



CITY OF PHOENIX
PLANNING & DEVELOPMENT DEPARTMENT
HISTORIC PRESERVATION OFFICE

GUIDE TO WINDOW REPAIR & REPLACEMENT FOR HISTORIC PROPERTIES

INTRODUCTION

The purpose of this guide is to provide information to historic property owners who are considering repair and/or replacement options for their windows. This guide pertains to properties that are individually listed on the Phoenix Historic Property Register or National Register of Historic Places or are located within a designated historic district. The guide is intended to help owners retain the historic character of their properties and to consider a wide range of solutions—including energy retrofits—before making final window decisions.

As of July 1, 2011, window replacement no longer requires a City of Phoenix building permit or formal review by the Historic Preservation Office, as long as certain conditions are met. (For more information, please refer to the document titled “Window Replacement without a Permit” online at phoenix.gov/pddsite/Pages/interpsdevinterps.aspx.) However, owners of historic properties are still strongly encouraged to follow this guide when planning window projects.

Approved by the City of Phoenix
Historic Preservation Commission 8/15/2011.
Last updated 9/11/2019.

What You Should Know Before You Start Your Project:

If your property has received grant funds from the City of Phoenix Historic Preservation Office, it is likely that a Deed of Conservation Easement was recorded with the Maricopa County Recorder in conjunction with the grant project. Properties with conservation easements are generally held to a higher standard of preservation than properties without a conservation easement, including window repair and replacement, and may be subject to additional requirements not stated in this guide. Before starting work, property owners should consult with City of Phoenix Historic Preservation staff to determine how the conservation easement may affect their project.

Properties that are receiving a property tax reduction through the State Historic Property Tax Reclassification for Owner-Occupied Homes are required to have their plans reviewed by the State Historic Preservation Office (SHPO) prior to the commencement of work. Unauthorized replacement of historic windows may result in the property being removed from the tax reduction program. For more information, please call (602) 542-4009 or visit the SHPO website at azstateparks.com/SHPO/propertytax.html.

PLANNING YOUR PROJECT

Here are a few things to consider as you plan your window project:



Conduct a survey of the existing windows on your building before deciding what action to take. The purpose of the survey is to determine the condition of each window, whether the window is from the historic era, and whether it is a “Tier 1” or “Tier 2” window. Tier 1 windows should be a high priority for preservation and are defined as follows:

- For single-story buildings on interior lots, Tier 1 windows are those on the front of the building and at first-room depth on each side (see illustration on page 10).
- For buildings on corner lots, Tier 1 windows are the same as above but also include all windows that face a side street.
- For multi-story buildings, Tier 1 windows are the same as on single-story buildings but also include additional windows on the upper stories, if they are readily visible from a front or side street.

All windows on the building that do not meet the criteria for Tier 1 windows are considered Tier 2 windows. While not as critical to the historic character of the house, Tier 2 windows should also be preserved, where possible.



Determine how best to address energy efficiency priorities for your property. Most historic buildings can benefit from energy efficiency improvements without compromising the building’s historic character. To find out what measures make sense for your building, it is recommended that you have a professional energy audit performed on your building first, then implement the most cost-effective approaches to improving energy efficiency. Improvements with the shortest



The front bay window of this historic house is a Tier 1 window and should be a high priority for preservation.



Energy auditors often use calibrated fans to measure the relative tightness of a building and to identify sources of air leaks.

Should I replace my historic windows?

Your historic windows are an important character-defining feature of your historic home. “While window replacements could save \$200 to \$300 per year in heating and cooling costs, doing so is not typically effective since it takes over 10 years to pay back, in energy savings, the cost of installing new windows.”

Source: Arizona Public Service (APS)

payback period typically include items such as installing compact fluorescent light bulbs; adjusting thermostats on water heaters, furnaces, and appliances; wrapping insulation around heating and cooling ducts and hot water pipes; adding insulation to attics, basements, and crawl spaces; and installing high efficiency A/C units and furnaces.

3 **Maintain and repair historic windows wherever possible.** Maintaining windows in good condition reduces the need to replace these important features of your historic property. Removing or altering historic windows could compromise the appearance of your historic building, reduce its value, and result in the loss of historic status (including the historic property tax reduction).

