

GUIDELINES FOR WINDOWS & DOORS



Town of Riverhead Landmarks Preservation Commission

GUIDELINES FOR WINDOWS & DOORS



A welcoming entrance door can act as a display window to entice potential customers.

PURPOSE

These *Guidelines* were prepared to assist property owners with information when considering the repair, alteration or installation of wood windows and doors. It is not intended that these *Guidelines* should replace consultation with qualified architects, contractors, the Landmarks Preservation Commission (LPC), Architectural Review Board (ARB) and applicable ordinances.

These *Guidelines* were developed in conjunction with the Town of Riverhead's Landmarks Preservation Commission (LPC) and Architectural Review Board (ARB). Please review this information during the early stages of planning your project. Familiarity with this material can assist in moving a project quickly through the approval process, saving applicants both time and money.

The LPC and ARB encourage informal informational meetings with potential applicants who are considering a project that might include exterior changes to their properties. Please call the Building Department at (631) 727-3200 ext. 213.

Nothing in these *Guidelines* shall be construed to prevent ordinary maintenance of repair with like materials of similar quality and color.

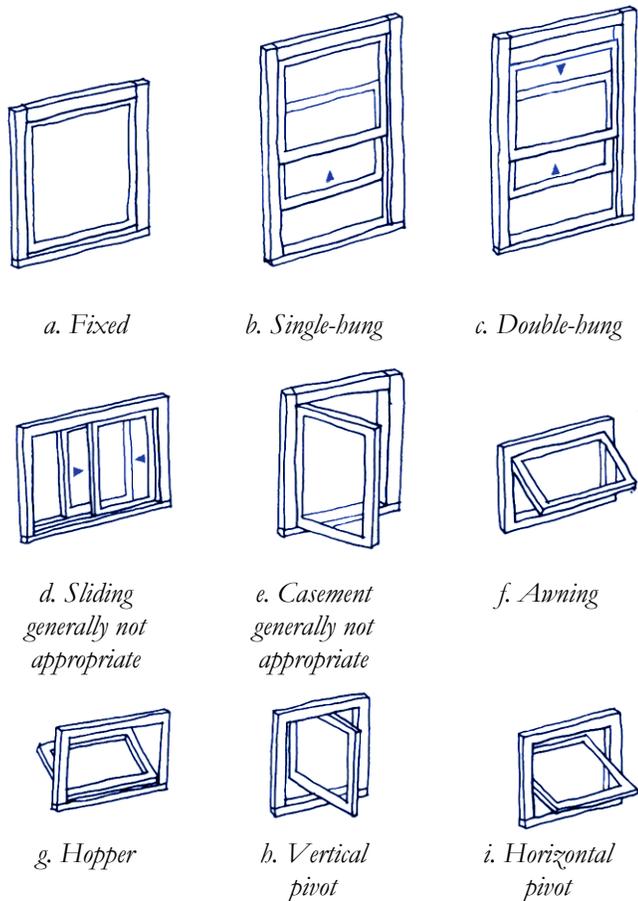
Additional *Guidelines* addressing other historic building topics are available at Town Hall and on its web site at www.riverheadli.com. For more information, to clarify whether a proposed project requires LPC review, or to obtain permit applications, please call the Building Department at (631) 727-3200 ext. 213.



The First Congregational Church features a variety of window shapes and groupings. The windows within the ground floor sanctuary are stained glass while the tower and gable end windows feature a diamond muntin pattern.

WINDOWS AND DOORS

- Define the character of a building and streetscape
- Act as interior and exterior building features
- Typically comprise approximately one quarter of the surface area of exterior walls in historic residences
- Can define architectural style
- Can retain connections to the past
- Help define the architectural building period
- Can display craftsmanship and durable construction



COMMON WINDOW TYPES

All of the identified window types can have different muntin patterns or configurations. Muntin patterns are defined in terms of the number of panes or lights. For example, a 6/1 double-hung window indicates there are 6 panes in the upper sash and 1 pane in the lower sash. Not all window types are appropriate for all buildings.

- a. **Fixed:** Non-operable framed glazing
- b. **Single-hung:** Fixed upper sash above a vertically rising lower sash
- c. **Double-hung:** Two sashes that can be raised and lowered vertically
- d. **Sliding:** Either a fixed panel with a horizontally sliding sash or overlapping horizontally sliding sash
- e. **Casement:** Hinged on one side, swinging in or out
- f. **Awning:** Hinged at the top and projecting out at an angle
- g. **Hopper:** Hinged at the bottom and projecting in at an angle
- h. **Vertical pivot:** Pivots vertically along a central axis
- i. **Horizontal pivot:** Pivots horizontally along a central axis

