

# Overflow provision for box gutters

October 2014

The VBA has identified several instances of plumbing practitioners failing to install appropriate overflow provision in box gutters and rainheads.

Plumbers are reminded that roof drainage systems need to be designed and installed with appropriate overflow provision. Failing to install appropriately sized and positioned overflow devices can lead to serious damage to buildings and contents, often resulting in hefty insurance claims.

To avoid problems, plumbers need to calculate the hydraulic capacity of a box gutter and when designing overflow devices, consider whether the discharge of the box gutter is to:

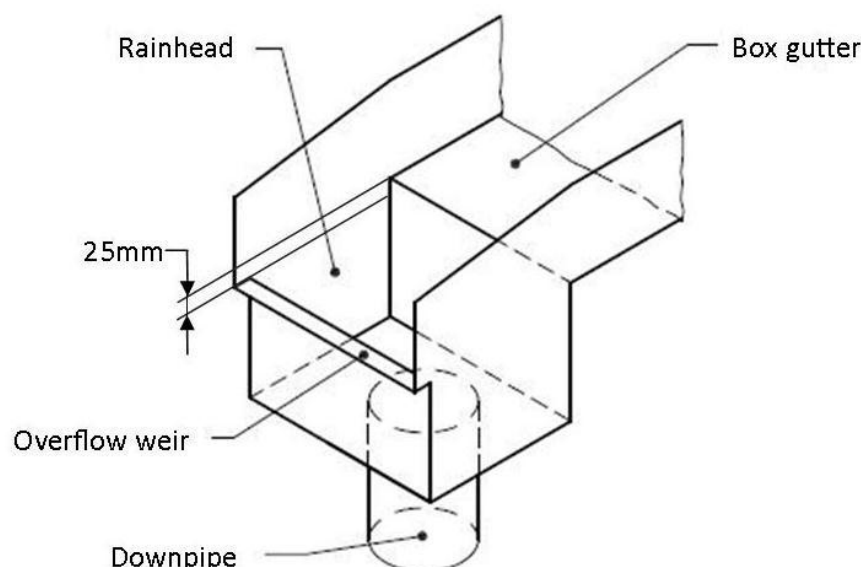
- a) a rainhead
- b) a sump with a side overflow device; or
- c) a sump with a high-capacity overflow device.

All of the above options provide overflow provision to the box gutter. The hydraulic capacity of these overflow devices must not be less than the design flow for the associated gutter outlet and must discharge to atmosphere. *AS/NZS 3500.3 Plumbing and drainage Part 3: Stormwater drainage*, assumes an average recurrence interval (ARI) of 100 years for box gutters in Australia

## Rainheads

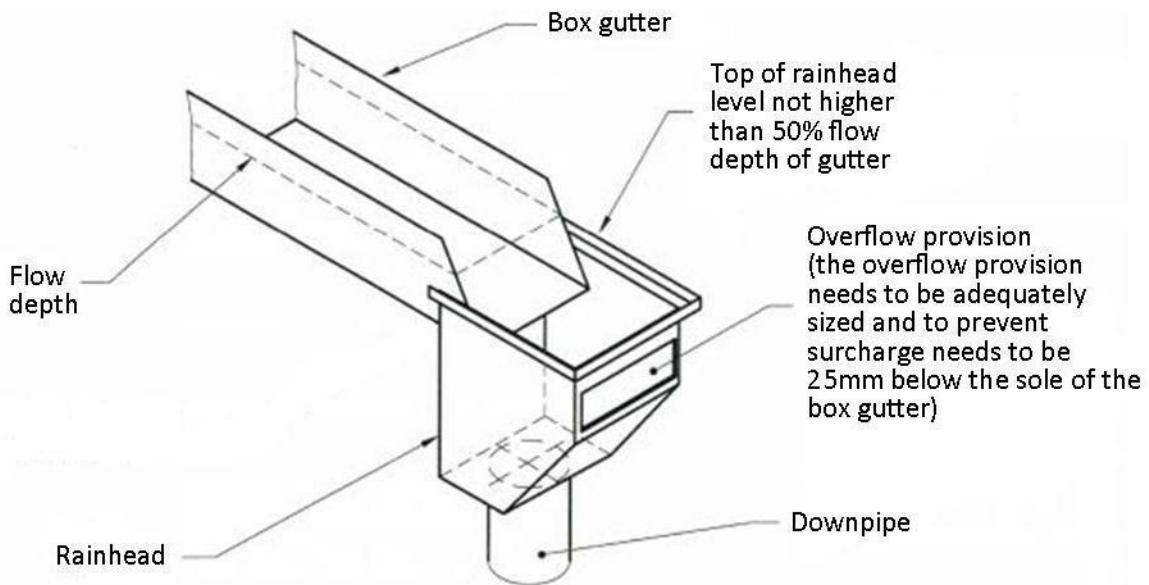
Overflow devices that discharge from a rainhead do not require an increase in depth of flow in the box gutter.

To ensure that adequate overflow provision is made and any surcharge is accommodated, the overflow weir of the rainhead is to be 25mm below the sole of the gutter and be fully open above the weir at the front of the rainhead (see *Figure 1*).



