

ROOF TILING

TRADE SPECIFICATION

GENERAL

- a) This Trade Specification gives information regarding the procurement of materials, installation of materials and on-site working methods to ensure the correct standards and compliance is achieved on site. This trade specification is to be read alongside working drawings, BDW Standard Details, manufacturer's literature and the Barratt Construction Best Practice Guide. Any statutory requirement relating to the Trade Specification takes precedent. If any doubts remain regarding the information given or further clarity is required, these concerns must be communicated to the Commercial Department BEFORE proceeding.
- b) **BDW Trading Limited**
Barratt Homes and David Wilson Homes are all trading names of BDW Trading Limited "the Company".
- c) **Clearing**
As part of this Trade Specification the Contractor is responsible for clearing up and safe removal of waste materials from in and around the house arising from execution of the Works, ensuring that all waste materials are segregated and disposed of into the relevant tipper skips.

Failure to comply with this requirement resulting in the Company's labour performing this task will result in contra charges being levied against the Contractor.

The Contractors attention is particularly drawn to the sections below which state where waste materials must be removed as work progresses.

- d) **Contract Conditions**
The Contractors attention is drawn to the Company's Conditions of Contract and General Terms.
- e) **Defective Workmanship**
All defects, resulting from poor workmanship by the Contractor or, by the Contractor not carrying out the Works in accordance with this Trade Specification and the Governing Documents listed below, are to be remedied by the Contractor at no extra cost to the Company.

Failure by the Contractor to carry out this contractual obligation, resulting in an alternative Contractor being instructed to carry out such remedial work, will incur the Contractor with the cost thereof.

Should any element of work, undertaken by a preceding trade, be considered deficient and inhibiting progression by this trade, all such defects must be brought to the attention of BDW Site Management for remedy prior to the commencement of the works.

f) **Governing Documents**

The documents below must be used for reference in compliance with the Company's standard working drawings and construction best practice guide. The Contractor is to ensure that all current versions are followed.

- NHBC Technical Standard 7.2 Roofing.
- NHBC Regulations (Feb 1989) Section Rf – clauses Rf1 – Rf29 (and further clauses referred to in these clauses)
- BS: 8000 Part 6 – British Standard – Good working Practice, Slating & Tiling.
- BS: 5534 – British Standard – Slating & Tiling
- BS: 5250 – British Standard – Control of Condensation in Roof Spaces.
- Building Regulation Part F – Mechanical & Soil Vent Extraction.
- Leadwork – Shall comply with LSA (Lead Sheet Association) details.
- HSE HSG 150 AND HSE Construction Information Sheet – Number 54 - Revision 1.
- HSG 33, Health & Safety in Roof Work, HSE
- Manufacturer's Site Specific Fixing Specification – Slating & Tiling

Information relating to Governing Documents shall be prone to updates. Any changes to the Governing Document must take precedence over information found in this trade specification. It is the Contractor's responsibility to ensure they are fully compliant with any updates. Manufacturers reserve the right to update product and change product or trade specification upon review of changes to the Governing Documents.

g) **Distribution**

Contractors should be aware that the Company operates a national supply chain agreement with:

Manthorpe Roof Ventilation Products:

Ian Firth Hardware

Lady Ann House
Shaw Cross Business Park
Dewsbury
West Yorkshire
WF12 7RD

Key Contact: Paul Claydon

Tel: 07771 873508

E-mail: paulc@ianfirth.co.uk



h) **Group Suppliers**

The Contractor should be aware that the Company operates National Commodity Agreements with a number of nominated suppliers, as listed in the enquiry letter. It is the Contractors responsibility to ensure that these agreements are adhered to. Failure to do so may lead to the Company making a claim from the Contractor for any loss of rebate. Roof and Ventilation Tiles:

Forticrete Tiles Ltd

Boss Avenue
Off Grovebury Road
Leighton Buzzard
Bedfordshire
LU7 4SD

Russell Roof Tiles

Nicolson Way
Wellington Road
Burton-on-Trent
Staffordshire
DE14 2AW

Monier Redland Limited

Spectrum House Beehive
Ring Road Gatwick
Crawley
West Sussex
RH6 0LG

Slate Roof Tiles

SIG Roofing Supplies

Unit 5, Harding Way
St. Ives
Cambridge
PE27 3YJ

Roof Ventilation Products:

Manthorpe Building Products Ltd

Brittain Drive
Codnor Gate Business Park
Ripley
Derbyshire
DE5 3ND

Key Contact: Gareth Wright
Tel:01773514200
Fax: 01773514262
E-mail: gareth.wright@manthorpe.co.uk
Web: www.manthorpe.co.uk

i) **Health & Safety**

All operatives are to be inducted on site in accordance with Barratt Sub-Contractors Code of Practice (SHE FORM 09).

It is the responsibility of the contractor to provide their own PPE Equipment (minimum requirements are head protection, hi-visibility vest and safety boots) which must be worn at all times while on site. All necessary PPE based on your assessment of risk or where required by statutory provision or site rules to be supplied by contractor.

All operatives are to be in possession of a valid CSCS Card, which is appropriate to the trade.

All roofing work shall be carried out in accordance with HSE Document HSG 33 where reasonably practical. Wet cutting is mandatory when using a disc cutter for cutting roof tiles into valleys, hips, and abutments.

No 240v tools are allowed on site.

Work at Height Fall Prevention – The Contractors Site Supervisor should review the work areas in order to ensure that suitable leading edge fall prevention is in place before works commence. The Supervisor must ensure that suitable table lift scaffolds, gable pitched handrails and front elevation gable pitched handrails have been provided before commencing works.

The Supervisor must advise the Site Manager of any shortfalls so that the scaffolders can make the necessary adaptations before works commence. The roofing operatives have a responsibility for their own health and safety and should not commence work on any house or garage unless suitable fall prevention handrails are in place.