Most historic windows can be repaired—peeling paint scraped off and sanded down, rust removed, broken window panes replaced, putty removed and replaced, rotted wood or depressions in metal windows removed and patched with appropriate compounds, and then repainted. In many cases, a property owner or handyman can perform the work. For more complex projects, window rehabilitation specialists should be brought in to undertake the project.

4 **Achieve a balance between sustainability, energy efficiency, and historic preservation.** Most historic windows were built with quality in mind and can be readily repaired and maintained in perpetuity. The continued use of existing windows avoids the need to ship new products to the site and lessens the need to add to our landfills, contributing to overall environmental sustainability. Furthermore, some of the newer window products, such as vinyl, do not always hold up well over time in our severe climate. Most replacement models only come with a 10 to 20 year warranty; by the time the warranty



Removing repairable windows and dumping them in a landfill is contrary to “green” principles.



A common problem with dual-pane replacement windows is that the insulating seal will eventually leak and moisture will penetrate between the glass, leaving the window looking foggy. When this happens, the glass—or perhaps the entire window—will need to be replaced again.



Vinyl window frames are constructed of polyvinyl chloride (PVC), a plastic material that breaks down in direct sunlight. To increase their longevity, vinyl frames include UV light stabilizers to keep them in good condition. However, over time, these windows may begin to lose their color, turn yellowish, or degrade. They are particularly susceptible to warping at high temperatures, as seen in the example above.

expires, the replacement window may need to be replaced again. So one replacement can soon lead to another, proving costly over time.

Use value engineering to spend funds on “energy efficiency” improvements with the quickest payback and with the least potential to impact your property’s historic appearance. If window replacements are a must, replace the least street-visible units. Retain the Tier 1 historic windows and consider thermal upgrades instead of replacement.

One cost-effective solution is to reduce heat gain/loss in remaining historic windows through passive improvements such as adding insulated interior blinds, exterior fabric awnings, and/or strategically placed shade trees (see examples at right). This approach can greatly improve the building’s overall performance while still retaining the unique historic aesthetics of the property.

THERMAL UPGRADES

Upgrading the thermal performance of your historic windows is an easily achievable goal. A wide range of improvements exists—from easy and relatively inexpensive solutions to more complex but still readily achievable improvements.

Some of the easiest solutions to improve the thermal performance of windows are:

- **Passive improvements**—such as adding interior blinds, exterior awnings, and tree plantings.
- **Window repair solutions**—removing excessive layers of paint, replacing broken window panes, replacing loose window putty, and ensuring a window fits tightly in the jamb are all easy methods to improve windows energy efficiency.
- **Window insulation solutions**—adding caulking between exterior window jambs



Heat gain/loss in historic windows can often be reduced through passive solutions such as adding insulated interior blinds (top left), exterior fabric awnings (top right), and strategically placed shade trees (bottom).



Caulking between exterior window jambs and wall surfaces is recommended to reduce air infiltration.

and wall surfaces, and installing weatherstripping between rails, sash, and jambs are recommended.

Other more complex solutions to improve the thermal performance of historic windows include:

- **Adding window films to historic glass**—applying high-quality films can be an effective means of reducing solar heat gain while still retaining the historic clear appearance of the glass (see example at right).
- **Replacing historic glass with thicker panes**—removing historic glass (usually 1/8" thick) and reinstalling thicker single-pane glass (3/16" to 3/8" thick) in existing jambs and sashes is another effective approach.
- **Replacing historic glass with single-pane hard coat Low-E glass**—installing new hard coat Low-E glass will significantly reduce solar heat gain compared to regular single-pane glass (see example at right).
- **Replacing historic glass with dual-pane glass**—replacing historic glass with dual-pane glass may be possible with wood windows, although in most cases the sash will need to be routed to accept the new thicker glass. Dual-pane glass may also be used in steel windows, although its use is typically limited to commercial buildings where the sashes are generally thicker than in residential models.
- **Adding interior storm windows**—adding interior storm windows (when they can be added into the wall depth without furring out interior walls) is another viable option. Original single-pane windows coupled with Low-E storm windows typically have a better U-value than new dual-pane windows.

Please note that all window films and replacement glass should have a visible light transmittance rating of 0.65 or higher to retain the building's historic character (the window



A high-quality window film has been applied to the windows on the right, while the windows on the left are unchanged. The film reduces glare, provides substantial heat rejection, and blocks harmful UV rays, protecting furniture and floors from fading.



