

For the attention of David Blow
West Sussex County Council Facilities Management
County Hall
West Sussex
PO19 1RF

09 August 2024

Project Number: SM-26-000095A
Project ID: 10128843

18 COLLEGE ROAD, ARDINGLY, HAYWARDS HEATH, WEST SUSSEX, RH17 6TT

Dear David,

Further to your enquiry via our Technical Specification Manager Dean Millward on 21 June 2024 regarding the above project, we have the pleasure of submitting your detailed BMI Redland SpecMaster specification for the roofing based upon the product(s) selected and information provided.

With SpecMaster, not only can you be sure that your roofing specification is the best it can be, but you also have the added reassurance of our comprehensive 15-year design liability and roof weathertightness guarantee.

We work on a simple premise. If you specify our products, then you will benefit from the resources we can bring to ensure our products perform reliably over time. There are lots of product guarantees available in the construction market, but SpecMaster goes much further to be more than just a product warranty.

Our comprehensive 15-year guarantee provides complete peace of mind for you and your clients. We take sole responsibility should something go wrong, or if any roofing element fails in those 15 years, and will pay for the full cost of setting it straight. This includes materials, labour and scaffolding. You won't find a more extensive roof guarantee anywhere else.

- Your specification has been compiled so it can be readily incorporated, along with all other relevant NBS sections, into your formalised specification for the project.
- There is important information contained in the specification that should be transferred to the carpentry sections to ensure preparatory work is carried out correctly.

- Detailed windloading calculations – which give values for wind uplift and tile resistance – are also included. This data has been included for your structural engineer's information.
- This specification is only applicable to the BMI Redland products specified and will be incorrect for any other products in our range and will not be correct for products supplied by other manufacturers.
- It is a condition of the guarantee that all the Redland products listed in the following section are purchased new and installed in accordance with Redland fixing instructions and that the works are carried out entirely in accordance with the specification provided.
- The ventilation recommendations provided ensure compliance with the current version of BS 5250 (Code of practice for management of moisture in buildings).

Our specification has been compiled using information provided by Dean Millward.

Please check the information you have provided and should you wish to alter anything please let us know and we will be happy to provide a revised specification. Alternatively, please confirm that you would like to go forward with this specification so we can offer our ongoing support and services available to assist with your project.

Should you wish to discuss any aspect of our recommendations please do not hesitate to contact us.

Yours faithfully,
For BMI Redland Technical Services,

Dean Millward

Technical Specification Manager

Required Products List for SpecMaster Guarantee

The Redland 15-Year SpecMaster Guarantee for this project is only valid if the following list of Redland products is purchased and installed in accordance with Redland fixing instructions and the NBS-based specification clauses in the next section.

Substitution of any of the listed Redland products without written prior approval from BMI Group UK Limited will invalidate the SpecMaster Guarantee.

ZONE 1 - MAIN ROOF

Code	Description
10003046	50 Double Roman
10002332	Half Tiles (50 Double Roman)
10002797	Divoroll Elite 200 2S (50m x 1.5m)
20001082	Continuous Hip (Profiles/Stonewold/Mini Stonewold 5m)
10002810	HR Continuous Ridge (Profile Tiles 5m)
10003121	Dry Verge (Pack of 18 LH & 18 RH)
10002864	Dry Verge Gable End Pack
20001276	Rapid Eaves 2 in 1 Eaves Tray (1m)
10002482	HR Ridge Without Nail Hole (450mm)
10002218	Third Round Hip With Nail Hole (450mm)
10002250	HR Block-End Ridge (450mm)
10002376	Third Round Hip Block End (450mm)
11000252	Innofix Clips - Light Blue (Pack of 250)
10003245	Kro-clips (Pack 50)
10003246	Eave Clips (inc. nail) (Regent/Grovebury/50 Double Roman)
20001173	60mm long x 3.35mm diameter Aluminium Alloy Clout Nails
20001173	60mm x 3.35mm Aluminium Alloy Clout Nails
10002447	ThruVent 8.8k (50 Double Roman)
20001275	Rapid EavesVent Rafter Roll (6m)
20001149	Flexible Pipe (100/100)

Other products referenced in this specification that are not listed in above Required Products List for SpecMaster Guarantee can be sourced from other manufacturers.