**FIGURE 1**

As an alternative, the top of the rainhead may be installed so that it is no higher than 50 per cent of the flow depth of the box gutter, consistent with *SAA HB39 Installation code for metal roof and wall cladding Section 5 Clause 5.7.3*, and *Figure 5.7.3* to prevent internal flooding or damage to the building or contents (see *Figure 2*).

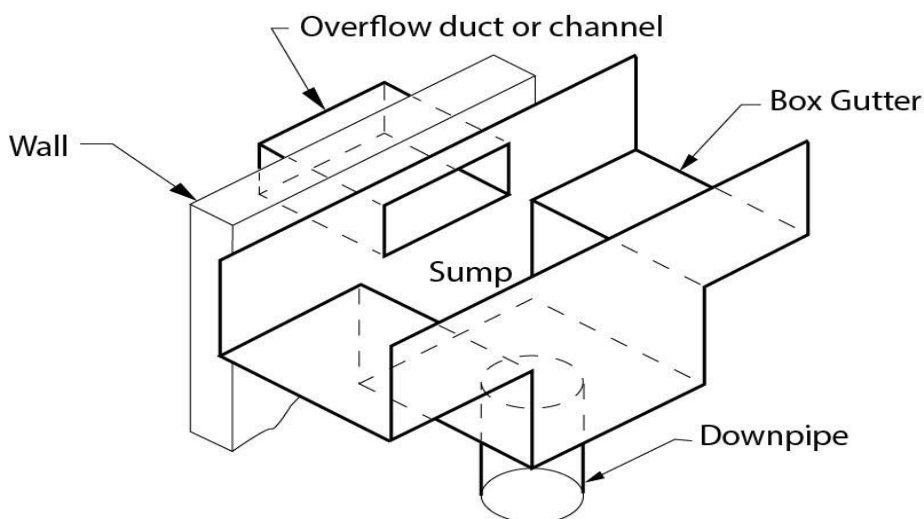


**FIGURE 2**

The width of the rainhead is to be at least equal to the width of the box gutter and the box gutter needs to be sealed to the rainhead. The hydraulic capacity of the overflow device must be no less than the design flow for the associated box gutter outlet. Overflow devices need to discharge to the atmosphere in such a way as to prevent damage to buildings and property.

**Sump with a side overflow device**

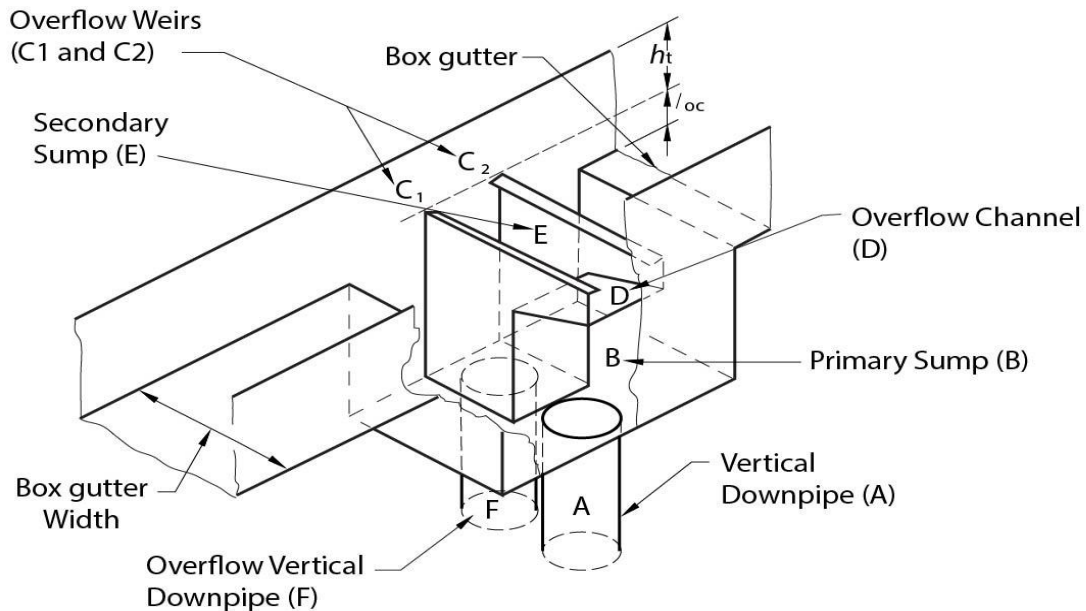
Sumps do require an increase in the depth of flow in the box gutter and gutters are to be fitted with either side overflows (see *Figure 3*) or high capacity overflows (see *Figure 4*).



**FIGURE 3**

### Sump with a high capacity overflow device

Where high capacity overflows are fitted, in the event of a blockage in the normal vertical downpipe (A), the water level in the primary sump (B) will rise to and overtop the overflow weirs C1 and C2 (each weir length is equal to the width of the adjacent box gutter). It will flow either directly or indirectly via the overflow channel (D) to the secondary sump (E) and then to the overflow vertical downpipe (F).



**FIGURE 4**

#### Notes:

- The layout of a sump / side overflow device may have to be varied due to building constraints.
- Where desired, the sides of the sump / high-capacity overflow device may be perforated to flush the overflow downpipe (F).
- The normal vertical downpipe outlet (A) may be moved longitudinally to clear the overflow channel to enable better inspection and maintenance access.

#### More information:

Contact the Victorian Building Authority Plumbing Technical Advice line on 1300 815 127.