The original glass in this steel casement window (top) was replaced with single-pane hard coat Low-E glass (below).

overall should have a rating of at least 0.5). Also, the glass replacement treatments outlined in this section are not recommended for windows with stained, leaded, or figured glass.

HISTORIC WINDOW REPAIRS

This section provides more detailed information regarding how to repair your historic wood, metal, and leaded light windows. Additional information is available in the City of Phoenix window repair technical bulletins and National Park Service Preservation Briefs (available online at phoenix.gov/pdd/historic-preservation).

A. Wood Windows

Most historic homes feature wood windows constructed of high-quality, old-growth lumber. If the windows are properly maintained and repaired, they can remain in perpetuity.

Overall Repair Approach

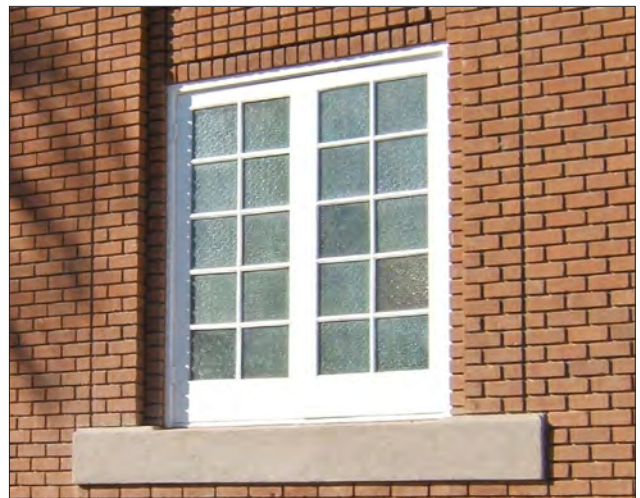
1. A good window repair project should holistically address the windows—sills, jambs, and sashes—with all components to be repaired or replaced in kind with matching materials and dimensions.
2. Exterior jambs for windows should be repaired in place if at all possible. If jambs are weak, they should be disassembled and reassembled with glue and pins.
3. Wood components should be gently hand-sanded, patched, and primed with appropriate wood compounds and fillers to be smooth. Any cracks or voids shall be glued, filled, and/or consolidated using semi-rigid epoxies appropriate for wood, with new parts of sashes or jambs spliced in when consolidation methods are ineffective. Mechanical/abrasive, chemical stripping, or thermal paint removal methods should be used with caution.



Most wood windows can be repaired. Depending on the condition of the window, it may be necessary to remove the sash and/or the affected parts of the jambs and have a carpenter or woodworking mill repair or reproduce the damaged or missing parts.



These photos show a damaged wood casement window prior to repair (top) and after a comprehensive repair was completed (bottom).



- Remove flaking, chalking, cracking, blistering, and otherwise failing paint to next sound layer using light and gentle hand scraping methods. Be sure to scrape away excess paint that has migrated into the sash track or sash stops, as this will allow for freedom of sash movement while eliminating gaps. Complete paint removal is acceptable but may not be needed unless there are deep cracks or severe blistering and peeling down to bare wood level.

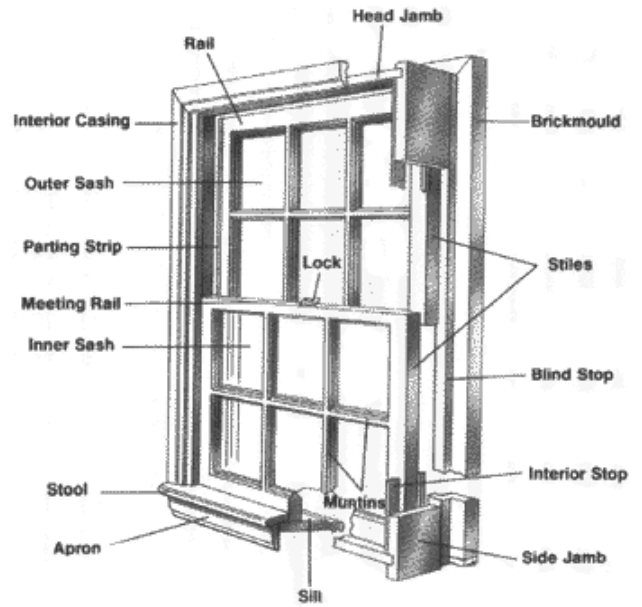
Making the Window Weathertight

- Sash should tightly fit jamb, maintaining minimal to no air gap.
- Before reinstalling glass, a bead of glazing compound or linseed oil putty should be laid around the rabbet to cushion and seal the glass. The final glazing compound or putty should be applied and beveled to complete the seal.
- Remove any old caulk between exterior window jambs and exterior wall surface, and re-caulk.
- Install weatherstripping between rails, sash, and jambs to reduce infiltration.