ZONE 1 - MAIN ROOF

H65 SINGLE LAP ROOF TILING TO Main Roof

- To be read with Preliminaries/General conditions.
- REDLAND TECHNICAL SOLUTIONS
- SpecMaster number SM-26-000095A
- It is a condition of the SpecMaster guarantee for this project that the works are carried out entirely in accordance with this SpecMaster specification and in accordance with Redland advice and instructions using normal standards of good workmanship and the requirements of British Standards for slating and tiling (BS 5534 and BS 8000 - Part 6). Failure to comply with this condition will invalidate the guarantee (see terms and conditions of SpecMaster guarantee).

TYPE(S) OF TILING

120 CONCRETE PROFILE ROOF TILING

- Base: Trussed Rafters at 450 mm centres (Estimated).
- Pitch: 30° (Estimated).
- Insulation: Insulation Between Joists.
- Underlay: Divoroll Elite 200 2S (50m x 1.5m) (10002797).
Lay as clause 240 Lay underlay to provide a drape between the rafters or supports sufficient to ensure that any water discharges away from the batten fixing holes at the rafters or supports and allows it to drain into the eaves gutter. Contact between the underlay and the underside of the roof covering should be avoided both during and following installation. A maximum drape of approximately 15 mm avoids noise nuisance caused by excessive flapping of the underlay under wind action, and prevents the transfer of wind loads to the roof covering for which it has not been designed to resist.
Minimum horizontal lap: 150 mm.
- Counterbattens: As clause 246, size 50 x 25 mm.
- Fix at centres coinciding with supports, marking positions of latter at top edges and eaves before laying underlay. Fix counterbattens at not more than 300 mm centres using 65mm long x 3.35mm diameter Galvanised Smooth Round Nails.
- Battens: As clause 245, size 50 x 25 mm.
- Joints must not occur more than once in any group of four battens on any one support. Fix each batten to each support, splay nailing at ends, using 65mm long x 3.35mm diameter Galvanised Smooth Round Nails.
- Tiles: Redland 50 Double Roman (10003046).
Colour: Terracotta.
Size: 418 x 330 mm.
Headlap: Minimum 75 mm, maximum 125 mm.
- Fixing Recommendation: All tiles at the perimeter of the roof must be nailed using 60mm long x 3.35mm diameter Aluminium Alloy Clout Nails and clipped. In addition, a band of full tiles 5 wide adjacent to the perimeters must also be clipped. All tiles in the remaining roof area must be nailed using 60mm long x 3.35mm diameter Aluminium Alloy Clout Nails.

In addition to nails or screws as specified above, tile clips (or double battening clips), eaves clips, verge clips, or Kro-clips should be used as a second fixing for the perimeter tiles where appropriate. At hips, verges or side abutments a Redland dry hip, dry verge or side abutment flashing (i.e. Wakaflex Rapid Flashing) can act in lieu of a clip fixing providing one of the two fixings required.

- See clause 275 for more detailed information on fixing.
- This construction is rated A+ in the 2008 BRE Green Guide to Specification.

TILING GENERALLY

205 MANUFACTURERS INFORMATION

- Check the supporting roof structure to be roofed upon is in a suitable state to receive roof covering. It must be free from harmful conditions such as timber rot and must be structurally sound. Monier Redland Limited cannot be held responsible for problems with roof performance caused by pre-existing conditions that are not discovered and corrected prior to any roofing works.
- It is your responsibility to ensure the submitted information on which this specification is based is correct; often information has to be assumed due to lack of clarification until the roofing works commence on site.
- Comply with Redland fixing instructions for each product. Check that this is the current edition of the fixing instructions; if not consult Redland Technical Solutions and draw to the attention of the CA any relevant technical changes.

