

In a series of articles on interlocking concrete roof tiles, experts from the **Concrete Tile Manufacturers Association** have pooled their knowledge. This Construction Note discusses mortar bedded verges.

### The Verge

The junction of a roof and a gable end wall. The verge is normally at right angles to the eaves and ridge. If the verge is not at right angles to the eaves or ridge it is called a raking verge. Rainwater will flow away from a raking verge. If rainwater flows over a verge it should be considered as a raking eaves.

### The building structure

The wall structure should be built up to a neat finish, level with the top of the rafters. With timber frame construction this may be up to 50mm below the top of the rafters to allow for shrinkage of the timber structure. With a gable ladder the ladder frame should be positioned and fixed to the rest of the roof structure prior to roof tiling starting.

### Underlay

The underlay (A) should be rolled out over the external wall or over-sail the gable ladder, to ensure that the gable ladder is protected. With a gable ladder it is sometimes easier to lay the underlay over the barge board and trim it off neatly once the battening and undercloak have been installed. If there is no gable ladder and the gable is covered with vertical tiles cladding, the underlay should lap over the vertical underlay.

### Battening

The tile battens (B) need to finish 100mm from the edge of the verge to allow for a 40mm mortar bed width on the outer edge, without it coming into

contact with the ends of the timber battens. The battens are nailed to the last rafter, which may be on the inside face of the gable wall. The ends of the battens should not extend more than 300mm beyond the last rafter. If the wall construction is thicker than 300mm it will be necessary to provide an additional batten fixing closer to the ends of the tile battens.

### Overhang

The roof covering needs to over-sail the wall or bargeboard (C) by between 38 and 50mm. This is to provide adequate protection the wall and avoid water staining the wall below.

### Undercloak

To keep the mortar in place an undercloak (D) of fibre cement board or slate is located between the battens and the underlay, sitting on the outer wall skin or bargeboard, with the outer edge flush with the outer edge of the verge tiles. To ensure the undercloak laps under the battens by 50mm, the undercloak needs to be a minimum of 150mm wide and longer than the gauge of the battens.

The undercloak should fall slightly away from the gable wall to discourage water from tracking back to the wall or bargeboard. The undercloak should be positioned on top of the underlay to ensure that the underlay will not become embedded in the mortar or allow water on the undercloak to drain onto the underside of the underlay. The undercloak should be joined neatly at

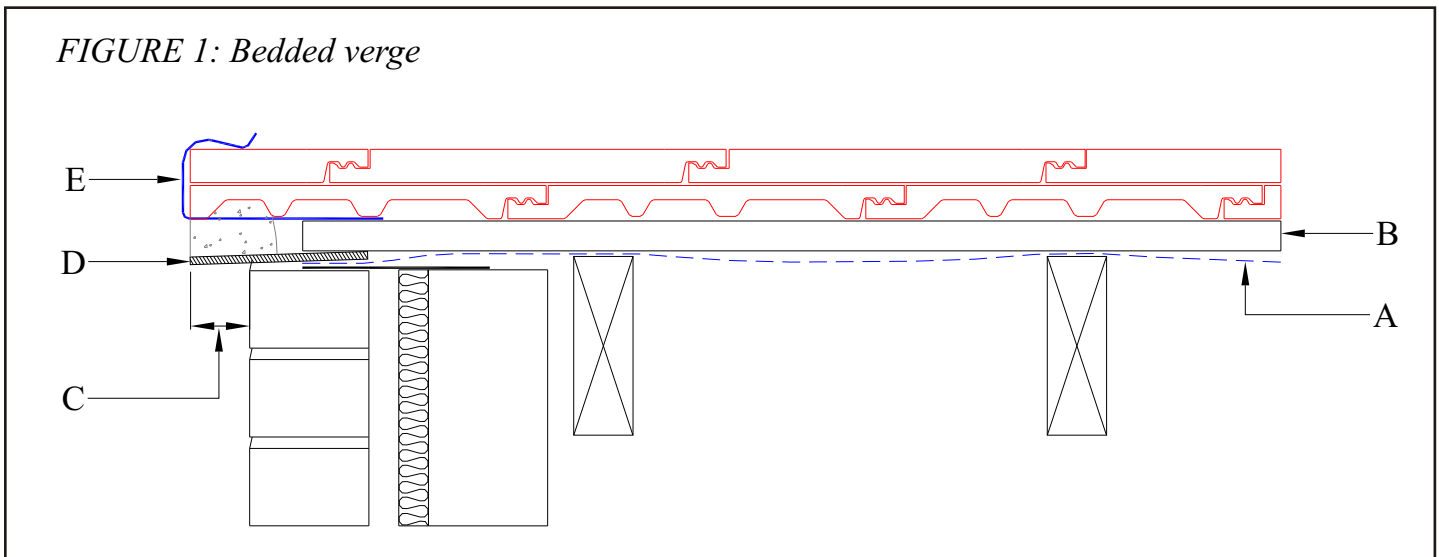
the ridge to stop large insects getting into the roof and the eaves should be joined to allow the bottom section to sit on top of the fascia board without causing the corner eaves/verge tile to kick up.

