

4.2 Window Design Guidelines



4.2.1 INTRODUCTION

The windows on historic buildings are an important aspect of the architectural character of those buildings. Their design, craftsmanship, or other qualities make them worthy of preservation. The significance of original materials and features should be respected; existing windows should be repaired and retained wherever possible, and when necessary, replaced in kind. As part of the original fabric of historic buildings, windows should be maintained and preserved in their original setting.

The repair and weatherization of existing wooden windows is more practical than most people realize, and many windows are unfortunately replaced because of a lack of awareness of techniques for evaluation, repair, and weatherization. Wooden windows which are repaired and properly maintained will have greatly extended service lives while contributing to the historic character of the building. Thus, an important element of a

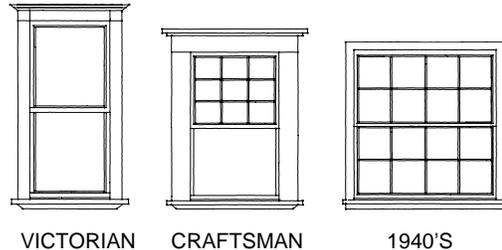
building's significance will have been preserved for the future.

Evaluating the architectural or historical significance of windows is the first step in planning for window treatments, and a general understanding of the function and history of windows is vital to making a proper evaluation. As a part of this evaluation, one must consider four basic window functions: admitting light to the interior spaces, providing fresh air and ventilation to the interior, providing a visual link to the outside world, and enhancing the appearance of a building.

No single factor can be disregarded when planning window treatments; for example, attempting to conserve energy by closing up or reducing the size of window openings may result in the use of more energy by increasing electric lighting loads and decreasing passive solar heat gains.

Windows are considered significant to a building if they:

- 1) are original,
- 2) reflect the original design intent for the building,
- 3) reflect period or regional styles or building practices,
- 4) reflect changes to the building resulting from major periods or events, or
- 5) are examples of exceptional craftsmanship or design. Once this evaluation of significance has been completed, it is possible to proceed with planning appropriate treatments, beginning with an investigation of the physical condition of the windows.



VICTORIAN CRAFTSMAN 1940'S
HISTORIC RESIDENTIAL WINDOW TYPES

4.2.2 WINDOW STYLES

Windows are wall openings that provide light and ventilation for the building interior. The word itself derives from ‘wind-holes,’ early openings that served principally to supply draft, and emit smoke from internal fires. Early windows were without glass, which was a rare and expensive luxury until the 17th century. When ventilation wasn’t required, the openings were covered with fabric or skins or by solid wooden sashes or shutters.

During the 18th and early 19th century, window sashes were available with panes of increasing size, as glass-making techniques improved, cost decreased and transportation of glass became more viable. By the mid-19th century, panes large enough to glaze sashes in only one or, at the most, two units became widely available. Commercial buildings used these larger panes both to gain light into the interior of the stores as well as to increase the visibility of the store interior and window display.

Different style of buildings (see the *Style Guides* in these Guidelines) utilize different style of windows: in Victorian or Queen Anne homes, windows are vertical; in Arts and Crafts houses, the windows are typically less vertical and often grouped in pairs. In Tudor houses, windows continue to be grouped together in pairs or triples and often incorporate stained glass.



WINDOW with 12/12 PANES



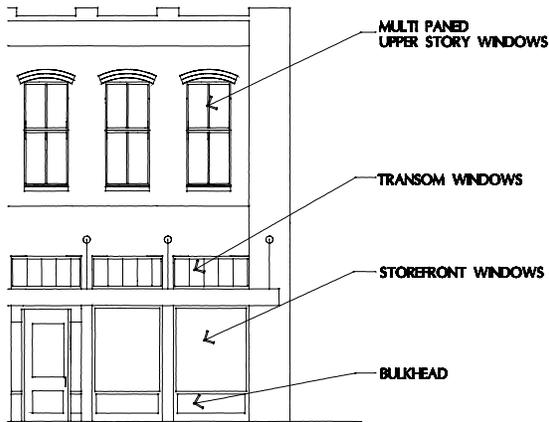
WINDOWS with 2/1 PANES

Windows in commercial buildings also have different styles, relative to the style of the building. Within Grapevine, most commercial buildings date from the late 19th and early 20th-

century, with windows reflecting the Victorian influences at the time – wood frame and sash, vertical orientation, multi-paned and with stone sills. Later buildings incorporated larger windows, with fewer (or single) panes and used metal window frames.

Multiple paned windows are important elements of upper story commercial windows while storefront windows shall consist of larger sheets of glass to maximize visibility of merchandise.

Original window framing and light (panes of glass) configurations shall be preserved and maintained or replaced in kind.



HISTORIC COMMERCIAL WINDOW TYPES

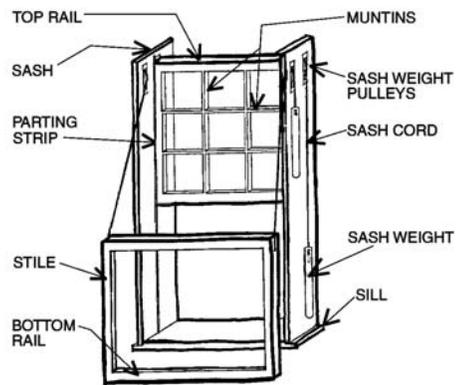


STEEL WINDOW AT COMMERCIAL BUILDING

Window changes that do not reflect the historic style of the house or those elements defined as significant to the building should be avoided. It is encouraged that such later changes restored back to an appearance similar to the original. If no documentation can be found regarding the original appearance, restoration back to a window (or windows) that would be typical of windows of this style of house might be acceptable.



