

TECHNICAL INFORMATION

FOR

TIMBER

SHINGLES & SHAKES

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PRODUCT SPECIFICATIONS

SOUTH PACIFIC RADIATA PINE SHINGLES

The information contained in this specification is applicable only to treated Radiata Pine shingles manufactured and distributed by South Pacific Shingles (2003) Ltd and does not apply to any product which does not carry the South Pacific Shingles label.

PRODUCT DESCRIPTION

South Pacific Shingles are quarter sawn from selected Pinus Radiata roundwood blocks recovered from the forest floor after felling and removal of sawlog requirements. After sawing, the shingles are graded to an international quality standard, kiln dried, packed in bundles, palletised and preservative treated.

GRADES

#1 BLUE LABEL - Premium Grade - roof and wall application

Quarter sawn, free of all defects, 100% vertical grain, free from flat sawn grain, gum pockets and pith.

#2 RED LABEL - Standard Grade - wall application or non critical roof

Quarter sawn, free of gum pockets and pith, grain deviation is allowed and sound intergrown defects are permitted in the upper 1/3rd of the shingle.

A utility grade of Radiata Pine Shingles can be produced for specific interior decor applications.

PACKAGING

Radiata shingles are a uniform, nominal, length of 405mm, with a butt end thickness of 10mm tapering to 2mm. Widths of individual shingles are random and vary between 55mm and 200mm. Shingles are packed in a standard bundle. Freight calculations can be based on 30kg and 0.07 m³ per bundle.

TREATMENT

Radiata shingles are preservative treated using the NATUREWOOD ACQ process which impregnates an Alkaline Copper Quaternary solution under pressure.

The ACQ process is marketed by Osmose New Zealand, a company recognised as a world leader in timber treatment technology. The process is licensed to Papakura Timber Processors. The shingles are treated at their facility situated in South Auckland. The plant registration number is 131.

Scientists at the prestigious Forest Research Institute in Rotorua have monitored the performance of timber shingles in an exposed test site since 1977. Of the five different species and treatments, results to date indicate a superior durability for radiata pine shingles treated with ACQ. All available performance data on timber shingles in the Pacific region provides convincing evidence that a superior preservative treatment is necessary to prevent insect attack and fungal decay. South Pacific Radiata Shingles are the only product to receive the treatment

discipline described above.

SOUTH PACIFIC CEDAR SHINGLES

The information contained in this specification is applicable only to Western Red Cedar or Alaskan Yellow Cedar shingles imported and distributed by South Pacific Shingles (2003) Ltd and does not apply to any product not carrying a quality assurance label issued by a registered certifying authority recognised by South Pacific Shingles (2003) Ltd.

PRODUCT DESCRIPTION

Cedar shingles are quarter sawn from selected Western Red Cedar (*Thuja Plicata*) or Alaskan Yellow Cedar (*Chamaecyparis Nootkatensis*) blocks, salvaged from cut over forest supplemented by saw log resource. After sawing the shingles are graded to an international quality standard, packed in bundles, palletised and kiln dried. At the buyers request, preservative and fire retardant treatments are available. Cedar shingles are available in lengths of 405mm, 455mm and 610mm. Fancy butt shingles with profiled exposure are also available. All following data relates to 455mm (PERFECTION) shingles which is the stock size offered for sale by South Pacific Shingles. Other production can be indented to client requirements.

GRADES

BLUE LABEL #1 GRADE - roof and wall application

Quarter sawn, free of all defects, 100% heartwood, 100% edge grain, free from resin pockets and pith.

RED LABEL #2 GRADE - wall application or non critical roof

Free of defects in 280mm measured from the butt, limited sapwood permitted, flat grain permitted, resin and pith pockets permitted in the upper 175mm.

PACKAGING

Cedar shingles are a uniform, nominal length of 455mm, with a butt end thickness of 10mm tapering to 2mm. Widths of individual shingles are random and vary between 55mm and 350mm. Shingles are packed in a standard bundle. Freight calculations can be based on 15 to 20kg and 0.07 m³ per bundle.

TREATMENT

There are natural resins and oils present in Cedar which provide resistance to decay giving the timber a durability for which it is recognised throughout the world. The Cedar Shake & Shingle Bureau specifies preservative treatment as "desirable" in areas where the climate combines heat and humidity for considerable portions of the year. In Northern New Zealand and the Pacific Basin, preservative treatment is essential for roofing shingles to achieve the minimum service life specified in standard building codes. Used as a wall cladding Cedar shingles do not require treatment, though, it remains as an option to increase durability.

South Pacific Cedar roofing shingles are preservative treated, in Canada, using a Copper Chrome Arsenate (CCA) pressure impregnation regime. The shingles are subsequently re dried to remove excess moisture.

The preservative process is carried out by licensed plant operators in British Columbia. Salt retention is set at 6.4kg/m³ which exceeds the requirement of the NZ Treatment Preservation Council specification H3 to protect timber for moderate hazard not in ground contact.

SOUTH PACIFIC CEDAR SHAKES

The information contained in this specification is applicable only to Western Red Cedar shakes imported and distributed by South Pacific Shingles (2003) Ltd and does not apply to any product not carrying a quality assurance label issued by a registered certifying authority recognised by South Pacific Shingles.

