

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 chimney back gutters.

Chimney back gutter

A chimney back gutter occurs where a chimney or other projection such as a return wall or roof window rises up through the middle of a roof slope. Rainwater running down the roof slope above the chimney will drain into the face of the chimney or projection facing the ridge. The water needs to be collected and drained away safely back onto the roof.

The quantity of water to be collected will depend upon the area of roof draining into the back gutter. The width of the chimney or projection can vary from as little as 450mm up to several metres. The wider the projection the deeper the back gutter (A) will need to be to collect the rainwater. Large volumes of rainwater from a back gutter should not be discharged back onto the roof. In these instances open lead gutters should channel the water away to the eaves, or internal outlets should be provided.

Cricket

The alternative to a back gutter is to construct a Cricket. This is a pitched dormer with the chimney positioned where the window would occur. The width of the Cricket has to be wider than the chimney to allow the inclined valleys to drain back onto the roof either side of the chimney. This solution works best for tall, narrow projections such as chimneys.

The building structure

With a back gutter the DPC (B) within the chimney needs to be positioned high enough up the brickwork to allow the cover flashing (C) to turn in under it without affecting the capacity of the gutter. If the back gutter is to an existing roof, with no DPC in the chimney, the most appropriate joint in the brickwork will need to be raked out ready to receive the new cover flashing.

For a short back gutter on a domestic sized roof the lay board (D) needs to be positioned such that the water running out of the back gutter onto the roof slope has a clear 50mm width (E). The height of the support board will depend upon the

pitch of the roof and the height of the tile profile.

For longer and deeper back gutters the support board should ideally be laid to falls, with the highest point in the centre. The outlet width should be no less than one third of the width of the support board.

Where the chimney is positioned at a gable wall it may be advantageous to drain the back gutter directly into a hopper head, or alternatively, create an upstand to prevent water running down the face of the gable wall.

The section of back gutter lay board supported by the face of the chimney should not lie in the same plane as the rafters, or drain directly into a secret gutter on the side abutment as water will flood into the batten cavity or roof void.

Where the horizontal lay board comes into contact with the inclined rafters the lay board should be positioned up and between the rafters. It should finish a minimum of 100mm above the top of the tilt fillet (F) and no lower than the top of the cover flashing on the chimney face of the back gutter, to prevent water flooding back under the tiles. The height of the tilt fillet will depend upon the profile of the tiles and the pitch of the roof. It is essential that

the tilt fillet height allows the tiles to lie in the same plane as the tiles on either side of the back gutter.

Underlay and battens

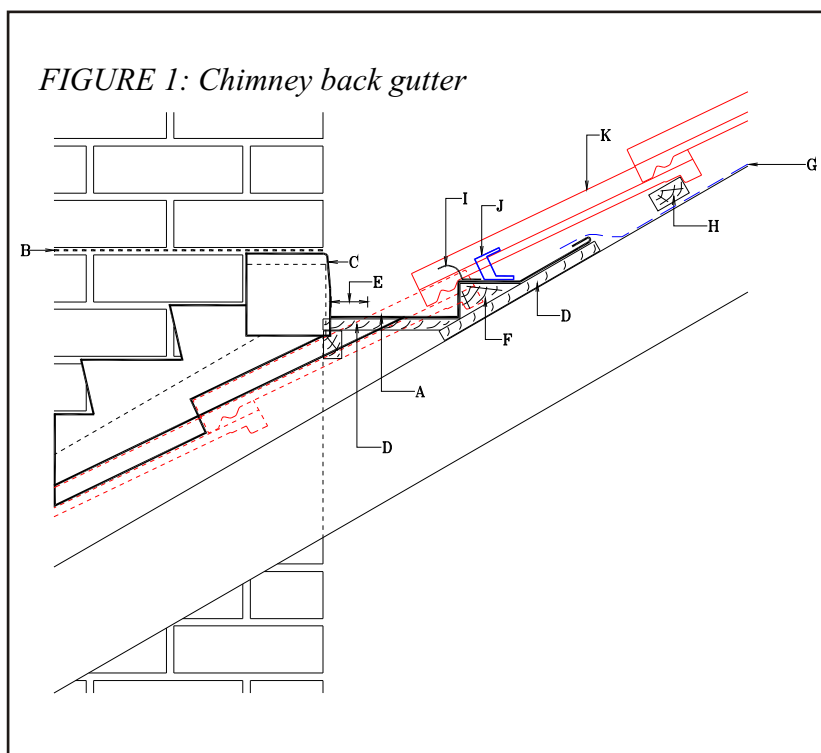
The underlay (G) should be lapped onto the support board to finish at the tilt fillet to provide a minimum of 150mm lap with the lead back gutter. The underlay should not lie under the lead back gutter.

The battens (H) should be gauged out to provide a complete tile course above the back gutter. This may be difficult to achieve with a small chimney at small rafter pitches. A cut course of tiles above the back gutter will affect the height of the tilt fillet and needs to lap onto the tiles where the back gutter discharges onto the roof slope.

