

# Slating & Tiling

## TIPS 42

### ridge construction part 1

All roof tilers know how to install ridge tiles using mortar bedding, and because the technique has been passed on from one generation to the next few can tell you why they do it that way.

But when it comes to other forms of ridge tile fixing, the recommendations are often not followed. If we look at the what, the where, and the how, it is possible to understand why mortar bedding is so popular and why it works.

#### Definitions

We need to start with some obvious statements that will help us define what a ridge is. A ridge is the horizontal junction between two roof slopes (duo ridge), or a roof slope and a vertical wall below a roof slope, (mono ridge). If the roof junction is inclined, then it is not a ridge, it is a hip or valley. A ridge (along with a top edge abutment) should be the highest point of any roof slope, making it more exposed than most other parts of a roof. A ridge is also one of the last parts of the roof to be completed, making access to it often difficult.

#### Sizes and pitches

A ridge is normally formed of ridge tiles that are curved or angled, and bridges the gap between the two roof slopes. To maintain a weather-tight joint the ridge tiles should lap the head of roof tiles, or slates, on each roof slope by a minimum of 75mm. To do this the width of a ridge tile needs to be in excess of 150mm.

As it is almost impossible to mitre cut the head of the top course of tiles to fit under a 150mm wide ridge tile, and because the gap between the top course of tiles will vary with rafter pitch and height of tile corrugation, ridge tiles are made to widths between 215mm and 340mm, depending upon shape, material and manufacturer. In most instances concrete and clay ridge tiles are available in two lengths – 450mm and 300mm – while continental clay tile manufacturers have lengths from 330mm to 500mm, and fibre cement tiles are available up to 900mm long.

Generally, the rafter pitch on each side of the ridge of most buildings is the same. In reality they can vary

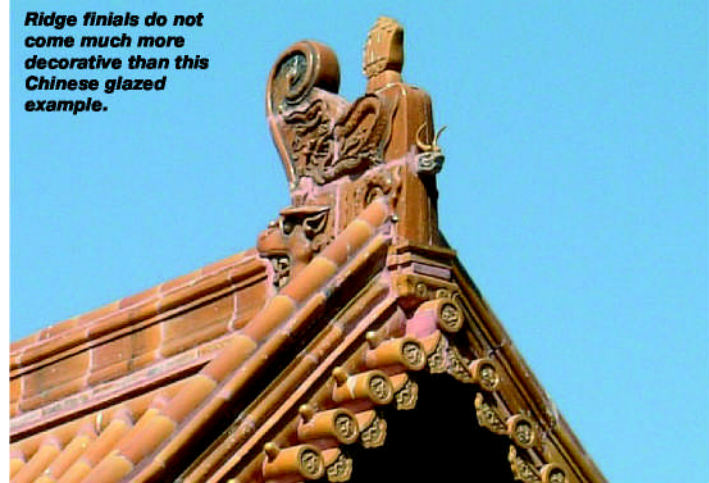
from vertical to 12.5° on either side. With half-round, and some designs of angled ridge tiles, it is possible to accommodate a wide range of rafter pitches from 12.5° to 45°.

If the roof slopes on both sides are steeper than 45°, most half-round ridge tiles will not be wide enough. With angled ridges, the angle should match as close as possible the true pitch of the tiles on each roof slope. In most instances the length of each wing remains the same, only the angle between them changes. Angles from 75° to 135°, in 10° and 15° degree increments, are usually available.

To determine the angle of ridge needed, the following procedure should be followed. Add together the rafter pitch of each roof slope and take the result away from 180° (the sum of the angles of a triangle). The result will give you the angle of the roof structure at the apex. Add to this the angle difference between the roof tile and the rafter pitch for each roof-slope (about 10° for plain tiles, 5° for interlocking tiles, and 3.5° for slates). The resulting figure will be the true dihedral angle between the top surfaces of the roof tiles or slates at the ridge. Choose the nearest size ridge angle that is smaller than your calculated dihedral angle (for 97° choose a 90 degree angle ridge). If you choose a larger angle the outer edges will not touch the tile surface and will give a thicker mortar bed appearance, while with a smaller angle the outer edges will make contact with the tiles and hide the majority of the mortar bedding.

#### Shapes

While half-round ridge tiles are the most popular shape, especially for plain tiles and profiled interlocking tiles, angled ridge tiles are popular with flat interlocking tiles and slates. 'Hogs Back' is a cross between angled and half round – they were popular with clay plain tiles but less popular now. Universal angle ridge tiles are a concrete angled ridge tile with a short vertical up-stand along the edge to allow it to be used with a variety of rafter pitches, as the name suggests. On the continent clay ridge tiles are generally half-round or



Ridge finials do not come much more decorative than this Chinese glazed example.

angled but with a flat top or a central rib, often a reflection of the roof tile profile.

Capped angle and capped half-round ridge tiles are another alternative. The cap is a raised section at one end that laps onto the end of the next ridge tile, to protect the butt joint. These should be jointed with mortar unless used with a dry-fix ridge system.

Half-round and angled ridge tiles are also available in ornamental patterns, with rolls and crests along the apex, or finials at one end. These are normally made of clay but can be found in a limited range in concrete. Some ornamental ridge tiles are made in one piece, while others are made in two or more pieces. Similarly, most decorative finials are made in one piece, while others are bolted to a normal ridge tile or block end.

Mono ridge tiles are generally available for both half-round and angled ridge situation. The vertical leg of the mono ridge should be long enough to cover the ends of the construction and provide a suitable screw fixing onto a timber barge board or similar structure on the vertical face.

#### Ridge accessories and fittings

There is also a range of fittings available for the ridge. Block ends are vertical caps to the end ridge tiles that close off the ridge to prevent birds entering the ridge. These are usually used with dry ridge and dry verge systems. The block ends can be separate plastic units or a complete end ridge tile unit. Dentil slips are narrow widths of plain tile, or similar material, that are used to thin out mortar bedding where profiled tiles have a deep corrugation. Thirdly, terminals for gas flues and ventilators for mechanical extracts or soil pipes are available for most ridge shapes. These terminals are ridge tiles with a rectangular duct passing up through the centre section. The terminal grill assembly is generally plastic for a ventilator and

clay or concrete for a gas flue as it needs to be non-combustible.

To achieve a continuous ridge-level roof-space ventilation system there are dry ventilated ridge systems that have grills along the leading edge of the ridge tiles, and ridge-to-ridge seals with mechanical fixings between the ridge tiles, that eliminate the need to mortar-bed the ridge tiles. For very exposed locations, and where there is a lot of roof structure movement, dry-fix ridge systems are also available with no ventilation. Some are similar to the dry vent systems, and some are very different relying on a waterproof membrane under the ridge tiles to protect the roof structure below.

Lightning conductors are often installed along the ridge line, either under the ridge tiles with externally exposed strike plates, or along the side of the ridge on slate straps. Whichever system is used it should be integrated into the ridge during construction, as the location of the straps, plates and tape must not interfere, or weaken, the ridge installation.

#### Tips

- Try to select all ridge components from the roof tile manufacturer to ensure compatibility.
- Check that the ridge tile and components are all suitable for the rafter pitches on each roof slope.
- Set the top tiles/slates as close to the apex of the roof as possible to achieve at least 75mm of lap between the ridge tiles and the top tiles/slates.

**Ridge construction part 2 will deal with the installation of the ridge components.**

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