PRODUCT DESCRIPTION

Cedar shakes are produced from Western Red Cedar (*Thuja Plicata*) in a range of variants. They are a different product to shingles and the two names are not interchangeable. Shakes are available in 455mm and 610mm lengths with butt end thicknesses of 9mm, 13mm (Mediums) and 19mm (Heavies). Finishes are available as Handsplit-and-Resawn, Tapersawn, Tapersplit, Handsplit and Straight-split. All following data relates to the stock lines offered for sale by South Pacific Shingles. Other production can be indented to client requirements.

Stock lines are :-

- 610mm x 13mm Handsplit-and-Resawn Mediums, having a split face and sawn back.
- 610mm x 16mm Tapersawn having a uniform sawn finish on both faces.

GRADES

BLUE LABEL PREMIUM GRADE - for roof and wall application
Free of all defects. 100% heartwood. 100% edge grain.

BLUE LABEL #1 GRADE - for roof and wall application
Free of all defects. 100% heartwood. Mixed grain permitted.

PACKAGING

Cedar Shakes are a uniform, nominal, length of 610mm with a butt end thickness as noted above and tapering to 2mm. Widths of individual shakes are random and vary between 75mm and 270mm. Shakes are packed in a standard bundle. Freight calculations can be based on 15 to 20kg and 0.07 m³ per bundle.

TREATMENT

With Hand Split-and-Re sawn Shakes, the uneven surface reduces water retention between courses and permits greater air circulation. This feature combined with the additional timber thickness gives a longer service life, compared to shingles, for the untreated or natural product. It is recommended that for the Northern regions of New Zealand, roofing shakes, and particularly Taper sawn shakes, be preservative treated to ensure the minimum service life specified in standard building codes. When used as a wall cladding, treatment is not required. South Pacific Shingles Cedar Shakes, when treatment is required, are preservative treated in Canada using the CCA discipline fully described under the Cedar Shingle TREATMENT heading.

TECHNICAL DATA

Information detailed under this heading is common to both our Radiata Pine and Cedar shingles. Detailed information on Cedar shakes is available on enquiry to South Pacific Shingles.

TERMINOLOGY

- PITCH** : The slope of the roof measured in degrees.
COVERAGE : The area covered by one bundle of shingles at a given exposure.
EXPOSURE : The portion of the shingle left exposed to the weather.
STARTER : The initial course of shingles laid at the fascia line.
COURSE : A row of shingles.

MINIMUM PITCH

Timber shingles are a traditional roofing material best suited to a steeply pitched roof. It is recommended that they should not be applied to a roof plane pitched lower than 18 degrees.
NOTE: For roofing in the range 18° to 30° refer to special requirements for underlay.

COVERAGE & EXPOSURE

The following table shows the nominal gross area of cover for one bundle of shingles when installed at the various recommended maximum exposures. Note: This table does not apply to any of the shake products.

RADIATA PINE SHINGLES			WESTERN RED CEDAR SHINGLES		
PITCH	EXPOSURE	COVERAGE	PITCH	EXPOSURE	COVERAGE
18° - 45°	125mm	2.10 m ²	18° - 45°	140 mm	2.32 m ²
45° - 60°	135mm	2.26 m ²	45° - 60°	150 mm	2.50 m ²
90° Wall	145mm	2.43 m ²	90° Wall	160 mm	2.65 m ²

QUANTITY ESTIMATING

Use the following formula to estimate the quantity of shingles required to cover the job area as measured from building plans or a site visit.

$$\text{Total Surface Area divided by coverage (as above)} = \text{Number of bundles required.}$$

This provides a base number only and additional allowance must be included for capping, cutting and waste. These allowances are quantified as follows:

STARTER COURSE

Allow one bundle for every 16 metres of roof fascia or wall base.

CAPPING

Allow one bundle for every 9 metres of ridge and/or hip.

CUTTING

Allow one bundle for every 9 metres of valley.

WASTE

It is prudent to allow an overall percentage of the estimated quantity as waste arising from cutting and trimming. This may range from 3% to 7% depending on the complexity of the roof/wall structure.

CHECK

As a final check divide the Total Surface Area by the number of bundles calculated. The result for roofing should be between 1.8 and 2.1 square metres of net effective cover per bundle. Wall coverage's are more variable so it is difficult to provide an average.

WEIGHT

At the recommended exposure shingles have a loading weight, at equilibrium moisture content as per the following table:

Roof pitched 18° to 45° : 11 - 12 kg per m²

Roof pitched 45° to 60° : 09 - 10 kg per m²

Roof pitched over 60° : 08 - 09 kg per m²

These weight ranges encompass both Pine and Cedar shingles. Timber shingles are a light weight roof covering in accordance with NZS 3604, The New Zealand Code of Practice for Light Timber Framed Construction.

FASTENINGS

Recommended fastenings are corrosion resistant nails or stainless steel staples.

Nails may be Silicone Bronze, Stainless Steel or hot dip Galvanised. Shank length should be in the 30mm to 40mm range with a diameter of not more than 2.5mm. The nails must be flat head and ideally annular grooved.

