CITY OF SAN ANTONIO

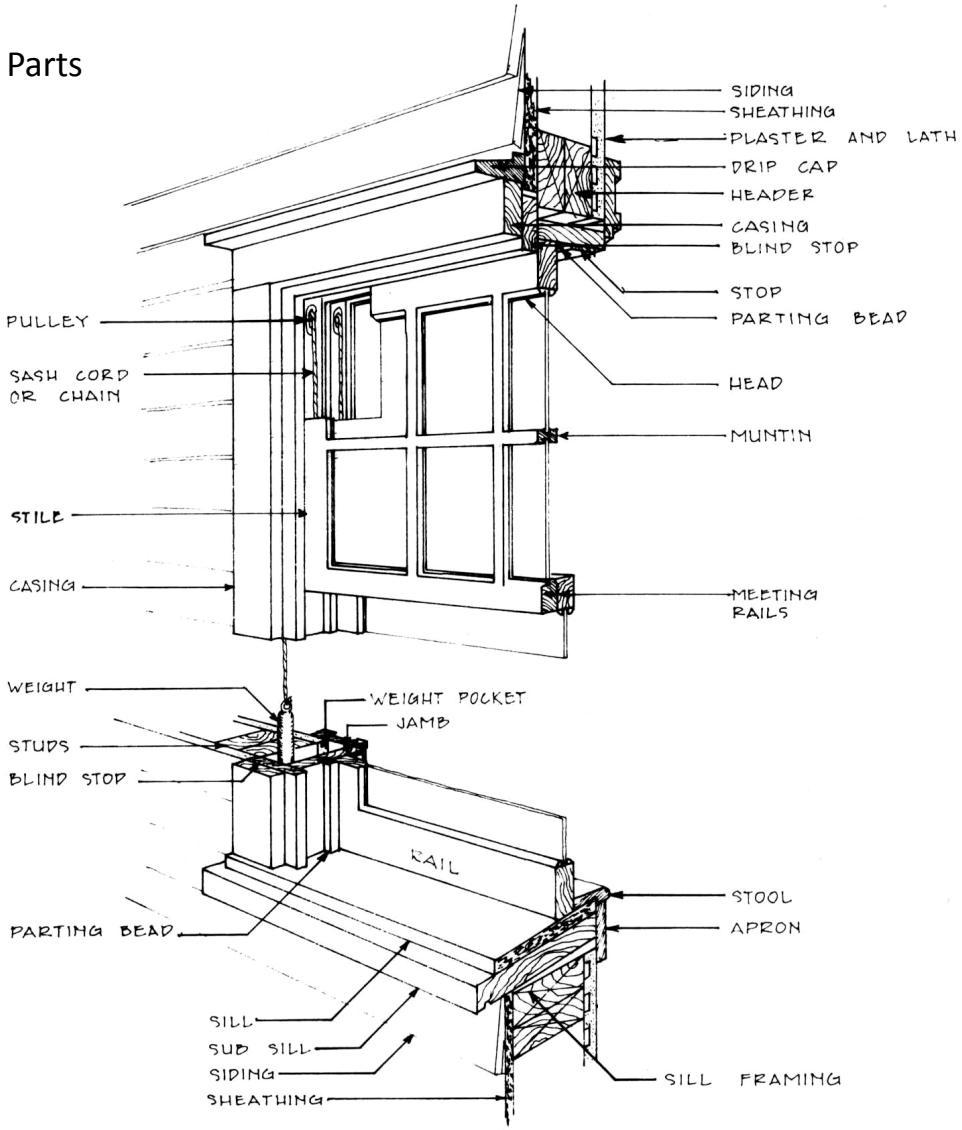
OFFICE OF HISTORIC PRESERVATION

HISTORIC DESIGN GUIDELINES

WINDOWS: REPAIR, REPLACEMENT, AND NEW CONSTRUCTION

December 16, 2015

Wood Window Parts



Why are windows important?

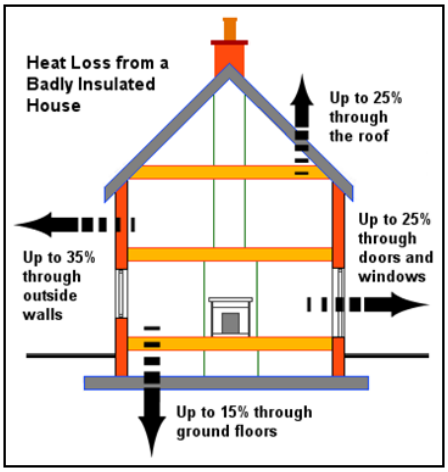
A value of a historic home is equal to the sum of its parts. As original materials are removed from a historic property, it begins to lose its integrity and ultimately its historic value. Historic windows greatly contribute to a property in terms of character and craftsmanship. They were expertly designed and constructed from high-quality materials. Preserving historic windows in place keeps original, high quality materials with the property and out of the landfill.

