The method of silicone bonding glass to aluminium framing is well developed for use in glazed curtain walling to provide visually smooth glass facades with no visible cappings. The use of silicone sealed rooflights, discussed in an earlier section, can be taken a step further to become a full bond without the need for the mechanical restraint of pressure plates. In silicone bonded rooflights, the glass is glued to a supporting frame. The glue is also the external seal. This technique is useful for small rooflights, where cappings would be very difficult to fabricate, and in rooflights which are walked upon, where the rooflight is an external glass floor.

Four examples are discussed in this section. The generic conical rooflight has curved double glazed units bonded to an aluminium frame. Silicone bonding avoids cover caps which would have to be curved both vertically and horizontally, and which would be extremely difficult to fabricate. The generic rectangular rooflight can be bonded together without a supporting structure, with the glass providing its own support. A flat monopitch rooflight can be bonded to a frame to provide a small rooflight from one double glazed unit. The use of laminated glass sheets can make a glass deck strong enough to walk on. Similar to a glass floor used inside a building, it must also take heavier traffic loadings and be weathertight.

**Generic conical rooflight**

In a generic conical rooflight, a lightweight steel frame is used to support double glazed units that form a rooflight. The structural frame comprises box sections set vertically.
A 3-D view from below of a typical conical rooflight assembly. Vertical section 1:10. Junction with adjacent material.

Details:
1. Silicone bond
2. Mild steel support frame
3. Single glazed laminated glass panel
4. Silicone seal
5. Concrete base
6. Insulated metal panel
7. Folded metal flashing
8. Reinforced concrete support frame


3-D detail view of glass to glass junction in conical rooflight.

3-D view of frame in conical rooflight.

Key plan

Horizontal section of rooflight assembly. The glass panels are supported on horizontal flat sections which are welded to the horizontal set tube section. The glass is levelled on blocks set onto the horizontal flat section, and the silicone is applied to the joint. At the base, the horizontal metal section projects out to form a flashing over the upstand in which the rooflight is set. An additional inner metal upstand can be provided with another silicone seal if there is a risk of future flooding from blocked rainwater outlets, for example. The waterproof membrane for the roof slab is continued up the upstand and is bonded to the base of the horizontal section that supports the glass. This provides a complete seal from the glass to the roof membrane, with the metal flashing providing both a protection to this seal and a means of concealing the closed cell thermal insulation set on top of the waterproof membrane.

At the top of the rooflight, a metal panel is used to seal the pointed form. The glass can be continued almost to the top, with only a small pointed metal cover, but this example aims to show how the glass is sealed to another material set above it. The metal cover is folded inwards at its junction with the double glazed unit. The fold forms an edge to make a silicone seal. The glass is bonded to another steel flat set below the metal cover. This provides lateral support to the glass unit as well as making an additional inner seal. The metal cover is typically formed from a single piece of aluminium or stainless steel that is welded and ground smooth, and is insulated with injected foam.