

# Guidance Note: Traditional Sash Windows



January 2011

## Introduction

Windows are often a building's most prominent feature. They reflect the development in design and technology that has been seen throughout recent centuries. One of the most common window types found in historic buildings is the sash window. This window type first appeared in Britain during the 17<sup>th</sup> century and has seen a considerable change in form over following years. It remained the most common window type installed in new buildings up until the early 20<sup>th</sup> century.

## Design

Sash windows are almost always made of timber, usually softwood (commonly pine), although hardwood frames, such as oak, can be seen in some of the grander houses throughout the country. The window consists of two glazed frames or sashes. The front sash is suspended in the top half of the frame and the rear sash forms the bottom half of the window. Double-hung sashes have both upper and lower sashes counter-balanced by lead or cast iron weights. These weights are suspended in hollow sections of the window framework, allowing the window to move up and down. A simpler form of sash window is the single hung frame, which has the upper sash fixed directly to the frame, with counter weights or pegs used to hold the bottom window open. Although vertically hung sashes are a popular form of window, horizontal sashes or Yorkshire lights are also prominent within the Bassetlaw area. This type of window has one fixed sash and one sliding sash that moves horizontally. This type of window is normally found on small farmhouses and cottages.

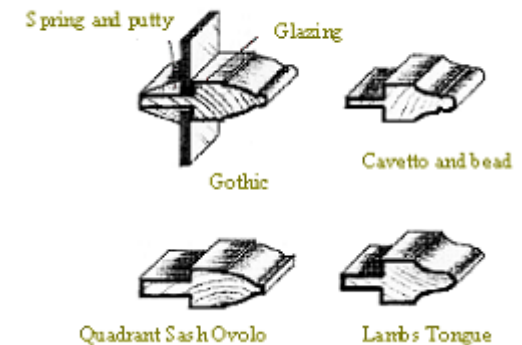
The development of the sash window runs in parallel with improvements in technology and glass making methods. The upper and lower parts of a sash window are usually sub divided by glazing bars. Over time, technological advances in the manufacture of glass enabled a more cost-effective



The retention of original windows is vital to the preservation of the character of historic buildings

production of larger panes, so the total number of individual panes and glazing bars decreased from the early Georgian times. This development meant that the sashes needed to be strengthened. Short upward or downward projections called 'horns' at the corner of the sash meeting rail were added to retain stability. These are not seen on early multi-pane sash windows but are commonly seen on Victorian sash windows. During the Georgian period, glazing bars became particularly slender and would normally be shaped to a traditional profile and would not exceed 18mm in width. Similarly the meeting rails (where upper and lower sashes overlap when in a closed position) should not exceed 22mm.

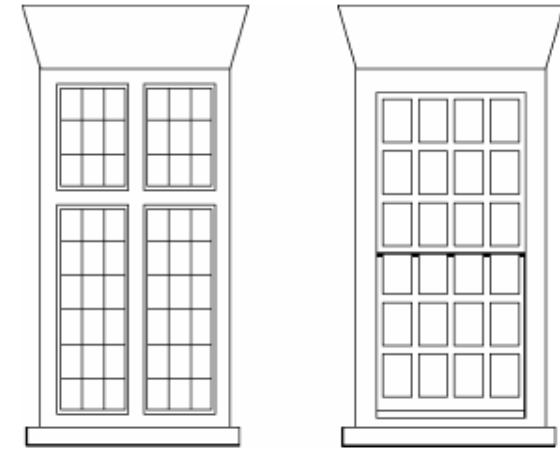
### Typical Glazing Bar Moulds



## Sash Window Development and Types

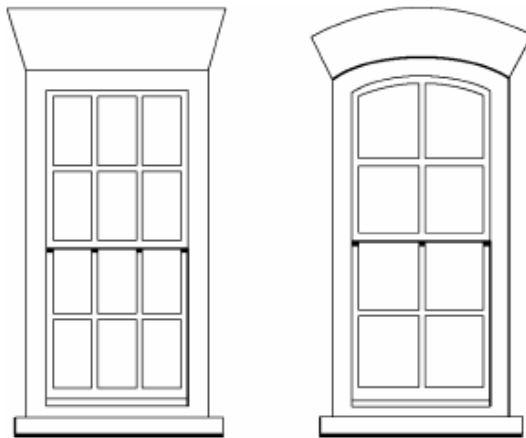
Window 1: A late 17th century cross-window with leaded lights. The window is divided into four sections (lights) by a central post (mullion) and a horizontal cross bar (transom). Each section contains a wrought iron frame or 'casement' with small pieces of glass held together by H-section strips of lead.

