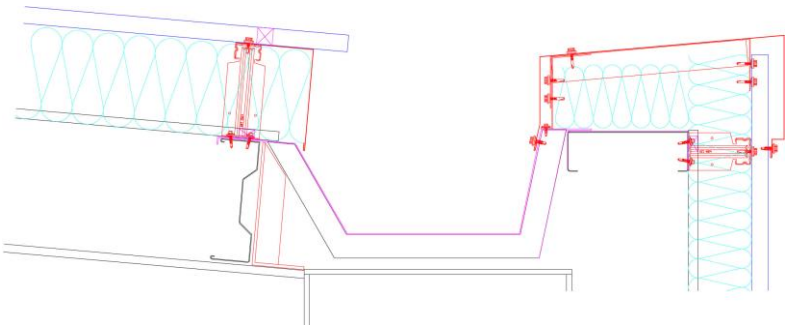
METAL GUTTER MANUFACTURERS ASSOCIATION

FOCUS ON INDUSTRIAL GUTTERING

The first recorded use of metal gutters dates back to the Industrial Revolution and the first official British Standard specification for pressed steel gutters was published in 1946. Today, the Metal Gutter Manufacturers Association (MGMA), in collaboration with BSI, is developing a new best practice British Standard which will reflect the development of thinner materials, the range of different coatings and manufacturing technologies and will apply to the manufacture of all heavy duty metal gutters.

There are a number of factors to consider when specifying industrial gutters, including insulation, thermal performance, location on the building and joint installation methods.



Boundary wall with internal gutter

Thermal performance

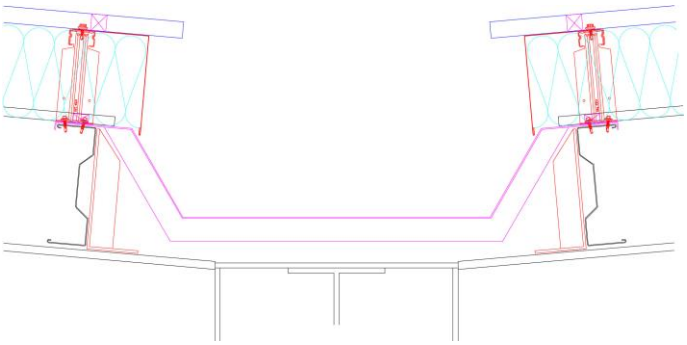
All internal gutters must be thermally insulated. This means taking care with air and vapour sealing and the avoidance of thermal bridges. The integrity of the vapour control layer and air leakage barriers must be maintained throughout the roof and gutter areas. The gutter edge should be designed to make sealing a simple procedure.

To minimise the risk of condensation of gutters within the building, the thermal performance of the gutters must be lower than the performance of the roof. In cold weather the outlets can freeze and gutters become full of snow and ice. It is critical that the roof as a whole does not begin to thaw until the outlets and the ice and snow in the gutters have thawed, allowing the gutters to flow freely. Therefore, as the roof begins to thaw the water flows without restriction and the gutters perform as designed.

Gutters should therefore be classed as a ψ (psi)-value, not a U-value. To eliminate the risk of condensation the f-factor needs to be calculated. The following table determines the minimum f-factor for each building type, in accordance with BS 5250.

Humidity Class	Minimum f-factor	Building Type
1	0.30	Storage areas
2	0.50	Offices, shops
3	0.65	Dwellings with low occupancy
4	0.80	Sports halls, kitchens, canteens, buildings heated with un-flued gas heaters
5	0.90	Swimming pools, laundries, breweries

When gutters are to be insulated, this can be done on site during the installation process. However, this process is usually performed in the factory environment whilst the gutters are being manufactured. The insulation used to give the thermal performance to the gutter is predominantly PIR or mineral wool in composition. To complete the process and retain the insulation in place, a white liner tray is attached to the gutter to give an aesthetic appearance inside the building when it is complete.



Valley gutter

Location on building

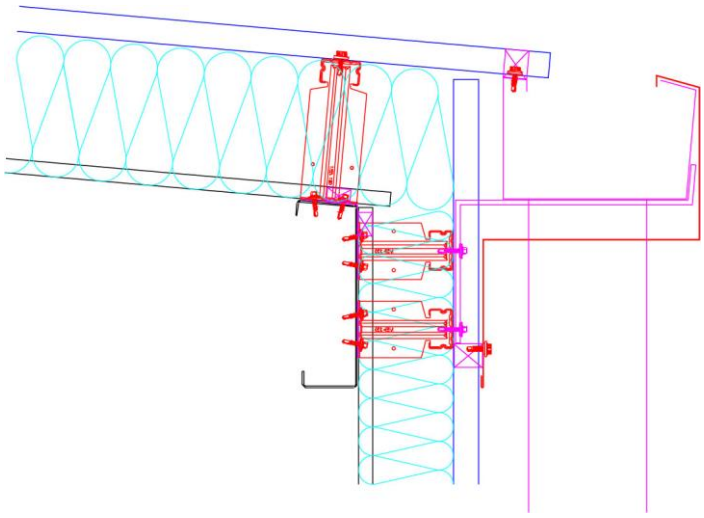
Both valley and boundary gutters have to be fitted at an early stage of construction that is, immediately after the main frame or phased whilst the roof cladding is progressing. The gutters are usually factory insulated; however, single skin gutters can be site insulated, including those used on projected eaves or on a canopy.

External eaves gutters are usually outside the building envelope and are often erected during the latter stages of construction. These can be supported by gutter arms under the sole of the gutter or, alternatively, supported arms projecting from the roofing profile.

Joint installation methods

Fascia gutters are external to the building envelope with a riveted butt strap joint. The butt strap should be sealed at either side of the fixing line with sealant and the reverse of each rivet should also have a bead of sealant to prevent water drips from the fixings

Bolted single skin fixings should always be installed from the centre of the gutter out. The strip mastic should be applied to a clean dry surface and pierced to allow the bolt to be installed. When tightening the nut and bolts, ensure that the mastic exudes from the joint; however do not over-tighten as this will create metal to metal contact.



External eaves gutter

Bolted captive nut fixings should always be installed from the centre of the gutter out as this application allows the gutter to be installed from the top side only. The strip mastic should be applied to a clean dry surface and pierced to allow the bolt to be installed. When tightening the bolt and washers, ensure that the mastic exudes from the joint and do not over-tighten as this will strip the system.

Pre-laminated membrane gutters should have a riveted joint with some form of foil tape offering a 'weld free zone' under the membrane joint. The membrane joint should be fully welded (back and securing welds) with no creases or ash present, greater than the minimum requirement.

Metal guttering systems are designed and manufactured to give many years of reliable service and detailed advice is available from individual MGMA member companies. The *Focus on industrial gutters* guidance document can be downloaded from the MGMA web site at www.mgma.co.uk

This article has been prepared for MGMA by Simon Mawson of C A Group Limited.
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