Staples in stainless steel are manufactured for South Pacific Shingles and marketed by the Company under the product codes : NSS - 32DP ; NSS - 36DP ; NSS - 45DP. This staple is fabricated in 1.55mm, 304 grade stainless steel wire. Crown width is 10mm and shank length 32mm, 36mm or 45mm. Cut with divergent points the staple shanks spread on penetration and this feature greatly enhances holding. The staple fits all pneumatic guns designed for "N" series staples.

The quantity of fastenings is estimated at:

455mm Cedar Shingles - 210 per bundle

405mm Radiata Pine Shingles - 250 per bundle

610mm Western Red Cedar Shakes - 100 per bundle

CONSTRUCTION DETAILS

GENERAL

South Pacific Shingles may be fixed to timber battens, timber sarking or construction grade plywood of a minimum 12mm thickness although 15mm T&G roofing ply is recommended. Where shingles are being used for re-sheathing, counter battens can be fixed over the existing cladding and the application details are then the same as for new work. While shingles are normally applied in straight courses, placement may be varied to achieve a range of different effects. Where a staggered exposure is used the recommended exposure is the maximum and the effect is achieved by reducing exposure on selected shingles. It is important that the recommended exposure is not used as the median.

BATTENS

Recommended timber for battens is Radiata Pine treated to the NZTPC specification H1 or H3. Battens may be rough sawn however thickness gauged timber is preferred.

Batten centres are the same as the exposure on the shingles. In placing battens, care must be taken to ensure that knots or other defects are not placed over the span between rafters or structural supporting timbers.

The following table gives recommended batten sizes :

SUPPORT CENTRES	NOMINAL BATTEN SIZE
Up to 900mm	50mm x 25mm
900mm to 1200mm	50mm x 40mm
1200mm to 1500mm	50mm x 50mm

NOTE: The Code of Practice for Light Timber Framed Construction NZS3604 does not show a batten size under 50mm x 40mm at 900mm centres. Timber shingles were not specifically addressed in the preparation of the Code and the lighter 50mm x 25mm is accepted on the manufacturer's recommendation. Shingles are the only roofing element where the weight loading of a single course is distributed over four rows of battens.

ROOF STRUCTURE

Ridge and Hip boards are set flush with the top of the rafters.

Valley formation will be determined by the type of valley flashing being used. This may be either metal or Butyl rubber. The valley should extend at least 200mm each side of the centre line.

Valley boards are cut between or rebated into the rafters to finish flush. Alternately valleys may be formed by the shingle courses. Flashing is achieved by placement of a 300x300 square of butyl rubber between every course of shingles.

For a splayed gable end or Swiss gable it is necessary to provide for a concealed gutter inside the line of the barge board.

UNDERLAY

It is recommended that a breather type building paper or self supporting roof underlay be fixed over the battens. For any roof plane where the pitch is less than 30° it is recommended that an interwoven underlay consisting of a 300mm strip of heavy weight building paper or self supporting roof underlay, be laid with each course of shingles. Where a fire retardant underlay or additional thermal insulation is required these membranes should be draped over the rafters prior to fixing of the battens and underlay as detailed above.

INSULATION

To comply with minimum thermal insulation requirements it may be necessary to place insulation within the roof structure. In skillion or cathedral type construction it will be necessary to fix counter battens over the rafters, above the sarking, and then fix the shingle battens. The cavity created by the counter battens will accommodate blanket or loose fill insulation.

APPLICATION DETAILS

GRAPHICS

Drawings are attached showing details of :- strip underlay placement, shingle course lay ups, typical cross sections, capping details, gable end finishing, valley and gutter details, a range of common flashings for penetrations and abutments, typical wall section, external and internal corner finishing and wall to roof flashings.

ROOFING

It is recommended that #1 Blue Label or Premium Grade shingles/shakes should be used for roof sheathing. The application details must be strictly adhered to.

- 1. Starter course.** This forms a double layer at the fascia or on the line of a break in the roof plane. Shingles are close butted together and laid in a random sequence. At the gutter line the overhang should be not less than 40mm. At the barge board the overhang should be not less than 30mm.
- 2. Fastenings.** No more than two per shingle. Position is 15mm - 20mm in from each edge and 25mm above the exposure line. The fastening must penetrate into the batten but the head or crown of the fastening should not penetrate the surface of the shingle.
- 3. First course.** Laid directly over the starter course. A minimum cover of 38mm is required to either side of each joint in the underlying course. Leave an even gap of 3mm - 5mm between adjacent shingles. Fastenings must penetrate through the starter course and into the first batten.
- 4. Second course.** The 3mm - 5mm gap between shingles and the 38mm side cover to joints in the underlying course must be maintained. Select an appropriate width shingle from the bundle to achieve correct cover or if necessary trim the edge of a shingle to suit.
- 5. Subsequent courses.** The 3mm - 5mm gap between shingles and the 38mm side cover to joints in the underlying course must be maintained. It is important that within three courses, joints should not be in alignment. Shingles must be laid in a truly random pattern to prevent tracking

of water down the roof slope. To maintain a straight line at each course a chalk line or straight edge may be used and the shingles butted up to the line before fastening.

