

## Tiling tips: No 15

### Long rafter lengths

During a deluge of rain, water will wet everything in its path equally. However some surfaces will get wetter than others. One square metre of horizontal surface will receive more rainwater than one square metre of sloping surface at 45°. In theory one square metre of vertical wall should hardly get wet at all.

#### Water flow

Look closely at a sloping roof surface and rainwater falling on the ridge will always be minimal, but each course of tiles below the ridge will receive progressively more water flow, as further rainfall is added to the water running down the roof slope. The longer the roof slope the greater will be the volume of water flowing over the eaves.

#### Pitch

The pitch of the roof will also affect the volume of water

flowing over the eaves. The steeper the roof slope the less time the rainwater will take to reach the eaves. The shallower the roof slope the longer it will take for the rainwater to reach the eaves and the greater will be the volume of rainfall added to the water flowing down the roof slope during its journey.

#### Texture

A rough surface texture to the roof can also slow up the water run off; therefore it is better to have a smooth surface texture for shallow roof slopes.

#### Wind driven rain

Whilst the design rainfall rate that is used for a 'once in 50 year event' is expressed as 225mm depth of rain on a horizontal surface during a one hour period, deluge rain storms tend to have a duration of less than one hour. Therefore the intensity of the



- The choice of a bold roll interlocking tile on such a long rafter length is excellent. But collecting all the rainwater run off into a valley and expecting a small hopperhead and down pipe at the bottom of the valley to cope with the high volume of water, is not.

rainfall may be far in excess of the 225mm/hr at the deluge peak. Whilst wind driven rain contains less water than a deluge with no wind, the higher the wind speed the less water falls, however the wind can blow water up a roof and slow up the water run off.

Rainwater blown onto a non-porous wall surface will drain off. If there is a roof slope below, the added water run off could produce high localised volumes of water that could exceed the maximum deluge rainfall rate. This is also true of rainwater pipes, or inclined valleys, from higher roofs discharging onto lower roof slopes. They should be avoided or reduced where possible.

#### Side interlock

The effect of high volumes of water flowing down a shallow roof slope with a long rafter length can generate flows of up to 15mm deep. If water starts to back up, due to obstructions, restrictions or gaps, it will try and find a way through the roof covering. Where the side lap joints in the roof covering are at a high point, as with some bold roll interlocking tiles, there is a reduced risk of water penetra-

tion. But where the side lap joint is at the lowest point, as with a flat interlocking tile, there is a much higher risk of water penetration. The minimum pitch/maximum rafter length will vary with each tile design and manufacturer and this information should be available from the roof tile manufacturers literature.

#### Prevention

To ensure that high water flows down a roof slope with a long rafter length do not become a problem, the following precautions should be taken:

- Rafter pitch should be as steep as possible,
- Rafter length should not exceed the recommendations of the tile manufacturer,
- Water run off from higher roofs, walls or valleys should be reduced or drained away separately, and not discharged onto lower roof slopes.
- A tile with a side interlock positioned as high above the pan of the tile as possible should be used.

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