HISTORIC WINDOWS HAVE BEEN REPLACED WITH 'NEW' PICTURE WINDOW



WINDOW COMPONENTS

4.2.3 SCREENED WINDOWS

Most historic houses originally had window screens to allow ventilation without also letting into the house outside elements – insects, flying debris – and to provide security for the house. Window screens have a wood frame w/ inset wire screening that could be removed and replaced when worn out or damaged.

Screen windows typically aligned with and complemented the style of the window, as shown in the following photograph.



APPROPRIATE SCREEN
WINDOWS

4.2.4 WEATHERIZATION

A window, which is repaired, should be made as energy efficient as possible by the use of appropriate weather-stripping to reduce air infiltration. A wide variety of products are available to assist in this task. Felt may be fastened to the top, bottom, and meeting rails, but may have the disadvantage of absorbing and holding moisture, particularly at the bottom rail. Rolled vinyl strips may also be tacked into place in appropriate locations to reduce infiltration. Bronze strips or new plastic spring strips may be used on the rails and, if space permits, in the channels between the sash and jamb. Weather-stripping is a historic treatment, but old weather-stripping (felt) is not likely to perform very satisfactorily. Appropriate contemporary weather-stripping should be considered an integral part of the repair process for windows.

The use of sash locks installed on the meeting rail will insure that the sash are kept tightly closed so that the weather-stripping will function more effectively to reduce infiltration.

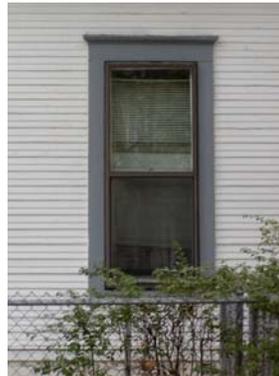
4.2.5 STORM WINDOWS

Many styles of storm windows are available to improve the thermal performance of existing

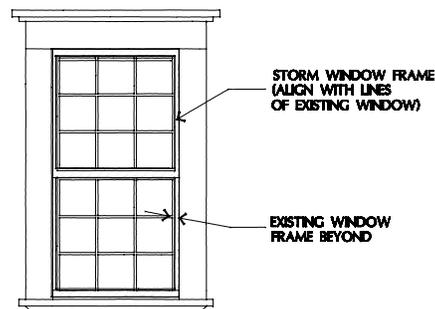
windows. The use of exterior storm windows should be investigated whenever feasible because they are thermally efficient, cost-effective, reversible, and allow the retention of original windows.

Storm window frames may be made of wood, aluminum, vinyl, or plastic; these should be purchased or painted to blend with the surrounding elements (typically the window frame and sashes). The use of unfinished aluminum frames should be avoided, as these are not historically appropriate for use on historic buildings; if existing aluminum frames are already on a house, the aluminum frame should be painted.

The visual impact of storm windows may be minimized by selecting colors which match existing trim color and styles which complement and work with the style of the windows.



APPROPRIATE STORM
WINDOW (*CENTER
HORIZONTAL MUNTIN
ALIGNS WITH WINDOW
SASHES*)



STORM WINDOWS

Arched top storms are available for windows with special shapes.

Although interior storm windows appear to offer an attractive option for achieving double glazing with minimal visual impact, the potential for damaging condensation problems must be addressed. Moisture which becomes trapped between the layers of glazing can condense on the colder, outer prime window, potentially leading to deterioration. The correct approach to using interior storms is to create a seal on the interior storm while allowing some ventilation around the prime window. In actual practice, the creation of such a durable, airtight seal is difficult.

Magnetic interior storm windows are now available for windows in historic houses and are gaining popularity. As these have a very small frame that is held in place by magnets attached to the inside of the window frame, these storm windows can be easily removed for cleaning or to ‘dry out’ any condensation that has accumulated between the window and this storm window. Many owners remove these during the fall and spring months when the climate is moderate and enjoy the clear visibility thru the historic windows. As these storm windows are so easily removed and can be stored, owners are more likely to remove these and periodically inspect the condition of the window and frame to ensure it is not incurring damage

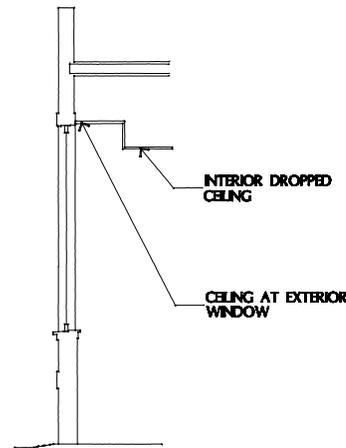
Glass used in storm windows may be clear or slightly tinted; plastic should not be used as this can be easily scratched by debris, trees, etc. No reflective or tinted glass shall be used.

4.2.6 SECURITY GRILLES OR BARS

Security or ‘burglar’ bars shall be installed on the interior of the windows; exterior mounted security bars are not acceptable. Investigate current City of Grapevine and state codes regarding exiting and life safety requirements for windows with security bars on them.

4.2.7 CEILINGS AT WINDOWS

If a dropped ceiling is installed in the interior of the building, be sure it is installed above the window height, or if not, that it is slanted up at the window so that it will not cut into the window opening.



CEILING AT DROPPED WINDOW

Additional Technical information on the stabilization and repair of historic windows is included in ‘*Technical Guidelines*’ (Part 5).