WINDOW STYLES

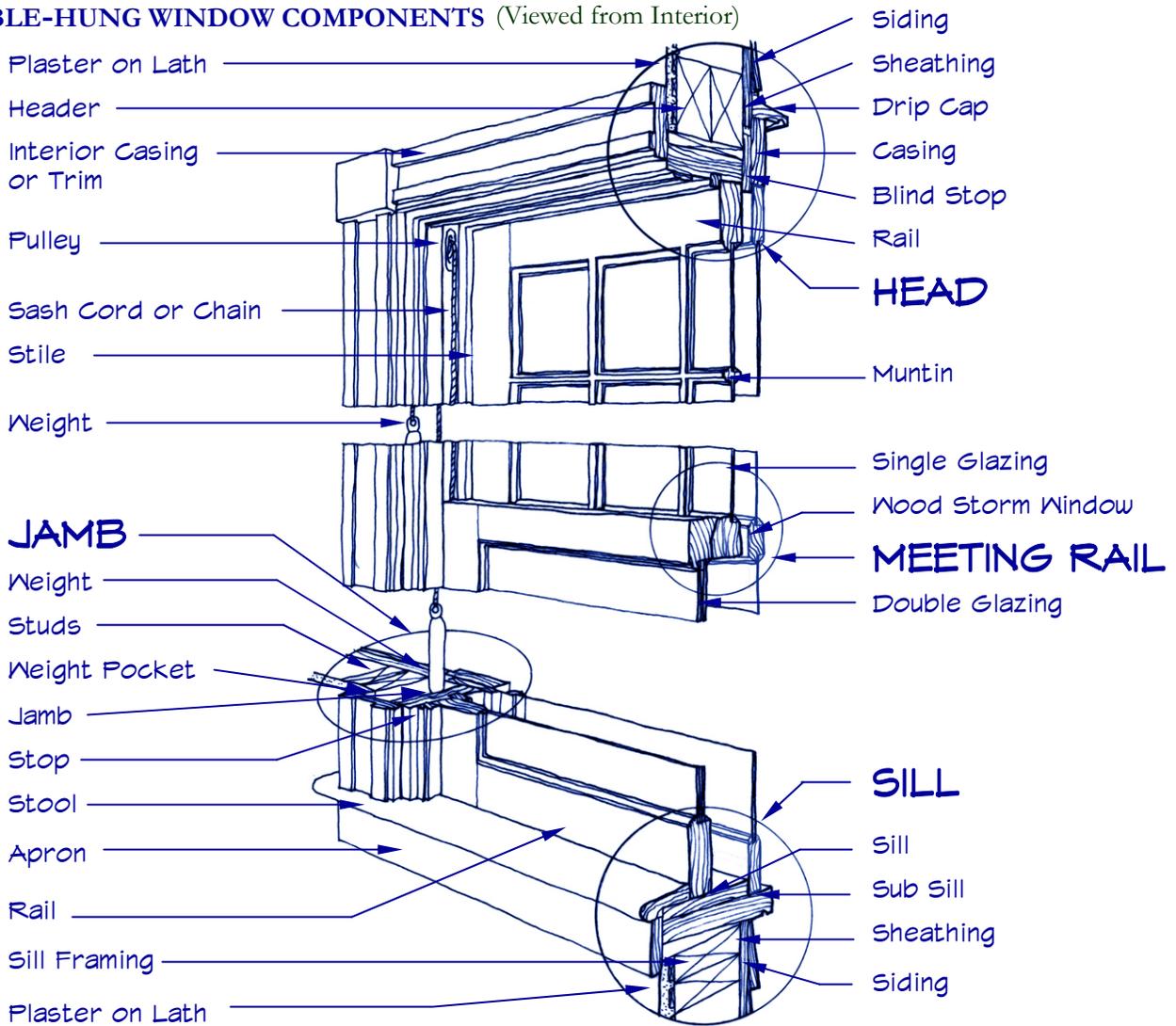
Window patterns and configurations are intrinsically linked to a building's period of construction and style. Older buildings, pre-dating 1850, were typically constructed with small individual pieces of glass within an operable sash. As technology developed in the second half of the nineteenth century, smaller pieces of glazing were replaced with larger pieces of glass allowing for more expansive views. This coincided with the advent of the Victorian period, which also encouraged varied shaped windows and significantly more elaborated frames, casings and applied ornament and trim. When the Colonial Revival style was popularized beginning in the twentieth century, the use of multi-paned windows with simpler frames and casings was more prevalent.

Since all of the components and details of a window are essential to defining a building's style, property owners are encouraged to investigate the essential elements of their windows prior to undertaking any modifications. For guidance on window and building styles, please consult with the Landmarks Preservation Commission or an architectural reference guide such as *What Style is it? A Guide to American Architecture, Revised Edition* by John C. Poppeliers and S. Allen Chambers, Jr. (NY: John Wiley & Sons.)



The first and second floor windows are visually joined by the applied "balcony" ornament. An ornate, bracketed window hood with a central gothic arch complements the building cornice.