210 BASIC WORKMANSHIP

- Set out to give true lines and regular appearance fitting neatly at all edges, junctions and features. Fix roof covering to make the whole roof sound and weathertight at the earliest opportunity. Repair any defects as quickly as practicable to minimise damage and nuisance. Keep gutters and pipes free of debris and clean out at completion

240 UNDERLAY

- Handle carefully to prevent tears and punctures and repair with adhesive tape any which do occur.
- Vertical laps not less than 100 mm wide, coinciding with supports. Horizontal laps of the dimensions specified.
- Where a horizontal lap occurs the lap should be sealed using the integral double glue strips provided; peel off the protective backing and press the glue strips firmly together using the hand to form a sealed joint.
- Fix with extra large head fixings, keeping the number of perforations to a minimum.
- Where pipes and other components penetrate the underlay, use proprietary underlay seals.

245 BATTENS

- Sawn softwood, species to BS 5534, clause 4.11.1. Grading: To BS 4978, clause 5 or 9. Moisture content not more than 22% at time of fixing.
- To be in straight horizontal lines aligned on adjacent areas with battens to be fully supported over no less than 3 supports.
- Batten joints to be square cut and butted centrally on supports.
- Preservative Treatment: In accordance with BS 8417, being suitable for Hazard Class 2.

246 COUNTERBATTENS

- Sawn softwood, species to BS 5534, clause 4.11.1. Grading: To BS 4978, clause 5 or 9. Moisture content not more than 22% at time of fixing.
- Preservative Treatment: In accordance with BS 8417, being suitable for Hazard Class 2.
- Batten joints to be square cut and butted centrally on supports.

275 TILE FIXING

- Lay tiles straight bond in even courses with tails aligned
- Nail Tiles using 60mm long x 3.35mm diameter Aluminium Alloy Clout Nails (20001173)
- Clip Tiles using Innofix Clips - Light Blue (Pack of 250) (11000252)
- Use Eaves clips (10003246)
- Use Kro-clips (Pack 50) (10003245)

EDGES/JUNCTIONS/FEATURES

305 GENERALLY

- Ensure that related trades are provided with all relevant information relating to carpentry and other work, etc. Before starting work ensure that previous related work is complete and in accordance with the project documents.
- Form all details using the specified and Redland recommended fittings and accessories: do not improvise without approval.
- Please be aware that this SpecMaster specification complies with the minimum requirements set out in British Standards so as to conform with Building Regulations. For certain projects such as new housing there may be additional non-regulatory technical requirements from third-party insurers that have to be satisfied. For existing properties and renovation works there may be additional requirements ultimately determined by local building control that are not stated within this document. It is your responsibility to check what if any non-regulatory or local requirements exist for your project and ensure they are complied with.
- Fittings and accessories to be supplied by Redland to match tile colour and finish unless specified otherwise.

- Cut tiles only where necessary with an appropriate tool to give straight, clean edges.
- Note also that the free edge of a lead flashing must always be adequately fixed typically using clips: The material used for the clips, their spacing and, most important, the method of fixing will depend on the site exposure. Furthermore, ensure that any widths of lead or laps in the lead work either horizontal laps or side laps over lead or the tiles are sufficient for the application, roof pitch, and site exposure. Please note that in the clauses in this section the laps specified assume a moderate site exposure e.g. for side abutments and other similar details it may be necessary to increase side laps from 150mm to a minimum of 200mm. It is your responsibility to check that the appropriate specification and fixing of lead is selected for the project site. As soon as practical, a smear coating of patination oil should be applied to the lead evenly in one direction and in dry conditions. For specific advice on any of these issues contact the Lead Sheet Training Academy (LSTA). Tel 01622 872432.
- A roof maintenance program, as recommended by the RTA should be built into any contract. More information can be requested from our technical department.