6. Capping. The intersection of roof planes at ridges and hips must be capped to ensure a weatherproof finish. It is necessary to collect sufficient shingles of uniform width as roof covering progresses. 140mm - 150mm is the ideal width for capping. Measure the capping requirement at 2 shingles for each 150mm of ridge and/or hip. An underflashing of butyl rubber membrane (Butynol, or similar) 200mm wide is placed over the ridge or hip and the capping shingles fixed over the top of this flashing. On lower pitched roofs it is advisable to glue the membrane in place. The overlap on capping should be alternated to provide a laced effect and assist in maintaining a straight line. At the ridge it is advisable to have the butt end facing away from the prevailing weather.

7. Flush finish. As an alternate to capping, especially in small length runs, it may be desirable to finish the hips flush. This is done by scribing the shingles to each other. Before fixing, a square of rubber membrane is placed under the joint to serve as weather protection. This procedure is repeated through the run of the hip. It is advisable to form the hip first and then complete the course of shingles running left and right from the hip.

8. Valleys. The valley base should be flush with the rafter. The flashing may be stainless steel, Copper or a butyl rubber membrane. A shingle batten laid parallel to the edge of the valley gives a true line to trim the valley shingles and provides a finish for the main roof battens.

9. Gable ends. In exposed locations it is desirable to have a sealant on top of the barge board. This may be a weatherproof compressible strip or cartridge sealant.

10. Roof penetrations. Flashings to chimneys, vents, stand pipes and flues are normally completed in butyl rubber. If desired they can then be over-flashed in metal. The penetrations should be in place before the shingles are applied.

11. Junctions. Where wall and roof meet a flashing must be installed extending a minimum of 150mm up the wall surface and at least 120mm into the roof slope. When butyl rubber is used the shingles may be laid over the flashing and still provide an effective weatherproof joint. In situations where a wall rises through the roof a concealed gutter may be installed or a butyl rubber step flashing laid with each course of shingles.

12. Mansard. This popular form of facade is ideally suited to shingles and may be finished at the crest either with a fascia and gutter or a metal cap flashing.

WALL CLADDING

South Pacific Shingles are suitable for all exterior wall applications and may be used on new construction or as a re sheathing material. Refer to PRODUCT SPECIFICATIONS for the selection of the correct grade of shingle. Graphics are attached for common situations. Under recent building code changes it may be a requirement to have a cavity between the wall frame and the shingle batten or plywood. Details are available from South Pacific Shingles.

1. Set out. Determine the number of courses of shingles by dividing the wall height by the desired exposure. The exposure may be varied slightly to achieve an even number of courses and so avoid finishing with a small cut shingle as the top course. e.g. 2.370m wall height / 0.160 exposure = 14.81 courses becomes 2.370m wall height / 15 courses = 0.158 exposure. Mark the set out on a rod and transfer to the wall surface.

2. Batten fixing. Fasten the battens to the wall frame or existing sheathing making sure that the nail length is adequate to give a firm fixing to the wall studs. Batten spacing is the same as the exposure marked on the set out rod. Where shingles are to carry around a corner, make sure the battens line up. A building paper membrane is placed over the battens before fixing the shingles.

3. Starter course. As with roofing, the starter course shingles are close butted together. Fix with two fastenings in each shingle securing them to the first batten. Position the fastenings 15mm - 20mm in from each edge.

4. First course. Laid directly over the starter course. A minimum cover of 30mm is required to either side of each joint in the underlying course. Leave an even gap of 3mm - 5mm between adjacent shingles. Fastenings must penetrate through the starter course and into the first batten.

5. Second course. The 3mm - 5mm gap between shingles and the 30mm side cover to joints in the underlying course must be maintained. Select an appropriate width shingle from the bundle to achieve correct cover or if necessary trim the edge of a shingle to suit.

6. Subsequent courses. Continue with shingle courses to the top of the wall following the procedures set down for the second course. To maintain a true line on the courses and a consistent exposure, a straight edge or non-permanent chalk line may be used.

7. Finishing. The shingles may be finished at the top of the wall with a suitable timber moulding.

8. Corners - External. The shingles are usually overlapped alternately to give a "laced" effect. A square of butyl rubber is laid with each completed shingle course to create a step flashing. When using this method the courses on the two wall faces must be laid progressively. It is advisable to start at the corner working away in each direction on alternate courses. Protruding edges can be trimmed with a smoothing plane. An alternate finish is to pre assemble an external corner cover board and fit this over the corner joint or use copper soakers as with weatherboards.

9. Corners - Internal. A metal or PVC flashing may be fitted over the stud in an internal corner situation where direct weather exposure is likely. A rubber membrane is also suitable. The shingles should be lapped alternately, completing the corner first then working away in each direction. An alternate finish is to place an ex 50mm x 50mm treated timber fillet in the corner and finish the shingles up to this.

10. Flashings. All door and window openings must have appropriate head flashings in accordance with good building practice. Attention should also be given to protect any junctions or angles where water may enter. Allow 30mm for the thickness of shingle cladding when determining reveal linings and flashing reach. This does not include the substrate of battens or plywood.

GABLES AND BAY WINDOWS

Shingles have traditionally been used for sheathing these feature areas in housing design. Fixing procedures are as detailed for Roof or Walls depending on the application. It should be noted that bundle coverage is reduced on these types of areas due to the high wastage in cutting.

