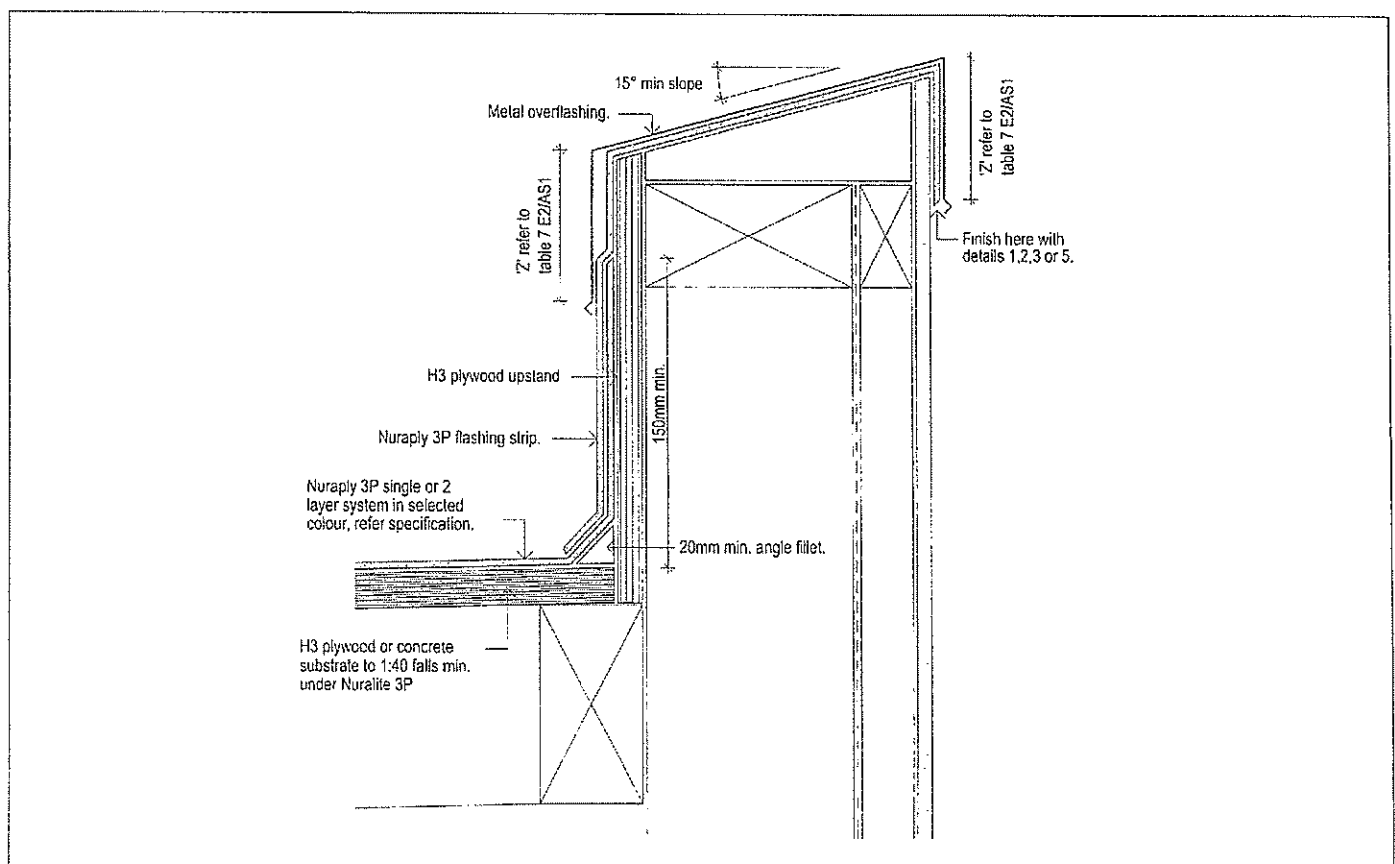
Upstands - Nuraply 3P Upstand Termination Detail



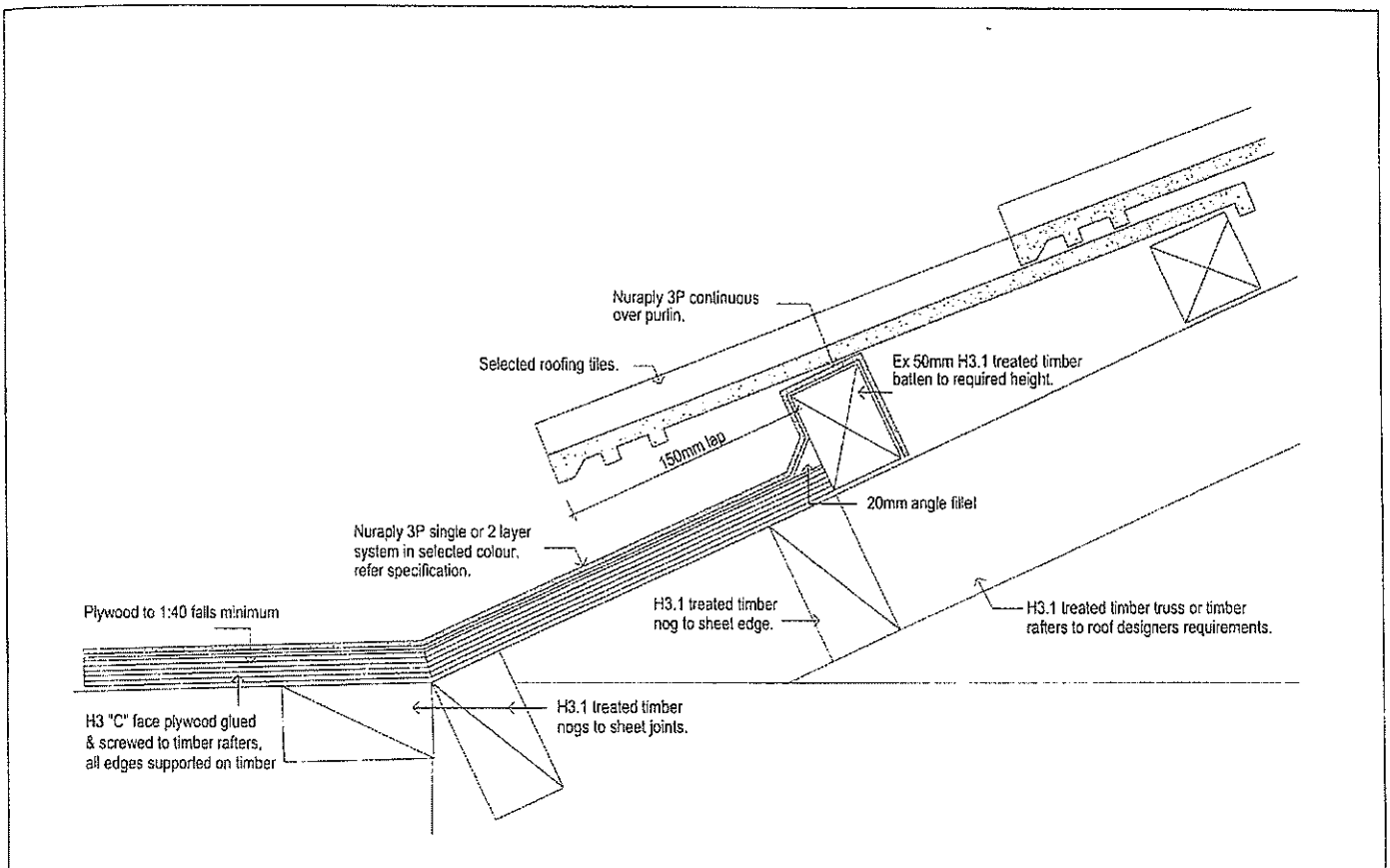
Upstands - Nuraply 3P Upstand Behind Cladding Detail



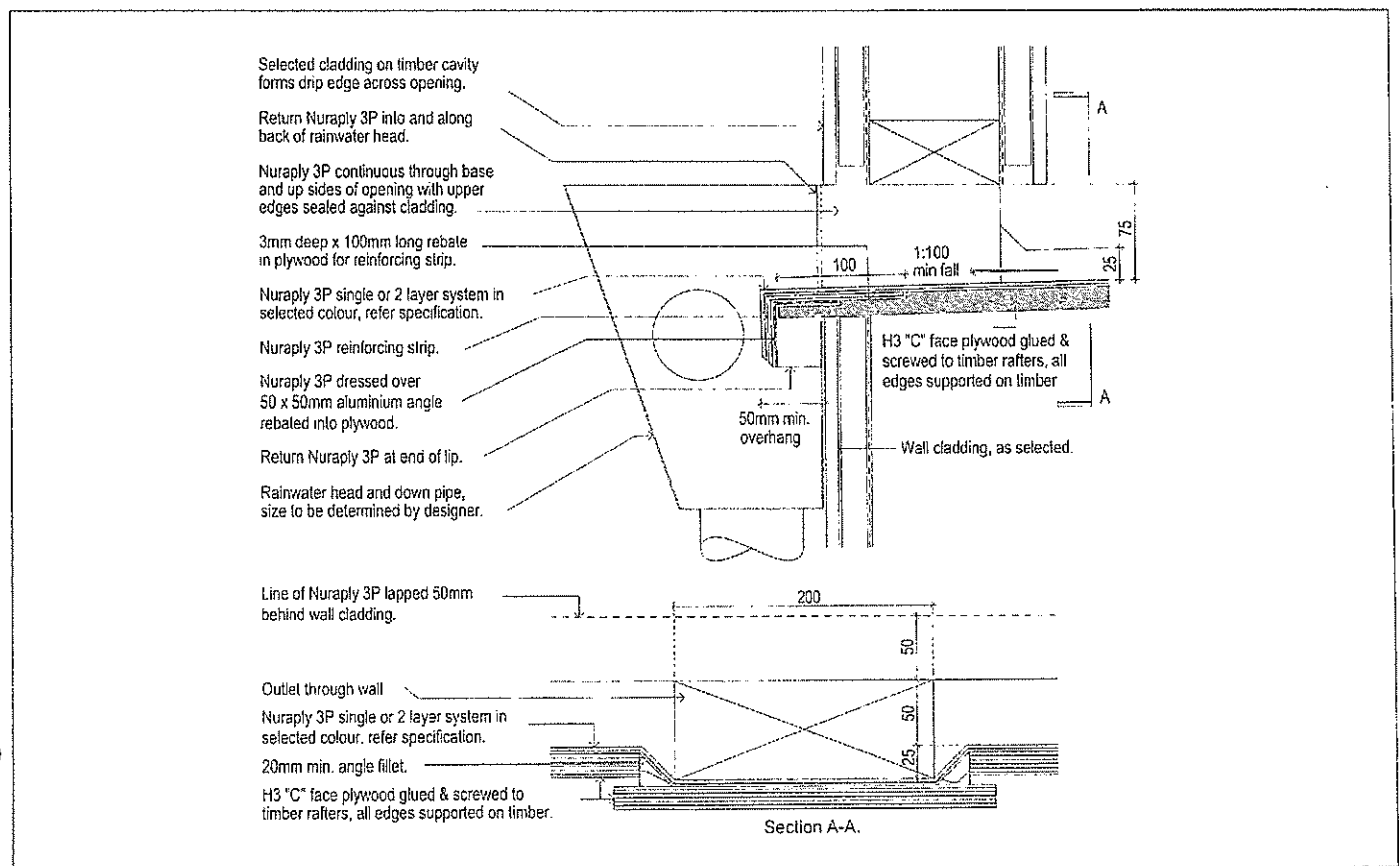
Parapets - Nuraply 3P Parapet Termination Detail



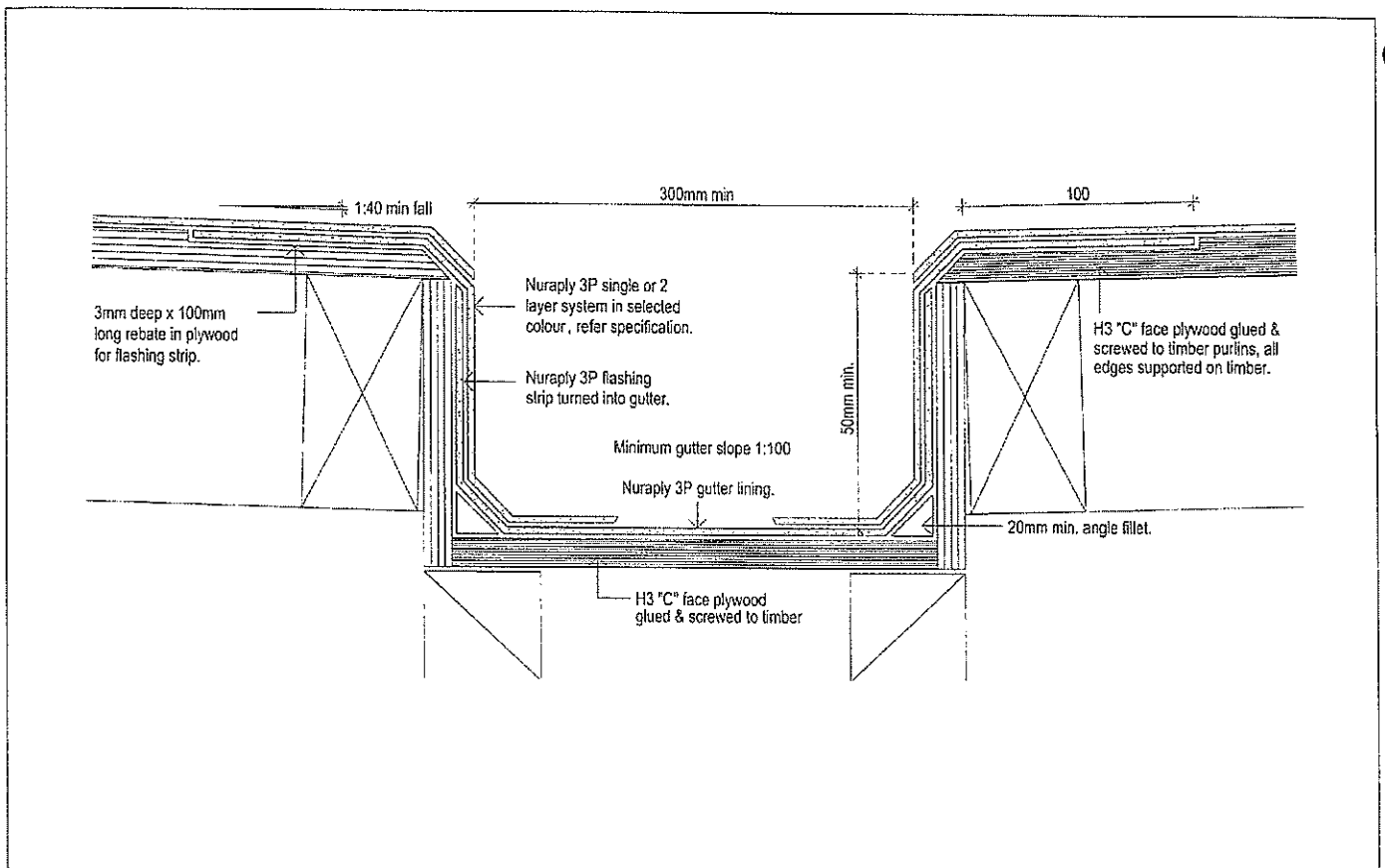
Roof Details - Nuraply 3P / Tile Roof Detail



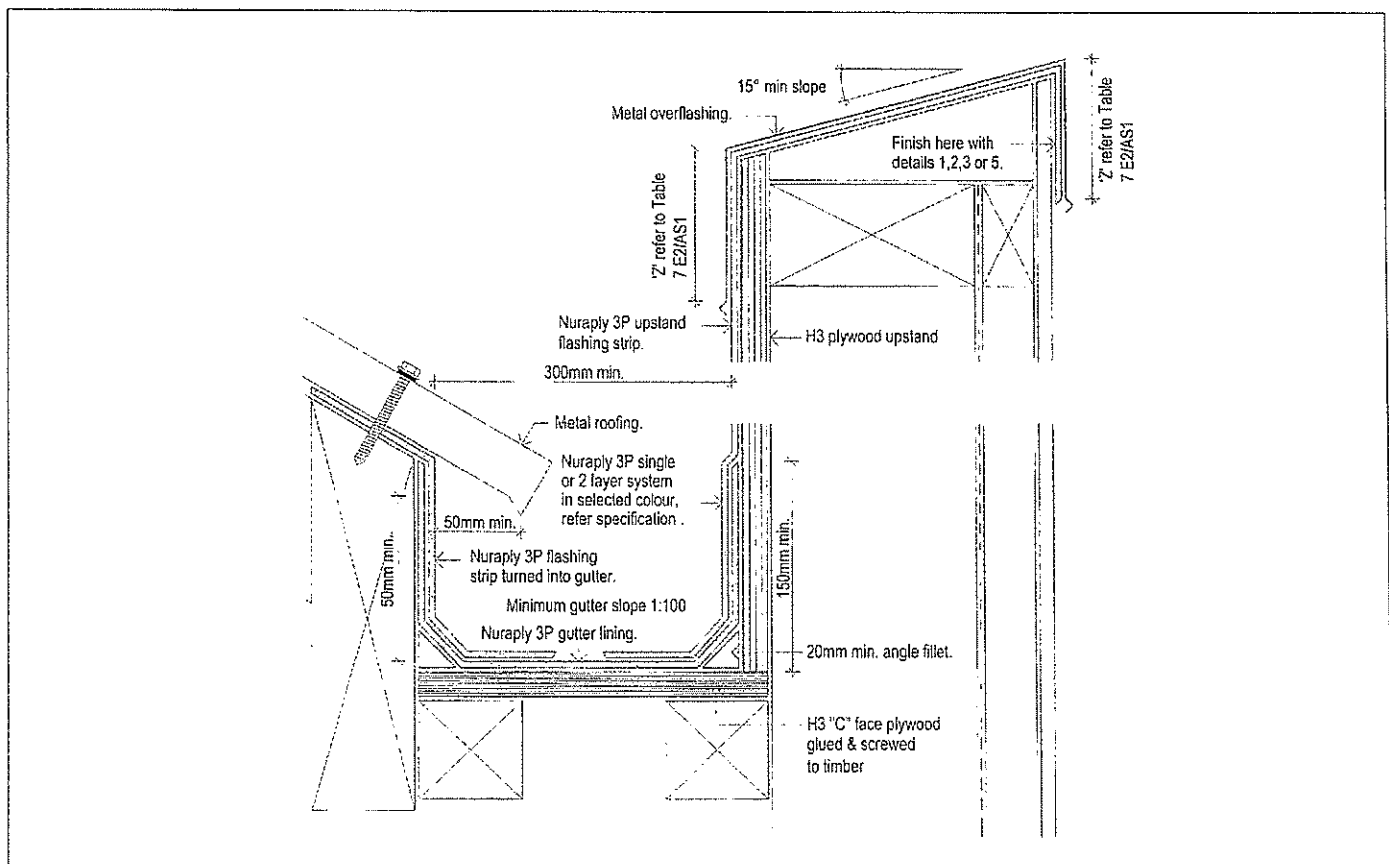
Scupper Details - Scupper Opening In Membrane Roof Detail



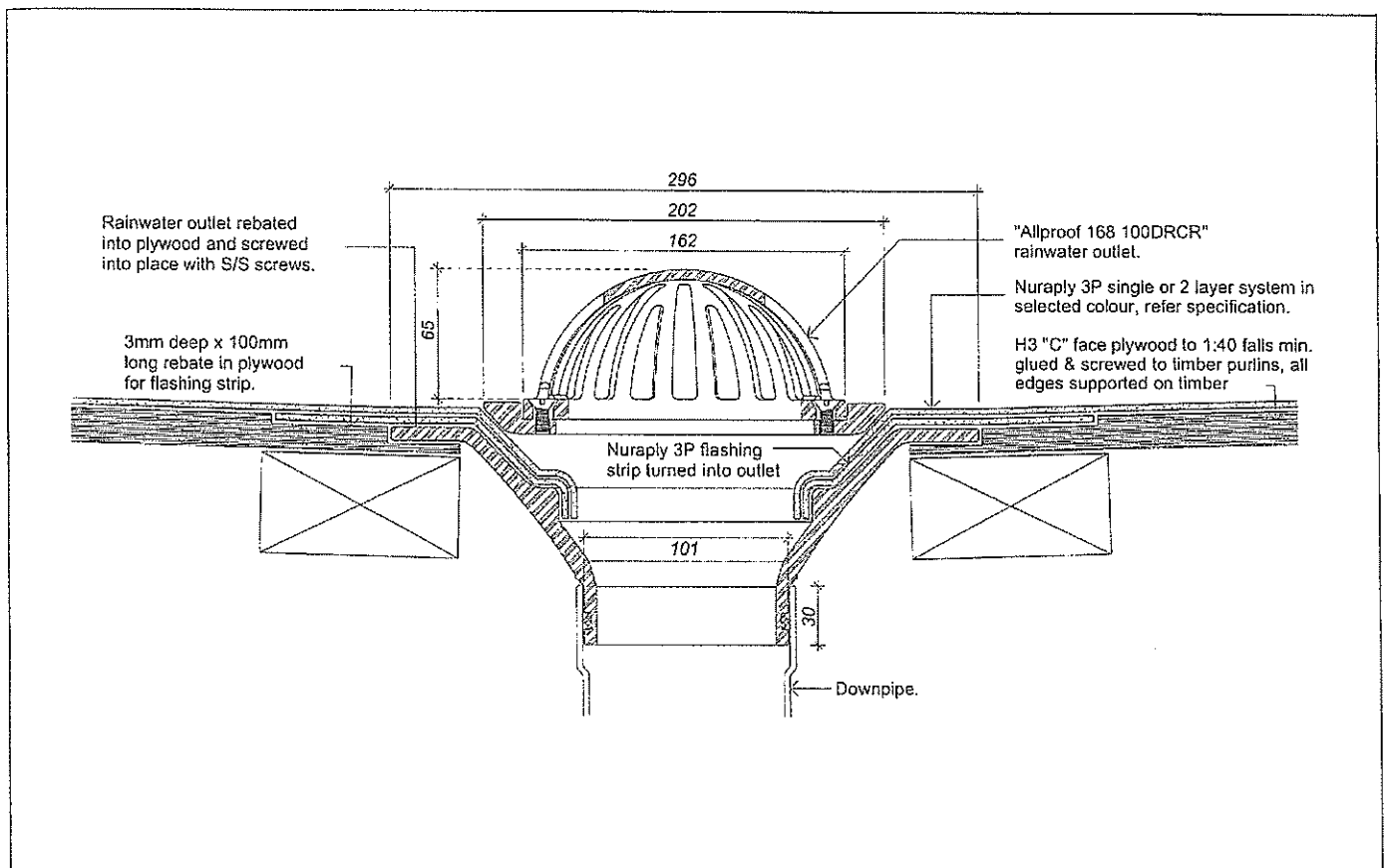
Box Gutters - Nuraply 3P Internal Box Gutter With Nuraply Roof