325 FIRE SEPARATING WALLS

- Ensure that separating wall is cut on the rake 25-50 mm below top of adjacent rafters.
- Fill space over top of wall with layers of mineral fibre quilt so that when underlay and battens are laid it is lightly compressed. Tuck edges of quilt between edges of wall and adjoining rafters.
- Lay 300 mm wide pads of mineral fibre quilt thick enough to seal all gaps cut to fit snugly between battens.
- For boxed eaves completely seal air paths in the plane of the separating wall with 50 mm wire reinforced mineral fibre nailed to sides of rafters and carefully cut to shape.

346 EAVES UPVC FASCIA

- Ensure that top of uPVC fascia board is fixed at the correct height to ensure all tiles are laid in an even and level plane.
- Fix an additional fixing batten to the top of the rafter behind and level with the top of the uPVC fascia board.
- Rapid EavesVent Rafter Roll (6m) (20001275).
- Rapid Eaves 2 in 1 Eaves Tray (1m) (20001276).
- Fix all tiles in the eaves course with eaves clips (10003246), using appropriate size nails.
- Fix all tiles in the eaves course with tails projecting 50 mm.

425 DRY VERGE

- Ensure that gable wall is brought up level with the top of the counterbattens.
- Carry underlay over full width of gable.
- Project tiling battens 35 mm beyond gable, ends aligned.
- Fix standard tiles for both left hand and right hand verges.
- Fix Dry Verge Interlocking System (10003121) to battens by screwing into batten ends with stainless steel screws provided.
- At eaves and ridge use Gable End Pack (10002864).

530 CONTINUOUS HIP

- Overlap underlay courses at the hip line by not less than 150 mm.
- Fix batten(s) to top of hip rafter to a height level with top of counterbattens.
- Fix 50 x 50 mm high batten full length of hip on spacer blocks provided.
- Cut tiles neatly to rake.
- For Plan Angles at 90°:
Hip tiles: Third Round Hip With Nail Hole (450mm) (10002218).
Colour: Terracotta.
- Use head and tail clips as necessary to secure cut tiles either side of hip.
- Cover with Continuous Hip Pack (20001082), including Hip Support Tray.
- Hip Ends: Third Round Hip Block End (450mm) (10002376).

720 CONTINUOUS VENTED RIDGE

- Ensure that underlay is finished short of apex to allow a 30 mm airgap and that counterbattens are extended to form an apex to support the ridge tree batten.
- Fix 38 mm wide ridge batten to each counterbatten with fixing straps provided. Form ridge batten from 38 x 25 mm tiling battens pre-nailed together. Height of ridge batten should ensure a wood screw penetration of not less than 15 mm.
- Fix top course of tiles.
- Ridge tiles: HR Ridge Without Nail Hole (450mm) (10002482).
Colour: Terracotta.
- Fix using Continuous Ridge Pack (10002810).
- Block Ends with wood screw for gables (10002250).

810 JUNCTIONS

- Fix a lead saddle to provide a weathertight detail at each:
- Junction of ridge with two hips.
- Junction of verge with eave.

830 CHIMNEY WITHIN ROOF SLOPE

- Turn underlay not less than 50 mm up sides and front of chimney.
- Fix top course of tiles.
- Ensure that lead front apron flashing is fitted.
- Closely fit tiles to sides of chimney, cutting as necessary.
- Tiles adjacent to chimneys must be cut from full tiles. Half tiles (10002332) may be required elsewhere within the course to ensure this occurs.
- Ensure that lead flashing with upstand not less than 65 mm are dressed closely over one complete roll and pan of tile with front ends turned 75 mm around chimney over front apron flashing and dressed into chimney.
- Ensure that back gutter and back gutter flashing are installed.

852 ROOF SLOPE TERMINALS

- Mechanical Extract Terminals: ThruVent 8.8k (50 Double Roman) (10002447) with underlay seal and Flexible Pipe (20001149).