DECOR CLADDING

South Pacific Shingles are ideal for interior uses in residential, commercial or institutional situations. Utility grade may be used as structural and weathering properties are not critical. The mixed grain pattern and knots in the lower grades add to the decorative effect. The fixing procedures are generally the same as for exterior application, however, since the shingles are not required to be weatherproof, exposures, gaps and laying patterns are flexible and may be varied to meet design objectives.

LANDSCAPE BUILDINGS

South Pacific Shingles are the finishing touch to outdoor leisure features such as gazebos, spa enclosures, pool cabanas, wishing wells, garden sheds and summer houses. Should weather security not be a critical factor, lower grade shingles may be used for such buildings. The fixing procedures are generally the same as for roof application.

FINISH & CARE

NATURAL WEATHERING

Timber shingles are best left to weather naturally. At the time of installation the Radiata Pine product will have a slight green colouration as a result of dyes used in the treatment process. This will rapidly fade to a natural brown colour. Longer term exposure to the sun will leave the shingles a silver grey colour. The Cedar product in its natural state will weather to a darker grey colour. Treated Cedar is generally of a uniformly dark brown colour and retains this colouring for a longer period of time after installation before weathering to a dark grey colour. All natural timber shingles are subject to variation in colour and texture. There will always be some movement in response to changes in ambient temperature and humidity. It is important not to try and restrict or eliminate such natural movement by the excessive use of fastenings.

PAINTS AND STAINS

Pine Shingles - Can be painted or stained to match any colour scheme. High quality oil and latex based paints and stains are recommended. Ensure that shingles are dry and free from surface deposits prior to coating.

Cedar Shingles - Will accept most modern paint systems, provided the surface is thoroughly dry and the manufacturers recommendations for priming are followed.

SURFACE TREATMENTS

A variety of products are offered for topical application to act as water repellents, mould and moss growth inhibitors, colour retainers and preservatives. The manufacturers and suppliers of these products should be consulted for specific information. The chosen product must be compatible with butyl rubber flashings.

WATER COLLECTION

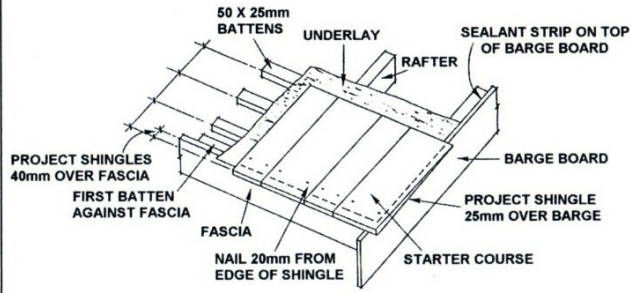
The quality of water collected from treated shingle roofs for drinking cannot be assured. There are several methods of filtration available for purification of potable water supplies and the manufacturers should be consulted for specific information.

Certain roof designs and locations allow the use of untreated Cedar Shakes. Rainwater may be collected from these roofs. Contact South Pacific Shingles for further information.

MAINTENANCE

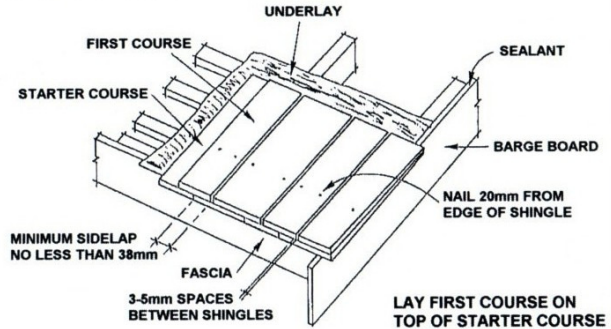
As a natural timber product, shingles will benefit from regular care. Debris should not be permitted to accumulate on a roof. Sweeping down with a stiff broom is advised. This is important as leaves and airborne debris retain moisture which is a major factor in the growth of lichen, moss, mildew and fungus. There are specialist contractors in roof cleaning whose services should be called upon when the need arises. The use of high pressure water blasting is not advisable on timber shingle roofing.

1. STARTER COURSE



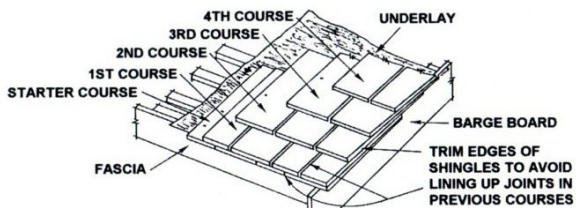
STARTER COURSE SHINGLES TO BE LAYED WITHOUT SPACES