Window 2: A late 17th century 'eight-over-eight' paned sash window. When sash windows emerged at the end of the 17th Century many cross-windows were taken out and replaced by sash windows such as this one. The removal of the mullion and transom created a single light, which was glazed with two timber sashes. The glazing bars were very thick and numerous, and the panes were small.



Window 1

Window 2



Window 3

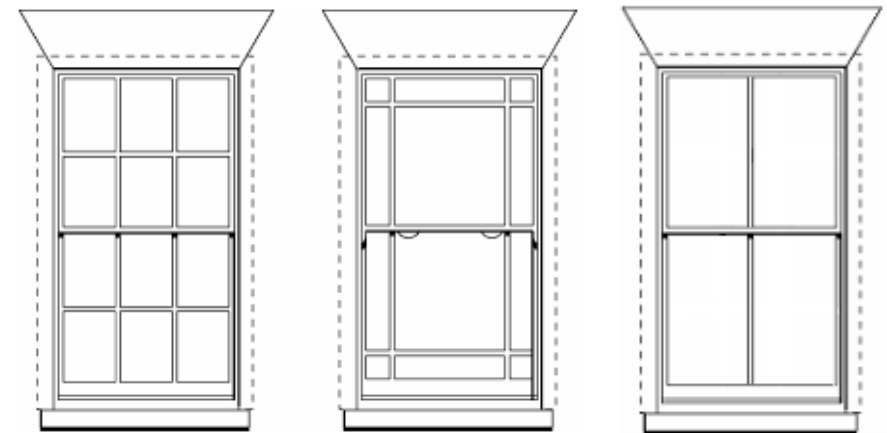
Window 4

Window 3 and 4: Both early 18th century sash windows. As the price of larger sheets of glass fell, the 'six-over-six' window (window 3) became common, as well as the 'four-over-four' (window 4). After 1709 the windows of buildings in London were required to be set back four inches from the face of the wall, but the box remained exposed. This requirement was often copied in provincial towns and can be seen in Bassetlaw. Double hung sashes began to dominate. From about 1710 to 1730 the segmental headed arch (window 4) became popular, with both the four and six-paned sash.

Window 5: A late 18th century six-over-six sash window with hidden sash boxes (their position indicated by dotted lines). The flat arch was reintroduced with the accession of George II (1730), and after 1774 windows were required to be recessed behind an outer nib of masonry to prevent the spread of fire from one to another. These developments, together with the introduction of finer glazing bars, led to the emergence of this style of window, which is characteristic of the mid-Georgian period.

Window 6: A Regency window with 'margin lights'. In the 1820's the introduction of small margin lights around a large central pane was fashionable. Although elegant, it was a significantly more expensive departure from the usual six-over-six sash window.

Window 7: A Victorian two-over-two sash became very popular due to bigger panes becoming available. Examples of one-over-one can also be seen.



Window 5

Window 6

Window 7

## Legal Position

When altering a listed property in any way, including the windows, approval from the District Planning Authority must be obtained in the form of Listed Building Consent. This is due to the fact that any change could be detrimental to the building's character, its special architectural interest or its historic interest. If any work is carried out on a listed property without consent, it is considered a criminal offence and the offender could be liable to prosecution and/or the expense of rectifying the change. For unlisted residential buildings, Planning Permission is not usually required for replacing windows. Properties within Conservation Areas may be the subject of an Article 4 Direction; in this case formal permission may be required. To be sure of the legal position, it is always advisable to check with the District Planning Authority before commencing any works to a historic building's fabric.

## Maintenance and Repair

The homeowner should regularly inspect Windows, ideally every year and a qualified professional should be brought in to check the windows every 4/5 years. Typical problems that are encountered when maintaining sash windows include:

- **Cracked and flaking paintwork**

The outside of a window should be repainted every 5 to 8 years to help protect the timber from deterioration and to also improve appearance (see external treatment for paint advice).