It is also important that suitable fall protection is installed where Velux Window have not been fitted and where window openings have been left unprotected.

Important – the roofing operatives should not stand on the leading edge of the dormer windows. No materials are to be loaded out on top of the dormer window platform. A specific risk assessment and method statement will need to be developed, where the Contractor states that the roof tiles above the dormer windows cannot not be fitted from the roof battens.

Internal Fall Prevention – The Company will provide internal fall prevention platforms in order to prevent internal falls. The Contractor's Supervisor must ensure that the internal fall mitigation platform e.g. scaffold birdcage, rhino deck, etc. are in place before works commence and should remain in place until works are completed.

High Level Access – Roof Ladders – Roof Tiling Contractors must provide suitable roof ladders in order to gain access to the upper levels of the roof and in order to gain access so that the ridge tiles can be fitted safely.

The Contractor should not under any circumstances interfere with the scaffold working platform, by removing ladders or internal boards, so that they can be used for a means of access. The Contractor should ensure that their operatives have been trained in the use of these ladders and should also complete a weekly inspection of the equipment.

Material Distribution – roof tiling materials, where possible, should be distributed onto loading bay working platforms, which are fitted with suitable brickguards in order to prevent materials from falling. No materials should be loaded on, or stacked above, the external handrails.

Tile battens should be transferred onto the working platforms and should be stacked neatly in order to maintain a clear access route and to prevent potential trip hazards.

Abrasive Wheels – Tile Cutting – The Contractor must ensure that the operatives are trained and competent in the safe use of the angle grinder. The roof tilers should not cut tiles on the scaffold platforms as this can result in damage to the boards. The Roof tilers should provide a protective board in order to ensure that the working platform boards are protected from damage. The need to cut tiles should be kept to a minimum in order to reduce the potential for airborne dust but where required a suitable dust suppression system, e.g. battery pump or manually operated, must be utilised.

The Contractor must limit the operative's exposure to silica dust during the tile cutting process by ensuring that all operatives wear a FFP3 disposable mask or half face respirator with a P3 filter. All operatives involved in the work must be face fit tested and records made available to site management.

Hand Arm Vibration – Workers may be exposed to hand-arm vibration (HAV) when operating hand held power tools such as cut-off saws or hammer drills. Regular and frequent exposure to HAV can lead to permanent ill health. Where workers are exposed to HAV dangers, the extent of that exposure should be assessed and eliminated, or reduced to as low a level as reasonably practical.

Waste Material & Rubbish Removal – Waste tile materials should be removed from the platform via a scaffold rubbish chute into a skip at ground level. Alternatively, mini skips can be placed on a high-level loading bay. Where possible waste material should not be mixed. The roof tilers should ensure that no nails are left projecting from roof battens. Lightweight material, e.g. plastic packaging, causes blockages in waste chutes and should therefore be disposed of separately.

Important – Under no circumstances should roof tiler's drop materials from the upper levels as this poses serious risk of injury for persons below.

Good Housekeeping – Roof tilers must ensure that as works progress and on completion of their works that all working platforms are left clean, tidy and free of slip hazards so that they and following trades can work in a safe environment.

Exposure to UV Sunlight – Roof tilers can be significantly exposed to sunlight and they are therefore at particular risk from heat exhaustion and the effects of ultraviolet radiation on the skin. Roof tilers should introduce simple precautions to significantly reduce the risk of skin cancer and heat exhaustion, e.g. wearing suitable clothing, use of suitable sun screen protection, allowing suitable rest periods or rotating work and regularly drinking water.

j) **Materials**

It is the Contractor's responsibility for checking materials delivered directly to site for any damage, colour variation and correct quantities prior to unloading. Should significant quantities of damaged materials be identified, these must be reported to the supplier before accepting the consignment. When laying it is important that tiles from a minimum three different pallets are mixed to ensure a consistent and uniform colour appearance is achieved.

The Contractor is responsible for unloading, protecting and safe storing of all of their own materials to avoid damage and surface contamination.

The Contractor must also ensure that all materials are satisfactory for use and have not been subject to deterioration and conform to the relevant BSS, if applicable or Agrément Certificates, NHBC and Local Authority requirements. Failure resulting from the Contractor using unsuitable or damaged materials will result in the Contractor being liable for any costs in rectifying the same.

Any materials offered as "similar" to those products specified will require the Contractor to obtain written approval from the Company before use.

k) **Manufacturers Products**

The Contractor must make themselves aware of the Manufacturer's product specification, site and house type specific fixing specification at the tendering stage as no claim for want of knowledge will be entertained. All technical issues must be resolved before work commences on site.

Only those accessories to the main Roof Tile manufacturer are to be used. UNDER NO CIRCUMSTANCES are alternative manufacturer's ventilation tile products to be used unless specifically noted in this Trade Specification or notified by the Company in writing.

l) **Site Conditions**

The Contractor is to examine the drawings, visit the site in order to ascertain position of site office, compound, electricity and water supplies.

Accessibility may vary depending on the location, weather conditions and such like. These factors must be taken into consideration at tender stage as no claims will be entertained for additional costs due to adverse site conditions.

m) **Sub-Contractor**

The Contractor must not further sub-contract any part of the Works to another Contractor without the prior knowledge and written approval of the Company.

The Roof Tile Contractor MUST NOT commence Roof Tiling works until confirmation is given from the Site Manager that works leading up to this trade have been completed and the plot is available for Roof Tiling works to commence.

It is essential that the Contractor brings to the Site Managers attention any preceding work that appears to be damaged or has not been installed correctly. The Contractor MUST NOT continue with any Roof Tiling works until such work has been remedied.

