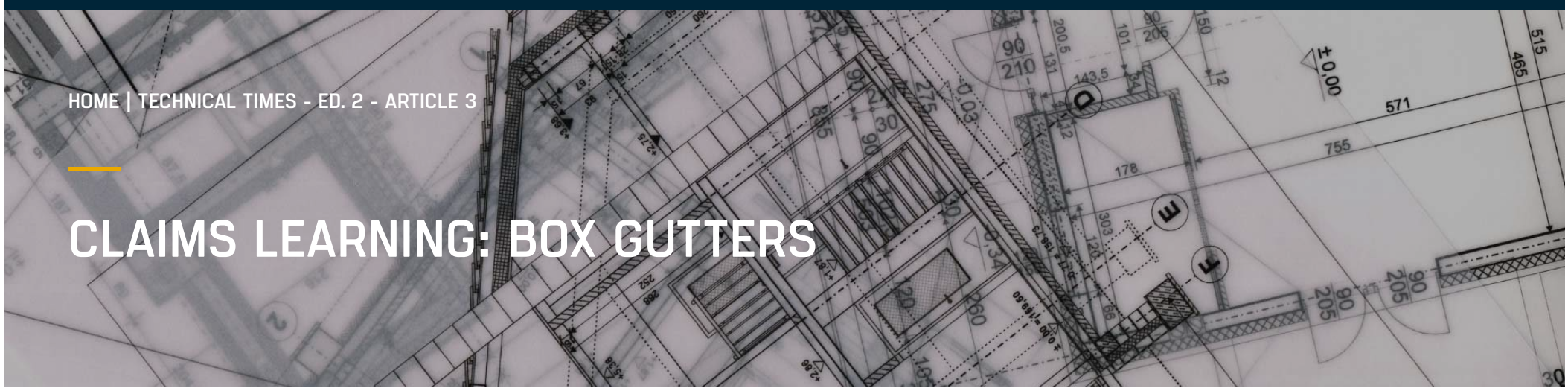
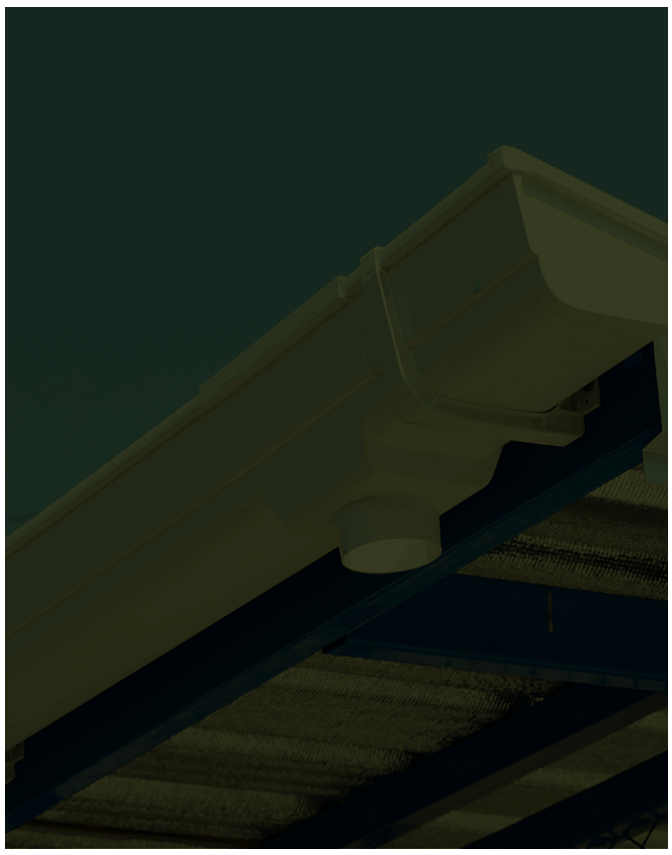


CLAIMS LEARNING: BOX GUTTERS

In this article we are looking into a claim relating to ingress of water due to inadequately designed box gutters and substandard workmanship, on a project for which the roof and gutters were replaced during the conversion of a former coach house into a new dwelling.