In historic homes, the windows are an integral part of the design. They were designed to not only be aesthetically pleasing, but were necessary as a functioning component to the building by providing light and ventilation. The loss of original windows also has great potential to negatively impact the appearance of a historic home. Building facades lose proportionality and depth as modern replacements are introduced.

Historic wood windows can certainly be maintained or restored to working order. Preservation of original architectural features, including windows, is encouraged in the City of San Antonio Historic Design Guidelines. Nevertheless, there is an abundance of replacement window products that are too often used by historic home owners seeking to “upgrade” their aging properties.

I’ve been told my wood windows need to be replaced.

In an age where energy reduction is at the forefront of every homeowner’s mind, windows are often blamed as the leading culprit of heat gain/loss. The criminalization of “drafty old windows” is nothing new; window manufacturers have long been pointing out the faults of old windows while promoting attractive solutions (their products). New low -e, gas-filled and triple pane replacements may seem like an exciting solution for homeowners coping with their monthly energy bill. Walk into any home-improvement store, and you may be feeling the pressure to replace. Door-to-door window salesmen have also been reported in historic districts in San Antonio.



In reality, heat gain/loss occurs evenly throughout the home, with windows only accounting for 25% of waste. Poorly insulated walls and attics are the greater culprit, especially locally. The San Antonio climate offers many days of full sun. While we enjoy these sunny days in the winter, during the hot summer months that same sun bears down on rooftops, turning attics into ovens.

Trying to solve an energy problem by only addressing the windows is like trying to hold water in a leaky bucket and only patching a few of its holes!

Retrofitting Solutions

Even windows in the best condition can be made more energy efficient. Heat gain/loss through windows occurs in three different ways: air infiltration, heat transfer (conduction) and solar gain (radiation). There are a number of low cost, reversible and historically appropriate strategies that can be used to reduce heat gain/loss. It should be noted that implementing a combination of any of these techniques can be just as effective in arresting heat gain/loss as a brand new window.

Weather stripping is perhaps the cheapest and easiest solution for improving window efficiency. Proper weather stripping drastically reduces air infiltration at meeting points in the window. This can easily be done by any homeowner and offers a great return on investment.

Storm windows can be used to provide an additional transparent barrier between the outside and inside of a historic home. Their installation creates an insulating air pocket which reduces heat transfer. Storm windows can be hung from the interior of a window and simply clipped or wedged into place (some even use magnets) for easy removal and cleaning. Some exterior storm windows may be appropriate provided that they have a thin frame and are used with either a decorative screen or in a manner that does not obscure any architectural details.

Shades, Shutters and Screens can all be used to prevent solar gain during the hot summer months or seasons where windows receive direct sunlight. Some interior shades also have insulating qualities that can reduce heat transfer. Solar screens are gaining in popularity, but are only appropriate when installed on the rear of a building as to not have a visual impact from the street.

Interior window films can be applied to reduce the impact of solar gain, and are another affordable, easy solution. A wide variety of products are available, but homeowners should be cautious to avoid films that are deeply tinted or reflective as they have the potential to alter the exterior appearance of the glass.

Additional Resources

There are countless online resources from a number of reputable sources. Perhaps some of the best materials come from the National Trust for Historic Preservation and National Park Service:

NTHP: Repair or Replace?

NTHP: Saving Windows, Saving Money

NTHP: Wood Windows Tip Sheet

NPS: Preservation Brief

OHP periodically hosts a Historic Window Restoration Workshop. The workshop is open to all, and for a small tuition participants receive hands-on training in window repair. Of course, OHP staff is always available for consultation at your property. We look forward to helping you find an appropriate solution.

REPAIR OR REPLACE?

6.A.iii. Preserve historic windows. When glass is broken, the color and clarity of replacement glass should match the original historic glass.

Repairable Window:

- Glass missing or broken;
- Meeting rails not aligning;
- Cords broken or hardware missing;
- Sill or frame rotted;
- Partially rotted rails and stiles which require patching.

Beyond Repair:

- Missing components or units;
- Extreme wood rot;
- Where 50% or more of a window's components must be reconstructed, a replacement may be considered;
- Replacement sashes may also be constructed to fit within the original frame.

In most cases, window repair is not only the more affordable solution upfront, but offers a much greater return on investment than replacement. Repairing and maintaining an old wood window may seem like a daunting task, but remember that historic windows were intended to be taken apart. If one piece fails, then only that piece may be replaced. By educating themselves on these practices, repairs can become something that any homeowner can tackle one window at a time (although feel free to obtain the services of a professional!)

Examples of Repairable Windows:

SELECTING AN APPROPRIATE **REPLACEMENT**

6.B.iv. Install new windows to match the historic or existing windows in terms of size, type, configuration, material, form, appearance, and detail when original windows are deteriorated beyond repair.