Where interlocking tiles are used, roofs are to be left at felt and batten stage to allow the Solar PV Contractor to install the photovoltaic panels. Where slate tiles are used, the Roof Tiling Contractor will need to liaise with the solar PV installer so that the required amount of slate can be laid before PV installation.

The Roof Tile Contractor is to ensure that lead flashings and soakers are appropriate for the roof tiles being used e.g. at vent tiles, side abutments, secret gutter with cover flashings, step or continuous cover flashings with single lapped interlocking tiles, and soakers with double lapped plain tiles and natural slates.

For lead valleys ensure correct width of lead, thickness (code) and overlaps are used for the truss rafter pitch, roof plan drainage area into the valley location. Ensure the correct fixing of lead slate for vent pipe, flashing etc.

Further advice can be sought from the Lead Sheet Association or tile manufacturer for their preferred method of construction.

Where fire proofing or fire stopping measures are likely to follow this trade, it is essential the preparation work is sufficiently prepared. Please make reference to the Fire Proofing Trade Specification and associated standard details and drawings to ensure knowledge of requirements. If in doubt, please ask for clarification, prior to signing this document.

Manufacturing engineering judgements should be requested for non - standard applications. Please contact Group Design and Technical for assistance.

1. QUOTATION

1.1 A fully inclusive lump sum (labour and materials) fixed price quotation is required for ROOF and VERTICAL TILING in accordance with the enclosed drawings, external materials schedule, scope of work and enquiry documents.

1.2 Your quotation for the Works is deemed to include all necessary,

- (i) labour,
- (ii) supply of materials to site,
- (iii) protecting materials on site,
- (iv) distributing and fixing roof and vertical tiles,
- (v) roof underlay/felt,
- (vi) battening,
- (vii) fibreglass valleys,
- (viii) eaves closure units or comb fillers,
- (ix) eaves ventilation systems (over fascia vent / soffit ventilation / underlay support or eaves felt support tray),
- (x) dry systems and ventilation terminals,
- (xi) undercloak of suitable material at verges,

- (xii) nails, clips, screws and two-part adhesive for bonding tiles,
- (xiii) supply and laying of roof tile mortar required for bedding and pointing (coloured as required),
- (xiv) removal of cutting dust from laid tiles.
- (xv) 60mm thick layer of rock/stone mineral wool to be laid above the party wall and sandwiched between the roof membrane and the underside of the roof tile.
- (xvi) lead flashing.

- 1.3 All Works must be completed in accordance with the above listed Governing Documents, current codes of practice, manufacturers recommendations and site specific fixing specification as required to complete the Works.
- 1.4 The Contractor is responsible for taking account of all access requirements in respect of loading out of roofs and ensuring this is reflected within their submitted tender.
- 1.5 The Contractor shall allow within the quotation attendance on-site and co-operation with other trades as directed by the Site Manager.
- 1.6 Where plain tiling or slating is specified, the Contractor is to allow for supplying and fixing of Code 4 lead soakers.
- 1.7 The Contractors attention is also drawn to the Company's Timber Sourcing Policy noting compliance with ethically and sustainably sourced timber.
- 1.8 Work to comply generally with all the above and specifically with section Rf clauses Rf1 - Rf29 NHBC Regulations (Feb 1989) (and further regulations referred to in these clauses). All Contractors are to allow within their quotation the tile manufacturers site specific fixing specification.
- 1.9 All temporary fixings to be de-nailed prior to being removed from scaffold.
- 1.10 The Company will supply FOC:
 - (i) Use of scaffolding whilst erected
 - (ii) Shared welfare facilities
 - (iii) 110 v power in compound area (if available) - No 240v tools to be used.
 - (iv) Use of forklift (if available) to distribute roof tiles to the point of use.
- 1.11 Should any scaffolding require adapting for means of access, or to carry out any works, it must only be adapted by a qualified Scaffolder.
- 1.12 The Contractor is to review the site layout as part of their Quotation and take into account access requirements to plots that are to be constructed in close proximity to each other, i.e. hip roof to hip roof. The Contractor is to make provision in their Quotation for loading out the appropriate plot(s) using the front elevation to ensure that the Plumbing Contractor has access to install guttering to the hip-to-hip roof prior to commencement of Roof covering works.

2. UNDERLAY

- 2.1 All Underlay must have 3rd party accreditation by BM TRADA, KIWA, BRE or BBA, vapour permeable (LR) type to BS EN 13859-1 and compliant with BS 5534 underlay wind uplift resistance requirements for the house type, site location and batten gauge to be used.
- 2.2 The Contractor is to ensure that the 'zonal classification' label, provided by the underlay manufacturer, meets the requirements for the location of the roof being installed; this is to ensure that the underlay does not balloon under wind conditions and make contact with the roof tiles.
- 2.3 Underlay to be laid having minimum horizontal lap of 150mm and vertical laps of 100mm in accordance with BS 5534 to the entire roof area and the following requirements:
- (i) Where the underlay is installed at dry fixed vented ridge, the underlay must be positioned equally away from the apex of the roof, on both sides to provide a 5mm continuous gap. Under no circumstances must the underlay be laid first over the ridge and then cut with a Stanley knife, or similar, the underlay must be deliberately laid short of the apex of the ridge in accordance with the vented ridge manufacturer's instructions to provide the required air gap.
 - (ii) Where underlay is installed at dry fixed unventilated ridge, underlay must be draped over both sides of the roof apex by 150mm.
 - (iii) Laps should be secured by a naturally occurring batten course or manufacturer approved glue strips/tapes; additional battens are not recommended.
- 2.4 Underlay must drape by 10 mm between the truss rafters to avoid blockages and ensure water is allowed to freely track down to the eaves / gutter. This is important to prevent ponding of water behind the tiling battens, minimise water tracking to batten nail holes and to ensure free drainage of any water in the batten space to the eaves gutter.
- 2.5 Where the underlay is exposed at eaves level it must be UV resistant or type 5U fixed as a 1m strip (e.g. where felt is dressed into gutters) and supported by a Manthorpe G1281 refurbishment felt support tray NO OTHER MANUFACTURERS PRODUCTS ARE TO BE USED. These must be neatly mitre cut at the hip and valley details.
- 2.6 Where the underlay meets abutment walls on roof pitches greater than 15 degrees, the underlay must be carried up the face of the wall by 150mm.
- 2.7 Where the underlay is to be installed on hipped roofs, a secondary length of underlay to a minimum of 600mm wide is to be installed centrally over the main underlay down the line of the hip.
- 2.8 Where the underlay is to be installed at GRP or Lead Sheet substitute valleys, a secondary length of underlay to a minimum of 600mm wide is to be installed centrally under the main underlay down the line of the valley. This must be held in place by valley battens with the main roof underlay being dressed over the valley battens or otherwise, in accordance with the tile manufacturers' recommendations.