- **Sticky windows**

This can be due to the build up of paint and/or debris, which should be regularly cleared away. The incorrect replacement and repair of either the cords or beading can also have an effect on the opening of the window.

- **Failed Putty and Broken Glass**

Replacing either the putty or glass panes easily rectifies these problems.

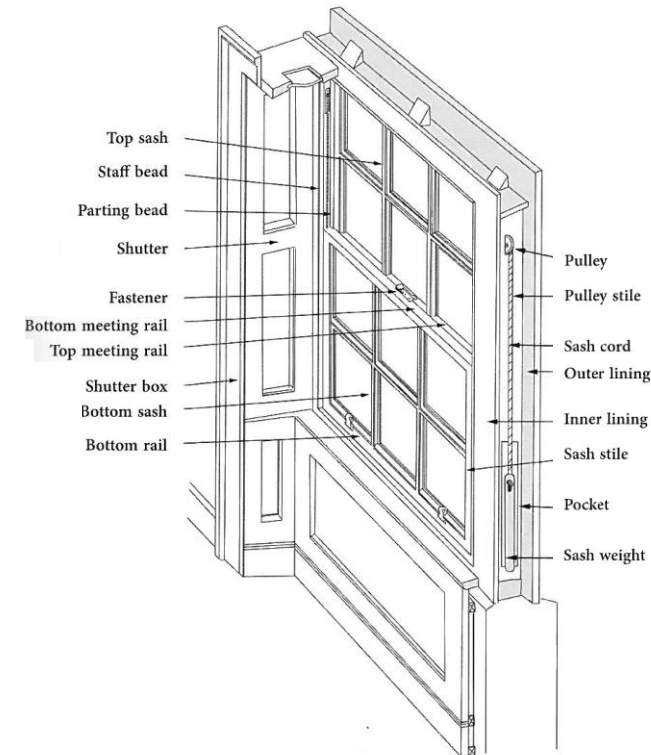
- **Timber Decay**

Timber decay is usually seen localised to the bottom part of a sash usually the found on the bottom rail (see the figure adjacent for construction detail). The decay is most likely to be caused by wet rot, but in certain instances woodworm or dry rot could have affected the frame. If dry rot is suspected advice should be sought from a specialist. Fillers can be used for minor decay and surface imperfections and where there are loose corner joints corner brackets could be used and painted over. For more significant repairs involving the removal of the decayed timber a skilled joiner should and consulted.

- **Leaks and Draughts**

Leaks and draughts are usually due to a misalignment of the window. Removing the pointing and fixing the window back to its original position is the best way of rectifying the problem. If building settlement or movement has led to the frame becoming twisted making it impossible to put the window back in its original place it is often advisable to contact a specialist firm who can install draught stripping and also refurbish the windows by checking sash cords and weights. Draught proofing can also be considered when the sash 'rattles' in

## Sash Window Construction



Source: *Windows: History, Repair and Conservation*  
(Editors: Tutton, Hirst and Pearce)

its frame. A secondary glazing system could also be installed in order to retain heat and reduce household bills.



Example of uPVC replacing original timber sash



The top window has been replaced with uPVC windows whilst the bottom retains the original timber frame and glass. The replacement of the traditional sash changes the character and appearance of the building and has an overall detrimental effect on the aesthetics of the façade.

### Repair Suggestions:

- Repair rather than replace wherever possible.
- Do not alter window openings in proportion or detail as they help to establish character.
- Retain and reuse all historic details, including old glass, window fittings and ironwork.
- Replace damaged or missing pieces with accurate modern reproductions or reclaimed originals that match those that have survived.
- Consider installing modern weather-stripping seals.
- Use heavy curtains and internal shutters, or consider the installation of a lightweight secondary glazing to reduce heat loss.

### Replacement

It is normally aesthetically pleasing and cost-effective to repair rather than replace a sash window. Although double-glazing is popular and provides some benefit in terms of energy conservation, it is a poor substitute for an authentic single glazed sash window. Weather-stripping single-glazed windows is much more economical. In aesthetic terms, it is virtually impossible to replicate the fine details and dimensions of a typical historic window when using double-glazed units. Although false glazing bars are incorporated in some types of double-glazing, they cannot match the delicately moulded glazing bars that are characteristic of Georgian or Victorian windows. The glass used also has an

entirely different visual character from historic glass. The end result is a window that may look superficially similar, but has very little historic accuracy.