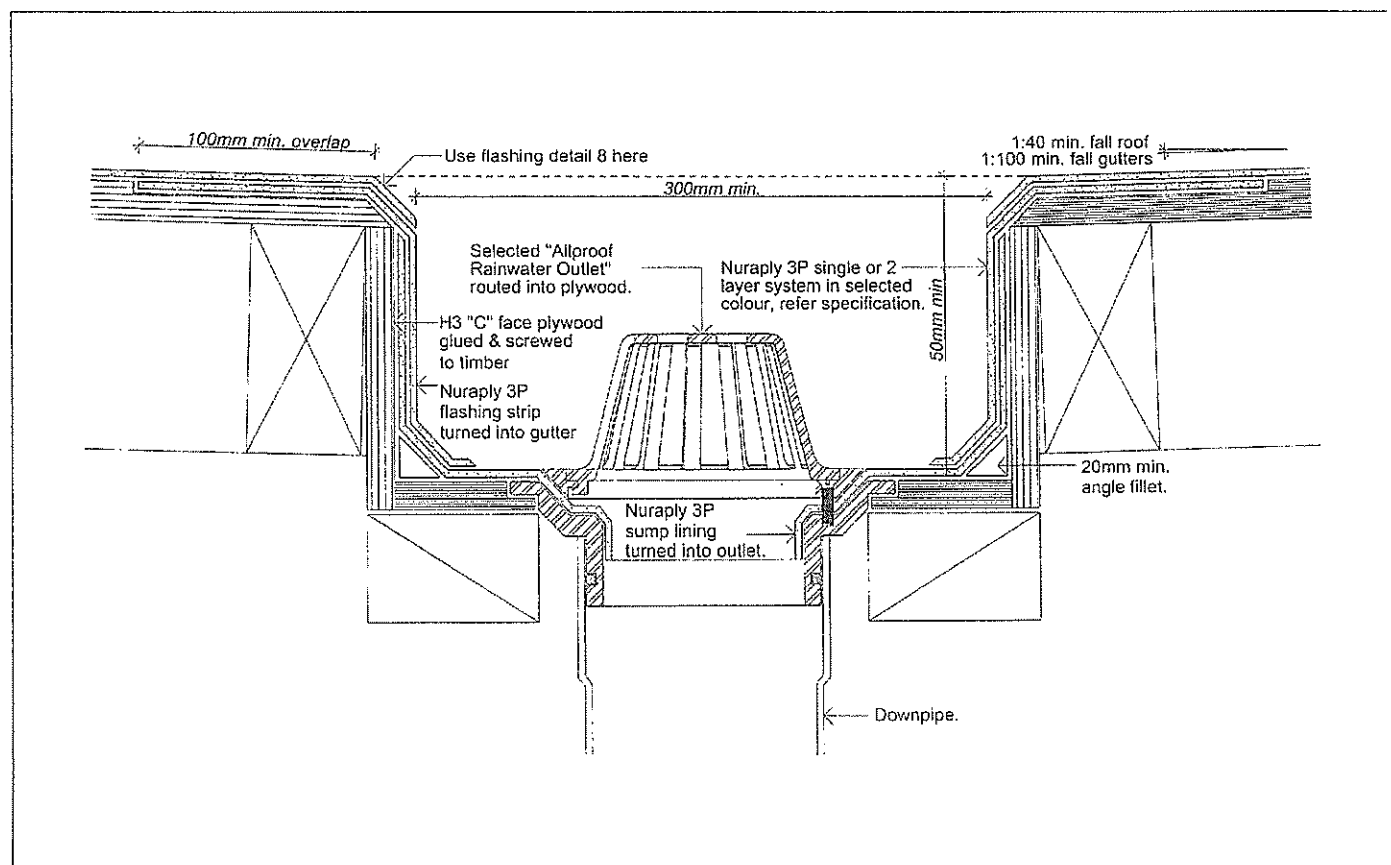
Box Gutters - Nuraply 3P Box Gutter with Metal Roof and Parapet



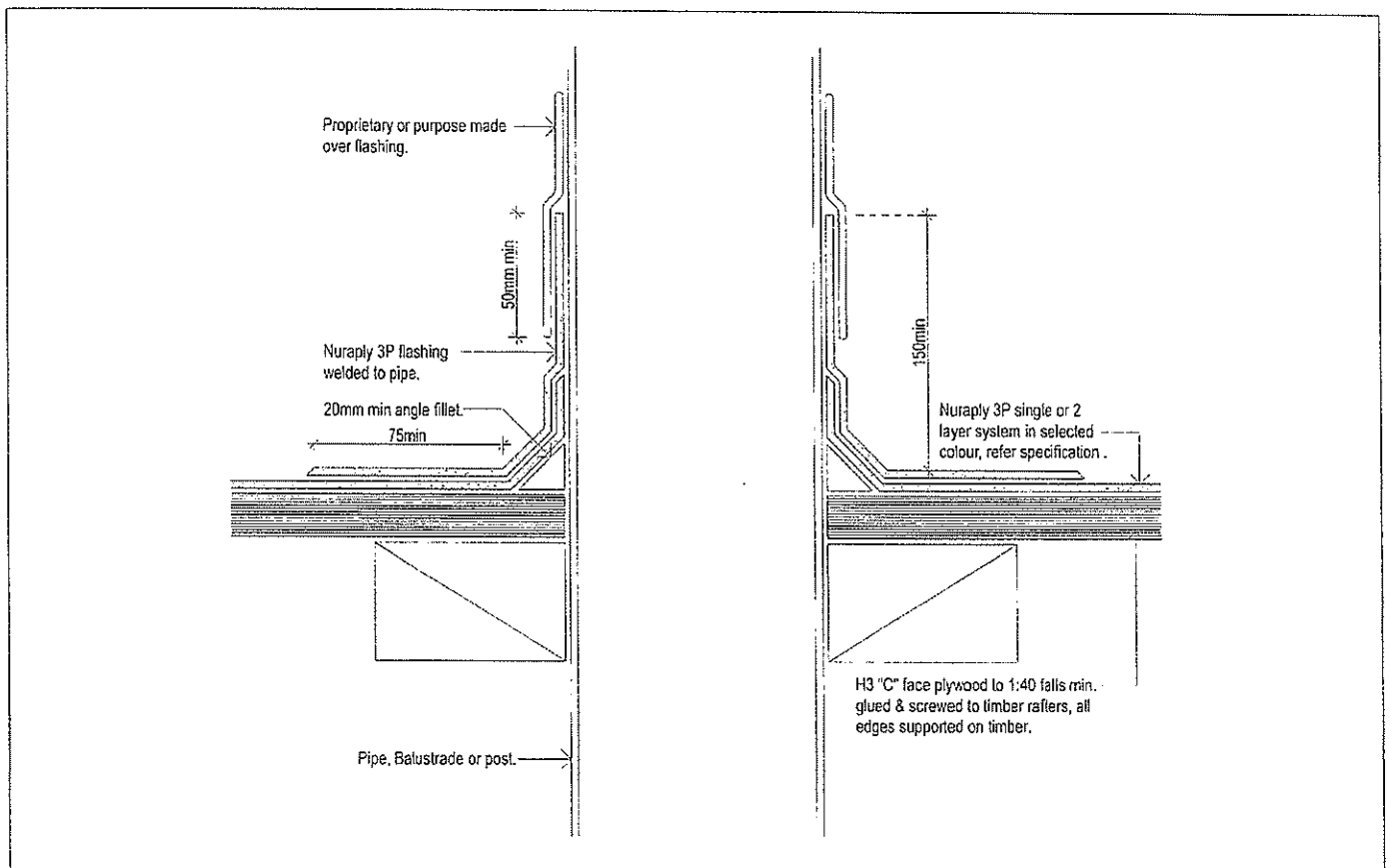
Sump Outlets - Nuraply 3P Large Allproof Rainwater Outlet Detail



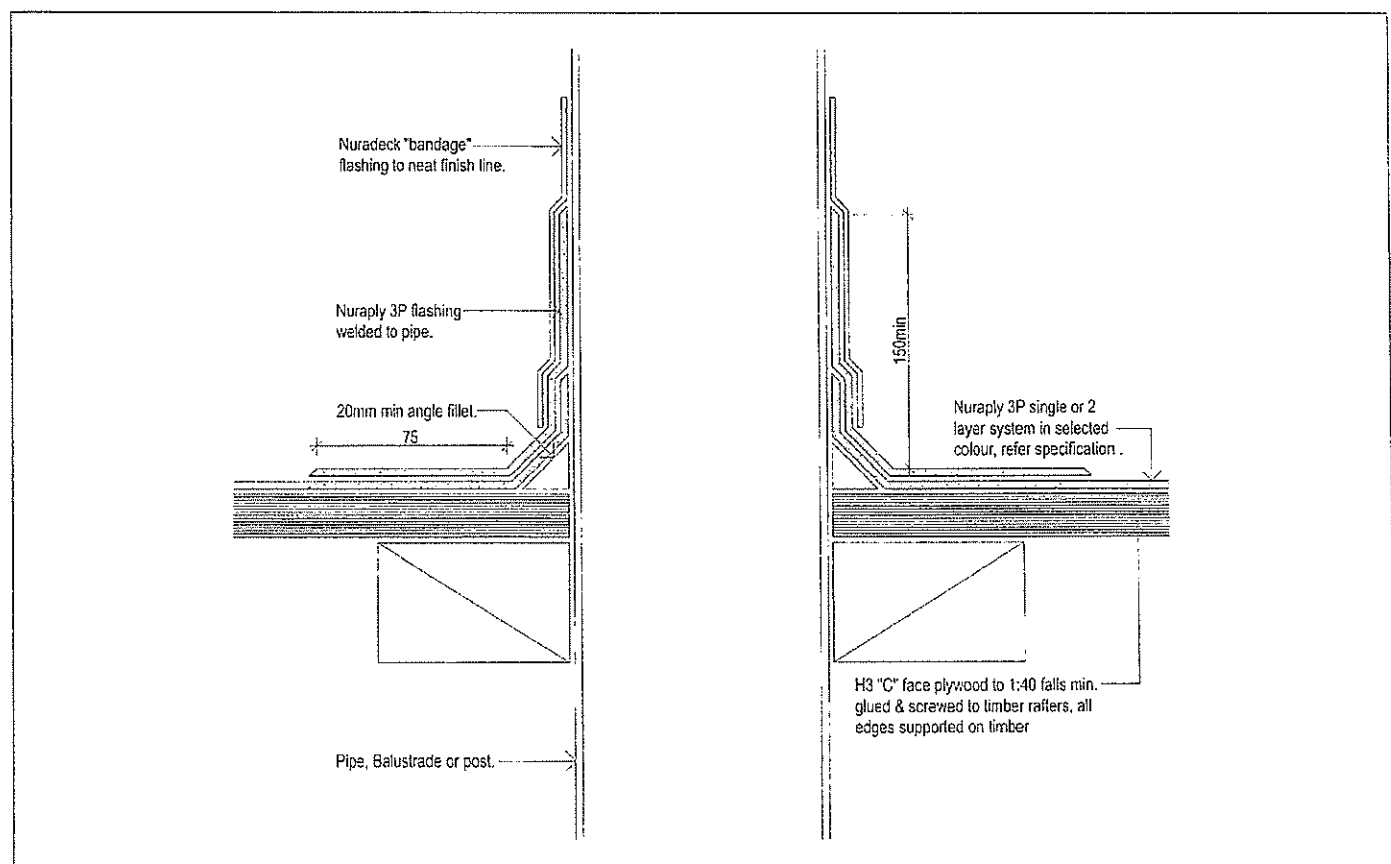
Sump Outlets - Nuraply 3P Square Sump Outlet



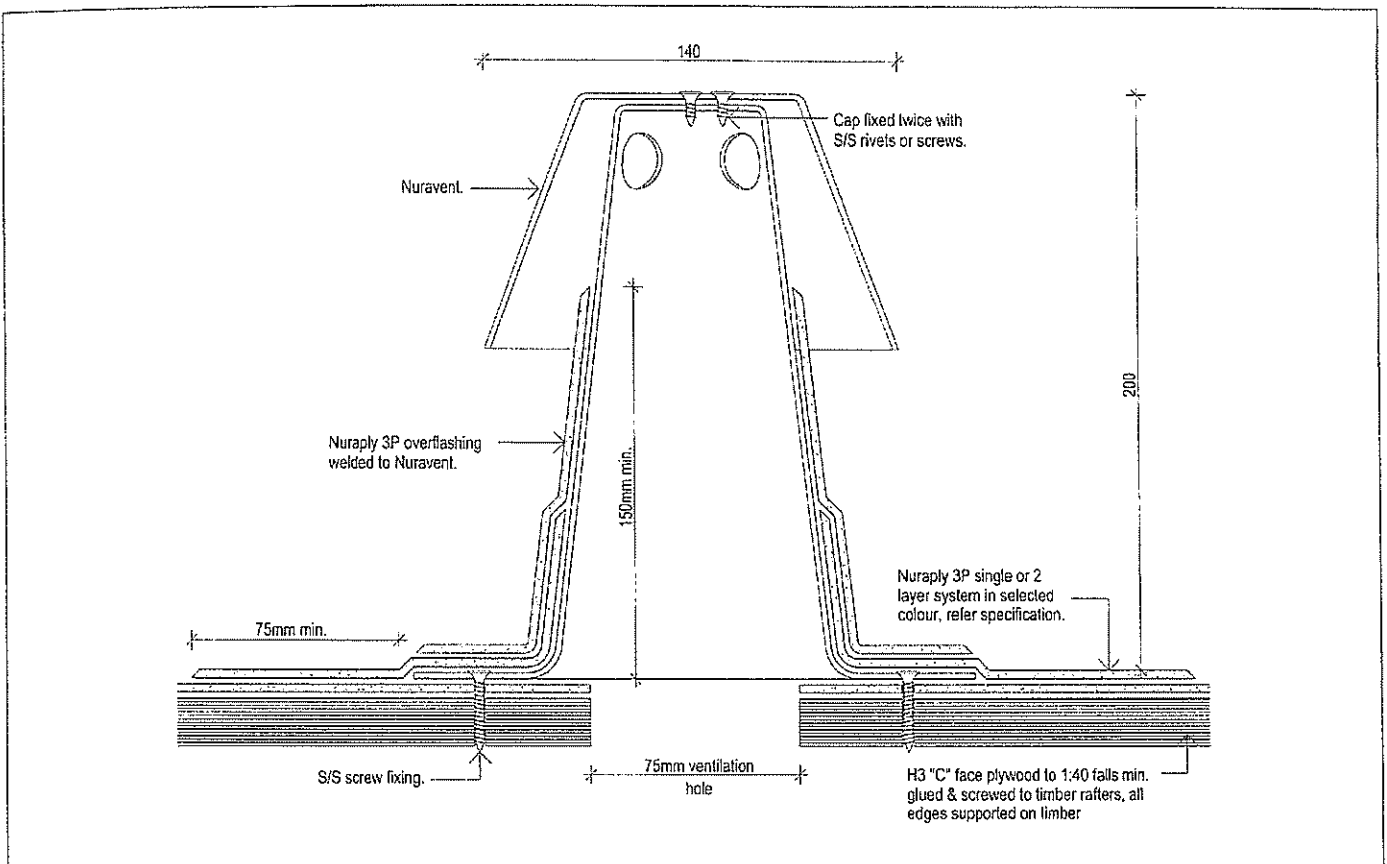
Sump Outlets - Nuraply 3P Pipe, Balustrade or Post Termination with Integral Flashing



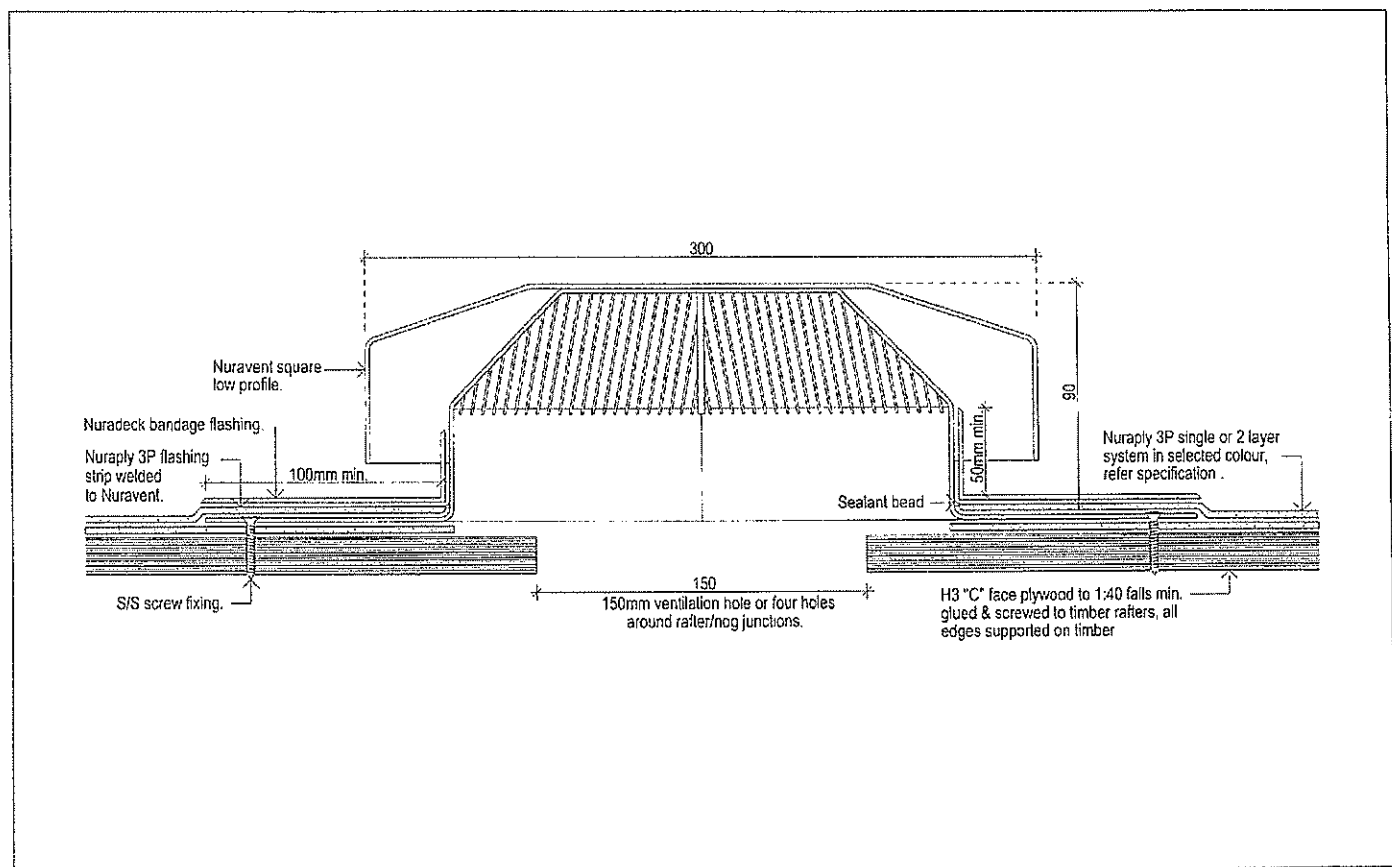
Sump Outlets - Nuraply 3P Pipe, Balustrade or Post Termination with Nuradeck "Bandage" Flashing



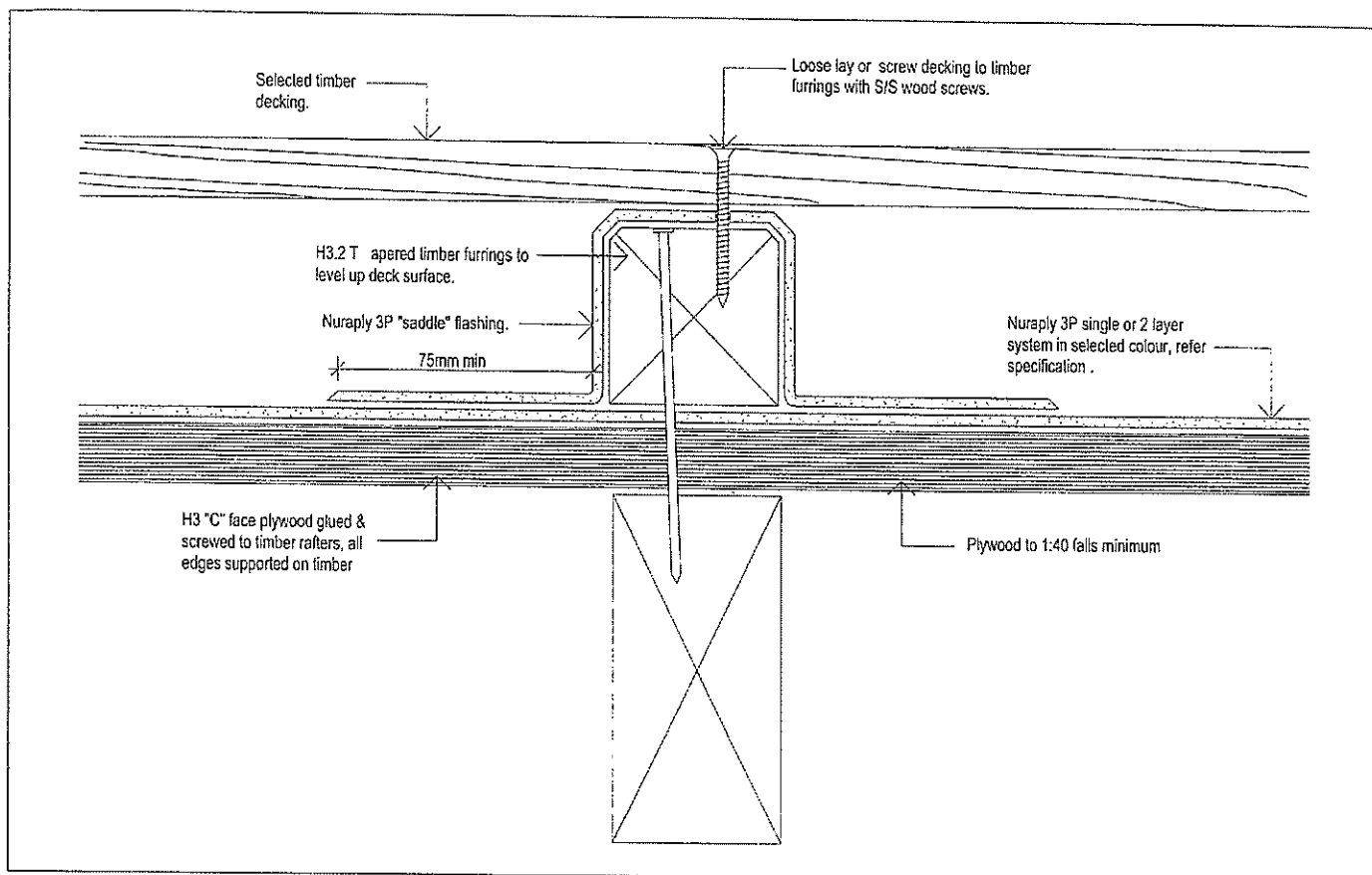
Penetrations - Round Nuravent / Nuraply 3P Flashing Detail



