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- 1 All work on pitched and flat roofs should be done in compliance with the manufacturer's instructions and structural design.
- 2 Ensure all underlays have a relevant BBA certificate and battens are compliant to BS 5534 and fixed correctly.
- All roof tiles should be fixed in accordance with the site specific fixing detail which is obtained from the tile manufacturer and must be readily available on site. The Technical team should provide the fixing specification for the site and be retained by production.
- 4 All tiles must be wet cut individually on the scaffold and not on the roof itself as per HSE Manual guidance. Tiles should be cleaned of any cutting residue before fixing into position.
- **5** ARC fire barrier system is mandatory and should be installed as per the manufacturer's instructions.
- 6 All trusses must be stored correctly off the ground on a purpose-built truss rack and mechanically lifted into place as per HSE manual guidance. Site should receive guidance from the truss manufacturer on correct installation procedure. The truss manufacturer should provide lifting and storage proposal for this but it is unlikely they would advise on fixing the trusses. Trussed Rafter Association (TRA) can offer advice on typical arrangements.
- **7** Glass Reinforced Plastic (GRP) valleys should be fitted as per manufacturer's instructions. Lead flashings should be applied to the head and to the base of the valleys as per TW detail. Patination oil should be applied after installation. Leadwork to rendered elevations should be fitted prior to the application of the render but then dressed over render once rendering is complete.

- 8 Tile vent positions will be checked prior to the commencement of the tiling operation to check the correct number and position. House type elevations should be considered to ensure a street scene of the same house type would have all tile vents coursing correctly.
- **9** Dry verge and ridge systems should be used on all TW developments unless dictated otherwise by local authority planning restrictions.
- **10** Wet bedded ridges or verges should be bedded on mortar with a 1:3 ratio cement: sand with a plasticiser. Mortar should be mixed based on sharp sand with soft sand added to achieve workability; the proportion of sharp sand should not be less than one third of the total content (proprietary mixes may be accepted by NHBC where they are shown to have similar strength, durability and workability. By exception, where roof mortar is required, premixed bags must be used to ensure the correct strength. Verge tiles should be fully bedded on a continuous 100mm mortar bed. All pointing should be neat and tidy.
- **11** Roof windows and GRP products must be fitted as per the manufacturer's instructions.
- **12** Ensure that ventilation in the ridge and eaves is correctly installed as per the design and manufacturer's instructions.
- **13** Off site manufactured roofing systems are generally installed by the manufacturer. In any event, details must be available on site for review.

BS 5534: CODE OF PRACTICE FOR SLATING & TILING



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BS 5534, the Code of Practice for Slating and Tiling in the UK was first published as CP 142 in September 1942. It sets the standards for recommended best practice for slating and tiling, covering all aspects of pitched roofing above the rafters. The new Code of Practice includes key changes that are based on developments during the past decade, including:

Changes were published in 2016 in the revised BS 8000-61, the Code of Practice for Workmanship on Building Sites dealing with slating and tiling of roofs and walls.

Enforcement is via authorities such as the National House Building Council (NHBC) and

Local Authority

Building Control.

The new Code of Practice was published in August 2014.

> Changes in UK climate.

Replacement of national standards with European standards.

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Changes in building practices. Improved knowledge and understanding of how roofs perform.

BREAKING BS 5534 DOWN FOR YOU WILL MAKE UNDERSTANDING THE CHANGES AS EASY AS 1, 2, 3...



·····>

Mechanical Fixing of **Ridge and Hip Tiles**



·····>

3 Underlays

Now read on for our guide to getting it right...

FRAMING



 Wall plates should be bedded to a line and level, fixed as per design and specification. They must be a minimum of three metres in length or extend over three trusses or more. All joints should be half lapped, including corners. Site specific fixing detail should be referenced and followed.