DOUBLE-HUNG WINDOW COMPONENTS (Viewed from Interior)



WINDOW CONFIGURATIONS

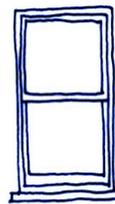
Different window configurations are appropriate for each architectural period or style. Altering the window type, style, shape, material, size, component dimension, muntin pattern or location can dramatically alter the appearance of the building.

The Landmarks Preservation Commission encourages:

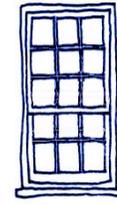
- Utilizing historically appropriate muntin pattern, window configuration exterior profile and size
- Utilizing hardware appropriate for the historic period
- Installing true divided-light windows rather than snap-in muntin grids for multi-paned appearance

The Landmarks Preservation Commission discourages:

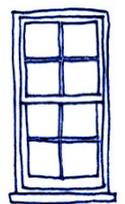
- Use of only internal muntins between glazing layers
- Use of only interior muntins



1/1 Window



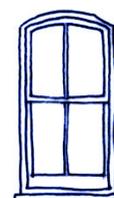
9/6 Window



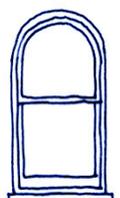
4/4 Window



6/1 Window



2/2 Window
with arched head



1/1 Window
with round head

HISTORIC WINDOW PROBLEM SOLVING

Property owners generally do not notice their windows until a problem occurs. Typical concerns include operation, reducing air infiltration, maintenance and improving the appearance.

Generally, the appearance of a window that has not been properly maintained can seem significantly worse than its actual condition. There is no need to replace an entire window or all windows because of a deteriorated component, typically the sill or bottom rail.

In many instances, selective repair or replacement of damaged parts, and the implementation of a regular maintenance program is all that is required. It is generally possible to upgrade windows in fair or good condition relatively economically. Full window replacement is rarely necessary and should be avoided when possible.

To improve operation

- Verify that sash cords, chains and weights are operational
- Remove built-up paint, particularly at jambs
- Repair or replace deteriorated components such as parting beads that separate window sash

To reduce air infiltration

- Install snug weather-stripping between moving parts (quality metal weather-stripping can last 20 years)
- Replace broken glass (glazing)
- Re-caulk perimeter joints



The window sill and jamb have peeling paint and some checking or splitting. Note the open joint between the wood sill and brick.

- Remove and replace missing or cracked glazing putty
- Add sash locks to tighten windows
- Add an interior or exterior storm sash (installing a secondary glazing system can achieve similar R-values to a new thermal window)
- Insulate sash pockets

To reduce solar heat gain or heat loss

- Install interior or exterior shutters
- Install interior blinds or curtains
- Plant deciduous trees at south and west elevations to block summer sun and allow in winter sun
- Install UV window shades

Maintenance

- Regularly review and repair windows
- Re-paint, particularly horizontal elements

The Landmarks Preservation Commission encourages:

- Retaining original windows if at all possible
- Using storm sash rather than window replacement as the best means to achieve energy efficiency
- Matching replacement windows to new ones as closely as possible in dimensions, proportion, profiles and external appearance
- Replacing modern inappropriate windows with historically appropriate windows

The Landmarks Preservation Commission discourages:

- Removing or encapsulating historic wood trim



Regular repair and repainting of these double hung windows with diamond patterned muntins will postpone costly replacement.



This decorative oval window is missing some of its surrounding ornament. The unusual muntin pattern enhances the window's unique character. In-kind replacement would likely require custom fabrication and be very costly. Therefore, repair is strongly encouraged.

WINDOW REPAIR VERSUS REPLACEMENT

When considering repair and retention of existing windows versus installation of window replacement, the Landmarks Preservation Commission and Architectural Review Board generally encourage applicants to retain the existing elements. However, they do recognize that it is sometimes necessary to replace window components or an entire unit because of extensive deterioration.

The Landmarks Preservation Commission discourages:

- Replacing a window component or unit if repair and maintenance will improve its performance and preserve historic elements

It is important to remember that because a portion of the window or door is deteriorated, replacement of the entire component or unit might not be necessary. A simple means of testing wood window deterioration is to stab the element with an awl or ice pick. Stab the element perpendicularly and measure the penetration depth and damp wood at an angle for the type of splintering. (Refer to the *Guidelines for Exterior Woodwork* for wood repair techniques.)

- If the penetration is less than ¼ inch, the component does not need replacement
- If the penetration is more than ½ inch, the component might need replacement
- If long splinters are produced, the component does not need replacement
- If short sections broken across the grain are produced, the component might need replacement

When evaluating window repair or replacement, the following guidelines can be helpful:

1. **Perform routine maintenance:** Replace broken or missing components such as trim, glazing or sash cords. Verify that caulking, glazing putty and weather-stripping is securely applied and repainted.

