



## TECHNICAL & INSTALLATION MANUAL

This information is provided by Asphalt Shingle Roofing New Zealand Ltd, PO Box 24 580, Royal Oak, Auckland, New Zealand.

For the latest technical information, refer to the web site [www.asphaltshingle.co.nz](http://www.asphaltshingle.co.nz)

### VERSION 1.1

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VERSION 1.1

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## 1 GENERAL INFORMATION

### 1.1 Introduction

This Technical Manual is intended for specifiers/installers in order to correctly assemble Asphalt Shingle Roofs over plywood on timber framed buildings complying with NZS 3604.

Detailed drawings of the most common construction situations are found at the rear of this Manual.

Any changes to Asphalt Shingle Roofing New Zealand (ASRNZ) specifications must be confirmed in writing with designer, contractor, and builder.

- ☒ All action for remedial work to rectify problems such as misaligned framing, irregular substrates, lack of blocking etc, must be agreed and confirmed in writing with the designer, contractor, and builder with ASRNZ representative.

### 1.2 Building Code Clauses

When installed in accordance with this Technical Manual the Asphalt Shingle Roof will meet the relevant provisions of the New Zealand Building Code (NZBC) Clauses.

- ☒ B2 Durability
- ☒ C3 Spread of Fire
- ☒ E2 External Moisture
- ☒ F2 Hazardous Building Materials

### 1.3 Health and Safety

- ☒ Please refer to the Manufacturers MSDS (Material Safety Data Sheets) for Identification of Hazards associated with products used.
- ☒ Building frames must be erected and must be solid enough prior to Asphalt Shingle installations. Do NOT commence work unless the work environment and building frames are safe to work on.

## 2 PRODUCT INFORMATION

### 2.1 Pabco Asphalt Shingles

The Pabco Asphalt Shingle Roof consists of mainly asphalt saturants, coatings and fibreglass base materials. These components are then combined during the production process. Asphalt is a unique material which occurs both naturally and as a by-product of crude oil refining.

Asphalt Shingles are most commonly available in strips of shingles for convenience. Typical shingles are in rectangular shapes with textural cut-outs which are exposed to the naked eye in order to form aesthetically pleasing tile effects.

Pabco Asphalt Shingles consist of;

- ☒ A base material is made of fibreglass mat.  
Serves as the matrix which supports the other components and gives the product the strength to withstand manufacturing, handling, installation and service conditions.
- ☒ A specially-formulated asphalt coating.  
Provides the long-term ability to resist weathering and remain stable under severe service temperature extremes.
- ☒ A surfacing of weather resistant mineral granules.  
Shields the asphalt coating against the UV rays, adds colour to the product and provides fire resistance.

### 2.2 Materials and Components

Plywood

- ☒ Plywood must be 15mm DD graded Tongue and Groove (T&G) complying with AS/NZS 2269.0:2008 and 1604.3:2004.
- ☒ A minimum standard of treatment to H3 MUST be used in areas where roof pitch is under 10 degrees or on a skillion roof.
- ☒ Plywood sheets must have staggered joints in order to provide more shear strength of the roof.
- ☒ Fixings used must comply with Table 20 of Compliance Document E2/AS1.

- ☒ Dimensions :  
Length: 2400mm or 2700mm  
Width: 1200mm  
Thickness: 15mm
- ☒ Other suppliers, grades and thicknesses may be used with an agreement between the contractor, specifier and ASRNZ representative.

Roofing Underlay

- ☒ 15lb, 30lb Felt Underlay
- ☒ A minimum requirement of 15lb saturated felt Underlay is laid over the plywood.
- ☒ Other suppliers, grades and thicknesses may be used with an agreement between the contractor, specifier and ASRNZ representative (refer to technical drawing 1.31-sheet 03) .

Asphalt Shingles

- ☒ 340mm wide x 1030mm long Pabco Asphalt Shingles are laid over the Roofing Underlay in specific installation methods provided by ASRNZ Shingle Installations Guide at the rear of this manual.