- 2.9 Where the underlay is to be installed at traditional Lead valleys, underlay should not be installed below the valley.
- 2.10 Tears and punctures in the underlay must be repaired immediately in accordance with the product manufacturer's recommendations.

3. BATTENS

- 3.1 Softwood timber battens must comply with the following requirements:
- (i) Fully factory graded and treated in accordance with BS: 5534 with third party certification of compliance.
 - (ii) Stamped with timber species identification codes. PNSY, WPCA, WPCE, or WPNE.
 - (iii) Accompanied documentation showing supplier, timber species, origin, grading standard, size, type of preservative treatment and preservative used.
 - (iv) Treated Battens must be covered by a 60 year material guarantee.
 - (v) The Contractor must purchase all timber via suppliers with FSC or PEFC Chain of Custody certified accreditation.
- 3.2 The use of ungraded battens is not permitted.
- 3.3 Tiling batten sizes are dependent on roof covering type and span between the truss rafters. For truss rafter spans up to 600mm, including vertical tiling, the following applies:
- (i) For all single lapped interlocking roof tiles and double lapped natural or synthetic slates – batten size shall be 50mm x 25mm.
 - (ii) For double lapped plain tiles – batten size shall be 38mm x 25mm.
 - (iii) For vertical tiling in shingle – batten size shall be 38mm x 25mm.
 - (iv) For vertical tiling in slate – batten size shall be 50mm x 38mm.
- 3.4 The precise fixing specification for the tiling battens will vary depending on the site location, exposure and building details therefore a site-specific batten calculation to determine the withdrawal resistance required by each batten fixing must be undertaken. With this information, tiling battens must be fixed in accordance with the tile manufacturers recommendations and British Standards BS 5534:2014 Slating and Tiling (Annex H.7 'Batten fixing penetration'), BS EN 1995-1 Part 1 including Amendments and National Annexes and BS EN 1991-1 Parts 1, 3, & 4 including Amendments and National Annexes.
- 3.5 The 'gauge' or spacing of the tiling battens must be in accordance with the tile manufacturer's specification, for the tile specified for the roof and fixed centrally into the truss rafter.
- 3.6 Tiling battens must be set out in straight lines of equal gauge up the roof, parallel with the ridge.

- 3.7 The first batten at the eaves must be fixed so that the roof tile projects not less than 50mm into the centre of the gutter.
- 3.8 Tiling battens must be a minimum length of 1.2 m long, supported and nailed to at least three truss rafters.
- 3.9 Vertical tiling batten joints must be cut neatly at right angles supported over a rafter/truss and splay nailed both sides into the support timber. Joint frequency must adhere to the following:
- (i) Not more than three consecutive batten joints in twelve courses up the same rafter for batten gauges up to 200mm.
 - (ii) Not more than one batten joint in any four consecutive courses up the same rafter for batten gauges over 200mm.
- 3.10 Any saw cut, batten ends, embedded in mortar, must be liberally treated with wood preservative.
- 3.11 Batten ends running into a valleys or hips must be properly supported and either nailed or screw fixed onto additional timber supports (noggins) running up both sides of the hip or valley line, provided by the Carpenter, to ensure that battens are not left unsupported and are not floating between rafter centres. This requirement must be discussed with the Carpenter during the liaison meeting with other trades prior to commencing roof tiling work.
- 3.12 The Roof Tiler must only walk directly up tiling batten lines that are directly supported underneath by a rafter. **NEVER WALK ON BATTENS MID SPAN BETWEEN TWO RAFTERS.**
- 3.13 When installing the 1st batten under roof light window, under window "Z" dimension to be 100mm for pan tiles, 50mm Slate, 100mm for Plain Tile before flashing kit is installed.

4. NAILS

- 4.1 Nails for fixing underlay and tiling battens are to be galvanised annular ring shanked or wire cut nails as noted in the tile manufacturers site specific fixing specification and must provide a minimum 30mm penetration into the truss rafter.
- 4.2 Nails for fixing slates or tiles are to be as noted in the tile manufacturer's site specific fixing specification or slate nails to BS1202: Part 3.

5. FASCIA BOARDS

- 5.1 The Contractor is liaise with the Carpenter to ensure that fascia boards are fixed at the correct height in accordance with manufacturer's recommendations to stop tiles lifting or falling along the eaves course.
- 5.2 Failure to ensure the eaves course of roof tiles lay at the same angle as the tiles above can compromise weather tightness of the roof at the junction where the pitch change occurs. If this cannot be avoided a Lead or Lead-replacement flashing must be installed at the junction where the tile pitch changes in accordance with LSA/Tile manufacturer details.