2. **Treat or repair deteriorated components:** At the earlier stages of wood deterioration, it is possible to complete in-place treatments that do not necessitate component replacement. This includes treating wood for insects or fungus, epoxy consolidation, applying putty at holes and cracks and painting.
3. **Replace Deteriorated Components:** Replace either the deteriorated portion of the component with a "Dutchman" or the entire component if the majority is deteriorated. A Dutchman is a repair with a piece of the same material in a sharp-edged recessed cut. The replacement pieces should match the original in design, shape, profile, size, material and texture. New sills are usually easily installed while complete sash replacement might solve problems of broken muntins and deteriorated rails.
4. **Replace Window:** If the majority of the window components are deteriorated or missing and in need of replacement, replacement of the unit might be warranted.

IF REPLACEMENTS ARE NECESSARY

Because of the importance of windows and doors in the appreciation of architectural character, the Landmarks Preservation Commission and Architectural Review Board strongly encourage repair or replacement of only the components of windows that are deteriorated beyond repair. If a property owner wishes to pursue window replacement, they might need to demonstrate that the existing windows or doors are beyond repair and replacements are warranted.

If replacements are warranted, the Landmarks Preservation Commission encourages:

- Relocating historic windows to the publicly visible elevations and installing replacement windows or doors in less visible areas
- Matching the original size, shape, configuration, operation, muntin pattern, dimensions, profiles and detailing to the greatest extent possible
- Selecting wood or aluminum clad wood replacement windows for street elevations
- Selecting true divided-light, single glazed windows or doors with matching muntin profiles and dimensions
- Reusing serviceable trim, hardware or components

The Landmarks Preservation Commission discourages:

- Decreasing window size or shape with in-fill to allow for installation of stock unit size
- Increasing window sizes or altering the shape to allow for picture or bay windows
- New openings at publicly visible elevations

WINDOW MATERIALS PAST & PRESENT

Wood windows were historically manufactured from durable, close, straight-grain hardwood of a quality uncommon in today's market. The quality of the historic materials and relative ease for repairs allows many well-maintained old windows to survive from the nineteenth century or earlier.

Replacement windows and their components tend to have significantly shorter life spans than historic wood windows. Selecting replacement windows is further complicated by manufacturers who tend to offer various grades of windows, with varying types and qualities of materials and warranties.

Today, lower cost wood windows are typically made from new growth timber, which is much softer and more susceptible to deterioration than hardwoods of the past. Vinyl and PVC materials, now common for replacement windows, break down in ultraviolet light, and have a life expectancy of approximately twenty-five years. Because of the great variety of finishes for aluminum windows, they continue to be tested to determine projected life spans.

Other areas of concern with replacement windows beyond the construction materials used in the frame and sash are the types and quality of the glazing, seals, fabrication and installation. Double glazing or insulated glass, used in most new window systems, is made up of an inner and outer pane of glass sandwiching a sealed air space. The air space is typically filled with argon gas with a perimeter seal. This perimeter seal can fail in as few as ten years, resulting in condensation between the glass layers, necessitating replacement to allow for clear visibility. Many of the gaskets and seals that hold the glass in place also have a limited life span and deteriorate in ultraviolet light.

Significant problems with replacement windows also result from poor manufacturing or installation. Twisted or crooked frames can make windows difficult to operate. Open joints allow air and water infiltration into the wall cavity or building interior.

REPLACEMENT WINDOW QUALITY

Reputable lumber yards typically provide a better selection and higher quality replacement window options than companies that advertise with bulk mailings or flyers. Each manufacturer also provides various grades of replacement window options. Manufacturer's information can generally be found on their web sites or in catalogs.

The Landmarks Preservation Commission encourages:

- Installing quality wood windows when replacement is deemed necessary
- Review of various grades of windows offered by manufacturers
- Utilizing quality materials throughout the installation process
- Understanding the limits of the warranties for all components and associated labor for replacement
- Selecting reputable manufacturers and installers who are likely to remain in business and respond if there is a future problem

MAINTAINING REPLACEMENT WINDOWS

One of the selling points of replacement windows is that they do not require maintenance. With the relatively short life expectancy of many of the materials and components, this is usually an optimistic viewpoint.

As joints or seals in replacement windows deteriorate, openings can be formed that allow air and water to enter into the window frame, wall cavity and/or building interior, causing additional damage. Repair of these openings typically requires replacement of the deteriorated parts. This can present a problem if the manufacturer has modified their designs or is no longer in business, necessitating custom fabrication of deteriorated elements or replacement of the window.

