Double glazing in listed buildings

General principles

A guidance note

by the Essex Conservation Officers Forum

October 2019

One of the most common questions which conservation officers are asked is: *can I install double-glazed windows in my listed building?* Such an alteration almost always requires listed building consent. Whether or not double glazing will be acceptable depends on several factors, and each case must be considered on its own merits. This guidance note outlines some of the main considerations.

18th-century Venetian window

Early-19th-century bow window

Where the existing windows are historic and significant – particularly when they incorporate handmade glass as in the above examples – every effort should be made to conserve and retain them. The desire for double glazing will not normally be considered sufficient justification for the loss of an important window. If historic single-glazed windows are replaced with double-glazed windows without the necessary consent, the local authority may require the reinstatement of single-glazed windows which replicate the detailing of those that have been lost. The thermal performance of single-glazed windows can be improved significantly by relatively simple methods, including traditional curtains, blinds or shutters, draughtproofing and secondary glazing. There are often alternative options available for improving the thermal efficiency of an historic building without affecting its character, and Historic England has produced extensive guidance on this subject: https://historicengland.org.uk/advice/technical-advice/energy-efficiency-and-historic-buildings/ .

Before repair

After repair

It is rarely the case that nothing can be salvaged of an old window since decay tends to be localised and the wood used over a hundred years ago is invariably of high quality. A skilled joiner can normally make an effective repair which will allow the window to last much longer into the future.

Before replacement

After replacement

Where old windows in a listed building are historic or significant but are so decayed that they are truly beyond salvage, their replacements should normally be single-glazed, in order to replicate authentically the detailing of the original windows. Where original glass survives it may be possible to reuse it in a replica window.

Early-20th century lead-glazed cross windows in a library of c.1699. The windows replicate the design of late-17th-century windows

Where existing windows are relatively modern replicas of a traditional design it still may not be appropriate to replace them with double-glazed windows. It is not possible, for instance, to successfully replicate the detailing of a traditional lead-glazed window using double-glazed units.

The imitation lead cames glued onto the face of this double-glazed window reflect off the inner leaf of the sealed unit, creating an appearance that is quite different to traditional lead glazing

Late-Victorian sash window with single glazing

Early-21st-century double-glazed window in the neighbouring house

Double-glazed windows have different reflective qualities to single-glazed windows. For this reason, where an existing single-glazed window is modern but forms part of a composition alongside historic single-glazed windows, it may not be appropriate to replace it with a double-glazed window.

In a 2015 appeal decision (ref. APP/F0114/Y/15/3002195), concerning the proposed installation of double-glazed windows on the front elevation of a grade II listed terrace of Georgian houses, the inspector concluded:

> […] *the provision of double-glazed units to the front elevation would be an incongruous and harmful addition to the building. Whilst there are a variety of window designs in the front elevation of the terrace, most are single glazed, and the proposed ones would be a detrimental contrast to them. Even with the narrow profile of the units, the proposed windows would have a reflective double image that would unacceptably harm the special interest of this listed building. This would be an incongruous feature within the uniformity of the front of the terrace, unacceptably harmful to these historic buildings and the character and appearance of the conservation area*.