Other Issues/Repainting

- If sashes are to be operable, the ropes, pulleys, and other mechanisms should be replaced or repaired as needed, and the window should operate smoothly and easily once work is completed. Replace damaged or missing stops in kind.
- If sash cords or chains will not be reinstalled on a double-hung window and the window will be reinstalled in fixed position, window sashes should be installed in original staggered position.
- Historic hardware should be retained and cleaned. Any new hardware should match existing as closely as possible.
- All wood components should be dry, clean, free of chalking, and dirt- and mildew-free prior to repainting. All wood components

Anatomy of a Window



Historic wood windows at Steele Indian School Park are painted after being restored by a window repair specialist.

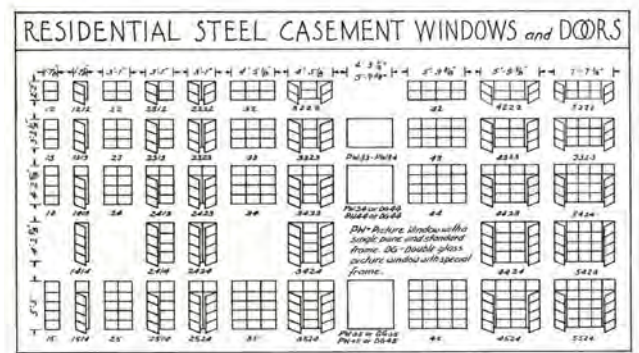
of the windows should be primed and painted with high-quality exterior paint or stain/sealant. If old paint layers remain, new products must be compatible and adhere tightly to earlier paint layers (which are typically oil-based). Apply paint onto glass about 1/8" to seal glazing compound.

B. Metal Windows

Most metal windows, including those with distortion of frame, excessive paint build-up, failed hinges and fittings, and rust, can be rehabilitated.

Overall Repair Approach

1. Perform a careful evaluation of the condition of each window unit, including any corrosion, number of layers and condition of paint, bent sections, condition of glass and glazing compound, presence and condition of hardware, and the condition of sills and surrounds. If this evaluation reveals that the windows are in basically sound condition, then repair is the appropriate option.
2. Remove rust and excess paint from all moving parts and components, including hinges, using either chemicals (but not hydrochloric acids) or a hand-held mini-grinder or rasping file. Well-bonded paint can remain, although the edges should be feathered by sanding.
3. Gently clean off any remaining rust, debris, and loose paint with a wire brush.
4. Patch depressions with epoxy compounds containing a high steel fiber content, plumber's epoxy, or auto body patching compound. If there is severe corrosion in select areas, you can torch out bad sections and then weld in and grind smooth new pieces with the window unit in place.
5. Prime exposed metal with a rust-inhibiting primer and repaint with up to two light finish coats. Paint should overlap glass at



Residences during the post-World War II era used steel casement windows with many different muntin patterns, as shown in this illustration from the 1956 edition of *Architectural Graphic Standards*.



The windows shown above have problems that are common to many steel casements—peeling paint, broken glass, stuck sash, missing hardware, air infiltration, and rust.

least 1/8" to form a seal over glazing compound.

6. Replace cracked or broken glass, remove glazing compound (where needed), and apply new compound formulated for metal windows.
7. Clean, oil, and lubricate hinges and all working parts. Repair damaged or lost hinges, fittings, screws, and fasteners.

Making the Window Weathertight

8. Window should fit tightly in frame, and all bent sections should be straightened to eliminate air gaps.
9. Ensure all glazing is in good condition and caulk the masonry surrounds and sills with a high quality elastomeric caulk suitable for metal.
10. Install weatherstripping between rails, sash, and jambs to reduce infiltration.