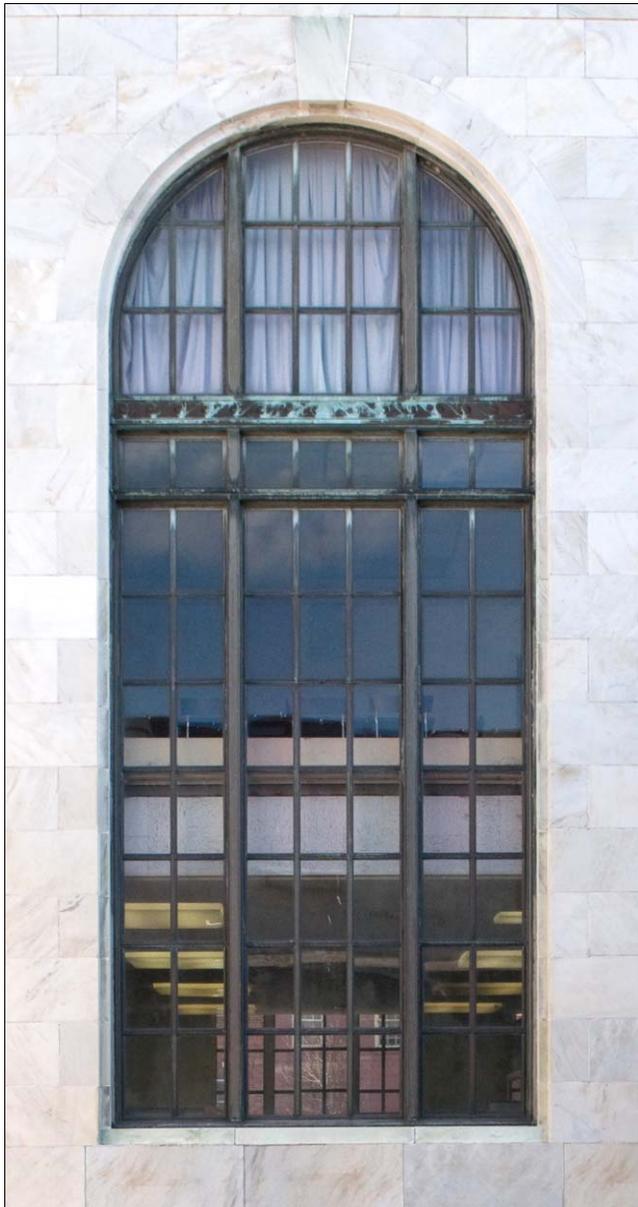
As previously described, the double-glazing has similar problems over time with the deterioration of the perimeter seal. In addition, if the glazing unit is cracked or broken, it will require full replacement. This is further complicated when the double-glazing includes an internal muntin grid.

By contrast, a good carpenter can generally repair a historic wood window with single pane glazing and install an interior or exterior storm window to improve thermal performance.

REPLACEMENT WINDOW COSTS

The costs that should be anticipated if considering the installation of replacement windows include:

- Labor to remove and disposal fee for old windows
- Purchase price and delivery of new windows
- Labor and materials to modify existing frames for new windows
- Labor to install new windows
- Life-cycle costs associated with more frequent replacement of deteriorated components and windows



Some windows are monumental and would be very difficult and costly to replace, such as this double-height round headed example.

WINDOW OPTIONS

Repair or replacement of existing components:

Deteriorated sills, sash and muntins are repairable by craftsmen with wood consolidant or replacement parts, retaining original fabric and function. (Refer to *Guidelines for Exterior Woodwork*.) In-kind replacement sash and sills can be custom-made to replace deteriorated sections if necessary. The Landmarks Preservation Commission and Architectural Review Board strongly encourage that all repair and selective replacement parts options be explored prior to considering complete replacement of sash or frames.

The benefits of repair and selective component replacement:

- Original building fabric and historic character remain
- Repairs can be completed by local carpenters
- Timber, used in historic windows, can last substantially longer than replacement units

Sash replacement package: Some manufacturers offer replacement jamb liners and sash for installation within existing window frames. The system allows installation of new sash of various muntin patterns within existing frames. Because of the loss of the historic sash, this option is discouraged by the Landmarks Preservation Commission and Architectural Review Board.

The benefits of the sash package:

- Original muntin pattern can be duplicated
- Maintains the historic opening, surround and trim

The negatives of the sash package:

- Historic sash are removed and become landfill debris
- Replacement sash have a limited warrantee, likely needing replacement again in 10 to 25 years as seals and joints open
- Modification of the jambs is necessary
- The jamb liners do not always work well in existing window openings and might need more frequent replacement
- Out-of-plumb openings can be difficult to fit making window sash hard to operate
- Perimeter seals might not be tight

Frame and sash replacement unit: A complete frame with pre-installed sash of various muntin patterns for installation within an existing window frame opening. Because of the total loss of both the frame and the sash, this is strongly discouraged by the Landmarks Preservation Commission and Architectural Review Board.

