Slating & Tiling

TIPS 74

Top edge and side abutment flashings with brick and block walls

Where does a roof start and finish? For the slater and tiler it starts with the rafters and finishes when he gets paid. But for the specifier the answer is not so clear, as the roof must be integrated into the surrounding structure especially if there are top edge and side abutments. In previous articles I have dealt with the flashings (articles 4, 29, 64 and 65) but that is not the full story. The tiles/slates can be right, the flashings can be right, the underlay and battens can be right, yet still water gets in. How can this happen?

Solid walls

With all top edge and side abutments the pitched roof meets a wall that rises above the roof surface, often in the form of a chimney, parapet wall, or other parts of the same building, such as the first floor walls above a ground floor extension.

With older buildings and with parapet walls and chimneys, the walls will be of solid half, or one brick, thick construction. They may be rendered, tiled, or may even be clad in lead sheet, as with the sides of some dormer windows. This will always be to prevent water penetrating the brickwork which is porous. Walls of this type should contain a Damp Proof Course (DPC) somewhere in the construction.

Without a water resistant covering, like vertical tiles or slates, wind-driven rain will soak into the brickwork and be drawn by capillarity into any dry air voids within the construction, and up and down into any dry porous material. This means that if the brick joints are not full of mortar they will be porous. Mortar that has a low cement content, or the cement has been eroded away by an acidic liquid, such as wet soot in a chimney, leaving only the sand, will also be more porous.

Similarly heavier bricks which are very dense will be less porous than lighter weight and softer bricks (however there are some exceptions to this rule). Therefore unprotected brick and block-work is not technically water-proof. Of course if the chimney is in constant use it may be warm enough to vaporise off the water before it has an opportunity to reach the insides of the building. But nowadays that is rare.

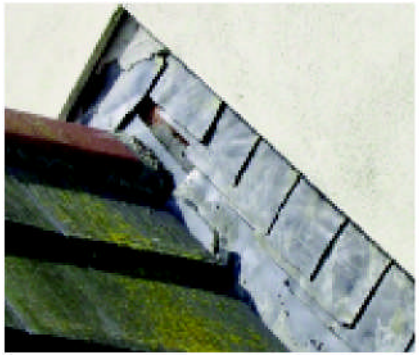
With solid walls, either the outer face needs to be protected using render or vertical tiling, or a DPC needs to be installed to prevent water soaking down the wall into the building. With chimneys this means installing either one, or two, DPC trays with a 25mm upturn on the inside with welded corners to form a tray, and a down turn on the outside to form a drip. The roof flashing should be tucked up under the DPC into the brick joint by at least 25mm, wedged and pointed using a suitable sealant for the flashing material that you are using (lead, zinc, aluminium or one of the alternative materials).

Where a roofing flashing meets rendering, there should be a metal stop bead fixed such that the flashing tucks up behind the stop bead and preferably into a chase, or brick joint. Often the rendering has to be undertaken after the flashing has been installed, which often means that the roof has to be sheeted out to protect it, which can present other problems. Therefore often the rendering is done before the roof and therefore it is almost impossible to install the flashing correctly behind the stop bead.

With vertical tiling or slating, the flashing should be installed into the tilt fillet such that the underlay finishes over the flashing (not under it) and is fixed to the wall, or the tilt fillet.

Cavity walls

Cavity walls, with a brick outer skin, manage to keep water out by allowing the rain to soak through the outer skin of bricks and to run down the back face of the wet bricks, to the bottom of the wall below the DPC and away into the ground. Provided water cannot get across to the inner wall construction, it should remain dry. If the cavity is filled with insulation, or the cavity is full of mortar droppings, then isolated wet patches can appear. But where an external wall at high level becomes an internal wall at low level, any water in the cavity between the two skins of brick and block-work, needs to be drained out onto the roof, or channelled away to where it can continue down the cavity to the ground; this is where cavity trays need to be installed.



The cavity trays were installed in the wrong place. The render was finished to miss the cavity tray flashings, leaving a very deep drop down onto the slates. The vertical lead flashing was not secured correctly, so it has slid down the GRP secret gutter, leaving a gap through which the rain can enter.

With new buildings it is quite easy to install a cavity tray into a cavity wall at the right height and location and leave weep holes to allow water in the cavity to drain out, but for extensions to an existing building, it can be much more complicated to install a cavity tray where the roof meets a wall, and therefore often it is forgotten until the first heavy rains come and the walls below become very damp.

Where exposed bricks are used with cavity wall construction, at all top and side abutments there should be a cavity tray. All flashings at the side and top edge abutment should be wedged and pointed in under the cavity tray by at least 25mm, with a sealant suitable for use with the type of flashing. The flashing should never go above the cavity tray as any water on the cavity tray will potentially drain out under the flashing, down the wall and soak into the wall below the flashing.

Often the brick-work has been installed long before the carpenters have installed the rafters, or the specifier has changed the specification resulting in the bricklayer installing the cavity trays too high, or too low, and this is not identified until the final flashings are to be installed. If this is the case, either the flashing will need to be modified, or the position of the cavity tray may need to be altered.

Conclusion

Often what appears to be a roof leak at a top edge, or side abutment, is not the failure of the roof or the flashing, but the lack of a DPC or cavity tray in the wall construction, which is in most instances is not the responsibility of roofer, but affects the roofer's work and reputation. I have heard of Building Control officers who have stated that cavity trays, or DPCs, have not been required when asked during construction, and this has caused a lot of additional cost when water leaked in and cavity trays had to be installed months after construction was finished and signed off. There is a much higher risk of leakage into a building through the perimeter flashings than through the centre of a roof slope. Top edge abutments with water draining away from them are less vulnerable than side abutments and other flashings, but unless they are installed correctly they can all leak.

Tips

- Always check to see if there is a cavity tray built into the wall. If there is no DPC or cavity tray report the fact to the client/specifier.
- Always secure the flashing in under the DPC, cavity tray, stop bead or underlay, never above.
- Always use the right sealant between the different materials that make up the roof flashing and the DPC or cavity tray.

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