Standing seam roofs are increasingly being used for industrial and commercial buildings in preference to profiled metal sheet where concealed fixings and low roof pitches are required for visual reasons. This is because standing seam roofing is both economic and has crisp, uninterrupted joint lines that allow it to be made a visible part of the building design, often with as much architectural presence as the facade beneath. The main advantage of standing seam roofs over profiled metal roofs is that almost no fixings pass through from outside to inside the construction. This gives the roof surface a visually crisp appearance with very few visible fixings. The standing seams allow the technique to be used on very low pitch roofs.

The traditional method of forming a standing seam roof is to set the sheet onto a timber substrate, and to fold the long edges of the metal upwards to form a standing seam joint. However, this method is increasingly giving way to prefabricated systems where the sheet metal is folded to a specific profile either in a factory or on site with a rolling machine. The folded metal is then secured with a clip-based fixing system rather than onto a continuous substrate. Both types are discussed in this section.

**Site-based method**

This method of fixing sheet is well suited to small-scale applications, or where complex geometries are used. These applications make the use of prefabrication both unnecessary and uneconomic, due to the time needed to make special junctions and edges on site. The use of a single sheet metal profile and angle support clips used in prefabricated methods is usually too inflexible for such conditions.

In this traditional method of forming standing seam roofs, timber boards or plywood sheet are used to form a continuous substrate, or supporting surface. Standing seams are formed by timber strips of rectilinear or curved section which are set at 450-600mm centres down the slope of the roof, corresponding to the width of the sheet metal used. Sheet metal is laid along the length of the roof from top to bottom, with the sides of the sheet folded up and over the timber battens. Successive strips of metal sheet are lapped over the next to form a continuous sealed surface. The standing seam joint is formed by folding the metal together to form a seal. Because the roof is formed, effectively, as a series of linked ‘gutters’, the standing seam between each gutter is above the level of the water draining down it. Rainwater is avoided being drawn through the joint by capillary action by one of two methods, where the joint is either sealed or ventilated. In a sealed joint the seam is pressed tight, as in a traditional lead or copper roof either by folding the metal over itself to form a thin seam, or by forming the metal over a timber roll or section. In a ventilated joint, a small gap is left between the folded sheets to allow air to pass through but not rainwater.

Sheet metal is fixed to the timber upstand strips either by clips, which avoid penetration of the sheet metal, or by a mechanical fixing through one side of the sheet. The fixing is applied to the side which has the adjacent sheet lapped over it, in order to avoid rainwater passing through the fixing penetration. Timber-based substrates are increasingly being replaced by profiled...
3-D cutaway view showing typical roof assembly

**Details**

1. Metal sheet
2. Standing seam joint
3. Breather membrane
4. Thermal insulation
5. Substrate, typically timber/metal rafters with plywood facing
6. Vapour barrier
7. Drywall/dry lining if required
8. Outer standing seam sheet
9. Inner lining sheet
10. Clips at centres
11. Folded metal gutter
12. Curved eaves sheet
13. External wall
14. Structural frame
15. Outer sheet fixing bracket
16. Rooflight
17. Metal flashing
18. Ridge piece