

# Slating & Tiling

## TIPS 44

### ridge construction part 3

Ridge construction part 3 looks at ridge fittings and accessories.

#### Fittings and accessories

Fittings are items like ridge tiles that are made in the same material as the roof tiles. Accessories are made of plastic, metal or another material that make up a system such as dry-fix or ventilation components at the ridge, or ridge terminals. In some instances fittings and accessories are fixed together, while on others they are not. The compatibility of fittings with accessories varies enormously, even when they are sold as universal products, and should be checked with the manufacturer of both components that are being put together. The ultimate responsibility for their compatibility is the specifier.

#### Ridge fixings

Ridge tiles that are not mortar-bedded must be secured against wind uplift by some other means. For ridge tiles this means nails, screws, straps or clips that are secured to a ridge board, secure ridge batten or a patent edge channel. Most clay and concrete ridge tiles are secured along the centre line of the ridge directly above the apex of the roof, either through the ridge tiles or through the joints between the ridge tiles with plates or straps. Fibre cement ridge tiles tend to be screwed along the outside edges into the top battens on each roof slope. This works well provided there is no flexing or movement in the roof structure, which can result in the ridge tiles cracking along the apex. This can be partially compensated for by drilling oversized holes for the screws. But as the amount of movement only becomes evident after a few years it is easy to get wrong.

Metal ridge systems, such as pre-formed zinc and lead rolls, rely upon being nailed to a ridge batten of the correct height and size. In exposed locations galvanized metal straps positioned on the laps, and screwed into the batten below, may be needed.

The number and spacing of the nails, screws, clips or straps will depend upon the system being used. Ridge tiles up to 500mm long will require at least two annular ring shank nails (minimum 3.7mm diameter), and penetrating the ridge

batten by a minimum of 35mm, or one screw 5mm diameter (no 10) penetrating the ridge batten by a minimum of 35mm. Smooth nails are not suitable as the grip of the nail into the timber is insufficient to prevent them withdrawing.

For longer ridge systems, or when using proprietary clips, the manufacturer should supply recommendations and fixing instructions.

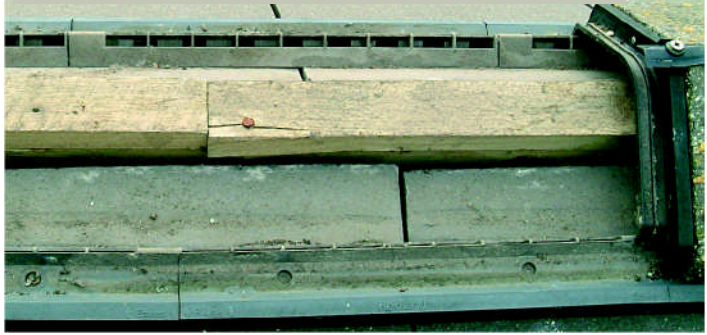
#### Ridge battens

What the ridge tiles are fixed to must be sufficiently strong, and securely fixed to transfer the wind uplift loads back into the roof structure. Therefore, the ridge batten should be at least 38mm deep and 11 times wider than the nail diameter, or seven times the screw diameter. The screws or nails should be fixed as close to the centre of the batten as possible, as a nail close to the edge can cause the timber to split. The recommended distances quoted in BS 5268 part 2 are: five times the diameter of the nail in from the edge of the timber and 20 times the diameter in from the end of the batten.

Nails require ever-increasing impact loads to drive them into the timber, which will try to deflect the impact load. Therefore, the ridge batten needs to be as rigid as possible. Laminating three or four layers of tile batten together is insufficient if there is no ridge board underneath it, as the individual pieces of timber will act like a leaf spring spanning between the trussed rafters. If the batten deflects under the nail-driving impact load, it is possible to reach a point where you cannot continue to drive the nail into the timber as greater impact loads just cause the ridge batten to deflect more and more. As the ridge batten deflects it causes the nail head to go down relative to the ridge tiles, and come back up again and remain slack.

When screws are being installed they require an ever-increasing turning load which is pulling the ridge batten up – taking slack out of it. Therefore, it is possible to use a smaller section of timber as a ridge batten as deflection is not an issue. Also the screw can always be pulled down onto the ridge tile or plate without leaving it slack.

The ridge batten used under a Redland Dry Vent Ridge system has been nailed together rather than strapped using the ridge batten straps that are provided. Also, the nail is too close to both the side and end of the batten and has caused the timber to split.



Sections of ridge batten may have to be removed to allow pipes or flues to connect to ridge ventilation terminals or flues. They should not occur in adjacent rafter spacings, as the ridge batten must be secured to at least two rafters.

#### Ridge batten fixings

The fixing of the ridge batten to the timber or metal roof structure is also critical, and it is important that the extreme forces at the ridge do not pull the fixing out. A ridge board with additional battens fixed above it, to give it additional height, should be fixed using ridge batten straps or a long screw at 600mm centres (maximum) to hold them together. Skew nailing into the ridge board is also possible if the ridge board is wide enough to hold the nails, but on older roofs this may not be appropriate.

With trussed rafters it is not possible to nail into the apex of the truss as this is a dry-mitred joint and will not hold a fixing. To prevent the timber splitting, the nail or screw fixing needs to be at least 20 times the diameter of the nail fixing away from the apex. Nails perform much better in shear than withdrawal, so where possible the nail should be driven in at right angles to the vertical upward pull of the ridge under wind load.

If ridge batten straps are being used they should be either twisted and nailed to the face of the trussed rafter, or bent down the top face of the rafter under the top batten position. It is essential to drive an annular ring shank nail, or a screw, into the top of the rafter through the fold in the ridge batten strap to take all the slack out of the strap fixing.

Over a year the timber (or steel) roof will move with thermal and moisture expansion and contraction. This can cause the ridge of a

domestic roof to rise and fall approximately 40mm. This movement can pull a bent strap straight and result in the ridge batten rising off the apex of the trussed rafter. This can produce what is known as 'rising nail syndrome', which only happens at the ridge.

#### Weather resistance

The position of waterproofing membrane under the ridge tiles, or the ridge to ridge seals, and skirts between the ridge tiles and the roof tile/slates, will vary, and the fixing instructions should always be followed. The majority of waterproof membranes should be installed over the ridge batten to protect it. With systems without a waterproof membrane the ridge batten does not need additional protection. Skirts and waterproofing membranes should be long enough to lap the head of the roof tiles and slates on each roof slope by a minimum of 75mm to protect the head nail holes. This may be difficult for deep profile tiles such as clay pantiles or unders and overs, and may require the skirt material to be able to stretch up to three times its original width, and one-and-a-half times its length. The steeper the rafter pitch, the narrower and deeper the corrugation, the more critical the skirt material stretch will be.

#### Tips

- Install any ridge battens before installing the top tile/slate battens.
- Nailed ridge tiles should be fixed to a solid timber, rather than laminated tile battens, onto timber trussed rafters.
- Ridge battens should be strapped down with no slack to trussed rafters to prevent slack nails at a later date.

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