



## **WHEN IS A GUTTER INTERNAL?**

That might sound a strange question, with an obvious answer. Surely internal gutters are behind parapets and in valley situations, external gutters are fixed to fascias? If that same question was posed 15 years ago, that would be the simple answer, but much has changed since then; changes which are not reflected in the current roof drainage design standards. Dr Malcolm Wearing, a consultant member of the Metal Gutter Manufacturers Association (MGMA) provides some answers to this question.

Over the last 10 to 15 years, an increasing number of projects have featured wrap around fascias, meaning that the external gutters are not as external as they once were. These architectural fascias make a considerable impact on the aesthetics of a building, allowing a very clean eaves line, but there is a cost in terms of effective gutter operation.

### **Why does this matter?**

The key reason this is an issue is that BSEN12056-3:2000 (the design guide for roof drainage) sharply differentiates between internal and external gutters. An internal gutter is designed for a rainfall event based on the building life with a safety factor, whereas an external gutter is designed to overflow every year.

It is quite normal and acceptable for a true external gutter to overflow every year in very heavy rain, but what happens when a fascia is added round this gutter? Unless the gutter is very well sealed to the fascia, fairly large quantities of water will run into the fascia, and then may find a path into the building, or dribble out of the fascia over a period of time, causing nuisance.

The rainfall event an internal gutter is designed for is typically 2-3 times larger than the event for an external gutter, and consequently true internal gutters are a lot larger. But when an eaves gutter is clad round, the gutter stays essentially external gutter size, therefore there is not enough capacity available to stop overflow occurring periodically.



*Typical external gutter. Image courtesy of Guttercrest Limited*

It is very hard to make an external gutter, which is normally cantilevered off the structure, as large as a parapet gutter, supported on both sides by steelwork, thus the external gutter will almost always end up having to be smaller, and thus having less capacity.

### **What is the best approach?**

There are a number of possible approaches to this issue:

1. Design the gutter as internal and add enough rainwater pipes to allow it to work with the available gutter size. The problem with this approach is it can look clumsy; many more rainwater pipes will be needed than for a true external gutter and the elevation may look cluttered. The clean lines which are delivered by the fascia system may be undermined by the extra pipe drops.

2. Design it as external, and allow the water out. It may be possible to detail the fascia in such a way that yearly water ingress does not lead to any risk to the building, and can be allowed out of the fascia without causing damage. Slotting the fascia, or allowing slightly open joints away from the building face, may allow this water to escape without unsightly wetting of the building walls. Real thought has to be given to how the water will run through the structure, to avoid places where it can become trapped, or run along support members and into the building itself.
3. Design as external, but with a longer period between events which lead to water overflowing the gutter edge. Water running into a soffit panel every year may be unacceptable, but if it only happens once every 5 or 10 years, it may not be such a cause for concern. If the event is annoying, but causes no real damage, and only occurs infrequently, it can often be acceptable to a building occupier.
4. Fabricate an integral gutter/soffit. Some manufacturers offer combined gutter/fascias, such that overflow continues to fall outside the overall fabric. These combined assemblies are more complex to construct, but offer a solution which covers both the aesthetic and practical issues.



*Gutter enclosed by fascia/soffit. Image courtesy of Guttercrest Limited*

## Is it really that important?

Rainwater drainage is often seen as the Cinderella of construction, it is only ever really noticed when something goes wrong with it. If water pours out of a newly completed fascia, the client is likely to start asking questions, and that is not a great time to be reviewing the basis (if any) of the design.

Weather patterns in the UK appear to be getting more unpredictable, with heavier storm events occurring more frequently. This makes good design even more critical; a well-designed and detailed drainage system is very unlikely to cause issues. As the cost of remedial works on a completed fascia structure is so high it is worth ensuring that it is right first time.

Further advice and guidance is available from any MGMA member company whose details can be found on the MGMA website at [www.mgma.co.uk](http://www.mgma.co.uk).

*This article has been prepared for MGMA by Dr Malcolm Wearing, consultant member of MGMA and director of CRM Rainwater Drainage Consultancy Limited. This article first appeared in RCi Magazine, March 2014*

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