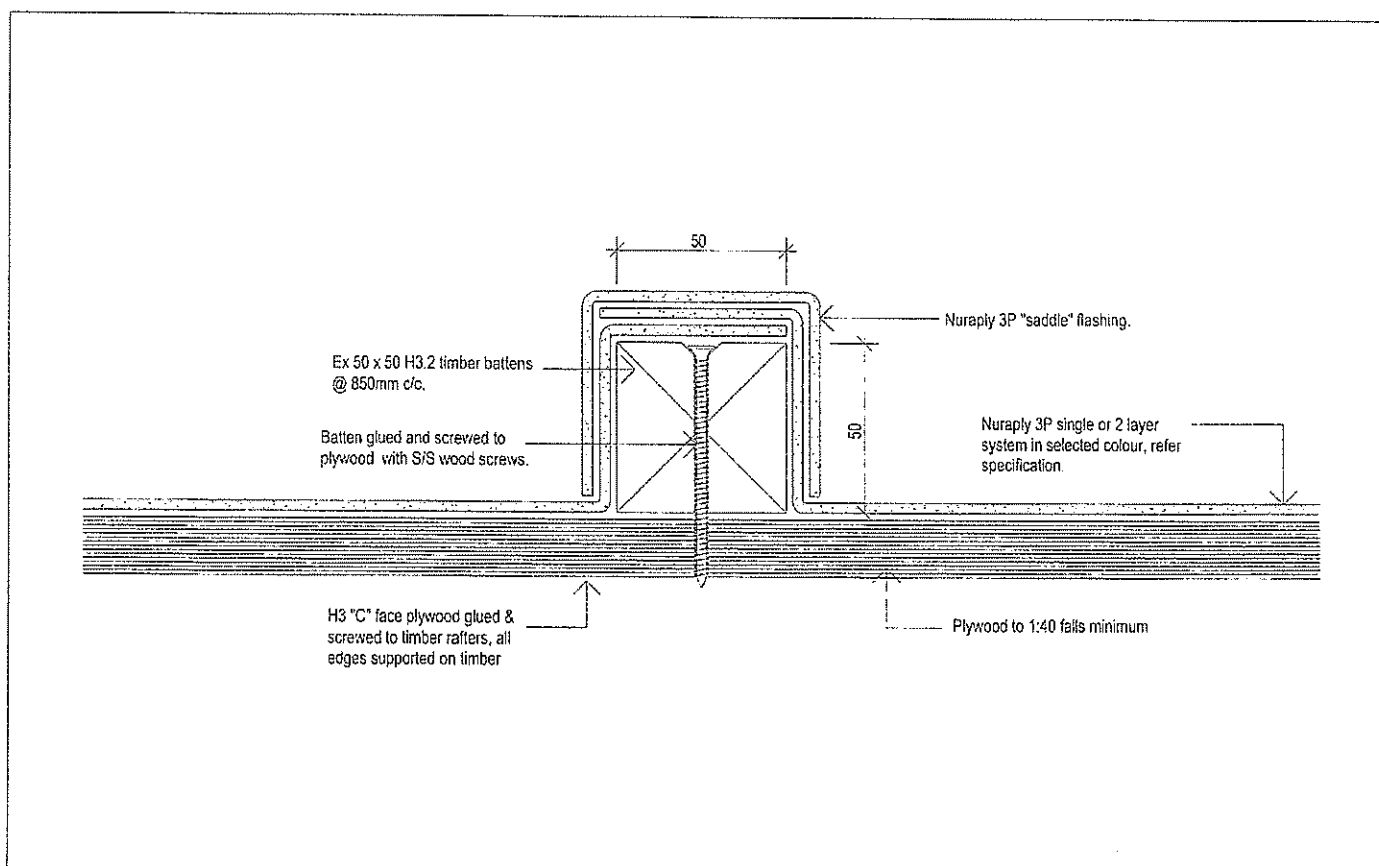
Nuravent - Square Low Profile Nuravent / Nuraply 3P Flashing Detail



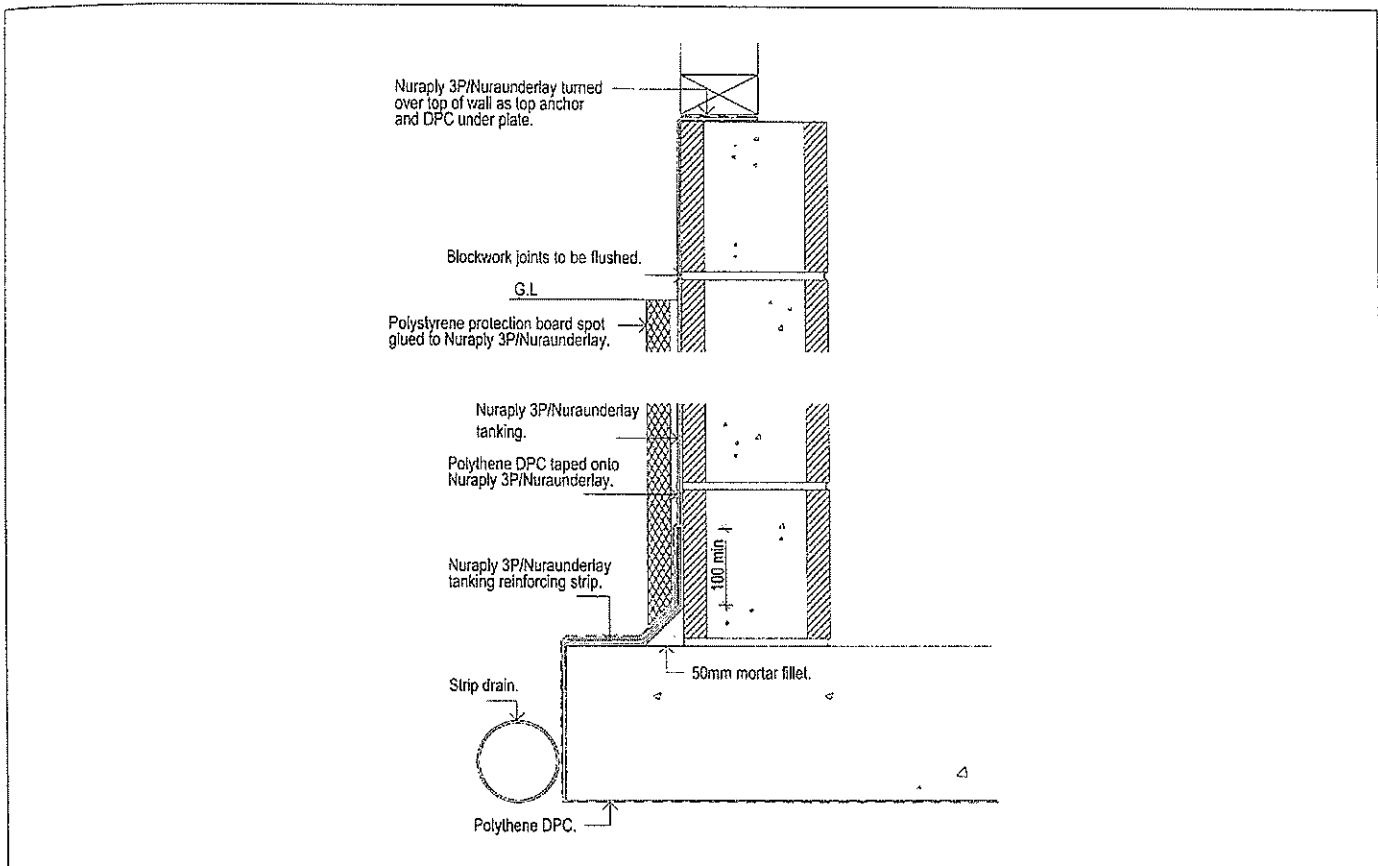
Decking Details - Nuraply 3P / Timber Deck Detail



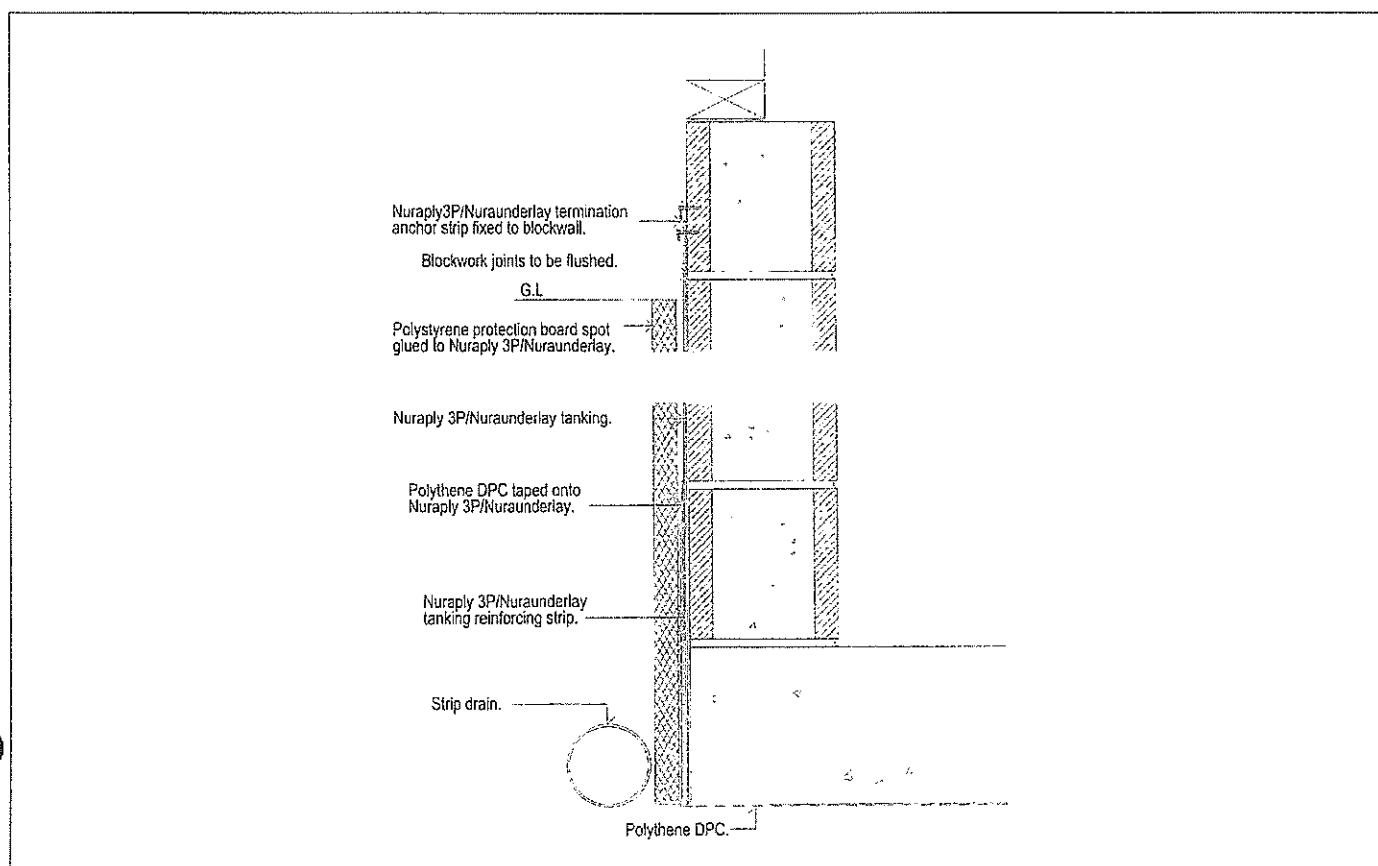
Roof Details - Nuraply 3P / Batten Roof Detail

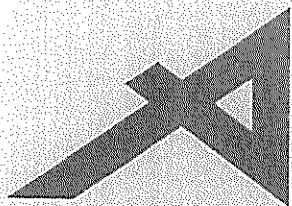


Nuraunderlay or Nuraseal Basement Tanking



Nuraunderlay or Nuraseal Basement Tanking





BRANZ Appraised
Appraisal No.663 [2009]

BRANZ Appraisals

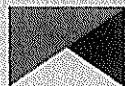
**Technical Assessments of products
for building and construction**

**BRANZ
APPRAISAL
No. 663 (2009)**

**HERMPAC
BEVELBACK
WEATHERBOARD
CAVITY SYSTEM**

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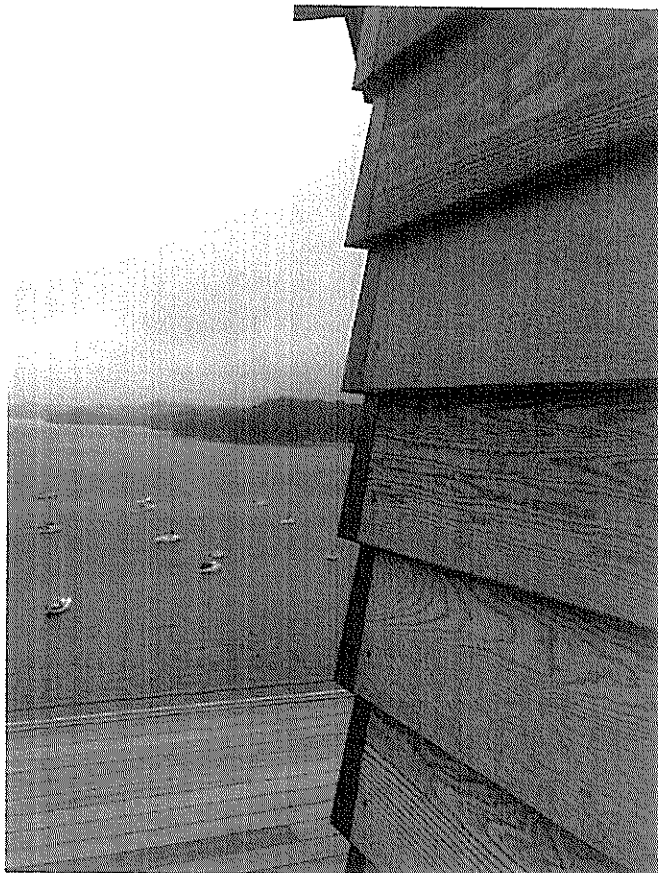
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1.1 The Herpac Bevelback Weatherboard Cavity System is a cavity-based cedar weatherboard external wall cladding system for residential and light commercial type buildings where domestic construction techniques are used.

1.2 The system consists of horizontally fixed Herman Pacific Limited bevelback and rebated bevelback cedar timber weatherboards, cavity battens, flashings and accessories and is finished with a premium penetrating oil stain to Herman Pacific Ltd 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 an 18 mm drained cavity.



2.1 The Herpac Bevelback Weatherboard Cavity System has been appraised as an external horizontally fixed 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 Building Wind Zones up to, and including 'Very High'.

2.2 The Herpac Bevelback Weatherboard Cavity System has also been appraised for weathertightness and structural wind loading when used for timber framed buildings subject to specific design up to a design differential ultimate limit state (ULS) wind pressure of 2.5 kPa.

2.3 The Herpac Bevelback Weatherboard Cavity System must only be installed horizontally on vertical, flat surfaces.

2.4 The Herpac Bevelback 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 Herpac Bevelback Weatherboard Cavity System relies on the joinery meeting the requirements of NZS 4211 for the relevant Building Wind Zone or wind pressure.)*

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Hermpac Bevelback 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. The Hermpac Bevelback Weatherboard Cavity System meets the requirement for loads arising from self-weight, wind, impact and creep [i.e. B1.3.3 (a), (h), (j) and (q)]. See Paragraphs 9.1 – 9.3.

Clause B2 DURABILITY: Performance B2.3.1(b), 15 years and B2.3.2. The Hermpac Bevelback Weatherboard Cavity System meets these requirements. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Hermpac Bevelback Weatherboard Cavity System meets this requirement. See Paragraphs 14.1 -14.5.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Hermpac Bevelback Weatherboard Cavity System meets 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.

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

Hermpac Bevelback Weatherboards

- Hermpac bevelback and rebated bevelback weatherboards are manufactured from Canadian Coastal Western Red Cedar (*Thuja plicata*) and Canadian Coastal Yellow Cedar (*Chamaecyparis nootkatensis*).
- 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 1.83 to 4.88 m lengths. Lengths outside of the general specification may be available by special contract. The weatherboards are supplied unfinished for site finishing, or prefinished using the flood coat or spraycoat application method by Machinecoat NZ Limited. The following Herman Pacific bevelback weatherboard profiles are covered by this Appraisal:
 - HP61 and HP62 (bevelback standard profiles)
 - HP63 and HP64 (rebated bevelback standard profiles)
 - CP325 and CP486 (bevelback custom profiles)

Note: This Appraisal is only valid when weatherboards with profiles as listed above are supplied by Herman Pacific Limited.

Accessories

- Hermpac 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.
- Hermpac eaves moulding – 40 x 27 mm bevelled profile, supplied in 1.8 m and longer.
- Hermpac scribes – 10 mm wide x 40 mm, 17 mm wide x 40 and 60 mm pre-cut scribes with arised edges supplied in 1.83 to 6.1 m lengths.

(Note: All timber accessories are manufactured from Canadian Coastal Western Red Cedar.)

- Hermpac weatherboard fixings – silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Hermpac 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.
- Hermpac clinch nails – 40 x 2.0 mm Grade 316 stainless steel annular grooved nails with an off-set flat head.
- Hermpac cover board fixings – 50 x 2.8 mm silicon bronze, Grade 304 or Grade 316 stainless steel annular grooved Hermpac Crown Head, Rose Head or Flat Head nails.
- Hermpac scribe fixings – 60 x 2.8 mm stainless steel ring shank jolt head nails.
- Hermpac corner soakers – 90° soakers available in copper, stainless steel and powder coated Zincalume.

4.2 Accessories used with the Hermpac Bevelback Weatherboard Cavity System which are supplied by the building contractor are:

- Building wrap – building paper or wrap complying with NZBC Acceptable Solution E2/AS1 Table 23, or breather-type membranes covered by a valid BRANZ Appraisal for use as wall wraps.
- Building wrap support – polypropylene strap, 75 mm galvanised mesh, galvanised wire, or additional vertical battens for securing the building wrap in place and preventing bulging of the bulk insulation into the drainage cavity. (Note: mesh and wire galvanising must comply with AS/NZS 4534.)
- 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.
- Cavity battens – Cavibat polypropylene cavity battens as covered by BRANZ Appraisal No. 524 (2007) or nominal 50 mm wide by 25 mm thick (minimum finished size of 45 mm wide by 18 mm thick) timber treated to Hazard Class H3.1.
- Timber cavity batten fixings – 40 x 2.8 mm hot-dip galvanised flat head nails.
- 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

4.3 Prior to installation, the back, face, ends and edges of the Hermpac bevelback 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 bevelback 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 applied. 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 WoodX, Resene, Dulux and Dryden's.)

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 bevelback 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.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Hermpac Bevelback 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.

Framing

Timber Treatment

7.1 Timber wall framing behind the Hermpac Bevelback Weatherboard Cavity System must be treated as required by NZS 3602.

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. 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 Bevelback 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 bevelback cedar 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 Bevelback 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: Cavibat cavity battens do not provide vermin proofing to the bottom of the drained cavity.)

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 Hermpac Bevelback 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 9.1.3.6.

8.5 All buildings must have barriers to airflow in the form of interior linings with all joints stopped, or alternatively, unlined gables and walls must incorporate a rigid sheathing or an air barrier which meets the requirements of NZBC Acceptable System E2/AS1, Table 23. Where rigid sheathings are used, the weatherboard fixing lengths must be increased by a minimum of the thickness of the sheathing.

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 junctions must be constructed in accordance with the Technical Literature. Inter-storey joints must be provided for walls over 2-storeys in height in accordance with the requirements of NZBC Acceptable System E2/AS1, Paragraph 9.1.9.4(b).

Structure

Mass

9.1 The mass of the Hermpac Bevelback Weatherboard Cavity System is approximately 12 kg/m² at equilibrium moisture content. The system is therefore considered a lightweight cladding in terms of NZS 3604.

Impact Resistance

9.2 The Hermpac Bevelback 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 Hermpac Bevelback Weatherboard Cavity System is suitable for use in all Building Wind Zones of NZS 3604, up to and including 'Very 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.

Durability

Serviceable Life

10.1 Hermpac Bevelback 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 bevelback weatherboards are continuously protected by a stain finish.

(Note: 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.)

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 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 re-staining, care must be taken to ensure bottom edges and bevelback edges are well covered and penetrated with the stain.

11.4 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 coatings, flashings or the weatherboards must be repaired in accordance with the relevant manufacturer's instructions.

11.5 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. *(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 Bevelback Weatherboard Cavity System.)*

Control of External Fire Spread

12.1 The Hermpac Bevelback Weatherboard Cavity System is considered to meet the performance provisions of NZBC C3.3.5 for use as an external wall cladding system when restricted to:

- Single storey buildings 1 m or more from the boundary for all purpose groups.

- Buildings up to 7 m high, 1 m or more from the boundary, for all purpose groups other than SC and SD.
- Fully sprinklered buildings up to 10 m high, 1 m or more from the boundary for all purpose groups other than SC, SD, SA and SR.
- Buildings containing purpose group SH, with a building height less than 10 m and located 1 m or more from the boundary.

(Note: The scope of this Appraisal limits building heights to 10 m in accordance with the limitations of NZBC Acceptable System E2/AS1, Paragraph 1.1(a). The building heights referenced in Paragraph 12.1 above are as defined in the Definitions Section of the Fire Safety Clauses of the NZBC.)

Outbreak of Fire

13.1 The Hermpac Bevelback Weatherboard Cavity System must be separated from chimneys and flues in accordance with the requirements of Acceptable Solution C/AS1 Part 9, for the protection of combustible materials.

External Moisture

14.1 The Hermpac Bevelback 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 Bevelback 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 Bevelback 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

Water Vapour

15.1 The Hermpac Bevelback 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 Skill Level Requirements

16.1 Installation and finishing of the Hermpac Bevelback Weatherboard Cavity System must be completed by competent, experienced tradespersons with an understanding of cavity installation and bevelback weatherboard installation, in accordance with instructions given within the Hermpac Bevelback Weatherboard Cavity System Technical Literature and this Appraisal.

Hermpac Bevelback Weatherboard Cavity System Installation

Building Wrap and Flexible Sill and Jamb Tape Installation

17.1 The selected building wrap and flexible sill and jamb tape system must be installed by the building contractor in accordance with the wrap and tape manufacturer's instructions prior to the installation of the cavity battens and the rest of the Hermpac Bevelback Weatherboard Cavity System. Building wrap must be installed horizontally and be continuous around corners. The wrap must be lapped 100 mm minimum at horizontal joints and 150 mm minimum over studs at vertical joints. Particular attention must be paid to the installation of the building wrap 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.

Cavity Batten Installation

17.2 Cavity battens must be installed over the building wrap to the wall framing at maximum 600 mm centres where the studs are at 600 mm centres, or at 400 mm centres when studs are at 400 mm centres. Cavibat 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 (2007) for further information. Timber cavity battens must be fixed in place with 40 x 2.8 mm hot-dip galvanised flat-head nails at maximum 800 mm centres.

17.3 Where studs are at greater than 400 mm centres, a building wrap support must be installed over the building wrap between the cavity battens at maximum 300 mm centres.

Hermpac Bevelback Weatherboard Cavity System Installation

17.4 Hermpac bevelback weatherboards may be cut on site by power or hand saw. Holes and cut-outs may be formed by using a hole saw.

17.5 Hermpac bevelback weatherboards must not be wet prior to installation. Prior to installation, the back face and edges of the Hermpac bevelback weatherboards 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.

17.6 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.

17.7 The first course of weatherboards must be full length, i.e. 4.88 m and commence from an external corner. The first weatherboard must be installed level to assist with the installation of subsequent weatherboards. The weatherboards must overhang the bottom plate by a minimum of 50 mm.

17.8 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.

17.9 Hermpac bevelback weatherboards must be overlapped a minimum of 32 mm. Hermpac rebated bevelback weatherboards must be overlapped a minimum of 25 mm with an expansion gap of 2 mm at the overlap.

17.10 Hermpac bevelback 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 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. The nail shank must be minimum 3.15 mm diameter and the length must allow minimum 30 mm penetration of the wall frame. The fixing must be located 35-40 mm above the bottom of the weatherboard and a minimum

of 32 mm from the end of the board and must finish flush onto the surface of the weatherboard, not into or below the surface.

17.11 Fix weatherboards in full lengths where possible. Where joints are unavoidable, scarf the weatherboard at 45° over a cavity batten and fix with one fixing through the overlapping board.

Aluminium Joinery Installation

17.12 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.