2. FIRST COURSE



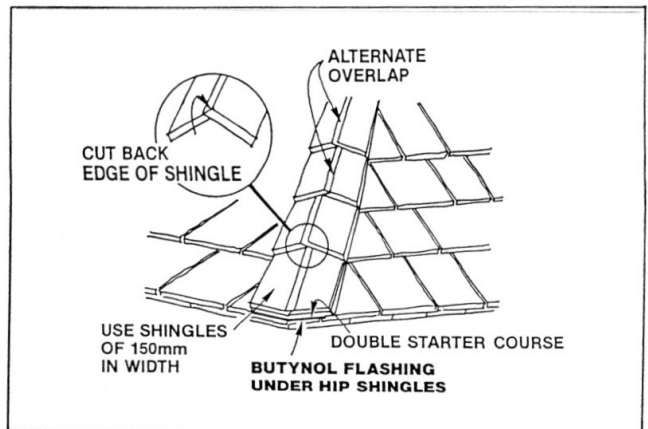
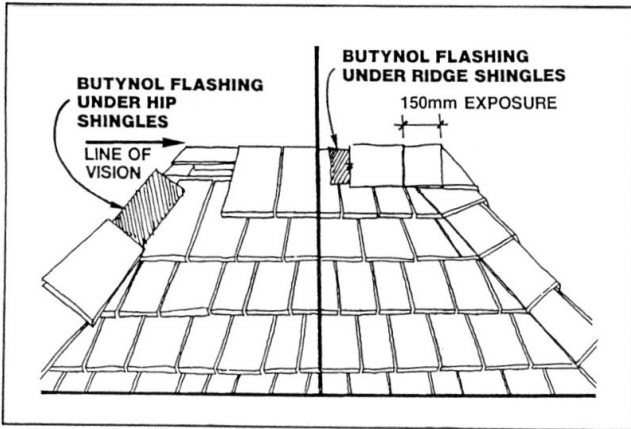
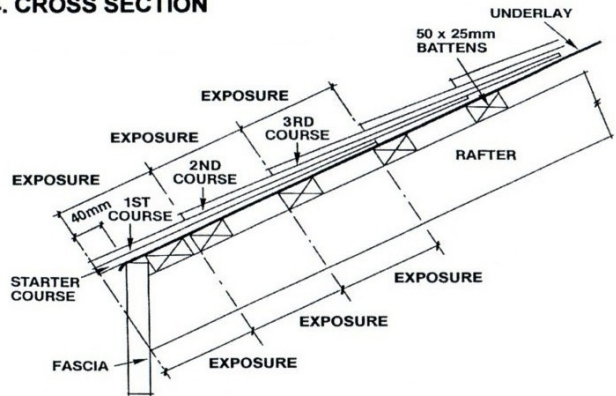
LAY FIRST COURSE ON TOP OF STARTER COURSE LEAVING 3-5mm SPACES BETWEEN SHINGLES

3. SHINGLE COURSES

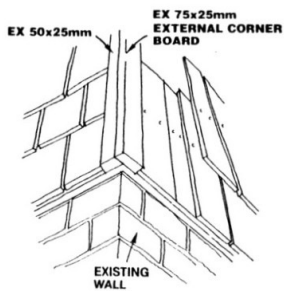


PLACE NAILS 25mm UP FROM EXPOSURE LINE. NAILS MUST PENETRATE BATTENS. IN ANY 3 COURSES, NO JOINTS SHOULD BE IN DIRECT ALIGNMENT.

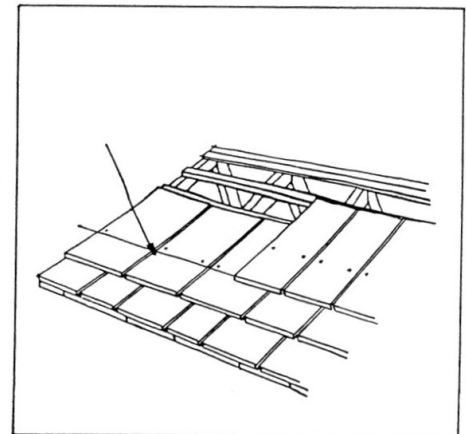
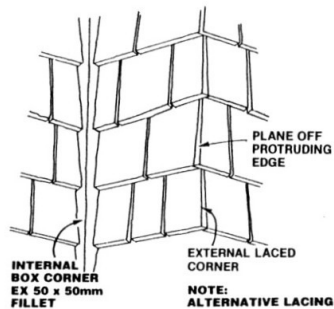
4. CROSS SECTION

