

Slating & Tiling

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dry valleys

Previously we have looked at open inclined valleys and GRP valley troughs. Now it is the turn of dry valleys to be discussed.

In essence a dry valley is an inclined valley that has no mortar bedding. This could apply to plain valley tiles, swept, laced, or mitred valleys either with plain tiles or double lap slate. But for the purposes of our discussion we will restrict it to inclined open valleys and proprietary systems for use with interlocking tiles.

The theory regarding rainfall rate, true valley pitch and roof area, as previously discussed, will all apply to dry valleys, just as it did for mortar-bedded open valleys.

Double lap slate and plain tiles

There are many occasions when an inclined valley is formed between roof coverings that are either different, or are at different rafter pitches requiring the use of an open valley. Traditionally, where double lap slates/tiles require an open valley, a lead or GRP valley trough is formed with no mortar bedding, as it is possible to cut the edge slates/tiles from 1.5 wide units, so preventing small unsupported cuts.

With most natural and FC slates the material thickness is between 4mm and 8mm, therefore the theoretical gapping between the underside of the slates and the top of the tilt fillet should be the same. With plain tiles the gapping will be between 12mm and 15mm, which is large enough to let in not only large insects but also small rodents.

The larger the gapping size the greater the volume of water that could leak through, if and when the valley reaches its full capacity, and is blocked by leaves or other debris. Having no mortar bedding the overall capacity (cross sectional area) of the valley is between 55% and 60% greater than a mortar-bedded valley, providing a large safety margin before maximum capacity is reached.

Interlocking tiles

There are two proprietary dry valley systems for use with interlocking tiles. The first uses a para-

bolic shaped trough with high profile ribs down each side, and second uses a central up-stand rib design.

Parabolic trough: The parabolic shape of the trough encourages the water to flow down the middle, and has a notional cross section slightly higher than for a 125mm-wide mortar-bedded valley. During deluge conditions any overspill will be captured in the small drainage trough between the ribs and drained away.

To prevent birds, rodents and large insects entering the batten cavity, a comb filler is installed down the outer edges and the fingers flex to follow the shape of the underside of the tiles. The parameters for use are: minimum rafter pitch 22.5°; maximum rafter pitch 90°; maximum valley length 8m (or 25m² of horizontal roof area); and an open valley width between the cut edges of the tiles of 125mm.

This means that it is not suitable for rafter lengths in excess of 5m, or for very shallow rafter pitches. The edge tiles must all be head nailed, but the tiles on the right-hand side are not clipped, and the tiles on the left of the valley can be clipped. This leaves the cut-edge tiles very vulnerable to wind damage during extreme wind conditions.

There does not appear to be any recommendations regarding the maximum wind uplift resistance of this arrangement.

Central up-stand rib trough: The central up-stand rib divides the valley into two distinct drainage channels, left and right of the central rib. The tiles on either side are cut to finish against the central rib, which is not as easy as it sounds as the rib is not at right angles to the surface of the tile, and a bevel cut would be needed; this is most noticeable with high profile tiles.

Water drains off the ends of the tiles and down between the ends of the tiles and the central rib, into the drainage trough below. Under deluge conditions, the volume of water flowing down the tiles is often greater than can flow through the gap between the ends of the tiles and the central rib causing the water to back up, or overspill the top surface of the tiles, especially



Even on a steep pitched roof, leaves collect in the corrugations and work their way down into the trough below. Note how some of the clay tiles have become frost damaged.

with high profile tiles.

The cross sectional area of the two drainage channels is approx 45% less than the equivalent mortar-bedded open valley. During deluge conditions the excess capacity can overspill into a draining trough between the two outer ribs, but these are relatively small and therefore their capacity is also small.

In the pre-purchase literature there are no in-use parameters regarding minimum or maximum rafter pitch, maximum valley length, or maximum roof drainage area. There are also no recommendations in the pre-purchase literature regarding the fixing of the cut edge tiles. However, in reality the central rib prevents the tiles from rotating upwards provided they are close mitred to the central rib. SS clips are available to lock interlocks together and little bridges available to support small cuts on the left-hand side of the valley.

In use, debris on the roof from construction washes into the valley, and is almost impossible to clean out without dismantling the valley. The valley can block up with leaves, twigs and other natural material very easily, and the resulting blockage can cause water to spill off the sides of the valley trough onto the underlay.

It has also been found that frost

damage is higher with the cut edges of clay tiles with this design of valley than with a conventional mortar-bedded valley.

Conclusion

Most dry valleys work within the limitations of the installation and use instructions provided, but make no allowance for the build-up of debris and the consequential effects of the blockage.

At this point they rely upon the underlay down the valley as a second line of defence. In the case of the central up-stand rib trough, to clear out the debris that collects below the tiles requires the edge tiles to be removed. With the parabolic trough, and the conventional dry valley for slates, this can be done without any problem. Dry valley for plain tiles, with no means of keeping out large insects and small rodents, are not recommended.

Tips

- It is essential to secure all cut pieces of interlocking tiles. Will the system allow for all the variations that may occur? The compatibility of the dry valley with the tiles/slates used, and the roof size and pitch, needs to be carefully considered before use.
 - With no mortar bedding, the cut edge tiles/slates are more vulnerable to wind uplift damage, than for a mortar-bedded valley.
 - All gaps should be kept to below 16mm to keep out birds, and below 4mm to keep out insects

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