C. Leaded Light Windows

It is important to remember that only specialists should clean or work on stained glass, and some repairs to leaded lights, such as re-leading, may also benefit from their assistance.

Before de-glazing frames with leaded lights, a useful recommendation is to cover both sides with a "cling-film"-type plastic; this sticks lightly to the glass and will help prevent the lights from falling apart in the process. However, if a light does need remaking, all the original glass should be kept for reuse and labeled, not thrown away.

Inevitably some work will be required following removal—the belief that a leaded light can be reglazed without any repair work and not leak is a myth. Even if the leaded lights do not need re-leading, the perimeter lead will usually need to be replaced. In most instances the lead cement which holds the glass will also need repairing or replacing entirely.



The same windows shown on the opposite page are shown again during (top) and after (bottom) repair. As part of the repair process, the windows were upgraded with 3/16" glass to increase energy efficiency and reduce noise.



The repair of stained, leaded, or figured glass is best performed by an experienced window specialist.

REPLACEMENT OPTIONS

Wherever possible, it is better to repair historic windows than to replace them. However, it is recognized that in some cases repair will not be feasible because the windows are damaged, deteriorated, or missing, or because the cost of repair significantly exceeds that of replacement. Guidelines for considering replacement or a combination approach of repair and replacement are delineated below. The guidelines are split into two sections, addressing both Tier 1 and Tier 2 windows.

Tier 1 Windows

Because they are highly visible, Tier 1 windows are a high priority for preservation. They are defined as follows:

- For single-story buildings on interior lots, Tier 1 windows are those on the front of the building and at first-room depth on each side (see illustration at bottom right).
- For buildings on corner lots, Tier 1 windows are the same as above but also include all windows that face a side street.
- For multi-story buildings, Tier 1 windows are the same as on single-story buildings but also include additional windows on the upper stories, if they are readily visible from a front or side street.

Note: Tier 1 windows that are almost entirely obscured from the street by fences, wingwalls, or other building features may be reclassified as Tier 2 windows. Windows obscured by vegetation will still be classified as Tier 1 windows.

Recommended

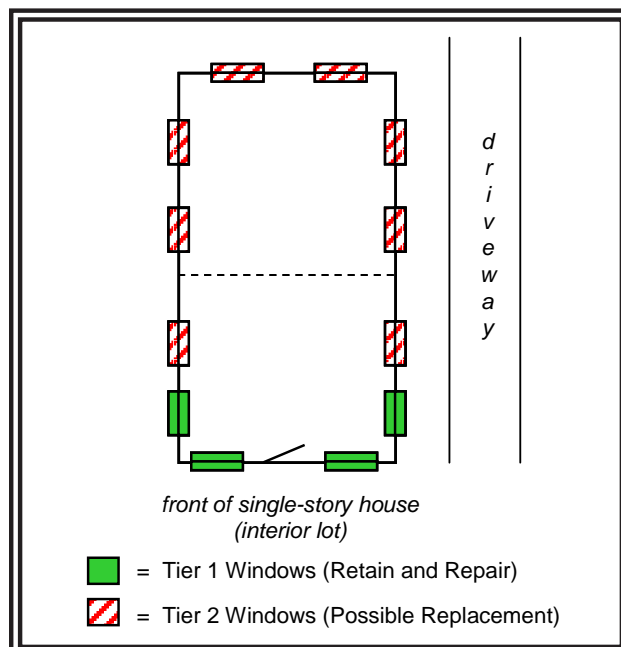
1. Tier 1 windows may be replaced if the historic windows are missing. If this is the case, **DO** provide photographs showing

Missing Windows

The intent of the “Replacement Options” guidelines is to ensure that new windows will be similar in appearance to the historic windows they are replacing. However, in some cases, the historic windows may be missing, making it difficult to meet compatibility requirements.

If your building is missing its historic windows, consult with Historic Preservation staff to see if any documentation is available, such as photographs or historic property inventory forms. If this information doesn't exist, staff can still provide guidance based on the size of the window openings and the age, location, construction materials, and architectural style of the building.

It is generally best to keep designs for missing windows simple. Avoid installing new windows with muntin patterns that are overly elaborate. The new windows should have traditional rails, stiles, and jambs, resembling those found on other historic windows. A traditional method of operation is also recommended (typically double-hung or casement). Materials may be traditional (such as wood or steel) or may be a highly compatible replacement material (such as fiberglass or finished aluminum). However, avoid installing wood windows when it is likely that the originals would have been steel (or vice versa), so as not to create a false sense of history.



the missing windows along with any historic windows that still remain.