6. VALLEYS

- 6.1 All valley troughs are to be installed in accordance with NHBC Technical Standards 7.2, British Standard BS8000:Part 6, BS5534 and the roof tiles manufacturer's instructions.
- 6.2 Valleys are to be formed using suitable GRP valley trough providing the pitches either side are equal or have a maximum 5 degrees differential. Consult with the tile manufacturer for further advice on valley pitch differentials if greater than 5 degrees since some dry valleys can accommodate greater pitch differentials.
- 6.3 Where GRP valleys are inappropriate for use e.g. the differential in pitch either side of the valley exceeds the manufacturers' recommendations or where the roof area draining on plan angle into the valley exceeds 25m² or the stated maximum from the tile manufacturer the GRP Valley must be replaced with Lead or substitute lead valleys designed in accordance with LSA /manufacturer's details.
- 6.4 Liaison with the Carpenter is required to ensure that all valleys, constructed in GRP, Lead or Lead substitute, are to be laid over supporting layboards.
- 6.5 The valley opening width for pitches of 17.5 degrees to 22.5 degrees and where the collected rainwater area of the roof is not greater than 25m² shall be 125mm. This must be increased to 200mm where the collected rainwater area of the roof is greater than 25m².

7. VENTILATION – LOW LEVEL

- 7.1 All ventilation must be fixed and specified in accordance with BS: 5250, NHBC Technical Standard 7.2 and manufacturers recommendations.
- 7.2 Eaves or low level ventilation shall be provided as follows:
 - (i) Soffit or over fascia ventilation with integral insect screen providing ventilation equivalent in area to a continuous air gap of 10mm along both parallel eaves on the longest eaves of the dwelling where the insulation is installed over a horizontal ceiling.
 - (ii) For roofs with pitches of 15 degrees or less and where the insulation is installed over a horizontal ceiling the continuous air gap shall be increased from 10mm to 25mm along both longest eaves of the roof.
 - (iii) Where the insulation follows the slope of the roof (i.e. insulation installed at truss rafter level, room-in-the-roof construction), a 25mm continuous air gap shall be provided along both longest eaves of the roof. A clear air path of 50mm shall be maintained between the insulation and the underside of the roofing membrane.

- 7.3 Where insulation is installed over horizontal ceilings, ventilation trays positioned over the truss rafters and below the underlay must be installed and provide a minimum 25mm continuous air gap. Roofing contractors must supply the right Manthorpe eaves vent tray and install it in the correct position to ensure it works effectively by providing the correct amount of ventilation to the roof space. Using the wrong tray or installing in the incorrect position could result in condensation being evident within the roof space, which is difficult to rectify. **NO OTHER MANUFACTURERS PRODUCTS ARE TO BE USED.**

The following table demonstrates which tray should be used for the different roof pitches:

Roof Pitch (Degrees)	Tray Type (Manthorpe)	Tray Length
30	G504	1250mm
35	G503	800mm
40	G502	650mm
45	G502	650mm
47.5	G502	650mm

- 7.4 Where insulation follows the slope of the roof and is installed between truss rafters. Ventilation tiles of sufficient ventilation capacity must be installed to provide 5mm air passage below and 25mm air passage above the obstruction. These ventilation tiles must be installed in each and every truss rafter bay both sides of valleys and above roof windows and other roof obstructions.
- 7.5 Where fire-break walls parallel to the eaves exist, ventilation tiles of appropriate capacity to achieve equivalent of continuous 10mm opening (where insulation laid over a horizontal ceiling) or 25mm opening (where insulation is installed between truss rafters) shall be installed above the fire-break walls.
- 7.6 Where a profiled tile of sufficient leading edge profile depth is used, eaves closer units, supplied by the roof tile manufacturer or, Manthorpe G1275 eaves comb filler are to be installed to prevent rodents, insects and birds entering the batten cavity.

8. VENTILATION – HIGH LEVEL

- 8.1 High level roof ventilation terminals can be installed either using a dry-fixed ventilated ridge system, or using ventilation tiles. Both must be installed in accordance with NHBC Technical Standards 7.2, current relevant British Standard and the roof tiles manufacturer's instructions.

Ventilation tiles are typically only used at high level where a ventilated ridge system cannot be installed due to the nature of the ridge and/or roof construction, such as hipped or pyramidal roofs, ridges constructed with mortar-bedded ridge tiles, and below fire-break walls parallel to eaves.

Irrespective of which of the two systems is used the following rules must be adhered to.

- 8.2 High level ventilation, equivalent to a continuous 5mm opening, either dry-fixed ventilated ridge system or ventilation tiles, shall be sourced from the main tile manufacturer used in addition to eaves ventilation where,
- (i) the roof pitch is greater than 35 degrees or,
 - (ii) the span of the roof is greater than 10m for roofs where the insulation is laid over a horizontal ceiling,
 - (iii) the insulation follows the truss rafter line (i.e. room-in-the-roof construction),
- 8.3 On lean-to or mono-pitch roofs, high level ventilation equivalent to a continuous 5mm opening is to be provided by the use of a proprietary ventilator or for lean-to roofs the use of Manthorpe G1105 flash vent may be used.
- 8.4 On roofs with fire-break walls parallel to eaves, ventilation tiles must be installed below the fire-break wall.
- 8.5 On small bay roofs and porches 5mm ventilation to be provided to the satisfaction of NHBC.
- 8.6 On hipped and pyramidal roofs where the ridge length is less than 2m and where the insulation is to be installed either over a horizontal ceiling creating a cold roof void, additional air ventilation tiles must be spaced and installed at no more than two tile courses below the ridge line to give the equivalent 5mm high level ventilation along the hip-line. Or, where the insulation is installed between truss rafters with an air gap between the insulation and underlay, ventilation tiles of a suitable capacity must be installed at no more than two tile courses below the ridge line in each and every rafter bay on both sides of the hip-line to give the equivalent of 5 mm high level ventilation all in accordance with the manufacturer's instructions.