855 ROOF SLOPE TERMINALS

- Soil Vent Pipe Terminals: Lead Slate.
- Gas Flue Terminals: Lead Slate

INFORMATION PROVIDED BY CUSTOMER

Roof Type		: Duopitch
Roof Pitch		: 30 degrees
Maximum Rafter Length		: 6 metres
Maximum Height to Ridge	Ht	: 12 metres
Building Length	Len	: 16 metres
Insulation Location		: Insulation Between Joists
Insulation Type		: Soft Fill
Timber Sarking		: None
Counterbatten Size		: 50 mm x 25 mm
Rafter Centres		: 450 mm
Batten Size		: 50 mm x 25 mm (Imported)
Duo Ridges		: Continuous Ridge System HR (Used as Vented)
Mono Ridges		: None
Hips		: Bedded (mechanically fixed)
Verges		: Dry Verge
Valleys		: None
Side Abutments		: None
Roof Windows		: No
Fascia Vent		: Yes
Solar Panels		: None
Well Sealed Ceiling		: No

CALCULATED VALUES

SITE

Effective Height	He	: 12.00 metres
Altitude Factor	calt	: 1.09
Exposure Factor	ce(he)	: 2.55
Site Wind Speed	vb	: 23.91 metres per second
Peak Velocity Pressure	qp	: 893.03 Newtons per square metre

TILING

Roof Areas	Cp, net	Uplift (N)	Resistance	Loading
General Areas	-0.30	31.01	43.49	71.32%
Local Areas	-0.78	108.86	349.59	31.14%

UNDERLAY

Design Wind Pressure	Pu	803.73 Newtons per square metre
Design Uplift Resistance	Pd	2,200.00 Newtons per square metre