PVC Drip edge

- ☒ The Drip edge supplied by ASRNZ is slipped over exposed plywood edge protecting the end grain as well as the topside and underneath side of the ply.
- ☒ Pre-formed drip edge MUST face down into the Spouting.
- ☒ Provide fixings at every 200mm.
- ☒ PVC drip edge channels MUST be installed prior to installation of Peel and Stick (P&S) Starter Course (refer to technical drawing 1.32-sheet 03) .

Barge Flashing

- ☒ Colour steel or copper barge flashings are most common.
- ☒ Do NOT drive fixings too deep and cause barge flashing to buckle.
- ☒ Fixing holes must be made weathertight (refer to technical drawing 1.34-sheet 03) .

Roof to wall junction (apron and step flashings)

- ☒ Butynol or colour steel are the most common materials used to flash the

Roof to wall junction.

#### Ridge Ventilation

- ☒ Pre-fabricated Ridge Ventilation shall be supplied by the ASRNZ installer and shall be installed as per this Technical and Installation Manual.
- ☒ ASRNZ approved pre-fabricated ridge vents.
- ☒ In most cases, the ventilated ridge provides the best form of ventilation for the roof space below. All nogs MUST NOT restrict air movements.
- ☒ Ridge Ventilation can be fragile when fixings penetrate too deep, and the installer must be careful not to damage ventilation gaps (refer to technical drawing 2.10 / sheet 07) .
- ☒ Pabco Ridge shingles are installed above for cosmetic reasons.

#### Ridge Shingle

- ☒ Pabco Ridge shingles are to be installed on top of Ridge Ventilations.
- ☒ It is important to overlap Ridge shingles away from the prevailing wind direction, to prevent wind driven moisture to fall away from the ridge shingle overlap (refer to technical drawing 1.51-sheet 05) .

#### Adhesives

- ☒ Adhesives are supplied by ASRNZ which have been independently tested for performance.

#### ASRNZ Peel and Stick (P&S) Starter Course

- ☒ ASRNZ P&S Starter Course is to provide extra protection against the weather.
- ☒ P&S Starter Courses MUST be installed around the perimeter of the Roof and elsewhere specified, by the ASRNZ installer (refer to technical drawings 1.21-sheet 02/ 2.30-sheet 09/ 2.40 -sheet 10) .

#### Butynol

- ☒ Butynol and accessories are supplied by ARDEX NZ
- ☒ Butynol sheet is installed by trained ASRNZ installers

### 2.3 Storage

An important aspect of maintaining the quality of the product that emerges from the manufacturing line is proper storage. Do NOT install any ASRNZ Roofing materials or accessories that show signs of damage or deterioration. If there is doubt, contact ASRNZ.

### 2.4 Storage Guide

- ☒ Store Asphalt Shingle bundles in a cool, dry place in stacks of not more than 4 stacks high. If higher stacking is necessary, use racks or bins that prevent the weight of the bundles on the upper pallets from bearing down on the bundles below.
- ☒ Systematically rotate all stock so that the material that has been stored the longest will be the first to be moved out.
- ☒ Store roll materials upright. If several tiers must be stored on top of one another, place plywood sheets between the tiers to prevent damage to the ends of the rolls and to stabilize the stacks.
- ☒ It is not recommended to store asphalt roofing products outdoors for extended periods of time. Shingles may be stored outdoors provided they are stored on raised platform or pallets so that they are not in contact with the ground and are covered from the weather.

### 3 PRIOR TO INSTALLATION

#### 3.1 General Instruction

ENSURE all building work complies with the New Zealand Building Code. TO QUALIFY FOR FULL WARRANTY PROTECTION AND TO OBTAIN STATED COVERAGE, THE INSTALLATION INSTRUCTIONS CONTAINED IN THIS MANUAL MUST BE FOLLOWED. Ask your supplier/installer for more details with regards to warranty information.

Ventilation;

In order to prevent harmful condensation, air MUST circulate freely under the roof deck. Refer to Technical drawings at the rear of this manual for more detailed information for ventilation at Ridge, Apron and Fascia junctions.

The main contractor shall be responsible for achieving sufficient ventilation, and all noggings shall NOT restrict the free air circulation within the roof space.