9. TILES / SLATES

- 9.1 Prior to the commencement of tiling works, the Contractor must ensure that all waste materials have been removed from the batten cavity. This is to ensure that any water underneath the tile is allowed to freely track down the underlay to the eaves / gutter.
- 9.2 All tiles are to be manufactured to:
- (i) Clay Tiles and Fittings to BS EN 1304.
 - (ii) Concrete Tiles and Fittings to BS EN 490 & BS EN 491.
 - (iii) Fibre Cement Slates and Fittings to BS EN492.
 - (iv) Natural slates to BS EN 12326 and comply with NHBC Durability Classification Appendix 7.2F.
 - (v) Shingles must be of Western Red Cedar, suitably treated and be Grade 1 to the Canadian Standard Association.

- 9.3 All tiles and slates shall be as specified by the Company, supplied and fixed in accordance with the manufacturer's instructions and Site Specific Fixing Specification – a copy of which must be forwarded to the Company for our records.
- 9.4 In addition to the manufacturers fixing instructions, the following minimum fixing instructions are also to apply:
- (i) Tiles are to be fixed with a minimum overlap of 75mm and to a maximum pitch of 54 degrees.
 - (ii) For all pitched roofs with rafter pitches from 45 to 54 degrees all tiles are to be to be nailed twice where two holes are provided by the manufacturer and comply with the requirements of BS 5534 or every tile nailed once in all other cases, to battens on suitable felt underlay, even if is this is in excess of manufacturers site specific fixing instructions.
 - (iii) Any tiles fixed vertically or with a pitch over 54 degrees are also to have each tile nailed twice where two holes are provided by manufacturer, or every tile nailed once and tail clipped in all other cases.
- 9.5 All unconnected low level roofs, above 35 degrees in pitch, are to be covered in plain tiles and fixed in accordance with the tile manufacturer's instructions, unless specified on the working drawing to be of preformed construction in GRP or similar.
- 9.6 Chimney Haunches (shoulders) are to be constructed in tiles to match the main roof tile unless a different tile has been used on low level roofs which will take precedence.
- 10. CUTTING TILES**
- 10.1 Prior to cutting, the Contractor is to refer to the tile manufacturer's fixing requirements to ensure the cut tile can be adequately fixed following cutting.
- 10.2 Dedicated cutting areas must be established at the planning stage with the Site Manager before work commences. The area should be the most suitable for the work which may dictate that more than one dedicated cutting area is required on the scaffold platform. The Site Manager may instruct that the designated cutting area be at ground level to eliminate the risk of damage to the scaffold platform.
- 10.3 Tiles **MUST NOT** be cut on Scaffold boards or tiling batten. If using a dedicated cutting area on the scaffold platform it is vital that the integrity of the scaffold is not compromised by the cutting operation. A suitable piece of sacrificial material must be placed between the tile and scaffold boards to prevent any damage to the scaffold platform. The Contractor is responsible for any damage arising to the scaffold platform from this operation.
- 10.4 Disc cutters must only be operated by trained and competent persons.

- 10.5 Small cut sections of roof tile running into the valleys, hips and abutments must be avoided wherever possible. Where small cut sections (less than half tile width) are unavoidable they must be mechanically fixed with a minimum of two mechanical fixings, or adhesively bonded to the adjoining full-width tile, or replaced in accordance with the main tile manufacturer's instructions.
- 10.6 Cementitious cutting dust must be first brushed and then washed down off the roof before it has a chance to set on the surface of the roof tiles.
- 10.7 Precautions should be taken to avoid cementitious slurry from being sprayed up against finished walls and masonry during the cutting process.

11. FIRE STOPPING

- 11.1 Following the instruction from the Site Manager for the Contractor to complete Roof Tiling works, the Contractor has a duty of care prior to commencing the Roof Tiling works MUST bring to the Site Manager's attention any areas where works appear to be damaged or incomplete.

The Contractor must not continue with any works until such work has been remedied.

- 11.2 All separating / party walls to have fire stopping and cavity barriers installed in accordance with Group Standard Details. Including the below:
- 11.3 Above Party Wall and Roof Membrane to be installed by the Roof Tiler
- (i) Install 60mm thick layer of rock/stone mineral wool to be laid above the party wall and sandwiched between the roof membrane and the underside of the roof tile.
 - (ii) Additional mineral wool may be required dependent on tile profile.

12. LEADWORK

- 12.1 All fully supported leadwork must conform to BS 6915:2001 and Lead Sheet Association (LSA) details.
- 12.2 All leadwork must conform to BS: EN 12588:2007 and be installed in accordance with LSA recommendations, and NHBC Technical Standard 7.2
- 12.3 The Installation of flashing kits for roof light windows must be so that the foam extends beyond the flashing. Trim foam under tile if this is causing the tile to kick up.
- 12.4 Supply and fix (Code 4) lead flashing to chimney, chimney bottoms / internal aprons, bay tops, bottoms of fibreglass valleys, porches, dormers (refer to working drawing), garage abutments and also as indicated on the working drawings. Please indicate in the tender qualifications whether lead cheeks have been allowed for.
- 12.5 All lead flashing, lengths, laps and dressing to installed to NHBC standards 7.2
- 12.6 All lead is to be cleaned and oiled upon completion with Patanation Oil.

12.7 The Contractor is to work off suitably provided working platforms when fitting lead flashing, all in accordance with latest HSE Guidelines.

12.8 The Contractor must provide lead or lead replacement soakers for fixing.

13. MORTAR

13.1 Mortar is deemed to have no tensile strength for fixing tiles and therefore, is only to be used for pointing of verges, hips and ridge tiles where noted in the enquiry letter.