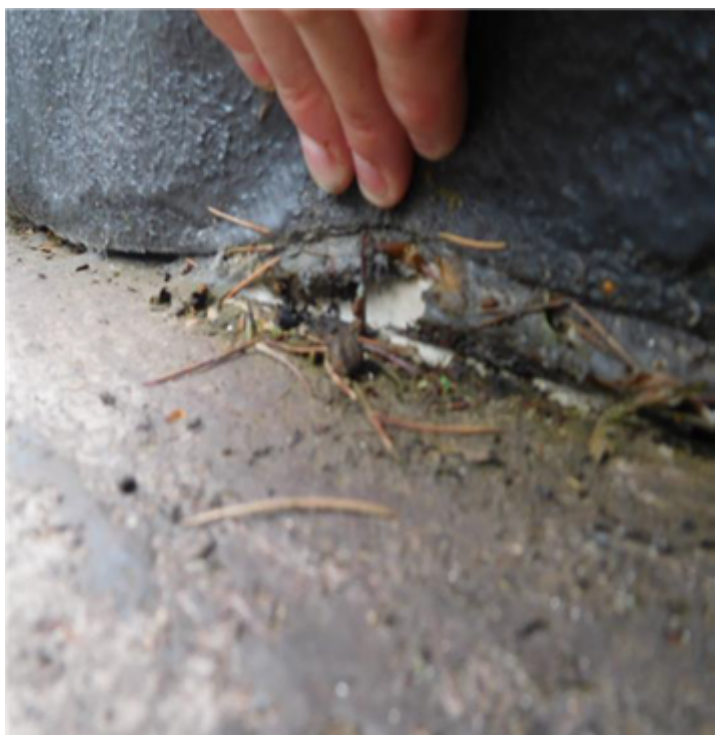
The property discussed in this article is a period coach house which is believed to be some 100 years old, with conversion works carried out in about 2007. The property is a two storey detached house with slate tiled roof sections and a glazed atrium roof which runs through the centre of the property. In addition to this, the tiled roofs and atrium are separated by two runs of flat/stepped valley gutter, which drain from back to front and down into lower secret box gutters at each side of the glazed front entrance.

The secret box gutters to each side of the atrium have been constructed with inadequate falls, with virtually no upstand to either side of the gutter. The outlets are inadequate to cope with the volume of water discharging from the adjacent roofs into the secret box gutters and therefore, under periods of heavy rainfall, the gutters flood up over the inadequate upstands and the water tracks into the property. The image to the left shows the lack of fall and ponding of the gutters.

During the investigation into the leaking roof, inspections showed very poor workmanship generally when the roof was recovered. In particular, the standard of workmanship in the vicinity of the secret gutter was extremely poor.

There have been a number of attempts to repair the secret box gutters as can be seen by this image, but fundamentally the roof needs to be stripped in the vicinity of the secret box gutters and new box gutters constructed with adequate upstands, falls and drainage outlets.

When the original secret box gutter was designed, it should have been regarded as a flat roof interface to pitched roof. The **Premier Guarantee Technical Manual** 7.10.9.1: Figure 7 shows a typical detail. This would have given a minimum 150mm upstand to the box gutter.



Of drainage of flat roofs, section 7.10.5 of the Premier Guarantee Technical Manual states:

“Drainage design should be based upon calculations in accordance with BS EN 12056 Part 3 given a design head of water (typically 30mm). Rain water outlet capacity should be taken from properly certificated information provided by manufacturers, and the resulting number and layout of outlets should allow for obstruction and drag due to any additional surface finishes, such as walkways.

It is not generally necessary to provide separate box gutters where two planes of roofing intersect, or where a single plane falls to an abutment. In the latter case, there will be no fall between outlets, so consideration should be given to creating these in the structure or insulation. Box gutters are slow, difficult to construct and introduce unnecessary complexity. The need to maintain a fall in gutters and comply with the energy requirements of the Building Regulations may be difficult to achieve.”