17.13 After installing the window and door joinery, Hermpac scribes must be installed in accordance with the Technical Literature to provide additional weatherproofing for the joinery/weatherboard junction.

Finishing

17.14 The stain manufacturer's instructions must be followed at all times for application of the stain finish.

Inspection

17.15 The Technical Literature must be referred to during the inspection of Hermpac Bevelback Weatherboard Cavity System installations.

Health and Safety

18.1 Cutting of Hermpac bevelback 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 Bevelback Weatherboard Cavity System are provided in the relevant manufacturer's Technical Literature.

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 Hermpac Bevelback Weatherboard Cavity System was based on testing and evaluation of all details within the scope and as stated within this Appraisal. The Hermpac Bevelback Weatherboard Cavity System was tested to NZBC E2/VM1. The testing assessed the performance of the 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. Hermpac rebated bevelback weatherboards have the same lap configuration as Hermpac rusticated weatherboards. The Hermpac Rusticated Weatherboard Cavity System has been tested to NZBC E2/VM1. In addition to the weathertightness tests, 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 cedar 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 Bevelback Weatherboard Cavity System has been examined by BRANZ and found to be satisfactory.

Quality

21.1 The manufacture of Hermpac bevelback 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.

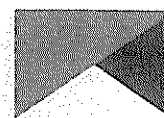
21.3 Quality of installation on site of components and accessories supplied by Herman Pacific Limited and the building contractor is the responsibility of the installer.

21.4 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and joinery, building wraps, flashing tapes, airseals, cavity battens and the Hermpac Bevelback Weatherboard Cavity System in accordance with the instructions of Herman Pacific Limited.

21.5 Building owners are responsible for the maintenance of the Hermpac Bevelback 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 3604:1999 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.
- 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 Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992, up to, and including August 2008 Amendment.



BRANZ

In the opinion of BRANZ, Hermpac Bevelback 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.
3. 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.
4. 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.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Herman Pacific Limited or any third party.

For BRANZ

P Burghout
Chief Executive

Date of issue: 18 September 2009

HERMAN PACIFIC LIMITED

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FINGER JOINTED/EDGE GLUED CEDAR CLADDING

On going customer requests for a superior, paint quality timber weatherboard have lead to the introduction of Herman Pacific's select range of Finger-Joint and/or Edge-Glued Finger-Joint cladding profiles in Western Red Cedar.

A popular resurgence in the use of traditional timber cladding, proven for its design and aesthetic values, reliability and ease of installation is complemented by the natural durability and stability benefits offered by Western Red Cedar.

Product features include . . .

- *Pre-sanding of the flat, visible face prior to coating - for improved finish and coating adhesion*
- *Profiles with a single, envelope coat of Oil based Primer*
- *Profiles with an initial envelope coat of Oil based Primer overlaid with a secondary finish of Oil based Under-coat*
- *Improved design for rebated bevel back profiles (HP150, 151 and 152)*
- *Selected for Vertical Grain orientation*

Plus all of the natural, proven benefits of Western Red Cedar to boot . . .

- *Lightweight*
- *Naturally decay resistant*
- *Stable*
- *Suitable for darker finishes (i.e. Resene 'Cool Colours')*
- *Easy to cut, drill, nail and finish*
- *Construction details available on-line at www.hermpac.co.nz*



The HP 150 Rebated Bevel Back series (150, 151 & 152) is a classic, horizontal Weatherboard style, providing strong shadow lines and increased stability with maximised board covers for economy and value.

With an average random length generally greater than five metres these light weight, naturally durable boards are largely quarter sawn for stability, consistent grain structure and a smoother sanded surface finish prior to coating.

Says Architectural Specifications Manager, Kyle Deans . . . "We have been surprised to see demand for the twice coated (pre-primed and undercoated) option surpassing that of the single pre-primed. I guess this highlights the growing market realisation that high quality, factory pre-finished products add excellent economy and time value to the construction process."

Herman Pacific has accessorised the product range with specifically designed, powder coated corner and flat soakers to suit the HP Bevel Back Profiles.

** Envelope Coat – refers to coating of back, front and edge surfaces of each profile. Manual sealing of all ends and fresh cut surfaces is required on site prior to fixing.*

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DATA SHEET

Alaska Yellow Cedar

Chamaecyparis nootkatensis

Family: Cupressaceae

The word *chamaecyparis* is derived from the Greek *chamai* (dwarf) and *kuparissos* (cypress). The name *nootkatensis* relates to Nootka Sound, on Vancouver Island B.C. where it was discovered.

Chamaecyparis nootkatensis – Alaska cedar, Alaska cypress, Pacific Coast yellow cedar.

Distribution: The coastal forests from south western Alaska through British Columbia to northern California.

The Tree: Yellow Cedars grow to heights of 36m, with a diameter of 1m. Forest grown trees may have a clear bole of 18m.

The Wood:

General Characteristics: The sapwood is narrow and slightly lighter than the bright, clear yellow heartwood. It has a slight odor best described as “raw potatoes”. The wood is moderately heavy, soft, fine texture, straight grained, easily worked and decay resistant in above ground applications. It is rated as moderate in strength, stiffness, hardness and shock resistance.

Drying and Shrinkage:

Type of Shrinkage	Average Percentage of Shrinkage (green to final moisture content)		
	0% MC	6% MC	20% MC
Tangential	6.0	4.8	2.0
Radial	2.8	2.2	0.9
Volumetric	9.2	7.4	3.1

Working Properties: The timber of Alaska Yellow Cedar is readily worked by both hand and machine tools. There is a slight dulling effect on cutting edges, but it usually finishes very well. In lumber with a wavy grain, there is a tendency for the grain to pick up in planing and moulding. It nails and glues well and holds paint, stains and varnishes satisfactorily.

Durability: Alaska Yellow Cedar is rated as resistant to very resistant to heartwood decay.

Uses: Used locally for joinery, weatherboards, panelling, interior trim, furniture, small boat hulls and canoe paddles. Used commercially for battery separators, bedding for heavy machinery, boat building, bridge and dock decking, carving, cooling towers, framing, furniture, heavy flooring, marine piling, moulding, musical instruments, toys, patterns, sash doors, stadium seats, utility poles, water and chemical tanks, and window boxes.



MACHINECOAT (NZ) LIMITED

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Machinecoat (NZ) Ltd – A Background

In 1992, after a series of enquiries for supply of pre-coated Hermpac timber products and after witnessing the handling, storage, drying, brush-lap and general quality problems of customers manually coating Hermpac timber profiles on building sites, the technical team at Herman Pacific were set the task of researching the potential options for a factory based coating system. The key goals were to provide the company's customers with a high quality, 'protective envelope' Oil Stain finish unattainable by hand, in a choice of traditional and contemporary colours, dried and packed ready for delivery when convenient for the customer . . . all within the bounds of a fair price.*

It wasn't an easy task, but in 1994 'Machinecoat (NZ) Ltd' was established and it's range of coating services were launched to a ready and waiting market. From outset, the concept has developed year on year as customer experience grew, 'designer' colours and coating types expanded in line with industry trends, customer needs and to keep in step with the burgeoning range of exciting, new, Custom Weatherboard, Fascia, Soffit and Wall Panelling profiles available.

Machinecoat (NZ) offers two distinct coating application methods.

Our premier application line, an engineered flood inundation, fibre saturation, pressure roller and brush application system, ensures consistent coating application for improved appearance and increased finish life, without unsightly lap marks or acclimatisation lines. The flood, pressure roller and stripping/spreading brush combination also guarantees effective coverage of the front, back and edge surfaces for increased stability and durability prior to racking. The manual 'board by board' racking process allows both coating and timber to 'open air' dry and stabilise naturally, in their own time, before packaging and despatch.

The secondary application line, a spray and finish brush combination backs up the flood application method for those coatings or timber products deemed unsuitable for flood application. The same 'board by board' and 'open air' racking procedure applies, prior to packaging and despatch.

** 'Protective Envelope' Coat – refers to coating of back, front and edge surfaces of each profile. Manual sealing of all ends and fresh cut surfaces is required on site prior to fixing.*

Incorporating **hermpac**

machinecoat

cedarone



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Sustainability Statement

Herman Pacific Ltd is committed to supplying not only legally sourced but genuinely sustainable specialty timber products to the New Zealand Market. We have developed our procurement strategies in line with this commitment as we continuously look to grow the range of products that fit with these ideals.

As a privately, wholly owned and operated New Zealand business Herman Pacific acknowledges the local contribution we can make to the global sustainability movement, the growing significance to New Zealanders of a sustainable environment and how their actions and decisions of 'Choice' impact their daily lives and the wider community as a whole.

Herman Pacific Limited Company Aims:

- (1) To be active in the sourcing and supply of legal and sustainable timbers for the New Zealand market
- (2) To be active in the promotion and specification of legal and sustainable timbers
- (3) To be recognised as New Zealand's foremost supplier of genuinely legal and sustainable specialty timbers

Quote; *"Without commercial supplies of legal and genuinely sustainable timbers we have no future"*

The Directorship, Herman Pacific Ltd - July 2001

For more information about Herman Pacific's range of sustainable timber products visit our website at [**www.hermpac.co.nz**](http://www.hermpac.co.nz)

Incorporating **hermpac**

machinecoat (NZ) LIMITED

cedarone

Durability of Timbers imported into New Zealand

Report by ENSIS Wood Processing
December 2005

With Compliments



For more information about Herman Pacific products and services please visit our website
www.herpac.co.nz

Overview

As New Zealand's leading importer of specialty timbers Herman Pacific is committed to providing information that is informative and useful to Architects and Designers. This includes information provided to us by Standards, BRANZ and other timber industry groups that we feel would be of use to the design community

The attached report was commissioned by the NZ Timber Importers Association Inc. The report by ENSIS Wood Processing in Rotorua indicates the durability and Potential end uses of imported Hardwoods into New Zealand. You may find this information useful when designing with timber imported into New Zealand.

Please take the time to read this report and do not hesitate to call us if you have any questions.

Yours sincerely,

Kyle Deans

Jonathan Rugg

Simon Langer

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 **HermanPacific**

 **machinecoat** LIMITED


sustainabletimbers

masterspec

Herman Pacific Species indicated in the attached report

  **Western Red Cedar**

  **Yellow Cedar**

  **Purpleheart**

  **White Oak**

  **Tasmanian Oak**

  **Victorian Ash**

  **Maple**

  **Red Oak**

  **Jarrah**

  **Greenheart**

  **Vitex**

 **Kwila**

Building Segments covered by the above species

- STRUCTURAL POSTS AND BEAMS
- EXTERIOR DECKING
- EXTERIOR CLADDING
- INTERIOR FLOORING
- INTERIOR PANELLING

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**DURABILITY AND POTENTIAL
END-USES OF SOME TIMBER
SPECIES IMPORTED INTO NEW
ZEALAND**

Dave Page and Mick Hedley

December 2005

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IMPORTED INTO NEW ZEALAND**

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DURABILITY AND POTENTIAL END-USES OF SOME TIMBER SPECIES IMPORTED INTO NEW ZEALAND

Dave Page and Mick Hedley

SUMMARY

The natural durability classification - a measure of resistance to fungal decay - is given for a number of timber species which are imported into New Zealand. The natural durability and other properties such as density have been obtained from nine reference works world wide. These properties determine potential for end use as building components as alternatives to preservative treated pine or naturally durable timbers already approved for use in NZS 3602:2003 Timber and Timber Products for Use in Buildings. Suitability for specified end uses has been obtained from various reference works and/or experience under New Zealand conditions.

NOTES TO THE TABLE

Common name:

This is the name as supplied by the NZ Timber Importers Association Inc.

Botanical name:

This is the botanical name, which has best alignment to the Common name. However, the common name may be attached to any one of a number of different species of the genus (and even to different genera). Some species with the same common name may have a range of natural durabilities. Where known, this range has been included in the table.

Durability rating:

Natural durability is based on the average life of timber stakes (usually 50 x 50 mm cross-section) exposed in the ground. Two rating systems are in use world wide, one based on 5 natural durability classes (used mainly in Europe) and one based on four (used in Australasia).

The relationship between these two systems is shown in Table 1

Table 1. Derivation of Natural Durability Classes

Durability grade (Europe)	Durability Class (Australia/ NZ)	Average life of 50 x 50 mm stakes (Europe)	Average life of 50 x 50 mm stakes (Australia/NZ)	Abbreviations used in table
5. Perishable	4	< 5 years	< 5 years	ND
4. Non-durable	3	5-10 years	5-15 years	MD
3. Moderately durable		10-15 years		
2. Durable	2	15-25 years	15-25 years	D
1. Very durable	1	>25 years	>25 years	VD

Where records have classed a species as "perishable" based on European test data, this has been recorded as "non-durable" in the table in line with the Australian and NZ rating system.

As a general rule of thumb, a durability rating in ground contact can be elevated to the next highest level if the species is used above ground, i.e. a Moderately Durable (Class 3 species) would be rated Durable (Class 2) above ground. However, Durability Class 4 species are unlikely to achieve a worthwhile service life in exposed, above ground situations. The sapwood of all species can be considered as Durability Class 4.

A rating for resistance to insect borer attack is not included in the table. Species rated Durability Class 3 and above are expected to be resistant to most borers. Durability Class 4 species, would be expected to be susceptible to insect attack. Many Durability Class 4 hardwoods are very susceptible to *Lyctus* (powder post beetle) attack.

Species with (M) in the Durability Class column indicates suitable for use in a marine environment.

External uses:

This part of the table is a compilation of recommended uses given in the various publications from which the durability data was obtained. These may be regarded as traditional uses, i.e. where their suitability has been demonstrated by long term experience. It is not exhaustive and deals mainly with building components. Some durable and very durable species are likely to be suitable for a wider range of exterior components than shown in the table, but there is no record of them having, to date, been so used. For example, macrocarpa would be suitable for a number of structural uses, such as pergolas, but there are currently no records sighted for structural usage.

Neither does the table preclude uses for other non-building components commodities, such as tool handles, cooperage etc.

- | | |
|--------------------|--|
| Structural: | Includes those species which have been "traditionally" used where stiffness, strength, nail holding etc are required attributes as well as long term durability. |
| Shingles: | Suitable for sawn or split shingles and shakes. Durability expectations for roofing shingles are 15-25 years. |
| Decking: | Does not include sub-floor structural use where there is a 50-year durability requirement. Most Durability Class 1 species would be suitable for that use. |
| Flooring: | Some species, such as American cherry, dark red meranti and nyatoh are usually used as overlays; designated (O) in the table. |
| Joinery: | Exterior doors and windows |
| Trim: | Any non-specific exterior trim |
| Sheathing: | Typically weatherboards |
| Reveals: | Window reveals |

**Interior use
only:**

Only suitable for interior exposures if used without any preservative treatment. Some species listed may be susceptible to insect attack. Species which can be used outside are obviously also suitable for interior uses.

If species can be preservative treated to requirements of H3.1 or H3.2, (Treatability Class 1 and, marginally, 2), then they would be suitable for exterior use after preservative treatment.

Treatability:

The sapwood of all species is amenable to boron diffusion treatment when treated in the green state.

Treatability in the table shows the relative permeability of sapwood and heartwood of all species to pressure treatment with waterborne preservatives. Some species are more readily pressure treated in a green rather than dried state. Very few of the species listed, are likely to be amenable to LOSP treatment to satisfy penetration and retention requirements of NZS 3640.

Treatability ratings are:

1. **Permeable.** Both sapwood and heartwood can be readily treated to meet requirements of NZS 3640
2. **Moderately resistant.** Treatment of sapwood and heartwood will rarely, consistently meet requirements of NZS 3640.
3. **Resistant.** Treatment is highly unlikely to meet requirements of NZS 3640 in either sapwood or heartwood.
4. **Very resistant.** Neither sapwood nor heartwood can be treated to any recognised standard.

N/A indicates no information is available on the treatability of sapwood and /or heartwood of this species.

Durability References.

1. World Woods in Colour. William A. Lincoln. Stobart & Sons, London, 1986 ISBN 0-85442-028-2.
2. Timbers of Fiji, Properties and Potential Uses. A.S Alston. Department of Forestry, Suva, 1982.
3. Properties and Uses of Papua and New Guinean Timbers. Director of Forests, Forest Products Research Centre, Division of Utilisation, Department of Forests, Hohola, Territory of Papua and New Guinea. 1970.
4. Wood in Australia - Types, Properties and Uses. Keith R. Bootle. McGraw-Hill Book Company, Sydney, 1983. ISBN 0-07-451047-9.
5. Naturally durable wood - is it a practical alternative to preservative treated pine? What's New in Forest Research No. 245. New Zealand Forest Research Institute, Rotorua 1997.

6. Imported Timbers in New Zealand. Stuart C. Scott. Government Printing Office, Wellington, 1987. ISBN 0-477-01391-0.

7. Building Timbers. Properties and recommendations for their use in Queensland. Technical Pamphlet No.1. WJ Smith, WT Kynaston, ML Cause and JG Grimmatt. Queensland Forest Service , Indooroopilly, 1991.

8. Tropical Timbers of the World. M.Chudnoff, 1984. USA Department of Agriculture. Forest Service, Forest Products Laboratory, Madison, Wisc.

9. AS 5604:2003. Timber- Natural durability ratings. Standards Australia, Sydney, 2003

NATURAL DURABILITY RATINGS AND POTENTIAL USES OF SOME TIMBERS IMPORTED INTO NEW ZEALAND													
Common Name	Botanical Name	Durability rating	Durability rating	Reference	Durability	Density	Exterior Structural	Exterior Shingles	Exterior Decking	Exterior Joinery	Exterior Trims	Exterior Sheathing	Ex/Int Reveal
					Class (NZ)	12%		Shakes					
Anigre	<i>Aningaia robusta</i> & others	ND	1		4	480-580							
Ash, American white	<i>Fraxinus americana</i> & others	ND	1		4	560-660							
Ash, Victorian	<i>Eucalyptus delegatensis</i> & others	ND	4,5,7,9		4	620-680							
Balau, yellow	<i>Shorea glauca</i> & others	D-VD	1,4,7,9		1-2	900-1100	Y		Y				
Bauvudi, Pencil cedar	<i>Palaequium fulgens</i> & others	ND	2,4,7		4	560-580							
Beech, European	<i>Fagus sylvatica</i>	ND	1		4	720							
Beech, red	<i>Nothofagus fusca</i>	D	5		2	560-700			Y				
Beech, silver	<i>Nothofagus menziesii</i>	MD	5,9		3-4	515-705			Y				
Belan	<i>Eucalyptus swainsonii</i>	VD	4,9		1(m)	1000	Y		Y				
Blackbutt	<i>Eucalyptus pilularis</i>	D	5,7,9		2-3	900A			Y				
Blackwood, Tasmanian	<i>Acacia melanoxylon</i>	MD	4,5,7,9		3	640-680							
Bubinga (African rosewood)	<i>Guibertia demoussii</i> & others	MD	1		3	800-860							
Calophyllum (Blitangor)	<i>Calophyllum pepuana</i> & others	MD-D	3,4,7		2-3	610							
Calophyllum (Dananu)	<i>Calophyllum villosum</i> & others	ND	2,7		4	640-720							
Cedar, Alaskan yellow	<i>Chamaecyparis nothkatisensis</i>	D	1,9		2	500		Y					
Cedar, red, South American	<i>Cedrela odorata</i> & others	MD	4,7		3	400-500			Y				
Cedar, western red	<i>Thuja plicata</i>	D	1,7,9		2	350	Y						
Cherry, American	<i>Prunus serotina</i>	MD	1		3-4	580							
Erina	<i>Ocoteleios sumatana</i>	ND	4		4	370							
Gmelina (White beech)	<i>Gmelina moluccana</i>	ND	3		3-4	500							
Greenheart	<i>Ocoteleios rostrata</i>	VD	1		1(m)	1030	Y		Y				
Gum, red	<i>Eucalyptus tereticornis, camaldulensis</i>	D	4,9		2	900-1050	Y		Y				
Gum, spotted	<i>Eucalyptus maculata</i>	MD-D	4,7,9		2-3	950			Y				
Gum, Sydney blue	<i>Eucalyptus saligna</i>	MD-D	5,7,9		2-3	880-950			Y				
Hemlock	<i>Tsuga heterophylla</i> (or others)	ND	1,7,9		4	500							
Hopoe, heavy	<i>Hopoe hianna</i> & others	D	3,9		2	1000			Y				
Hopoe, light	<i>Hopoe papuana</i> & others	D	3,9		2	700			Y				
Iroko	<i>Chlorophora excelsa</i>	D-VD	1,4		1(m)	640-660	Y		Y				
Ironbark	<i>Eucalyptus paniculata</i> & others	VD	1,4		1	11-1200	Y		Y				
Jarrah	<i>Eucalyptus marginata</i>	D	4,7		2	820			Y				
Jatoba	<i>Hymenaea courbaril, davisii</i>	MD	1		3	910			Y				
Kari	<i>Eucalyptus diversicolor</i>	MD	4,7,9		3	900			Y				
Kaudamu	<i>Myristica cinnamomea</i> & others	ND	2,7		4	580							
Kauri, Fijian	<i>Agathis villosum</i>	ND	2,7		4	540							
Kavala	<i>Endospermum macrophyllum</i>	ND	2,7		4	440							
Kempas	<i>Koompassia excelsa</i> & others	MD	4,9		3	850							
Kwila, Merbau	<i>Isia bijuga</i>	MD-D	1,7,9		1-2	850	Y		Y				
Macrocarpa	<i>Cupressus macrocarpa</i>	MD-D	1,5		3	485			Y				
Malas	<i>Homalium laetum</i>	MD	4,9		3	800			Y				
Maple, American hard	<i>Acer saccharum</i> & others	ND	1		4	720							
Massaranduba (Pacific jarrah)	<i>Manilkara bidentata</i>	VD	8		1	1100	Y		Y				
Matai (heart)	<i>Prumnopitys spicata</i>	MD	5,7		3	610							
Matal Pacific	<i>Podocarpus nivalis</i> & others	MD	3		3	510-570			Y				
Morant or lauan, Dark red	<i>Shorea glauca</i> & others	ND-MD	1,4,7,9		3-4	640-720							
Nyiah	<i>Palaequium & Pycnanthus</i>	ND-MD	1,4,9		3	600-700							

	Botanical name	Durability rating	Durability Reference	Durability Class (NZ)	Density	Exterior Structural	Exterior Shingles	Exterior Decking	Exterior Joinery	Exterior Trim	Exterior Sheathing	Exterior Reveal	Interior Roofing	Interior Only	Treatability
															S = sapwood H = heartwood
Oak, American white	<i>Quercus alba</i> & others	MO-D	1,9	2-3	760							Y	Y		S2 H4
Oak, European	<i>Quercus robur</i> & others	D	1,9	2	670-720			Y				Y	Y		S1 H4
Oak, silky	<i>Cardwellia sublimis</i> & others	ND	4,9	3-4	550-620							Y	Y	Y	S1 H4
Oak, Tasmanian	<i>Eucalyptus obliqua</i> & others	ND-MD	4,7	3-4	510-780			Y				Y	Y	Y	S1 H4
Podak	<i>Pterocarpus macrocarpus</i> & others	D	4	1-2	850							Y	Y		S/N/A H4
Pine Brown	<i>Podocarpus elatus</i> & others	ND	7	4	600									Y	S/N/A H4
Pine, Baltic	<i>Pinus sylvestris</i>	ND	1,9	4	510									Y	S1 H3
Pine, Black	<i>Podocarpus nianus</i> & <i>nerifolius</i>	ND	3,7,9	4	500									Y	S2 H4
Purpleheart	<i>Peltogyne pubescens</i> & others	VD	1	1	800-1000	Y		Y	Y	Y	Y	Y	Y		S1 H4
Rhin(heart)	<i>Decrydium cupressinum</i>	MD	5,7	3	555				Y	Y	Y	Y	Y		S2 H4
Roanwa	<i>Gmelina villosa</i>	ND	2	3-4	640							Y	Y		S/N/A H4
Rosewood PNG	<i>Pterocarpus indicus</i>	DVD	3,4,9	1-2	650				Y			Y	Y		S/N/A H4
Salu salu, Dakota salu salu	<i>Decussocarpus villosus</i>	MD	2,7	4	440			Y	Y			Y	Y	Y	S/N/A H N/A
Sapale	<i>Elaeagnus cylindrica</i>	MD	4	3	560-880				Y			Y	Y		S1-2 H4
Spruce, Baltic	<i>Picea & Abies spp</i>	ND	1,9	4	470									Y	S3 H4
Succupira	<i>Bonolichia nuda</i> (& others)	VD	1	1	1000	Y		Y	Y			Y	Y		S2-3 H3-4
Suriani, Kalantas, Island cedar	<i>Toona calantae</i>	MD-D	4,7,9	2-3	448				Y			Y			S/N/A H6
Tallowood	<i>Eucalyptus microcarpa</i>	VD	4,9	1	990	Y		Y	Y			Y	Y		S/N/A H4
Tataluba	<i>Begonia guianensis</i> & others	D	1	1-2	800	Y		Y	Y			Y	Y		S/N/A H N/A
Tauu	<i>Pometia pinnale</i> & others	MD	4,7,9	3	580-850			Y	Y			Y	Y		S/N/A H4
Toak	<i>Trochena grandis</i>	D	4,7,9	2	550-670	Y		Y	Y	Y		Y	Y		S/N/A H4
Toiara	<i>Podocarpus toiara</i>	VD	5	1	480	Y	Y	Y	Y	Y		Y	Y		S2-3 H4
Vitex	<i>Vitex colassus</i> & others	D	3,7	2	700	Y		Y				Y	Y		S2-3 H4
Walnut, American black	<i>Juglans nigra</i>	VD	1	2	640							Y	Y		S1-2 H3
Wenge	<i>Millettia lauranti</i>	D	1	2	890			Y	Y			Y	Y		S4 H4
Yaka	<i>Decrydium elatum</i>	D	2	3	620							Y	Y		S2-3 H4

REFINISHING WESTERN RED CEDAR SIDING - PAINTS & SOLID-COLOR STAINS

By William C. Feist.