#### 3.2 Substrates

The substrate that is referred to in this manual deals with the main substrate that the asphalt shingles are directly laid upon, which should be 15mm DD graded Tongue and Groove Plywood. If another substrate other than that specified in this manual is to be used, the ASRNZ representative must be consulted prior to installation.

Applications directly over Polyurethane or Polystyrene surfaces are strictly prohibited.

#### 3.3 Timber Treatment

All plywood must be treated to comply with NZS 1604.3:2004

#### 3.4 Roof Frame layout and noggings

The ASRNZ roofing system may be fixed to new or existing timber or steel frame constructions. New timber frame

construction must be in accordance to NZS3604, 3603 and 1170 depending on situations.

DO NOT commence work if roof frames does not meet the appropriate New Zealand Standards.

#### 3.5 Fly Rafter

Do NOT commence work where the main contractor has not left sufficient spacing for ASRNZ roofing system to be fitted into, between Fly Rafter and Pitched Truss member. The main contractor shall be responsible for achieving this spacing prior to ASRNZ Roofing system installation. Refer to technical drawing 2.90-sheet 17 for details.

#### 3.6 Flat Deck to Pitched Roof Junction

Asphalt Shingles are NOT to be installed on flat decks or roofs. The main contractor and ASRNZ installer shall work in conjunction in order to achieve the correct layering of Deck membrane and ASRNZ roofing system for weather tightness.

#### 3.7 Repair/remedial works

- ☒ Do NOT attempt to remove existing layers of Asphalt Shingles. Apply new Asphalt shingles directly over the existing shingles.
- ☒ In order to correctly determine the main cause of defects, always check for moisture damages in plywood prior to resurfacing of shingles.
- ☒ If in doubt contact the ASRNZ representative.

## 4 INSTALLATIONS

### 4.1 Regulations

It is the builder's or framing installer's responsibility to ensure frame work is set out true in the correct alignment, as required by the Designer. Before installing plywood, check roof framing is true and in the correct alignment with rafters or trusses at 600mm, 800mm or 900 mm centres, noggings are in place, and blocking is provided for support of plywood edges where required.

All framing shall comply with the requirements of NZS 3604 code of practice for light timber frame buildings not requiring specific design, or be to a specific structural design.

Pipes and service penetrations E2/AS1  
reference: paragraph 8.5.9 .

Any pipes, chimneys or other protrusions through the roof must be sealed/flushed with a suitable sealant or designed flashing.

Roofing Underlay is ASRNZ installer's responsibility for installing the appropriate brand of good quality underlay, according to the Designer's requirements. Check correct material has been quoted as required by the Designer.

### 4.2 Plywood installation

- ☒ A major advantage with the ASRNZ roofing system is that full plywood sheets are laid over timber frames. This means that it provides extra strength against shear forces to brace the structures of the frames.
- ☒ In order to prevent any weak points in the joints of plywood, 15mm DD graded Plywood is Tongue and Grooved and Staggered to provide additional shear strength.
- ☒ Plywood is fixed using 60mm flathead ring shank nails at a maximum spacing of 200mm from the around the outside of the sheet and 300mm to the centre of the plywood.

- ☒ Fixings shall comply with Table 20 of E2/AS1.

- ☒ Always start installation of plywood at the bottom corner of the roof with a full sheet of plywood (refer to technical drawing 1.21-sheet 02) .

### 4.3 Underlay Installation

- ☒ After the plywood has been properly installed and is sufficiently dry, install appropriate water-proof underlay over the plywood. Typically in New Zealand conditions, 15lb felt Underlay is suitable for most regions, but there are variation with different regions therefore it is a good idea to check with local regulations.

- ☒ Where roof pitch is greater than 15 degrees, single layer of felt underlay is sufficient.

- ☒ Always lay the felt underlay parallel to the eaves.

- ☒ Underlay MUST be overlapped 50mm horizontally and 100mm vertically at junctions (refer to technical drawing 1. 31 -sheet 03) .

- ☒ For roof pitches between 12 to 15 degrees, double layer of felt underlay is required. Otherwise Bitumen Self Adhesive Membrane can be used.

- ☒ The ASRNZ shingle roof system cannot be installed over roofs with pitch less than 12 degrees.