13.2 All roof tile mortar, sand, cement and pigment colour is to be supplied by the Contractor and conforms to BS 5534.

13.3 Roofing mortar must not be from adaptive mixes (silo mixes with additional cement content) and must not be from factory-produced retarded mortars.

13.4 Pre-bagged roofing mortars should be used throughout to ensure consistency of mixture. Site mixed mortar may be used as a suitable alternative; this must be well mixed with one part Portland Cement to two parts soft sand and one part sharp sand to achieve workability. The proportion of sharp sand must not be less than $\frac{1}{3}$ of the total sand content.

13.5 Roofing mortar to all bedding and jointing must be completed in one operation, struck off to give a smooth face and coloured in accordance with the following:

Grey Tiles – Black Mortar.

Red Tiles – Red Mortar.

Brown Tiles – Brown Mortar.

14. HIPS

14.1 All hips are to be third round unless otherwise stated.

14.2 All mortar bedded hips must be mechanically fixed to the roof structure and bedded with a nominal joint thickness of 10mm.

14.3 Hip tiles must not be cut to less than 250mm in length. If the nail-hole position is cut off a new hole must be drilled to ensure that the tile can be mechanically fixed.

14.4 Bedding must be completed in one operation to ensure mortar bonding along the length of the hip in accordance with the tile manufacturers' fixing instructions and finished off at the bottom of the hip line with a decorative hip iron.

14.5 Bedded dentil slips must be used where the mortar bed is in excess of 25mm thick to prevent large mortar joints.

14.6 All dry fixed hips must be supplied by the same tile manufacturer as those provided for the main roof tile, installed in accordance with the manufacturers fixing instructions and finished at the bottom of the hip line with a block end hip tile.

15. VERGES

15.1 All perimeter tiles must be fixed in accordance with tile manufacturer's site specific fixing specifications and have a minimum of two mechanical fixings. Commonly this will require nailing and clipping, using only the tile manufacturer's dedicated verge clips, sized accordingly to the manufacturer's tile, to ensure that all clips are in direct contact with the top surface of the verge tile. Or where a dry verge system is specified, the dry verge unit is used to provide the equivalent of a clip fixing.

15.2 Where mortar bedded 'wet verge' tiles are specified in the enquiry letter:

- (i) Tiles are to be laid on a bed of mortar 100mm wide, using roof tile mortar or suitable bedding sealant, in one operation to ensure mortar bonding along the length of the verge.
- (ii) Laid on 150mm x 6mm thick cement based board undercloak and project 50mm beyond the gable wall or bargeboard.
- (iii) The underlay must be positioned under the undercloak prior to fixing ensuring that it is fixed to battens extending over the gable ladder.

15.3 Where 'dry verges' are specified in the enquiry letter or to dwellings over two storeys high:

- (i) All dry verge units are to be supplied by the main tile manufacturer and fixed in accordance with the manufacturer's instructions. Particular attention must be drawn to the position of the batten end location to ensure flush fitting of the units.
- (ii) Where dry verge is constructed flush to the gable wall, the Contractor is to ensure the units can be fitted flush without deviation along the length of the verge.
- (iii) All dry verges are to be finished at the apex with a block end ridge or a third round or angle ridge cap to match the dry verge system used.
- (iv) All perimeter tiles must be fully nailed with the installed dry verge units providing the equivalent of a tail (or clip) fixing.

15.4 Cut plain tiles are not acceptable. Purpose made plain tile-and-a-half or half tile must be used. Additionally, cut single lapped interlocking tiles must not be used unless unavoidable in which case cut tiles less than half the normal cover width must either be adhesively bonded to adjacent full tile using a suitable sealant or mechanically fixed to adjacent tile using a minimum of two fixings.

15.5 Natural slate verges must be formed with full slates and either slate-and-a-half or half slates that are a minimum 150mm wide.

16. DEDICATED VENT TERMINALS

16.1 All vent terminals are to be installed in accordance with NHBC Technical Standards 7.2, current relevant British Standard and the roof tiles manufacturer's instructions.



- 16.2 The Contractor is to allow for ridge terminals as indicated on the working drawings and for cutting, notching and making good at valleys, roof lights, soil pipes, chimney stacks, etc.
- 16.3 The Contractor is to allow for all soil, gas, and air vent (mechanical or roof space ventilation) terminals as indicated on the working drawings.
- 16.4 Where vent terminals are required to be fitted to single lap interlocking tiles, soil, gas and air vent tiles (mechanical or roof space ventilation) must be sourced from the main tile manufacturer and designed to fit with their own tiles and slates.
- 16.5 Where vent terminals are required to be fitted to double lapped slates, the Contractor is to allow for supplying and fixing Manthorpe Slate Ventilators, GILSV30-25 In-Line Slate Vent or GRSV30-25 Hooded Slate Vent (colour to be determined by the Company).
- 16.6 Soil, gas and Air vent tiles must be fitted in accordance with Manufacturer's Installation Instructions, with particular attention to the position, and spacing of underlay seals and gaskets.
- 16.7 When installing ventilation terminals through the roof, including panelised roof systems, the Roofing Contractor is to neatly cut the underlay and where necessary the panelised roof system, supply and install the vent terminal including adaptor through the underlay in readiness for connection by others, all cuts must be repaired immediately and underlay seals installed in accordance with the product manufacturers recommendations.
- 16.8 3rd party ventilation terminals must only be used where the has been fully warranted for compliance with the tile manufacturer. The Contractor's use of non-approved ventilation terminals is strictly prohibited.

