Method Statement windows replacement/refurbishing

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PROJECT
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JOB NO.
952

ISSUE DATE 28/02/24

Method Statement for refurbishing and replacement of conservation windows

The replacement/refurbishing window should match the form, detailing and operation of the window to be copied. It will be necessary for the maker of the new window to accurately copy the profiles of all the window components including head, jambs and cill of the frame and the stiles rails and glazing bars of the sashes or casements. Old glass should be carefully salvaged and reused. Where practicable, ironmongery should be overhauled and reused. Normally for replacement sliding sash windows counterbalancing springs should not be used in as a substitute for pulleys and weights as this significantly alters the detailing and appearance of the window.

Older buildings often incorporate numerous alterations that reflect changes in use and fashion over their lifetime. One particularly common change is the removal of glazing bars. As glass technology developed, larger sheets could be produced relatively cheaply. The fashion towards larger sheets of glass resulted in many windows having glazing bars removed. When the alterations are in an elevation in which the harmony and uniformity of the design is significant then there may be an argument for the reinstatement of one or two windows that are damaging to the building's significance.

When alteration or replacement requires listed building consent, our general approach is set out below:

1. Where historic windows, whether original or later insertions, make a positive contribution to the significance of a listed building they should be retained and repaired where possible. If beyond repair they should be replaced with accurate copies.

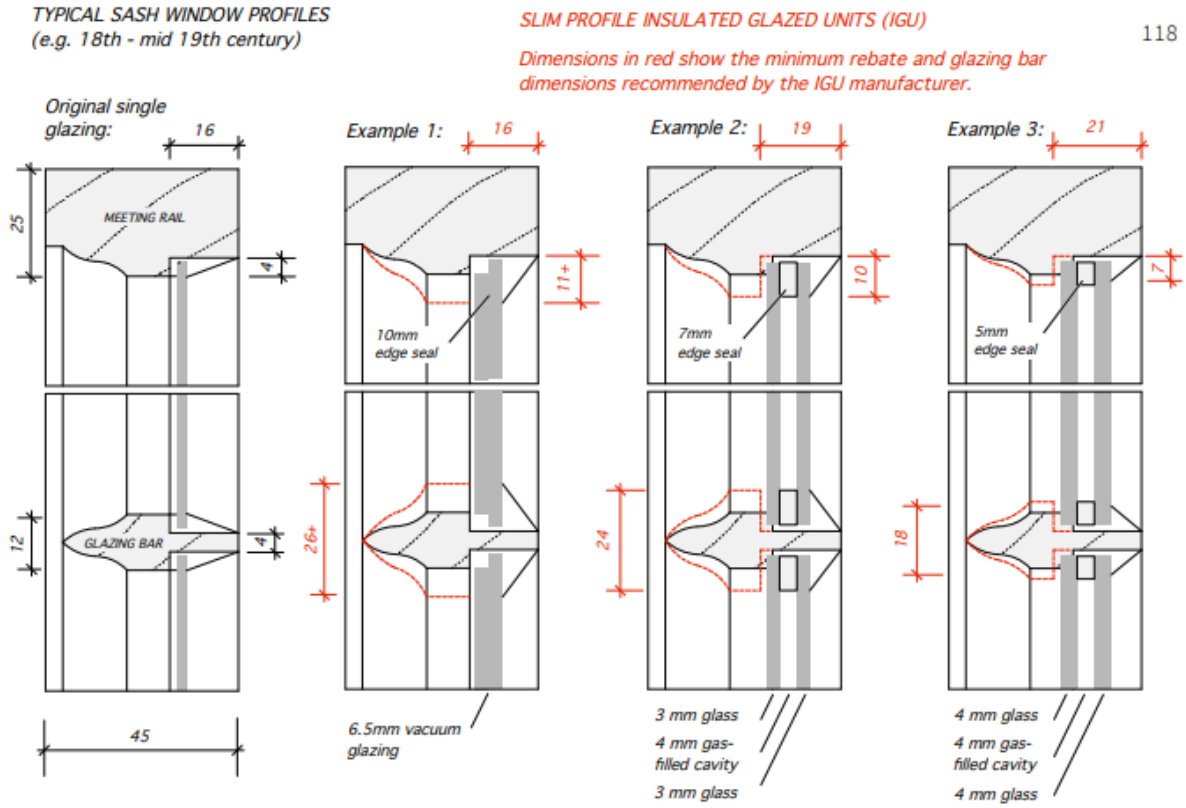
2. Where historic windows have already been replaced with windows whose design follows historic patterns, these usually make a positive contribution to the significance of listed buildings. When they do, they should therefore be retained and repaired where possible. If beyond repair they should be replaced with accurate copies.

3. Where historic windows or replacement windows of historic pattern survive without historic glass it may be possible to introduce slim-profile double-glazing without harming the significance of the listed building. There are compatibility issues to consider as the introduction of double-glazing can require the renewal of the window frame to accommodate thicker glazing, thereby harming significance.

4. Where historic windows have been replaced with ones whose design does not follow historic patterns, these are unlikely to contribute to the significance of listed buildings. Replacing such windows with new windows of a sympathetic historic pattern, whether single-glazed or incorporating slim-profile double-glazing, may cause no additional harm. It also provides an opportunity to enhance the significance of the building, which is the desired outcome under national policy.