Paints and solid-color stains are popular outdoor finishes for Western Red Cedar (call it “cedar” for short). These coatings usually need to be refinished when the surface deteriorates from sunlight and water. However, too frequent a refinishing can sometimes lead to a coating buildup and subsequent cracking and peeling, or other failure problems. Cracking and peeling can also occur from using low quality finishes; from poor surface preparation; and from poor application procedures. Under normal conditions, paints and solid-color stains deteriorate first by becoming discolored by dirt and mildew. The finish then gradually chalks and erodes away leading to a need for refinishing. In some cases, a dirty paint or solid-color stain coat can simply be freshened by washing with a mild detergent and water and refinishing postponed.

Some Cedar Problems That May Require Refinishing or Cleaning

Mildew is probably the most common cause of the discoloration of house paints and solid-color stains. Mildew grows on the coating surface and does not normally degrade the wood as do wood-rotting fungi. A simple test for the presence of mildew on the coating can be made by applying a drop or two of a fresh solution of liquid household bleach (containing 5 percent sodium hypochlorite) to the stained area. The dark color of mildew will usually bleach out in 15 to 30 seconds. Discoloration that does not bleach out is probably dirt.

The oil-based (also called alkyd) paints and solid-color stains have more tendency to grow mildew than latex finishes because the resins and oils in these finishes are food sources for the mildew organisms. Mildew grows more readily on exterior flat house paint than on satin, semigloss, or gloss enamel. Mildew growth can be minimized by using topcoats of acrylic latex paints containing a mildewcide over a primer coat that also contains a mildewcide.

Discoloration from water-soluble extractives can occur on the heartwood of cedar. The extractives give cedar its attractive color, good stability, and natural decay resistance, but they can also discolor latex paints and latex solid-color stains. Some flat (low lustre) oil-based finishes are porous and are also susceptible to extractive staining.

Peeling and cracking are often caused by cedar becoming wet and then drying putting stress on the finish. Brittle paints and solid-color stains are more likely to have peeling and cracking problems than are the more flexible finishes like those based on acrylic latex resins. Many finish failure problems could be avoided by using one coat of primer paint to the back (sometimes called back priming), edges and ends of siding boards before the cedar was installed. Back priming helps reduce wetting up the back side of the siding. Coating the ends and edges of the boards helps prevent water penetration there.

Intercoat peeling is the separation of the new paint or solid-color stain coat from the old, which indicates that the bond between the two coats is weak. Intercoat peeling usually results from inadequate cleaning of the old weathered finish prior to refinishing and generally occurs within 1

year of finishing. This type of peeling can be prevented by good cleaning and finishing practices.

Removal of Old Finishes

In refinishing old paint or solid-color stain, removal of the old coating is sometimes necessary. This is true if, for example, the old finish is severely cracked and is peeling. The complete removal of paint and solid-color stains is usually a time-consuming and often difficult process. These finishes can be removed by a variety of procedures. All of the procedures can be difficult, time-consuming and expensive processes. Some of them can damage the cedar. For example, **power washing should never be used** for removing coatings from cedar because this process can severely damage the wood surface fibers and make it difficult for the next finish to adhere properly.

Refinishing Cedar

Cedar that has been finished with paints or solid-color stains is best refinished with the same type of finish originally used. These finishes are sometimes used interchangeably but old latex coatings should **always** be refinished with latex coatings and never with oil-based coatings. Old oil-based finishes can be refinished with latex finishes only when the old oil-based finish has been properly cleaned and a primer paint applied first. Remember that proper surface preparation and cleaning before refinishing are essential for optimal performance of the new coat or coats of finish.

To refinish the old surface, first scrape away **all** loose, cracked or peeling finish. Sand the bare wood and any remaining finish to "feather" the edges smooth with the bare wood. Mildew **must** be killed and removed before cedar is refinished, or the mildew will grow through the new paint coat or solid-color stain. Removal can be done with a commercial mildew remover or with dilute solutions of liquid household bleach containing sodium hypochlorite followed by thorough rinsing with clean water. After these preparations, scrub the surface with a stiff bristle (not wire) brush and water, and rinse with clean water. Allow the washed surface to dry before recoating and apply primer paint to areas of bare wood. After the primer has dried, apply one or two topcoats of paint or solid-color stain. Two topcoats are always better over bare wood that has been prime coated.

Finish Quality - Getting What You Pay For

Remember, when buying paints and solid-color stains for cedar, it is always best to use the top-of-the-line of a supplier you know and trust. Since there are no standards, regulations or rating systems used to help you select commercial finishes, you should rely on your paint dealer and your painter for the best recommendations. **One last note** -- things are changing in the world of wood finishes and many traditional oil-based finishes that use petroleum solvents (sometimes called solvent-borne) may not be available in some areas of the country. More and more exterior finishes for cedar are latex (water-borne).



CI-SIB			
APRIL 2011			



WATERGATE^{plus}



THE ULTIMATE WRAP

FIRE RETARDANT ABSORBENT BREATHABLE
COMPOSITE NON WOVEN WALL UNDERLAY

CAN BE USED WITH:



ABSORBENT / NON ABSORBENT



METAL / NON METAL



STEEL FRAME / TIMBER FRAME

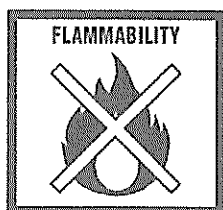


**FIRE RETARDANT ABSORBENT BREATHABLE
COMPOSITE NON WOVEN WALL UNDERLAY**

APPLICATION AND INSTALLATION

Product Description **WATERGATE^{Plus}** Fire Retardant Absorbent Breathable Composite Non Woven Wall Underlay is a coated, non woven polyolefin, specifically designed as a wall underlay behind exterior wall claddings.

Product Advantage



FLAMMABILITY INDEX OF ≤ 5
AS1530: PART 2 1993

WATERGATE^{Plus} can be used as a wall underlay on timber and steel framed buildings with absorbent and non-absorbent wall claddings direct fixed to framing.

WATERGATE^{Plus} can be used as a wall underlay on timber and steel framed buildings with absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity.

NOTE: WATERGATE^{Plus} MUST NOT BE USED AS A ROOF UNDERLAY

WATERGATE^{Plus} can be used as an Air Barrier where walls are not lined e.g. attic spaces at gable ends, and is suitable for use in all Building Wind Zones of NZS 3604 up to, and including, "Very High".

WATERGATE^{Plus} will provide temporary weather protection during construction. Translucency of the underlay will enable work to proceed during inclement weather.

WATERGATE^{Plus} can be used as a non-rigid backing material for Stucco Plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1 Paragraph 9.3.5.1. The Underlay must be supported with 75mm galvanized mesh, or **Thermakraft Stud Strap**, or wire at 150mm centres run across cavity battens to limit deflection to a maximum of 5mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.

WATERGATE^{Plus} may also be used as a slip layer over rigid backing for Stucco Plaster in accordance with the requirements of NZBC E2/AS1 Paragraph 9.3.3(b).

WATERGATE^{Plus} is unaffected by LOSP treated timber.

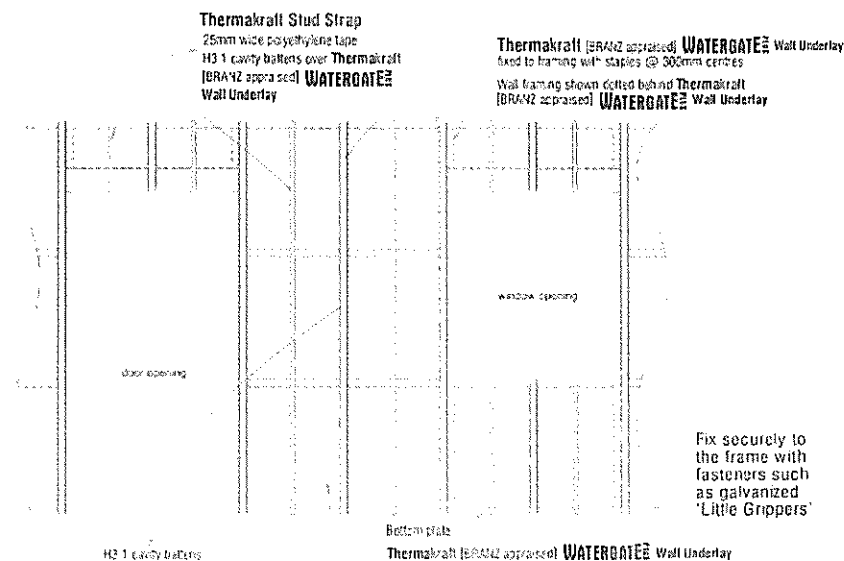
FLAMMABILITY

WATERGATE^{Plus} has a AS1530:Part 2 Flammability Index of ≤ 5 and meets the requirements of NZBC Acceptable Solutions C/AS1 Part 6 Table 6.2 surface finish requirements for suspended flexible fabrics.

Application

WATERGATE^{Plus} must be fixed with printed side out and the non-printed side to the frame.

1. WATERGATE^{Plus} is applied to all exterior walls from below bearers to the top plate. Fix securely to the frame with fasteners such as galvanized Little Grippers, 6mm-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out.





**FIRE RETARDANT ABSORBENT BREATHABLE
COMPOSITE NON WOVEN WALL UNDERLAY**

APPLICATION AND INSTALLATION . . . contd

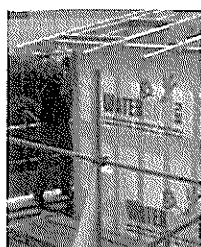
Application - continued ...

NOTE: Fastenings behind Brick Veneer Cladding must have an equivalent service life to that of Brick Veneer (50 years). Refer to NZBC E2/AS1 Table 20.

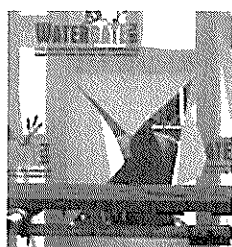
IMPORTANT NOTE: Drained Cavity System; In accordance with NZBC Acceptable Solution E2/AS1 Paragraph 9.1.8.5, where stud spacings are greater than 450mm centres, an intermediate means of restraining the building underlay and insulation from bulging into the drained cavity shall be installed. An acceptable means of achieving this is **Thermakraft Stud Strap** fixed horizontally at 300mm centres.

2. WATERGATE[®] if using either 2740mm or 1370mm width, a minimum of 150mm lap is required at joins and all vertical laps must be made over studs. Make good repairs on any forced tears with **Thermakraft PVC Tape** or **Thermakraft ALUBAND** Window Sealing Tape.

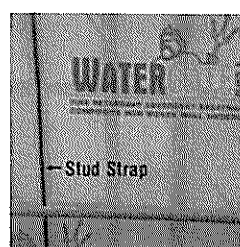
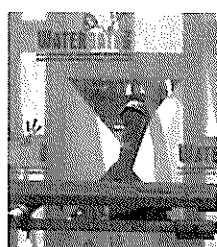
3. WATERGATE[®] is wide enough to cover the height of a standard wall from below the bottom plate to the top plate. Initially, cover all windows and door openings. Use extra fastenings around each window or door opening to be cut out. It is recommended that the wall underlay is not cut and prepared for window installation until the arrival of the windows.



Fix securely to the frame with fasteners such as galvanized Little Grippers



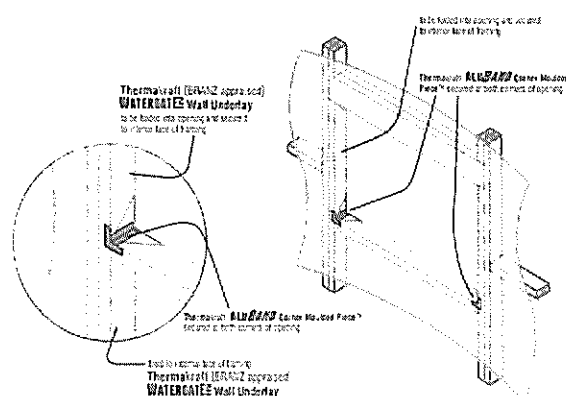
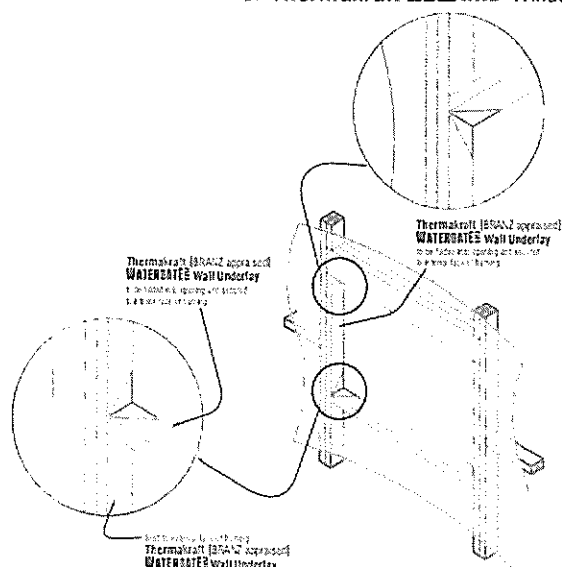
On arrival of doors and windows, cut the **WATERGATE[®]** at each opening on a 45° angle away from each corner. Pull the **WATERGATE[®]** flaps inside and fasten to inside of frame.



Application of **Thermakraft Stud Strap** for cavity construction where studs spaced > 450mm.



4. Thermakraft ALUBAND Window Sealing System is applied prior to fitting windows.



Storage

WATERGATE[®] must be stored in clean dry conditions and not in an area with direct sunlight.

Roll Dimensions

2740mm x 30m = 82m²

1370mm x 37m = 50m²

1370mm x 18.5m = 25m²

For more information regarding **Thermakraft ALUBAND** Window Sealing System (BRANZ no 614 (2008)) refer to the "APPLICATION and INSTALLATION GUIDELINES" or contact **Thermakraft Customer Services** on **0800 806 595**.



**FIRE RETARDANT ABSORBENT BREATHABLE
COMPOSITE NON WOVEN WALL UNDERLAY**

TECHNICAL SPECIFICATIONS

WATERGATE_{Plus} Fire Retardant Absorbent Breathable Composite Non Woven Wall Underlay can be used as a wall underlay on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with absorbent wall and non-absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity; and,
- with masonry veneer in accordance with NZS 3604; and,
- situated in NZS3604 Building Wind Zones up to, and including 'Very High'.

WATERGATE_{Plus} can be used as a wall underlay on steel framed buildings within the following scope:-

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with absorbent and non-absorbent wall claddings; and,
- with masonry veneer in accordance with NZS 3604; and,
- situated in NZS3604 Building Wind Zones up to, and including 'Very High'.

WATERGATE_{Plus} has an AS1530: Part 2 Flammability Index of ≤ 5 and meets the requirements of NZBC Acceptable Solution C/AS1 Part 6 Table 6.2 surface finish requirements for suspended flexible fabrics.

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS		
NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥ 100 gsm	Pass
Vapour Resistance	≤ 7 MN.s/g	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	$\leq 0.5\%$	Pass
Water Resistance	≥ 20 mm	Pass
Air Resistance	≥ 0.1 MN.s/m ³	Pass Watergate Plus can be used as an air barrier

Durability

WATERGATE_{Plus} 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, C/AS1 Part 6 Table 6.2 Flammability ≤ 5 , E2 External Moisture, and F2 Hazardous Building Materials F2.3.1., providing:

- it is not damaged
- installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES"
- it is not left exposed for more than 60 days
- installed by or under guidance of Licensed Building Practitioners
- is compatible with cladding system used

NOTE: WATERGATE_{Plus} MUST NOT BE USED AS A ROOF UNDERLAY

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



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**FIRE RETARDANT ABSORBENT BREATHABLE
COMPOSITE NON WOVEN WALL UNDERLAY**

TECHNICAL SPECIFICATIONS

WATERGATE_{Plus} Fire Retardant Absorbent Breathable Composite Non Woven Wall Underlay can be used as a wall underlay on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with absorbent wall and non-absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18mm minimum drained cavity; and,
- with masonry veneer in accordance with NZS 3604; and,
- situated in NZS3604 Building Wind Zones up to, and including 'Very High'.

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- with absorbent and non-absorbent wall claddings; and,
- with masonry veneer in accordance with NZS 3604; and,
- situated in NZS3604 Building Wind Zones up to, and including 'Very High'.

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NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS		
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Vapour Resistance	≤ 7 MN.s/g	Pass
pH of Extract	≥ 6 and ≤ 9	Pass
Shrinkage	$\leq 0.5\%$	Pass
Water Resistance	≥ 20 mm	Pass
Air Resistance	≥ 0.1 MN.s/m ³	Pass Watergate Plus can be used as an air barrier

Durability

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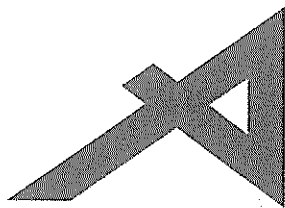
- it is not damaged
- installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES"
- it is not left exposed for more than 60 days
- installed by or under guidance of Licensed Building Practitioners
- is compatible with cladding system used

NOTE: WATERGATE_{Plus} MUST NOT BE USED AS A ROOF UNDERLAY

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.



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BRANZ Appraised
Appraisal No.695 [2010]

BRANZ Appraisals
Technical Assessments of products
for building and construction

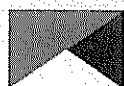
BRANZ
APPRAISAL
No. 695 (2010)

Amended 17 March 2011

WATERGATE-PLUS **FIRE RETARDANT** **WALL UNDERLAY**

Thermakraft Industries (NZ) Ltd
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1.1 Watergate-Plus is a fire retardant, synthetic wall underlay for use under direct fixed and non-direct fixed wall cladding on timber and steel framed buildings. The product is manufactured from coated, non-woven polyolefin and is coloured white.



2.1 Watergate-Plus has been appraised for use as a wall underlay on timber 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 absorbent and non-absorbent wall claddings directly fixed to framing; and,
- with absorbent and non-absorbent wall claddings installed over an 18 mm minimum drained cavity; and,
- with masonry veneer in accordance with NZS 3604:1999; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.2 Watergate-Plus has been appraised for use as a wall underlay on 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 absorbent and non-absorbent wall claddings; and,
- with masonry veneer in accordance with NZS 3604:1999; and,
- situated in NZS 3604 Building Wind Zones up to, and including 'Very High'.

2.3 Watergate-Plus has also been appraised for use on buildings subject to specific weathertightness design. Building designers are responsible for the building design and for the incorporation of Watergate-Plus into their design in accordance with the declared properties and the instructions of Thermakraft Industries (NZ) Ltd.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, Watergate-Plus, 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. Watergate-Plus meets these requirements. See Paragraphs 9.1 and 9.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. When used as part of the cladding system, Watergate-Plus will contribute to meeting this requirement. See Paragraphs 12.1 and 12.2.

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

3.2 This is an Appraisal of an **Alternative Solution** in terms of the New Zealand Building Code compliance.

4.1 Watergate-Plus is a white, 112 g/m² non-woven, microporous polyolefin fabric underlay.

4.2 The product is supplied in rolls 1.370 m wide x 54.8 and 30 m long and 2.740 m wide x 30 and 18.5 m long. The product is printed with the Watergate-Plus logo repeated along the length of the roll and is labelled with the marketing or construction company's name. The rolls are wrapped in clear polythene film.

Accessories

4.3 Accessories used with Watergate-Plus which are supplied by the installer are:

- Fixings - staples, clouts, screws or proprietary underlay fixings, or other temporary fixings to attach the wall underlay to the framing.
- Building underlay support - polypropylene strap, 75 mm galvanised mesh or galvanised wire, or vertical cavity battens where required to support the wall underlay in accordance with NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

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.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for Watergate-Plus. 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.

Timber and Steel Framing

7.1 Studs must be provided at maximum 600 mm centres. Dwaags must be fitted flush between the studs at maximum 1200 mm centres.

General

7.2 Watergate-Plus is intended for use as an alternative to conventional building papers which are fixed over timber or steel framed walls in order to limit the entry of wind into building cavities, and to act as a secondary barrier to wind-driven rain.

7.3 The material also provides a degree of temporary weather protection during early construction. However, the product will not make the building weathertight and some wetting of the underlying structure is always possible before the building is closed in. Hence, the building must be closed-in and made weatherproof before moisture sensitive materials such as wall or ceiling linings and insulation materials are installed.

7.4 Watergate-Plus is suitable for use under wall claddings as a wall underlay as called up in NZBC Acceptable Solution E2/AS1, Table 23 on timber framed buildings, including non-absorbent metal based sidings or metal based weatherboards in direct fixed installations. Watergate-Plus is suitable for use under cavity based wall claddings as an absorbent synthetic wall underlay as called up in NZS 2295, Table 2.4 on steel framed buildings. Refer to Table 1.

Table 1: NZBC E2/AS1 Table 23 Requirements

NZBC Table 23 Wall Properties	E2/AS1 Underlay	Property Performance Requirement	Actual Performance	Property
Absorbency		≥ 100 g/m ²	Pass	
Vapour Resistance		≤ 7 MN s/g	Pass	
Water Resistance		≥ 20 mm	Pass	
pH of Extract		≥ 6 and ≤ 9	Pass	
Shrinkage		≤ 0.5%	Pass	
Mechanical		Edge tear and tensile strength	Edge tear: Machine direction (average) = 110 N Cross direction (average) = 91 N Tensile strength: Machine direction (average) = 2.09 kN/m Cross direction (average) = 1.78 kN/m	
Air Barrier		Air resistance: ≥ 0.1 MN s/m ³	Pass. Watergate-Plus can be used as an air barrier.	