2. Tier 1 windows may be replaced if they are in poor condition or if the cost of repair significantly exceeds the cost of replacement. In this case, **DO** provide a report containing the following information:

- Photographs of each window proposed for replacement.
- Detailed information on the condition of each window.
- Cost estimates for repair vs. replacement, with the replacement costs based on windows that meet either the “Recommended” or “Acceptable” guidelines on pages 12-16.

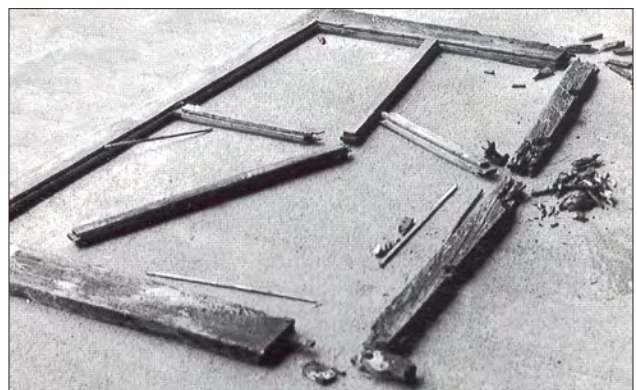
For window replacement to be approved on the basis of cost, the report should verify that the cost of repair will significantly exceed that of replacement (i.e., it will be at least 1.5 times higher). The report should be prepared by a window repair specialist or a licensed contractor with demonstrated experience rehabilitating historic buildings. The property owner should also provide a brief statement explaining why the financial incentives available for repair cannot be used to offset the higher cost of repair.

Note: The requirement for a full contractor’s report may be waived if the Historic Preservation Officer determines the pictorial evidence is sufficient to justify the need for replacement.

If either Item 1 or Item 2 above is met, then replacement may be allowed. The remaining requirements are to ensure that the new Tier 1 windows will be compatible with the historic windows, the overall historic character of the property, and the general character of the historic district.



In the example above, the top photo was sufficient pictorial evidence to show that one of the front windows was nonhistoric and that its replacement (shown in bottom photo) should match the window that still remained.



The window above is badly deteriorated and is a candidate for replacement.

Recommended

3. **DO** install new windows that fit precisely into the historic window openings (i.e., within ½” on each side).
4. If the historic windows were recessed within the openings, **DO** install new windows that are recessed to match. If the historic windows were not recessed, then the new windows should not be recessed.
5. **DO** install new windows with an overall visible light transmittance rating of 0.5 or higher.
6. **DO** install new windows with rails, stiles, and jambs that match those of the historic windows in profile and dimensions. The rails, stiles, and jambs should generally be within 1/2” of the originals.
7. **DO** install new windows with muntins that match those of the historic windows in profile and dimensions. The muntins should generally be within 1/4” of the originals and should follow the same pattern (i.e., 1/1 replacing 1/1, 6/1 replacing 6/1). True divided lights are preferred; however, simulated divided lights with interior and exterior grids and spacer bars between the glass may also be used (see examples at top and middle right).
8. **DO** install new windows that utilize the same material as the historic windows (i.e., wood for wood, steel for steel, aluminum for aluminum) or a highly compatible material (defined as either fiberglass or aluminum with a painted or coated finish for either steel or wood).
9. **DO** install new windows that have the same method of operation as the historic windows (i.e., casement for casement, double-hung for double-hung). Note: Single-hung windows may be substituted for double-hung windows and vice versa.

Acceptable

10. If the same material or a highly compatible material cannot be used, then **DO** use an



The dual-pane replacement windows shown above have true divided lights, with the muntins extending all the way through the glass. This type of window is recommended because it closely replicates the look of a historic window.



The dual-pane replacement window shown above has simulated divided lights, with muntin-like grids on the outside and inside of the glass and a spacer bar between the glass. While true divided lights are preferred, this type of window is a recommended alternative.



This new wood window utilized the same material as the window it replaced, as well as the same muntin pattern.

alternate material (i.e., vinyl or composite) that resembles the historic material and allows the other aspects of compatibility to be met (see example at top right).