2 Trusses should be stored upright off the ground ready for installation.



Check roof is constructed to the correct roof layouts and/or details. Refer to relevant manufacturer's instructions. Check that all bracing is fixed by two fixings at every truss position. Bracing must extend over a minimum of three trusses using 3.35mm x 75mm galvanised wire round nails, 2 fixings per truss. Where a nail gun is used, 3.1mm x 75mm long annular ring-shank nails are acceptable. They do not need to be galvanised. Installation guidance should be followed from the Trussed Rafter Association (TRA) or specific manufacturer guidance.

Note:

Preference for bracing projections to be plumb cut 50mm from truss as shown in the photo above.

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FRAMING

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4 Check all restraint straps are correctly positioned and supported as per design and manufacturer's guidance. Where details are unavailable, lateral restraint straps up the verge are typically positioned at max 2m centres (for homes up to and including 3 storeys, 2 storeys in Scotland). For homes with four storeys or more, straps should be positioned at max 1.25m, or as per design.



Timber or steel dragon tie should be used to prevent spreading of the hip rafter. Timber angle ties should be used to prevent the spread of a wall plate.
 Jack rafters should be Timber or steel dragon tie may be used to prevent the spread of the hip rafter. Please see specific roof design.



6 Typically, holding down straps are positioned at max 2m centres where roof members bear on the supporting wall. Straps to have a minimum cross section of 30mm x 2.5mm, be at least 1m long and four fixings to the wall with the fixing a minimum of 150mm from the bottom of the strap. Appropriate fixing for the substrate should be used as per the specification, drawings or details.

FRAMING

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7 All hangers should be fully nailed and secured. Refer to the specific roof layout for the appropriate hanger's size, type and positions. All holes should be nailed using 3.75 x 30mm long square twisted nails as per roof details.



SPANDREL PANELS



1 Spandrel panels must be used on both external gables and party walls fixed in conjunction with the manufacturers drawings.

Please refer to specific drawing.

SPANDREL PANELS

HORIZONTAL RAFTER RESTRAINT STRAP



HORIZONTAL CEILING RESTRAINT STRAP



Fixed at maximum 200mm centres and designed to restrain 8kn force. Restraint straps to be fixed at or near the truss apex and down the rafter lengths (maximum centres reduced to 1250mm for buildings over 3 storey or over 2 storey in Scotland).

21. Cullen RST – 3 restraint straps fixed to timber noggins with 8 no. 3.4 x 35mm square twist nails with last fixing at or beyond the third truss and fixed to timber spandrel panel studs and rails with 3 no. 3.4 x 35mm square twist nails.

22. Timber noggins between trusses.

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GABLE SPANDREL PANELS

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1 Where they are jointed they should follow the jointing detail.

SINGLE GABLE SPANDREL PANEL ELEVATION



LATERAL RESTRAINT TO BOTTOM OF GABLE END SPANDREL ONTO MASONRY WALL



1. Cullen RST – 3 restraint straps fixed to timber noggins with 8 no. 3.4 x 35mm square twist nails with last fixing at or beyond the third truss and fixed to timber spandrel panel studs and rails with 3 no. 3.4 x 35mm square twist nails.

2. ARC Cavity Stop Sock to top of cavity walls. Cavity barrier should fully fill cavity width and where cavity barriers meet they should ensure the barriers fit tightly together "Get it right, keep it tight".

- 3. Timber roof truss.
- 4. Cullen Gable restraint Bracket (GRB) at maximum 1200mm centres.

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GABLE SPANDREL PANELS

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5. Cullen PFS -1500-100-B restraint straps fixed to timber noggins with 8 no. 3.4 x 35mm square twist nails with last fixing at or beyond the third truss and fixed to timber spandrel panel studs and rails with 3 no. 3.4 x 35mm square twist nails. Straps to be fixed at maximum 200mm centres and designed to restrain 8kn force. Restraint straps to be fixed at or near the truss apex and down the rafter lengths (maximum centres reduced to 1250mm for buildings over 3 storey or over 2 storey in Scotland).

6. Timber noggins between roof trusses for fixing of lateral restraint straps.

- Continuous treated timber 38 75mm wallplate bedded on mortar and fixed to gable restraint brackets with 3.5 x 40mm wood screws (2 no. per bracket).
- 8. Cullen VRS-900-100 fixed to top of bottom rail with 4 no. 3.4 x 35mm square twist nails.

