

Water Overflow & Residential Gutters

Notes on the effective Design, Detailing , Installation and Maintenance of Residential Roof Drainage Systems

Under the Environmental Planning and Assessment Act 1979 and its Regulations, all building work must be carried out in accordance with the Building Code of Australia (BCA). In addition to referring to Australian Standards AS/NZS 3500.3 (2003), and AS/NZS 3500.5 (2000), the BCA also contains requirements for the disposal of surface water in Volume One, in Performance Requirements FP1.2 and FP 1.3, and in Volume Two, in Part 3.5.2, namely, Performance Requirement P2.2.1 and Clauses 3.5.2.1 and 3.5.2.4.

The most common means to satisfy these requirements for roof drainage (ie. guttering) installations is via compliance with the National Plumbing and Drainage Code AS/NZS 3500.3 - 2003.

Furthermore, in each state and territory it is necessary to satisfy the relevant regulation. For example, the NSW Code of Practice for Plumbing and Drainage (2006) adopts AS/NZS 3500.3-2003 and associated amendments. (Further information is available at www.deus.nsw.gov.au/water/plumbing.asp)

In the design and detailing of a roof drainage system consideration must be given to a range of the factors such as rainfall intensity, roof catchment area, gutter size/capacity, gutter fall, gutter outlets (sumps, rain-heads, nozzles), downpipe size, quantity and placement, overflow consideration, material selection, jointing, etc.

For residential roof drainage systems high fronted gutters are a popular aesthetic choice to hide the lower edge of tiles or roof cladding. Some simple overflow methods that can be employed on high fronted gutters are listed below;

- A) Methods related to the design and installation of roof drainage systems ;
- Slotted front of gutter - a simple and popular choice which allows for water overflow through the slots visible on the front face of the gutter.
 - Specifically located overflows as permitted in the BCA ie;
 - Inverted downpipe drop/pop at high points in the gutter but set at a level below the fascia top.
 - Stop ends cut down to a lower level to act as a weir. Stop ends weirs could be hidden at the high

point of the gutter and designed as part of an expansion joint.

- Rain-heads with overflow weir
- Holes, slot, or weir at downpipes
- Gap between the fascia and the gutter back – a packer is inserted between the gutter back and the fascia

or any of a number of other proprietary systems and trade solutions.

B) Methods related to alternative building designs methods;

- Unlined eaves - eliminates the issue where the house design suits.
- Gutter installed such that the gutter front is fully below the top of the fascia.
- Design for a higher rainfall intensity, as used for internal box gutters.
- Back flashing - where gutter support brackets allow back flashing installation (eg external brackets).

The detailing and sizing of the selected overflow method/s is normally completed by the designer/installer, but must be adequate for the situation and must meet the relevant performance requirement of the BCA and Australian Standards.

While there may be some variations from state to state, contractors who install guttering systems are generally required to hold an appropriate licence. In NSW, for example, a licence in the category of Builder, Plumber or Roof Plumber issued by the Office of Fair Trading is required and it is an offence to undertake this work without an appropriate licence. The work is required to comply with the appropriate codes and standards. Statutory warranties normally apply and consumers have a right to lodge a complaint and have it dealt with by the appropriate authority. In NSW, for example, the statutory warranty is 7 years under the Home Building Act.

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In the installation of the roof drainage system, particular focus should be given to the following;

- Attention to the use of compatible materials for drainage system components, leaf-guard type system components and compatible fasteners/sealants to connect and seal the components
- The position of the gutter in relation to the fascia
- Installation of the specified gutter and downpipes, ensuring that downpipes are installed in the correct locations and numbers.
- Gutter fall, ensuring sufficient fall and that it is in the direction of the downpipes.
- Overflow has been considered and specific details are installed where required (such as when the gutter front is higher than the top of the fascia).
- During the installation all debris and loose waste materials (swarf, fasteners, etc) must be cleaned off at the end of each day and at the completion of the installation to prevent blockages of the drainage system or deterioration of the individual components. Any protective films should also be removed as part of the installation process.

In the longer term, the ability of a roof drainage system to handle overflow will also depend on the regular cleaning of the system. For example the removal of plant or animal matter (leaves, fungal growth, dropping, nests, etc.) and debris from gutters, leaf-guard type systems and the gutter overflow devices to ensure free drainage of water.

To ensure a long life the roof drainage system the maintenance requirements of the roof drainage system should be forwarded to the occupier/owner of the building and should be fulfilled. Adequate maintenance is a requirement of rainwater good warranties.

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