

## Box Gutter Design

This fact sheet provides guidance to the building and plumbing industries on designing and installing box gutters to achieve compliance with relevant regulations.

Architects, draftpersons, builders and other practitioners responsible for designing a box gutter should work closely with the roof plumbers that will install the box gutter to ensure that the overall design and installation will be compliant with relevant regulations.

A box gutter is defined as a graded channel, generally of a rectangular shape, for the conveyance of rainwater within the building footprint, including adjacent to a wall or parapet.

Box gutters are deemed to satisfy the performance requirements of the National Construction Code if they are certified to meet one of the following referenced Australian Standards:

- *AS/NZS 3500.3 Plumbing and drainage Part 3: Stormwater drainage.*
- *AS/NZS 3500.5 Plumbing and drainage Part 5: House installations.*

The Plumbing Regulations 2008 also specify that roofing (stormwater) work must comply with:

- *SA HB 39 Installation code for metal roof and wall cladding.*
- *SAA/SNZ HB114 Guidelines for the design of eaves and box gutters.*

### Deemed to Satisfy Requirements

The following design parameters must be achieved to meet the deemed to satisfy requirements:

#### Gradients

Box gutter gradients shall not be flatter than 1:200 for sole widths equal to or less than 600mm wide. Deviations from the gradient must be smooth and prevent permanent ponding.

### Support System

Box gutter support systems must:

- be fabricated from a material that is compatible with the box gutter;
- be resistant to UV degradation where exposed to direct sunlight;
- be securely attached to the building structure;
- not have any other services attached to the support system;
- be protected against corrosion where exposed to a corrosive environment;
- be securely attached to prevent longitudinal movement, unless designed to allow for thermal effect;
- support the entire weight of the gutter and sumps when full of water as well as a trafficable load at any point in the gutter and sumps.

### Outlets

Box gutter outlets must discharge through either a rainhead or sump.

### Overflow

Box gutters must have independent overflow provision discharging to the atmosphere.

### Layout

Box gutters must:

- have a minimum width of 300mm (for commercial installations) & 200mm (for domestic installations);
- have a minimum depth of 75mm at the high end;
- have a sole width which is not reduced towards the outlet without a proportional increase in depth;
- discharge at the downstream end without

change in direction (i.e. not to the side);

- be straight (without change in direction);
- be sealed to rainheads and sumps.

**NOTE:** Architects, draftspersons and builders should consult with the roof plumber where a roof frame is designed and a compliant gutter cannot be installed without major roof frame alterations.

### Relevant factors

Workmanship is a factor in successful gutter installations. Where a roof frame does not readily allow the installation of a compliant box gutter (*due to the location or layout of roofing members*) the issue should be referred to the designer, building surveyor and/or builder.

Where the installation of the box gutter involves the removal or alteration of any element of the building that supports any other element of the building, then a building permit is required.



**Image 1** - Box gutter installed with a change in direction is **NOT PERMITTED**.

### What practitioners need to be aware of

**Designers or Architects** should ensure approved drawings are in accordance with the design parameters of AS/NZS 3500.3 and include adequate information to enable the builder and plumber to comply.

**Building Surveyors** should ensure that the proposed design complies with AS/NZS 3500.3

when reviewing a building permit application. Building surveyors should also check that the proposed roof structure is appropriate to ensure that a compliant gutter system can be installed. HB 39 and HB 114 can assist in determining if compliance can be achieved.

During site inspections, building inspectors should refer deviations from the approved building permit involving the box gutter system to the relevant building surveyor.

**Builders, Site Supervisors and Project Managers** must ensure that the building is constructed in accordance with the approved design.

**Plumbers** must install the box gutter system in accordance with AS/NZS 3500.3, AS/NZS 3500.5, HB 114 and HB 39.

### NOTE:

In Victoria, the installation of box gutters is regulated plumbing work that must be carried out and certified by suitably registered/licensed plumbers.

The VBA guidance in this Fact Sheet is based on the 'Deemed-to-Satisfy' provisions of the *Plumbing Code of Australia*. For further information on achieving compliance under a performance solution, please refer to the VBA *Industry Guide Performance Solution*.

Want to know more?

If you have a technical enquiry, please email [plumbingtechnicaladvice@vba.vic.gov.au](mailto:plumbingtechnicaladvice@vba.vic.gov.au) or call 1300 815 127.

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