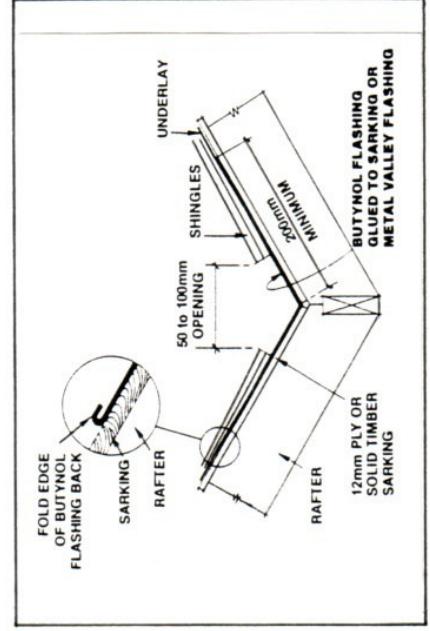
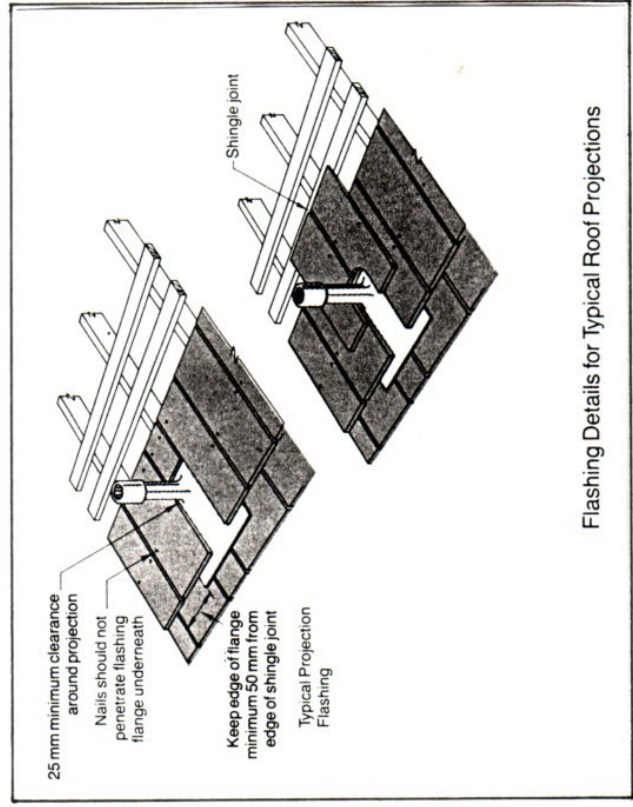
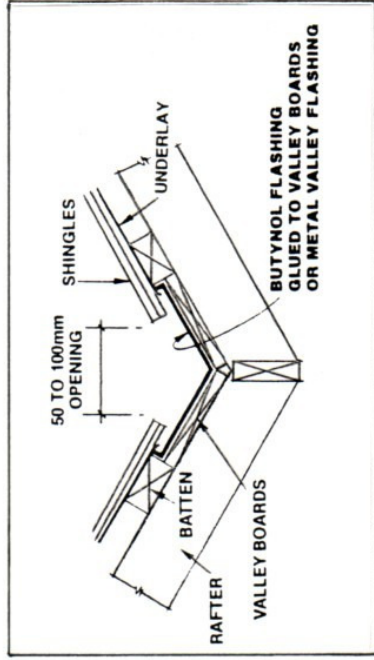
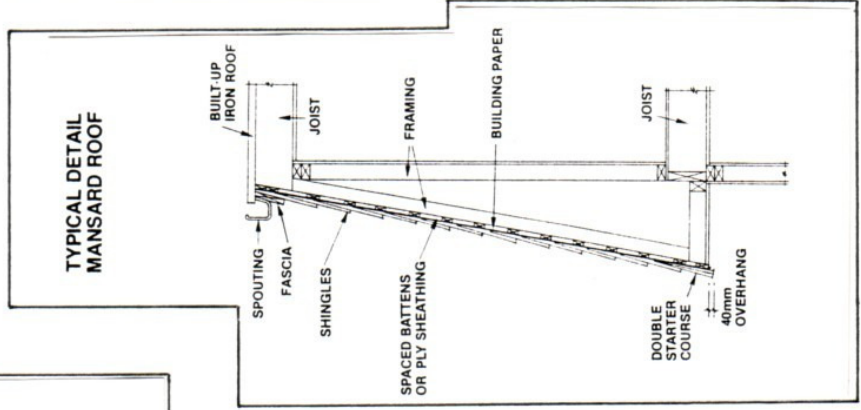
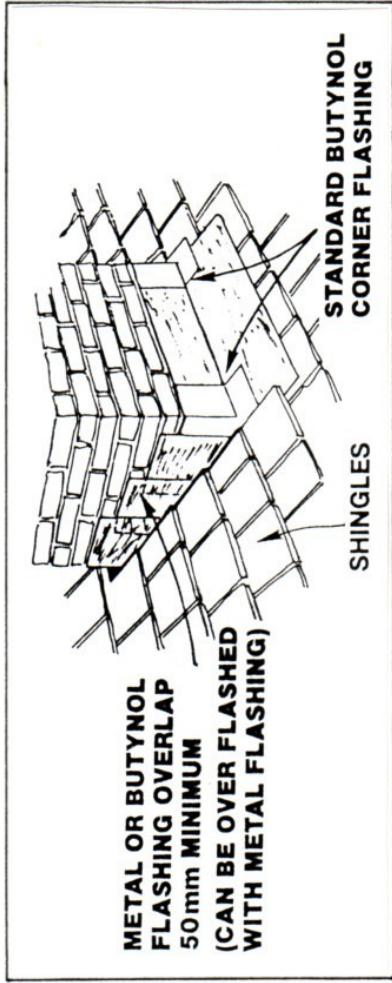
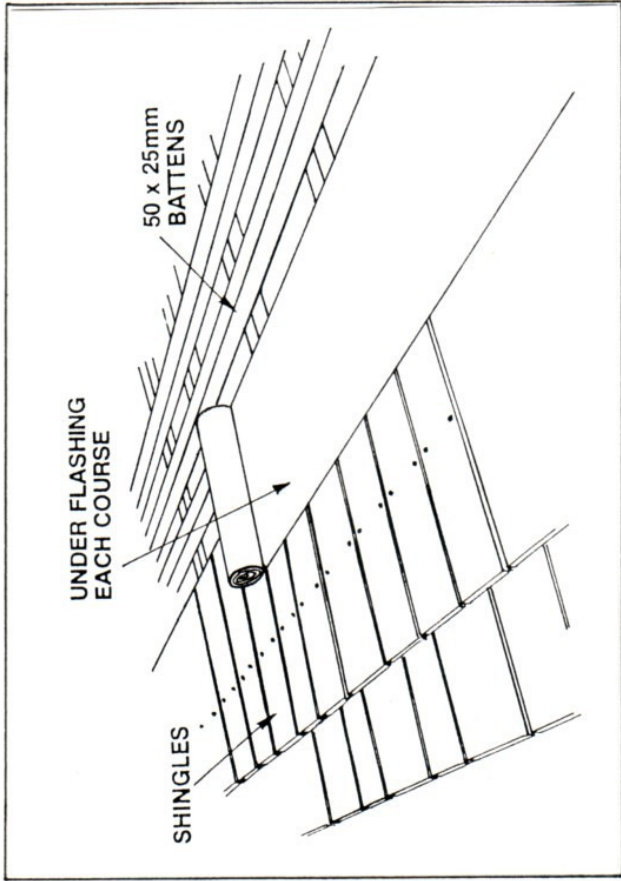