7.5 In cavity installations where the cavity battens are installed at greater than 450 mm centres, the building underlay must be supported between the battens to prevent the underlay bulging into the cavity space when bulk insulation is installed in the wall frame cavity in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.8.5.

Stucco Plaster

7.6 Watergate-Plus is suitable for use as a non-rigid backing material for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.1. The underlay must be supported with 75 mm galvanised mesh or plastic tape or wire at 150 mm centres run across the cavity battens to limit deflection to a maximum of 5 mm in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.5.2.

7.7 Watergate-Plus may also be used as a slip layer over rigid backings for stucco plaster in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.3.3(b).

Structure

8.1 Watergate-Plus is suitable for use in all Building Wind Zones of NZS 3604 up to, and including, 'Very High'.

Durability

9.1 Watergate-Plus meets code compliance with NZBC Clause B2.3.1 (a), not less than 50 years for building underlays used where the cladding durability requirement or expected serviceable life is not less than 50 years, e.g. behind masonry veneer, and code compliance with NZBC Clause B2.3.1 (b), 15 years for building underlays used where the 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 60 days, and provided the exterior cladding is maintained in accordance with the cladding manufacturer's instructions and the cladding remains weather resistant, Watergate-Plus is expected to have a serviceable life equal to that of the cladding.

Control of Internal Fire and Smoke Spread

10.1 Watergate-Plus has an AS 1530 Part 2 Flammability Index of less than 5 and meets the requirements of NZBC Acceptable Solution C/AS1 Part 6, Table 6.2 for surface finish requirements for suspended flexible fabrics, and therefore it may be used with no restrictions in all buildings.

Outbreak of Fire

11.1 Watergate-Plus must be separated from fireplaces, heating appliances, flues and chimneys in accordance with the requirements of NZBC Acceptable Solution C/AS1 Part 9 for the protection of combustible materials.

External Moisture

12.1 Watergate-Plus must be used behind claddings that meet the requirements of the NZBC, such as those covered by NZBC Acceptable Solution E2/AS1, or claddings covered by a valid BRANZ Appraisal.

12.2 Watergate-Plus, when installed in accordance with the Technical Literature and this Appraisal will assist in the total cladding systems compliance with NZBC Clause E2.

Installation Skill Level Requirements

13.1 Installation must always be carried out in accordance with the Watergate-Plus Technical Literature and this Appraisal, by competent tradespersons with an understanding of wall underlay installation.

Underlay Installation

14.1 Watergate-Plus must be fixed to all framing members at maximum 300 mm centres with large-head clouts 20 mm long, 6-8 mm staples, self drilling screws or proprietary underlay fixings. The underlay must be pulled taut over the framing before fixing.

14.2 Watergate-Plus must be run horizontally and must extend from the upper-side of the top plate to the under-side of the bearers or wall plates supporting ground floor joists, or below bottom plates on concrete slabs. Horizontal laps must be no less than 150 mm wide, with the direction of the lap ensuring that water is shed to the outer face of the membrane. End laps must be made over framing and be no less than 150 mm wide.

14.3 The wall underlay should be run over openings and these left covered until windows and doors are ready to be installed. Openings are formed in the underlay by cutting on a 45 degree diagonal from each corner of the penetration. The flaps of the cut underlay must be folded inside the opening and stapled to the penetration framing. Excess underlay may be cut off flush with the internal face of the wall frame.

14.4 Watergate-Plus can be added as a second layer over head flashings in accordance with the requirements of NZBC Acceptable Solution E2/AS1, Paragraph 9.1.7(e).

14.5 When fixing the product in windy conditions, care must be taken due to the large sail area created by wide roll widths.

14.6 Any damaged areas of Watergate-Plus, 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

14.7 The Technical Literature must be referred to during the inspection of Watergate-Plus installations.

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

Tests

15.1 The following tests have been carried out on Watergate-Plus 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, pH of extract in accordance with AS/NZS 1301.42.1s and air resistance to BS 6538.3. A range of these tests were completed before and after Watergate-Plus was exposed to ultra-violet light.

15.2 The flammability Index of Watergate-Plus has been evaluated in accordance with AS/NZS 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 Watergate-Plus in direct contact with metal wall cladding has been completed by BRANZ.
- 16.3 The practicability of installation of Watergate-Plus 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 Watergate-Plus has not been examined by BRANZ, but details of the methods adopted for quality control and the quality of the materials used, have been obtained and found to be satisfactory.
- 17.2 The quality of supply to the market is the responsibility of Thermakraft Industries (NZ) Ltd.
- 17.3 Building designers are responsible for the design of the building, and for the incorporation of the wall underlay into their design in accordance with the instructions of Thermakraft Industries (NZ) Ltd.
- 17.4 Quality of installation is the responsibility of the installer in accordance with the instructions of Thermakraft Industries (NZ) Ltd.

Sources of Information

- AS 1530.2 - 1993 Test for flammability of materials.
- AS/NZS 1301.421s: 1988 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 4201.1: 1994 Pliable building membranes and underlays - Methods of test - Resistance to dry delamination.
- AS/NZS 4201.2: 1994 Pliable building membranes and underlays - Methods of test - Resistance to wet delamination.
- 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.
- BS 6538.3: 1987 Method for determination of air permeance using the Garley apparatus.
- NZS 2295: 2006 Pliable, permeable building underlays
- NZS 3604: 1999 Timber Framed Buildings.
- NZS 3604: 2011 Timber-framed Buildings.
- Compliance Document for the New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005.
- New Zealand Building Code Handbook, Department of Building and Housing, Third Edition May 2007.
- The Building Regulations 1992 up to, and including, August 2008 amendment.




In the opinion of BRANZ, the Watergate-Plus Wall 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 Industries (NZ) Ltd, 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 Industries (NZ) Ltd:
 - 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 Industries (NZ) Ltd.
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 Industries (NZ) Ltd or any third party.

For BRANZ


P. Burghout
Chief Executive

Amendment No. 1, dated 17 March 2011.

This Appraisal has been amended to cover the use of Watergate-Plus in direct contact with metal based wall cladding.

Date of issue: 13 July 2010

THERMAKRAFT 215

BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

APPLICATION AND INSTALLATION

Product Description	<p>THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY is specifically designed for use in Domestic and Commercial type buildings.</p> <p>THERMAKRAFT 215 is a breathable, absorbent bituminous wall and roofing underlay.</p> <p>THERMAKRAFT 215 will provide the following functions:</p> <ul style="list-style-type: none"> • Reduce wind entry into the cavity, thereby assisting the performance of thermal insulation. • Highly water vapour permeable, thereby allowing excess water vapour which might otherwise condense in the structure, to escape. • Provides a temporary protection against wind, dust, rain and other weathering elements until the external cladding is applied. 						
Applications	<p>THERMAKRAFT 215 is suitable as a wall and roofing underlay where Fire Retardancy is NOT required, and with all cladding types.</p> <p>THERMAKRAFT 215 is self supporting to 1200mm rafter/purlin spacing.</p> <p>THERMAKRAFT 215 can be used as an Air Barrier.</p> <p>THERMAKRAFT 215 must not be left exposed to the elements for more than 7 days. Cladding on the same day is recommended. If Fire Retardancy (FI <5) is required, use Thermakraft COVERIEK407.</p>						
Installation Roofing	<p>THERMAKRAFT 215 may be run vertically over purlins with a 150mm lap if roof pitch >8 degrees. Fix securely to purlins with 8mm staples or 20mm clouts. The membrane should be firmly laid to avoid excessive dishing between purlins.</p> <p>THERMAKRAFT 215 may be run horizontally across rafter/trusses with a 150mm lap for roof pitches above 3 degrees. Fix securely with 8mm staples or 20mm clouts.</p>						
Control of Condensation	<p>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;</p> <table border="0"> <tr> <td> <ul style="list-style-type: none"> • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities </td><td> <ul style="list-style-type: none"> • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry </td></tr> </table> <p>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.</p>	<ul style="list-style-type: none"> • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities 	<ul style="list-style-type: none"> • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry 				
<ul style="list-style-type: none"> • Humid, and/or cold climatic regions • Warm/Skillion roof construction • Low roof cavity air volume and restricted air movement • Omitting Vapour Control Layers • Ceiling penetrations and entry of warm air into roof cavities 	<ul style="list-style-type: none"> • Occupancy activities which have high moisture loading on conditioned spaces • Low pitched roof • Bulk insulation • Building structures ability to naturally dry 						
Storage	<p>THERMAKRAFT 215 should be stored on end in dry conditions. Protect from the weather and direct sunlight.</p>						
Roll Dimensions	<table border="0"> <tr> <td>1250mm x 40.0m = 50m²</td><td>20kg</td></tr> <tr> <td>1250mm x 20.0m = 25m²</td><td>10kg (2 per pack)</td></tr> <tr> <td>1450mm x 34.5m = 50m²</td><td>20kg</td></tr> </table>	1250mm x 40.0m = 50m ²	20kg	1250mm x 20.0m = 25m ²	10kg (2 per pack)	1450mm x 34.5m = 50m ²	20kg
1250mm x 40.0m = 50m ²	20kg						
1250mm x 20.0m = 25m ²	10kg (2 per pack)						
1450mm x 34.5m = 50m ²	20kg						

For more information regarding Thermakraft **COVERIEK407** FIRE RETARDANT SELF SUPPORTING ABSORBENT BREATHABLE SYNTHETIC NON WOVEN ROOFING UNDERLAY refer to the "DESIGNER and USER GUIDELINES" - Direct and Cavity Fix. or contact Thermakraft Customer Services on **0800 806 595**.

Thermakraft

C1: S1B			
JUNE 2010			

THERMAKRAFT 215

BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY

TECHNICAL SPECIFICATIONS

Technical Data

THERMAKRAFT 215 BITUMINOUS SELF SUPPORTING ROOFING UNDERLAY complies with the requirements of NZBC E2/AS1 Table 23.

Nominal Grammage 400g/m²

NZBC E2/AS1 TABLE 23 AS A WALL UNDERLAY REQUIREMENTS		
NZBC E2/AS1 TABLE 23 WALL UNDERLAY PROPERTIES	PROPERTY PERFORMANCE REQUIREMENTS	PROPERTY PERFORMANCE
Absorbency	≥100 gsm	Pass
Vapour Resistance	≤7 MN.s/g	Pass
pH of Extract	≥6 and ≤9	Pass
Shrinkage	≤0.5%	Pass
Water Resistance	≥100mm	Pass
Air Barrier	≥0.1 MN.s/m ²	Pass
Duty		Heavy

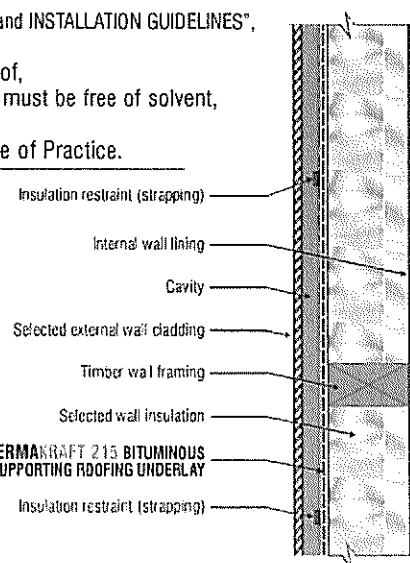
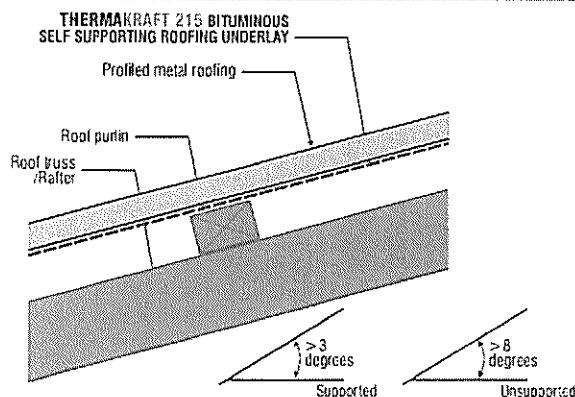
NZS2295:2006 Classification		
Flammability Index		Non Fire Retardant
Wind Zone	R2	Up to Very High
NZS2295:2006 Classification	R2	Self Supporting

Durability/Limitations

For **THERMAKRAFT 215** to meet the Performance Requirements of NZBC Clause B2, Durability B2.3.1(a) 50 years and B2.3.1(b) 15 years, E2 External Moisture,

THERMAKRAFT 215:

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- run length no greater than 10 metres,
- is not left exposed for more than (7 days) roof,
- when used on LOSP treated timber, the timber must be free of solvent,
- installed by a licensed building practitioner,
- installed in accordance with the Roofing Code of Practice.



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.

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PERRIMETER

DAMP PROOF COURSE (D.P.C.)

APPLICATION AND INSTALLATION

Product Description	Thermakraft PERRIMETER Damp Proof Course (D.P.C.) is a heavy kraft impregnated with high grade bitumen and then coated with a higher resistant bitumen.	
Product Advantage	Thermakraft PERRIMETER provides the ideal protection between the bottom plate and the concrete foundation.	
Application	Thermakraft PERRIMETER is a durable waterproof material suitable for placing between brick, stone, concrete, timber and metal as a protection against moisture.	
Storage	Thermakraft PERRIMETER should be stored on end in dry conditions, protect from the weather and direct sunlight.	
Roll Dimensions	50mm x 20m	12 rolls / pack
	75mm x 20m	8 rolls / pack
	90mm x 20m	7 rolls / pack
	100mm x 20m	6 rolls / pack
	150mm x 20m	4 rolls / pack
	200mm x 20m	3 rolls / pack
	250mm x 20m	2 rolls / pack
	300mm x 20m	2 rolls / pack
	1000mm x 20m	1 rolls / pack

PERRIMETER

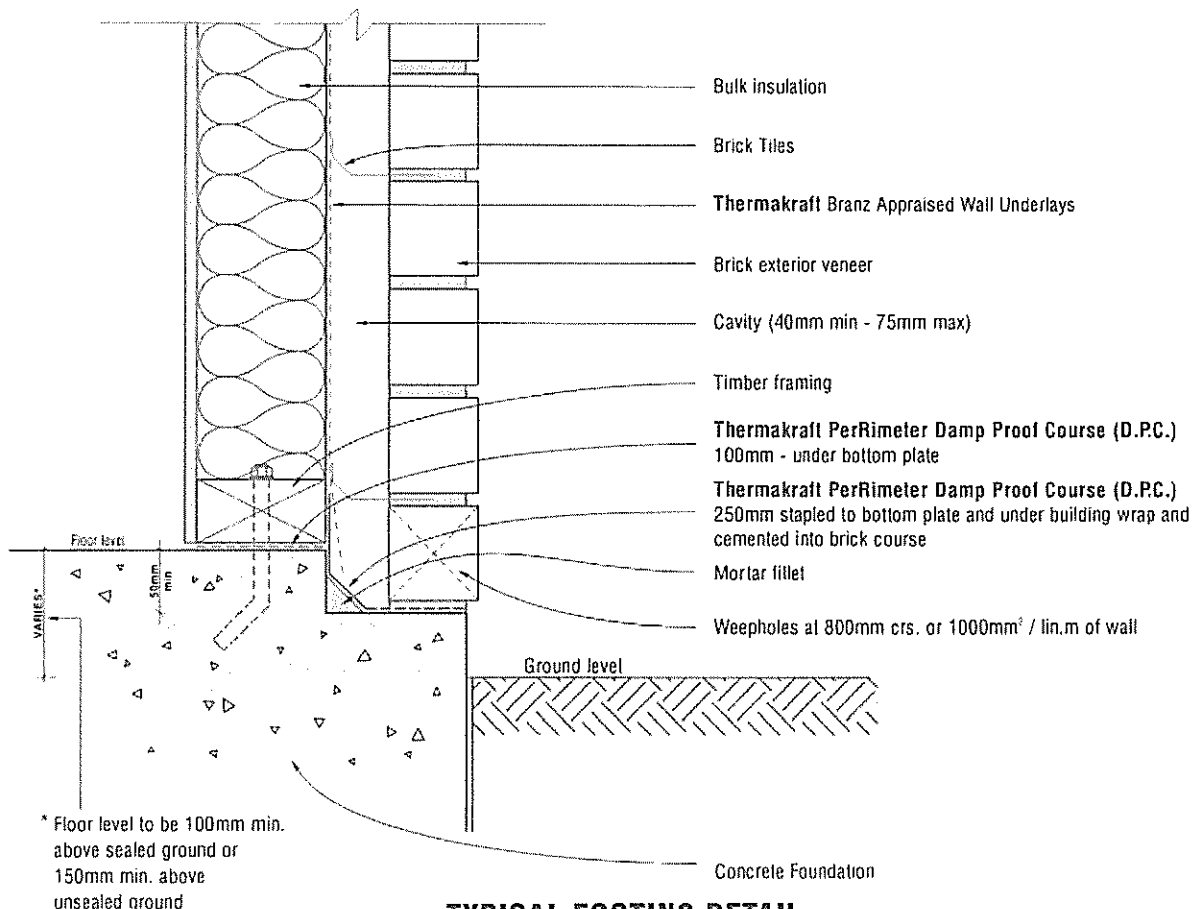
DAMP PROOF COURSE (D.P.C.)

TECHNICAL SPECIFICATIONS

Durability

Thermakraft **PERRIMETER** Damp Proof Course (D.P.C.) to meet the performance requirements of NZBC Clauses B2, Durability (B2.3.1[a] 50 years), and B2.3.1 (b) 15 years, E2 External Moisture, providing;

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES"
- is not left exposed for more than 7 days
- when used on LOSP treated timber, the timber must be free of solvent
- installed in accordance with NZBC, NZS 3604:1999
- installed by or under guidance of Licensed Building Practitioners



**TYPICAL FOOTING DETAIL
BRICK VENEER ABOVE GROUND**

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THERMATHENE BLACK

**250 MICRON
CONCRETE UNDERLAY**

APPLICATION AND INSTALLATION

Product Description	THERMATHENE BLACK 250 Micron Concrete Underlay is a tear resistant Polyethylene film.
Product Advantage	THERMATHENE BLACK is used as a concrete underlay and a moisture vapour barrier in areas where protection is required. It is a 250 micron in weight, and is coloured black for ultra violet resistance.
Installation	<p>THERMATHENE BLACK must be installed to E2/AS1 10.3.3. Damp Proof Membranes, and must be laid on a properly prepared base as required by NZS3604:1990.E8.2.</p> <p>THERMATHENE BLACK may be used to cover ground areas under suspended timber floors to prevent the rise of dampness. Ensure that the site is clear of rubbish, sharp edges such as rocks or bricks. Slit and patch around jack studs or pipe work. All joints must be taped with Thermakraft Black 48mm P.V.C. tape.</p> <p>THERMATHENE BLACK must be inspected for tears and penetrations. Repair with Thermakraft Black 48mm P.V.C. tape to ensure integrity of THERMATHENE BLACK as a moisture barrier.</p>
Roll Dimensions	200micron x 4000mm x 50m = 200m ²

THERMATHENE BLACK

**250 MICRON
CONCRETE UNDERLAY**

TECHNICAL SPECIFICATIONS

Durability

THERMATHENE BLACK 250 Micron Concrete Underlay to meet the performance requirements of NZBC Clauses B2, Durability B2.3.1[a] 50 years and B2.3.1(b) 15 years, E2 External Moisture,

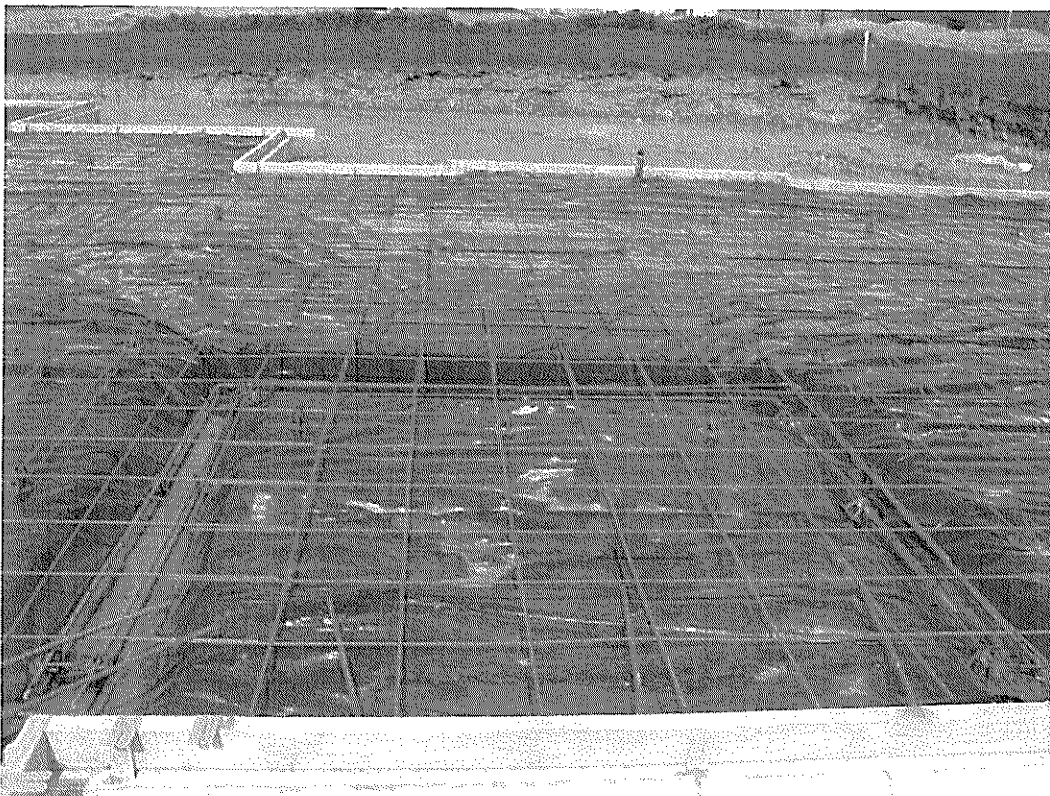
THERMATHENE BLACK:

- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES",
- is not left exposed for more than 28 days,
- installed by a licensed building practitioner,
- free of tears and penetrations.