- **11.** Spandrel Panel (see manufacturer's details). Stud spacing design:
 - Single 47 x 97mm studs at 400mm centres up to 3250mm high.
 Double 47 x 97mm studs at 400mm centres –
 - up to 4000mm high.
- **12.** 47 x 97mm Timber Packer between last truss and spandrel panel.
- **13.** Spandrel Panel (see manufacturer's details) fixed to wall plates with min. 3.1 x 90mm nails at maximum 175mm centres (max. centres reduced to 100mm for building over 3 storey, or over 2 storey in Scotland).
- Top of spandrel panel fixed to timber noggins by galvanised restraint straps which are fixed to timber noggins between trusses.
- 15. Ridge restraint straps. If restraint strap clashes with the chimney, the strap should be moved down from the ridge and two straps are provided one each side of the ridge.

Refer to site

specific detail and

designs when fixing spandrel panels.

PLAN VIEW SPANDREL WALL JOINT DETAIL



24 38 x 89mm CLS or 50 x 75mm TR26 framing to suit manufacturer.

25. 15mm Fermacell board (on 50 x 75 framing) or 18mm Fermacell board (on 38 x 89 framing) on each side of panel.

PLAN VIEW SPANDREL WALL JOINT DETAIL



GRP CHIMNEYS

All GRP chimneys should be fitted in accordance of the manufacturer's instructions. Details of fixing instructions from the manufacturer. Avoid chimneys sited centrally on a party wall.



1 The roof should be prepared by installing a ply seat between rafters. If the chimney is to be installed over masonry and timber, consideration should be given to settlement when installing.



2 A secondary membrane should be installed under the chimney position. Chimney should then be craned into position and securely fitted. Roof membrane should then be fitted with lap under chimney membrane. Check that the chimney does not interfere with a party wall or fire barrier. Chimneys over party walls should be avoided where possible. If a chimney sits on a party wall then a fire rated chimney system is required.



3 The chimney batten should be adjusted to suit the type of tile. The minimum distance that the batten should be from the chimney is 75mm and the max is 150mm.



4 Battens and verge clips should be secured ensuring that they do not penetrate the GRP too close to the secret gutter. Lead flashing apron should be installed and the flashing should be folded over the tiles. Tiles should be then installed.

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GRP PRODUCTS

ROOF WINDOWS



1 Any roof windows should be fitted by the room in the roof provider as per the current drawing and the manufacturer's instructions before the roof is constructed. Check that all fixings are tightly secured. Ensure there are no gaps showing natural daylight. Any gaps around the roof window showing natural daylight should be suitably filled with foam.



GPR DORMERS



GRP dormers are to be installed only on system roofs and by the roof manufacturer. Some instances can require packing timber along the slope line to allow a fixing point for plasterboard and a neat square reveal.

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GRP DORMERS

Note: GRP dormers are fitted by the supplier. This is page is for information only.



1 Roof should be prepared by a ply seat being installed between the double support rafter and adjacent rafter or by the loose truss method.



2 The secondary membrane should fitted under the dormer position. Crane the dormer into position using the slings. Dormer should be secured using 4 x fixing plates supplied.



3 Fit roof membrane and lap under dormer membrane. Lay out secondary membrane on top of rear dormer flashing / fixing flange. Adjust dormer batten to suit tiles. The closest tiling batten should be a minimum of 75mm and maximum of 150mm. Install support batten and ply support fillet.



4 Cut a suitable notch in the batten to ensure it does not kick up. When securing batten and verge clips ensure that it does not penetrate GRP too close to secret gutter. Install lead flashing apron and fold flashing over tiles. Trim sling support batten and complete tiling.

GRP APEX CANOPIES





1 Canopy height should be installed level with the door head. Positions should be marked and drilled using an M10 drill bit. First bracket should be secured using manufacturer's recommended and supplied fittings.

be provided by the manufacturer.