Recommended stipulations for replacement:

Individual sashes should be replaced where possible. Should a full window unit require replacement, inserts should

- Match the original materials;
- Maintain the original dimension and profile;
- Feature clear glass. Low-e or reflective coatings are not recommended for replacements;
- Maintain the original appearance of window trim or sill detail.

Details to avoid:

- Vinyl product changes the material
- Window is not recessed within frame
- Sash components do not feature traditional dimensions

- Track insert alters profile
- Meeting rails thicker than original
- Low-e coating alters hue and reflectivity

- Window trim and sill detail not consistent with original

SELECTING WINDOWS FOR **NEW BUILDINGS**

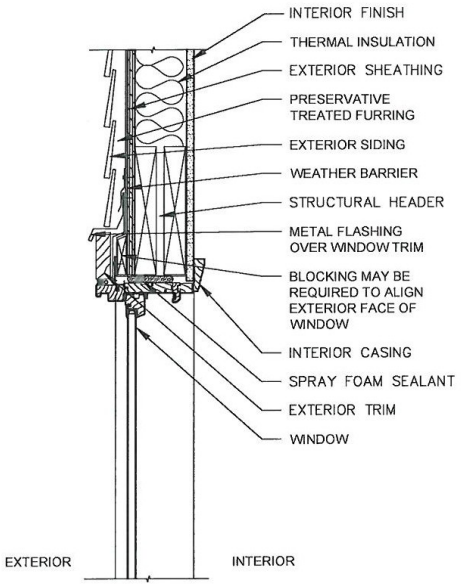
3.A.i. Complementary materials—Use materials that complement the type, color, and texture of materials traditionally found in the district. Materials should not be so dissimilar as to distract from the historic interpretation of the district...

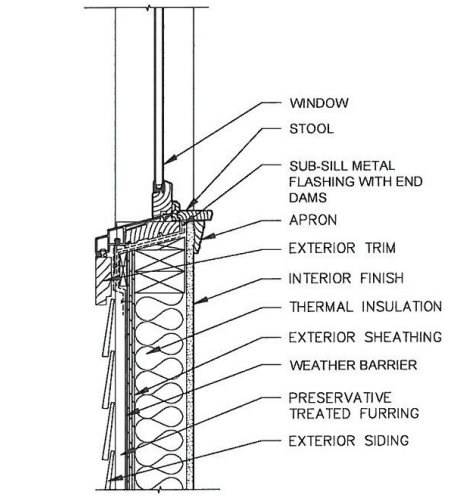
Windows used in new construction should:

- Maintain traditional dimensions and profiles;
- Be recessed within the window frame. Windows with a nailing strip are not recommended;
- Feature traditional materials or appearance. Wood windows are most appropriate. Double-hung, block frame windows that feature alternative materials may be considered on a case-by-case basis;
- Feature traditional trim and sill details. Paired windows should be separated by a wood mullion.

The use of low-e glass is appropriate in new construction provided that hue and reflectivity are not drastically different from regular glass.

Examples in New Construction:





Block Frame

(not recommended)