Before

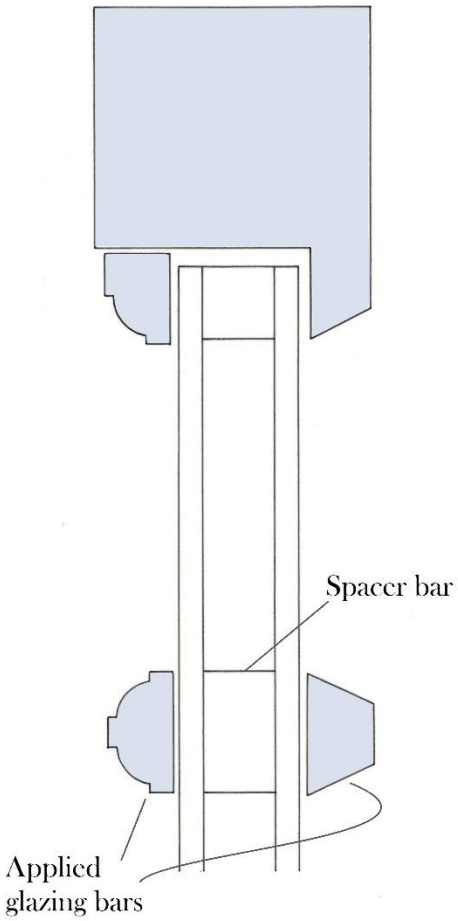
After

Window dating from the 3rd quarter of the 20th century

Casement window with slim-profile double-glazed units installed in 2011

Where the windows in place at the time of the listing are modern or unimportant, and double-glazed windows pose the potential to preserve or enhance the building's special architectural character, replacement with appropriately detailed double-glazed windows is acceptable in principle.

The grade II listed house illustrated above has interest because of its 16th-century timber-framed structure and chimney, but the 20th-century windows and cement render were judged to be unsympathetic. Listed building consent was granted to install replacement windows which replicate the design of 19th-century windows depicted in old photographs of the house, but the new windows incorporate slim-profile double glazing.



A factory-made timber sash window with 24mm double glazed units and applied glazing bars

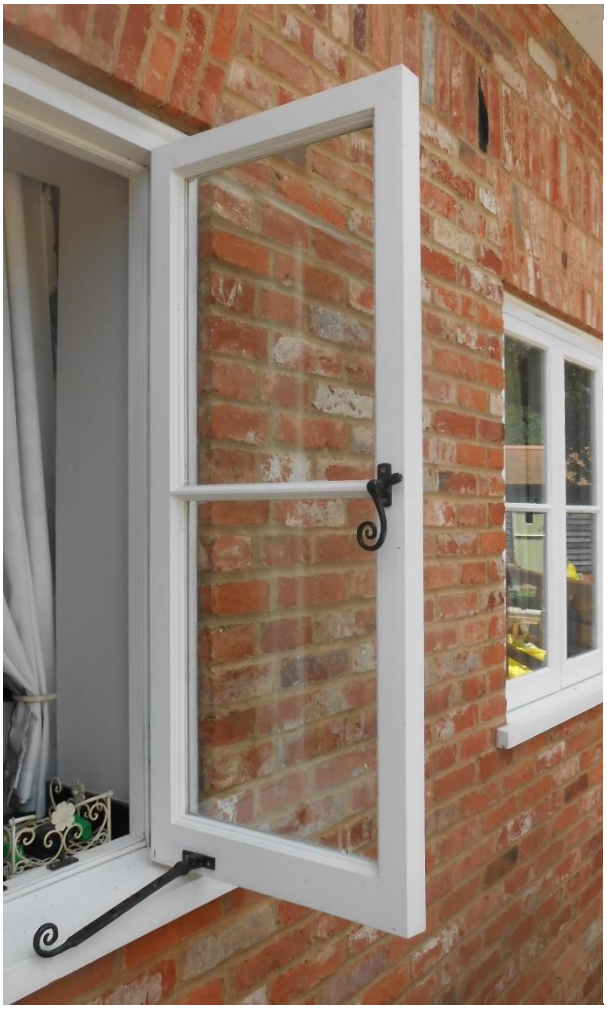
Standard thickness double-glazed units (typically 24mm thick) will not normally be acceptable in a traditional-style multi-paned window on a listed building. Such windows appear very obviously double-glazed. Aspects of their finer detailing – such as prominent spacer bars and applied glazing bars – can appear incongruous in the context of an old listed building.