2 Mastic sealant should be applied to the rear of the flashing upstand while on the ground. A protective sheet should be placed on the ground to protect the front face of the canopy.

Note:



3 Centre the canopy into position ensuring equal distance at either side before pushing back in contact with the wall. Canopy should be secured through the flashing upstand at a minimum of 300mm centres, max 450mm centres using the manufacturer recommended fixings using an M10 drill bit.



4 Canopy should be secured to the brackets using the pre-drilled holes and the recommended fixings. A second mastic sealant should be applied when the canopy is fully secured.

USEFUL LINK: https://www.youtube.com/watch?v=4KRmpnX45ww

Ensure that the manufacturer is aware of the substrate that the product will be fixed to and all fixings will

GRP VALLEYS





1 All GRP valleys should be fully supported by timber or ply supports as per TW standard roof details. 18mm external grade plywood, timber valley boards or 19mm softwood valley boards cut between trussed rafters and supported on 39 x 50mm noggins nailed to rafters to stop any flex.



2 TGRP troughs should be squeezed together to close the spine, spine bottom should be sealed with mastic with gutter end dressed into gutter neatly and with lead saddle at bottom of valley for eaves/verge and mid slope dormers.



3 Valley timber supports should be flush to the top of the roof trusses, adequately sized to support the GRP valley gutter and be of a material which will not deteriorate during weather exposure.



4 An alternative to notching fascia board is to construct a lead or wakaflex rapid flashing saddle supported on a tilting fillet.



NEW

FIRE PROTECTION

SAFETY CRITICAL

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ARC products must be used and installed as per the manufacturer's instructions to provide a fire break. Barrier lengths butted tightly together, ensuring no gaps remain. Where barriers meet at angles, joints require mitre cuts so barriers achieve a tight fit. At corners, cut lengths to suit.

ARC wired tile batten barrier is designed to provide a fire, thermal, and acoustic break at the party wall between the roof tiles and roof membrane, working in conjunction with ARC T barrier pitched roof to create a fire barrier at the separating wall.

Barriers are supplied in 1.2m lengths and tile battens are nailed on top of the barrier compressing it where the two cross.

A knife is used to score the ARC wired tile batten barrier, releasing the compression and allowing the barrier to cover the full tile batten.

ARC products must be used and installed as per the manufacturer's instructions to provide a fire break. Barrier lengths butted tightly together, ensuring no gaps remain. Where barriers meet at angles, joints require mitre cuts so barriers achieve a tight fit. At corners, cut lengths to suit.



Tile batten barrier scored to allow complete cover of the full tile batten.







VENTILATION

ROOF



- 1. Proprietary over fascia vent equivalent to a continuous 10mm slot running the length of the eaves.
- 2. ARC Eaves Insulator with 900mm black tray pre-attached to ARC insulation to maintain 25mm continuous air gap above the ARC insulation and 400mm roof insulation.
- **3.** Roof tiles to suit housetype with tile fixings to suit sit location.
- **4.** Preservative-treated tile batten to suit tile type graded and marked in accordance with BS 5534.
- 5. 260mm min. wide continuous strip of BS 747 Type 5U felt over fascia vent and tilting fillet.
- 6. Roof membrane laid horizontally over rafters and lapped over eaves.

- 7. Proprietary roofing membrane titling fillet or support tray nailed to each rafter.
- 8. 100mm black half round pvc-u rainwater goods with 68mm dia offset downpipes.
- **9.** Gap Homeline Core 200 x 16mm white square fascia.
- **10.** 50×50 mm s.w. frame for soffit.
- **11.** Gap Homeline Core 275 x 9mm white soffit.
- **12.** 100 x 50mm Wallplate.
- **16.** External wall as Sections EW13-03 and EW13-04.
- **17.** Dry verge unit and clip, fitted as manufacturer's instructions.

Eaves insulator should terminate on the upper storey lintel.