FROM SITE LOCATION INFORMATION

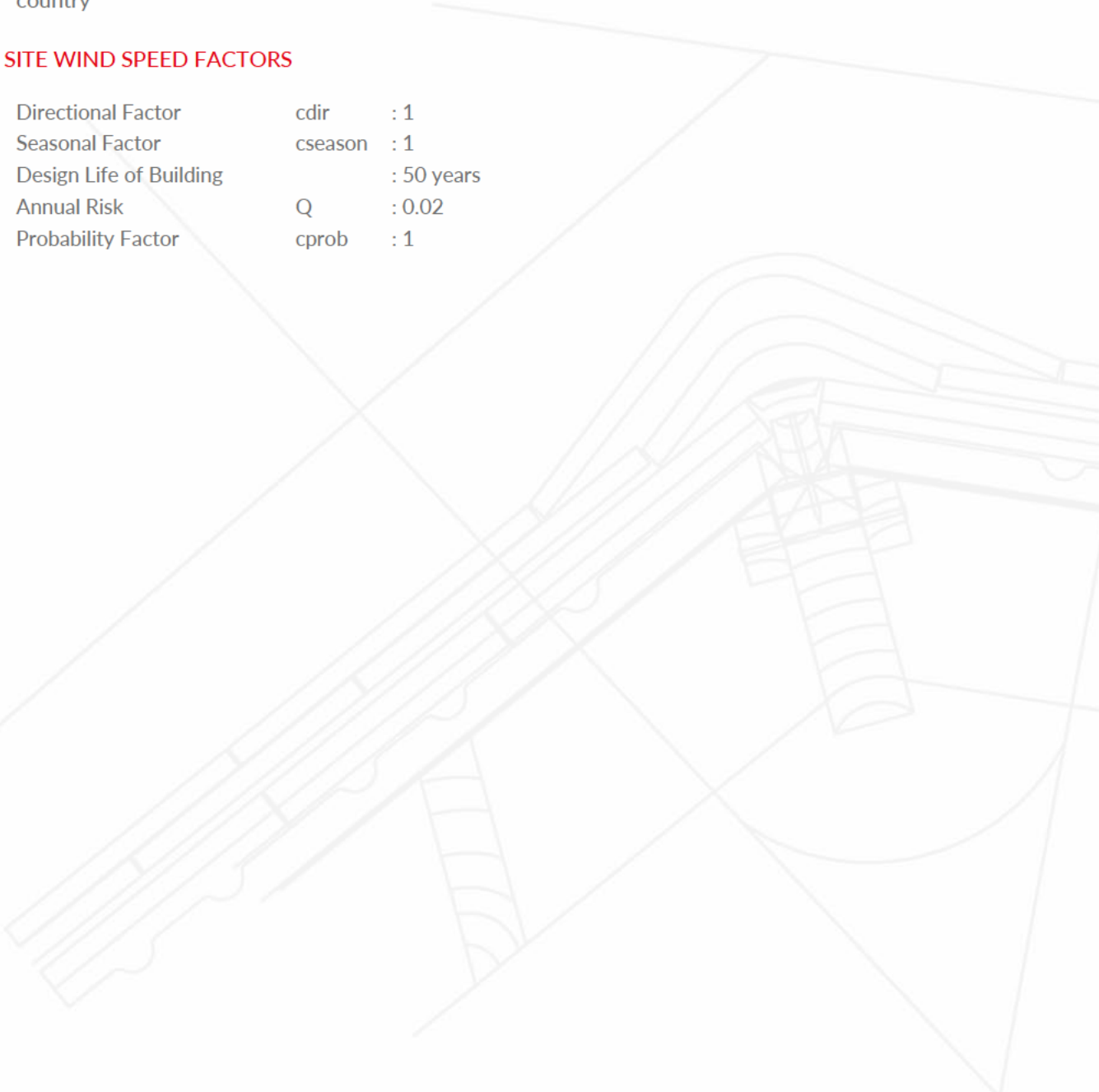
Basic Wind Speed	vb,map	: 22.0 metres per second
Maximum Site Altitude		: 90 metres
Minimum Distance From Sea		: 19 kilometres
Nominal Site Terrain		: CountryName
Within an Airport Zone		: No

SITE INFORMATION PROVIDED BY CUSTOMER

Site is located in the country

SITE WIND SPEED FACTORS

Directional Factor	cdir	: 1
Seasonal Factor	cseason	: 1
Design Life of Building		: 50 years
Annual Risk	Q	: 0.02
Probability Factor	cprob	: 1



GENERAL NOTES

The fixing specification complies with the requirements of the current version of the following standards:

- BS EN 1991-1-4, Eurocode 1 - Actions on structures, Part 1-4: General actions - Wind actions;
- NA to BS EN 1991-1-4, UK National Annex to Eurocode 1 - Actions on structures, Part 1-4: General actions - Wind actions;
- BS 5534, Slating and tiling for pitched roofs and vertical cladding - Code of practice.

BS 5534 requires that perimeter tiles are mechanically fixed using a minimum of two fixings (subject to meeting the wind loading requirements), one of which can be a tile clip, adhesive, suitable dry hip or dry verge system where appropriate. To avoid the use of small pieces of cut tiles, which are difficult to fix, double tiles, tile-and-a-half or half tiles should be used where available. Small pieces (less than half tile width) of cut single lap tiles that cannot be fixed as above should be bonded or mechanically fixed to the adjoining full-width tile using C-Clips (20001209) and Tail Clips (20001210 / 20001213), or secured using Kro-Clips (20001142).

The specification is based upon the information provided by you and the correctness of this information remains your responsibility. On re-checking, should you find a need to revise your specification, please let us know and we will re-run the program and produce a revised fixing specification.

For practical reasons on site, the fixing recommendations have been consolidated into a simplified format where appropriate.

Standard building design values have been used for calculation of the probability factor. Should you wish to revise either of these values, again please let us know and we will re-run our computer-based program and produce a revised fixing specification.