Technical Solution Sheet 0.02
0: Roof Plumbing

V-Gutters

AIM

The aim of this technical solution is to prevent the overflow from and premature corrosion of roof gutters which can occur due to substandard installations; and to ensure that only adequately designed roof gutter systems are installed.

PLUMBING REGULATIONS 2008

The *Plumbing Code of Australia* (PCA) is adopted by and forms part of the *Plumbing Regulations 2008*. Part D1 of the PCA specifies the objectives and performance requirements related to the installation of roof drainage systems. ***AS/NZS 3500.3: Plumbing and drainage Part 3: Stormwater drainage*** is a "deemed to satisfy" document listed in Part D1 of the PCA and contains sections on "Box gutter systems" and "Roof drainage systems-installations".

BACKGROUND

There have been numerous instances where practitioners have installed "V" shaped gutters instead of box gutters. These "V" gutters are being installed to fit the building design. They are usually installed as internal gutters and may not have any fall. They are substandard, not fit for purpose, do not comply and cannot be certified. The "V" shaped gutter profile presents a high risk of premature failure of the gutter and internal water damage.

Note:

The term "V" gutter used in this technical solution does not apply to a chimney gutter.

THE PROBLEM

Most of the instances of sub-standard "V" gutters have occurred because a roofing practitioner followed a building design, and failed in their own obligation as a professional to check that the design can be certified. The "V" gutters commonly abut a parapet wall and are installed directly onto the roof battens or trusses. As a result the gutters are laid without any fall and while the ends of the gutter may be open to a rainhead or other roof, there is incomplete drainage, and the gutter soon becomes clogged with debris (see Figure 1).

This type of design and installation may result in water damage to the building in several ways including:

- Inadequate drainage with water / or debris accumulating in the gutter causing overtopping of the gutter.
- Corrosion and premature failure of the gutter due to inadequate drainage and intense localised corrosion caused by permanent ponding and debris accumulating in the crevices.
- The "V" fold, being well in excess of 90° can cause damage the protective coating of the gutter material causing premature failure.

THE SOLUTION

- Prior to installation, check building plans and designs to ensure that all internal gutters can be certified to ***AS/NZS 3500.3***.

  Some of the basic information needed to do this includes:

  - The average rainfall recurrence interval (ARI) for internal gutters of 1 in 100 years
  - The rainfall intensity for the area
  - The catchment area of the roof

  (refer to ***AS/NZS 3500.3***) for appropriate methods to design internal gutters.

- If it appears that any gutter will not comply, the matter must be discussed with the builder, architect or designer with a view to amending the design. If in doubt, contact the Victorian Building Authority (VBA) for advice prior to undertaking any work.

- ***AS/NZS 3500.3*** specifies that the minimum width of any box gutter is 200mm for domestic and 300mm for commercial constructions.

- The gradients of box gutters must be in the range of 1:40 to 1:200 (see Figure 2).

- A box gutter incorporating a lear is acceptable providing the gutter is sized in accordance with ***AS/NZS 3500.3*** (see Figure 2).

- Overflow measures are essential to protect buildings from internal water damage and must be sized in accordance with ***AS/NZS 3500.3***.

  E.g. rainheads incorporating an overflow weir or sumps with side or high capacity overflow devices.

- In a situation where an existing box gutter needs to be renewed and it will be difficult for the roofing practitioner to comply with ***AS/NZS 3500.3*** the practitioner or owner may apply to the VBA for a modification.

  The VBA may consider a modification to accommodate the installation, provided that there will be adequate protection against overflow.

  Refer to www.vba.vic.gov.au for details of the modification application process.

FIGURE 1 – TYPICAL INCORRECT V-GUTTER

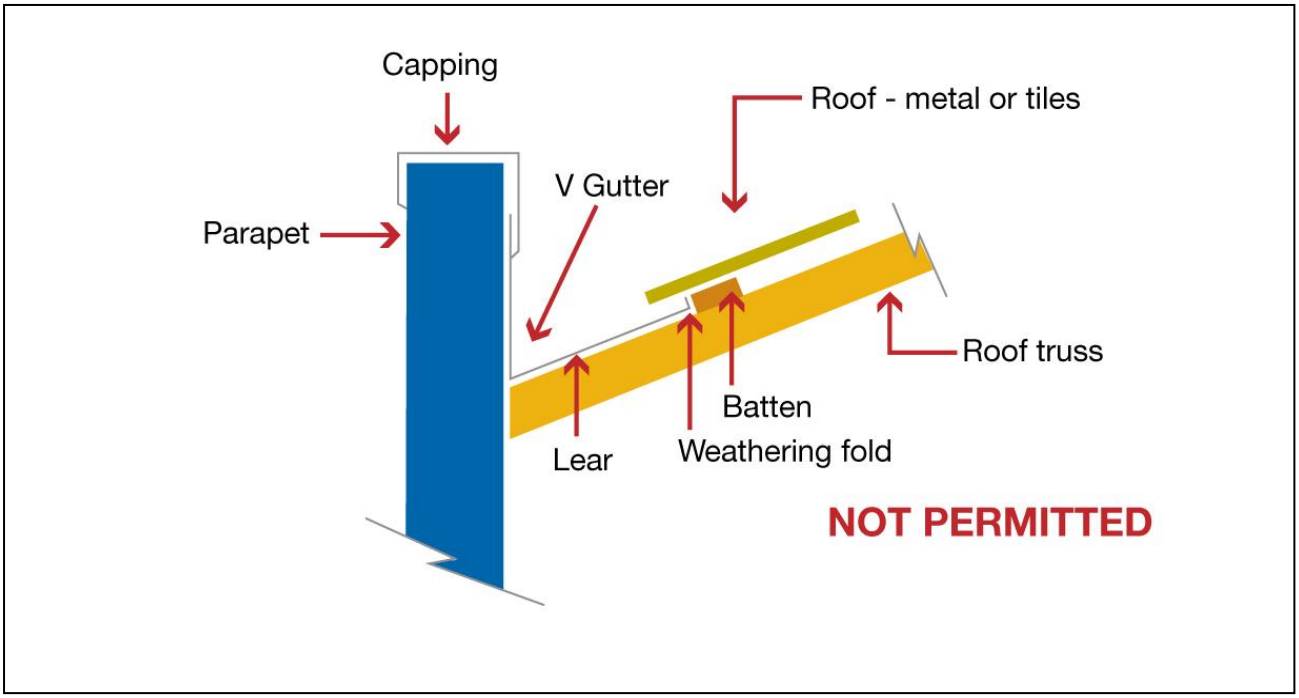

FIGURE 2 – BOX GUTTER AT 1:200 MIN FALL