11. If the new windows must have a different method of operation, **DO** install new windows with sashes that are the same size as those on the historic windows (i.e., paired casements may be replaced by sliders if the sash size is the same; see example at middle right).

Not Recommended

12. **DON'T** replace windows without providing the necessary documentation which demonstrates that replacement is necessary due to either the condition of the windows or the cost of repair.
13. **DON'T** replace windows solely because of peeling paint, broken glass, stuck sash, missing hardware, or high air infiltration. These conditions, in themselves, are no indication that windows are beyond repair.
14. **DON'T** install new windows that don't fit precisely into the historic openings. Avoid removing or modifying the historic sills, lintels, surrounds, and trim. Also avoid installing stuccoed "popouts" or similar features around the window openings if they didn't exist on the building historically.
15. If the historic windows were recessed within the openings, **DON'T** install new windows that are flush with the exterior wall. Conversely, if the historic windows were flush with the exterior wall, the new windows should not be recessed.
16. **DON'T** install windows that have an overall visible light transmittance rating of less than 0.5. Avoid the use of reflective, obscure, colored, or other nonoriginal glazing.
17. **DON'T** install new windows with rails, stiles, and jambs that don't match those of the historic windows.
18. **DON'T** install new windows with muntins that don't match those of the historic



In this example, new vinyl sliders were installed in place of original steel casements. Although an alternate material was used, the work was deemed acceptable because the new windows were specially made to fit the openings. The window contractor carefully ensured that the new muntin patterns matched the originals and that the rails, stiles, and jambs of the new windows matched those of the historic windows.



In this example, an original steel casement window (left) was replaced with an aluminum slider (right). Although the method of operation was different, the work was deemed acceptable because the material was highly compatible and the new sashes were the same size as the originals. The new muntin pattern matched that of the historic window, and the rails, stiles, and jambs also matched.



Even though this steel casement window is painted shut, the paint could be removed and the window repaired.

windows or don't follow the same pattern. Avoid using "snap-on" muntins, internal muntins only, or other muntins that are significantly thinner or thicker than the historic muntins.

19. **DON'T** install windows that utilize a material that is incompatible with or does not resemble the historic windows (i.e. mill finish aluminum for wood).
20. **DON'T** replace historic windows with new windows that have a different method of operation and have sashes that are not the same size as the originals.

Tier 2 Windows

All windows that are not classified as Tier 1 windows will be classified as Tier 2 windows. While not as critical to the historic character of the building, Tier 2 windows should also be preserved, where possible.

It should be noted that some Tier 2 windows will have high visibility from the street while others will not be visible at all. Tier 2 windows with no street visibility may be exempted from the requirements below.

Tier 2 windows with street visibility should meet the following requirements:

Recommended

21. **DO** install new windows that fit precisely into the historic window openings (i.e., within ½" on each side).
22. If the historic windows were recessed within the openings, **DO** install new windows that are recessed to match. If the historic windows were not recessed, then the new windows should not be recessed.
23. **DO** install new windows with an overall visible light transmittance rating of 0.5 or higher.
24. **DO** install new windows with rails, stiles, and jambs that match those of the historic



The replacement windows shown above illustrate the type of work that meets the "Recommended" requirements for both Tier 1 and Tier 2 windows.



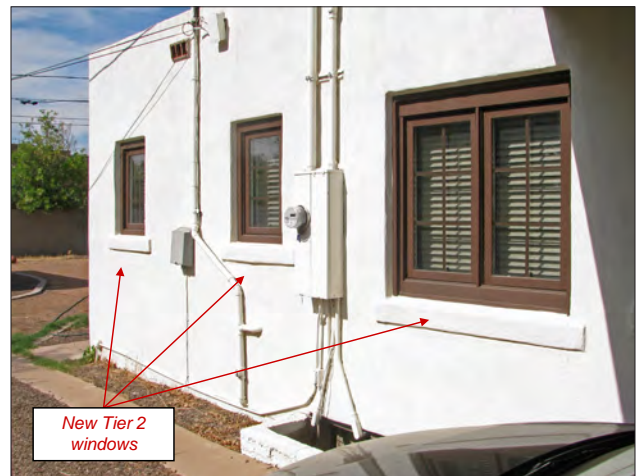
The original wood windows on this house had been replaced with incompatible aluminum sliders, with the openings reduced in size. Fortunately, there was sufficient documentation to replicate the original windows and restore the house back to its historic appearance.

windows in profile and dimensions. The rails, stiles, and jambs should generally be within 1/2" of the originals.

