Slating & Tiling

TIPS 47

roof windows 1

Wherever there is a room within a pitched roof, there is likely to be at least one roof window installation. Each window will be a penetration through the roof covering that will need to be detailed and constructed correctly.

Too often, the standard flashings that are supplied are inadequate, or compromise the weathering of the roof covering. The capabilities of the roof window flashings need to be understood before they are used.

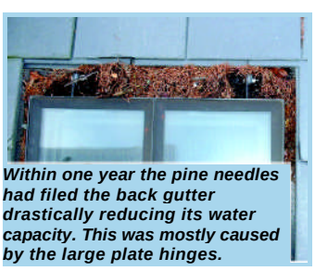
Types

There are two generic forms of roof window that are available, as far as this discussion is concerned: those with an integral gutter and flashing attached to the window frame, and those that have removable flashings that differ with the type of roof covering that is used. Each has its advantages and disadvantages.

The types that have an integral gutter around three sides, and an apron flashing integral with the window frame, are more watertight as they have no joints between the frame and the flashing, but will not allow the use of soakers between double lap plain tiles or slates, or an alternative lead cover flashing with interlocking tiles. They are also either manufactured with a coated steel frame or an injection moulded plastic frame; both of which have drainage channels of a fixed size.

With the steel framed variety, there are large hinges which intrude into the back gutter that trap snow and debris, and are heavier to open.

The windows with removable flashings tend to have a timber or extruded plastic frame, to which the flashings are lapped and screwed, allowing any alternative lead flashings to be used if the proprietary flashings are not suitable. The gutter/flashing material is generally coated with aluminium or zinc and needs to be supported, as it is very thin.



Within one year the pine needles had filed the back gutter drastically reducing its water capacity. This was mostly caused by the large plate hinges.

Rafter pitch

Generally, where there are rooms in the roof, the rafter pitch will be fairly steep, but there are instances where, on a wide-span building with a low pitch, roof windows are used to let light into the centre of the building. While many roof window manufacturers claim that their roof windows are suitable for rafter pitches down to 15°, it is often only the window, not the flashings, which are suitable for the quoted minimum rafter pitch.

Experience has shown that soaker installations down to 22.5° can be trouble-free, while side channel flashings can be trouble free down to 30°. The steeper the rafter pitch, the better.

Water run-off

The wider the roof window, the more rain-water will be collected in the back gutter and drain down the side flashings of the roof window.

The greater the roof, and wall area above the roof window, the greater the volume of rainwater that will drain into the back gutter. But there is a limit to the amount of rainwater that can be collected in a back gutter and flow down the gutter channels on each side of the roof window, before the water floods over the edges of the flashing.

Depending upon the pitch of the roof and the actual size of the water channel, so the maximum area of roof draining into the back gutter will vary. To be safe, the maximum roof area draining into the back gutter at 25° rafter pitch should not exceed the equivalent of 10m² (horizontal), and at 40° this could rise to 15m² (horizontal). There are no tables provided by the roof window manufacturers to assist designers, as roof window manufacturers only make one size of roof flashing drainage channel and could not offer an alternative if required.

Flashing laps

Around the roof window, the tiles lap onto the side and back gutter flashings by approximately 75mm, depending on the manufacturer, while the apron flashing laps over the course of tiles or slates.

With the flashings that are not integral, there are laps between the apron and side channels, and the side channels and the back gutter. The laps between the various sections of flashings are mostly only 75mm and, if the lap is increased at the bottom, it reduces the lap at the top by the same amount. At 30° the 75mm lap appears to give no problems, while below 30° water can back up through the 75mm lap, especially if the drainage channel is blocked with leaves.

Experience and testing undertaken by the Lead Sheet Association has shown that, at 30° a 150mm flashing lap of an apron flashing is needed to prevent water creeping up between the flashing and the top surface of the tile, allowing for a nail hole to be positioned 38mm down from the head of the tile. Below 30° the length of the flashing needs to increase to a maximum of 270mm at 15° true pitch. In almost every case the apron flashing supplied is not capable of achieving a lap of greater than 150mm and, with some high profile tiles such as unders and overs, the flashing may only achieve a 50mm lap on the crown of the corrugation and may not stretch down to the trough of the corrugation.

The flashing lap between the side channels and the tiles, in most instances, relies upon an upstand against which the tiles should rest. Under the tiles there is often a foam insert and an upturn on the edge of the flashing. If installed correctly when new, this will keep out most of the rainwater that will flow down the side channels. However, after a few years the foam does become impregnated with algae and can shrivel up leaving gaps through which rain can enter and run down and across the underside of the edge tiles. This situation is worse at shallow rafter pitches.

Tips

- Choose, or construct, the side flashings with a drainage channel that is set in the thickness of the battens (not above) to allow the edge tiles to sit flat, and not kick up
- Ensure that the side drainage channels can cope with the volumes of water that will drain into the back gutter, and are kept away from high level valleys.
- Windows that are installed into shallow roof pitches need to have longer flashings to suite the true pitch of the tiles or slates.

The second part of this article looks at the installation of the roof window flashings.

Compiled by Chris Thomas
The Tiled Roofing Consultancy
2 Ridlands Grove, Limpsfield Chart
Oxted, Surrey, RH8 0ST
tel: 01883 724774
Email:
chris.thomas@thetiledroofingconsultancy.com

To view previous Slating & Tiling Tips, go to www.thetiledroofingconsultancy.com