The benefits of the frame and sash replacement unit:

- Manufactured as a unit to be weather tight
- Original muntin pattern can be duplicated

The negatives of the frame and sash replacement unit:

- Historic sash are removed and become landfill debris, the historic character of the building is diminished
- The surrounding frame is modified, alteration of built-in surrounds might be required and two frames and sills are typically visible at the exterior
- The size of the window sash and glass openings are reduced due to the new frame within the old frame
- In-fill might be required for non-standard sizes

STORM WINDOWS

There are several types of storm windows available for both interior and exterior installation, some of which include screen inserts. Storm sash should conceal as little of the historic window as possible and should be selected to complement each window type.

The Landmarks Preservation Commission encourages:

- Interior storms to minimize the change to the exterior appearance
- Retaining and installing exterior wood storm frames rather than aluminum or vinyl (Wood storm windows can be custom made to fit any size or shaped opening, and lose less heat through the frame than aluminum)
- If wood storm windows are not feasible, using properly sized triple-track storms as preferable to window replacement and increase energy efficiency
- Matching the shape of the opening
- Aligning the divisions of the storm window with the divisions of the window, revealing as much of the historic window as possible
- Utilizing glass rather than Plexiglas, which can discolor and lose clarity
- Painting the wood or aluminum storm window frame to match the adjacent window trim
- Minimizing damage to historic windows and frames during the installation of storm windows
- Caulking and weather-stripping the storm window in accordance with manufacturer's instructions allowing for exterior drainage at the sill
- Installing removable storm sash to facilitate maintenance of historic window



This wood storm window complements the original window and provides good insulation from drafts. It is the same size and shape as the window opening and can be easily removed to accommodate screens in the summer and regular window maintenance.



The meeting rails of the storm and double hung window align.



The exterior storm windows have been painted to match the wood siding making them visually less obtrusive.

The Landmarks Preservation Commission discourages:

- Using stock storm windows that are too small for the window opening and require in-fill trim
- Installing triple track windows on arched windows or in situations where the frames are not plumb
- Fixed storm sash screwed or nailed into window surround



The Corwin-Katz House was constructed pre-1858 and retains its original shutters under the wraparound porch. The upper level windows have appropriate unusually sized and shaped lowered wood shutters that fit each window opening.

SHUTTERS

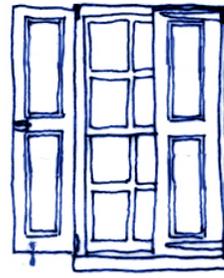
Historically, exterior shutters were used as shielding devices. Paneled shutters were installed to provide a solid barrier when closed and louvered shutters to regulate light and air. Shutters were not used on all historic buildings or in all locations. It is often possible to determine if shutters previously existed by looking for hardware such as hinges or tie-backs or evidence of their attachment such as former screw holes in the window casing.

The Landmarks Preservation Commission encourages:

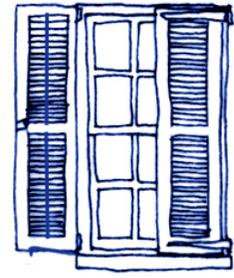
- Shutters where they existed historically
- Operable wood shutters with period-appropriate hardware
- Shutters of the appropriate style for the building and location
- Appropriately sized and shaped shutters for the window opening, fitted to cover the window when closed
- Refurbished historic shutter hardware appropriate to the building style

The Landmarks Preservation Commission discourages:

- Installing shutters where they did not exist historically
- Screwing or nailing shutters to the face of the building
- Installing vinyl or aluminum shutters
- Inappropriately sized or shaped shutters



Six-over-six double-hung window with 2-panel shutters



Six-over-six double-hung window with lowered shutters



*The 2-panel shutters do not fit the arched opening
Not Recommended*



*The lowered shutters are the incorrect size for the window
Not Recommended*



The unusually shaped third floor window has an appropriately sized operable lowered wood shutters.



Despite the tie-backs, these vinyl shutters were screwed directly to the brick wall. The shutters are not proportionately sized to the window and given the close window spacing it is unlikely that there were shutters historically.

WEATHER STRIPPING & CAULK FOR WINDOWS & DOORS

Proper application of weather stripping and caulk around windows and doors can greatly reduce air infiltration and drafts. When selecting weather stripping or caulk it is important to choose the material appropriate for each location and follow manufacturer's installation recommendations for the best results.

Because weather stripping is used between the moving parts of windows and doors, it is highly susceptible to damage and can become loose, bent or torn. It is important to inspect weather stripping on a regular basis, preferably every fall, and replace it as needed. For high use installations such as entrance doors, it may be beneficial to install more durable weather stripping such as spring metal or felt.

Recommended locations for weather stripping:

- Behind window sash track
- Between window meeting rails
- At perimeter of doors and windows

The installation of caulk or other sealants should occur throughout the exterior of the building. Locations include where two dissimilar materials meet; where expansion and contraction occur; or where materials are joined together. In some instances caulks and sealants can be sanded and/or painted to minimize their visual appearance. It is important to select the appropriate type for each location and exercise care when removing old caulk that might contain lead.