VENTILATION



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1 All eaves will be insulated using ARC products eaves ventilator. Ensure eaves ventilation is installed so that the correct depth of insulation can be laid without blocking the ventilation. Extra insulation between the gable wall and final truss can help to elevate cold bridging in this area. Felt must be supported by cut down ARC eaves vent where there are reduced truss centres.



2 The rafter ventilator must extend above the line of the loft insulation to ensure cross ventilation is not compromised.

Please refer to Technical group drawings.

Ensure the eaves insulator tray folds out to the full 900mm.



3 Dry ventilated ridge should be mechanically fixed as per manufacturer's detail.



4 There should be a continuous gap in the underlay for the dry ridge system. The gap in the underlay can vary depending on the dry ridge system but Redland state that for a vented ridge underlay should be left 30mm short of the apex on either side of the roof. However, if rigid sarking this is reduced to 10mm either side. Please refer to design.

UNDERLAY & FELT





1 The primary purpose of underlay is to reduce the wind load acting on the roof tiles by taking a significant proportion of the wind load itself. The underlay must not stretch to the point where it touches the back of the tiles as this transfers the wind loading pressure onto the tile. Ensure roof membrane is installed as per specification.



2 Horizontal overlaps of felt must comply with the table above. Any lap exceeding this should have either an additional tile batten fixed to the felt overlap or the overlap fixed by proprietary adhesive tape.



3 The new code of practice introduces a single test for the measurement of the wind resistance of underlays, which all testing bodies will follow to allow for greater transparency. A new labelling system has been introduced indicating where an underlay can be used for different batten gauge.



4 Bird protection should be fitted to valleys and roof underlay should be turned up at abutments to parapet walls.

UNDERLAY & FELT



Below is an example of the new easy to understand labelling that will be present on the packaging of every roll of Redland's new Spirtech 400 2S underlay. It shows the underlay can be used everywhere in the UK without restriction, irrespective of the slate / tile batten gauges.

PRODUCT	IDENTIFICATION	MANUFACTURER	WEBSITE
Spirtech [®] 400 2S	Artno. 540042	Monier Roofing Components	www.redland.co.uk
Batten Gauge	Declared wind uplift resistance, P₀ (Pa)	Zone suitability	Wind zone map
< 345mm	> 2,200	1 to 5	5
< 250mm	> 2,200	1 to 5	3
< 100mm	> 2,200	1 to 5	

Note:

Zone suitability applies only for underlays in applications where a well sealed ceiling is present, ridge height is not greater than 15m, roof patch is between 12.5° and 70°, site altitude is not greater than 100m, and no significant site topography is present. Other applications might require underlays with greater and uplift resistance and it is advisable to seek professional advice.

UNDERLAY & FELT - VENTILATION



1 Where services penetrate the roof covering the felt must be cut neatly and secured tight to the service. No rips or tears.



2 Underlay must drape a nominal 15mm between the truss rafters to avoid blockages and ensure water is allowed to freely track down towards the gutter. This is important to prevent ponding of water behind the tiling battens and minimise the tracking of water towards the batten nail holes.



3 Tile vents should be fitted in the correct location as per the house type drawing, so when same house types appear in a street scene, there is no deviation on the coursing of tile vents plot to plot.

Tile vents should be installed as per manufacturer's instructions.



4 Underlay flap from tile vent cut-out has been nailed to the batten to prevent flap from turning into roof space.

BATTENS

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1 Battens should be a minimum of 1.2m long and span a minimum of three rafters. They should be set out in straight lines parallel to the ridge and to the gauge required for the tile or slate.



2 Battens should be set out so that the tiles project a minimum of 50mm over the gutter using a minimum of 3.35mm x 65mm long (10 gauge) and a minimum of 30mm longer than the batten thickness. Nail gun fixings are acceptable if the nail manufacturer can provide tests to show the performance of the nail complies with BS 5534. Nails with a shank less than 3.1mm are unlikely to comply. The nail gun should be adjusted so that the nail head finishes flush with the batten and is not left proud or driven into the batten.