- ☒ ASRNZ require all residential Asphalt Shingle roofs to have underlay installed. ASRNZ shingle fire rating has been tested only in conjunction with the presence of underlay.

#### 4.4 Pabco Asphalt Shingle Installation

##### General Installation

- ☒ Starting point of shingle installation is vital to achieve good workmanship quality. Where there is a valley, dormer and hip junctions are present, start with a full shingle at the rake corner and start working towards the junction.
- ☒ In a simple roof layout, where there is no critical junction in roof form, it is a good idea to start with a full shingle at the most visible rake corner of the roof.
- ☒ Always lay Pabco Asphalt Shingles parallel to the eaves.
- ☒ P&S Starter Course MUST be applied around the perimeter of the roof (around the eaves and barge ends), prior to installation of Asphalt Shingles.
- ☒ 340mm wide Pabco Asphalt Shingle has 140mm exposure and 200mm vertical overlap with subsequent shingle above.
- ☒ Horizontal overlaps are not required.
- ☒ All fixings MUST be covered by the subsequent layers above.
- ☒ Refer to technical drawing 1.41-sheet 04 for more details.

##### Hips

- ☒ Shingles are laid up to within 10mm of hips and not lapped over the hip.
- ☒ Pabco Ridge Shingles are used to cover hip junctions.

##### Valleys

- ☒ One of the major advantages with Pabco Asphalt Shingle Roofing System is that there is no need for valley gutters, which achieves more attractive roof line.
- ☒ Asphalt shingles are laid through the valley to a minimum of 300mm up onto the next face of the roof.

- ☒ The next face of the roof is laid with shingles being cut to the line of the valley offsetted by 50mm from the valley centre line. The top corner of this shingle is cut off on an angle and a layer of sealant is applied between the shingles to stop water tracking.
- ☒ No fixings shall be within 150mm of the bottom of the valley and no vertical joints within 300mm of the valley.
- ☒ Refer to technical drawing 2.20-sheet 08 for more details.

##### Step Flashing

- ☒ Butynol or coloursteel (refer to technical drawing 1.61-sheet 06) .

##### Kickout Flashing

- ☒ Kickout flashing is absolutely vital, in order to keep water out from cavity space behind wall cladding.
- ☒ ASRNZ shall provide either pre-fabricated PVC Kickout flashing, or shall form one out of folded metal.
- ☒ All Kickout flashings MUST be installed prior to any Asphalt Shingle installation begins.

##### Barge Flashing

- ☒ Barge flashings must be installed by ASRNZ as per this manual (refer to technical drawing 2.40-sheet 10) .

## 5 ROOF CARE & MAINTENANCE

### 5.1 General Information

Properly installed Asphalt Shingle Roofs will provide years of protection. Even so, there are certain aspects of roof care such as those listed below that the owner should be made aware of to ensure maximum roof performance.

Do NOT paint over Pabco Asphalt Shingles without consultant of ASRNZ representative.

Do NOT allow any downpipes to pour water directly onto shingles.

Minimise any forms of litter settle on roof surfaces.

Make annual inspections.

### 5.2 Maintenance

A type of roof discolouration caused by algae and commonly referred to as "fungus growth" is a frequent problem throughout the country. It is often mistaken for soot, dirt, moss or tree droppings.

[Pabco Scotchgard Algae Resistant Roofing System can prevent this problem for a period of 20 years.](#)

The algae that cause this discolouration do not feed on the roofing material and, therefore, do not affect the service life of the roofing. However, the natural pigments in the algae may gradually turn a white or light roof to dark brown or black over a period of years.

Algae discolouration is difficult to remove from roof surfaces but it may be lightened with a diluted cleaning solution (contact one of the ASRNZ representatives). Sponge the solution on the roof surface gently; scrubbing will loosen and remove granules. Apply the solution careful to avoid damaging other parts of the building and/or surround landscape. If possible, work from a ladder or walkboards to avoid walking directly on the roof surface. Observe safety precautions whenever working on or near the roof. After

sponging, rinse the solution off the roof with a hose.

The effectiveness of such cleaning is only temporary and the discolouration may recur.