17. RIDGE TILES

- 17.1 All ridge tiles and hip tiles shall be mechanically fixed to the roof structure in accordance with NHBC Technical Standard 7.2, BS 5534 and the tile manufacturer's instructions. This includes ALL roofs to main house, garages and any low level bays or projections.
- 17.2 Where mortar bedded ridge tiles are specified in the enquiry letter, these are to be half round unless otherwise stated. Mortar bed depth over the tile and between joints should be no more than 10mm to prevent excessive shrinkage causing loose mortar to drop out. Bedded dentil slips must be used where the mortar bed is in excess of 25mm thick to prevent large mortar joints.
- 17.3 Where dry ridge tiles are specified in the enquiry letter, the Contractor is to only use the ridge and fixed ventilated products provided by the main tile manufacturer and must be fixed in accordance with the manufacturer's instructions.
- 17.4 Ridge tiles must not be cut to less than 250mm in length. If the nail-hole position is cut off a new hole must be drilled to ensure that the tile can be mechanically fixed.



- 17.5 Under no circumstances are bonnet tiles to be used for ridges on low roofs (i.e. single storey). In these situations, plain tiles (to match main roofs) must be accurately cut and neatly bedded with a suitable lead flashing. Baby or mini ridges to be installed, which correspond to material finishes layout, to be clarified at tender submission.

18. DORMER ROOFS & ROOF LIGHTS

- 18.1 All battens running up the sides of the dormer roof and roof light must be properly supported and either nailed or screw fixed onto additional timber supports (noggin) running up both sides of the dormer roof and roof light.
- 18.2 All tiles running up the sides of the dormer roof and roof light are to be either nailed and clipped or clipped and adhesive bonded to the adjacent nailed tile using the tile manufacturers recommended adhesive to comply with the requirements of BS 5534.
- 18.3 Code 4 lead soaker provided by the Plumber to the dormer roof and roof light to run over the first course of tiles immediately below the dormer roof or roof light minimum 300mm girth to suit tiling gauge. Lead soaker to be fixed in position to full length of grp apron flashing.
- 18.4 Underlay to be tucked under soaker to provide minimum 75mm overlap.
- 18.5 Pan tiles should be chamfered off (approx. 20mm) to ensure lead installation.
- 18.6 Expanding foam tape is to be provided and installed by the Roofing Contractor to dormers, and chimneys to fill the gap at any exposed tile edges to prevent ingress into the roof from wildlife and driving rain.

19. SOLAR PV / SOLAR THERMAL

- 19.1 Additional battens may be required as necessary to the top and bottom of the PV array to support tiles.
- 19.2 Tiles must be cut to fit uniformly over the top and side flashings on the solar panels. The bottom apron flashing must be dressed down to seal the system from driving rain and wind uplift.
- 19.3 Fixtures and fittings must not be substituted. Only those fixtures and fittings supplied by the tile manufacturer are to be used to fix solar panels to the roof. These are designed and tested by the manufacturer to resist wind forces and transmit these back to the building structure.
- 19.4 The contractor must take all necessary precautions when walking around installed panels to avoid damaging cables when installing tiles. No tools are to be placed on PV Panels. Tiles are to be loaded-out adjacent to the PV Panels to ensure no damage occurs to the panel when installing the tiles.
- 19.5 Where PV Solar panels are to be installed the Roof Tiling Contractor must liaise with the PV Solar Panel installer to ensure battens are installed in line with the fixing details of the PV Panels.

19.6 The contractor is to ensure tiles are cut neatly, free from dust, loose debris or slurry where they abut PV Panels to be covered with flashing. Cutting of tiles must be carried out in the designated cutting area. Tiles are to be dressed with PV Panel flashing ensuring the bitumen strip is well-bonded to the tiles. Where necessary, the contractor must apply a low modulus external silicone sealant to achieve a good adhesion. It may be necessary to chamfer the high points under the sill flashing. Lighter tiles will sit more neatly if the foam surround is trimmed. For slates, trim the foam to within 10mm of its base and flatten over the outside edge of the flashing.

20. WASTE REMOVAL (ON SITE) AND CLEANING OUT

20.1 The contractor must ensure that waste from their work activities is minimised and materials are reused where practicable.

20.2 All plots, garages and scaffolds must be cleaned by the contractor upon completion of the works and left free of materials or debris created by the works. Failure to do so will result in contra charges being applied.

20.3 Upon completion of the contract (or defined sections thereof), the Contractor will clear from site all stored materials, equipment, site accommodation, etc., no longer required, without delay.

20.4 Waste removal and disposal must be in accordance with all current UK legislation.

20.5 We reserve the right to contra-charge the Contractor for the cost of excessive removal of the Contractors' waste, including waste resulting from damage to materials in their care, plus an administration fee of 20%.

21. APPROVED MATERIALS

21.1 The following products from the Manthorpe Building Products Ltd range are to be used in compliance with the clauses above:

Section	Item	Description	Product Code
Underlay	Underlay Support	Refurbishment Felt Support Tray	G1281
Ventilation – Low Level	Eaves Ventilation	Continuous Roll Panel Eaves Ventilator 6m	G502,G503,G504
	Eaves Closure	Eaves Comb Filler	G1275
Ventilation High Level	Lean-to Roof	Abutment Flash Ventilator	G1105
Dedicated Vent Terminals	Slate Vents	In-Line Slate Vent	GILSV30-25
		Hooded Slate Vent	GRSV30-25
	Tile Vents	Russell Roof Tiles Russvent P13 Universal MVHR	



ROOF TILING

TRADE SPECIFICATION AGREEMENT

This Specification Agreement relates specifically to the Company's development at

I confirm that I have read and understood the foregoing Specification and any necessary associated documentation referenced, such as standard specifications, drawings or quoted details and that my prices include for all items contained therein and will "remain fixed" for a period of:..... as outlined in the Enquiry letter.

SIGNED:

FOR AND ON BEHALF OF:
.....

DATE:

N.B. The Contractor is to sign this Agreement and return it with his Quotation. Any prices received without this Agreement will be excluded from consideration.

Revised: Rev AF – 1 July 2024