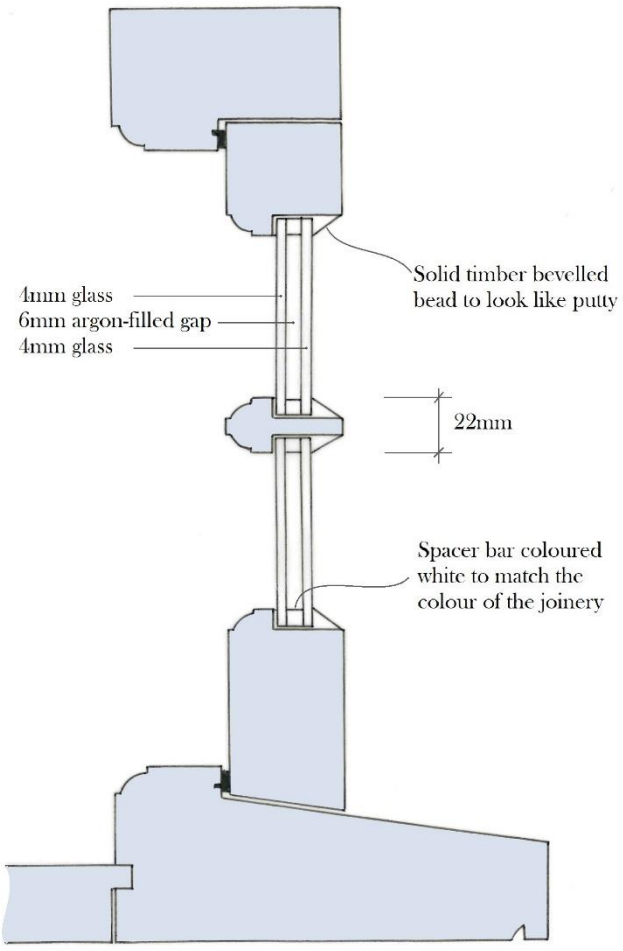
Modern glazing introduced to a grade II listed barn as part of residential conversion

An extension by Hilary Brightman to a grade II listed cottage deploying traditional forms and materials, but with modern plain-glazed windows

A contemporary-style extension by Plater-Claiborne added to a grade II listed farmhouse

When modern-style windows without glazing bars are used in a listed building – for example as part of a barn conversion or modern-style extension – the use of standard-thickness double glazing is not normally a problem.





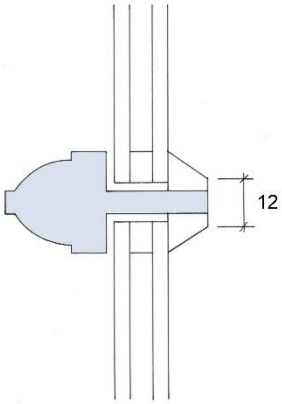
Casement windows with slim-profile double glazing, made by Kevin Gribble of Maeldune Bespoke

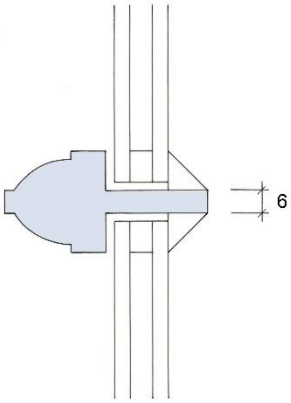
The detailing of traditional windows can be replicated with a degree of success using slim-profile sealed units. These units typically have an overall thickness of between 10mm and 14mm. With these slim units it is technically possible to achieve glazing bars as thin as 18mm; close to the fine glazing bars of late-Georgian windows (which can be as thin as 15mm). However, many joiners are uncomfortable with this and insist upon a minimum glazing-bar thickness of between 20mm and 25mm, which may be acceptable in certain listed buildings, depending on their age and character, and the style of the windows. The width of the flat outer face of the glazing bar has a considerable impact on the appearance of the window, and should normally be no thicker than 5mm. It should be noted that slim-profile double glazing is more expensive than standard-thickness double glazing and is not as thermally efficient. Some architects and joiners complain that, in their experience, the slim-profile units are more prone to failure, resulting in misting between the panes. Contractors should ensure that the system they use complies with the relevant British Standard.

To achieve an authentic appearance, glazing bars in such windows should be integral and not glued to the face of the glass. Spacer bars should be coloured the same as the joinery because the use of a contrasting colour draws attention to the fact that the window is double glazed.