Check the type of nail to be used for tile batten for nail gun and without

BATTENS



3 Batten cut ends should be treated whether it is a wet or dry system. The cut should be on the inner truss and not at the verge. All cut ends must be treated or batons spun to keep non-cut edge by mortar with a mastic bead between wet verge board and brickwork.

Ensure a well aligned and visually straight dry verge system.

At verges, tile battens should finish 25mm - 50mm from the face of the protecting undercloak.



- 4 Battens should be set out to avoid joints occurring over the same rafter. Where batten spacing is:
 - More than 200mm, no more than one batten in any group of four should be joined over any one truss or rafter.
 - 200mm or less, no more than three joints should be made over any 12 consecutive battens.



Note:

The battens should be colour coded and every batten should be stamped with a BS 5534 stamp to show compliance.

BS 5534 CHANGES

This is general indicative guidance and the SMT must have the site specific fixing details.



 Tile type: Mini Stoneworld, 4 bed detached house, Northampton – 35 degrees, duopitch roof, 2 storey (8m ridge height) All tiles at the perimeter of the roof must be twice nailed with all remaining tiles nailed in right hand nail hole using aluminium alloy clout nails.



3 Tile type: Grovebury, 4 bed detached house, Hereford – 35 degrees, duopitch roof, 2 storey (8m ridge height).

All tiles at the perimeter of the roof must be nailed and clipped. In addition, a band of full ties 2 wide adjacent to the perimeters must be clipped in an alternate diagonal pattern. Other tiles must be nailed using 70mm x 3.75mm. An end tile must be a minimum of 150mm.

TILING & SLATING



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1 Perimeter tiles and those around solar panels should be mechanically fixed with either nails or clips in accordance with manufacturer's guidelines and BS 5534.

Where plain tiles meet a hip system, the tiles should be cut into the hip to minimise the number of small cut pieces. This is best achieved using plain tile and a halves and running the battens up to the hip.



2 For slating, lay eaves course of slates, nailing and clipping as normal. At hips, cut a slate and a half or a double slate to size as appropriate (see table) ensuring gap between the cut slates ranges from 3mm - 5mm.

Slate and a half and above	45 degrees
Double slate	< 45 degrees



TILING & SLATING

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3 The raking of cut slates should be fixed as per design and at the head using manufacturer's recommended fixings.

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4 Where the raking cut leaves only one nail hole, a second nail hole (3 - 3.5mm) should be drilled on site. Cut slates should be secured with at least two head fixings.

TYPE OR TITLE	GUAGE	MINIMUM HEADLAP	MINIMUM PERMISSIBLE PITCH (°)
Plain	Maximum 1/3	65mm generally for clay tiles	35 (clay)
(Double lap)	length lap	75mm in severe exposure conditions	35 (plain concrete)
Concrete (Single lap interlocking)	Comply with manufacturer's recommendations	75mm or to the manufacturer's recommendations	30
Slates	Maximum 1/3	54mm minimum, increased with lower pitch and severe exposure conditions	20 subject
(Double lap)	length lap		to headlap

5 Where slated roofs have a breather membrane, counter battens are required (50mm x 25mm) in accordance with BS5250:2011.

RIDGE & HIP TILES



1 Mechanical fixing of ridge and hip tiles – when fixing tiles, mortar should not be used alone to fix ridges and hips. Even if mortar is used, the ridges and hips must also be mechanically fixed. This is an example of one type of ridge system. Refer to manufacturer's specification and site specific design.



2 Tiles should project 50mm across the gutter.

When using slate or plain tiles, an under eaves course should be used. The concealed drainage channel in the dry verge should be linked directly with the gutter to stop water draining down the brickwork.

WET VERGES & RIDGES



1 Wet verges and ridges must be neatly finished. Unless a proprietary dry verge system or cloaked verge is used, tiles should be bedded into a 100mm wide bedded and finished with mortar using the same mix. Mortar should be mixed based on sharp sand with soft sand added to achieve workability; the proportion of sharp sand should not be less than one third of the total content.

Premixed mortar is always recommended.