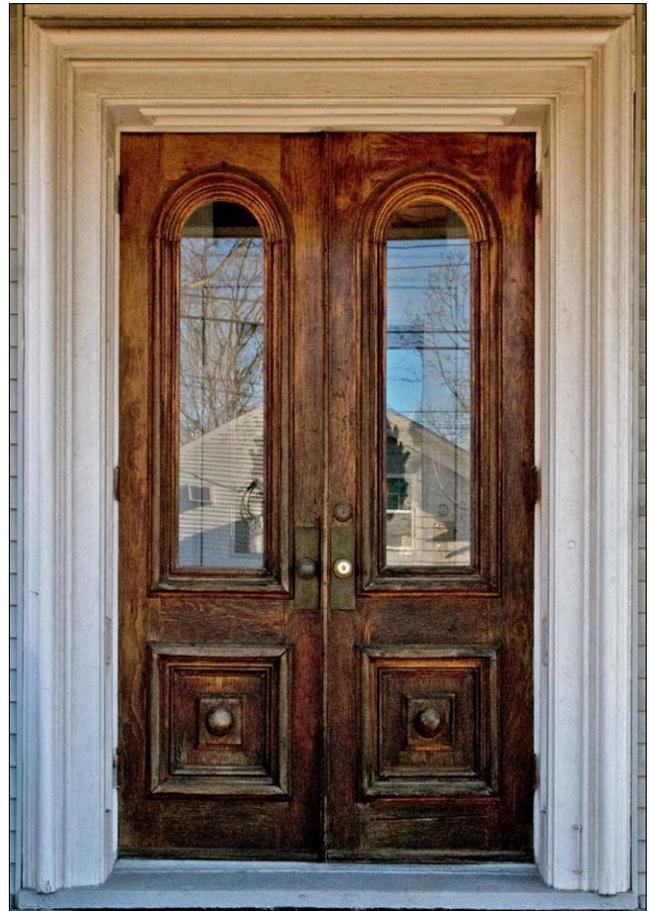
Recommended locations for caulk:

- Between window or door frame and adjacent wall
- Between abutting materials such as corner boards and siding, porch and wall surface
- Between dissimilar materials such as masonry and wood, flashing and wall surface

DEFINITIONS:

Weather Stripping: A narrow compressible band used between the edge of a window or door and the jambs, sill, head and meeting rail to seal against air and water infiltration; of various materials including spring metal, felt, plastic foam and wood with rubber edging.

Caulk: Flexible sealant material used to close joints between materials; of various materials including tar, oakum, lead, putty, and modern elastomerics such as silicone and polyurethane.



Doors can help define a building's architectural style. Paired doors, such as this example, are often found on Victorian buildings.

WOOD DOORS

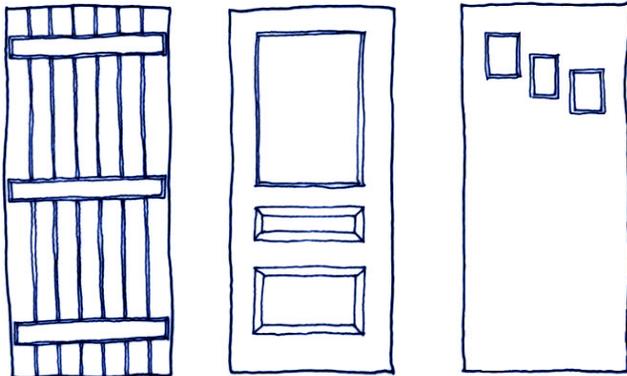
Entrance doors serve an important role in regulating the passage of people, light and air into a building as well as providing a threshold separating the exterior and interior. Historically most doors were wood and varied stylistically based upon the building design, providing a grand formal appearance or one that is more informal and welcoming. When selecting hardware for a door it is important to complement the historic style.

Doors are typically constructed of numerous parts. In some of the earliest examples doors were constructed of vertical boards nailed to horizontal boards, similar to many doors found at barns and secondary buildings. By the middle of the eighteenth century, more elaborate paneled doors became more common and now represent the most common door type in American residences. Paneled doors were and still are constructed in a variety of configurations that can reflect the style of the building, with many later doors including glazed panels.

WOOD DOOR TYPES

All door types can have glazing installed in different configurations.