Sealed units held in place by timber fillets

Sealed units held in place by Butyl putty

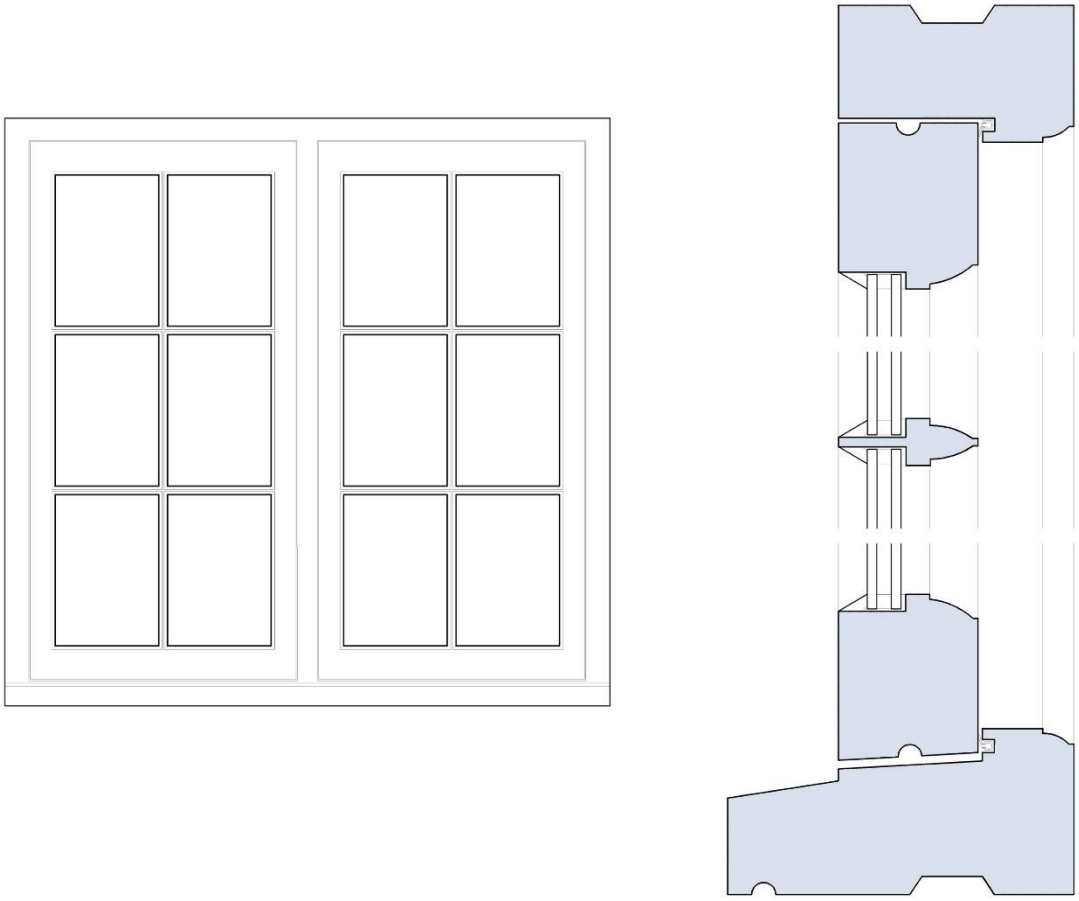




For the best appearance in a multi-paned window, the slim-profile sealed units should be held in place with a form of putty rather than a timber fillet (unless the fillet is perfectly triangular). The use of timber fillets often makes the flat outer face of the glazing bars appear excessively wide. Sometimes the junctions between the fillets and the glazing bars are also visible, which can appear jarring in a traditional listed house. If the timber fillet is perfectly triangular (without a flat outer face) and skilfully installed it can replicate the appearance of putty quite successfully, but not all joiners are willing to do this.

Windows should generally be hand painted rather than spray finished. The latter method of finishing timber windows tends to create a very uniform and flat appearance which is at odds with the subtle textural qualities of traditional joinery.

Where it is not possible to achieve double glazing, internal secondary glazing units can normally be installed without any harm to the fabric of the building. Visually, this can be a discreet solution and the units can easily be removed in the summer months.



Detailed drawings of a proposed window, reproduced with permission from Kay Pilsbury Thomas Architects. The elevation drawing is at a scale of 1:10 whereas the section details are drawn at 1:2.

When submitting a listed building consent application for replacement windows it is essential that adequate information is included to assess the proposal. In addition to existing and proposed elevation drawings, large-scale section drawings will be expected, like those shown above. The heritage statement should identify the age and significance of the windows to be replaced.