TYPICAL DETAIL EXTERNAL CORNER



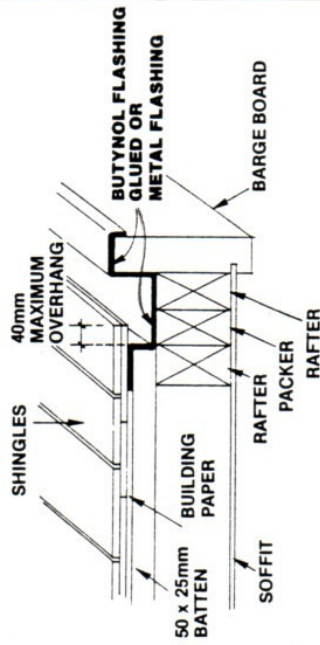
TYPICAL DETAIL INTERNAL CORNER



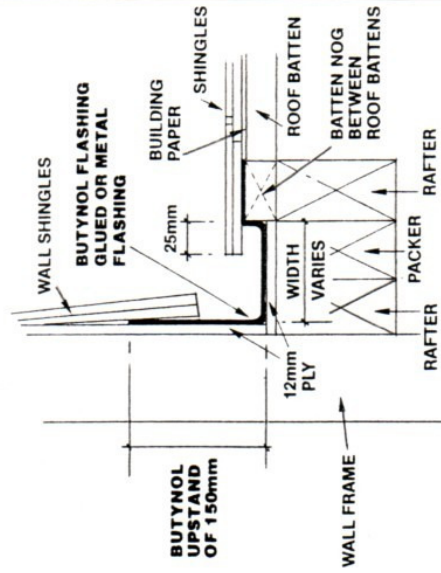


Flashing Details for Typical Roof Projections

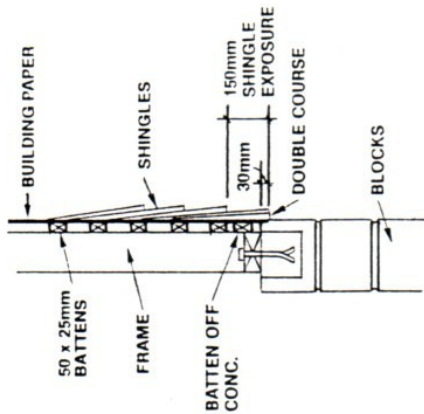
GABLE ENDS CONCEALED GUTTER EAVE DETAIL



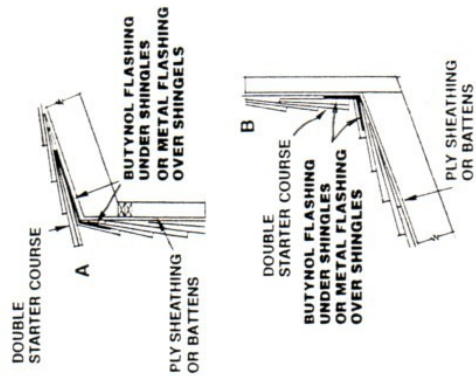
CONCEALED GUTTER DETAIL WALL TO ROOF JUNCTION



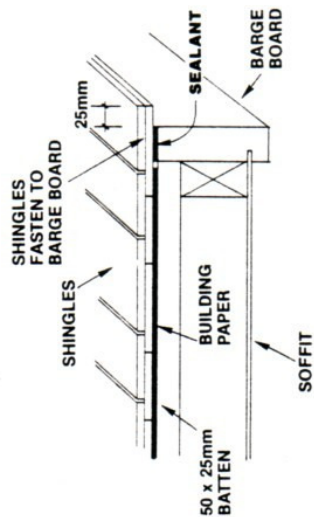
TYPICAL WALL DETAIL



TYPICAL FLASHING DETAIL WALL TO ROOF



GABLE ENDS TYPICAL EAVE DETAIL



TYPICAL FLASHING DETAIL WALL TO ROOF