- a. **Batten:** Full height boards attached edge to edge with horizontal boards nailed to the verticals
- b. **Paneled:** A frame of solid wood parts with either glass or wood panels
- c. **Flush:** A single plain surface on its face, typically wood veneer, are generally inappropriate at historic buildings



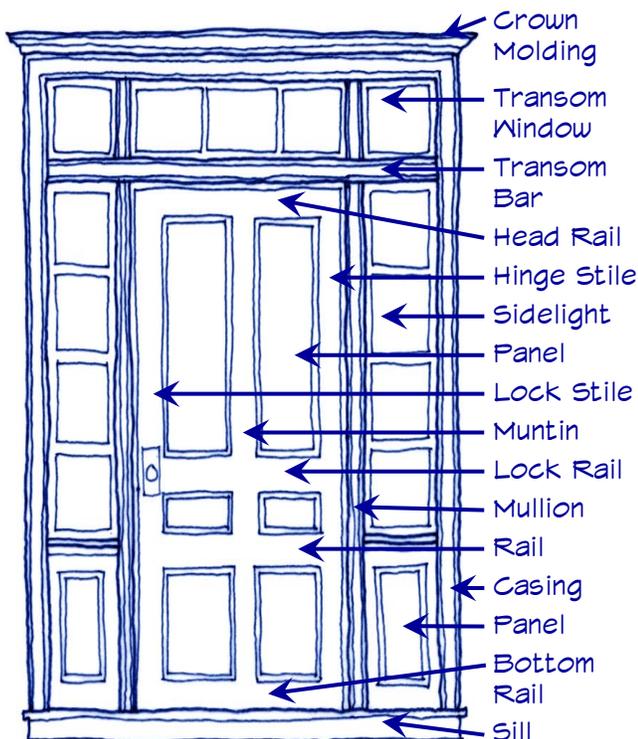
a. Batten

b. Paneled

c. Flush

PANELED WOOD DOOR COMPONENTS

In Town of Riverhead paneled wood doors are most common for historic residences. The diagram below identifies common wood paneled door components.



HISTORIC DOOR PROBLEM SOLVING

Since doors tend to be one of the most operated elements on the exterior of a building, they are more susceptible to deterioration from wear or damage and generally require more regular maintenance such as painting or varnishing. If deterioration occurs, selective repair or replacement of damaged parts and the implementation of a regular maintenance program is often all that is required to retain a historic door.



Wood checking and peeling paint visible. Minor repair and maintenance can prolong the serviceable life of this historic door.

To improve operation

- Verify that doors fit properly in their frames and joints are tight
- Verify that hardware is operational particularly that hinges are tight and hinge pins not worn
- Remove built-up paint at door and jambs
- Repair or replace deteriorated components such as trim and stops

To reduce air infiltration

- Install weather stripping between door and frame
- Replace broken glass (glazing) and remove and replace missing glazing putty
- Re-caulk perimeter joints around frame
- Install a storm door

Maintenance

- Regularly review and repair doors
- Re-paint, particularly horizontal elements

The Landmarks Preservation Commission encourages:

- Retaining historic doors and surrounding trim
- If the originals do not survive, matching replacement doors as closely as possible to original doors or using doors appropriate to the period and style of the building
- Precisely matching contours of profiles and trim to those of real wood doors if non-wood doors are used

The Landmarks Preservation Commission discourages:

- Removing or encapsulating historic wood trim
- Replacing original wood doors unless seriously deteriorated

STORM & SCREEN DOORS

There are several types of storm doors available, some of which include screen inserts. Similar to storm windows, storm or screen doors should conceal as little of the historic door as possible and should be selected to complement the door configuration. This generally means selecting a storm or screen door that has horizontal and vertical rails that coincide with the door behind and a similar or larger sized glazed opening.

The most recommended option for a storm door is a simple wood storm door with a single glazed opening to match the historic door with as little detail or ornamentation as possible. If more elaborate detailing is desired, the style and level of detailing should complement the building style; for example, a storm door with Victorian gingerbread would not be appropriate for a Colonial Revival house.



Bare metal finished doors such as this aluminum example are generally not appropriate for historic buildings. This example includes a thick horizontal division that runs across the center of the lower windows and decorative grillwork that makes the storm door visually more prominent.

The Landmarks Preservation Commission encourages:

- Wood storm doors rather than aluminum or vinyl – wood storm doors can be custom made to fit any size or shaped opening, and lose less heat through the frame than aluminum
- Matching the size and shape of the glazed opening
- Aligning the divisions of the storm door with the divisions of the door
- Utilizing tempered glass rather than Plexiglas, which can discolor and lose clarity
- Painting the storm door frame to match the door
- Minimizing damage to historic doors and frames during the installation of storm door
- Caulking and weather-stripping the storm door in accordance with manufacturer's instructions



A storm or screen door, finished to match the historic front door, can provide additional protection from the elements and insects while minimizing the visual impact on the historic character. The large glazed opening and vertical lower panels complement the historic door and its surround.

The Landmarks Preservation Commission discourages:

- Using stock storm doors that are too small for the door opening and require in-fill trim
- Metal finish aluminum storm doors at visible street elevations
- Decorative detailing that does not complement the historic character and building style



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© Dominique M. Hawkins, AIA, of Preservation Design Partnership in Philadelphia, PA, preparer of this publication.