### Verge tile fixings

The verge is one of the most exposed parts of the roof and is prone to wind-driven rain driving in between the tiles and the wall. The verge tiles are vulnerable to wind uplift by a combination of force on the underside of the over-sail and suction on the top surface. To overcome this tendency mortar is traditionally used to fill the edges of the batten cavity and nails and/or clips are used to keep the edges tiles in place.

The suitability of either clips or nails will depend upon the anticipated wind uplift and the resistance of the tile and nail/clip together. This can be calculated in accordance with BS 5534: 2003, the British Standard Code of Practice for Slating and Tiling. If nailing is sufficient to hold the verge tiles in place the edge tile needs to have a nail hole which is at least 160mm from the verge edge to ensure that the nail penetrates the timber batten at least 60mm from the cut end, otherwise the batten may split. With broken bonded tiles, which have a half tile at the verge, it may not be possible to nail the half tile and comply with BS 5534 fixing requirements. Verge clips must therefore be used.

FIGURE 1: Bedded verge



# Construction Notes - No 2 Verge (Part 1)

## Verge clips

The fixing specification for the roof can be calculated from the guidance in BS 5534 or may be obtained from the roof tile manufacturer. Where the fixing specification requires verge clips (**E**) to be used, they will be needed on both left and right hand verges and located at the tail of each tile, including the corner eaves/verge tile.

The left hand eaves/verge tile is the most vulnerable tile on the roof and cannot be clipped with an eaves clip. It will therefore require the verge clip to be slightly modified to accommodate the one-tile thickness and is nailed on top of the fascia board. The omission of this clip is a contributory factor for mortar cracking at the joint between the first and second courses.

The verge clips should be the correct type for the profile of the tiles used. Some patterns of profiled tiles have a different left and right verge clip. The edge of the undercloak helps to position the verge clips prior to being twice nailed to the ends of the battens.

## Mortar

The mortar should be 1:3 sand:cement with pigment to match, or contrast, the tile colour. Not too wet that it will not stand up, nor too dry that it will not allow the tile to be bedded. The mortar should be sufficiently fluid to allow the

outer face to be trowelled to a smooth finish. The 50mm wide continuous bed of mortar, high enough to reach the top of the tile corrugation, should be placed on the edge of the undercloak after the verge clips have been fitted and before the damp verge tiles are laid. Damping the verge tiles will allow the mortar to adhere to them better than to dry tiles. The act of nailing the verge tiles may cause the mortar to slump slightly and may need to be a little stiffer than for clipped verge tiles. The bedding of the tiles onto the mortar will compact the mortar and cause it to expand towards the batten ends, but should not reach the batten ends.

The finish of the mortar bedding should be neat and smooth and should not require a secondary surface coating, either whilst the mortar is wet or later when it has set. All the tiles on the verge should lie in the same plane as the rest of the roof. Kicking up of the verge tiles is not an acceptable practice as it can cause 'gapping' between the tiles which, at low roof pitches, may allow wind-driven rain to penetrate under the tiles.

Pointing of the verge rather than bedding is not recommended as it will result in mortar being pushed sideways towards the ends of the battens and will frequently touch. It will also result in very little contact with the underside of the verge tile.

## Summary

- The wind forces on a verge can be higher than other parts of the roof. Therefore clipping and/or nailing are more important.
- Mortar bedding is a good filler. However, it is the nails and clips that will keep the verge tiles mechanically fixed on the perimeter of the roof.
- Pointing the verge is not recommended. Bedding will use less mortar and produce a better surface contact.

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