Physical Properties

THERMATHENE BLACK

- Exceeds the minimum impact resistant film test AS1326:1972(IR3)
- Complies with (A) AS2879:1995, 5.3.3 vapour barrier for concrete underlays
- Resistance to Water Vapour Transmission Not less than 90MN.s/g



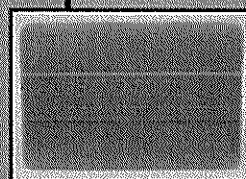
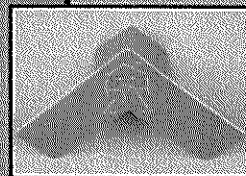
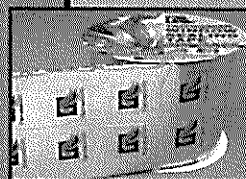
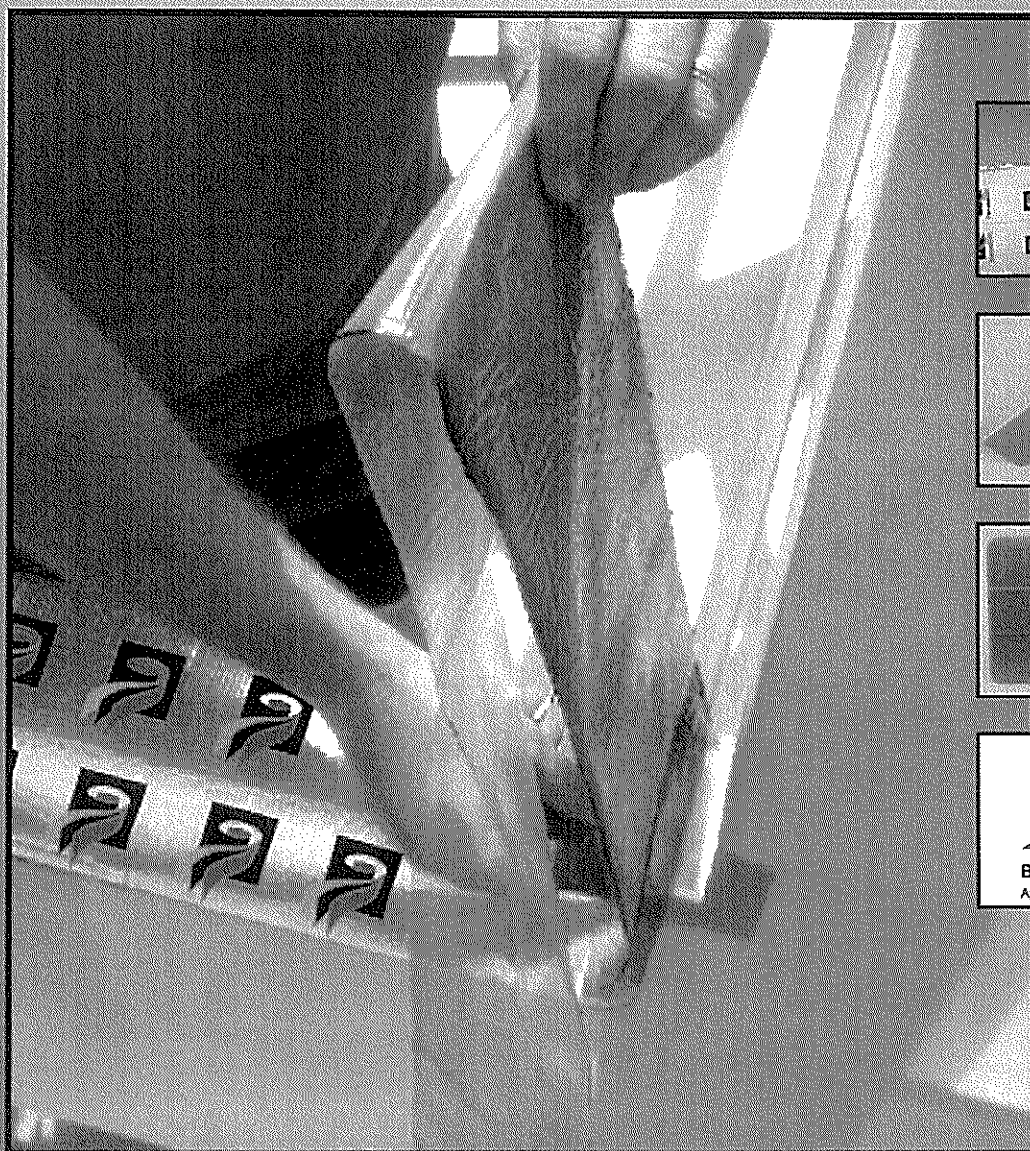
THERMATHENE BLACK is used as a concrete underlay and a moisture vapour barrier.

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.

Thermakraft

ALUBAND™

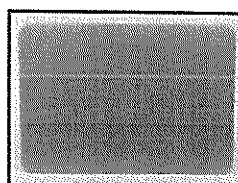
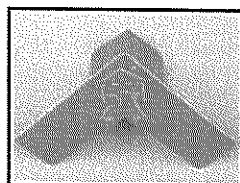
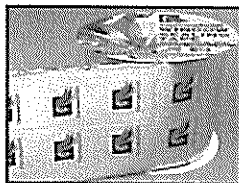
Window Sealing System



BRANZ Appraised
Appraisal No. 614 [2008]

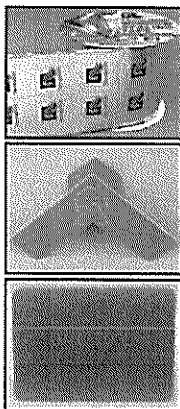
ALUBAND™

Window Sealing System



APPLICATION AND INSTALLATION

Product Description



Thermakraft **ALUBAND** is a polymeric faced, modified bituminous self adhesive tape with a release backing film.

The Thermakraft **ALUBAND** Corner Moulded Piece is made from inert polyethylene and is coloured orange. It is used in conjunction with the Thermakraft **ALUBAND** Tape and the building underlay.

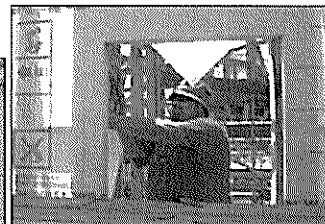
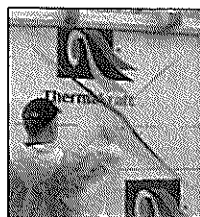
The Thermakraft **ALUBAND** Tool is used to ensure proper adhesion of the tape to the building underlay.

Product Advantage

Thermakraft **ALUBAND** Window Sealing System is used around framed joinery openings as a secondary weather barrier. Thermakraft **ALUBAND** is suitable for use in all Building Wind Zones of NZS 3604 up to, and including "Very High".

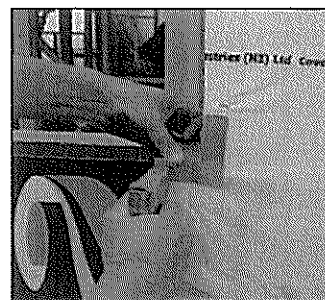
Application

- 1 Cut the wall underlay/air barrier at a 45° angle away from each corner (*left pic*). Fold flaps tightly into the window or door opening and fix with staples on the back faces of the framing (*right pic*). Trim excess wall underlay, to enable unimpeded access to the opening.



- 2 Fix the Thermakraft **ALUBAND** Corner Moulded Piece to the sill corners by way of staples or clouts to the two jambs as shown. The flexibility of the corner piece allows for a 5° chamfer (slope) on the timber sill where it is required for direct fix cladding. Now install the **ALUBAND** as in step 3. Always ensure that **ALUBAND** is applied to surfaces that are clean and free of dust, contaminants, solvents, oils or waxes.

Note the following: 150mm wide tape is used for 100mm wide window or door framing, and the 200mm wide tape is used for 140mm to 150mm wide reveals. (With steel framed houses use Double Sided Tape to attach Thermakraft **ALUBAND** Corner Moulded Piece to metal cladding).

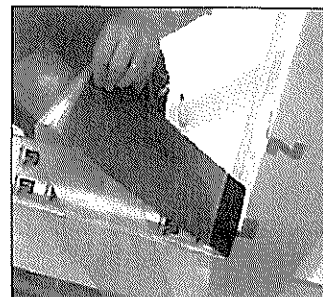


- 3 Measure 200mm up both jambs (*left pic*), add 400mm to the length of the window sill and cut the **ALUBAND** to suit that measurement (*right pic*).

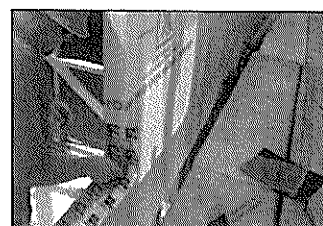


APPLICATION AND INSTALLATION . . . contd

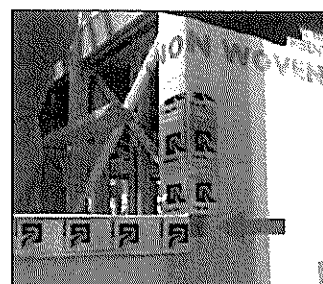
- 4** **ALUBAND** should not be applied directly on to timber, or indirectly on to a timber sheathed in underlay that has been freshly LOSP treated. Always allow the solvent to fully flash off prior to wrapping in underlay and applying **ALUBAND**.
Remove first the polyethylene release film from the **ALUBAND**; align the back edge of the **ALUBAND** with the inside edge of sill.



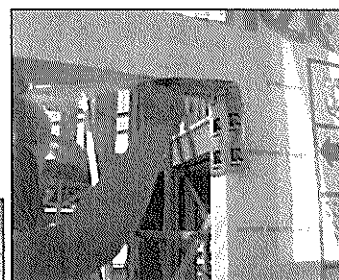
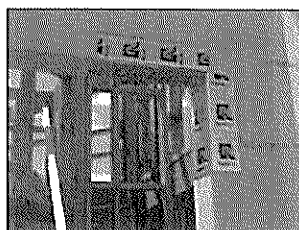
- 5** Using the Thermakraft **ALUBAND** Tool, firmly press the **ALUBAND** onto the wall underlay to ensure good adhesion. Using the Thermakraft **ALUBAND** Tool, ensure the tape is fitted tightly into the jamb to sill corners.



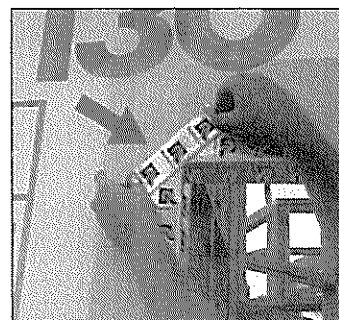
- 6** At the sill/jamb corners cut the **ALUBAND** from the external edge of the frame outwards. Fold flaps (**ALUBAND**) back onto the wall underlay/air barrier and press tape firmly for good adhesion.



- 7** Proceed to fix the **ALUBAND** to the top corners of the frame (200mm across lintel x 200mm down jamb). Remove first the release film from the **ALUBAND**; align the back edge of the **ALUBAND** with inside edge of lintel. Using the Thermakraft **ALUBAND** Tool, ensure that the tape is fitted tightly into the corners.
Cut the **ALUBAND** from the external edge of the frame outwards. Fold flaps (**ALUBAND**) back onto the wall underlay and press tape firmly for good adhesion.

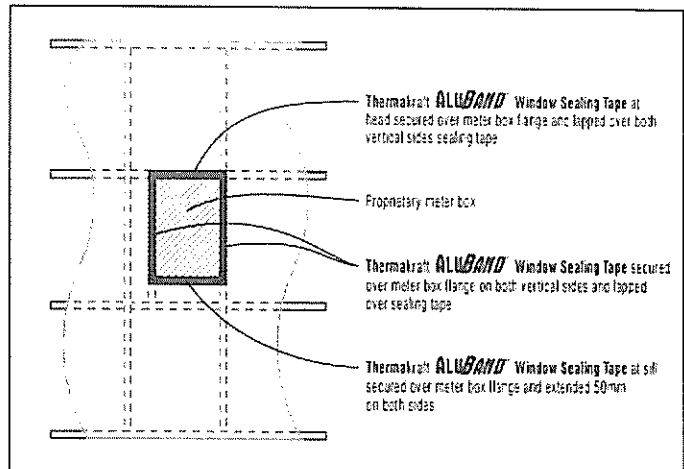


- 8** For window or door lintel to jamb junction, apply a Butterfly using the 50mm wide x 100mm long **ALUBAND**. Fix at a 45° angle to the jamb with an overlap at the corner of 3mm (as per photo on right).
After the installation of **ALUBAND**, ensure that the edges do not come into contact with solvent based sealants or adhesives. Solvents in these products can adversely affect the **ALUBAND** adhesion or dissolve the bituminous adhesive and cause it to run. If the application of solvent based adhesives or sealants are necessary, cover the edges with Thermakraft 48mm 403F, 493F or equivalent foil tape to form a barrier.

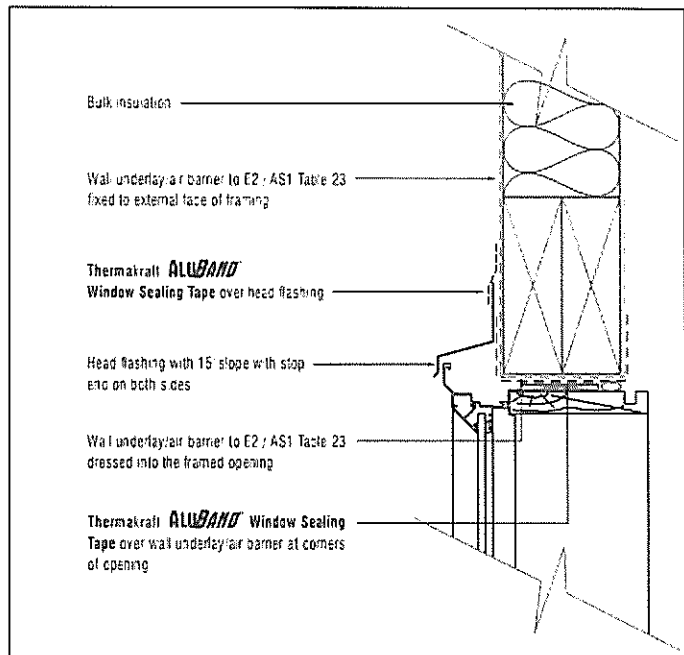


APPLICATION AND INSTALLATION . . . contd

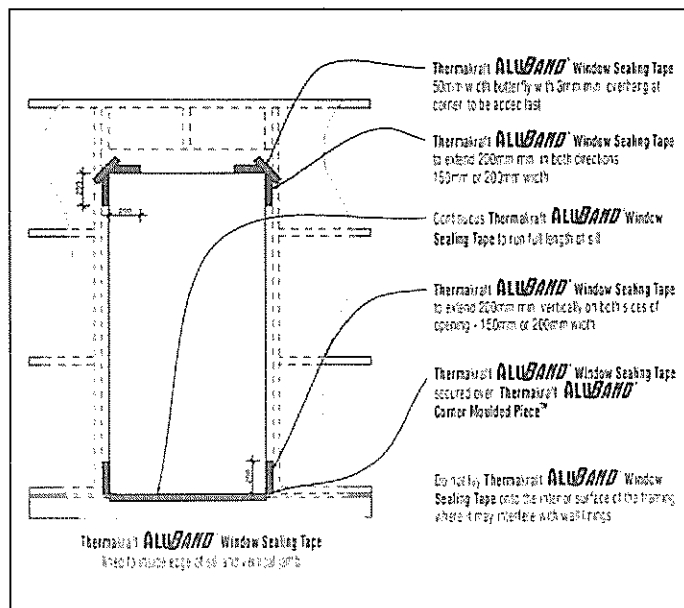
- 9** Meter boxes with built-in flanges, to be taped with 50mm **ALUBAND**™ along each flange to the building underlay. (Refer steps 1-8).



- 10** 50mm **ALUBAND**™ is used to seal the up stand of the window head flashing to the building underlay. Refer to the cladding manufacturer's details.

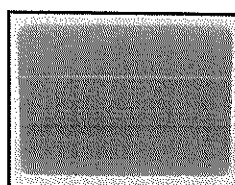
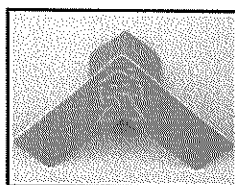
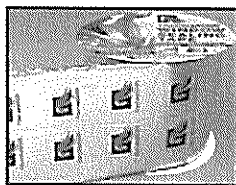


- 11** Door frames are to be treated similarly to window openings. The sill may be either a timber or a concrete floor.



ALUBAND™

Window Sealing System



Storage

Thermakraft **ALUBAND** Window Sealing System must be stored in clean dry conditions and not in an area with direct sunlight.

Roll Dimensions

200mm x 25m = 2 rolls per ctn
150mm x 25m = 4 rolls per ctn
75mm x 25m = 8 rolls per ctn

50mm x 25m = 12 rolls per ctn
150mm x 10m = 12 rolls per ctn

House Pack:

3 x 150mm x 25m rolls / 3 x 50mm x 10m rolls / 1 x pkt Thermakraft **ALUBAND** Corner Moulded Pieces / 1 x Thermakraft **ALUBAND** Tool.

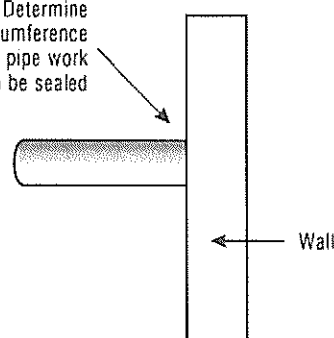
ALUBAND

Pipe Sealing Method

ALUBAND adhesive may affect Polybutene pipes, and should not be used to seal penetrations around Polybutene pipe systems.

STEP 1

Determine circumference of pipe work to be sealed



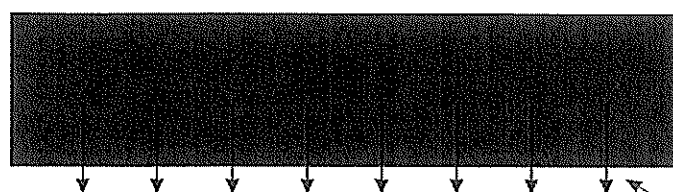
PIPE/WALL JOINT

STEP 2

Cut a length of **ALUBAND** 20% longer than circumference

Circumference of the pipe plus 20%

Length of cut 35/40mm



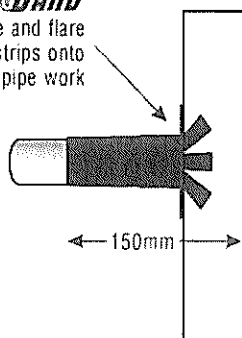
Arrows show lines of cuts 30-40mm in length

150mm

Make cuts along one edge of **ALUBAND** at 20mm intervals

STEP 3

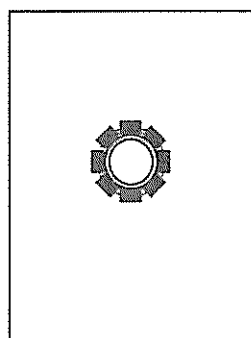
Wrap **ALUBAND** around pipe and flare out cut strips onto adjacent pipe work



150mm

STEP 4

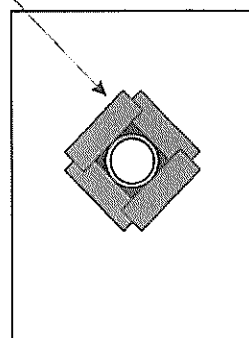
ALUBAND attached to pipe work



END VIEW

STEP 5

Cut four BUTTERFLY **ALUBAND** strips 150mm x 50mm and attach to pipe work as shown



END VIEW

TECHNICAL SPECIFICATIONS

Thermakraft **ALUBAND**® Window Sealing System can be used as a flexible flashing system around window and door joinery openings on timber framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with wall cladding systems complying with NZBC Acceptable Solution E2/AS1; and,
- with wall underlays compatible with the flashing tape; and,
- situated in NZS 3604 Building Wind Zones up to, and including "Very High".

Thermakraft **ALUBAND**® can be used as a flexible flashing system around window and door joinery openings on steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1; and,
- constructed with steel 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 with wall cladding systems complying with NZBC Acceptable Solution E2/AS1; and,
- with wall underlays compatible with the flashing tape; and,
- situated in NZS 3604 Building Wind Zones up to, and including "Very High".

Thermakraft **ALUBAND**® meets the Performance Requirements of NZBC Clauses B2, Durability (B2.3.1 [b] 15 years and B2.3.2), E2 External Moisture, and F2 Hazardous Building Materials.

Thermakraft **ALUBAND**® is expected to have a serviceable life equal to that of the cladding, when installed in accordance with this "Application and Installation" sheet, provided it is not exposed to the weather or ultra-violet (UV) for a total of no more than 90 days, or damaged on installation.

Thermakraft **ALUBAND**® is designed to work on all kraft based building underlays that meet the requirements of NZBC E2/AS1 Table 23, and on all Thermakraft BRANZ appraised wall underlays.

Thermakraft **ALUBAND**® should be installed when temperatures are above +10°C - +30°C. At temperatures below 10°C, the following cold weather installation may be required:-

1. Follow application and installation steps 1-3.
2. At step 4 remove the polyethylene release film from the **ALUBAND**® tape. Align the back edge of the **ALUBAND**® with the inside of the sill, and press into place.
3. **USING A HEAT GUN SET ON LOW, APPLY HEAT** to the top of the **ALUBAND**® tape (logo facing up). The **ALUBAND**® adhesive will soften. Ensure during heating that the **ALUBAND**® surface is not damaged or melted.
NOTE: Take care not to apply excess heat, as this may melt or damage the wall underlay.
4. Whilst the **ALUBAND**® is warm to touch, and using the Thermakraft Aluband Tool, firmly press the **ALUBAND**® onto the wall underlay to ensure good adhesion. Using the Thermakraft Aluband Tool, ensure the tape is fitted tightly into the jamb to sill corners.

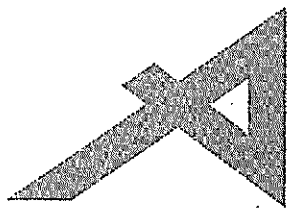
Thermakraft **ALUBAND**® must not be left exposed to the elements for more than 90 days.

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BRANZ Appraised
Appraisal No.614 [2008]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ
APPRAISAL
No. 614 (2008)

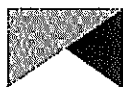
Amended 31 January 2012

ALUBAND™ /
ALUMINIUM WINDOW
SEALING SYSTEM

Thermakraft Industries (N.Z.) Ltd
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Greenmount
Auckland

Tel: 0800 806 595
Fax: 09 273 3726

Web: www.thermakraft.co.nz

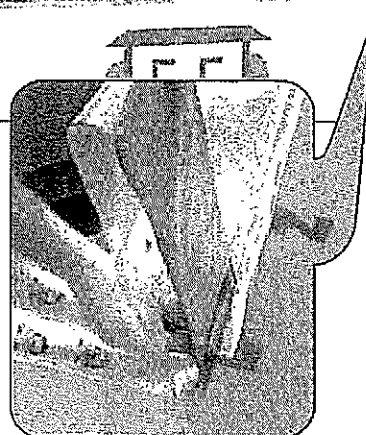
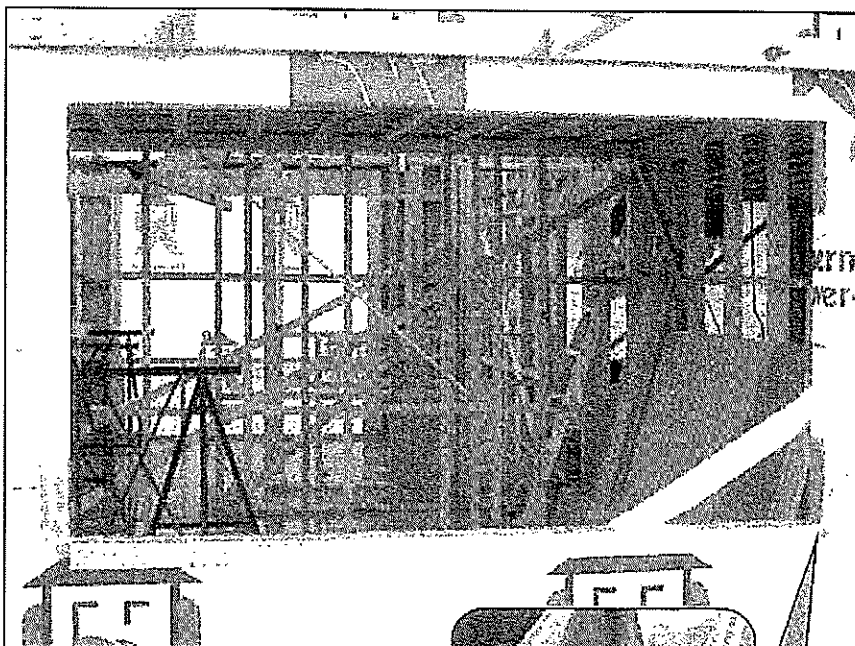


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1.1 The Aluband™ / Aluminium Window Sealing System comprises Aluband™ / Aluminium Window Sealing Tape and the Aluband™ Corner Moulded Piece™. The system is used around framed joinery openings as a secondary weather resistant barrier.