### Replacement suggestions:

- Retain the original depth of window.
- Incorporate glazing bars of the appropriate thickness and profile, which will usually be that of the glazing bars being replaced.
- Install sash and case windows with weights and pulleys, as opposed to inappropriate spring balances.
- Ensure that the opening method and mechanism match that of the original window.
- Do not assume that building regulations require the use of double-glazing, as this is often not the case. The character of a historic building will be compromised by the use of double-glazing.

### External Treatment

In most cases, joinery should always be painted. It is a common misconception that windows were traditionally stained. Almost all windows have been painted since the start of the 18<sup>th</sup> century. For much of the 18<sup>th</sup> century windows were painted a Georgian white (which is not comparable with the modern day white, being more of off-white). By the 1780's, windows began to be painted in darker hues. Dark greys, greens and browns were popularly used for fashionable homes. Many

## Useful Contacts

### English Heritage

Regional Office  
44 Derngate  
Northampton  
NN1 1UH  
01604 735400

### The Society for the Protection of Ancient Buildings (S.P.A.B.)

37 Spital Square  
London  
E1 6DY  
020 73771644

### The Georgian Group

6 Fitzroy Square  
London  
W1P 6DX  
020 73871720

### The Victorian Society

1 Priory Gardens  
London  
W4 1T  
020 89941016

### The Twentieth Century Society

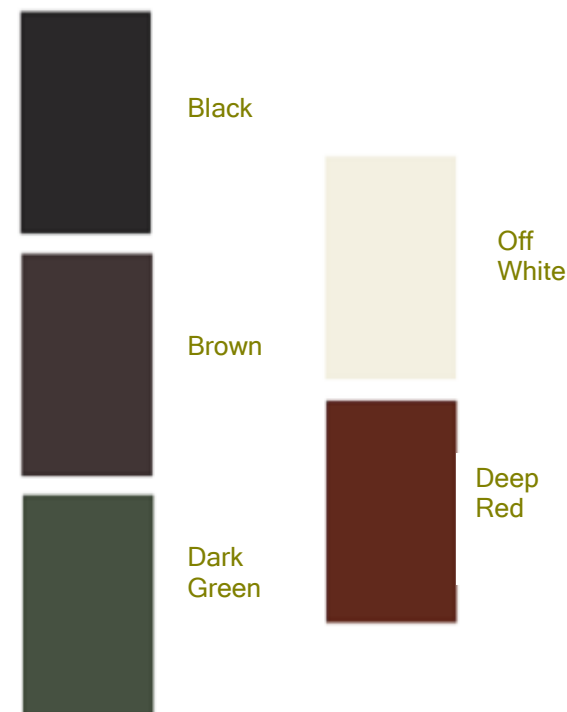
70 Cowcross Street  
Bedford Park  
London  
EC1M 6EJ  
020 72503857

of these colours were over painted in the late 19<sup>th</sup> century in keeping with 'Queen Anne' style. A favourite Victorian technique was graining, a process of painting softwood, in particular front doors and window joinery, to imitate hardwood. Another trend was to paint windows in two tones, with the outer framework being a darker colour than the inner sash. If there is no evidence of darker hues on the window frames it may be necessary to play it safe and keep it to an off white. If a darker paint is more desirable and is found to be more appropriate, a selection of acceptable colours can be seen to the right. The choice of colour that is acceptable on historic buildings depends on the period and architectural style of the building, the material to be painted and in some cases the location of the building. However for listed buildings, changing the colour of external joinery, walls and rainwater goods will often require Listed Building Consent. It is always advisable to contact the District Planning Authority with any queries before work is carried out.

## Advice

If in doubt about the character of your street or property seek professional advice. The District Planning Authority's Conservation Team, can offer advice on traditional window design and may be able to suggest firms who have supplied windows for historic property restoration, which have previously been approved. If you are in any doubt at all, owners should discuss their proposals with the Planning Authority at an early stage.

Finally, make sure that anyone promoting or selling replacement windows knows that your property is in a Conservation Area or whether it is a Listed Building. They could be liable if they advise you to proceed with inappropriate work without planning or listed building approval.



The above colour swatch gives an idea of the type of acceptable paint colours that would be considered by the Local Planning Authority when repainting the outside facade of a window.



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