SOLAR / PV PANELS

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- **1** A visual inspection should take place before the scaffold is stripped to ensure any damages have been rectified.
- 2 The isolator must be within 1m of the loft hatch.
- **3** Please ensure trusses have been designed with loadings from PV panels and any other items such as chimneys included.
- 4 Each panel must come with a fixing design for the correct number of fixings and flashing panel design.
- **5** Preference for PV panels are for integrated or in roof systems rather than mounted panels.

LEADWORK





1 Flashings should be neat, uniformly shaped from plot to plot and snugly fitted to tiles and bricks.



2 The bottom cavity tray should allow water to freely drain to the outside by the use of a perpendicular weep vent.



3 Brickwork should be raked out so as not to damage the cavity tray. A minimum upstand of 75mm must be achieved with a minimum of 150mm overlap. Lead flashing wedge into joint below wall cavity. Underlay must be turned up behind flashing. Weep hole must be in place at the bottom / last stepped tray to allow water to drain effectively. Leadwork / flashings should be neatly dressed and patinated upon completion.



4 In Scotland, the cavity tray must have attached lead. The cavity tray must be built into the brickwork.

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ROOF - ROOM

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		FIXING DETAIL
ANCILLARIES	Chamfered Wall Plate	3.1 x 90mm ARS nails at 300mm c/c.
	Purlin to Spandrel	2 No. 6.5mm x 200mm timberloks fixed through outside ply glulam into top hat stud.
	Ridge Board to Spandrel	2 No. 3.1 x 90mm ARS nails fixed through top bearer of spandrel into ridge purlins perpendicular to pitch of roof.
ROOF CASSETTES	To Wall Plate	3.1 x 90mm ARS nails at 300mm c/c.
	To Purlin	3.1 x 90mm ARS nails skew nailed at 45° 150mm c/c.
	To Ridge Board	Through panel location timbers into u/s of each joist with 3.1 x 90mm ARS nails.
	To Gable Spandrel	Fixed through, internally, at 45° into gable ladder joist with 3.1 x 90mm ARS nails at 150mm c/c.
	To Party Wall Spandrel	Fixed through, internally, at 45° into sound block timber with 3.1 x 90mm ARS nails at 150mm centres.
	To Intermediate Spandrel	Fixed both sides at 45° into sound blocking timber with 3.1 x 90mm ARS nails at 300mm centres.
	To Roof Cassette	3.1 x 90mm ARS nails at skewed at 300mm alternating entry centres along full rafter length.
SPANDREL PANELS		Spandrel not fixed through sole chord of gable spandrel into wall plate a 600mm centres with 3.1 x 90mm ARS nails.
	To Wall Plate	Vertical straps by RoofSpace at 2m centres fixed through both sole chord and wall plate with minimum 3 x 30mm square twist nails into timber studs and 3 x No.8 guage screws through wall plugs over 2 block courses.
	To Top Hat Spandrel	Fixed from below, through into sole bearer of top hat spandrel with 3.1 x 90mm ARS nails at 150mm centres.

1 Roof panels are delivered to site and the installation is fully managed by the contractor and the SiteM. All works must be carried out in accordance to the manufacturers details and specification. Pre-delivery checks must be carried out by a representative of the external contractor. An example is shown above and to the left showing manufacturer's details.

Refer to manufacturer's plan on who is responsible for installing the fire barriers.

Note: Room in roof providers will now install fire barriers and install plaster catch noggins.

GUTTERS AND DOWNPIPES

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1 All gutter brackets should have correct spacings as per the manufacturer's instructions with a minimum of two fixings per bracket at 1m centres except in areas of expected heavy snowfall the distance reduces to 600mm intervals.



2 Downpipes should be well aligned, fixed at maximum 2m centres, appropriately jointed, and well fixed with colour caps to screws.

Note:

It is good practice to ensure that all fixing points are used i.e. a bracket with three fixing points will require three fixings.



3 Swan necks where downpipes join are plumb and aesthetically pleasing. Shoes should be appropriately fitted where downpipes discharge over gulleys.

