is to prevent water which penetrates the outer leaf coming into contact with the steel frame.

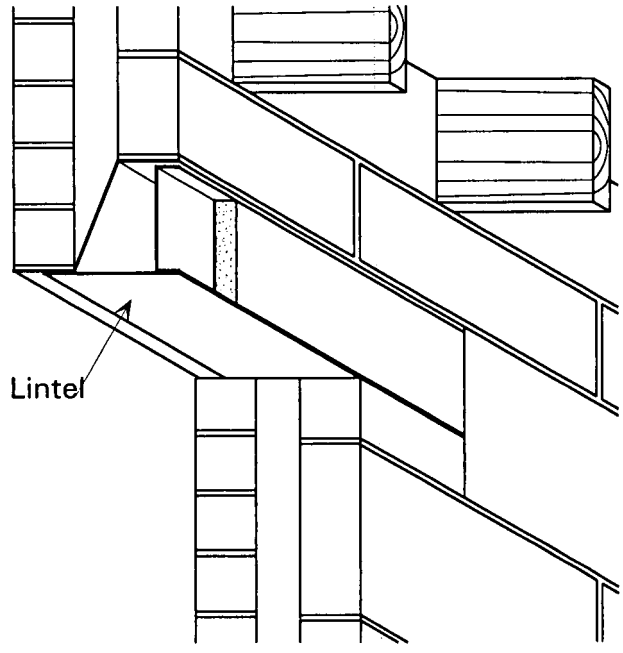

Figure 7.7 *Example of a steel lintel above a window*

Steel lintels may be used to support brickwork or masonry above windows and doors. Figure 7.7 shows an example of this type of application. Similarly, angles may be used to support brickwork cladding, as shown in Figure 7.8. Stainless steel is often used for this type of application [73,74]. It can be seen from this figure that, as with brickwork ties, the designer must consider a means of accommodating differences in level between the steel and brickwork.

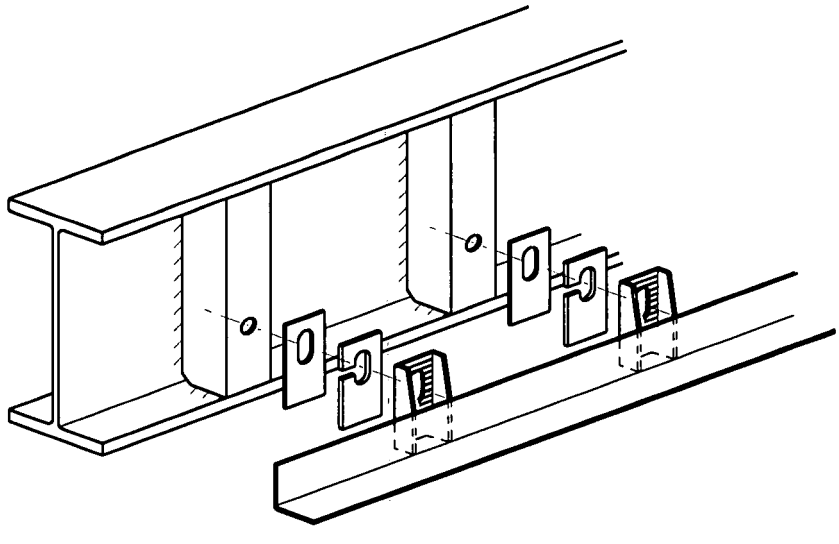

Figure 7.8 *Angle support for brickwork cladding*

ACTIONS - Brickwork restraints

The designer should specify ties:

- with provision for vertical adjustment, to accommodate differences in level between the steel frame and brickwork
- which are easy to place and adjust.

7.7 Surface protection

Surface protection of steel falls into two categories; corrosion protection (paint, galvanising etc.), and fire protection. As well as being used for protection, paint may be applied for decorative reasons. To avoid problems, the specifier must ensure that surface protection systems are compatible with one another.

7.7.1 Corrosion protection

Several types of paint and methods of application are suitable for shop use. Details of these are given in the *Design for manufacture guidelines(1)*. Contact surfaces for non-slip connections, or any surfaces to be welded on site, must be clearly identified by the designer so that they remain unpainted by the fabricator.

Site painting is used for touching-up areas damaged during transportation or erection, or to cover site welds or other such details. Whilst the designer may have little influence over the extent of damage, he can reduce the number of site welds etc. requiring painting. Site painting is time consuming and therefore expensive, and can look unsightly.

Paint should be protected during transportation and erection to minimise damage. The specification of hard, two-pack chemical resistant paint reduces the likely extent of damage, but it is initially more expensive, more difficult to touch-up, and takes longer to cure. When additional coats of paint are required for decorative purposes they will generally need to be applied on site, and for convenience damaged paint can be touched-up as part of this operation. Controlling temperature and humidity, and keeping surfaces clean between the application of coats, may prove difficult on site unless the building envelope is sealed before touching up, or the application of additional coats, commences. Site welds should be minimised because they require careful cleaning and degreasing before paint is applied.

The designer should carefully consider the erection sequence and detailing of the frame, in order to minimise problems of access and painting at height. One option is to use sub-frames assembled at ground level.