Lead sheet back gutter

The back gutter should be formed out of one piece of Code 4 sheet lead and either bossed or lead welded at the corners. For chimneys up to one metre wide this presents no problem. For chimneys up to two metres wide two pieces should be joined with a lead roll at the mid point of the gutter. For chimneys in excess of two metres the back gutter should be

FIGURE 1: Chimney back gutter



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constructed in accordance with the Lead Sheet Association Manual Volume Two: Tables 7 and 8.

At the ends of the back gutter the lead should be dressed onto the top surface of the roof tiles and lap them by a minimum of 150mm. The upstand of the back gutter against the chimney should not be less than 100mm and may rise to more than 200mm, depending upon the length of the back gutter and the height of the steps or rolls. The upstand should finish under the cover flashing that is turned into the brickwork. On the other side of the back gutter the lead should dress over the tilt fillet and up to the top of the inclined lay board, under the underlay, and finish with a welt.

Ventilation

Where a chimney occurs in a domestic roof with insulation position at the horizontal ceiling, there is no need to provide additional ventilation. Where insulation is positioned between the rafters and the chimney, or projection blocks off one or more rafter spacing, ventilation will be required to comply with BS 5250 *Code of practice for the control of condensation in buildings* and Building Regulation Approved

Document F2. Because of the restricted space available it is advisable to introduce one vent tile per rafter void to achieve 25,000 square mm per metre run. For 600mm rafter centres each vent tile should have a minimum free vent capacity of 15,000 square mm.

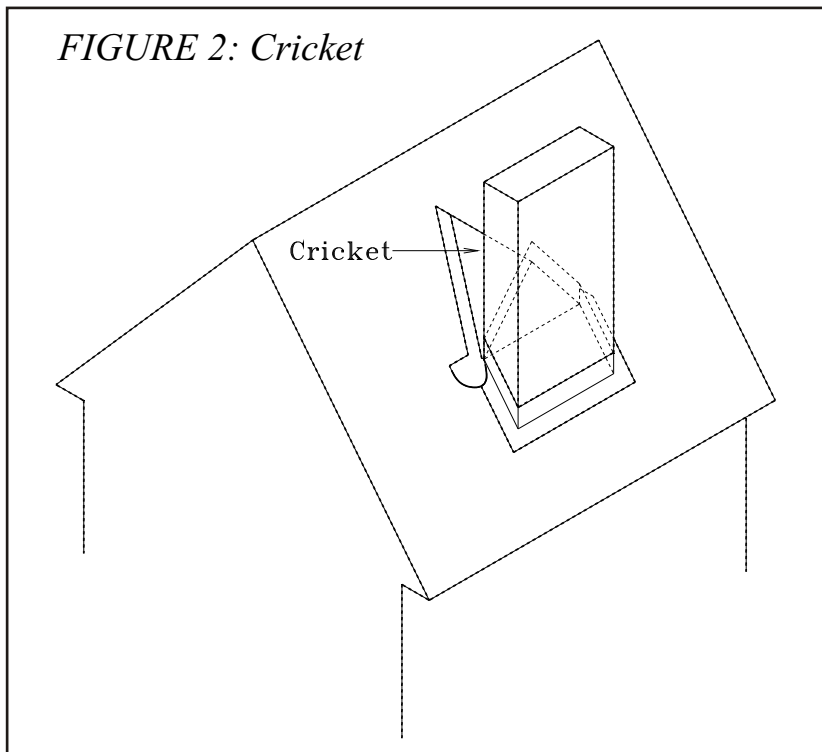
Tiles

Before the final fitting of the back gutter, the roof tiles at the ends of the gutter should be in place to ensure that the lead is dressed correctly onto the top surface of the tiles. With profile tiles an eaves comb filler (I) will need to be nailed through the lead sheet into the tilt fillet. This to prevent birds, rodents and large insects getting into the batten cavity. Where the tile fixing specification, in accordance with BS 5534: *Code of practice for slating and tiling*, requires the perimeter tiles to be clipped the eaves clips (J) holding the first course of tiles (K) should be nailed through the lead sheet into the tilting fillet. Although nailing through lead should be avoided, it is unavoidable in this situation. In marine environments it is advisable to use stainless steel or copper nails for the tile clips to reduce the effects of electrolysis on the lead sheet.

Summary

- The position of the lay board is critical to ensure the water can discharge back onto the roof slope.
- The width and height of the back gutter will depend upon the area of roof draining into the back gutter.
- Water from the back gutter should not be allowed to drain into a secret gutter to the side abutment.
- Very wide back gutters should be laid to falls and may have steps and rolls to allow the sections of lead to be joined correctly.
- Where large roof areas drain into a back gutter the discharge from the back gutter should return back onto the roof.
- The use of a Cricket as an alternative to a back gutter should only be used with tall, narrow projections such as chimneys.

FIGURE 2: Cricket



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