Flush Flange

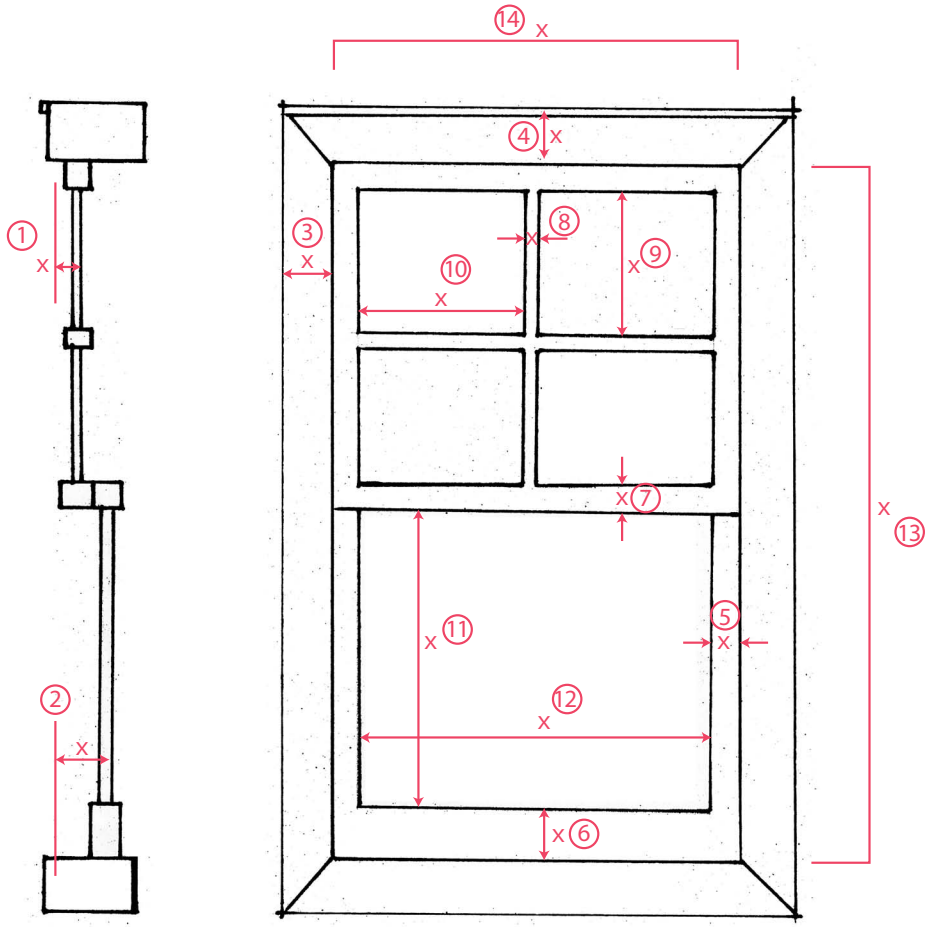
	Description of Window			General Information						Frame		Sash						Recommendation
Number	Style	Width & Height	Material	Historic?	Paint Condition?	Square?	Operable?	Glazing Condition?	Weather stripping?	Sill	Jambs	Sash Only Replacement?	Bottom Rail	Rails	Muntins	Meeting Rail	Total Value	Treatment
3a	Double Hung 1:1	36" x 78"	wood	yes	Good	yes	no	Bad	no	2	2	no	3	1	1	1	10	Replace deteriorated bottom rail, use epoxy repair on rotten sill and jambs, repair glazing and add weather stripping

EXAMPLE

Document courtesy of Denver Community Planning & Development, Landmark Preservation

Frame and Sash Comparison - Single and Double Hung Windows

Instructions: To compare the replacement windows to the original, it is important to understand the compatibility between the original and the replacement. Please fill in each value, in inches. Feel free to notate any other measurements that you feel is important to the replacement discussion.



Existing Frame and Sash Exterior Material _____

Proposed Frame and Sash Exterior Material _____

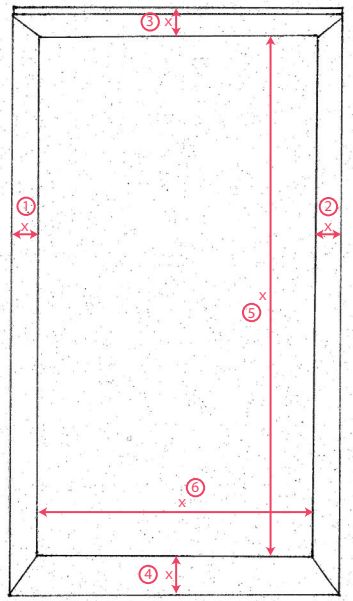
	Existing	Proposed
1. Upper Sash Measurement from exterior façade to glass (Shadow Profile)		
2. Lower Sash Measurement from exterior façade to glass (Shadow Profile)		
3. Side trim Measurement		
4. Top/bottom Measurement		
5. Stile Measurement		
6. Rail Measurement		
7. Meeting Rail Measurement		
8. Muntin Measurement		
9. Glass Height upper		
10. Glass Width lower		
11. Glass Height lower		
12. Glass Width lower		
13. Overall Sash height		
14. Overall Sash width		

Document courtesy of Denver Community Planning & Development, Landmark Preservation

Window Comparison - Casement or Fixed Windows

Instructions: To compare the replacement windows to the original, it is important to understand the compatibility between the original and the replacement. Please fill in each value, in inches. Feel free to notate any other measurements that you feel is important to the replacement discussion.

Existing

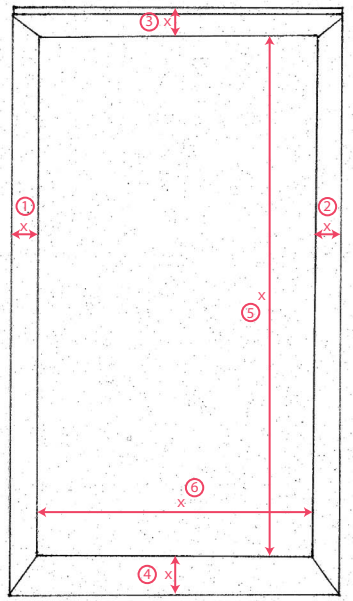


Window Location _____

Window Exterior Material _____

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Proposed



Window Exterior Material _____

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Document courtesy of Denver Community Planning & Development, Landmark Preservation