1.2 The system is installed into and around the framed joinery opening over the building wrap and exposed frame to cover both the face and edge of the opening framing. Aluband™ / Aluminium Window Sealing Tape is also used at joinery heads to seal flashing upstands to the building underlay.



2.1 The Aluband™ / Aluminium Window Sealing System has been appraised as a flexible flashing system for use around window and door joinery openings for buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; and,
- with a risk score of 0-20, calculated in accordance with NZBC Acceptable Solution E2/AS1, Table 2; and,
- with wall cladding systems complying with NZBC Acceptable Solution E2/AS1 or a valid BRANZ Appraisal that specifies a flexible flashing system; and,
- with flexible wall underlays compatible with the flashing tape; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

2.2 The Aluband™ / Aluminium Window Sealing System has also been appraised as a flexible flashing system for use around window and door joinery openings for steel framed buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, with regards to building height and floor plan area; and,
- constructed with steel 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,
- with wall cladding systems covered by a valid BRANZ Appraisal that specifies a flexible flashing system; and,
- with flexible wall underlays compatible with the flashing tape and steel frame; and,
- situated in NZS 3604 Wind Zones up to, and including, 'Extra High'.

New Zealand Building Code (NZBC)

3.1 In the opinion of BRANZ, the Aluband™ / Aluminium Window Sealing System, 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. The Aluband™ / Aluminium Window Sealing System meets these requirements. See Paragraphs 8.1 and 8.2.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2. The Aluband™ / Aluminium Window Sealing System contributes to meeting this requirement. See Paragraphs 7.1 - 7.4 and 11.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Aluband™ / Aluminium Window Sealing System meets 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. See Paragraph 7.1.

4.1 System components and accessories supplied by Thermakraft Industries (N.Z.) Ltd are:

- Aluband™ / Aluminium Window Sealing Tape is a polymeric faced, high quality, bituminous modified, self adhesive tape with a polyethylene release backing paper. The tape is supplied in rolls 200, 150, 75 and 50 mm wide x 25 m long and 150 mm wide x 10 m long. The product is printed with the Aluband™ / Aluminium Window Sealing System logo repeated along the length of the roll. The rolls are wrapped in clear polythene film.
- The Aluband™ / Aluminium Corner Moulded Piece™ is made from inert polyethylene and is coloured orange. It is used in conjunction with the Aluband™ / Aluminium Window Sealing Tape and building underlays as part of the Aluband™ / Aluminium Window Sealing System.
- The Aluband™ / Aluminium Tool is used to ensure proper adhesion of the Aluband™ / Aluminium Window Sealing Tape and to achieve a tight fit into corners.

4.2 Accessories used with the system which are supplied by the installer are:

- Aluband™ / Aluminium Corner Moulded Piece™ fixings - staples, clouts or other temporary fixings to attach the corner mould to the framing prior to the installation of the Aluband™ / Aluminium Window Sealing Tape.

Handling and Storage

5.1 Handling and storage of all materials supplied by Thermakraft Industries (N.Z.) Ltd, whether on or off site, is under the control of the installer. The Aluband™ / Aluminium Window Sealing System components must be protected from damage and weather. Rolls must be stored under cover, in clean, dry conditions away from direct exposure to sunlight.

6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for the Aluband™ / Aluminium Window Sealing 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.

General

7.1 The Aluband™/Aluminium Window Sealing System meets the requirements of AC148: 2001 which is an alternative solution to the version of AC148 referenced by NZBC Acceptable Solution E2/AS1 Paragraph 9.1.5(b). The installation method for the Aluband™/Aluminium Window Sealing System is an alternative solution to the installation method shown within NZBC Acceptable Solution E2/AS1, Figures 72(a) and 72(b).

7.2 The use of flexible flashing systems around window and door joinery openings is critical to assist the overall weathertightness performance of window and door joinery installations.

7.3 The Aluband™ / Aluminium Window Sealing System is designed to prevent air leakage and water penetration around window and door openings at framing junctions (e.g. at the sill trimmer and opening stud junction), and to keep any water that gets past the cladding, or through the joinery, from direct contact with the framing timber.

7.4 The Aluband™ / Aluminium Window Sealing System is not designed to overcome poor detailing and workmanship of the window or door joinery installation. The system must not be considered in isolation, but be considered as part of the wall cladding system. The Aluband™ / Aluminium Window Sealing System is designed to be used in conjunction with air seals and joinery flashing systems, not as a substitute.

7.5 When the Aluband™ / Aluminium Window Sealing System is used in conjunction with LOSP (light organic solvent preservative) treated timber, the solvent from the timber treatment must be allowed to evaporate (generally at least one week) prior to the installation of the system.

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 the Aluband™ / Aluminium Window Sealing System both during normal use and maintenance of the building.

Serviceable Life

8.2 Provided it is 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, the Aluband™ / Aluminium Window Sealing System is expected to have a serviceable life equal to that of the cladding.

Maintenance

9.1 No maintenance is required for the Aluband™ / Aluminium Window Sealing System. Regular checks, at least annually, must be made of the junctions between the joinery and wall cladding to ensure that they are maintained weathertight and that the primary means of weather resistance for the junction e.g. flashing, sealant, etc continues to perform its function, to ensure that water will not penetrate the cladding.

Outbreak of Fire

10.1 The Aluband™ / Aluminium Window Sealing 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

11.1 Where a cladding manufacturer specifies the use of generic flashing tapes around window and door joinery openings at framing junctions as part of their system, or they specify the use of flexible flashing tapes that comply with NZBC E2/AS1, Paragraph 9.1.5(b), the Aluband™ / Aluminium Window Sealing System may be used.



Installation Skill Level Requirements

12.1 Installation of the Aluband™ / Aluminium Window Sealing System must be completed by tradespersons with an understanding of flexible flashing systems, in accordance with instructions given within the Aluband™ / Aluminium Window Sealing System Technical Literature and this Appraisal.

General

13.1 The selected building underlay must be installed in accordance with the manufacturer's instructions, and must completely cover the joinery opening. The underlay is then cut on a 45° angle away from each corner of the opening so the flaps can be folded into the opening and secured to the interior face of the timber framing.

13.2 Fit an Aluband™ / Aluminium Moulded Corner Piece™ into each of the bottom corners to create a seal at the corner junction. The corner piece must be fixed to the framing with staples or clouts.

13.3 Before the Aluband™ / Aluminium Window Sealing Tape is applied, the substrate surfaces must be clean, dry and free from any surface contaminants such as dust and grease that may cause loss of adhesion.

13.4 A length of Aluband™ / Aluminium Window Sealing Tape must be cut to the length of the sill plus 400 mm. The tape is installed flush with the interior face of the opening and is applied along the entire length of the sill and 200 mm up each jamb. The overhanging tape is cut at the corner of the opening to allow the tape to be folded onto the face of the building underlay. The Aluband™ / Aluminium Tool must be used to ensure that adequate adhesion of the tape is achieved and that the tape is installed tight into the sill/jamb junction.

13.5 A 400 mm length of Aluband™ / Aluminium Window Sealing Tape must be installed 200 mm down the jamb and 200 mm along the lintel at each of the top corners of the window or door joinery opening. A 50 mm wide x 100 mm long sealing tape 'butterfly' must be installed at 45° across the corner of the head/jamb junction overlapping the corner by 3 mm to create a seal at the corner junction.

13.6 Aluband™ / Aluminium Window Sealing Tape must not be stretched. To avoid wastage, the tape can be lapped 100 mm minimum onto itself without reducing the performance of the Aluband™ / Aluminium Window Sealing System.

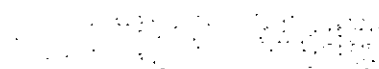
13.7 If the Aluband™ / Aluminium Window Sealing System is exposed to the weather or UV light for more than 90 days, then it must be replaced with new material.

Installation Temperature

13.8 The Aluband™ / Aluminium Window Sealing System must not be installed at temperatures of less than 10°C.

Inspections

13.9 The Technical Literature must be referred to during the inspection of Aluband™ / Aluminium Window Sealing System installations.



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

Tests

14.1 Testing of Aluband™ / Aluminium Window Sealing Tape has been completed by BRANZ to the requirements of ICC Evaluation Service Acceptance Criteria for Flashing Materials AC148. The adhesion of Aluband™ / Aluminium Window Sealing Tape to black bituminous Kraft building paper complying with the requirements of NZBC Acceptable Solution E2/AS1, Table 23 and selected other synthetic wall underlays has been tested and found to be satisfactory.

Other Investigations

15.1 An assessment was made of the durability of the Aluband™ / Aluminium Window Sealing System by BRANZ technical experts.

15.2 Site inspections were carried out by BRANZ to examine the practicability of installation.

15.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

16.1 The manufacture of the Aluband™ / Aluminium Window Sealing System has not been examined by BRANZ, but details of the quality and composition of the materials used were obtained and found to be satisfactory.

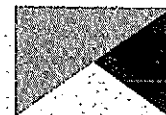
16.2 The quality of supply to the market is the responsibility of Thermakraft Industries (N.Z.) Ltd.

16.3 Designers are responsible for the building design, and building contractors are responsible for the quality of installation of framing systems and building wraps in accordance with the instructions of the designer.

16.4 The quality of installation, handling and storage on site is the responsibility of the installer in accordance with the instructions of Thermakraft Industries (N.Z.) Ltd.

Sources of Information

- ICC Evaluation Service, Inc, AC148 Acceptable Criteria for Flexible Flashing Materials, July 2001.
- NZS 3604: 2011 Timber-framed buildings.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.



BRANZ

In the opinion of BRANZ, Aluband™ / Aluminium Window Sealing 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 Thermakraft Industries (N.Z.) Ltd, 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 Industries (N.Z.) Ltd:
 - 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. 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.
4. 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 Industries (N.Z.) Ltd.
5. 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.
6. BRANZ provides no certification, guarantee, indemnity or warranty, to Thermakraft Industries (N.Z.) Ltd or any third party.

For BRANZ

C. Preston
Chief Executive


Amendment No. 1, dated 31 January 2012.

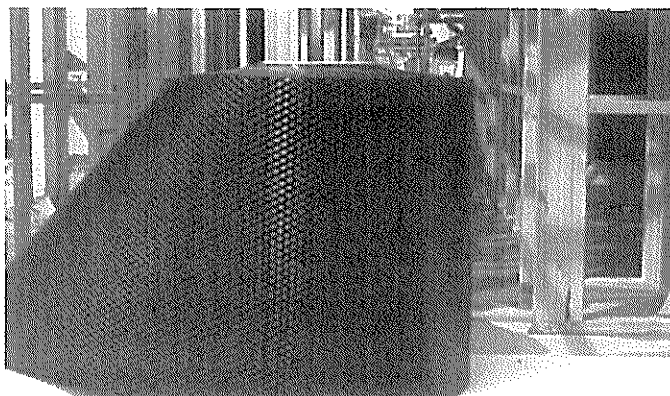
This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.

Date of issue: 7 July 2008

SUPERCOURSE 500 HI-IMPACT EMBOSSED POLYETHYLENE DPC

APPLICATION AND INSTALLATION

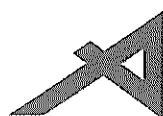
Product Description		Thermakraft Supercourse 500 DPC and CONCEALED FLASHING is a hi-impact polyethylene film, embossed on both sides.	
Product Advantage		Thermakraft Supercourse 500 DPC is used as a general damp-proof course (DPC), and also as a concealed flashing for brick veneer cladding.	
	DPC	Thermakraft Supercourse 500 DPC will provide the ideal protection and prevent walls, floors and structural elements in contact with the ground absorbing or transmitting moisture.	
		Thermakraft Supercourse 500 DPC is a suitable moisture impremeable alternative to bituminous DPCs. It is intended for use as a DPC separating timber and wood-base products from concrete or masonry elements, or where required, timber jack studs or bearers from timber piles.	
FLASHING		Thermakraft Supercourse 500 DPC is also suitable for use as a flashing material for weather sealing window and door joinery installations in masonry veneer wall claddings.	
Application		DPC	
		Strips of Thermakraft Supercourse 500 DPC may be cut to length with a sharp knife. Surface must be smooth and flat, free from sharp ridges that may puncture membrane. The strip of Thermakraft Supercourse 500 DPC must be wide enough to fully protect the width of material in contact with concrete or masonry. A small slit should be made in the material to accommodate the bolts or fixings when used under timber plates or concrete floors or foundation walls.	
FLASHING		Thermakraft Supercourse 500 DPC must be fixed in place to framing members at 300mm centres with small hot-dip galvanised clouts. Horizontal and vertical joints must be no less than 75mm wide, with the direction of the lap ensuring that water is shed to the outer face of the flashing. At the sill/jamb junction, the jamb flashing must overlap the sill flashing.	
		Thermakraft Supercourse 500 DPC when installed as a flashing as part of a brick veneer cladding system, will assist in the brick veneer cladding systems code compliance with NZBC Clause E2.3.2.	
Storage		Thermakraft Supercourse 500 DPC should be stood one end in dry conditions, protect from weather and direct sunlight	
Roll Dimensions		50mm x 30m	100mm x 30m
		75mm x 30m	150mm x 30m
		90mm x 30m	200mm x 30m
			250mm x 30m
			300mm x 30m
			1000mm x 30m
Note: special widths available on request (conditions apply)			



SUPERCOURSE 500 HI-IMPACT EMBOSSED POLYETHYLENE DPC

TECHNICAL SPECIFICATIONS

Durability



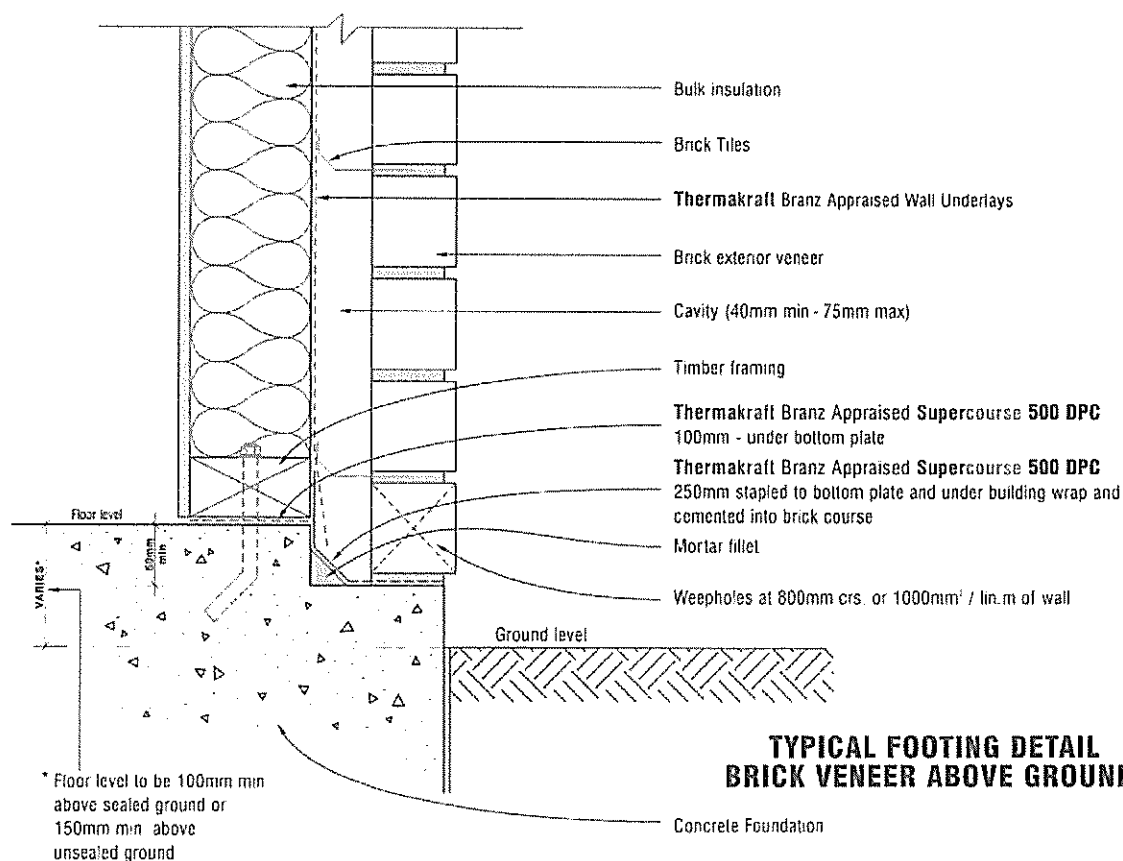
BRANZ Appraised
Appraisal No. 329 [2005]

Thermakraft Supercourse 500 DPC and CONCEALED FLASHING will meet the performance requirements of NZBC Clauses B2 Durability B2.3.1(a) 50 years, B2.3.1(b) 15 years and E2 External Moisture providing;

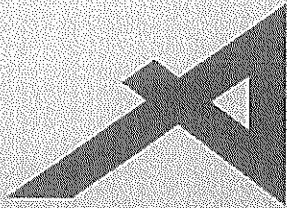
- must be installed in accordance to the "APPLICATION and INSTALLATION GUIDELINES"
- is not left exposed for more than 30 days
- when used on LOSP treated timber, the timber must be free of solvent
- installed in accordance with the NZBC and NZS 3604:1999
- installed by or under guidance of Licensed Building Practitioners

Technical Data

Thermakraft Supercourse 500 DPC has a minimum thickness of 0.5mm. The total thickness of the product after embossing is 0.75mm, and meets the water permeability test requirements of AS/NZS 4347.1-1995.



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.



BRANZ Appraised
Appraisal No.329 [2005]

BRANZ Appraisals

Technical Assessments of products
for building and construction

BRANZ APPRAISAL

No. 329 (2005)

This Appraisal replaces BRANZ
Appraisal No. 329 (1996) issued
October 1996.

Amended 31 January 2012.

SUPERCOURSE 500 DAMP-PROOF COURSE & CONCEALED FLASHING

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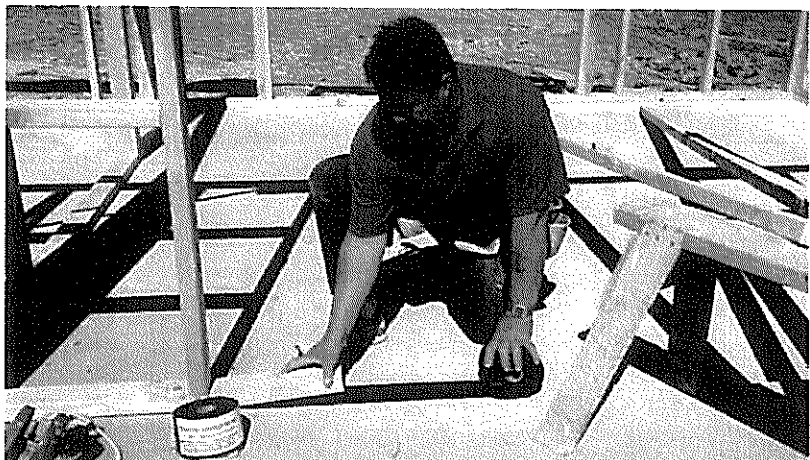
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1.1 Supercourse 500 is a single layer black polyethylene, embossed on both faces to produce a small diamond pattern. It is for use as a general damp-proof course (DPC), and also as a concealed flashing for brick veneer cladding.



Scope

2.1 Supercourse 500 has been appraised for use as a damp-proof course within the following scope:

- for separating timber, wood-based products and metal from concrete, masonry or brick; and,
- as a moisture barrier and flashing in masonry veneer constructed in accordance with NZBC Acceptable Solution E2/AS1 and NZS 4229.

2.2 Supercourse 500 has also been appraised for use as a concealed flashing at jambs and sills of aluminium window and door joinery in masonry veneer walls constructed in accordance with NZBC Acceptable Solution E2/AS1.

Building Requirements

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), 50 years. Supercourse 500 meets this requirement. See Paragraph 8.1.

Readers are advised to check the validity of this Appraisal by referring to the Valid Appraisals listing on the BRANZ website, or by contacting BRANZ.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.2 and E2.3.3. When used as a DPC, Supercourse 500 will meet the requirements of 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. 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** in terms of the New Zealand Building Code compliance.

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 20 m long and is available in widths of 50, 75, 90, 100, 150, 200, 250, 300, 400, 500 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 Appraisal must be followed.

Design Information

General

7.1 Supercourse 500 is a suitable moisture impermeable alternative to bituminous DPC's and flashings. It is intended for use as a DPC separating timber and wood-based products from concrete or masonry elements, or where required, timber jack studs or bearers from timber piles, e.g. where required by NZS 3604, Paragraph 2.3.3.

7.2 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 suitable for use as a flashing material for weather sealing window and door joinery installations in masonry veneer wall claddings as detailed in the Technical Literature.

Timber Treatment

7.4 Supercourse 500 when used as a DPC or concealed flashing, is suitable for use in contact with timber treated with light organic solvent preservative (LOSP) or water-based timber preservatives.

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 Solution C/AS1 Part 6 by NZBC Acceptable Solution C/AS1 Part 6, Paragraph 6.20.4 (d).

Outbreak of Fire

10.1 Supercourse 500 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

11.1 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.

11.2 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.

Insulation 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

- 14.1 Supercourse 500 must be fixed in place to framing members at maximum 300 mm centres with small hot-dip galvanised clouts.
- 14.2 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.
- 14.3 At the sill/jamb junction, the jamb flashing must overlap the sill flashing.

Technical Appraisal

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

Tests

- 15.1 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

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

Quality

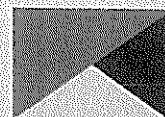
- 17.1 The manufacture of Supercourse 500 has been examined by BRANZ, and details of the methods adopted for quality control and the quality of the materials used, have been obtained.
- 17.2 The quality management system of the Supercourse 500 manufacturer, Cromford Pty Ltd, has been assessed and registered as meeting the requirements of ISO 9001: 2008.
- 17.3 The quality of supply to the market is the responsibility of Thermakraft Industries (NZ) Ltd.
- 17.4 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 Industries (NZ) Ltd.
- 17.5 Quality of installation is the responsibility of the installer in accordance with the instructions of Thermakraft Industries (NZ) Ltd.

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: 1999 Concrete masonry buildings not requiring specific engineering design.
- Compliance Document for New Zealand Building Code External Moisture Clause E2, Department of Building and Housing, Third Edition July 2005 (Amendment 5, 1 August 2011).
- New Zealand Building Code Handbook Department of Building and Housing, Third Edition (Amendment 12, 10 October 2011).
- The Building Regulations 1992.

Amendment No. 1, dated 31 January 2012.

This Appraisal has been amended to update clause changes as required by the introduction of NZS 3604: 2011 and NZBC Acceptable Solution E2/AS1 Third Edition, Amendment 5.



BRANZ

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 the Appraisal Holder, Thermakraft Industries (NZ) Ltd, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

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. The Appraisal 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 Appraisal Holder.
5. 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.

For BRANZ

P Robertson
Chief Executive

Date of issue: 23 September 2005