25. **DO** install new windows with muntins that match those of the historic windows in profile and dimensions. The muntins should generally be within 1/4" of the originals and should follow the same pattern (i.e., 1/1 replacing 1/1, 6/1 replacing 6/1). True divided lights are preferred, with simulated divided lights utilizing interior and exterior grids and spacer bars between the glass as a second choice, and other types of simulated divided lights as a third choice. As an alternative, the new windows may utilize a pattern that is simplified (i.e., single-light windows may be used as replacements for divided-light windows).
26. **DO** install new windows that utilize the same material as the historic windows (i.e., wood for wood, steel for steel, aluminum for aluminum) or a highly compatible material (defined as either fiberglass or aluminum with a painted or coated finish for either steel or wood). If this is not possible, then the new windows may use an alternate material (i.e., vinyl or composite) that resembles the historic material and allows the other aspects of compatibility to be met.
27. **DO** install new windows that have the same method of operation as the historic windows (i.e., casement for casement, double-hung for double-hung). If this is not possible, then the windows should at least have sashes that are the same size as those on the historic windows (i.e., paired casements may be replaced by sliders if the sash size is the same). Note: Single-hung windows may be substituted for double-hung windows and vice versa.

Not Recommended

28. **DON'T** install new windows that don't fit precisely into the historic openings. Avoid removing or modifying the historic sills,



In the example above, the historic Tier 1 windows on the front of the house and on either side of the chimney were retained and repaired. The street-visible Tier 2 windows on the side of the house adjacent to the driveway were replaced with new windows with simulated divided lights, utilizing muntins with internal grids only. While these muntins are not recommended for Tier 1 windows, they may be allowed on Tier 2 windows, even if the windows are street-visible.

lintels, surrounds, and trim. Also avoid installing stuccoed “popouts” or similar features around the window openings if they didn’t exist on the building historically.

29. If the historic windows were recessed within the openings, **DON’T** install new windows that are flush with the exterior wall. Conversely, if the historic windows were flush with the exterior wall, the new windows should not be recessed.
30. **DON’T** install windows that have an overall visible light transmittance rating of less than 0.5. Avoid the use of reflective, obscure, colored, or other nonoriginal glazing.
31. **DON’T** install new windows with rails, stiles, and jambs that don’t match those of the historic windows.
32. **DON’T** install new windows with muntin patterns that are overly elaborate.
33. **DON’T** install windows that utilize a material that is incompatible with or does not resemble the historic windows.
34. **DON’T** replace historic windows with new windows that have a different method of operation and have sashes that are not the same size as the originals.



Windows in historic masonry buildings are typically recessed within the openings (see example above left). Any new replacement windows installed in these buildings should be recessed to match the historic windows. Many masonry buildings also have projecting sills at the bottom of the openings and decorative lintels at the top of the openings; these features should not be altered. Windows in wood frame buildings, on the other hand, are often flush with the exterior wall, with ornamental trim or surrounds around the outside of the openings (see example above right). New replacement windows in these buildings should be installed in the same manner, preserving the historic surrounds or trim, where possible.

ADDITIONAL INFORMATION

For additional information on window repair and replacement, please visit the City of Phoenix Historic Preservation Office website at phoenix.gov/pdd/historic-preservation. You may also call (602) 261-8699, send an e-mail message to historic@phoenix.gov, or visit the Historic Preservation Office at 200 West Washington Street, 3rd floor, Phoenix, Arizona 85003. For a copy of this publication in an alternate format, please contact the Planning & Development Department at 602-262-7811 Voice or TTY use 7-1-1.

Noncontributing Buildings in Historic Districts

Certain properties in historic districts are classified as “**noncontributing**” either because of their age or because of extensive alterations. If Historic Preservation staff determines that a property is a non-contributor and has no possibility of ever becoming a contributor, the guidelines establishing the need for replacement (1, 2, 12 & 13) may be waived. However, the property will still need to meet the relevant guidelines for compatibility (3-11, 14-34). The new windows may be compatible either with the windows that were on the building originally or with other windows that are generally present in the historic district.