5. Where a new window or re-glazing is agreed, the reflective properties of secondary and double-glazing as compared to modern, polished single-glazing, do not usually harm the significance of the building. But when new multi-paned windows are proposed, the desirability of reproducing broken reflections by individually glazing each pane should be considered. Where the aesthetic value of the

building is high, then the impact on the whole of the relevant elevation should be considered, including the desirability of accurately matching other windows.



Historic England/Historic Environment Scotland windows research Historic England and Historic Environment Scotland decided to commission research into the thermal performance of traditional windows as they were concerned that calculated U values were not giving a true picture of actual thermal behaviour.

These complex factors are very hard to measure, not least because they are so dependent on exterior conditions. Thermal transfer through building materials is commonly expressed in terms of overall heat transfer coefficient, or U-value (the rate of heat transfer through a given area of a building element when exposed to different temperatures on either side; the lower the U-value the more slowly the element transfers heat).

Timber sash windows

The main series of tests looked at the behaviour of two timber vertically-sliding sash windows of about the same size. The sashes of one were divided into six panes (6-over-6 window) as was common in the Georgian period; the other had a more typically Victorian configuration, with each sash divided into two panes (2-over-2 window). The 6-over-6 window was in good condition but the 2-over-2 example was deliberately chosen as it was in poor condition, so that the improvement in air leakage due to simple repairs and refurbishment could be assessed.

The main round of testing looked at the reduction in conductive heat loss due to a series of common improvements, including installing roller blinds, lined curtains, shutters and secondary glazing, and using glass with a lowemissivity coating.

Results

Effect of maintenance

Simple maintenance to mend cracks and eliminate gaps can significantly reduce the amount of air infiltration or draughts. On the window that was tested air infiltration was reduced by more than 33%.

Draught-proofing

Draught-proofing was found to reduce air exchange through the window by as much as 86%.

Reduction in heat loss

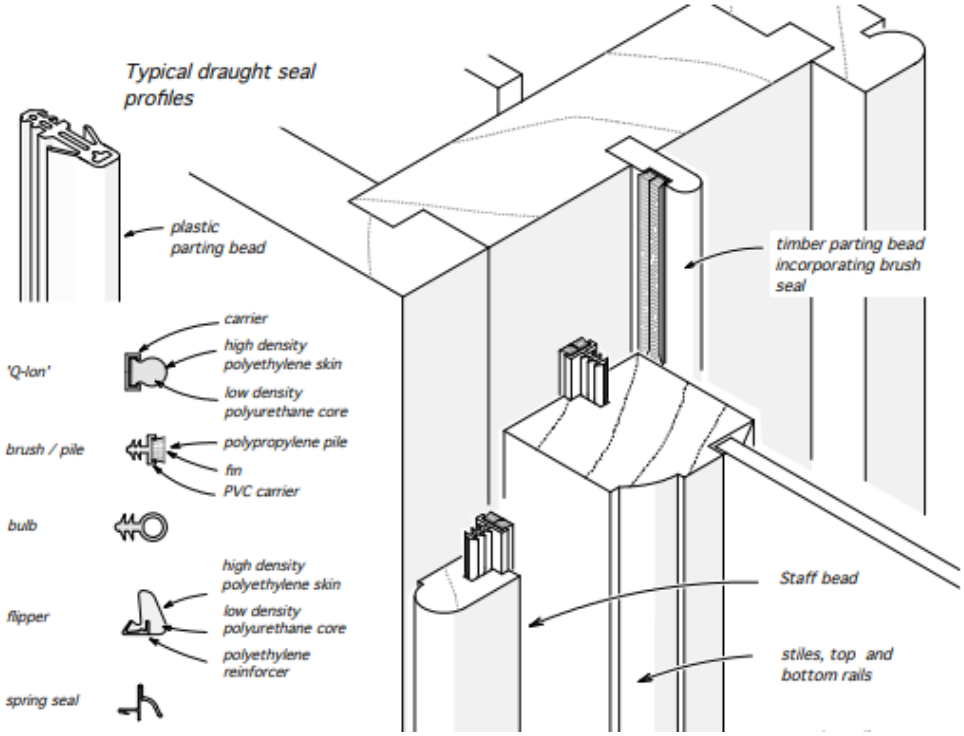
Simple measures were found to have a dramatic effect on conductive transfer through the window: thermal roller blinds alone could cut heat loss by 57%. Secondary glazing was especially effective if made from glass with a low-emissivity coating, cutting heat loss by around 60%; shutters performed almost as well. The best results were achieved by multiple systems – shutters or secondary glazing combined with curtains or blinds for example. This was, indeed, the traditional approach and it has the added bonus of allowing flexibility, in that the system can easily be adjusted for different seasons.

Heat loss through contact with the glass and frames can be significantly reduced by adopting simple measures like closing thick curtains and plain roller blinds. In the test, heat loss was reduced by 41% and 38% respectively

More elaborate measures reduce heat loss even more and can improve windows to meet modern building regulations, which target a U-value for new windows of 1.6 or below. In a test with good quality secondary glazing this value was 1.7. Well-fitted, closed shutters produce similarly good results. The best result is when the two methods are used together, yielding a 62% reduction in heat loss and a U-value of 1.6Wm^2K.

With timber windows, simple measures such as adding roller blinds and secondary glazing produced dramatic improvements, cutting heat loss by as much as 54% and 62% respectively. Comparison with slim-profile double-glazing The heat transfer through the frame greatly limited the improvement that could be gained by replacing single glass with slim-profile double glazing.

Example of draughtproofing for sash windows.



Examples of draughtproofing for casements or doors.